United States Department of Agriculture

Natural Resources Conservation Service

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

Soil Survey of Greene County, Ohio

Supplement
March 2007

How to use this survey

General Soil Map

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

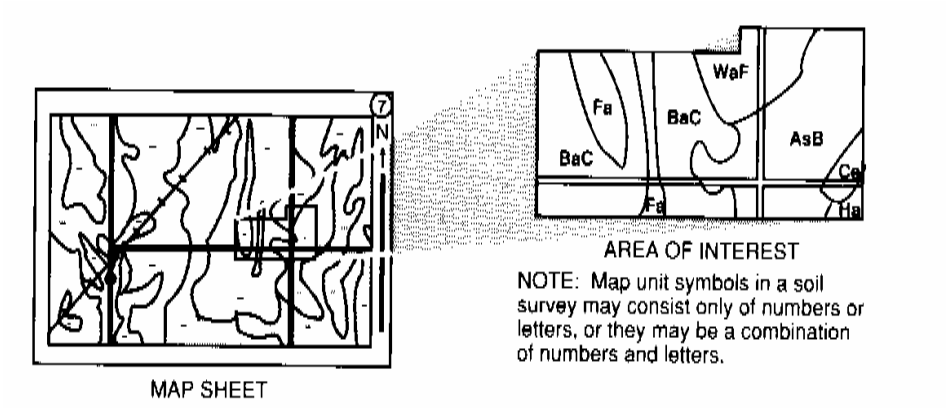
To find information about your area of interest, locate that area on the map, identify the name of the map unit in the area on the color-coded map legend, then refer to the section **General Soil Map Units** of this survey for a general description of the soils in your area.

Detailed Soil Maps

Detailed soil maps can be generated with geographic information system software from the Natural Resources Conservation Service's Soil Data Mart Website (http://soildatamart.nrcs.usda.gov/Survey.aspx?State=OH). These maps are useful in planning the use and management of small areas.

To reference the soils information and area of interest locate the area using the information from the Soil Data Mart or use the Web Soil Survey http://websoilsurvey.nrcs.usda.gov/ . 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** also shows which table has data on a specific land use for each detailed soil map unit. See **Contents** for sections of this publication that may address your specific needs.



This soil survey supplement is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies and State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (formerly the Soil Conservation Service) has leadership for the Federal part of the National Cooperative Soil Survey.

Major fieldwork for this soil survey was completed in 1973. Soil names and descriptions were approved in 1974. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1973. The 1978 survey was made cooperatively by the Natural Resources Conservation Service, Ohio Department of Natural Resources, Division of Soil and Water Conservation, Ohio Agricultural Research and Development Center, the Ohio State University Extension, the Greene Soil and Water Conservation District and the Greene County Commissioners. This survey is part of the technical assistance furnished to the Greene Soil and Water Conservation District.

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

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Cover: Top Left - Small cattle operations are scattered throughout the county. Rotational grazing systems, such as this one on Fincastle soils, are well suited to nearly all soils in the county. **Top Right** – US Route 35 is the main east-west thoroughfare in Greene County that traverses many prime agricultural soils in the eastern sections of the county. **Bottom Left** - Cedar Cliff Falls is an attractive feature on Massie Creek, a stream system that drains the northeastern part of the county**. Bottom Right** - The Little Miami River was the first state and national scenic river to be designated. Greene County lies in the headwaters of this beautiful river system.

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Preface

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

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

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

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

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

Soil Survey of Greene County, Ohio

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

Greene County is in the southwestern part of Ohio about midway between Columbus and Cincinnati. It has an area of approximately 265,792 acres or 415 square miles. The total population of the county in 2002 was 152,233, a 20% increase since 1970. The county seat of Xenia, which is the third largest city in the county, had a 2002 population of 24,154. The two largest cities, Beavercreek and Fairborn, lie in the western edge of the county and had a 2002 populations of 39,196 and 32,474 respectively. Other communities in Greene County are Bellbrook, Bowersville, Cedarville, Clifton, Jamestown, Spring Valley and Yellow Springs.

Figure 1. Location of Greene County in Ohio.

General Nature of the County

Climate

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

Climate Tables are created from the climate station in Xenia, Ohio.

Table 1 gives data on temperature and precipitation for the survey area as recorded at XENIA 6 SSE 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 30.7 degrees F and the average daily minimum temperature is 22.3 degrees. The lowest temperature on record, which occurred at XENIA 6 SSE on January 21, 1984, is -28 degrees. In summer, the average temperature is 71.3 degrees and the average daily maximum temperature is 82.0 degrees. The highest temperature, which occurred at XENIA 6 SSE on July 11, 1936, is 108 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 about 39.91 inches. Of this, about 21.74 inches, or 54 percent, usually falls in May 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 XENIA 6 SSE on July 4, 1975. Thunderstorms occur on about 40 days each year, and most occur in June.

The average seasonal snowfall is 22.6 inches. The greatest snow depth at any one time during the period of record was 25 inches

recorded on January 31, 1955. On an average, 2 days per year have at least 1 inch of snow on the ground. The heaviest 1-day snowfall on record was 13.0 inches recorded on November 27, 1950.

The average relative humidity in mid-afternoon is about 61 percent. Humidity is higher at night, and the average at dawn is about 78 percent. The sun shines 68 percent of the time in summer and 39 percent in winter. The prevailing wind is from the south-southwest. Average wind speed is highest, 11.7 miles per hour, in March.

History

Greene County was established in 1803 just one year after Ohio became a state. It originally encompassed a significant part of western Ohio; its present boundaries were established in 1819. The County was named for General Nathaniel Greene, a Revolutionary War Hero.

Two important Shawnee chiefs, Tecumseh and Blue Jacket, frequented a major settlement named Old Chillicothe (now Old Town) near the center of the county. Early settlements were along the Little Miami River and Massie Creek, and little progress was made in settling much of the eastern portions of the county until methods of draining the flat, wet swampland were developed around the Civil War. Today these rich dark soils are among the most productive in the county.
In the early 1900s, the Wright Brothers began experiments in flight in a prairie near the northwestern part of the county that later became Wright-Patterson Air Force Base.

Natural Resources

The soils of Greene County are among its most valuable natural resources. The many soils in the county range from well suited for agriculture and urban uses to those that are very unsuited. Other resources of minor to moderate importance include gravel deposits along river bottoms and in other glacial formations and limestone bedrock.

Geology

Mike Angle, geologist, Ohio Department of Natural Resources, prepared this section

During the Pleistocene Epoch (2 million to 10,000 years before present (Y.B.P.)) several episodes of ice advance occurred in southwestern Ohio. Deposits from the older pre-Illinoian (formerly referred to as Kansan) and Illinoian ice advances are not present at the surface in Greene County. Illinoian till and lacustrine deposits occur at depth in Greene County and are exposed at the surface south and east of Greene County. The last advance, the Late Wisconsinan Ice Sheet, deposited the surficial till in Greene County.

Glacial deposits in Greene County include: (glacial) till, lacustrine deposits, outwash (valley train) deposits, wind-blown loess deposits, and ice-contact sand and gravel (kames, eskers) deposits. Drift is an older term that collectively refers to the entire sequence of glacial deposits. Overall, drift is thinner in areas of ground moraine and thicker in end moraines. There are areas in southwestern and northern Greene County where the drift is very thin and the bedrock is very close to the ground surface, particularly in areas of steeper relief along stream valleys. In some limited areas, the limestone is close enough to ground surface that it is encountered within the soil profile which consists of residuum and thin till in these areas. Drift is thickest in the buried valleys found in western and central Greene County. Ancestral stream channels filled with glacial/alluvial sediments are referred to as buried valleys. Buried valleys may contain a mix of all of these types of deposits. The deposits vary with the energy level of the Alluvial deposits are associated with the banks and floodplains of modern streams and are much more recent features. Therefore, alluvial deposits, while being surficial deposits are not considered as being glacial deposits in this discussion. Alluvial deposits typically consist of fine-grained silt, clay, and some fine sand.

Till is an unsorted, non-stratified (non-bedded) mixture of sand, gravel, silt, and clay deposited directly by the ice sheet. There are two main types or facies of glacial till: lodgement till and ablation till. Lodgement till is "plastered-down" or "bulldozed" at the base of an actively moving ice sheet. Lodgement till tends to be relatively dense and compacted and pebbles typically are angular or broken and have a preferred direction or orientation. "Hardpan" and "boulder-clay" are two common terms used for lodgement till. Ablation or "melt-out" till occurs as the ice sheet melts or stagnates away. Debris bands are laid down or stacked as the ice between the bands melts. Ablation till tends to be less dense, less compacted, and slightly coarser as meltwater

commonly washes away some of the fine silt and clay.

Till has relatively low inherent permeability. Permeability in till is in part dependent upon the primary porosity of the till, which reflects how fine-textured the particular till is. Vertical permeability in till is controlled largely by factors influencing the secondary porosity such as fractures (joints), worm burrows, root channels, sand seams, etc. Fractures may also interconnect the sand and gravel lenses.

The till associated with the Late Wisconsinan ice advance actually entered Greene County via two large ice masses or lobes. The Scioto Lobe entered the county from the northeast and pushed westward. The Miami Lobe entered the county from the northwestern corner and pushed mostly due south. The ice advances were not totally synchronous and the deposits typically override previous deposits of the other lobe.

At the land surface, till accounts for two primary landforms: ground moraine and end moraine. Ground moraine (till plain) is relatively flat to gently rolling. End moraines are ridge-like, with terrain that is steeper and more rolling or hummocky. End moraines commonly serve as a local drainage divide due to their ridge-like nature. The Reesville Moraine extends from north to south across eastern Greene County. The Cuba Moraine also runs roughly from north to south across central Greene County. Both Moraines were associated with and mark the western extent of the Scioto Lobe at a various interval of time.

Outwash deposits are created by active deposition of sediments by meltwater streams. They consist of sand and gravel with a very minor component of fines. These deposits are generally bedded or stratified and are sorted. Outwash deposits in Greene County include along the Mad River by Fairborn, along Beaver Creek, Little Beaver Creek and the Little Miami River in Beaver Creek and Xenia Townships, and the Little Miami River near Bellbrook and south of Spring Valley. Outwash deposits associated with stream valleys were referred to in earlier literature as valley trains. Sorting and degree of coarseness depend upon the nature and proximity of the melting ice sheet. Braided streams usually deposited the outwash. Such streams have multiple channels, which migrate across the width of the valley floor, leaving behind a complex record of deposition and erosion. Deposition of outwash may precede an advancing ice sheet or be associated with a melting ice sheet. As modern streams downcut, the older, now higher elevation remnants of the original valley floor are called terraces. Terraces in Greene County tend to be relatively low elevation and are at elevations just above the current floodplain.

Kames and eskers are ice contact features. They are composed of masses of generally poorly sorted sand and gravel with minor till, deposited in depressions, holes, tunnels, or other cavities in the ice. As the surrounding ice melts, a mound of sediment remains behind. Typically, these deposits may collapse or flow as the surrounding ice melts. These deposits may display high angle, distorted or tilted beds, faults, and folds. Kames are comprised of isolated or small groups of rounded mounds of dirty sand and gravel with minor till. Eskers are comprised of elongate, narrow, sinuous ridges of sand and gravel. Kame terraces are a linear belt of kames that have a similar appearance and a fairly uniform elevation. Kame terraces commonly flank valleys or streams. Kames are found along uplands flanking the outwash terraces in western Greene County.

Lacustrine deposits are composed of silty to clayey material found in low depressional areas within the valleys and also on the ground moraine. These deposits formed when advancing ice sheets blocked streams or when tributaries were dammed or cut off and could not reach the trunk streams. Lacustrine deposits tend to be laminated (or varved) and contain various proportions of silts and clays. Thin layers of fine sand interbedded with the clayey to silty lacustrine deposits may reflect storm or flood events. Permeability is preferentially horizontal due to the laminations and water-laid nature of these sediments. The inherent vertical permeability is low; however, secondary porosity features such as fractures, joints, root channels, etc. help increase the vertical permeability. These deposits may also be found at depth in buried valleys.

The lakes were created during the recession of the ice sheets. Meltwater was trapped between the receding ice sheet and end moraines. In some areas, meltwater may have been trapped between two end moraines, forming a lake. Run-off also helped to fill these ponds. The only lakebed mapped is found along the border of Clinton County in western Concord Township and Jasper Township.

Eastern Greene County also has large areas of ground moraine that are capped by a thin layer of loess. Loess is a deposit formed by wind-blown silt. Loess is derived from the wind picking up fine silt-sized (to very fine-grained sand) particles covering the

floodplains of the wide outwash or lacustrine valley floors. Loess is commonly found capping bedrock uplands and higher stream terraces to the east (upwind) of major river valleys. Although not necessarily very thick, these deposits have a great influence on soil formation and agriculture usage.

Bedrock Geology

Bedrock underlying the surface of Greene County includes both the Ordovician and Silurian Systems. Ordovician rocks occupy the western half of the county and the Silurian rocks roughly underlie the eastern half of the county. Thin Silurian units cap some of the steeper ridgetops in western Greene County.

The youngest units encountered in Greene County are dolomites and minor shale of the Silurian Tymochtee and Greenfield Formations. These formations are limited to the northeastern corner of Greene County and these units thin sharply to the southwest.

The Cedarville Dolomite, Springfield Dolomite, and Euphemia Dolomite have been grouped and mapped together. These units are variable, thin, darker-colored, massive dolomites. They are found throughout eastern Greene County.

The Massie Shale, Laurel Dolomite, Osgood Shale, and Brassfield Limestone have been grouped and mapped together. These units vary from bluish shales to gray, massive dense dolomites. These units are found in central Greene County and at depth in eastern Greene County.

The oldest rocks in the county are the thinly interbedded muddy, calcareous shales and dense, fossiliferous limestones of the Ordovician System. These units are found in the western half of Greene County and underlie all of the deeper buried valley systems of this part of Ohio.

Ground Water Resources

Ground water in Greene County is obtained from both unconsolidated (glacial-alluvial) and consolidated (bedrock) aquifers. The relatively thick, clean outwash deposits along the Mad River and portions of Little Beaver Creek, Beaver Creek, and the Little Miami River are the highest–producing aquifers in Greene County. Yields exceeding 100 gallons per minute (gpm) can be obtained from these units. Yields of 25 to 100 gpm can be obtained from sandy outwash, kams and alluvium along the margins of these buried valley outwash deposits. Thin lenses of sand and gravel interbedded with till comprise the glacial aquifers in eastern Greene County. Yields from sand and gravel lenses interbedded with the fine-grained till average 5 to 25 gpm Sand and gravel lenses can directly overlie the carbonate bedrock. These lenses may serve as an aquifer or, more commonly, serve as an extra source of recharge to the underlying fractured bedrock. The sand and gravel may also directly overlie the bedrock and yield 5 to 25 gpm. Drillers may penetrate the bedrock directly below the sand and gravel. In such cases the bedrock acts as a “screen” to help filter fines out of the gravel.

The best yielding bedrock units are the Silurian Tymochtee and Greenfield Formations and the Cedarville, Springfield, and Euphemia Dolomites in eastern Greene County. Yields ranging from 25 to 100 gpm are possible from areas where these units are thicker and highly fractured. Elsewhere yields average 5 to 25 gpm for these units. The Massie Shale, Laurel Dolomite, Osgood Shale, and Brassfield Limestone are found in the east central portion of the county. The yields drop significantly for these units, averaging less than 5 gpm. The interbedded thin limestones of the Ordovician System are a very poor aquifer providing meager yields barely suitable for domestic purposes.

Land Use

The Statistics in this section were obtained from the United States Census of Agriculture.

Tthe western half of Greene County, which includes the cities of Beavercreek, Fairborn and Xenia, continues to become more developed with Planned Unit Developments and rural non-farm housing. Most of the agricultural areas are in the eastern half of the county.

In 2002, Greene County had 168,568 acres in farms, a 14% decrease from 195,070 acres in 1987. The total number of farms in 2002 was 699, down 16% from the 1987 figure of 835. The percentage of farms in the 10 to 50 acre range has increased from 24% to 47% during the same period (1987-2002). Predominant crops continue to be corn and soybeans with over 123,000 acres harvested in 2004 compared to 119,000 in 1987. Minor crops of wheat and hay accounted for 11,000 acres in 2004 and 15,000 acres in 1987.

Figure 2. Wheat is growing along US Route 35 near Jamestown.

The largest change in livestock is the increasing number of horses being kept on smaller rural properties. The number of cattle in the county has decreased from 13,000 in 1987 to 7,000 in 2004. Hog production reflects the same trend with sales decreasing from 91,000 in 1987 to 53,000 in 2004.

US Route 35, a four lane highway and recent improvements to local roads and infrastructures will continue to promote urbanization throughout the county. With the average farmer's age of 54.8 years in the county, it can be assumed some farms may be lost to urbanization in the near future.

Figure 3. Rural agricultural landscapes are being converted to residential uses throughout the county. Many soils, including this Xenia silt loam, are well suited to both uses with proper conservation or development practices.

Industry

Greene County's industry is very diverse, which adds to its stability. With Wright-Patterson Air Force base on the county line plus automobile assembly plants in nearby counties, Greene County is home to numerous support companies for the aerospace and manufacturing industry. The population growth has created several modern shopping and residential areas within the county.

There are six colleges and universities, seven school districts, nine private schools, the U.S. Air Force Museum and the National Afro-American Museum in Greene County. Combined, they attract support industries, jobs, visitors, students, and new residents to the county.

Transportation

The railway system that was used through the mid 1900s is now an extensive bikeway system used by many local residents and visitors. US Route 35 is the major east-west roadway through the county and has been upgraded to a four-lane limited access highway. US Routes 42 and 68 are major north-south roadways. Interstate 71 crosses the southeast corner of the county, and Interstate 675 crosses the northwest corner.

The Lewis A. Jackson Greene County Airport has been upgraded to a 4,500 foot runway and will bring more corporate users to the county and make corporate relocation to the county more attractive.

How This Survey Was Made

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

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

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

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

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

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

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

General Soil Map Units

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

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

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

Some soil boundaries and soil names in this survey area do not fully match those in adjacent survey areas that were published at an earlier date. Differences are the result of changes and refinements in soil series concepts, updated soil taxonomy, slightly different map unit composition in survey areas, and the use of the State Soil Geographic data (STATSGO) map as the base for the general soil map in this publication.

General Soil Map

The general soil map at the back of this survey shows, in color, the soil associations in Greene County. A soil association is a landscape that has a distinctive proportional pattern of soils. It normally consists of one or more major soils and at least one minor soil, and it is named for the major soils. The soils in one association may occur in another, but in a different pattern.

A map showing soil associations is useful to people who want a general idea of the soils in a county, who want to compare different parts of a county, or who want to know the location of large tracts that are suitable for a certain kind of land use. Such a map is a useful general guide in managing a watershed, a wooded tract, or a wildlife area, or in planning engineering works, recreational facilities, and community developments. It is not a suitable map for planning the management of a farm or field, or for selecting the exact location of a road, building, or similar structure, because the soils in any one association ordinarily differ in slope, depth, drainage, and other characteristics that affect their management.

The soil associations in this survey area have been grouped into two general kinds of landscapes for broad interpretative purposes. Each of the broad groups and the soil associations in it are described on the following pages.

Soils That Formed Mainly in Glacial Till and Loess on Uplands

These soils are in areas throughout the county. They are mostly deep soils that formed in glacial till and a loess mantle of variable thickness. A few areas of these soils have bedrock at a depth of less than 40 inches. A few areas of the soils formed entirely in loess, and some formed in sand and gravel. Most areas are farmed; corn and soybeans are the main crops. Some small grain and meadow crops are also grown. This group of associations makes up about 81 percent of the county.

1. Miamian-Celina association.

Gently sloping to steep, well drained and moderately well drained soils that formed in loam glacial till; on uplands

This association is mainly in two major areas of the county. The largest of these areas is in northwestern Greene County, north of Little Beaver Creek and west of Little Miami River. The other major area is in the eastern part of the county.

This association makes up 17 percent of the county. It is about 55 percent Miamian soils, 15 percent Celina soils, and 30 percent minor soils.

Miamian and Celina soils formed in loam glacial till. Miamian soils are well drained and are mostly sloping to steep. Celina soils are moderately well drained and are dominantly gently sloping.

Minor in this association are Crosby, Brookston, Reesville, and Hennepin soils. A few areas of Ritchey soils underlain by bedrock at a depth of less than 20 inches are

in places, particularly in Miami, Cedarville, Beaver Creek, and Xenia Townships.

The gently sloping soils of the association are used for cultivated crops, and the sloping and steep soils are commonly used for pasture; however, those parts of the association in northwestern Greene County near the expanding metropolitan area of Dayton are increasingly being used for housing and other nonfarm purposes. The area in the eastern part of the county is used dominantly for farming. In a few places in the northwestern area of the association, the soils are underlain by deposits of sand and gravel at a depth of 10 to 30 feet. Many steep slopes and a severe hazard of erosion are the major limitations of this association for farming and for some nonfarm uses. Moderately slow permeability is an additional limitation for some nonfarm uses.

2. Brookston-Celina-Crosby association

Level to gently sloping, very poorly drained to moderately well drained soils that formed in loam glacial till; on uplands

The largest area of this soil association is a strip extending from north to south along the eastern border of the county. A few smaller areas are scattered across the northern part of Greene County,

This association makes up about 8 percent of the County. It is about 65 percent Brookston soils, 15 percent Celina soils, 15 percent Crosby soils, and 5 percent minor soils.

The soils formed mostly in loam glacial till. Brookston soils are very poorly drained and are level or slightly depressional. Celina soils are moderately well drained and mostly gently sloping. They are on irregular-shaped knolls and slight rises that dot the landscape. Crosby soils are somewhat poorly drained and are nearly level to gently sloping.

Minor in this association are well drained Miamian soils and very poorly drained Ragsdale soils.

Most of the acreage in this association is intensively farmed. If artificially drained, Brookston and Crosby soils are well suited to corn and soybeans. On these soils wetness caused by a seasonal high water table is the major limitation for most nonfarm uses. Celina soils and gently sloping areas of Crosby soils are subject to erosion, but erosion control is different because slopes are short and irregular. Some areas of Celina and Miamian soils on the better drained rises and knolls have few limitations for building sites.

3. Miamian-Eldean-Casco association

Gently sloping to very steep, well drained soils formed in loam glacial till and sand and gravel; on uplands

This association is in areas scattered throughout the western part of Greene County. The soils of this association make a very intricate pattern of moderately steep to very steep stream valley sides and gently sloping to steep, glacier-deposited hills (kames).

This association makes up about 8 percent of the county. It is about 45 percent Miamian soils, 25 percent Eldean soils, and 10 percent Casco soils. Minor soils make up the remaining 20 percent.

The soils are well drained. Miamian soils formed in loam glacial till. In some places they are underlain by deposits of sand and gravel at a depth of 10 to 30 feet. The Eldean soils formed in loamy material underlain by sand and gravel. Casco soils are also underlain by sand and gravel, but at a shallower depth than Eldean soils.

Minor in this association are Rodman and Hennepin soils. These soils are steep and very steep.

The gently sloping areas of the association are commonly used for cultivated crops, and the sloping to moderately steep areas are used for pasture. The steep and very steep soils are mostly wooded. Sand and gravel underlying many parts of the association are mined commercially. Many steep slopes, a severe hazard of erosion, and droughtiness are limitations for many uses. Sternness on eroded areas is a hazard, particularly on Eldean and Casco soils. Because the soils are well drained, where slope is not a limitation, there are few limitations for residential development, and the soils are increasingly being used for this.

4. Milton-Miamian association

Nearly level to very steep, well drained soils that formed in loam glacial till overlying limestone bedrock, and well drained soils that formed in loam glacial till;on uplands

This soil association is mainly in several areas in Bath and Miami Townships in the northern part of the county.

This association makes up 3 percent of the county. It is 45 percent Milton soils, 40 percent Miamian soils, and 15 percent minor soils.

Milton and Miamian soils are well drained. Milton soils formed in loam glacial till underlain by limestone bedrock at a depth of 20 to 40 inches. They are sloping to very steep and are generally in and along the sides of

drainageways that dissect the association. Miamian soils formed in loam glacial till. They are commonly gently sloping to sloping.

Minor in this association are Ritchey and Fairmount soils. Ritchey soils are well drained. They are less than 20 inches thick over bedrock. Hillside seeps and springs are common in areas of Ritchey soils. Fair-mount soils are very steep. In this association they are along Clifton Gorge near Yellow Springs and in places along Massie Creek.

Most areas of the mildly sloping soils are used for growing cash crops. The steep and very steep soils are commonly used for pasture or woodland. In some areas of the association in Bath Township, the underlying bedrock has been mined for use in the manufacture of cement. The steep and very steep soils in Miami Township along the Little Miami River at Clifton Gorge are used mainly for recreation, nature study, and scenic value. Many steep slopes, a severe hazard of erosion, and shallowness to bedrock are the major limitations of the soils in this association for most uses. On Milton soils, droughtiness because of shallowness to bedrock is also a limitation for certain uses.

5. Miamian-Russell-Xenia association

Nearly level to sloping, well drained and moderately well drained soils that formed in a thin layer of silty material and the underlying loam glacial till; on uplands

This association is one of the most extensive in Greene County. It covers large areas in the central and southwestern parts of the county. The areas are cut by V-shaped valleys.

This association makes up about 29 percent of the county. It is 45 percent Miamian soils, 15 percent Russell soils, 15 percent Xenia soils, and 25 percent minor soils.

The dominant soils formed partly in loess and partly in the underlying loam glacial till. Miamian soils are well drained and are mostly sloping. They are adjacent to streams and drainageways. Russell soils are well drained and gently sloping or sloping. They are typically adjacent to drainageways or narrow ridges between the smaller drainageways. Xenia soils are moderately well drained and are nearly level or gently sloping. They are generally farther from the drainage-ways than Russell or Miamian soils.

Minor in this association are Ragsdale, Reesville, Fincastle, and Birkbeck soils. Some areas of soils that are shallow to bedrock, such as Edenton, Milton, Randolph, and Ritchey soils, are also in a few places in the association.

Erosion control on the sloping soils is the major limitation for farming. Nearly level soils, however, have few limitations for farming. Moderately slow permeability is a limitation for some nonfarm uses. Some areas of Xenia soils, particularly the nearly level soils, have a temporary high water table in winter and early in spring. Those parts of this association in southwestern Greene County near Dayton are being increasingly used for residential development. Establishing lawns and gardens is difficult on some sloping Russell and Miamian soils that are eroded.

6. Ragsdale-Reesville association

Depressional to gently sloping, very poorly drained and somewhat poorly drained soils that formed in loess over loam glacial till; on uplands

This association is mostly in the east-central and southern parts of the county.

This association makes up about 16 percent of the county. It is about 55 percent Ragsdale soils, 35 percent Reesville soils, and 10 percent minor soils.

The soils of this association formed in more than 40 inches of loess over loam glacial till. Ragsdale soils are very poorly drained and are level to slightly de-pressional. Reesville soils are somewhat poorly drained and are nearly level to gently sloping. They are on slightly higher positions on the landscape than Rags-dale soils.

Minor in this association are moderately well drained Birkbeck and Xenia soils and well drained Miamian and Russell soils. These soils are on higher rises and knolls and along the sides of drainageways. Some areas of somewhat poorly drained Raub soils are also included.

If artificially drained, the dominant soils in this association are among the most productive for farming in Greene County. They are used intensively for growing cash crops. Corn and soybeans are the most common crops. Because of generally mild slopes, erosion is not a serious hazard on these soils. Wetness because of a seasonal high water table is a severe limitation on the major soils for many land uses. Temporary ponding of surface water after heavy rain is also a limitation on Ragsdale soils in the depressions. Building foundations and basements in the dominant soils are likely to be wet, unless these soils are adequately drained.

Soils That Formed in Glacial Outwash, Alluvium, and Loess on Terraces and Flood Plains

These soils are in areas scattered across the northern part of the county, and are mainly along the major streams in the southern part of the county. The soils are mostly deep. They formed in glacial outwash on terraces or in alluvium on flood plains. The upper layers of most soils on terraces formed in a loess mantle of variable thickness. Most areas of these soils are farmed intensively; corn and soybeans are the main crops. Much of the city of Xenia and Wright-Patterson Air Force Base are in these areas. This group of associations makes up about 19 percent of the county.

7. Ockley-Rush association

Mainly nearly level to gently sloping, well drained soils that formed in loamy or silty material; deep to sand and gravel; on terraces

This association is mostly in an irregular-shaped band that extends northeast to southwest in the west-central part of the county. Two small areas are in the northern part of the county along the dark County line.

This association makes up about 5 percent of the county. It is about 45 percent Ockley soils, 25 percent Rush soils, and 30 percent minor soils.

The soils in the association are mostly nearly level to gently sloping on high terraces. A few sloping to steep soils are on the sides of stream valleys and escarpments. Ockley and Rush soils are well drained. Ockley soils formed in 42 inches or more of silty or loamy material overlying sand and gravel. Ockley soils are mainly gently sloping, and Rush soils more commonly are nearly level.

Minor in this association are Eldean, Casco, and Rodman soils. These well drained soils are in the few sloping to steep areas along stream valleys and escarpments. Also included in some areas are well drained Wea and Warsaw soils, moderately well drained Thack-ery soils, and somewhat poorly drained Sleeth soils. In some places in the association the sand and gravel is covered by a thin deposit of loam glacial till.

The part of this association north and northeast of Xenia is used mainly for farming. Part of the city of Xenia is on an area of this association, and nonfarm development is increasing in this area. The underlying sand and gravel of Ockley and Rush soils in most places is suitable for commercial use. Because natural drainage is good and slopes are mostly mild, the dominant soils in this association have few limitations for many different farm and nonfarm uses.

8. Eldean-Ockley-Wea association

Mainly nearly level to gently sloping, well drained soils that formed in loamy or silty material; moderately deep and deep to sand and gravel; on terraces

This association is in areas scattered along Mad River, Little Miami River, and their larger tributaries.

This associaton makes up 4 percent of the county. It is 40 percent Eldean soils, 25 percent Ockley soils, 10 percent Wea soils, and 25 percent minor soils.

The soils in this association are mostly nearly level to gently sloping and are well drained. They formed in sand and gravel deposits. A few sloping to steep soils are on the sides of stream valleys and escarpments that separate terrace levels. The dominant El-dean soils commonly are on the lower terraces, particularly along Little Miami River. Ockley soils are the main soils on the higher terraces along Little Miami River. Wea soils are mostly along Mad River in Bath Township. The depth to the underlying sand and gravel is less than 40 inches in Eldean soils and more than 40 inches in Ockley and Wea soils.

Minor in this association are well drained, sloping to steep Casco and Rodman soils. These soils are on sides of stream valleys and escarpments. Also included in places are well drained Rush soils in nearly level areas.

The part of this association adjacent to Mad River in Bath Township is used mainly for residential development. Other, smaller parts along Little Miami River near Oldtown and south of Spring Valley are farmed intensively. The deposits of sand and gravel which underlie this association are suitable for com-mercial use. The dominant soils in this association have few limitations for many farm and nonfarm uses because natural drainage is good and slopes are mostly mild. However, some of the Eldean soils on the lower terraces are subject to occasional flooding. Droughtiness on Eldean soils is also a limitation for farming.

9. Sloan-Ross-Algiers association

Level to nearly level, very poorly drained to well drained soils that formed in loamy, stream-deposited material; on flood plains

This association is on level to nearly level stream flood plains along the major streams in the county.

This association makes up 7 percent of the county. It is 45 percent Sloan soils, 15 percent Ross soils, 10 percent Algiers soils, and 30 percent minor soils.

The soils in this association formed in loamy sediments deposited by flooding streams. Sloan soils are very poorly drained, and Ross soils are well drained. Both have dark colored surface layers. Algiers soils are somewhat poorly drained. They have a layer of lighter colored sediment overlying older, darker colored soils.

Minor in this association are well drained Genesee soils and moderately well drained Eel soils. Also included in a few places, particularly along Mad River and south of Spring Valley, are areas of Linwood muck.

Because most flooding on soils of this association occurs in winter and early in spring, soils are better suited to crops grown in summer than at other times during the year. They are used intensively for cash crops, mainly corn and soybeans. The deep, dark colored surface layer of Ross soils is a good source of topsoil. Flooding is the major limitation for many land uses. In Sloan and Algiers soils, wetness resulting from a seasonal high water table is a limitation for some uses. Although these soils can be drained artificially, locating adequate outlets is generally difficult because the soils are nearly flat.

10. Westland association

Level to nearly level, very poorly drained soils that formed in loamy material underlain by sand and gravel; on terraces

This association is of relatively limited extent. It is mostly in small areas, scattered mainly in the northern part of Greene County. The largest area is in Cedarville and Ross Townships in the northeastern part of the county.

This association makes up about 3 percent of the county. It is about 70 percent Westland soils and 30 percent minor soils.

The soils in this association **are** low, level to nearly level terraces. Westland soils dominate the association. They are very poorly drained. They formed in 40 inches or more of loamy material underlain by sand and gravel. The sand and gravel in some places contains a considerable amount of silt and clay.

The minor soils in the association include small areas of very poorly drained Ragsdale, Patton, and Sloan soils. Somewhat poorly drained Sleeth soils are also included.

Most areas **of** this association are intensively farmed. Cash cropping is the major farm enterprise. Corn and soybeans are the main crops. Wetness resulting from a seasonal high water table is the major limitation of the soils for many land uses. If artificially drained and intensively managed, all of these soils are highly productive. Wetness severely limits the use of Westland soils for most nonfarm uses.

Detailed Soil Map Units

Detailed soil maps can be accessed and generated in three different ways.

1. Downloaded from the Soil Data Mart http://soildatamart.nrcs.usda.gov/
2. Viewed at the Web Soil Survey http://websoilsurvey.nrcs.usda.gov/
3. Viewed by means of the Greene County Digital Soil Survey. A copy of the Greene County Digital Soil Survey can be otained at the Greene County Soil and Water Conservation District.

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

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

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may 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.

The detailed map unit descriptions list management statements for most major uses of the soils: cropland, pasture, woodland, building sites, septic tank absorption fields, and local roads and streets. The management statements listed for a particular map unit address the most limiting features of that soil for a certain use. Some management statements suggest specific measures that may help alleviate the effects of these limiting soil features. The mention of such management measures is not a recommendation, especially where current laws or programs may prohibit an activity, such as installation of drainage. Even the best management practices cannot overcome some limitations of the soil.

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, *CeA=Celina silt loam, 0 to 2 percent slopes.*.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

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. CcD2=Casco-Eldean loams, 12 to 18 percent slopes, moderately eroded is an example.

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

Table 4 (p. 281) 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.

Ag=Algiers silt loam

Setting
Landform: Flood plain, Terrace

Map Unit composition
Algiers and similar components: 90 percent

Contrasting Components:
Eel soils: 5 percent
Sloan soils: 5 percent

Map Unit Interpretive Groups
Land capability classification: 2w
Prime farmland: Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season

Soil Properties and Qualities

Available water capacity: About 11.0 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 10 to 24 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: 0.0 to 1.5 feet
Water table kind: Apparent
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: Frequent
Organic matter content in the surface layer: 2.0 to 4.0 percent
Parent material: Loamy alluvium
Permeability: Moderately slow or moderate
Potential frost action: High
Shrink-swell potential: Low
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- Winter grain crops are commonly not grown because of frequent flooding.
- Measures that protect the soil from scouring and minimize the loss of crop residue by floodwaters are needed.
- Subsurface drainage helps to lower the seasonal high water table.

Pastureland

- Forage production can be improved by seeding grass-legume mixtures that are tolerant of flooding.

- Sediment left on forage plants after a flood event may reduce palatability and forage intake by the grazing animal.
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root systems of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by reducing root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Flooding may result in damage to haul roads and increased maintenance costs.
- Soil wetness may limit the use of this soil by log trucks.
- Flooding restricts the safe use of roads by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building Sites

- The frequent flooding in areas of this soil greatly increases the risk of damage associated with floodwaters. Because of the flooding, this soil is generally unsuited to building site development.

Septic Tank Absorption Fields

- This soil is generally unsuited to septic tank absorption fields. The flooding in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Rapidly moving floodwaters may damage some components of septic systems.
- Because of the seasonal high water table, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local Roads and Streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
- Special design of roads and bridges is needed to prevent the damage caused by flooding.

Component Interpretive Groups

Pasture and hayland suitability group: C-3
Hydric soil: No

BbB=Birkbeck silt loam, 1 to 4 percent slopes

Setting
Landform: Till plain
Position on the landform: Summit

Map Unit composition
Birkbeck and similar components: 90 percent

Similar Components:
well drained soils
Reesville
Xenia

Map Unit Interpretive Groups
Land capability classification: 2e
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

Available water capacity: About 9.3 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 11 to 23 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: 1.5 to 3.0 feet
Water table kind: Apparent
Ponding: None
Drainage class: Moderately well drained
Flooding: None

Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loess over till
Permeability: Slow or moderately slow
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- The root systems of plants may be damaged by frost action.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building Sites

- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. It is poorly suited to building site development and structures may need special design to avoid damage from wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic Tank Absorption Fields

- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.
- The moderate permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Pasture and hayland suitability group: A-6
Hydric soil: No

BcB=Birkbeck silt loam, 2 to 6 percent slopes

Setting
Landform: Slight rises on the Wisconsinan till plain
Position on the landform: Summits

Map Unit composition
Birkbeck and similar components: 75 percent

Contrasting Components:
Miamian soils: 10 percent
Reesville soils: 10 percent
Treaty soils: 5 percent

Map Unit Interpretive Groups
Land capability classification: 2e
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

Available water capacity: About 11.5 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 11 to 23 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 80 inches
Depth to the top of the seasonal high water table: 2.5 to 3.5 feet
Water table kind: Apparent
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loess and the underlying till
Permeability: Moderate in the upper part of the solum and moderately slow in the lower part
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Erosion control is needed when pastures are renovated.
- The root systems of plants may be damaged by frost action.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building Sites

- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent damage caused by wetness.

Septic Tank Absorption Fields

- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.
- The moderate permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and

streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Pasture and hayland suitability group: A-6
Hydric soil: No

Bs=Brookston silty clay loam

Setting
Landform: Depression

Map Unit composition
Brookston and similar components: 94 percent

Similar Components:
soils with lighter colored silt loam overwash

Contrasting Components:
Crosby soils: 6 percent

Map Unit Interpretive Groups
Land capability classification: 2w
Prime farmland: Prime farmland if drained

Soil Properties and Qualities

Available water capacity: About 10.3 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 27 to 35 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 78 inches
Depth to the top of the seasonal high water table: 0.0 to 1.0 feet
Water table kind: Apparent
Ponding: Long
Depth of ponding: 0.0 to 0.5 feet
Drainage class: Very poorly drained
Flooding: None
Organic matter content in the surface layer: 3.0 to 5.0 percent
Parent material: Loess over loamy till
Permeability: Slow or moderately slow
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silty clay loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland
- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- A combination of surface and subsurface drainage helps to remove excess water.

Figure 4. Drainage is an important part of agricultural management especially in the eastern parts of Greene County. This is a surface drainage ditch in a Brookston silty clay loam.

Pastureland

- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root systems of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by reducing root respiration.
- Standing water can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in

unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of this soil by log trucks.
- Ponding restricts the safe use of roads by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- A loss of soil productivity may occur following an episode of fire.

Building Sites

- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building maintenance may be needed. The soil is generally unsuited to building site development.

Septic Tank Absorption Fields

- Because of ponding, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local Roads and Streets

- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Pasture and hayland suitability group: C-1
Hydric soil: Yes

Bt=Brookston-Urban land complex

Setting
Landform: Depression

Map Unit composition

Brookston and similar components: 50 percent
Urban land and similar components: 20 percent

Similar Components:
fill area

Map Unit Interpretive Groups
Land capability classification: 2w
Prime farmland: Not prime farmland

Brookston

Soil Properties and Qualities

Available water capacity: About 10.3 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 27 to 35 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 78 inches
Depth to the top of the seasonal high water table: 0.0 to 1.0 feet
Water table kind: Apparent
Ponding: Long
Depth of ponding: 0.0 to 0.5 feet
Drainage class: Very poorly drained
Flooding: None
Organic matter content in the surface layer: 3.0 to 5.0 percent
Parent material: Loess over loamy till
Permeability: Slow or moderately slow
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silty clay loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Building Sites

- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building maintenance may be needed. The soil is

generally unsuited to building site development.

Septic Tank Absorption Fields

- Because of ponding, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local Roads and Streets

- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Pasture and hayland suitability group: C-1
Hydric soil: Yes

Urban land

Use and Management Considerations

- Onsite investigation is needed to determine the suitability for specific uses.

Component Interpretive Groups
Pasture and hayland suitability group: Not rated
Hydric soil: Unranked

CaE2=Casco silt loam, 18 to 50 percent slopes, eroded

Setting
Landform: Wisconsinan outwash terrace
Position on the landform: Risers and Back slopes

Map Unit composition
Casco and similar components: 85 percent

Contrasting Components:
Fox soils: 5 percent
Miamian soils: 5 percent
Ockley soils: 5 percent

Map Unit Interpretive Groups
Land capability classification: 7e
Prime farmland: Not prime farmland

Soil Properties and Qualities

Available water capacity: About 3.3 inches to a depth of 21 inches
Cation-exchange capacity of the surface layer: 4.0 to 20 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Strongly contrasting textural stratification: 10 to 23 inches
Depth to the top of the seasonal high water table: Greater than 6.0 feet
Ponding: None
Drainage class: Somewhat excessively drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loamy alluvium underlain by calcareous stratified sandy and loamy outwash
Permeability: Moderate in the loamy mantle and rapid in the stratified sandy outwash material
Potential frost action: Low
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- The slope may restrict the use of some farm equipment.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a

potential for erosion during construction of haul roads and log landings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Sandy layers in this soil increase the maintenance of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- The slope creates unsafe operating conditions and reduces the operating efficiency of harvesting and mechanical planting equipment.
- Because of the slope, the use of mechanical planting equipment is not practical.
- Rock fragments in the soil obstruct the use of mechanical planting equipment.
- The slope restricts the use of equipment for preparing this site for planting and seeding.

Building Sites

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic Tank Absorption Fields

- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
- Because of the slope, special design and installation techniques are needed for the effluent distribution lines.

Local Roads and Streets

- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

Pasture and hayland suitability group: E-2
Hydric soil: No

CbD2=Casco gravelly loam, 12 to 20 percent slopes, eroded

Setting
Landform: Knoll on outwash terrace
Position on the landform: Shoulder
Backslope

Map Unit composition
Casco and similar components: 80 percent
Other features: Removal of part of the original surface layer

Contrasting Components:
Eldean soils: 10 percent
Rodman soils: 10 percent

Map Unit Interpretive Groups
Land capability classification: 6e
Prime farmland: Not prime farmland

Soil Properties and Qualities

Available water capacity: About 2.1 inches to a depth of 17 inches
Cation-exchange capacity of the surface layer: 3.0 to 15 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Strongly contrasting textural stratification: 10 to 20 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 2.0 percent
Parent material: Sandy and gravelly outwash
Permeability: Moderate in the upper part of the soil and rapid in the underlying material
Potential frost action: Low
Shrink-swell potential: Moderate
Surface layer texture: Gravelly loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- The rooting depth of crops is restricted by soil layers that have strongly contrasting textures.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- Rock fragments in the soil obstruct the use of mechanical planting equipment.
- Burning may destroy organic matter.

Building Sites

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic Tank Absorption Fields

- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
- Because of the slope, special design and installation techniques are needed for the effluent distribution lines.

Local Roads and Streets

- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

Pasture and hayland suitability group: B-1
Hydric soil: No

CcD2=Casco-Eldean loams, 12 to 18 percent slopes, moderately eroded

Setting
Landform: Kame, Outwash terrace
Position on the landform: Backslope

Map Unit composition

Casco and similar components: 50 percent
Eldean and similar components: 35 percent

Similar Components:
gravelly loam surface layer
silt loam surface layer

Map Unit Interpretive Groups
Land capability classification: 6e
Prime farmland: Farmland of local importance

Casco

Soil Properties and Qualities

Available water capacity: About 2.4 inches to a depth of 20 inches
Cation-exchange capacity of the surface layer: 4.0 to 20 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Strongly contrasting textural stratification: 10 to 24 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loamy alluvium over sandy and gravelly outwash
Permeability: Moderate in the loamy mantle and rapid in the stratified sandy outwash material
Potential frost action: Low
Shrink-swell potential: Moderate
Surface layer texture: Loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- The rooting depth of crops is restricted by soil layers that have strongly contrasting textures.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during construction of haul roads and log landings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Sandy layers in this soil increase the maintenance of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- The slope restricts the use of equipment for preparing this site for planting and seeding.

Building Sites

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are

required to ensure satisfactory performance.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic Tank Absorption Fields

- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
- Because of the slope, special design and installation techniques are needed for the effluent distribution lines.

Local Roads and Streets

- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

Pasture and hayland suitability group: B-1
Hydric soil: No

Eldean

Soil Properties and Qualities

Available water capacity: About 5.5 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 8.0 to 21 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loamy outwash over sandy and gravelly outwash
Permeability: Moderately slow or moderate
Potential frost action: Low
Shrink-swell potential: Moderate
Surface layer texture: Loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- The rooting depth of crops may be restricted by the high clay content.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during construction of haul roads and log landings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.

- The low strength of the soil increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- The slope restricts the use of equipment for preparing this site for planting and seeding.

Building Sites

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.
- In some areas the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic Tank Absorption Fields

- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
- Because of the slope, special design and installation techniques are needed for the effluent distribution lines.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

Pasture and hayland suitability group: B-1
Hydric soil: No

CdE2=Casco-Rodman loams, 18 to 50 percent slopes, moderately eroded

Setting
Landform: Outwash terrace
Position on the landform: Backslope

Map Unit composition
Casco and similar components: 50 percent
Rodman and similar components: 35 percent

Similar Components:
gravelly loam surface layer
silt loam surface layer
eroded areas with sand and gravel at the surface

Contrasting Components:
Eldean soils: 5 percent

Map Unit Interpretive Groups
Land capability classification: 7e
Prime farmland: Not prime farmland

Casco

Soil Properties and Qualities

Available water capacity: About 2.4 inches to a depth of 20 inches
Cation-exchange capacity of the surface layer: 4.0 to 20 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Strongly contrasting textural stratification: 10 to 24 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent

Parent material: Loamy alluvium over sandy and gravelly outwash
Permeability: Moderate in the loamy mantle and rapid in the stratified sandy outwash material
Potential frost action: Low
Shrink-swell potential: Moderate
Surface layer texture: Loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- The slope may restrict the use of some farm equipment.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during construction of haul roads and log landings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Sandy layers in this soil increase the maintenance of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope creates unsafe operating conditions and reduces the operating efficiency of harvesting and mechanical planting equipment.
- Because of the slope, the use of mechanical planting equipment is not practical.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- The slope restricts the use of equipment for preparing this site for planting and seeding.

Building Sites

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic Tank Absorption Fields

- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
- Because of the slope, special design and installation techniques are needed for the effluent distribution lines.

Local Roads and Streets

- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

Pasture and hayland suitability group: B-1
Hydric soil: No

Rodman

Soil Properties and Qualities

Available water capacity: About 3.3 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 5.0 to 18 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches

Depth to the top of the seasonal high water table: Greater than 6 feet
Ponding: None
Drainage class: Excessively drained
Flooding: None
Organic matter content in the surface layer: 2.0 to 4.0 percent
Parent material: Sandy and gravelly outwash
Permeability: Moderately rapid
Potential frost action: Low
Shrink-swell potential: Low
Surface layer texture: Gravelly loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Properly designed erosion-control practices are needed on the steeper slopes.
- The use of farm machinery is restricted because of the slope.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Plant nutrients are leached at an accelerated rate because of the sandy layer.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- The slope may restrict the use of some farm equipment.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during construction of haul roads and log landings.
- The high pH in the soil may cause a nutrient imbalance in seedlings.
- The high content of lime in the upper part of the soil may cause a nutrient imbalance in seedlings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Sandy layers in this soil increase the maintenance of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope creates unsafe operating conditions and reduces the operating efficiency of harvesting and mechanical planting equipment.
- Sandy layers may slough, thus reducing the efficiency of mechanical planting equipment.
- Because of the slope, the use of mechanical planting equipment is not practical.
- Rock fragments in the soil obstruct the use of mechanical planting equipment.
- The slope restricts the use of equipment for preparing this site for planting and seeding.
- Stones restrict the use of equipment during site preparation for planting or seeding.

Building Sites

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic Tank Absorption Fields

- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
- Because of the slope, special design and installation techniques are needed for the effluent distribution lines.

Local Roads and Streets

- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

Pasture and hayland suitability group: B-1
Hydric soil: No

CeA=Celina silt loam, 0 to 2 percent slopes

Setting
Landform: Moraine onTill plain
Position on the landform: Summit

Map Unit composition
Celina and similar components: 95 percent

Similar Components:
Crosby

Contrasting Components:
Brookston soils: 1 percent

Map Unit Interpretive Groups
Land capability classification: 1
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

Available water capacity: About 7.1 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 9.0 to 19 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: 1.5 to 3.0 feet
Water table kind: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loess over loamy till
Permeability: Slow or moderately slow
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Controlling traffic can minimize soil compaction.
- The rooting depth of crops may be restricted by the high clay content.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- This soil is well suited to pasture.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building Sites

- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. It is poorly suited to building site development and structures may need special design to avoid damage from wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- In some areas the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic Tank Absorption Fields

- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Pasture and hayland suitability group: A-1
Hydric soil: No

CeB=Celina silt loam, 2 to 6 percent slopes

Setting
Landform: Moraine on Till plain
Position on the landform: Summit

Map Unit composition
Celina and similar components: 90 percent

Similar Components:
moderately eroded areas
Crosby

Contrasting Components:
Brookston soils: 3 percent

Map Unit Interpretive Groups
Land capability classification: 2e
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

Available water capacity: About 7.1 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 9.0 to 19 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: 1.5 to 3.0 feet
Water table kind: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loess over loamy till
Permeability: Slow or moderately slow
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.

- Controlling traffic can minimize soil compaction.
- The rooting depth of crops may be restricted by the high clay content.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Erosion control is needed when pastures are renovated.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building Sites

- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. It is poorly suited to building site development and structures may need special design to avoid damage from wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- In some areas the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic Tank Absorption Fields

- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Pasture and hayland suitability group: A-1
Hydric soil: No

CfB=Celina-Losantville silt loams, 2 to 6 percent slopes

Setting
Landform: Slight rises on the Wisconsinan till plain
Position on the landform: Summits and shoulders

Map Unit composition

Celina and similar components: 50 percent
Losantville and similar components: 30 percent

Contrasting Components:

Crosby soils: 10 percent
Birkbeck soils: 5 percent
Miamian soils: 5 percent

Map Unit Interpretive Groups
Land capability classification: 2e
Prime farmland: All areas are prime farmland

Celina

Soil Properties and Qualities

Available water capacity: About 5.5 inches to a depth of 28 inches
Cation-exchange capacity of the surface layer: 9.0 to 19 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Dense material: 20 to 40 inches
Depth to the top of the seasonal high water table: 1.5 to 3.0 feet
Water table kind: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: A thin layer of loess and the underlying till
Permeability: Moderately slow in the solum and very slow in the substratum
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- The root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.

- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- The rooting depth of crops is restricted by dense soil material.

Pastureland

- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- The root systems of plants may be damaged by frost action.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building Sites

- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. It is poorly suited to building site development and structures may need special design to avoid damage from wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic Tank Absorption Fields

- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Pasture and hayland suitability group: A-6
Hydric soil: No

Losantville

Soil Properties and Qualities

Available water capacity: About 2.8 inches to a depth of 18 inches
Cation-exchange capacity of the surface layer: 9.0 to 21 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Dense material: 12 to 20 inches
Depth to the top of the seasonal high water table: 1.0 to 2.0 feet
Water table kind: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 2.0 percent
Parent material: Basal till
Permeability: Moderately slow in the solum and very slow in the substratum
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Very high
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- The movement of water into subsurface drains is restricted. Drainage guides can be used to determine tile spacing requirements.
- Subsurface drainage helps to lower the seasonal high water table.
- Including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil to facilitate the movement of water into subsurface drains.
- The rooting depth of crops is restricted by dense soil material and high clay content.

Pastureland

- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.

- Soil wetness may limit the use of this soil by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- Burning may destroy organic matter.

Building Sites

- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. It is poorly suited to building site development and structures may need special design to avoid damage from wetness.
- In some areas the dense nature of the subsurface layer increases the difficulty of digging and compacting the soil material in shallow excavations.

Septic Tank Absorption Fields

- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local Roads and Streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.

Component Interpretive Groups

Pasture and hayland suitability group: B-1
Hydric soil: No

ChB=Celina-Strawn complex, 2 to 6 percent slopes

Setting
Landform: Knoll

Map Unit composition
Celina and similar components: 50 percent
Strawn and similar components: 35 percent

Contrasting Components:
Kokomo soils: 10 percent
Crosby soils: 5 percent

Map Unit Interpretive Groups
Land capability classification: 2e
Prime farmland: All areas are prime farmland

Celina

Soil Properties and Qualities

Available water capacity: About 5.8 inches to a depth of 30 inches
Cation-exchange capacity of the surface layer: 9.0 to 19 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Dense material: 20 to 40 inches
Depth to the top of the seasonal high water table: 2.0 to 3.5 feet
Water table kind: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Till
Permeability: Slow or moderately slow
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Incorporating crop residue or other organic matter into the surface layer increases the

capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- The root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- The rooting depth of crops is restricted by dense soil material.

Pastureland

- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- The root systems of plants may be damaged by frost action.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building Sites

- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. It is poorly suited to building site development and structures may need special design to avoid damage from wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic Tank Absorption Fields

- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Pasture and hayland suitability group: A-6
Hydric soil: No

Strawn

Soil Properties and Qualities

Available water capacity: About 4.2 inches to a depth of 23 inches
Cation-exchange capacity of the surface layer: 18 to 22 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Dense material: 20 to 40 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 2.0 percent
Parent material: Till
Permeability: Slow or moderately slow
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silty clay loam

Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- The rooting depth of crops is restricted by dense soil material.

Pastureland

- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- A loss of soil productivity may occur following an episode of fire.

Building Sites

- This soil is well suited to use as building sites.

Septic Tank Absorption Fields

- This soil is well suited to use as a site for septic tank absorption fields.

Local Roads and Streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Pasture and hayland suitability group: A-1
Hydric soil: No

CrA=Crosby silt loam, 0 to 2 percent slopes

Setting
Landform: Till plain

Map Unit composition
Crosby and similar components: 95 percent

Similar Components:
Celina

Contrasting Components:
Brookston: 5 percent

Map Unit Interpretive Groups
Land capability classification: 2w
Prime farmland: Prime farmland if drained

Soil Properties and Qualities

Available water capacity: About 7.1 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 6.0 to 20 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: 0.5 to 1.5 feet

Water table kind: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loamy till
Permeability: Slow
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.
- The rooting depth of crops may be restricted by the high clay content.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- Subsurface drainage helps to lower the seasonal high water table.
- Including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil to facilitate the movement of water into subsurface drains.

Pastureland

- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root systems of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by reducing root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of this soil by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building Sites

- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. It is poorly suited to building site development and structures may need special design to avoid damage from wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- In some areas the dense nature of the subsurface layer increases the difficulty of digging and compacting the soil material in shallow excavations.
- In some areas the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic Tank Absorption Fields

- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Pasture and hayland suitability group: C-1
Hydric soil: No

CrB=Crosby silt loam, 2 to 6 percent slopes

Setting
Landform: Till plain

Map Unit composition
Crosby and similar components: 97 percent

Similar Components:
moderately eroded areas
Celina

Contrasting Components:
Brookston: 3 percent

Map Unit Interpretive Groups
Land capability classification: 2e
Prime farmland: Prime farmland if drained

Soil Properties and Qualities

Available water capacity: About 7.1 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 6.0 to 20 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: 0.5 to 1.5 feet
Water table kind: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loamy till
Permeability: Slow
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- The root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.
- The rooting depth of crops may be restricted by the high clay content.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- Subsurface drainage helps to lower the seasonal high water table.
- Including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil to facilitate the movement of water into subsurface drains.

Pastureland

- Erosion control is needed when pastures are renovated.
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root systems of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by reducing root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.

- Soil wetness may limit the use of this soil by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building Sites

- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. It is poorly suited to building site development and structures may need special design to avoid damage from wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- In some areas the dense nature of the subsurface layer increases the difficulty of digging and compacting the soil material in shallow excavations.
- In some areas the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic Tank Absorption Fields

- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Pasture and hayland suitability group: C-1
Hydric soil: No

CsA=Crosby-Lewisburg silt loams, 0 to 2 percent slopes

Setting
Landform: Till plain

Map Unit composition
Crosby and similar components: 55 percent
Lewisburg and similar components: 35 percent

Contrasting Components:
Kokomo soils: 5 percent
Odell: 5 percent

Map Unit Interpretive Groups
Land capability classification: 2w
Prime farmland: Prime farmland if drained

Crosby

Soil Properties and Qualities

Available water capacity: About 6.0 inches to a depth of 31 inches
Cation-exchange capacity of the surface layer: 6.0 to 20 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Dense material: 20 to 40 inches
Depth to the top of the seasonal high water table: 1.0 to 3.0 feet
Water table kind: Apparent
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loamy till
Permeability: Slow
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- Subsurface drainage helps to lower the seasonal high water table.
- The rooting depth of crops is restricted by dense soil material.

Pastureland

- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root systems of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- The high content of lime in the upper part of the soil may cause a nutrient imbalance in seedlings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building Sites

- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. It is poorly suited to building site development and structures may need special design to avoid damage from wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- In some areas the dense nature of the subsurface layer increases the difficulty of digging and compacting the soil material in shallow excavations.

Septic Tank Absorption Fields

- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Pasture and hayland suitability group: C-1
Hydric soil: No

Lewisburg

Soil Properties and Qualities

Available water capacity: About 3.7 inches to a depth of 21 inches
Cation-exchange capacity of the surface layer: 8.0 to 19 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Dense material: 12 to 22 inches
Depth to the top of the seasonal high water table: 2.0 to 4.0 feet
Water table kind: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 4.0 percent
Parent material: Loamy till
Permeability: Slow
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- The rooting depth of crops is restricted by dense soil material.

Pastureland

- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building Sites

- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. It is poorly suited to building site development and structures may need special design to avoid damage from wetness.

Septic Tank Absorption Fields

- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local Roads and Streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

Component Interpretive Groups

Pasture and hayland suitability group: A-1
Hydric soil: No

CsB=Crosby-Lewisburg silt loams, 2 to 6 percent slopes

Setting
Landform: Till plain

Map Unit composition
Crosby and similar components: 55 percent
Lewisburg and similar components: 35 percent

Contrasting Components:
Kokomo soils: 5 percent
Odell: 3 percent
Eroded areas: 2 percent

Map Unit Interpretive Groups
Land capability classification: 2e
Prime farmland: Prime farmland if drained

Crosby

Soil Properties and Qualities

Available water capacity: About 6.0 inches to a depth of 31 inches
Cation-exchange capacity of the surface layer: 6.0 to 20 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Dense material: 20 to 40 inches
Depth to the top of the seasonal high water table: 1.0 to 3.0 feet
Water table kind: Apparent
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loamy till
Permeability: Slow
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- Subsurface drainage helps to lower the seasonal high water table.
- The rooting depth of crops is restricted by dense soil material.

Pastureland

- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root systems of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- The high content of lime in the upper part of the soil may cause a nutrient imbalance in seedlings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of

the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building Sites

- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. It is poorly suited to building site development and structures may need special design to avoid damage from wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- In some areas the dense nature of the subsurface layer increases the difficulty of digging and compacting the soil material in shallow excavations.

Septic Tank Absorption Fields

- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Pasture and hayland suitability group: C-1
Hydric soil: No

Lewisburg

Soil Properties and Qualities

Available water capacity: About 3.7 inches to a depth of 21 inches
Cation-exchange capacity of the surface layer: 8.0 to 19 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Dense material: 12 to 22 inches
Depth to the top of the seasonal high water table: 2.0 to 4.0 feet
Water table kind: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 4.0 percent
Parent material: Loamy till
Permeability: Slow
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- The rooting depth of crops is restricted by dense soil material.

Pastureland

- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.

- This soil provides poor summer pasture.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building Sites

- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. It is poorly suited to building site development and structures may need special design to avoid damage from wetness.

Septic Tank Absorption Fields

- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local Roads and Streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

Component Interpretive Groups

Pasture and hayland suitability group: A-1
Hydric soil: No

CtA=Crosby-Celina silt loams, 0 to 2 percent slopes

Setting
Landform: Flats on the Wisconsinan till plain
Position on the landform: Summits

Map Unit composition
Crosby and similar components: 70 percent
Celina and similar components: 15 percent

Contrasting Components:
Kokomo soils: 5 percent
Losantville soils: 5 percent
Reesville soils: 5 percent

Map Unit Interpretive Groups
Land capability classification: 2w
Prime farmland: Prime farmland if drained

Crosby

Soil Properties and Qualities

Available water capacity: About 5.1 inches to a depth of 34 inches
Cation-exchange capacity of the surface layer: 6.0 to 20 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Dense material: 20 to 40 inches
Depth to the top of the seasonal high water table: 0.5 to 1.5 feet
Water table kind: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: A thin layer of loess and the underlying till
Permeability: Moderate in the upper part of the solum and very slow in the substratum
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- The root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- The movement of water into subsurface drains is restricted. Drainage guides can be used to determine tile spacing requirements.
- Subsurface drainage helps to lower the seasonal high water table.
- Including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil to facilitate the movement of water into subsurface drains.
- The rooting depth of crops is restricted by dense soil material and high clay content.

Pastureland

- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root systems of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by reducing root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of this soil by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building Sites

- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. It is poorly suited to building site development and structures may need special design to avoid damage from wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- In some areas the dense nature of the subsurface layer increases the difficulty of digging and compacting the soil material in shallow excavations.
- In some areas the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic Tank Absorption Fields

- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.
- The moderate permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Pasture and hayland suitability group: C-2
Hydric soil: No

Celina

Soil Properties and Qualities

Available water capacity: About 4.7 inches to a depth of 24 inches
Cation-exchange capacity of the surface layer: 9.0 to 19 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Dense material: 20 to 40 inches
Depth to the top of the seasonal high water table: 1.5 to 3.0 feet
Water table kind: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: A thin layer of loess and the underlying till
Permeability: Moderately slow in the solum and very slow in the substratum
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- The root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- The rooting depth of crops is restricted by dense soil material.

Pastureland

- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- The root systems of plants may be damaged by frost action.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building Sites

- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. It is poorly suited to building site development and structures may need special design to avoid damage from wetness.

Septic Tank Absorption Fields

- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local Roads and Streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.

Component Interpretive Groups

Pasture and hayland suitability group: A-6
Hydric soil: No

CtB=Crosby-Celina silt loams, 2 to 4 percent slopes

Setting
Landform: Slight rises on the Wisconsinan till plain
Position on the landform: Summits

Map Unit composition
Crosby and similar components: 60 percent
Celina and similar components: 30 percent

Contrasting Components:
Losantville soils: 5 percent
Miamian soils: 5 percent

Map Unit Interpretive Groups
Land capability classification: 2e
Prime farmland: Prime farmland if drained

Crosby

Soil Properties and Qualities

Available water capacity: About 5.0 inches to a depth of 35 inches
Cation-exchange capacity of the surface layer: 6.0 to 20 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Dense material: 20 to 40 inches
Depth to the top of the seasonal high water table: 0.5 to 1.5 feet
Water table kind: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: A thin layer of loess and the underlying till
Permeability: Moderate in the upper part of the solum and very slow in the substratum
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- The root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- The movement of water into subsurface drains is restricted. Drainage guides can be used to determine tile spacing requirements.
- Subsurface drainage helps to lower the seasonal high water table.
- Including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil to facilitate the movement of water into subsurface drains.
- The rooting depth of crops is restricted by dense soil material and high clay content.

Pastureland

- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root systems of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by reducing root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of this soil by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building Sites

- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. It is poorly suited to building site development and structures may need special design to avoid damage from wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- In some areas the dense nature of the subsurface layer increases the difficulty of digging and compacting the soil material in shallow excavations.
- In some areas the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic Tank Absorption Fields

- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.
- The moderate permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Pasture and hayland suitability group: C-2
Hydric soil: No

Celina

Soil Properties and Qualities

Available water capacity: About 5.0 inches to a depth of 26 inches
Cation-exchange capacity of the surface layer: 9.0 to 19 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Dense material: 20 to 40 inches
Depth to the top of the seasonal high water table: 1.5 to 3.0 feet
Water table kind: Perched

Ponding: None
Drainage class: Moderately well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: A thin layer of loess and the underlying till
Permeability: Moderately slow in the solum and very slow in the substratum
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- The root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

- The rooting depth of crops is restricted by dense soil material.

Pastureland

- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- The root systems of plants may be damaged by frost action.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building Sites

- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. It is poorly suited to building site development and structures may need special design to avoid damage from wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic Tank Absorption Fields

- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and

streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Pasture and hayland suitability group: A-6
Hydric soil: No

Du=Dumps

Setting
Landform: None assigned

Map Unit composition
Dumps and similar components: 100 percent

Map Unit Interpretive Groups
Land capability classification: None assigned
Prime farmland: Not prime farmland

Use and Management Considerations

- Onsite investigation is needed to determine the suitability for specific uses.

Component Interpretive Groups
Pasture and hayland suitability group: Not rated
Hydric soil: Unranked

EdB=Edenton silt loam, 2 to 6 percent slopes

Setting
Landform: Till plain
Position on the landform: Summit

Map Unit composition
Edenton and similar components: 90 percent

Similar Components:
bedrock within 20 inches

Contrasting Components:
Russell soils: 5 percent
Raub soils: 3 percent

Map Unit Interpretive Groups
Land capability classification: 2e
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

Available water capacity: About 4.9 inches to a depth of 33 inches
Cation-exchange capacity of the surface layer: 8.0 to 22 meq per 100 grams
Depth class: Moderately deep
Depth to root restrictive feature: Paralithic bedrock: 20 to 40 inches
Depth to the top of the seasonal high water table: Greater than 2.8 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loess over loamy till over residuum weathered from limestone and shale
Permeability: Moderately slow
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The rooting depth of crops is restricted by bedrock and a high clay content.
- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- The rooting depth of plants may be restricted by bedrock.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Bedrock may interfere with the construction of haul roads and log landing sites.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building Sites

- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- The nature and depth of the soft bedrock in this soil reduces the ease of excavation and increases the difficulty in constructing foundations and installing utilities.
- In some areas the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic Tank Absorption Fields

- Because of the limited depth to bedrock, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Pasture and hayland suitability group: F-1
Hydric soil: No

EdC2=Edenton silt loam, 6 to 12 percent slopes, moderately eroded

Setting
Landform: Till plain
Position on the landform: Shoulder

Map Unit composition
Edenton and similar components: 85 percent

Similar Components:
bedrock within 20 inches
clay loam surface layer

Contrasting Components:
Miamian soils: 4 percent
Raub soils: 3 percent
Russell soils: 3 percent

Map Unit Interpretive Groups
Land capability classification: 3e
Prime farmland: Farmland of local importance

Soil Properties and Qualities

Available water capacity: About 4.9 inches to a depth of 33 inches
Cation-exchange capacity of the surface layer: 8.0 to 22 meq per 100 grams
Depth class: Moderately deep
Depth to root restrictive feature: Paralithic bedrock: 20 to 40 inches
Depth to the top of the seasonal high water table: Greater than 2.8 feet
Ponding: None
Drainage class: Well drained

Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loess over loamy till over residuum weathered from limestone and shale
Permeability: Moderately slow
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The rooting depth of crops is restricted by bedrock and a high clay content.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- The rooting depth of plants may be restricted by bedrock.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Bedrock may interfere with the construction of haul roads and log landing sites.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building Sites

- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- The nature and depth of the soft bedrock in this soil reduces the ease of excavation and increases the difficulty in constructing foundations and installing utilities.
- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs may be required to ensure satisfactory performance.
- In some areas the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic Tank Absorption Fields

- Because of the limited depth to bedrock, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

Pasture and hayland suitability group: F-1
Hydric soil: No

EdD2=Edenton silt loam, 12 to 18 percent slopes, moderately eroded

Setting
Landform: Till plain
Position on the landform: Backslope

Map Unit composition
Edenton and similar components: 90 percent

Similar Components:
bedrock within 20 inches
silty clay loam surface layer

Contrasting Components:
Miamian soils: 3 percent
Russell soils: 3 percent

Map Unit Interpretive Groups
Land capability classification: 4e
Prime farmland: Farmland of local importance

Soil Properties and Qualities

Available water capacity: About 4.9 inches to a depth of 33 inches
Cation-exchange capacity of the surface layer: 8.0 to 22 meq per 100 grams
Depth class: Moderately deep
Depth to root restrictive feature: Paralithic bedrock: 20 to 40 inches
Depth to the top of the seasonal high water table: Greater than 2.8 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loess over loamy till over residuum weathered from limestone and shale
Permeability: Moderately slow
Potential frost action: Moderate
Shrink-swell potential: Moderate

Surface layer texture: Silt loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The rooting depth of crops is restricted by bedrock and a high clay content.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.

- This soil provides poor summer pasture.
- Removing excess water can reduce the possibility of soil slippage.
- Slippage may cause uneven slopes, which can affect equipment use and the grazing patterns of animals.
- Slips may affect fencing patterns and increase the cost of maintaining fences and buried water pipelines.
- The rooting depth of plants may be restricted by bedrock.

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during construction of haul roads and log landings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- The potential for slippage may interfere with the construction and use of haul roads and log landings and creates unsafe operating conditions.
- Bedrock may interfere with the construction of haul roads and log landing sites.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- The slope restricts the use of equipment for preparing this site for planting and seeding.

Building Sites

- The potential for slippage may interfere with excavation and building site development. For foundations and other structures and buried utility lines, special design and construction may be needed to help prevent structural damage caused by slippage.
- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- The nature and depth of the soft bedrock in this soil reduces the ease of excavation and increases the difficulty in constructing foundations and installing utilities.
- In some areas the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic Tank Absorption Fields

- Slippage may result in damage to effluent distribution lines and increased maintenance costs.
- Because of the limited depth to bedrock, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local Roads and Streets

- Slippage may result in damage to roads and increase the cost of design, construction, and maintenance.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

Pasture and hayland suitability group: F-1
Hydric soil: No

Ee=Eel loam

Setting
Landform: Flood plain

Map Unit composition
Eel and similar components: 90 percent

Similar Components:
Genesee
silt loam surface layer

Contrasting Components:
Sloan soils: 5 percent

Map Unit Interpretive Groups
Land capability classification: 2w
Prime farmland: Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season

Soil Properties and Qualities

Available water capacity: About 10.6 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 12 to 20 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: 1.5 to 3.0 feet
Water table kind: Apparent
Ponding: None
Drainage class: Moderately well drained
Flooding: Frequent
Organic matter content in the surface layer: 1.0 to 2.0 percent
Parent material: Loamy alluvium
Permeability: Moderately slow or moderate
Potential frost action: High
Shrink-swell potential: Low
Surface layer texture: Loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Winter grain crops are commonly not grown because of frequent flooding.
- Measures that protect the soil from scouring and minimize the loss of crop residue by floodwaters are needed.

Pastureland

- Forage production can be improved by seeding grass-legume mixtures that are tolerant of flooding.
- Sediment left on forage plants after a flood event may reduce palatability and forage intake by the grazing animal.
- The root systems of plants may be damaged by frost action.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Flooding may result in damage to haul roads and increased maintenance costs.
- Flooding restricts the safe use of roads by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- Burning may destroy organic matter.

Building Sites

- The frequent flooding in areas of this soil greatly increases the risk of damage associated with floodwaters. Because of the flooding, this soil is generally unsuited to building site development.

Septic Tank Absorption Fields

- This soil is generally unsuited to septic tank absorption fields. The flooding in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Rapidly moving floodwaters may damage some components of septic systems.

Local Roads and Streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- Special design of roads and bridges is needed to prevent the damage caused by flooding.

Component Interpretive Groups

Pasture and hayland suitability group: A-5
Hydric soil: No

EmA=Eldean silt loam, 0 to 2 percent slopes

Setting
Landform: Kame on Moraine or Outwash terrace

Map Unit composition
Eldean and similar components: 90 percent

Similar Components:
Ockley
loam surface layer
areas with infrequent flooding

Map Unit Interpretive Groups
Land capability classification: 2s
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

Available water capacity: About 5.5 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 8.0 to 21 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loamy outwash over sandy and gravelly outwash
Permeability: Moderate in the solum and rapid in the substratum
Potential frost action: Low
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- The rooting depth of crops may be restricted by the high clay content.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building Sites

- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.
- In some areas the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.
- This soil is well suited to use as building sites.

Septic Tank Absorption Fields

- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Pasture and hayland suitability group: B-1
Hydric soil: No

EmB=Eldean silt loam, 2 to 6 percent slopes

Setting
Landform: Kame on Moraine or Outwash terrace

Map Unit composition
Eldean and similar components: 90 percent

Similar Components:
Ockley
moderately eroded areas
loam surface layer

Map Unit Interpretive Groups
Land capability classification: 2e
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

Available water capacity: About 5.5 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 8.0 to 21 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loamy outwash over sandy and gravelly outwash
Permeability: Moderate in the solum and rapid in the substratum
Potential frost action: Low
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- The rooting depth of crops may be restricted by the high clay content.

- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building Sites

- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.
- In some areas the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.
- This soil is well suited to use as building sites.

Septic Tank Absorption Fields

- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Pasture and hayland suitability group: B-1
Hydric soil: No

EmB2=Eldean silt loam, 2 to 6 percent slopes, moderately eroded

Setting
Landform: Kame on Moraine or Outwash terrace

Map Unit composition
Eldean and similar components: 95 percent

Similar Components:
loam surface layer
gravelly loam surface layer

Map Unit Interpretive Groups
Land capability classification: 2e
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

Available water capacity: About 5.5 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 8.0 to 21 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loamy outwash over sandy and gravelly outwash
Permeability: Moderate in the solum and rapid in the substratum

Potential frost action: Low
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.

Building Sites

- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.
- This soil is well suited to use as building sites.

Septic Tank Absorption Fields

- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Pasture and hayland suitability group: B-1
Hydric soil: No

EmC2=Eldean silt loam, 6 to 12 percent slopes, moderately eroded

Setting
Landform: Kame on Moraine or Outwash terrace

Map Unit composition

Eldean and similar components: 93 percent

Similar Components:
loam or gravelly loam surface

Contrasting Components:
Casco soils: 5 percent
severely eroded areas: 2 percent

Map Unit Interpretive Groups
Land capability classification: 3e
Prime farmland: Farmland of local importance

Soil Properties and Qualities

Available water capacity: About 5.5 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 8.0 to 21 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loamy outwash over sandy and gravelly outwash
Permeability: Moderate in the solum and rapid in the substratum
Potential frost action: Low
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- The rooting depth of crops may be restricted by the high clay content.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.

Building Sites

- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures

may require some special design and construction techniques or maintenance.
- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs may be required to ensure satisfactory performance.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.
- In some areas the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic Tank Absorption Fields

- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
- Because of the slope, special design and installation techniques are needed for the effluent distribution lines.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

Pasture and hayland suitability group: B-1
Hydric soil: No

EnC3=Eldean clay loam, 6 to 12 percent slopes, severely eroded

Setting
Landform: Kame on End Moraine or Outwash terrace

Map Unit composition
Eldean and similar components: 93 percent

Similar Components:
loam surface layer

Contrasting Components:
Casco soils: 5 percent
moderately eroded areas: 2 percent

Map Unit Interpretive Groups
Land capability classification: 4e
Prime farmland: Not prime farmland

Soil Properties and Qualities

Available water capacity: About 5.5 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 12 to 24 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 0.5 to 2.0 percent
Parent material: Loamy outwash over sandy and gravelly outwash
Permeability: Moderate in the solum and rapid in the substratum
Potential frost action: Low
Shrink-swell potential: Moderate
Surface layer texture: Clay loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize

the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- A loss of soil productivity may occur following an episode of fire.

Building Sites

- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs may be required to ensure satisfactory performance.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic Tank Absorption Fields

- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
- Because of the slope, special design and installation techniques are needed for the effluent distribution lines.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

Pasture and hayland suitability group: B-1
Hydric soil: No

EoC2=Eldean-Miamian complex, 6 to 12 percent slopes, eroded

Setting
Landform: Kame, moraine
Position on the landform: Shoulder, Backslope

Map Unit composition
Eldean and similar components: 50 percent
Miamian and similar components: 35 percent

Contrasting Components:
Westland soils: 10 percent
Casco soils: 5 percent

Map Unit Interpretive Groups
Land capability classification: 3e
Prime farmland: Farmland of local importance

Eldean

Soil Properties and Qualities

Available water capacity: About 3.6 inches to a depth of 30 inches
Cation-exchange capacity of the surface layer: 12 to 24 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Strongly contrasting textural stratification: 20 to 40 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 0.5 to 2.0 percent
Parent material: Outwash
Permeability: Moderate in the solum and rapid in the substratum
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- The rooting depth of crops may be restricted by the high clay content.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- The rooting depth of crops is restricted by soil layers that have strongly contrasting textures.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Figure 5. Steeply rolling Eldean and Miamian soils in the northeast portions of the county are commonly used for pasturing cattle and sheep.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.

- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- Burning may destroy organic matter.

Building Sites

- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs may be required to ensure satisfactory performance.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.
- In some areas the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic Tank Absorption Fields

- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
- Because of the slope, special design and installation techniques are needed for the effluent distribution lines.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

Pasture and hayland suitability group: B-1
Hydric soil: No

Miamian

Soil Properties and Qualities

Available water capacity: About 4.5 inches to a depth of 27 inches
Cation-exchange capacity of the surface layer: 10 to 18 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Dense material: 20 to 40 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loess over till
Permeability: Slow or moderately slow
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

- The rooting depth of crops is restricted by dense soil material.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building Sites

- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs may be required to ensure satisfactory performance.

Septic Tank Absorption Fields

- Because of the slope, special design and installation techniques are needed for the effluent distribution lines and seepage of poorly treated effluent is a concern.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

Pasture and hayland suitability group: A-1
Hydric soil: No

EoD2=Eldean-Miamian complex, 12 to 18 percent slopes, eroded

Setting
Landform: Kame, moraine

Map Unit composition
Eldean and similar components: 45 percent
Miamian and similar components: 40 percent

Contrasting Components:
Casco soils: 15 percent

Map Unit Interpretive Groups
Land capability classification: 4e
Prime farmland: Not prime farmland

Eldean

Soil Properties and Qualities

Available water capacity: About 3.2 inches to a depth of 26 inches
Cation-exchange capacity of the surface layer: 12 to 24 meq per 100 grams
Depth class: Very deep

Depth to root restrictive feature: Strongly contrasting textural stratification: 20 to 40 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Outwash
Permeability: Moderate in the solum and rapid in the substratum
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- The rooting depth of crops may be restricted by the high clay content.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- The rooting depth of crops is restricted by soil layers that have strongly contrasting textures.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.

Building Sites

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.
- In some areas the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic Tank Absorption Fields

- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.

- Because of the slope, special design and installation techniques are needed for the effluent distribution lines.

Local Roads and Streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

Pasture and hayland suitability group: B-1
Hydric soil: No

Miamian

Soil Properties and Qualities

Available water capacity: About 3.2 inches to a depth of 22 inches
Cation-exchange capacity of the surface layer: 10 to 18 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Dense material: 20 to 40 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 0.5 to 2.0 percent
Parent material: Loess over till
Permeability: Slow or moderately slow
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- The rooting depth of crops is restricted by dense soil material.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- Burning may destroy organic matter.

Building Sites

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.

Septic Tank Absorption Fields

- Because of the slope, special design and installation techniques are needed for the effluent distribution lines.

Local Roads and Streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

Pasture and hayland suitability group: A-1
Hydric soil: No

EpC=Eldean-Urban land complex, rolling

Setting
Landform: Outwash terrace, Kame, End moraine

Map Unit composition
Eldean and similar components: 50 percent
Urban land and similar components: 30 percent

Similar Components
fill areas

Map Unit Interpretive Groups
Land capability classification: 3e
Prime farmland: Not prime farmland

Eldean

Soil Properties and Qualities

Available water capacity: About 5.5 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 8.0 to 21 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loamy outwash over sandy and gravelly outwash
Permeability: Moderate in the solum and rapid in the substratum
Potential frost action: Low
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight

Use and Management Considerations

Building Sites

- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs may be required to ensure satisfactory performance.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.
- In some areas the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic Tank Absorption Fields

- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
- Because of the slope, special design and installation techniques are needed for the effluent distribution lines.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

Pasture and hayland suitability group: B-1
Hydric soil: No

Urban land

Use and Management Considerations

- Onsite investigation is needed to determine the suitability for specific uses.

Component Interpretive Groups

Pasture and hayland suitability group: Not rated
Hydric soil: No

FaF=Fairmount silty clay loam, moderately deep variant, 25 to 50 percent slopes

Setting
Landform: Hill
Position on the landform: Backslope

Map Unit composition
Fairmount variant and similar components: 80 percent

Similar Components:
moderately eroded areas
slopes of 18 to 25 percent
silt loam surface layer
deeper to bedrock

Map Unit Interpretive Groups
Land capability classification: 7e
Prime farmland: Not prime farmland

Soil Properties and Qualities

Available water capacity: About 4.0 inches to a depth of 29 inches
Cation-exchange capacity of the surface layer: 13 to 30 meq per 100 grams
Depth class: Moderately deep
Depth to root restrictive feature: Lithic bedrock: 20 to 40 inches
Depth to the top of the seasonal high water table: Greater than 2.4 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Residuum weathered from limestone and shale
Permeability: Moderately slow
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silty clay loam
Potential for surface runoff: Very high
Wind erosion hazard: Slight

Use and Management Considerations

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during construction of haul roads and log landings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The high content of stones or boulders on the surface may obstruct the construction of haul roads and log landings.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- The potential for slippage may interfere with the construction and use of haul roads and log landings and creates unsafe operating conditions.
- Because of the content of clay, this soil becomes sticky when wet. The stickiness increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The volume of rock fragments on the surface may reduce the traction of wheeled harvest equipment.
- The slope creates unsafe operating conditions and reduces the operating efficiency of harvesting and mechanical planting equipment.
- This soil is unsuited to the use of mechanical planting equipment because of stones or boulders on the surface.

- Because of the slope, use of equipment to prepare this site for planting and seeding is not practical.
- Because of the slope, the use of mechanical planting equipment is not practical.
- Rock fragments in the soil obstruct the use of mechanical planting equipment.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- Because of rock fragments, this soil is unsuited to mechanical site preparation for planting and seeding.
- Because of the stickiness of the soil, the use of equipment for site preparation is restricted to the drier periods.
- Burning may destroy organic matter.

Building Sites

- The potential for slippage may interfere with excavation and building site development. For foundations and other structures and buried utility lines, special design and construction may be needed to help prevent structural damage caused by slippage.
- The depth to bedrock and hardness of the bedrock greatly reduce the ease of excavation and increase the difficulty in constructing foundations and installing utilities.
- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- Because of the high content of rock fragments, excavation is difficult and cutbanks are unstable. Excavations and trench walls should be reinforced.
- In some areas the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic Tank Absorption Fields

- Slippage may result in damage to effluent distribution lines and increased maintenance costs.
- Because of the limited depth to bedrock, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local Roads and Streets

- The depth to bedrock and hardness of the bedrock reduce the ease of excavation and increase the difficulty of constructing roads.
- Slippage may result in damage to roads and increase the cost of design, construction, and maintenance.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
- Because of the slope, designing local roads and streets is difficult.
- The high content of large stones affects the ease of excavation and grading.

Component Interpretive Groups

Pasture and hayland suitability group: H-1
Hydric soil: No

FnA=Fincastle silt loam, 0 to 2 percent slopes

Setting
Landform: Till plain
Position on the landform: Summit

Map Unit composition
Fincastle and similar components: 96 percent

Similar Components:
Xenia
slopes of 2 to 4 percent

Contrasting Components:
Ragsdale: 4 percent

Map Unit Interpretive Groups
Land capability classification: 2w
Prime farmland: Prime farmland if drained

Soil Properties and Qualities

Available water capacity: About 8.6 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 6.0 to 20 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: 0.5 to 1.5 feet
Water table kind: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loess over loamy till
Permeability: Slow or moderately slow
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- Subsurface drainage helps to lower the seasonal high water table.

Pastureland

- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root systems of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by reducing root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of this soil by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building Sites

- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. It is poorly suited to building site development and structures may need special design to avoid damage from wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic Tank Absorption Fields

- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Pasture and hayland suitability group: C-1
Hydric soil: No

Gn=Genesee loam

Setting
Landform: Flood plain

Map Unit composition
Genesee and similar components: 80 percent

Similar Components:
Eel
sandier soils
silt loam surface layer
Ross

Contrasting Components:
Sloan soils: 5 percent

Map Unit Interpretive Groups
Land capability classification: 2w
Prime farmland: Prime farmland if drained and either protected from flooding or not frequently
flooded during the growing season

Soil Properties and Qualities

Available water capacity: About 10.7 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 9.0 to 23 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 66 inches
Depth to the top of the seasonal high water table: Greater than 6.0 feet
Ponding: None
Drainage class: Well drained
Flooding: Frequent
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loamy alluvium
Permeability: Moderately slow or moderate
Potential frost action: Moderate
Shrink-swell potential: Low
Surface layer texture: Loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Winter grain crops are commonly not grown because of frequent flooding.
- Measures that protect the soil from scouring and minimize the loss of crop residue by floodwaters are needed.

Pastureland

- Forage production can be improved by seeding grass-legume mixtures that are tolerant of flooding.
- Sediment left on forage plants after a flood event may reduce palatability and forage intake by the grazing animal.

Woodland

- The high pH in the soil may cause a nutrient imbalance in seedlings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Flooding may result in damage to haul roads and increased maintenance costs.
- Flooding restricts the safe use of roads by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building Sites

- The frequent flooding in areas of this soil greatly increases the risk of damage associated with floodwaters. Because of the flooding, this soil is generally unsuited to building site development.

Septic Tank Absorption Fields

- This soil is generally unsuited to septic tank absorption fields. The flooding in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Rapidly moving floodwaters may damage some components of septic systems.

Local Roads and Streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.
- Special design of roads and bridges is needed to prevent the damage caused by flooding.

Component Interpretive Groups

Pasture and hayland suitability group: A-5
Hydric soil: No

Ko=Kokomo silty clay loam

Setting
Landform: Flats and depressions on the Wisconsinan till plain
Position on the landform: Summits

Map Unit composition
Kokomo and similar components: 95 percent

Contrasting Components:
Crosby soils: 5 percent

Map Unit Interpretive Groups
Land capability classification: 2w
Prime farmland: Prime farmland if drained

Soil Properties and Qualities

Available water capacity: About 9.8 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 16 to 33 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 80 inches
Depth to the top of the seasonal high water table: At or near the surface
Water table kind: Apparent
Ponding: Very long
Depth of ponding: 0.0 to 1.0 feet
Drainage class: Very poorly drained
Flooding: None
Organic matter content in the surface layer: 3.0 to 6.0 percent
Parent material: Till
Permeability: Moderately slow in the solum and moderately slow in the substratum
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silty clay loam
Potential for surface runoff: Negligible
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- A combination of surface and subsurface drainage helps to remove excess water.

Pastureland

- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root systems of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by reducing root respiration.
- Standing water can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of this soil by log trucks.
- Ponding restricts the safe use of roads by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of

the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- A loss of soil productivity may occur following an episode of fire.

Building Sites

- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building maintenance may be needed. The soil is generally unsuited to building site development.

Septic Tank Absorption Fields

- Because of ponding, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local Roads and Streets

- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Pasture and hayland suitability group: C-1
Hydric soil: Yes

Lh=Linwood mucky silt loam, drained

Setting
Landform: Depression

Map Unit composition
Linwood and similar components: 80 percent

Contrasting Components:
Adrian soils: 10 percent
Patton soils: 10 percent

Map Unit Interpretive Groups
Land capability classification: 2w
Prime farmland: Farmland of local importance

Soil Properties and Qualities

Available water capacity: About 14.7 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 10 to 30 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 80 inches
Depth to the top of the seasonal high water table: 0.0 to 1.0 feet
Water table kind: Apparent
Ponding: Very long
Depth of ponding: 0.0 to 1.0 feet
Drainage class: Very poorly drained
Flooding: None
Organic matter content in the surface layer: 10.0 to 20.0 percent
Parent material: Woody organic material over loamy glacial drift
Permeability: Moderately slow to moderately rapid in the organic material and moderate to moderately slow in the underlying materials
Potential frost action: High
Shrink-swell potential: Low
Surface layer texture: Mucky silt loam
Potential for surface runoff: Negligible
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.

- A combination of surface and subsurface drainage helps to remove excess water.
- Subsidence or shrinkage of the muck causes displacement of subsurface drains.
- Control of the water table helps reduce subsidence, prevent burning, and reduce the hazard of wind erosion.

Pastureland

- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root systems of plants may be damaged by frost action.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by reducing root respiration.
- Standing water can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of this soil by log trucks.
- Ponding restricts the safe use of roads by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building Sites

- When drained, the organic layers in this soil subside. Subsidence leads to differential rates of settlement which may cause foundations to break. Because of the high potential for subsidence, this soil is generally unsuited to building site development.
- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building maintenance may be needed. The soil is generally unsuited to building site development.

Septic Tank Absorption Fields

- Because of ponding, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local Roads and Streets

- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Subsidence of the organic material reduces the bearing capacity of this soil.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

Component Interpretive Groups

Pasture and hayland suitability group: G-1
Hydric soil: Yes

Ln=Linwood muck

Setting
Landform: Depression on flood plain

Map Unit composition
Linwood and similar components: 85 percent

Similar Components:
thinner organic layers
thicker organic layers
organic layer lost to burning
small areas underlain with marl or travertine

Map Unit Interpretive Groups
Land capability classification: 2w
Prime farmland: Not prime farmland

Soil Properties and Qualities

Available water capacity: About 12.7 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: ---
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: 0.0 to 1.0 feet
Water table kind: Apparent
Ponding: Very long
Depth of ponding: 0.0 to 1.0 feet
Drainage class: Very poorly drained
Flooding: None
Organic matter content in the surface layer:
Parent material: Organic material over loamy outwash
Permeability: Moderately slow to moderately rapid in the organic material and moderate to moderately slow in the underlying materials
Potential frost action: High
Shrink-swell potential: Low

Surface layer texture: Muck
Potential for surface runoff: Very low
Wind erosion hazard: Severe

Use and Management Considerations

Cropland

- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- A combination of surface and subsurface drainage helps to remove excess water.
- Subsidence or shrinkage of the muck causes displacement of subsurface drains.
- Control of the water table helps reduce subsidence, prevent burning, and reduce the hazard of wind erosion.

Pastureland

- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root systems of plants may be damaged by frost action.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by reducing root respiration.
- Standing water can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of this soil by log trucks.
- Ponding restricts the safe use of roads by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building Sites

- When drained, the organic layers in this soil subside. Subsidence leads to differential rates of settlement which may cause foundations to break. Because of the high potential for subsidence, this soil is generally unsuited to building site development.
- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building maintenance may be needed. The soil is generally unsuited to building site development.

Septic Tank Absorption Fields

- Because of ponding, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local Roads and Streets

- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Subsidence of the organic material reduces the bearing capacity of this soil.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

Component Interpretive Groups

Pasture and hayland suitability group: D-1
Hydric soil: Yes

LuF2=Lumberton silt loam, 25 to 50 percent slopes, eroded

Setting
Landform: Wisconsinan valley sideslopes
Position on the landform: Risers and back slopes

Map Unit composition
Lumberton and similar components: 80 percent

Contrasting Components:
Miamian soils: 10 percent
Thrifton soils: 10 percent

Map Unit Interpretive Groups
Land capability classification: 7e
Prime farmland: Not prime farmland

Soil Properties and Qualities

Available water capacity: About 5.6 inches to a depth of 34 inches
Cation-exchange capacity of the surface layer: 6.0 to 12 meq per 100 grams
Depth class: Moderately deep to deep
Depth to root restrictive feature: Lithic bedrock: 33 to 60 inches
Depth to the top of the seasonal high water table: Greater than 2.8 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 0.5 to 2.0 percent
Parent material: Loess and loamy outwash over limestone residuum
Permeability: Moderate
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: High
Wind erosion hazard: Slight
Distinctive soil property: Removal of part of the original surface layer

Use and Management Considerations

Figure 6. Small pockets of Linwood muck are scattered throughout the county. Here a muck pocket (cattails) has been isolated from the pasture to keep cattle from getting stuck and to protect the wetland.

Pastureland

- This soil is generally not recommended for pasture.

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during construction of haul roads and log landings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope creates unsafe operating conditions and reduces the operating efficiency of harvesting and mechanical planting equipment.
- Because of the slope, use of equipment to prepare this site for planting and seeding is not practical.
- Because of the slope, the use of mechanical planting equipment is not practical.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- Burning may destroy organic matter.

Building Sites

- The depth to bedrock and hardness of the bedrock greatly reduce the ease of excavation and increase the difficulty in constructing foundations and installing utilities.
- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.

- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic Tank Absorption Fields

- Because of the limited depth to bedrock, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local Roads and Streets

- The depth to bedrock and hardness of the bedrock reduce the ease of excavation and increase the difficulty of constructing roads.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

Pasture and hayland suitability group: F-2
Hydric soil: No

MhA=Miamian silt loam, 0 to 2 percent slopes

Setting
Landform: Moraine, Till plain
Position on the landform: Summit

Map Unit composition
Miamian and similar components: 96 percent

Similar Components:
Celina

Contrasting Components:
Crosby: 4 percent

Map Unit Interpretive Groups
Land capability classification: 1
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

Available water capacity: About 7.7 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 10 to 18 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loess over loamy till
Permeability: Slow or moderately slow
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- This soil is well suited to pasture.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building Sites

- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic Tank Absorption Fields

- This soil is well suited to use as a site for septic tank absorption fields.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Pasture and hayland suitability group: A-1
Hydric soil: No

MhB=Miamian silt loam, 2 to 6 percent slopes

Setting
Landform: Moraine, Till plain
Position on the landform: Summit

Map Unit composition
Miamian and similar components: 90 percent

Similar Components:
Celina
moderately eroded areas

Map Unit Interpretive Groups
Land capability classification: 2e
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

Available water capacity: About 7.7 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 10 to 18 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loess over loamy till
Permeability: Slow or moderately slow
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Erosion control is needed when pastures are renovated.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building Sites

- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic Tank Absorption Fields

- This soil is well suited to use as a site for septic tank absorption fields.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Pasture and hayland suitability group: A-1
Hydric soil: No

MhB2=Miamian silt loam, 2 to 6 percent slopes, moderately eroded

Setting
Landform: Till plain, Moraine
Position on the landform: Summit

Map Unit composition
Miamian and similar components: 90 percent

Similar Components:
Celina

Contrasting Components:
severely eroded areas: 5 percent

Map Unit Interpretive Groups
Land capability classification: 2e
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

Available water capacity: About 7.7 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 10 to 18 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loess over loamy till
Permeability: Slow or moderately slow
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Erosion control is needed when pastures are renovated.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of

the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building Sites

- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic Tank Absorption Fields

- This soil is well suited to use as a site for septic tank absorption fields.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Pasture and hayland suitability group: A-1
Hydric soil: No

MhC2=Miamian silt loam, 6 to 12 percent slopes, moderately eroded

Setting
Landform: Moraine, Till plain
Position on the landform: Footslope, Shoulder

Map Unit composition
Miamian and similar components: 97 percent

Similar Components:
Celina
shallow gullies

Contrasting Components:
severely eroded areas: 3 percent

Map Unit Interpretive Groups
Land capability classification: 3e
Prime farmland: Farmland of local importance

Soil Properties and Qualities

Available water capacity: About 7.7 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 10 to 18 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loess over loamy till
Permeability: Slow or moderately slow
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building Sites

- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs may be required to ensure satisfactory performance.

Septic Tank Absorption Fields

- Because of the slope, special design and installation techniques are needed for the effluent distribution lines and seepage of poorly treated effluent is a concern.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

Pasture and hayland suitability group: A-1
Hydric soil: No

MhD2=Miamian silt loam, 12 to 18 percent slopes, moderately eroded

Setting
Landform: Moraine, Till plain
Position on the landform: Footslope

Map Unit composition
Miamian and similar components: 90 percent

Similar Components:
Hennepin
Russell

Map Unit Interpretive Groups
Land capability classification: 4e
Prime farmland: Farmland of local importance

Soil Properties and Qualities

Available water capacity: About 7.7 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 10 to 18 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loess over loamy till
Permeability: Slow or moderately slow
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during construction of haul roads and log landings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- The slope restricts the use of equipment for preparing this site for planting and seeding.

Building Sites

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic Tank Absorption Fields

- Because of the slope, special design and installation techniques are needed for the effluent distribution lines.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

Pasture and hayland suitability group: A-1
Hydric soil: No

MlB3=Miamian clay loam, 2 to 6 percent slopes, severely eroded

Setting
Landform: Moraine, Till plain
Position on the landform: Summit

Map Unit composition
Miamian and similar components: 95 percent

Contrasting Components:
moderately eroded areas:
4 percent
slightly eroded areas: 1 percent

Map Unit Interpretive Groups
Land capability classification: 3e
Prime farmland: Not prime farmland

Soil Properties and Qualities

Available water capacity: About 7.7 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 14 to 20 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 0.5 to 2.0 percent
Parent material: Loess over loamy till
Permeability: Slow or moderately slow
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Clay loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Figure 7. Sloping soils that have been farmed over the past century typically have been moderately or severely eroded. No-till, grassed waterways and filter strips are being used on this farm to protect these severely eroded Miamian soils.

Pastureland

- Erosion control is needed when pastures are renovated.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- Burning may destroy organic matter.

Building Sites

- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic Tank Absorption Fields

- This soil is well suited to use as a site for septic tank absorption fields.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Pasture and hayland suitability group: A-1
Hydric soil: No

MlC3=Miamian clay loam, 6 to 12 percent slopes, severely eroded

Setting
Landform: Till plain, Moraine
Position on the landform: Footslope, Shoulder

Map Unit composition
Miamian and similar components: 90 percent
Similar Components:
Hennepin
Russell

Map Unit Interpretive Groups
Land capability classification: 4e
Prime farmland: Not prime farmland

Soil Properties and Qualities

Available water capacity: About 7.7 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 14 to 20 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 0.5 to 2.0 percent
Parent material: Loess over loamy till
Permeability: Slow or moderately slow
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Clay loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

- The slope may restrict the use of some mechanical planting equipment.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- Burning may destroy organic matter.

Building Sites

- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs may be required to ensure satisfactory performance.

Septic Tank Absorption Fields

- Because of the slope, special design and installation techniques are needed for the effluent distribution lines and seepage of poorly treated effluent is a concern.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

Pasture and hayland suitability group: A-1
Hydric soil: No

MlD3=Miamian clay loam, 12 to 18 percent slopes, severely eroded

Setting
Landform: Till plain, Moraine
Position on the landform: Footslope

Map Unit composition
Miamian and similar components: 90 percent

Similar Components:
Hennepin
Russell

Map Unit Interpretive Groups
Land capability classification: 6e
Prime farmland: Not prime farmland

Soil Properties and Qualities

Available water capacity: About 7.7 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 14 to 20 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 0.5 to 2.0 percent
Parent material: Loess over loamy till
Permeability: Slow or moderately slow
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Clay loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.

- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during construction of haul roads and log landings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- The slope restricts the use of equipment for preparing this site for planting and seeding.
- Burning may destroy organic matter.

Building Site

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic Tank Absorption Fields

- Because of the slope, special design and installation techniques are needed for the effluent distribution lines.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

Pasture and hayland suitability group: A-1
Hydric soil: No

MmD2=Miamian-Casco complex, 12 to 18 percent slopes, moderately eroded

Setting
Landform: Moraine, Kame
Position on the landform: Backslope

Map Unit composition
Miamian, Casco and similar components: 95 percent

Similar Components:
Hennepin

Contrasting Components:
severely eroded areas: 5 percent

Map Unit Interpretive Groups
Land capability classification: 4e
Prime farmland: Farmland of local importance

Miamian

Soil Properties and Qualities

Available water capacity: About 7.7 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 10 to 18 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 6 feet

Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loess over loamy till
Permeability: Slow or moderately slow
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during construction of haul roads and log landings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- The slope restricts the use of equipment for preparing this site for planting and seeding.

Building Sites

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic Tank Absorption Fields

- Because of the slope, special design and installation techniques are needed for the effluent distribution lines.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

Pasture and hayland suitability group: A-1
Hydric soil: No

Casco

Soil Properties and Qualities

Available water capacity: About 2.4 inches to a depth of 20 inches
Cation-exchange capacity of the surface layer: 4.0 to 20 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Strongly contrasting textural stratification: 10 to 24 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loamy alluvium over sandy and gravelly outwash
Permeability: Moderate in the loamy mantle and rapid in the stratified sandy outwash material
Potential frost action: Low
Shrink-swell potential: Moderate
Surface layer texture: Loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- The rooting depth of crops is restricted by soil layers that have strongly contrasting textures.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during construction of haul roads and log landings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Sandy layers in this soil increase the maintenance of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- The slope restricts the use of equipment for preparing this site for planting and seeding.

Building Sites

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic Tank Absorption Fields

- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
- Because of the slope, special design and installation techniques are needed for the effluent distribution lines.

Local Roads and Streets

- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

Pasture and hayland suitability group: B-1
Hydric soil: No

MmE2=Miamian-Casco complex, 18 to 35 percent slopes, moderately eroded

Setting
Landform: Kame, Moraine
Position on the landform: Backslope

Map Unit composition
Miamian and similar components: 50 percent
Casco and similar components: 35 percent

Similar Components:
Rodman
silt loam surface layer

Map Unit Interpretive Groups
Land capability classification: 7e
Prime farmland: Not prime farmland

Miamian

Soil Properties and Qualities

Available water capacity: About 7.7 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 10 to 18 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loess over loamy till
Permeability: Slow or moderately slow
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Very high
Wind erosion hazard: Slight

Use and Management Considerations

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during construction of haul roads and log landings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope creates unsafe operating conditions and reduces the operating efficiency of harvesting and mechanical planting equipment.
- The slope may restrict the use of some mechanical planting equipment.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

- The slope restricts the use of equipment for preparing this site for planting and seeding.

Building Sites

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic Tank Absorption Fields

- Because of the slope, special design and installation techniques are needed for the effluent distribution lines.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

Pasture and hayland suitability group: A-2
Hydric soil: No

Casco

Soil Properties and Qualities

Available water capacity: About 2.4 inches to a depth of 20 inches
Cation-exchange capacity of the surface layer: 4.0 to 20 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Strongly contrasting textural stratification: 10 to 24 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loamy alluvium over sandy and gravelly outwash
Permeability: Moderate in the loamy mantle and rapid in the stratified sandy outwash material
Potential frost action: Low
Shrink-swell potential: Moderate
Surface layer texture: Loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during construction of haul roads and log landings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Sandy layers in this soil increase the maintenance of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.

- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope creates unsafe operating conditions and reduces the operating efficiency of harvesting and mechanical planting equipment.
- The slope may restrict the use of some mechanical planting equipment
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- The slope restricts the use of equipment for preparing this site for planting and seeding.

Building Sites

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic Tank Absorption Fields

- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
- Because of the slope, special design and installation techniques are needed for the effluent distribution lines.

Local Roads and Streets

- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

Pasture and hayland suitability group: B-1
Hydric soil: No

MoB2=Miamian-Eldean silt loams, 2 to 6 percent slopes, moderately eroded

Setting
Landform: End moraine
Position on the landform: Summit

Map Unit composition
Miamian and similar components: 40 percent
Eldean and similar components: 30 percent

Similar Components:
Hennepin

Contrasting Components:
Casco soils: 15 percent

Map Unit Interpretive Groups
Land capability classification: 2e
Prime farmland: All areas are prime farmland

Miamian

Soil Properties and Qualities

Available water capacity: About 7.7 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 10 to 18 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loess over loamy till
Permeability: Slow or moderately slow
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.

- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Erosion control is needed when pastures are renovated.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building Sites

- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic Tank Absorption Fields

- This soil is well suited to use as a site for septic tank absorption fields.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Pasture and hayland suitability group: A-1
Hydric soil: No

Eldean

Soil Properties and Qualities

Available water capacity: About 5.5 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 8.0 to 21 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loamy outwash over sandy and gravelly outwash
Permeability: Moderate in the solum and rapid in the substratum
Potential frost action: Low
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture

stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- The rooting depth of crops may be restricted by the high clay content.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building Sites

- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.
- In some areas the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.
- This soil is well suited to use as building sites.

Septic Tank Absorption Fields

- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Pasture and hayland suitability group: B-1
Hydric soil: No

MoC2=Miamian-Eldean silt loams, 6 to 12 percent slopes, moderately eroded

Setting
Landform: End moraine
Position on the landform: Footslope, Shoulder

Map Unit composition
Miamian and similar components: 40 percent
Eldean and similar components: 30 percent

Similar Components:
Hennepin

Contrasting Components:
Casco soils: 15 percent

Map Unit Interpretive Groups
Land capability classification: 3e
Prime farmland: Farmland of local importance

Miamian

Soil Properties and Qualities

Available water capacity: About 7.7 inches to a depth of 60 inches

Cation-exchange capacity of the surface layer: 10 to 18 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loess over loamy till
Permeability: Slow or moderately slow
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building Sites

- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs may be required to ensure satisfactory performance.

Septic Tank Absorption Fields

- Because of the slope, special design and installation techniques are needed for the effluent distribution lines and seepage of poorly treated effluent is a concern.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

Pasture and hayland suitability group: A-1
Hydric soil: No

Eldean

Soil Properties and Qualities

Available water capacity: About 5.5 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 8.0 to 21 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loamy outwash over sandy and gravelly outwash
Permeability: Moderate in the solum and rapid in the substratum
Potential frost action: Low
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- The rooting depth of crops may be restricted by the high clay content.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.

Building Sites

- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs may be required to ensure satisfactory performance.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow

excavations and cutbanks are susceptible to caving.
- In some areas the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic Tank Absorption Fields

- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
- Because of the slope, special design and installation techniques are needed for the effluent distribution lines.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

Pasture and hayland suitability group: B-1
Hydric soil: No

MpE=Miamian and Hennepin soils, 18 to 25 percent slopes

Setting
Landform: Till plain
Position on the landform: Backslope

Map Unit composition
Miamian and similar components: 50 percent
Hennepin and similar components: 45 percent

Contrasting Components:
severely eroded areas: 5 percent

Map Unit Interpretive Groups
Land capability classification: 6e
Prime farmland: Not prime farmland

Miamian

Soil Properties and Qualities

Available water capacity: About 7.7 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 10 to 18 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loess over loamy till
Permeability: Slow or moderately slow
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during construction of haul roads and log landings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope creates unsafe operating conditions and reduces the operating

efficiency of harvesting and mechanical planting equipment.
- The slope may restrict the use of some mechanical planting equipment.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- The slope restricts the use of equipment for preparing this site for planting and seeding.

Building Sites

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic Tank Absorption Fields

- Because of the slope, special design and installation techniques are needed for the effluent distribution lines.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

Pasture and hayland suitability group: A-2
Hydric soil: No

Hennepin

Soil Properties and Qualities

Available water capacity: About 6.1 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 14 to 22 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 2.0 percent
Parent material: Till
Permeability: Slow or moderately slow
Potential frost action: Moderate
Shrink-swell potential: Low
Surface layer texture: Loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during construction of haul roads and log landings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

- The slope creates unsafe operating conditions and reduces the operating efficiency of harvesting and mechanical planting equipment.
- The slope may restrict the use of some mechanical planting equipment.
- The slope restricts the use of equipment for preparing this site for planting and seeding.
- Burning may destroy organic matter.

Building Sites

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.

Septic Tank Absorption Fields

- Because of the slope, special design and installation techniques are needed for the effluent distribution lines.

Local Roads and Streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

Pasture and hayland suitability group: A-2
Hydric soil: No

MpF=Miamian and Hennepin soils, 25 to 50 percent slopes

Setting
Landform: Till plain
Position on the landform: Backslope

Map Unit composition
Miamian and similar components:
Hennepin and similar components:

Similar Components
steeper slopes

Map Unit Interpretive Groups
Land capability classification: 7e
Prime farmland: Not prime farmland

Miamian

Soil Properties and Qualities

Available water capacity: About 7.7 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 10 to 18 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loess over loamy till
Permeability: Slow or moderately slow
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Pastureland

- This soil is generally not recommended for pasture.

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during construction of haul roads and log landings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and

damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope creates unsafe operating conditions and reduces the operating efficiency of harvesting and mechanical planting equipment.
- Because of the slope, use of equipment to prepare this site for planting and seeding is not practical.
- Because of the slope, the use of mechanical planting equipment is not practical.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building Sites

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic Tank Absorption Fields

- Because of the slope, special design and installation techniques are needed for the effluent distribution lines.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

Pasture and hayland suitability group: A-3
Hydric soil: No

Hennepin

Soil Properties and Qualities

Available water capacity: About 5.9 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 14 to 22 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 2.0 percent
Parent material: Till
Permeability: Slow or moderately slow
Potential frost action: Moderate
Shrink-swell potential: Low
Surface layer texture: Loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- This soil is generally unsuited to use as cropland because of the slope and the erosion hazard.

Pastureland

- This soil is generally not recommended for pasture.

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during construction of haul roads and log landings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.

- The low strength of the soil increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope creates unsafe operating conditions and reduces the operating efficiency of harvesting and mechanical planting equipment.
- Because of the slope, use of equipment to prepare this site for planting and seeding is not practical.
- Because of the slope, the use of mechanical planting equipment is not practical.
- Burning may destroy organic matter.

Building Sites

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.

Septic Tank Absorption Fields

- Because of the slope, special design and installation techniques are needed for the effluent distribution lines.

Local Roads and Streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

Pasture and hayland suitability group: E-2
Hydric soil: No

MqE2=Miamian-Thrifton complex, 18 to 25 percent slopes, eroded

Setting
Landform: Wisconsinan till plain
Position on the landform: Back slopes

Map Unit composition
Miamian and similar components: 70 percent
Thrifton and similar components: 20 percent

Contrasting Components:
Crouse soils: 10 percent

Map Unit Interpretive Groups
Land capability classification: 6e
Prime farmland: Not prime farmland

Miamian

Soil Properties and Qualities

Available water capacity: About 6.3 inches to a depth of 38 inches
Cation-exchange capacity of the surface layer: 10 to 18 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Dense material: 20 to 40 inches
Depth to the top of the seasonal high water table: 2.5 to 3.5 feet
Water table kind: Perched
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: A thin layer of loess and the underlying till
Permeability: Moderately slow in the solum and slow or very slow the dense till.
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Very high
Wind erosion hazard: Slight
Distinctive soil property: Removal of part of the original surface layer

Use and Management Considerations

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.

- Erosion control is needed when pastures are renovated.

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during construction of haul roads and log landings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope creates unsafe operating conditions and reduces the operating efficiency of harvesting and mechanical planting equipment.
- The slope may restrict the use of some mechanical planting equipment.
- The slope restricts the use of equipment for preparing this site for planting and seeding.

Building Sites

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent damage caused by wetness.
- In some areas the dense nature of the subsurface layer increases the difficulty of digging and compacting the soil material in shallow excavations.

Septic Tank Absorption Fields

- Because of the slope, special design and installation techniques are needed for the effluent distribution lines.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

Pasture and hayland suitability group: A-2
Hydric soil: No

Thrifton

Soil Properties and Qualities

Available water capacity: About 2.8 inches to a depth of 19 inches
Cation-exchange capacity of the surface layer: 14 to 20 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Dense material: 10 to 20 inches
Depth to the top of the seasonal high water table: 1.0 to 2.0 feet
Water table kind: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Organic matter content in the surface layer: 0.5 to 2.0 percent
Parent material: Basal till

Permeability: Moderately slow in the solum and slow in the underlying dense till
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Loam
Potential for surface runoff: Very high
Wind erosion hazard: Slight
Distinctive soil property: Removal of part of the original surface layer

Use and Management Considerations

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during construction of haul roads and log landings.
- The high pH in the soil may cause a nutrient imbalance in seedlings.
- The high content of lime in the upper part of the soil may cause a nutrient imbalance in seedlings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of this soil by log trucks.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- The slope creates unsafe operating conditions and reduces the operating efficiency of harvesting and mechanical planting equipment.
- The slope may restrict the use of some mechanical planting equipment.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- The slope restricts the use of equipment for preparing this site for planting and seeding.
- Burning may destroy organic matter.

Building Sites

- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. It is poorly suited to building site development and structures may need special design to avoid damage from wetness.
- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.
- In some areas the dense nature of the subsurface layer increases the difficulty of digging and compacting the soil material in shallow excavations.

Septic Tank Absorption Fields

- Because of the slope, special design and installation techniques are needed for the effluent distribution lines.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local Roads and Streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

Pasture and hayland suitability group: A-2
Hydric soil: No

MqF2=Miamian-Thrifton complex, 25 to 50 percent slopes, eroded

Setting
Landform: Wisconsinan till plain
Position on the landform: Back slopes

Map Unit composition
Miamian and similar components: 70 percent
Thrifton and similar components: 25 percent

Contrasting Components:
Crouse soils: 5 percent

Map Unit Interpretive Groups
Land capability classification: 7e
Prime farmland: Not prime farmland

Miamian

Soil Properties and Qualities

Available water capacity: About 6.4 inches to a depth of 38 inches
Cation-exchange capacity of the surface layer: 10 to 18 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Dense material: 20 to 40 inches
Depth to the top of the seasonal high water table: 2.5 to 3.5 feet
Water table kind: Perched
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: A thin layer of loess and the underlying till
Permeability: Moderately slow in the solum and slow or very slow the dense till.
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Very high
Wind erosion hazard: Slight
Distinctive soil property: Removal of part of the original surface layer

Use and Management Considerations

Pastureland

- This soil is generally not recommended for pasture.

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during construction of haul roads and log landings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope creates unsafe operating conditions and reduces the operating efficiency of harvesting and mechanical planting equipment.
- Because of the slope, use of equipment to prepare this site for planting and seeding is not practical.
- Because of the slope, the use of mechanical planting equipment is not practical.

Building Sites

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent damage caused by wetness.
- In some areas the dense nature of the subsurface layer increases the difficulty of digging and compacting the soil material in shallow excavations.

Septic Tank Absorption Fields

- Because of the slope, special design and installation techniques are needed for the effluent distribution lines.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

Pasture and hayland suitability group: A-3
Hydric soil: No

Thrifton

Soil Properties and Qualities

Available water capacity: About 2.7 inches to a depth of 18 inches
Cation-exchange capacity of the surface layer: 14 to 20 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Dense material: 10 to 20 inches
Depth to the top of the seasonal high water table: 1.0 to 2.0 feet
Water table kind: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Organic matter content in the surface layer: 0.5 to 2.0 percent
Parent material: Basal till
Permeability: Moderately slow in the solum and slow in the underlying dense till
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Loam
Potential for surface runoff: Very high
Wind erosion hazard: Slight
Distinctive soil property: Removal of part of the original surface layer

Use and Management Considerations

Pastureland

- This soil is generally not recommended for pasture.

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during construction of haul roads and log landings.
- The high pH in the soil may cause a nutrient imbalance in seedlings.
- The high content of lime in the upper part of the soil may cause a nutrient imbalance in seedlings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of this soil by log trucks.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- The slope creates unsafe operating conditions and reduces the operating efficiency of harvesting and mechanical planting equipment.
- Because of the slope, use of equipment to prepare this site for planting and seeding is not practical.
- Because of the slope, the use of mechanical planting equipment is not practical.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- Burning may destroy organic matter.

Building Sites

- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. It is poorly suited to building site development and structures may need special design to avoid damage from wetness.
- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.
- In some areas the dense nature of the subsurface layer increases the difficulty of digging and compacting the soil material in shallow excavations.

Septic Tank Absorption Fields

- Because of the slope, special design and installation techniques are needed for the effluent distribution lines.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local Roads and Streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

Pasture and hayland suitability group: A-3
Hydric soil: No

MrB=Miamian-Urban land complex, undulating

Setting
Landform: Till plain
Position on the landform: Summit

Map Unit composition
Miamian and similar components: 40 percent
Urban land and similar components: 15 percent

Similar Components:
fill areas
Birkbeck
Celina
Russell
Xenia

Map Unit Interpretive Groups
Land capability classification: 2e
Prime farmland: Not prime farmland

Miamian

Soil Properties and Qualities

Available water capacity: About 7.7 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 10 to 18 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loess over loamy till
Permeability: Slow or moderately slow
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Clay loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight

Use and Management Considerations

Building Sites

- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic Tank Absorption Fields

- This soil is well suited to use as a site for septic tank absorption fields.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Pasture and hayland suitability group: A-1
Hydric soil: No

Urban land

Use and Management Considerations

- Onsite investigation is needed to determine the suitability for specific uses.

Component Interpretive Groups

Pasture and hayland suitability group: Not rated
Hydric soil: No

MrC=Miamian-Urban land complex, rolling

Setting
Landform: Till plain
Position on the landform: Shoulder

Map Unit composition
Miamian and similar components: 50 percent
Urban land and similar components: 15 percent
Similar Components:
fill areas
Russell

Map Unit Interpretive Groups

Land capability classification: 3e
Prime farmland: Not prime farmland

Miamian

Soil Properties and Qualities

Available water capacity: About 7.7 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 10 to 18 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loess over loamy till
Permeability: Slow or moderately slow
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Clay loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Building Sites

- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs may be required to ensure satisfactory performance.

Septic Tank Absorption Fields

- Because of the slope, special design and installation techniques are needed for the effluent distribution lines and seepage of poorly treated effluent is a concern.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

Pasture and hayland suitability group: A-1
Hydric soil: No

Urban land

Use and Management Considerations

- Onsite investigation is needed to determine the suitability for specific uses.

Component Interpretive Groups

Pasture and hayland suitability group: Not rated
Hydric soil: No

Ms=Millsdale silty clay loam

Setting
Landform: Depression on till plain

Map Unit composition
Millsdale and similar components: 85 percent

Similar Components:
gently sloping soils
silt loam surface layer

Contrasting Components:
Brookston soils: 5 percent
Ragsdale soils: 5 percent

Map Unit Interpretive Groups
Land capability classification: 3w
Prime farmland: Prime farmland if drained

Soil Properties and Qualities

Available water capacity: About 4.2 inches to a depth of 26 inches
Cation-exchange capacity of the surface layer: 20 to 36 meq per 100 grams
Depth class: Moderately deep
Depth to root restrictive feature: Lithic bedrock: 20 to 40 inches
Depth to the top of the seasonal high water table: 0.0 to 1.0 feet
Water table kind: Apparent
Ponding: Long
Depth of ponding: 0.0 to 1.0 feet
Drainage class: Very poorly drained
Flooding: None
Organic matter content in the surface layer: 4.0 to 7.0 percent
Parent material: Till over residuum weathered from limestone
Permeability: Moderate
Potential frost action: High
Shrink-swell potential: High
Surface layer texture: Silty clay loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The rooting depth of crops is restricted by bedrock.
- Plants may suffer from moisture stress because of the limited available water capacity.
- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- A combination of surface and subsurface drainage helps to remove excess water.
- The movement of water into subsurface drains is restricted. Drainage guides can be used to determine tile spacing requirements.
- The depth to bedrock may restrict the gradient needed to provide adequate drainage from subsurface systems.

Pastureland

- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root systems of plants may be damaged by frost action.
- The rooting depth of plants may be restricted by bedrock.

- Restricting grazing during wet periods can minimize compaction.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by reducing root respiration.
- Standing water can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Bedrock may interfere with the construction of haul roads and log landing sites.
- Soil wetness may limit the use of this soil by log trucks.
- Ponding restricts the safe use of roads by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- Burning may destroy organic matter.

Building Sites

- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building maintenance may be needed. The soil is generally unsuited to building site development.

Septic Tank Absorption Fields

- Because of the limited depth to bedrock, this soil is generally unsuited to use as a site for septic tank absorption fields.
- Because of ponding, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local Roads and Streets

- The depth to bedrock and hardness of the bedrock reduce the ease of excavation and increase the difficulty of constructing roads.
- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Pasture and hayland suitability group: C-2
Hydric soil: Yes

MtA=Milton silt loam, 0 to 2 percent slopes

Setting
Landform: Till plain
Position on the landform: Summit

Map Unit composition
Milton and similar components: 95 percent

Contrasting Components
Miamian: 5 percent

Map Unit Interpretive Groups
Land capability classification: 2s
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

Available water capacity: About 4.7 inches to a depth of 30 inches
Cation-exchange capacity of the surface layer: 10 to 22 meq per 100 grams
Depth class: Moderately deep
Depth to root restrictive feature: Lithic bedrock: 20 to 40 inches
Depth to the top of the seasonal high water table: Greater than 2.5 feet
Ponding: None
Drainage class: Well drained

Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loess over till over residuum weathered from limestone
Permeability: Moderate
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The rooting depth of crops is restricted by bedrock.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- The rooting depth of plants may be restricted by bedrock.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Bedrock may interfere with the construction of haul roads and log landing sites.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building Sites

- The depth to bedrock and hardness of the bedrock greatly reduce the ease of excavation and increase the difficulty in constructing foundations and installing utilities.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic Tank Absorption Fields

- Because of the limited depth to bedrock, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local Roads and Streets

- The depth to bedrock and hardness of the bedrock reduce the ease of excavation and increase the difficulty of constructing roads.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Pasture and hayland suitability group: F-1
Hydric soil: No

MtB=Milton silt loam, 2 to 6 percent slopes

Setting
Landform: Till plain
Position on the landform: Shoulder

Map Unit composition
Milton and similar components: 95 percent

Similar Components:
moderately eroded areas
limestone fragments on the surface

Contrasting Components:
Miamian: 5 percent

Map Unit Interpretive Groups
Land capability classification: 2e
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

Available water capacity: About 4.7 inches to a depth of 30 inches
Cation-exchange capacity of the surface layer: 10 to 22 meq per 100 grams
Depth class: Moderately deep
Depth to root restrictive feature: Lithic bedrock: 20 to 40 inches
Depth to the top of the seasonal high water table: Greater than 2.5 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loess over till over residuum weathered from limestone
Permeability: Moderate
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The rooting depth of crops is restricted by bedrock.
- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- The rooting depth of plants may be restricted by bedrock.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Bedrock may interfere with the construction of haul roads and log landing sites.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building Sites

- The depth to bedrock and hardness of the bedrock greatly reduce the ease of excavation and increase the difficulty in constructing foundations and installing utilities.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic Tank Absorption Fields

- Because of the limited depth to bedrock, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local Roads and Streets

- The depth to bedrock and hardness of the bedrock reduce the ease of excavation and increase the difficulty of constructing roads.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Pasture and hayland suitability group: F-1
Hydric soil: No

MtC2=Milton silt loam, 6 to 12 percent slopes, moderately eroded

Setting
Landform: Till plain
Position on the landform: Shoulder, Footslope

Map Unit composition
Milton and similar components: 96 percent

Similar Components:
slightly eroded areas
limestone fragments on the surface

Contrasting Components:
severely eroded areas: 4 percent

Map Unit Interpretive Groups
Land capability classification: 3e
Prime farmland: Farmland of local importance

Soil Properties and Qualities

Available water capacity: About 4.7 inches to a depth of 30 inches
Cation-exchange capacity of the surface layer: 10 to 22 meq per 100 grams
Depth class: Moderately deep
Depth to root restrictive feature: Lithic bedrock: 20 to 40 inches
Depth to the top of the seasonal high water table: Greater than 2.5 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loess over till over residuum weathered from limestone
Permeability: Moderate
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The rooting depth of crops is restricted by bedrock.
- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.

- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- The rooting depth of plants may be restricted by bedrock.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Bedrock may interfere with the construction of haul roads and log landing sites.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building Sites

- The depth to bedrock and hardness of the bedrock greatly reduce the ease of excavation and increase the difficulty in constructing foundations and installing utilities.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs may be required to ensure satisfactory performance.

Septic Tank Absorption Fields

- Because of the limited depth to bedrock, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local Roads and Streets

- The depth to bedrock and hardness of the bedrock reduce the ease of excavation and increase the difficulty of constructing roads.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

Pasture and hayland suitability group: F-1
Hydric soil: No

MUF=Milton soils, channery variant, 25 to 50 percent slopes

Setting
Landform: Till plain
Position on the landform: Backslope

Map Unit composition
Milton variant and similar components: 90 percent

Similar Components:
limestone edges
short slopes over 50 percent

Map Unit Interpretive Groups
Land capability classification: 7e
Prime farmland: Not prime farmland

Soil Properties and Qualities

Available water capacity: About 3.2 inches to a depth of 30 inches

Cation-exchange capacity of the surface layer: 15 to 30 meq per 100 grams
Depth class: Moderately deep
Depth to root restrictive feature: Lithic bedrock: 20 to 40 inches
Depth to the top of the seasonal high water table: Greater than 2.5 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 4.0 to 8.0 percent
Parent material: Colluvium derived from limestone over residuum weathered from limestone
Permeability: Moderate
Potential frost action: Low
Shrink-swell potential: Moderate
Surface layer texture: Very channery silt loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during construction of haul roads and log landings.
- The high content of stones or boulders on the surface may obstruct the construction of haul roads and log landings.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The volume of rock fragments on the surface may reduce the traction of wheeled harvest equipment.
- The slope creates unsafe operating conditions and reduces the operating efficiency of harvesting and mechanical planting equipment.
- Stones or boulders on the surface obstruct the use of mechanical planting equipment.
- Because of the slope, use of equipment to prepare this site for planting and seeding is not practical.
- Because of the slope, the use of mechanical planting equipment is not practical.
- Rock fragments in the soil obstruct the use of mechanical planting equipment.
- Because of rock fragments, this soil is unsuited to mechanical site preparation for planting and seeding.
- A loss of soil productivity may occur following an episode of fire.

Building Sites

- The depth to bedrock and hardness of the bedrock greatly reduce the ease of excavation and increase the difficulty in constructing foundations and installing utilities.
- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- Because of the moderate content of rock fragments, excavation may be more difficult and cutbanks may become unstable. Excavations and trench walls may require reinforcement.

Septic Tank Absorption Fields

- Because of the limited depth to bedrock, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local Roads and Streets

- The depth to bedrock and hardness of the bedrock reduce the ease of excavation and increase the difficulty of constructing roads.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Because of the slope, designing local roads and streets is difficult.
- The high content of large stones affects the ease of excavation and grading.

Component Interpretive Groups

Pasture and hayland suitability group: F-2
Hydric soil: No

OcA=Ockley silt loam, 0 to 2 percent slopes

Setting
Landform: Outwash plain, Stream terrace
Position on the landform: Summit

Map Unit composition
Ockley and similar components: 90 percent

Similar Components:
Eldean
Rush

Map Unit Interpretive Groups
Land capability classification: 1
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

Available water capacity: About 7.8 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 3.0 to 15 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 0.5 to 3.0 percent
Parent material: Loess over loamy outwash
Permeability: Moderate in the solum and rapid in the substratum
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- This soil is well suited to pasture.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- A loss of soil productivity may occur following an episode of fire.

Building Sites

- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic Tank Absorption Fields

- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Pasture and hayland suitability group: A-1
Hydric soil: No

OcB=Ockley silt loam, 2 to 6 percent slopes

Setting
Landform: Stream terrace, Outwash plain
Position on the landform: Summit

Map Unit composition
Ockley and similar components: 90 percent

Similar Components:
Rush
Eldean

Map Unit Interpretive Groups
Land capability classification: 2e
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

Available water capacity: About 7.7 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 3.0 to 15 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 0.5 to 3.0 percent
Parent material: Loess over loamy outwash
Permeability: Moderate in the solum and rapid in the substratum
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Erosion control is needed when pastures are renovated.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- A loss of soil productivity may occur following an episode of fire.

Building Sites

- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic Tank Absorption Fields

- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Pasture and hayland suitability group: A-1
Hydric soil: No

OcB2=Ockley silt loam, 2 to 6 percent slopes, moderately eroded

Setting
Landform: Outwash plain, Stream terrace
Position on the landform: Summit

Map Unit composition
Ockley and similar components: 95 percent

Similar Components:
Eldean

Map Unit Interpretive Groups
Land capability classification: 2e
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

Available water capacity: About 7.8 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 3.0 to 15 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 0.5 to 3.0 percent
Parent material: Loess over loamy outwash
Permeability: Moderate in the solum and rapid in the substratum
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Erosion control is needed when pastures are renovated.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- A loss of soil productivity may occur following an episode of fire.

Building Sites

- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic Tank Absorption Fields

- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Pasture and hayland suitability group: A-1
Hydric soil: No

OdB=Ockley-Urban land complex, undulating

Setting
Landform: Stream terrace, Outwash plain
Position on the landform: Summit

Map Unit composition
Ockley and similar components: 45 percent
Urban land and similar components: 25 percent

Similar Components:
fill areas
Eldean
Rush

Map Unit Interpretive Groups
Land capability classification: 2e
Prime farmland: Not prime farmland

Ockley

Soil Properties and Qualities

Available water capacity: About 7.8 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 3.0 to 15 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 0.5 to 3.0 percent
Parent material: Loess over loamy outwash
Permeability: Moderate in the solum and rapid in the substratum
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Building Sites

- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic Tank Absorption Fields

- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Pasture and hayland suitability group: A-1
Hydric soil: No

Urban land

Use and Management Considerations

- Onsite investigation is needed to determine the suitability for specific uses.

Component Interpretive Groups

Pasture and hayland suitability group: Not rated
Hydric soil: No

OeB=Odell silt loam, 2 to 6 percent slopes

Setting
Landform: Moraine, Till plain
Position on the landform: Summit

Map Unit composition
Odell and similar components: 90 percent

Contrasting Components:
Brookston: 10 percent

Map Unit Interpretive Groups
Land capability classification: 2e
Prime farmland: Prime farmland if drained

Soil Properties and Qualities

Available water capacity: About 9.1 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 11 to 25 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: 0.5 to 1.5 feet
Water table kind: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Organic matter content in the surface layer: 2.0 to 4.0 percent
Parent material: Loess over loamy till
Permeability: Slow or moderately slow
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- The root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- Subsurface drainage helps to lower the seasonal high water table.

Pastureland

- Erosion control is needed when pastures are renovated.
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root systems of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by reducing root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of this soil by log trucks.

- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building Sites

- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. It is poorly suited to building site development and structures may need special design to avoid damage from wetness.

Septic Tank Absorption Fields

- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.
- The moderate permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.

Local Roads and Streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.

Component Interpretive Groups

Pasture and hayland suitability group: C-1
Hydric soil: No

Pa=Patton silty clay loam

Setting
Landform: Depression on lake plain

Map Unit composition
Patton and similar components: 90 percent

Similar Components:
Westland

silt loam subsoil

Map Unit Interpretive Groups
Land capability classification: 2w
Prime farmland: Prime farmland if drained

Soil Properties and Qualities

Available water capacity: About 9.1 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 22 to 31 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: 0.0 to 1.0 feet
Water table kind: Apparent
Ponding: Long
Depth of ponding: 0.0 to 0.5 feet
Drainage class: Very poorly drained
Flooding: None
Organic matter content in the surface layer: 3.0 to 5.0 percent
Parent material: Silty lacustrine deposits
Permeability: Slow or moderately slow
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silty clay loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- A combination of surface and subsurface drainage helps to remove excess water.

Pastureland

- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.

- The root systems of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by reducing root respiration.
- Standing water can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of this soil by log trucks.
- Ponding restricts the safe use of roads by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- Burning may destroy organic matter.

Building Sites

- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building maintenance may be needed. The soil is generally unsuited to building site development.

Septic Tank Absorption Fields

- Because of ponding, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local Roads and Streets

- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Pasture and hayland suitability group: C-1
Hydric soil: Yes

Pg=Pits, gravel

Setting
Landform: None assigned

Map Unit composition
Pits, gravel and similar components: 100 percent

Map Unit Interpretive Groups
Land capability classification: None assigned
Prime farmland: Not prime farmland

Use and Management Considerations

- Onsite investigation is needed to determine the suitability for specific uses.

Component Interpretive Groups

Pasture and hayland suitability group: Not rated
Hydric soil: No

Pu=Pits, quarry

Setting
Landform: None assigned

Map Unit composition
Pits, quarry and similar components: 100 percent

Map Unit Interpretive Groups
Land capability classification: None assigned
Prime farmland: Not prime farmland

Use and Management Considerations

- Onsite investigation is needed to determine the suitability for specific uses.

Component Interpretive Groups

Pasture and hayland suitability group: Not rated
Hydric soil: No

Ra=Ragsdale silty clay loam

Setting
Landform: Depression on till plain

Map Unit composition
Ragsdale and similar components: 96 percent

Similar Components:
Westland
silt loam surface layer

Contrasting Components:
Reesville: 4 percent

Map Unit Interpretive Groups
Land capability classification: 2w
Prime farmland: Prime farmland if drained

Soil Properties and Qualities

Available water capacity: About 9.6 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 19 to 30 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 96 inches
Depth to the top of the seasonal high water table: 0.0 to 1.0 feet
Water table kind: Apparent
Ponding: Long
Depth of ponding: 0.0 to 0.5 feet
Drainage class: Very poorly drained
Flooding: None
Organic matter content in the surface layer: 4.0 to 6.0 percent
Parent material: Loess over till
Permeability: Slow
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silty clay loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- A combination of surface and subsurface drainage helps to remove excess water.

Figure 8. The higher, better drained Miamian soils are used for housing and pasture while the flatter and more productive Ragsdale soils are being farmed more intensively. The Ragsdale soils have been artificially (tile) drained.

Pastureland

- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root systems of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by reducing root respiration.
- Standing water can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in

unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of this soil by log trucks.
- Ponding restricts the safe use of roads by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- A loss of soil productivity may occur following an episode of fire.

Building Sites

- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building maintenance may be needed. The soil is generally unsuited to building site development.

Septic Tank Absorption Fields

- Because of ponding, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local Roads and Streets

- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Pasture and hayland suitability group: C-1
Hydric soil: Yes

RbA=Randolph silt loam, 0 to 2 percent slopes

Setting
Landform: Till plain
Position on the landform: Summit

Map Unit composition
Randolph and similar components: 88 percent

Similar Components:
gently sloping soils

Similar Components:
Crosby: 5 percent
Fincastle: 2 percent
Millsdale: 5 percent

Map Unit Interpretive Groups
Land capability classification: 3w
Prime farmland: Prime farmland if drained

Soil Properties and Qualities

Available water capacity: About 5.2 inches to a depth of 37 inches
Cation-exchange capacity of the surface layer: 8.0 to 22 meq per 100 grams
Depth class: Moderately deep
Depth to root restrictive feature: Lithic bedrock: 20 to 40 inches
Depth to the top of the seasonal high water table: 0.5 to 1.5 feet
Water table kind: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Till over residuum weathered from limestone
Permeability: Moderately slow
Potential frost action: Moderate
Shrink-swell potential: High
Surface layer texture: Silt loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The rooting depth of crops is restricted by bedrock.
- Incorporating crop residue or other organic matter into the surface layer increases the

capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- The movement of water into subsurface drains is restricted. Drainage guides can be used to determine tile spacing requirements.
- Subsurface drainage helps to lower the seasonal high water table.
- The depth to bedrock may restrict the gradient needed to provide adequate drainage from subsurface systems.

Pastureland

- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The rooting depth of plants may be restricted by bedrock.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by reducing root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Bedrock may interfere with the construction of haul roads and log landing sites.
- Soil wetness may limit the use of this soil by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building Sites

- The depth to bedrock and hardness of the bedrock greatly reduce the ease of excavation and increase the difficulty in constructing foundations and installing utilities.
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. It is poorly suited to building site development and structures may need special design to avoid damage from wetness.
- Severe shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures generally require special design and construction techniques or intensive maintenance.

Septic Tank Absorption Fields

- Because of the limited depth to bedrock, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local Roads and Streets

- The depth to bedrock and hardness of the bedrock reduce the ease of excavation and increase the difficulty of constructing roads.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Pasture and hayland suitability group: C-2
Hydric soil: No

RdA=Raub silt loam, 0 to 2 percent slopes

Setting
Landform: Till plain

Map Unit composition
Raub and similar components: 90 percent

Contrasting Components:
Ragsdale: 10 percent

Map Unit Interpretive Groups
Land capability classification: 2w
Prime farmland: Prime farmland if drained

Soil Properties and Qualities

Available water capacity: About 8.8 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 12 to 25 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: 0.5 to 1.5 feet
Water table kind: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Organic matter content in the surface layer: 2.0 to 4.0 percent
Parent material: Loess over till
Permeability: Moderate in the solum and slow in the substratum
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- Subsurface drainage helps to lower the seasonal high water table.

Pastureland

- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root systems of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by reducing root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of this soil by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building Sites

- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. It is poorly suited to building site development and structures may need special design to avoid damage from wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic Tank Absorption Fields

- The seasonal high water table in areas of this soil greatly limits the absorption and

proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.
- The moderate permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Pasture and hayland suitability group: C-1
Hydric soil: No

RdB=Raub silt loam, 2 to 6 percent slopes

Setting
Landform: Till plain

Map Unit composition
Raub and similar components: 96 percent

Similar Components:
moderately well drained soils
Xenia

Contrasting Components:
Ragsdale: 4 percent

Map Unit Interpretive Groups
Land capability classification: 2e
Prime farmland: Prime farmland if drained

Soil Properties and Qualities

Available water capacity: About 8.8 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 12 to 25 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: 0.5 to 1.5 feet
Water table kind: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Organic matter content in the surface layer: 2.0 to 4.0 percent
Parent material: Loess over till
Permeability: Moderate in the solum and slow in the substratum
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- The root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- Subsurface drainage helps to lower the seasonal high water table.

Pastureland

- Erosion control is needed when pastures are renovated.
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root systems of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by reducing root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of this soil by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building Sites

- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. It is poorly suited to building site development and structures may need special design to avoid damage from wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic Tank Absorption Fields

- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.
- The moderate permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Pasture and hayland suitability group: C-1
Hydric soil: No

ReA=Reesville silt loam, 0 to 2 percent slopes

Setting
Landform: Till plain, Moraine
Position on the landform: Summit

Map Unit composition
Reesville and similar components: 96 percent

Similar Components:
Fincastle
slopes of 3 to 4 percent

Contrasting Components:
Ragsdale: 4 percent

Map Unit Interpretive Groups
Land capability classification: 2w
Prime farmland: Prime farmland if drained

Soil Properties and Qualities

Available water capacity: About 9.3 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 10 to 26 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 72 inches
Depth to the top of the seasonal high water table: 0.5 to 1.5 feet
Water table kind: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Organic matter content in the surface layer: 2.0 to 4.0 percent
Parent material: Loess over till
Permeability: Moderately slow or moderate
Potential frost action: High
Shrink-swell potential: Moderate

Surface layer texture: Silt loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- Subsurface drainage helps to lower the seasonal high water table.

Pastureland

- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root systems of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by reducing root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of this soil by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building Sites

- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. It is poorly suited to building site development and structures may need special design to avoid damage from wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic Tank Absorption Fields

- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Pasture and hayland suitability group: C-1
Hydric soil: No

RhB=Ritchey silt loam, 2 to 6 percent slopes

Setting
Landform: Till plain
Position on the landform: Summit

Map Unit composition
Ritchey and similar components: 90 percent

Similar Components:
Milton
slopes of less than 2 percent

Map Unit Interpretive Groups
Land capability classification: 3e
Prime farmland: Not prime farmland

Soil Properties and Qualities

Available water capacity: About 2.6 inches to a depth of 18 inches
Cation-exchange capacity of the surface layer: 13 to 22 meq per 100 grams
Depth class: Shallow
Depth to root restrictive feature: Lithic bedrock: 10 to 20 inches
Depth to the top of the seasonal high water table: Greater than 1.5 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Till over residuum weathered from limestone
Permeability: Moderate
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The rooting depth of crops is restricted by bedrock and a high clay content.
- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- The rooting depth of plants may be restricted by bedrock.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Bedrock may interfere with the construction of haul roads and log landing sites.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- Rock fragments in the soil obstruct the use of mechanical planting equipment.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building Sites

- The depth to bedrock and hardness of the bedrock greatly reduce the ease of excavation and increase the difficulty in constructing foundations and installing utilities.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic Tank Absorption Fields

- Because of the limited depth to bedrock, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local Roads and Streets

- Because of the limited depth to hard bedrock, excavation is difficult.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Pasture and hayland suitability group: E-1
Hydric soil: No

RhC=Ritchey silt loam, 6 to 12 percent slopes

Setting
Landform: Till plain
Position on the landform: Shoulder, Footslope

Map Unit composition
Ritchey and similar components: 85 percent

Similar Components:
Milton
bedrock within 10 inches
darker colored soils in drangeways

Map Unit Interpretive Groups
Land capability classification: 4e
Prime farmland: Farmland of local importance

Soil Properties and Qualities

Available water capacity: About 2.6 inches to a depth of 18 inches
Cation-exchange capacity of the surface layer: 13 to 22 meq per 100 grams
Depth class: Shallow
Depth to root restrictive feature: Lithic bedrock: 10 to 20 inches
Depth to the top of the seasonal high water table: Greater than 1.5 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Till over residuum weathered from limestone
Permeability: Moderate
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The rooting depth of crops is restricted by bedrock and a high clay content.
- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- The rooting depth of plants may be restricted by bedrock.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Bedrock may interfere with the construction of haul roads and log landing sites.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- Rock fragments in the soil obstruct the use of mechanical planting equipment.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building Sites

- The depth to bedrock and hardness of the bedrock greatly reduce the ease of excavation and increase the difficulty in constructing foundations and installing utilities.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs may be required to ensure satisfactory performance.

Septic Tank Absorption Fields

- Because of the limited depth to bedrock, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local Roads and Streets

- Because of the limited depth to hard bedrock, excavation is difficult.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

Pasture and hayland suitability group: E-1
Hydric soil: No

RhD=Ritchey silt loam, 12 to 18 percent slopes

Setting
Landform: Till plain
Position on the landform: Footslope

Map Unit composition
Ritchey and similar components: 85 percent

Similar Components:
Milton
bedrock within 10 inches
bedrock outcrop

Map Unit Interpretive Groups
Land capability classification: 7e
Prime farmland: Farmland of local importance

Soil Properties and Qualities

Available water capacity: About 2.6 inches to a depth of 18 inches
Cation-exchange capacity of the surface layer: 13 to 22 meq per 100 grams
Depth class: Shallow
Depth to root restrictive feature: Lithic bedrock: 10 to 20 inches
Depth to the top of the seasonal high water table: Greater than 1.5 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Till over residuum weathered from limestone

Permeability: Moderate
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The rooting depth of crops is restricted by bedrock and a high clay content.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- The rooting depth of plants may be restricted by bedrock.

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during construction of haul roads and log landings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Bedrock may interfere with the construction of haul roads and log landing sites.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- Rock fragments in the soil obstruct the use of mechanical planting equipment.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- The slope restricts the use of equipment for preparing this site for planting and seeding.

Building Sites

- The depth to bedrock and hardness of the bedrock greatly reduce the ease of excavation and increase the difficulty in constructing foundations and installing utilities.
- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic Tank Absorption Fields

- Because of the limited depth to bedrock, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local Roads and Streets

- Because of the limited depth to hard bedrock, excavation is difficult.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

Pasture and hayland suitability group: E-1
Hydric soil: No

RhE2=Ritchey silt loam, 18 to 25 percent slopes, moderately eroded

Setting
Landform: Till plain
Position on the landform: Backslope

Map Unit composition
Ritchey and similar components: 90 percent

Similar Components:
bedrock within 10 inches
darker colored soils in drainageways

Map Unit Interpretive Groups
Land capability classification: 7e
Prime farmland: Not prime farmland

Soil Properties and Qualities

Available water capacity: About 2.6 inches to a depth of 18 inches
Cation-exchange capacity of the surface layer: 13 to 22 meq per 100 grams
Depth class: Shallow
Depth to root restrictive feature: Lithic bedrock: 10 to 20 inches
Depth to the top of the seasonal high water table: Greater than 1.5 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Till over residuum weathered from limestone
Permeability: Moderate
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Very high
Wind erosion hazard: Slight

Use and Management Considerations

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- The rooting depth of plants may be restricted by bedrock.

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during construction of haul roads and log landings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Bedrock may interfere with the construction of haul roads and log landing sites.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

- The slope creates unsafe operating conditions and reduces the operating efficiency of harvesting and mechanical planting equipment.
- The slope may restrict the use of some mechanical planting equipment.
- Rock fragments in the soil obstruct the use of mechanical planting equipment.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- The slope restricts the use of equipment for preparing this site for planting and seeding.

Building Sites

- The depth to bedrock and hardness of the bedrock greatly reduce the ease of excavation and increase the difficulty in constructing foundations and installing utilities.
- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic Tank Absorption Fields

- Because of the limited depth to bedrock, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local Roads and Streets

- Because of the limited depth to hard bedrock, excavation is difficult.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

Pasture and hayland suitability group: E-1
Hydric soil: No

RkE=Rodman gravelly loam, 18 to 35 percent slopes

Setting
Landform: Kame moraine
Position on the landform: Backslope

Map Unit composition
Rodman and similar components: 85 percent

Contrasting Components:
Eldean soils: 15 percent

Map Unit Interpretive Groups
Land capability classification: 7s
Prime farmland: Not prime farmland

Soil Properties and Qualities

Available water capacity: About 1.3 inches to a depth of 12 inches
Cation-exchange capacity of the surface layer: 5.0 to 18 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Strongly contrasting textural stratification: 10 to 20 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Ponding: None
Drainage class: Excessively drained
Flooding: None
Organic matter content in the surface layer: 2.0 to 4.0 percent
Parent material: Sandy and gravelly outwash
Permeability: Moderately rapid in the upper part of the soil and very rapid in the underlying material
Potential frost action: Low
Shrink-swell potential: Low
Surface layer texture: Gravelly loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight

Use and Management Considerations

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.

- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- The slope may restrict the use of some farm equipment.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during construction of haul roads and log landings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Sandy layers in this soil increase the maintenance of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope creates unsafe operating conditions and reduces the operating efficiency of harvesting and mechanical planting equipment.
- Because of the slope, the use of mechanical planting equipment is not practical.
- Rock fragments in the soil obstruct the use of mechanical planting equipment.
- The slope restricts the use of equipment for preparing this site for planting and seeding.

Building Sites

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic Tank Absorption Fields

- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
- Because of the slope, special design and installation techniques are needed for the effluent distribution lines.

Local Roads and Streets

- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

Pasture and hayland suitability group: B-1
Hydric soil: No

RpA=Ross loam, 0 to 1 percent slopes, occasionally flooded

Setting
Landform: Flood Plain

Map Unit composition
Ross and similar components: 95 percent

Contrasting Components:
Sloan soils: 5 percent

Map Unit Interpretive Groups
Land capability classification: 2w
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

Available water capacity: About 9.8 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 12 to 26 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 80 inches
Depth to the top of the seasonal high water table: 4.0 to 6.0 feet

Water table kind: Apparent
Ponding: None
Drainage class: Well drained
Flooding: Occasional
Organic matter content in the surface layer: 3.0 to 5.0 percent
Parent material: Loamy alluvium
Permeability: Moderate in the solum and moderate or moderately rapid in the substratum
Potential frost action: Moderate
Shrink-swell potential: Low
Surface layer texture: Loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations
Cropland

- Measures that protect the soil from scouring and minimize the loss of crop residue by floodwaters are needed.
- Small grain crops may be damaged by flooding in winter and spring.

Pastureland

- Forage production can be improved by seeding grass-legume mixtures that are tolerant of flooding.
- Sediment left on forage plants after a flood event may reduce palatability and forage intake by the grazing animal.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Flooding may result in damage to haul roads and increased maintenance costs.
- Flooding restricts the safe use of roads by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building Sites

- Under normal weather conditions, this soil is subject to occasional flooding. The flooding may result in physical damage and costly repairs to buildings. This soil is generally unsuited to homesites. Special design of some structures, such as farm outbuildings, may be needed to prevent damage caused by flooding.

Septic Tank Absorption Fields

- This soil is generally unsuited to septic tank absorption fields. The flooding in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Rapidly moving floodwaters may damage some components of septic systems.

Local Roads and Streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.
- Special design of roads and bridges is needed to prevent the damage caused by flooding.

Component Interpretive Groups

Pasture and hayland suitability group: A-5
Hydric soil: No

RqA=Ross silt loam, 0 to 1 percent slopes, frequently flooded

Setting
Landform: Flood Plain

Map Unit composition
Ross and similar components: 95 percent

Contrasting Components:
Sloan soils: 5 percent

Map Unit Interpretive Groups
Land capability classification: 2w
Prime farmland: Prime farmland if protected from flooding or not frequently flooded during the growing season

Soil Properties and Qualities

Available water capacity: About 9.7 inches to a depth of 60 inches

Cation-exchange capacity of the surface layer: 12 to 26 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 80 inches
Depth to the top of the seasonal high water table: 4.0 to 6.0 feet
Water table kind: Apparent
Ponding: None
Drainage class: Well drained
Flooding: Frequent
Organic matter content in the surface layer: 3.0 to 5.0 percent
Parent material: Loamy alluvium
Permeability: Moderate in the solum and moderate or moderately rapid in the substratum
Potential frost action: Moderate
Shrink-swell potential: Low
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Controlling traffic can minimize soil compaction.
- Winter grain crops are commonly not grown because of frequent flooding.
- Measures that protect the soil from scouring and minimize the loss of crop residue by floodwaters are needed.

Pastureland

- Forage production can be improved by seeding grass-legume mixtures that are tolerant of flooding.
- Sediment left on forage plants after a flood event may reduce palatability and forage intake by the grazing animal.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Flooding may result in damage to haul roads and increased maintenance costs.
- Flooding restricts the safe use of roads by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building Sites

- The frequent flooding in areas of this soil greatly increases the risk of damage associated with floodwaters. Because of the flooding, this soil is generally unsuited to building site development.

Septic Tank Absorption Fields

- This soil is generally unsuited to septic tank absorption fields. The flooding in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Rapidly moving floodwaters may damage some components of septic systems.

Local Roads and Streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Special design of roads and bridges is needed to prevent the damage caused by flooding.

Component Interpretive Groups

Pasture and hayland suitability group: A-5
Hydric soil: No

Rs=Ross loam

Setting
Landform: Terrace, Flood plain

Map Unit composition
Ross and similar components: 85 percent

Similar Components:
Genesee
lighter colored surface layer

Contrasting Components:
Sloan: 5 percent

Map Unit Interpretive Groups
Land capability classification: 2w
Prime farmland: Prime farmland if protected from flooding or not frequently flooded during the growing season

Soil Properties and Qualities

Available water capacity: About 10.6 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 12 to 26 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 78 inches
Depth to the top of the seasonal high water table: 4.0 to 6.0 feet
Water table kind: Apparent
Ponding: None
Drainage class: Well drained
Flooding: Occasional
Organic matter content in the surface layer: 3.0 to 5.0 percent
Parent material: Loamy alluvium
Permeability: Moderately slow or moderate
Potential frost action: Moderate
Shrink-swell potential: Low
Surface layer texture: Loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Measures that protect the soil from scouring and minimize the loss of crop residue by floodwaters are needed.
- Small grain crops may be damaged by flooding in winter and spring.

Pastureland

- Forage production can be improved by seeding grass-legume mixtures that are tolerant of flooding.
- Sediment left on forage plants after a flood event may reduce palatability and forage intake by the grazing animal.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Flooding may result in damage to haul roads and increased maintenance costs.
- Flooding restricts the safe use of roads by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building Sites

- Under normal weather conditions, this soil is subject to occasional flooding. The flooding may result in physical damage and costly repairs to buildings. This soil is generally unsuited to homesites. Special design of some structures, such as farm outbuildings, may be needed to prevent damage caused by flooding.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic Tank Absorption Fields

- This soil is generally unsuited to septic tank absorption fields. The flooding in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Rapidly moving floodwaters may damage some components of septic systems.

Local Roads and Streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.
- Special design of roads and bridges is needed to prevent the damage caused by flooding.

Component Interpretive Groups

Pasture and hayland suitability group: A-5
Hydric soil: No

RtA=Rush silt loam, 0 to 2 percent slopes

Setting
Landform: Outwash plain, Terrace
Position on the landform: Summit

Map Unit composition
Rush and similar components: 85 percent

Similar Components:
Ockley
Wea
loam till substratum

Map Unit Interpretive Groups
Land capability classification: 1
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

Available water capacity: About 9.1 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 5.0 to 16 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 75 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 0.5 to 2.0 percent
Parent material: Loess over loamy outwash
Permeability: Moderate in the solum and rapid in the substratum
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations
Cropland

- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- The root systems of plants may be damaged by frost action.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- A loss of soil productivity may occur following an episode of fire.

Building Sites

- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic Tank Absorption Fields

- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and

streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Pasture and hayland suitability group: A-6
Hydric soil: No

RtB=Rush silt loam, 2 to 6 percent slopes

Setting
Landform: Outwash plain, Terrace
Position on the landform: Summit

Map Unit composition
Rush and similar components: 90 percent

Similar Components:
Ockley
moderately eroded areas

Map Unit Interpretive Groups
Land capability classification: 2e
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

Available water capacity: About 9.0 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 5.0 to 16 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 75 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 0.5 to 2.0 percent
Parent material: Loess over loamy outwash
Permeability: Moderate in the solum and rapid in the substratum
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Erosion control is needed when pastures are renovated.
- The root systems of plants may be damaged by frost action.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- A loss of soil productivity may occur following an episode of fire.

Building Sites

- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow

excavations and cutbanks are susceptible to caving.

Septic Tank Absorption Fields

- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Pasture and hayland suitability group: A-6
Hydric soil: No

RuA=Russell silt loam, 0 to 2 percent slopes

Setting
Landform: Till plain
Position on the landform: Summit

Map Unit composition
Russell and similar components: 95 percent

Similar Components:
Miamian

Map Unit Interpretive Groups

Land capability classification: 1
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

Available water capacity: About 8.2 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 5.0 to 19 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 0.5 to 2.0 percent
Parent material: Loess over loamy till
Permeability: Slow or moderately slow
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- This soil is well suited to pasture.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- A loss of soil productivity may occur following an episode of fire.

Building Sites

- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

- This soil is well suited to use as building sites.

Septic Tank Absorption Fields

- This soil is well suited to use as a site for septic tank absorption fields.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Pasture and hayland suitability group: A-1
Hydric soil: No

RvB=Russell-Miamian silt loams, 2 to 6 percent slopes

Setting
Landform: Till plain
Position on the landform: Summit

Map Unit composition
Russell and similar components: 55 percent
Miamian and similar components: 30 percent

Similar Components:
Xenia
moderately eroded areas
limestone substratum soils

Map Unit Interpretive Groups
Land capability classification: 2e
Prime farmland: All areas are prime farmland

Russell

Soil Properties and Qualities

Available water capacity: About 8.2 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 5.0 to 19 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 0.5 to 2.0 percent
Parent material: Loess over loamy till
Permeability: Slow or moderately slow
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- The root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Erosion control is needed when pastures are renovated.
- The root systems of plants may be damaged by frost action.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

- A loss of soil productivity may occur following an episode of fire.

Building Sites

- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- This soil is well suited to use as building sites.

Septic Tank Absorption Fields

- This soil is well suited to use as a site for septic tank absorption fields.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Pasture and hayland suitability group: A-6
Hydric soil: No

Miamian

Soil Properties and Qualities

Available water capacity: About 7.7 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 10 to 18 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loess over loamy till
Permeability: Slow or moderately slow
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Erosion control is needed when pastures are renovated.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building Sites

- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic Tank Absorption Fields

- This soil is well suited to use as a site for septic tank absorption fields.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Pasture and hayland suitability group: A-1
Hydric soil: No

RvB2=Russell-Miamian silt loams, 2 to 6 percent slopes, moderately eroded

Setting
Landform: Till plain
Position on the landform: Summit

Map Unit composition
Russell and similar components: 50 percent
Miamian and similar components: 40 percent

Similar Components:
Xenia

Map Unit Interpretive Groups
Land capability classification: 2e
Prime farmland: All areas are prime farmland

Russell

Soil Properties and Qualities

Available water capacity: About 8.2 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 5.0 to 19 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 0.5 to 2.0 percent
Parent material: Loess over loamy till
Permeability: Slow or moderately slow
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- The root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Erosion control is needed when pastures are renovated.
- The root systems of plants may be damaged by frost action.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

- A loss of soil productivity may occur following an episode of fire.

Building Sites

- This soil is well suited to use as building sites.

Septic Tank Absorption Fields

- This soil is well suited to use as a site for septic tank absorption fields.

Local Roads and Streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Pasture and hayland suitability group: A-6
Hydric soil: No

Miamian

Soil Properties and Qualities

Available water capacity: About 7.7 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 10 to 18 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None

Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loess over loamy till
Permeability: Slow or moderately slow
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Erosion control is needed when pastures are renovated.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building Sites

- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic Tank Absorption Fields

- This soil is well suited to use as a site for septic tank absorption fields.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Pasture and hayland suitability group: A-1
Hydric soil: No

RwB2=Russell-Xenia silt loams, 2 to 6 percent slopes, eroded

Setting
Landform: Slight rises on the Wisconsinan till plain
Position on the landform: Summits and shoulders

Map Unit composition
Russell and similar components: 60 percent
Xenia and similar components: 20 percent

Contrasting Components:
Miamian soils: 10 percent
Celina soils: 5 percent
Fincastle soils: 5 percent

Map Unit Interpretive Groups
Land capability classification: 2e
Prime farmland: All areas are prime farmland

Russell

Soil Properties and Qualities

Available water capacity: About 9.1 inches to a depth of 49 inches
Cation-exchange capacity of the surface layer: 5.0 to 19 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Dense material: 40 to 60 inches
Depth to the top of the seasonal high water table: 3.5 to 6.0 feet
Water table kind: Perched
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 0.5 to 2.0 percent
Parent material: Loess and the underlying till
Permeability: Moderate in the solum and slow in the underlying material.
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight
Distinctive soil property: 22 to 40 inches of loess over till material
Removal of part of original surface layer

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- The root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Erosion control is needed when pastures are renovated.
- The root systems of plants may be damaged by frost action.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and

damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- Burning may destroy organic matter.

Building Sites

- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent damage caused by wetness.
- In some areas the dense nature of the subsurface layer increases the difficulty of digging and compacting the soil material in shallow excavations.

Septic Tank Absorption Fields

- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.
- The moderate permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Pasture and hayland suitability group: A-6
Hydric soil: No

Xenia

Soil Properties and Qualities

Available water capacity: About 8.1 inches to a depth of 43 inches
Cation-exchange capacity of the surface layer: 6.0 to 20 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Dense material: 40 to 60 inches
Depth to the top of the seasonal high water table: 2.0 to 3.5 feet
Water table kind: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loess and the underlying till
Permeability: Moderate in the upper part of the solum and slow in the underlying dense till
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight
Distinctive soil property: 22 to 40 inches of loess over till material
Removal of part of original surface layer

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- The root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Erosion control is needed when pastures are renovated.

- The root systems of plants may be damaged by frost action.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building Sites

- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. It is poorly suited to building site development and structures may need special design to avoid damage from wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic Tank Absorption Fields

- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.
- The moderate permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Pasture and hayland suitability group: A-6
Hydric soil: No

SkA=Sligo silt loam, 0 to 1 percent slopes, occasionally flooded

Setting
Landform: Flood Plain

Map Unit composition
Sligo and similar components: 90 percent

Contrasting Components:
Sloan soils: 5 percent
Stringley soils: 5 percent

Map Unit Interpretive Groups
Land capability classification: 2w
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

Available water capacity: About 12.0 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 9.0 to 15 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 80 inches
Depth to the top of the seasonal high water table: 2.5 to 3.5 feet
Water table kind: Apparent
Ponding: None
Drainage class: Moderately well drained
Flooding: Occasional
Organic matter content in the surface layer: 1.0 to 2.0 percent
Parent material: Loamy alluvium
Permeability: Moderate in the upper part and rapid in the lower part
Potential frost action: Moderate
Shrink-swell potential: Low
Surface layer texture: Loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Measures that protect the soil from scouring and minimize the loss of crop residue by floodwaters are needed.
- Small grain crops may be damaged by flooding in winter and spring.

Pastureland

- Forage production can be improved by seeding grass-legume mixtures that are tolerant of flooding.
- Sediment left on forage plants after a flood event may reduce palatability and forage intake by the grazing animal.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Flooding may result in damage to haul roads and increased maintenance costs.
- Flooding restricts the safe use of roads by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- A loss of soil productivity may occur following an episode of fire.

Building Sites

- Under normal weather conditions, this soil is subject to occasional flooding. The flooding may result in physical damage and costly repairs to buildings. This soil is generally unsuited to homesites. Special design of some structures, such as farm outbuildings, may be needed to prevent damage caused by flooding.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic Tank Absorption Fields

- This soil is generally unsuited to septic tank absorption fields. The flooding in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Rapidly moving floodwaters may damage some components of septic systems.

Local Roads and Streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.
- Special design of roads and bridges is needed to prevent the damage caused by flooding.

Component Interpretive Groups

Pasture and hayland suitability group: A-5
Hydric soil: No

SlA=Sleeth silt loam, 0 to 2 percent slopes

Setting

Landform: Outwash terrace, Stream terrace, Outwash plain

Map Unit composition

Sleeth and similar components: 85 percent

Similar Components:

Thackery
areas with till substratum

Contrasting Components:

Westland soils: 5 percent

Map Unit Interpretive Groups

Land capability classification: 2w
Prime farmland: Prime farmland if drained

Soil Properties and Qualities

Available water capacity: About 7.8 inches to a depth of 60 inches

Cation-exchange capacity of the surface layer: 5.0 to 19 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: 0.5 to 1.5 feet
Water table kind: Apparent
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Organic matter content in the surface layer: 0.5 to 3.0 percent
Parent material: Loamy outwash over sandy and gravelly outwash
Permeability: Moderate in the loamy outwash and rapid in the underlying gravelly and sany outwash
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- Subsurface drainage helps to lower the seasonal high water table.

Pastureland

- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root systems of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by reducing root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of this soil by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- A loss of soil productivity may occur following an episode of fire.

Building Sites

- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. It is poorly suited to building site development and structures may need special design to avoid damage from wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic Tank Absorption Fields

- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Pasture and hayland suitability group: C-1
Hydric soil: No

SnA=Sloan silt loam, sandy substratum, 0 to 1 percent slopes, occasionally flooded

Setting
Landform: Flood Plain

Map Unit composition
Sloan and similar components: 90 percent

Contrasting Components:
Ross soils: 5 percent
Sligo soils: 5 percent

Map Unit Interpretive Groups
Land capability classification: 3w
Prime farmland: Prime farmland if drained

Soil Properties and Qualities

Available water capacity: About 12.1 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 13 to 26 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 80 inches
Depth to the top of the seasonal high water table: 0.0 to 1.0 feet
Water table kind: Apparent
Ponding: Very long
Depth of ponding: 0.0 to 1.0 feet
Drainage class: Very poorly drained
Flooding: Occasional
Organic matter content in the surface layer: 3.0 to 6.0 percent
Parent material: Loamy alluvium
Permeability: Moderate or moderately slow
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Negligible
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- Measures that protect the soil from scouring and minimize the loss of crop residue by floodwaters are needed.
- Small grain crops may be damaged by flooding in winter and spring.
- A combination of surface and subsurface drainage helps to remove excess water.

Pastureland

- Forage production can be improved by seeding grass-legume mixtures that are tolerant of flooding.
- Sediment left on forage plants after a flood event may reduce palatability and forage intake by the grazing animal.
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root systems of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by reducing root respiration.
- Standing water can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in

unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Flooding may result in damage to haul roads and increased maintenance costs.
- Soil wetness may limit the use of this soil by log trucks.
- Flooding restricts the safe use of roads by log trucks.
- Ponding restricts the safe use of roads by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building Sites

- Under normal weather conditions, this soil is subject to occasional flooding. The flooding may result in physical damage and costly repairs to buildings. This soil is generally unsuited to homesites. Special design of some structures, such as farm outbuildings, may be needed to prevent damage caused by flooding.
- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building maintenance may be needed. The soil is generally unsuited to building site development.

Septic Tank Absorption Fields

- This soil is generally unsuited to septic tank absorption fields. The flooding in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Rapidly moving floodwaters may damage some components of septic systems.
- Because of ponding, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local Roads and Streets

- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
- Special design of roads and bridges is needed to prevent the damage caused by flooding.

Component Interpretive Groups

Pasture and hayland suitability group: C-3
Hydric soil: Yes

So=Sloan silty clay loam

Setting
Landform: Flood plain

Map Unit composition
Sloan and similar components: 80 percent

Similar Components:
silt loam surface layer
high water table year round

Contrasting Components:
Algiers soils: 4 percent
Eel soils: 4 percent
Ross soils: 4 percent

Map Unit Interpretive Groups
Land capability classification: 3w
Prime farmland: Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season

Soil Properties and Qualities

Available water capacity: About 11.2 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 19 to 29 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: 0.0 to 1.0 feet

Water table kind: Apparent
Ponding: None
Drainage class: Very poorly drained

Flooding: Frequent
Organic matter content in the surface layer: 3.0 to 6.0 percent
Parent material: Loamy alluvium
Permeability: Moderately slow or moderate
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silty clay loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- Winter grain crops are commonly not grown because of frequent flooding.
- Measures that protect the soil from scouring and minimize the loss of crop residue by floodwaters are needed.
- Subsurface drainage helps to lower the seasonal high water table.

Pastureland

- Forage production can be improved by seeding grass-legume mixtures that are tolerant of flooding.
- Sediment left on forage plants after a flood event may reduce palatability and forage intake by the grazing animal.
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root systems of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by reducing root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Flooding may result in damage to haul roads and increased maintenance costs.
- Soil wetness may limit the use of this soil by log trucks.
- Flooding restricts the safe use of roads by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- A loss of soil productivity may occur following an episode of fire.

Building Sites

- The frequent flooding in areas of this soil greatly increases the risk of damage associated with floodwaters. Because of the flooding, this soil is generally unsuited to building site development.

Septic Tank Absorption Fields

- This soil is generally unsuited to septic tank absorption fields. The flooding in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Rapidly moving floodwaters may damage some components of septic systems.
- Because of the seasonal high water table, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.

- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
- Special design of roads and bridges is needed to prevent the damage caused by flooding.

Component Interpretive Groups

Pasture and hayland suitability group: C-3
Hydric soil: Yes

Sp=Sloan-Fill land complex

Setting
Landform: None assigned

Map Unit composition
Fill land and similar components: 50 percent
Sloan and similar components: 50 percent

Map Unit Interpretive Groups
Land capability classification: None assigned
Prime farmland: Not prime farmland

Fill land

Soil Properties and Qualities

Available water capacity: About 60 inches
Cation-exchange capacity of the surface layer: ---
Depth class: Very deep
Depth to root restrictive feature: Greater than
Depth to the top of the seasonal high water table: Greater than 6 feet
Ponding: None
Drainage class: ---
Flooding: ---
Organic matter content in the surface layer:
Parent material:
Permeability: Very slow
Potential frost action: Not rated
Shrink-swell potential: Not rated
Surface layer texture: ---
Potential for surface runoff:
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Component Interpretive Groups

Pasture and hayland suitability group: Not rated
Hydric soil: Unranked

Sloan

Soil Properties and Qualities

Available water capacity: About 11.2 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 19 to 29 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: 0.0 to 1.0 feet
Water table kind: Apparent
Ponding: None
Drainage class: Very poorly drained
Flooding: Frequent
Organic matter content in the surface layer: 3.0 to 6.0 percent
Parent material: Loamy alluvium
Permeability: Moderately slow or moderate
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silty clay loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

- Winter grain crops are commonly not grown because of frequent flooding.
- Measures that protect the soil from scouring and minimize the loss of crop residue by floodwaters are needed.
- Subsurface drainage helps to lower the seasonal high water table.

Pastureland

- Forage production can be improved by seeding grass-legume mixtures that are tolerant of flooding.
- Sediment left on forage plants after a flood event may reduce palatability and forage intake by the grazing animal.
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root systems of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by reducing root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Flooding may result in damage to haul roads and increased maintenance costs.
- Soil wetness may limit the use of this soil by log trucks.
- Flooding restricts the safe use of roads by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- A loss of soil productivity may occur following an episode of fire.

Building Sites

- The frequent flooding in areas of this soil greatly increases the risk of damage associated with floodwaters. Because of the flooding, this soil is generally unsuited to building site development.

Septic Tank Absorption Fields

- This soil is generally unsuited to septic tank absorption fields. The flooding in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Rapidly moving floodwaters may damage some components of septic systems.
- Because of the seasonal high water table, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
- Special design of roads and bridges is needed to prevent the damage caused by flooding.

Component Interpretive Groups

Pasture and hayland suitability group: C-3
Hydric soil: Yes

Sr=Sloan-Urban land complex

Setting
Landform: None assigned

Map Unit composition
Urban land and similar components: 65 percent
Sloan and similar components: 35 percent

Map Unit Interpretive Groups
Land capability classification: None assigned
Prime farmland: Not prime farmland

Urban land

Use and Management Considerations

- Onsite investigation is needed to determine the suitability for specific uses.

Component Interpretive Groups

Pasture and hayland suitability group: Not rated
Hydric soil: Unranked

Sloan

Soil Properties and Qualities

Available water capacity: About 11.2 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 19 to 29 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: 0.0 to 1.0 feet
Water table kind: Apparent
Ponding: None
Drainage class: Very poorly drained
Flooding: Frequent
Organic matter content in the surface layer: 3.0 to 6.0 percent
Parent material: Loamy alluvium
Permeability: Moderately slow or moderate
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silty clay loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Building Sites

- The frequent flooding in areas of this soil greatly increases the risk of damage associated with floodwaters. Because of the flooding, this soil is generally unsuited to building site development.

Septic Tank Absorption Fields

- This soil is generally unsuited to septic tank absorption fields. The flooding in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Rapidly moving floodwaters may damage some components of septic systems.
- Because of the seasonal high water table, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
- Special design of roads and bridges is needed to prevent the damage caused by flooding.

Component Interpretive Groups

Pasture and hayland suitability group: C-3
Hydric soil: Yes

ThA=Thackery silt loam, 0 to 2 percent slopes

Setting
Landform: Stream terrace

Map Unit composition

Thackery and similar components: 80 percent

Similar Components:
Ockley
Sleeth
till substratum

Contrasting Components:
Westland soils: 5 percent

Map Unit Interpretive Groups
Land capability classification: 1
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

Available water capacity: About 7.3 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 8.0 to 21 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 72 inches
Depth to the top of the seasonal high water table: 1.5 to 3.0 feet
Water table kind: Apparent
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Silty alluvium over loamy outwash
Permeability: Moderate in the solum and rapid in the substratum
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- This soil is well suited to pasture.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building Sites

- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. It is poorly suited to building site development and structures may need special design to avoid damage from wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic Tank Absorption Fields

- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Pasture and hayland suitability group: A-1
Hydric soil: No

ThB=Thackery silt loam, 2 to 6 percent slopes

Setting
Landform: Stream terrace

Map Unit composition
Thackery and similar components: 90 percent

Similar Components:
Ockley

Contrasting Components:
Westland soils: 5 percent

Map Unit Interpretive Groups
Land capability classification: 2e
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

Available water capacity: About 7.3 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 8.0 to 21 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 72 inches
Depth to the top of the seasonal high water table: 1.5 to 3.0 feet
Water table kind: Apparent
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Silty alluvium over loamy outwash
Permeability: Moderate in the solum and rapid in the substratum
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Erosion control is needed when pastures are renovated.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building Sites

- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. It is poorly suited to building site development and structures may need special design to avoid damage from wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic Tank Absorption Fields

- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Pasture and hayland suitability group: A-1
Hydric soil: No

Ts=Tremont silt loam, occasionally flooded

Setting
Landform: Flood plain

Map Unit composition
Tremont and similar components: 80 percent

Contrasting Components:
Sloan soils: 20 percent

Map Unit Interpretive Groups
Land capability classification: 2w
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

Available water capacity: About 9.9 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 20 to 24 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 80 inches
Depth to the top of the seasonal high water table: 1.5 to 3.0 feet
Water table kind: Apparent
Ponding: None
Drainage class: Moderately well drained
Flooding: Occasional
Organic matter content in the surface layer: 4.0 to 7.0 percent
Parent material: Alluvium
Permeability: Moderately slow or moderate
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- Measures that protect the soil from scouring and minimize the loss of crop residue by floodwaters are needed.
- Small grain crops may be damaged by flooding in winter and spring.

Pastureland

- Forage production can be improved by seeding grass-legume mixtures that are tolerant of flooding.
- Sediment left on forage plants after a flood event may reduce palatability and forage intake by the grazing animal.
- The root systems of plants may be damaged by frost action.

Woodland

- The high pH in the soil may cause a nutrient imbalance in seedlings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Flooding may result in damage to haul roads and increased maintenance costs.
- Flooding restricts the safe use of roads by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building Sites

- Under normal weather conditions, this soil is subject to occasional flooding. The flooding may result in physical damage and costly repairs to buildings. This soil is generally unsuited to homesites. Special design of some structures, such as farm outbuildings, may be needed to prevent damage caused by flooding.

Septic Tank Absorption Fields

- This soil is generally unsuited to septic tank absorption fields. The flooding in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Rapidly moving floodwaters may damage some components of septic systems.

Local Roads and Streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.
- Special design of roads and bridges is needed to prevent the damage caused by flooding.

Component Interpretive Groups

Pasture and hayland suitability group: A-5
Hydric soil: No

TtA=Treaty silty clay loam, 0 to 1 percent slopes

Setting
Landform: Flats and depressions on the Wisconsinan till plain
Position on the landform: Summits

Map Unit composition
Treaty and similar components: 90 percent

Contrasting Components:
Reesville soils: 10 percent

Map Unit Interpretive Groups
Land capability classification: 2w
Prime farmland: Prime farmland if drained

Soil Properties and Qualities

Available water capacity: About 10.1 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 27 to 36 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 80 inches
Depth to the top of the seasonal high water table: 0.0 to 1.0 feet
Water table kind: Apparent
Ponding: Very long
Depth of ponding: 0.0 to 0.5 feet
Drainage class: Poorly drained
Flooding: None
Organic matter content in the surface layer: 4.0 to 6.0 percent
Parent material: Loess and the underlying till
Permeability: Moderate in the solum and slow in the underlying material
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silty clay loam
Potential for surface runoff: Negligible
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.

- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- A combination of surface and subsurface drainage helps to remove excess water.

Pastureland

- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root systems of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by reducing root respiration.
- Standing water can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of this soil by log trucks.
- Ponding restricts the safe use of roads by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- A loss of soil productivity may occur following an episode of fire.

Building Sites

- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building maintenance may be needed. The soil is generally unsuited to building site development.

Septic Tank Absorption Fields

- Because of ponding, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local Roads and Streets

- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Pasture and hayland suitability group: C-1
Hydric soil: Yes

Ud=Udorthents

Setting
Landform: None assigned

Map Unit composition
Udorthents and similar components: 100 percent

Map Unit Interpretive Groups
Land capability classification: None assigned
Prime farmland: Not prime farmland

Soil Properties and Qualities

Available water capacity: About 60 inches
Cation-exchange capacity of the surface layer: ---
Depth class: Very deep
Depth to root restrictive feature: Greater than
Depth to the top of the seasonal high water table: Greater than 6 feet
Ponding: None

Drainage class: ---
Flooding: ---
Organic matter content in the surface layer:
Parent material:
Permeability: Very slow
Potential frost action: Not rated
Shrink-swell potential: Not rated
Surface layer texture: ---
Potential for surface runoff:
Wind erosion hazard: Slight

Use and Management Considerations

- Onsite investigation is needed to determine the suitability for specific uses.

Component Interpretive Groups

Pasture and hayland suitability group: Not rated
Hydric soil: No

Ur=Urban land

Setting
Landform: None assigned

Map Unit composition
Urban land and similar components: 100 percent

Map Unit Interpretive Groups
Land capability classification: None assigned
Prime farmland: Not prime farmland

Use and Management Considerations

- Onsite investigation is needed to determine the suitability for specific uses.

Component Interpretive Groups

Pasture and hayland suitability group: Not rated
Hydric soil: Unranked

W=Water

Setting
Landform: None assigned

Map Unit composition
Water and similar components: 100 percent

WaA=Warsaw loam, 0 to 2 percent slopes

Setting
Landform: Stream terrace, Outwash plain

Map Unit composition
Warsaw and similar components: 90 percent

Similar Components:
Wea
gently sloping soils

Map Unit Interpretive Groups
Land capability classification: 2s
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

Available water capacity: About 6.3 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 10 to 25 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 2.0 to 5.0 percent
Parent material: Loamy outwash over sandy and gravelly outwash
Permeability: Moderate in the solum and rapid in the substratum
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.

Pastureland

- This soil is well suited to pasture.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building Sites

- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.
- This soil is well suited to use as building sites.

Septic Tank Absorption Fields

- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Pasture and hayland suitability group: A-1
Hydric soil: No

WbA=Warsaw-Fill land complex, nearly level

Setting
Landform: None assigned

Map Unit composition
Fill land and similar components: 40 percent
Warsaw and similar components: 40 percent

Similar Components:
urban land
borrow pits

Map Unit Interpretive Groups
Land capability classification: None assigned
Prime farmland: Not prime farmland

Fill land

Use and Management Considerations

- Onsite investigation is needed to determine the suitability for specific uses.

Component Interpretive Groups

Pasture and hayland suitability group: Not rated
Hydric soil: No

Warsaw

Soil Properties and Qualities

Available water capacity: About 6.3 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 10 to 25 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 2.0 to 5.0 percent
Parent material: Loamy outwash over sandy and gravelly outwash
Permeability: Moderate in the solum and rapid in the substratum
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.

Pastureland

- This soil is well suited to pasture.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building Sites

- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.
- This soil is well suited to use as building sites.

Septic Tank Absorption Fields

- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Pasture and hayland suitability group: A-1
Hydric soil: No

WcA=Warsaw-Urban land complex, nearly level

Setting
Landform: Outwash plain, Stream terrace

Map Unit composition
Warsaw and similar components: 40 percent
Urban land and similar components: 35 percent

Similar Components:
fill areas

Map Unit Interpretive Groups
Land capability classification: 2s
Prime farmland: Not prime farmland

Warsaw

Soil Properties and Qualities

Available water capacity: About 6.3 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 10 to 25 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 2.0 to 5.0 percent
Parent material: Loamy outwash over sandy and gravelly outwash
Permeability: Moderate in the solum and rapid in the substratum
Potential frost action: Moderate
Shrink-swell potential: Moderate

Surface layer texture: Loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Building Sites

- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.
- This soil is well suited to use as building sites.

Septic Tank Absorption Fields

- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

Component Interpretive Groups

Pasture and hayland suitability group: A-1
Hydric soil: No

Urban land

Use and Management Considerations

- Onsite investigation is needed to determine the suitability for specific uses.

Component Interpretive Groups

Pasture and hayland suitability group: Not rated
Hydric soil: No

WeB=Wea silt loam, 1 to 3 percent slopes

Setting
Landform: Stream terrace

Map Unit composition
Wea and similar components: 85 percent

Similar Components:
Ross
Warsaw
thicker silty subsoil
loam surface layer

Map Unit Interpretive Groups
Land capability classification: 2e
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

Available water capacity: About 8.2 inches to a depth of 45 inches
Cation-exchange capacity of the surface layer: 8.0 to 24 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Strongly contrasting textural stratification: 40 to 60 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 2.0 to 5.0 percent
Parent material: Loamy outwash over gravelly outwash
Permeability: Moderate in the solum and rapid in the substratum
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.

Pastureland

- This soil is well suited to pasture.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building Sites

- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic Tank Absorption Fields

- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Pasture and hayland suitability group: A-1
Hydric soil: No

WpC3=Wapahani-Miamian clay loams, 6 to 12 percent slopes, severely eroded

Setting
Landform: Wisconsinan till plain
Position on the landform: Shoulders

Map Unit composition
Wapahani and similar components: 70 percent
Miamian and similar components: 20 percent

Contrasting Components:
Thrifton soils: 5 percent
Xenia soils: 5 percent

Map Unit Interpretive Groups
Land capability classification: 4e
Prime farmland: Not prime farmland

Wapahani

Soil Properties and Qualities

Available water capacity: About 2.3 inches to a depth of 18 inches
Cation-exchange capacity of the surface layer: 13 to 16 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Dense material: 10 to 20 inches
Depth to the top of the seasonal high water table: 1.0 to 2.0 feet
Water table kind: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Organic matter content in the surface layer: 0.5 to 1.0 percent
Parent material: Till
Permeability: Moderately slow in the solum and very slow in the underlying dense till
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Clay loam
Potential for surface runoff: Very high
Wind erosion hazard: Slight
Distinctive soil property: Removal of all the original surface layer

Use and Management Considerations

Cropland

- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- The movement of water into subsurface drains is restricted. Drainage guides can be used to determine tile spacing requirements.
- Subsurface drainage helps to lower the seasonal high water table.
- The rooting depth of crops is restricted by dense soil material.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of this soil by log trucks.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- Burning may destroy organic matter.

Building Sites

- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. It is poorly suited to building site development and structures may need special design to avoid damage from wetness.
- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs may be required to ensure satisfactory performance.
- In some areas the dense nature of the subsurface layer increases the difficulty of digging and compacting the soil material in shallow excavations.

Septic Tank Absorption Fields

- Because of the slope, special design and installation techniques are needed for the effluent distribution lines and seepage of poorly treated effluent is a concern.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local Roads and Streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

Pasture and hayland suitability group: B-1
Hydric soil: No

Miamian

Soil Properties and Qualities

Available water capacity: About 4.4 inches to a depth of 28 inches
Cation-exchange capacity of the surface layer: 14 to 20 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Dense material: 20 to 40 inches
Depth to the top of the seasonal high water table: 2.5 to 3.5 feet
Water table kind: Perched
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 0.5 to 2.0 percent
Parent material: A thin layer of loess and the underlying till
Permeability: Moderately slow in the solum and slow in the underlying dense till
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Clay loam
Potential for surface runoff: High
Wind erosion hazard: Slight
Distinctive soil property: Removal of all the original surface layer

Use and Management Considerations

Cropland

- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

- The rooting depth of crops is restricted by dense soil material.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- Burning may destroy organic matter.

Building Sites

- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent damage caused by wetness.
- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs may be required to ensure satisfactory performance.
- In some areas the dense nature of the subsurface layer increases the difficulty of digging and compacting the soil material in shallow excavations.

Septic Tank Absorption Fields

- Because of the slope, special design and installation techniques are needed for the effluent distribution lines and seepage of poorly treated effluent is a concern.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

Pasture and hayland suitability group: A-1
Hydric soil: No

WpD3=Wapahani-Miamian clay loams, 12 to 18 percent slopes, severely eroded

Setting
Landform: Wisconsinan till plain
Position on the landform: Foot slopes and shoulders

Map Unit composition
Wapahani and similar components: 60 percent
Miamian and similar components: 30 percent

Contrasting Components:
Thrifton soils: 10 percent

Map Unit Interpretive Groups
Land capability classification: 6e
Prime farmland: Not prime farmland

Wapahani

Soil Properties and Qualities

Available water capacity: About 2.4 inches to a depth of 19 inches
Cation-exchange capacity of the surface layer: 13 to 16 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Dense material: 10 to 20 inches
Depth to the top of the seasonal high water table: 1.0 to 2.0 feet
Water table kind: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Organic matter content in the surface layer: 0.5 to 1.0 percent
Parent material: Till
Permeability: Moderately slow in the solum and very slow in the underlying dense till
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Clay loam
Potential for surface runoff: Very high
Wind erosion hazard: Slight
Distinctive soil property: Removal of all the original surface layer

Use and Management Considerations

Cropland

- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.

- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- The movement of water into subsurface drains is restricted. Drainage guides can be used to determine tile spacing requirements.
- Subsurface drainage helps to lower the seasonal high water table.
- The rooting depth of crops is restricted by dense soil material.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during construction of haul roads and log landings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of this soil by log trucks.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- The slope restricts the use of equipment for preparing this site for planting and seeding.
- Burning may destroy organic matter.

Building Sites

- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. It is poorly suited to building site development and structures may need special design to avoid damage from wetness.
- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.
- In some areas the dense nature of the subsurface layer increases the difficulty of digging and compacting the soil material in shallow excavations.

Septic Tank Absorption Fields

- Because of the slope, special design and installation techniques are needed for the effluent distribution lines.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local Roads and Streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

Pasture and hayland suitability group: B-1
Hydric soil: No

Miamian

Soil Properties and Qualities

Available water capacity: About 3.7 inches to a depth of 24 inches
Cation-exchange capacity of the surface layer: 14 to 20 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Dense material: 20 to 40 inches
Depth to the top of the seasonal high water table: 2.5 to 3.5 feet
Water table kind: Perched
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 0.5 to 2.0 percent
Parent material: A thin layer of loess and the underlying till
Permeability: Moderately slow in the solum and slow in the underlying dense till
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Clay loam
Potential for surface runoff: High
Wind erosion hazard: Slight
Distinctive soil property: Removal of all the original surface layer

Use and Management Considerations

Cropland

- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- The rooting depth of crops is restricted by dense soil material.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during construction of haul roads and log landings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

- The slope restricts the use of equipment for preparing this site for planting and seeding.
- Burning may destroy organic matter.

Building Sites

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent damage caused by wetness.
- In some areas the dense nature of the subsurface layer increases the difficulty of digging and compacting the soil material in shallow excavations.

Septic Tank Absorption Fields

- Because of the slope, special design and installation techniques are needed for the effluent distribution lines.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local Roads and Streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

Pasture and hayland suitability group: A-1
Hydric soil: No

Ws=Westland silty clay loam

Setting

Landform: Depression on stream terrace, Depression on outwash plain

Map Unit composition
Westland and similar components: 80 percent

Similar Components:
Sloan
Ragsdale
till substratum
silt loam surface

Map Unit Interpretive Groups
Land capability classification: 2w
Prime farmland: Prime farmland if drained

Soil Properties and Qualities

Available water capacity: About 9.1 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 15 to 31 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: 0.0 to 1.0 feet
Water table kind: Apparent
Ponding: Long
Depth of ponding: 0.0 to 0.5 feet
Drainage class: Very poorly drained
Flooding: None
Organic matter content in the surface layer: 2.0 to 6.0 percent
Parent material: Loamy outwash over sandy and gravelly outwash
Permeability: Moderate in the solum and rapid in the substratum
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silty clay loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize

the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- A combination of surface and subsurface drainage helps to remove excess water.

Pastureland

- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root systems of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by reducing root respiration.
- Standing water can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of this soil by log trucks.
- Ponding restricts the safe use of roads by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- A loss of soil productivity may occur following an episode of fire.

Building Sites

- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building maintenance may be needed. The soil is generally unsuited to building site development.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic Tank Absorption Fields

- Because of ponding, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local Roads and Streets

- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Pasture and hayland suitability group: C-1
Hydric soil: Yes

Wt=Westland-Urban land complex

Setting
Landform: Depression on stream terrace, Depression on outwash plain

Map Unit composition
Westland and similar components: 40 percent
Urban land and similar components: 35 percent

Similar Components:
fill areas

Map Unit Interpretive Groups
Land capability classification: 2w
Prime farmland: Not prime farmland

Westland

Soil Properties and Qualities

Available water capacity: About 9.1 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 15 to 31 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: 0.0 to 1.0 feet
Water table kind: Apparent
Ponding: Long
Depth of ponding: 0.0 to 0.5 feet
Drainage class: Very poorly drained
Flooding: None
Organic matter content in the surface layer: 2.0 to 6.0 percent
Parent material: Loamy outwash over sandy and gravelly outwash
Permeability: Moderate in the solum and rapid in the substratum
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silty clay loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight

Use and Management Considerations

Building Sites

- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building maintenance may be needed. The soil is generally unsuited to building site development.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic Tank Absorption Fields

- Because of ponding, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local Roads and Streets

- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Pasture and hayland suitability group: C-1
Hydric soil: Yes

Urban land

Use and Management Considerations

- Onsite investigation is needed to determine the suitability for specific uses.

Component Interpretive Groups

Pasture and hayland suitability group: Not rated
Hydric soil: Unranked

XeA=Xenia silt loam, 0 to 2 percent slopes

Setting
Landform: Till plain
Position on the landform: Summit

Map Unit composition
Xenia and similar components: 80 percent

Similar Components:
Birkbeck
Celina
Fincastle

Contrasting Components:
Ragsdale soils: 5 percent

Map Unit Interpretive Groups
Land capability classification: 1
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

Available water capacity: About 8.1 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 6.0 to 20 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: 2.0 to 3.0 feet
Water table kind: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loess over loamy till
Permeability: Slow or moderately slow
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- The root systems of plants may be damaged by frost action.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building Sites

- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. It is poorly suited to building site development and structures may need special design to avoid damage from wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic Tank Absorption Fields

- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.
- The moderate permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Pasture and hayland suitability group: A-6
Hydric soil: No

XeB=Xenia silt loam, 2 to 6 percent slopes

Setting
Landform: Till plain
Position on the landform: Summit

Map Unit composition
Xenia and similar components: 75 percent

Similar Components:
Birkbeck
Fincastle
Russell
moderately eroded areas

Contrasting Components:
Ragsdale soils: 5 percent

Map Unit Interpretive Groups
Land capability classification: 2e
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

Available water capacity: About 8.1 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 6.0 to 20 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: 2.0 to 3.0 feet
Water table kind: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loess over loamy till
Permeability: Slow or moderately slow
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- The root systems of plants may be damaged by frost action.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building Sites

- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. It is poorly suited to building site development and structures may need special design to avoid damage from wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic Tank Absorption Fields

- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.
- The moderate permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Pasture and hayland suitability group: A-6
Hydric soil: No

Important Farmland

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, woodland, 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, 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.

Most of the total acreage in the county, meets the soils requirements for prime farmland as defined by the Natural Resources Conservation Service. Greene County consists of dominantly prime farmland soils, however, small areas of soils not meeting the requirements are scattered throughout the county.

Most of the prime farmland in the county is used as cropland. Urbanization in and around cities and along interstate corridors account for the majority of prime farmland lost to agricultural uses.

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 5 (p. 283). These lists do not constitute a recommendation for a particular land use. On some soils included in the lists, measures that overcome a hazard or limitation, such as flooding, wetness, and droughtiness, are needed. Onsite evaluation is needed to determine whether or not the hazard or limitation has been overcome by corrective measures. The extent of each listed map unit is shown in table 4 (p. 281). The location is shown on the detailed soil maps. The soil qualities that affect use and management are described under the heading "Detailed Soil Map Units."

Figure 9. Recently installed systematic subsurface drainage system in the Crosby and Brookston soils. Drainage systems in the county make many of the soils prime farmland.

Unique Farmland

Unique farmland is land other than prime farmland that is used for the production of specific high–value food and fiber crops. It has the special combination of soil qualities, location, growing season, and moisture supply needed for the economic production of sustained high yields of a specific high–quality crop when treated and managed by acceptable farming methods. Examples of such crops are tree fruits, berries, and vegetables.

Unique farmland has an adequate supply of available moisture for the specific crops for which it is used because of stored moisture, precipitation, or irrigation and has a combination of soil qualities, growing season, temperature, humidity, air drainage, elevation, aspect, and other factors, such as nearness to markets, that favors the production of a specific food or fiber crop.

Lists of unique farmland are developed as needed in cooperation with conservation districts and others.

Additional Farmland of Statewide Importance

Some areas other than areas of prime farmland and unique farmland are of statewide importance in the production of food, feed, fiber,
forage, and oilseed crops. The criteria used in defining and delineating these areas are determined by the appropriate state agency or agencies. Generally, additional farmland of statewide importance includes areas that nearly meet the criteria for prime farmland and that economically produce high yields of crops when treated and managed by acceptable farming methods. Some areas can produce as high a yield as areas of prime farmland if conditions are favorable. In some states additional farmland of statewide importance may include tracts of land that have been designated for agriculture by state law.

Additional Farmland of Local Importance

This land consists of areas that are of local importance in the production of food, feed, fiber, forage, and oilseed crops and are not identified as having national or statewide importance. Where appropriate, this land is identified by local agencies. It may include tracts of land that have been designated for agriculture by local ordinance.

Lists of this land are developed as needed in cooperation with conservation districts and others.

The Greene Soil and Water Conservation District has developed a list of map units which comprise the farmland of local importance. The Natural Resources Conservation Service, NRCS assisted this project, approving them for insertion into the Field Office Technical Guide, Section II on June 20, 2002. This list is available in this Soil Survey Supplement, and on the internet at the NRCS website.

The soil map units of locally important farmland do not meet the eligibility standard for inclusion on the prime farmland list. They are locally important because they are of significant production potential for farm operations in Greene County. These map units so designated receive credit in farmland preservation interests, and some protection from land use conversion pressures which are ever expanding.

Hydric Soils

In this section, hydric soils are defined and described and the hydric soils in the survey area are listed in table 6 (p. 285).

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 each of the characteristics must be met for areas to be identified as wetlands. Undrained hydric soils that have natural vegetation should support a dominant population of ecological wetland plant species. Hydric soils that have been converted to other uses should be capable of being restored to wetlands.

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

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 1995). These criteria are used to identify a phase of a soil series that normally is associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 1998) and in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils in this survey area are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and others, 1998).

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.

Figure 10. Restored wetland on Sloan soils.

The map units in table 6 (p. 285) meet the definition of hydric soils and, in addition, have at least one of the hydric soil indicators. This list can help in planning land uses; however, onsite investigation is recommended to determine the hydric soils on a specific site (National Research Council, 1995; Hurt and others, 1998).

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

The map units, in table 7 (p. 286), in general, do not meet the definition of hydric soils because they do not have one of the hydric soil indicators. A portion of these map units, however, may include hydric soils. Onsite investigation is recommended to determine whether hydric soils occur and the location of the included hydric soils.

Soil Quality

Prepared by Natural Resources Conservation Service, Soil Quality Institute, Ames, Iowa.

SOIL QUALITY is how well soil does what we want it to do. More specifically, soil quality is the capacity of a specific kind of soil to function, within natural or managed ecosystem boundaries, to sustain plant and animal productivity, maintain or enhance water and air quality, and support human health and habitation.

Example of a quality soil.

People have different ideas of what a quality soil is. For example: for people active in production agriculture, it may mean highly productive land, sustaining or enhancing productivity, maximizing profits, or maintaining the soil resource for future generations; for consumers, it may mean plentiful, healthful, and inexpensive food for present and future generations; for naturalists, it may mean soil in harmony with the landscape and its surroundings; for the environmentalist, it may mean soil functioning at its potential in an ecosystem with respect to maintenance or enhancement of biodiversity, water quality, nutrient cycling, and biomass production.

What Does Soil Do?

Healthy soil gives us clean air and water, bountiful crops and forests, productive rangeland, diverse wildlife, and beautiful landscapes. Soil does all this by performing five essential functions:

- Regulating water. Soil helps control where rain, snowmelt, and irrigation water goes. Water and dissolved solutes flow over the land or into and through the soil.
- Sustaining plant and animal life. The diversity and productivity of living things depends on soil.
- Filtering potential pollutants. The minerals and microbes in soil are responsible for filtering, buffering, degrading, immobilizing, and detoxifying organic and inorganic materials, including industrial and municipal by-products and atmospheric deposits.
- Cycling nutrients. Carbon, nitrogen, phosphorus, and many other nutrients are stored, transformed, and cycled through soil.
- Supporting structures. Buildings need stable soil for support, and archeological treasures associated with human habitation are protected in soils.

Here are some examples of indicators of soil quality:

Indicator	Relationship to Soil Health
Soil organic matter (SOM)	Soil fertility, structure, stability, nutrient retention; soil erosion.
PHYSICAL: Soil structure, depth of soil, Infiltration and bulk density; water holding capacity	Retention and transport of water and nutrients; habitat for microbes; estimate of crop productivity potential; compaction, plow pan, water movement; porosity; workability.
CHEMICAL: pH; electrical conductivity; extractable N-P-K	Biological and chemical activity thresholds; plant and microbial activity thresholds; plant available nutrients and potential for N and P loss.
BIOLOGICAL: Microbial biomass C and N; potentially mineralizable N; soil respiration.	Microbial catalytic potential and repository for C and N; soil productivity and N supplying potential; microbial activity measure

Soil Has Both Inherent and Dynamic Quality.

Inherent soil quality is a soil's natural ability to function. For example, sandy soils drain faster than clayey soils. Deep soils will have more room for roots than soils with bedrock near the surface. These characteristics do not change easily.

Dynamic soil quality is how soil changes depending on how it is managed. Management choices affect the amount of soil organic matter, soil structure, soil depth, water and nutrient holding capacity. One goal of soil quality research is to learn how to manage soil in a way that improves soil function. Soils respond differently to management depending on the inherent properties of the soil and the surrounding landscape.

Soil Quality is Linked to Sustainability.

Understanding soil quality means assessing and managing soil so that it functions optimally now and is not degraded for future use. By monitoring changes in soil quality, a land manager can determine if a set of practices are sustainable.

Assessing Soil Quality

Soil quality is an assessment of how well soil performs all of its functions. It cannot be determined by measuring only crop yield, water quality, or any other single outcome. The quality of a soil is an assessment of how it performs all of its functions now and how those functions are being preserved for future use.

Soil quality cannot be measured directly, so we evaluate indicators. Indicators are measurable properties of soil or plants that provide clues about how well the soil can function. Indicators can be physical, chemical, and biological characteristics.

Useful indicators:

- are easy to measure
- measure changes in soil functions
- encompass chemical, biological, and physical properties
- are accessible to many users and applicable to field conditions
- are sensitive to variations in climate and management.

Indicators can be assessed by qualitative or quantitative techniques. After measurements are collected, they can be evaluated by looking for patterns and comparing results to measurements taken at a different time or field.

Soil Quality is Not an End in Itself.

The ultimate purpose of researching and assessing soil quality is not to achieve high aggregate stability, biological activity, or some other soil property. The purpose is to protect and improve long-term agricultural productivity, water quality, and habitats of all organisms including people. We use soil characteristics as indicators of soil quality, but in the end, soil quality must be identified by how it performs its functions.

Managing for Soil Quality

Each combination of soil type and land use calls for a different set of practices to enhance soil quality. Yet, several principles apply in most situations.

1. Add organic matter. Regular additions of organic matter are linked to many aspects of soil quality. Organic matter may come from crop residues at the surface, roots of cover crops, animal manure, green manure, compost, and others. Organic matter, and the organisms that eat it, can improve water holding capacity, nutrient availability, and can help protect against erosion.

2. Avoid excessive tillage. Tillage has positive effects, but it also triggers excessive organic matter degradation, disrupts soil structure, and can cause compaction. For more information about conservation tillage, visit the Conservation Tillage Information Center site.

3. Carefully manage fertilizer and pesticide use. In this century, pesticides and chemical fertilizers have revolutionized U.S. agriculture. In addition to their desired effects, they can harm non-target organisms and pollute water and air if they are mismanaged. Nutrients from organic sources also can become pollutants when misapplied or over-applied. On the positive side, fertilizer can increase plant growth

and the amount of organic matter returned to the soil.

4. Increase ground cover. Bare soil is susceptible to wind and water erosion, and to drying and crusting. Ground cover protects soil, provides habitats for larger soil organisms, such as insects and earthworms, and can improve water availability. Cover crops, perennials, and surface residue increase the amount of time that the soil surface is covered each year.

5. Increase plant diversity. Diversity is beneficial for several reasons. Each crop contributes a unique root structure and type of residue to the soil. A diversity of soil organisms can help control pest populations, and a diversity of cultural practices can reduce weed and disease pressures. Diversity across the landscape and over time can be increased by using buffer strips, small fields, contour strip cropping, crop rotations, and by varying tillage practices. Changing vegetation across the landscape or over time increases plant diversity, and the types of insects, microorganisms, and wildlife that live on your farm.

Use and Management of the Soils

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

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

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

Interpretative ratings help engineers, planners, and others understand how soil properties influence important nonagricultural uses, such as building site development and construction materials. The ratings indicate the most restrictive soil features affecting the suitability of the soils for these uses.

Soils are rated in their natural state. No unusual modification of the soil site or material is made other than that which is considered normal practice for the rated use. Even though soils may have limitations, it is important to remember that engineers and others can modify soil features or can design or adjust the plans for a structure to compensate for most of the limitations. Most of these practices, however, are costly. The final decision in selecting a site for a particular use generally involves weighing the costs of site preparation and maintenance.

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

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

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

The classification of the soils in this survey area are shown in table 33 (p. 565). The extent of the soils are shown in table 4 (p. 281).

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.

Cropland Limitations and Hazards

The management concerns affecting the use of the detailed map units in the survey area for crops are shown in table 8 (p. 288). The main concerns in managing nonirrigated cropland are controlling flooding and water erosion, preventing groundwater pollution, removing excess water, reducing surface crusting, reducing compaction, and maintaining soil tilth, organic matter, and fertility.

Generally, a combination of several practices is needed to control water erosion. Conservation tillage, stripcropping, contour farming, conservation cropping systems, crop residue management, diversions, and grassed waterways help to prevent excessive soil loss.

Figure 11. Water and sediment control basins and grassed waterways are commonly used practices on rolling cropland fields, such as this one on Miamian and Russell silt loams.

Surface and/or subsurface drainage is used to remove excess water, lower seasonal high water tables, and to reduce ponding.

A surface crust forms in tilled areas after hard rains and may inhibit seedling emergence. Regular additions of crop residue, manure, or other organic materials help to improve soil structure and minimize crusting.

Tilling within the proper range of moisture content minimizes compaction.

Measures that are effective in maintaining soil tilth, organic matter, and fertility include applying fertilizer, both organic and inorganic, including manure; incorporating crop residue or green manure crops into the soil; and using proper crop rotations. Controlling erosion helps to prevent the loss of organic matter and plant nutrients and thus helps to maintain productivity, although the level of fertility can be reduced even in areas where erosion is controlled. All soils used for nonirrigated crops respond well to applications of fertilizer.

Some of the limitations and hazards shown in the table cannot be easily overcome. These are flooding, ponding, slope, limited organic matter content, and depth to bedrock.

Flooding.—Flooding can damage winter grain and forage crops. A tillage method that partly covers crop residue and leaves a rough or ridged surface helps to prevent removal of crop residue by floodwater. Tilling and planting should be delayed in the spring until flooding is no longer a hazard.

Ponding.—Surface drains helps to remove excess surface water and reduce damage from ponding.

Slope.—Where the slope is more than 25 percent, water erosion is excessive. The selection of crops and use of equipment is limited. Cultivation may be restricted.

Limited organic matter content.—Many soils that have a light colored surface layer have a low or moderately low organic matter content and weak or moderate structure. Regularly adding crop residue, manure, and other organic matter materials to the soil maintains or improves the organic matter content and the soil structure.

Depth to bedrock.—Rooting depth and available moisture may be limited by bedrock within a depth of 40 inches.

Additional limitations and hazards are as follows:

Potential for groundwater pollution.—This is a hazard in soils with excessive permeability, moderately deep or shallow bedrock, or a water table within the profile.

Limited available water capacity, poor tilth, restricted permeability, and surface crusting.—These limitations can be overcome by incorporating green manure crops, manure, or crop residue into the soil; applying a system of conservation tillage; and using conservation cropping systems.

Frost action.—Frost action can damage deep rooted legumes and some small grains.

Sandy layers.—Deep leaching of nutrients and pesticides may result from sandy layers. Crops generally respond better to smaller, more frequent applications of fertilizer and lime than to one large application.

Clodding. —Clods may inhibit germination, reduce water infiltration and increase runoff.

Subsidence of the muck. —Subsidence or shrinking occurs as a result of oxidation in the muck after the soil is drained. Control of the

water table by subirrigation through subsurface drain lines reduces the hazards of subsidence, burning, and soil blowing.

High clay content.—The high clay content in the soil reduces rooting depth and water movement.

Root restrictive layers.—Root restrictive layers limit root growth and water movement.

Excessive alkalinity.—High pH in the upper part of the soil may inhibit plant growth and reduce availability of potassium and micronutrients.

Excessive acidity.—Low pH in the upper part of the soil may increase concentrations of aluminum and manganese and may injure plants.

Gravelly surface.—This limitation causes rapid wear of tillage equipment. It cannot be easily overcome.

Stony surface.—Stones or boulders on the surface can hinder normal tillage unless they are removed.

Following is an explanation of the criteria used to determine the limitations or hazards for cropland.

Easily eroded.—The surface K factor multiplied by the relative value of the slope is more than 2 (same as prime farmland criteria). (See table 29 for K factors.)

Erosion hazard.—The relative value of the slope is greater than 2.

Frequent flooding.—The component of the map unit is frequently flooded.

Occasional flooding.—The component of the map unit is occasionally flooded.

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

Ponding.—Ponding duration is assigned to the component of the map unit.

Ponded for extended periods.—Very long ponding duration is assigned to the component of the map unit.

Gravelly surface. —The surface texture has flaggy, very flaggy, extremely flaggy, very gravelly, extremely gravelly, or very channery modifier.

Stony surface.—The surface texture has bouldery, very bouldery, extremely bouldery, stony, very stony, extremely stony, cobbly, very cobbly, or extremely cobbly modifier.

Sandy layers.—The family particle size is sandy, sandy or sandy-skeletal, sandy over loamy, sandy over clayey, sandy-skeletal, sandy-skeletal over clayey, or sandy-skeletal over loamy; or the subgroup is Arenic or Psammentic; or the suborder is Psamments.

Depth to bedrock.—Bedrock is at a depth of less than 40 inches.

High potential for groundwater pollution.—Hard bedrock is within a depth of 40 inches, or permeability is more than 6 inches per hour in some layer within a depth of 80 inches and is not 0.2 inch per hour or less in some layer within that depth.

Moderate potential for groundwater pollution.—An apparent water table is within a depth of 4 feet, or permeability is moderately rapid in some layer between depths of 24 and 60 inches and is not 0.2 inch per hour or less in some layer within a depth of 80 inches.

Poor tilth. —The component of the map unit is severely eroded, has less than 1 percent organic matter in the surface layer, or 35 percent or more clay in the surface layer.

Fair tilth.—The component of the map unit has a silty clay loam or clay loam surface layer and less than 35 percent clay or moderately eroded and a silt loam or loam surface texture.

Excessive acidity.—The upper range of the soil pH is less than 4.5 within 40 inches.

Excessive alkalinity.—The lower range of the soil pH is more than 7.9 within 40 inches.

Restricted permeability.—Permeability is 0.06 inches per hour or less within 40 inches and a seasonal high water table is within 18 inches.

Seasonal high water table.—The seasonal high water table is within a depth of 18 inches.

Excessive slope.—The upper slope range of the component of the map unit is more than 25 percent.

Surface crusting.—The organic matter content of the surface layer is less than or equal to 3 percent and the texture is silt loam or silty clay loam.

Surface compaction. —The component of the map unit has a silt loam, silty clay loam, clay loam, clay, or silty clay surface layer.

Frost action.—The component of the map unit has a high potential frost action.

Part of surface removed.—The surface layer of the component of the map unit is moderately eroded.

Most of surface removed.—The surface layer of the component of the map unit is severely eroded.

Subsidence of the muck. —The organic matter content of the surface layer of the component of the map unit is greater than or equal to 20 percent.

Wind erosion.—The upper range of the slope is less than or equal to 25 percent and

the wind erodibility group is 1, 2, or 3. (See table 29 for wind erodibility group values.)

Clodding. —The relative value of the total clay in the surface layer is greater than 32 percent.

Root restrictive layer.—Fragipan or dense material within 40 inches.

High clay content.—A layer within 40 inches of the surface has clay content that averages between 40 and 60 percent.

Very high clay content. —A layer within 40 inches of the surface has clay content that averages more than 60 percent.

Crops and Pasture

General management needed for crops and pasture is suggested in this section. The system of land capability classification used by the Natural Resources Conservation Service is explained below.

Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil under the heading "Detailed Soil Map Units." Specific information can be obtained from the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

Crop Yield Index

Table 9 (p. 295) is the crop yield index for HGreene County. The yield index reflects the yield potential of a soil in relation to other soils in the county. It is based on the most productive soil, Ra—Ragsdale silty clay loam, receiving a rating of 100, and other soils are ranked against this standard.

The yields used to calculate the index values are based on using good management practices.

To calculate estimated yields, use the yield index number as a percentage, and multiply it by the crop yield in the table header. For example, to calculate estimated corn yield for Ag, multiply 0.80 by the corn yield in the table header, which is 185. 0.80 x 185 = 148 bushels of corn estimated for Ag.

To use this yield index in the future to calculate estimated yields, use current yield data for the most productive soil as a reference. Additional information on calculating estimated yields can be obtained from the local offi ce of the Natural Resources Conservation Service or the Cooperative Extension Service.

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for woodland, or for engineering purposes.

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

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, woodland, or wildlife habitat.

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

Class 7 soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, woodland, 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 aesthetic purposes.

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

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

The acreage of soils in each capability class or subclass is shown in table 10 (p. **Error! Bookmark not defined.**). The capability classification of map units in this survey area is given in the section "Detailed Soil Map Units" and in the yields table.

Pasture and Hayland Suitability Groups

The pasture and hayland suitability group symbol for each soil is listed in each map unit description and in the “Interpretive Groups” section. Soils assigned to the same suitability group require the same general management and have about the same potential productivity. The pasture and hayland suitability groups are organized by soil characteristics and limitations. The groups are described in the following paragraphs.

Figure 12. Pastured Angus cattle in Greene County

Soils assigned to group A have few limitations affecting the management and growth of climatically adapted plants.

Soils in group A-1 are deep or very deep and are well drained or moderately well drained. The available water capacity ranges from moderate to very high. Slopes range from 0 to 18 percent. Plants on these soils respond well to additions of lime. Frequent applications may be needed to maintain an adequate pH level. A low pH level in the subsoil shortens the life of some deep-rooted legumes.

Soils in group A-2 are deep or very deep and are well drained or moderately well drained. The available water capacity ranges from moderate to very high. Slopes range from 18 to 25 percent. Plants on these soils respond well to additions of lime. Frequent applications may be needed to maintain an adequate pH level. A low pH level in the subsoil shortens the life of some deep-rooted legumes. The slope may interfere with clipping, mowing, and spraying for weed control. The slope also increases the hazard of erosion if the areas are overgrazed or cultivated for reseeding. The soils in this group are suited to no-till reseeding and interseeding.

Soils in group A-3 are deep or very deep and are well drained or moderately well drained. The available water capacity ranges from moderate to very high. Slopes range from 25 to 40 percent. These soils are not suited to pasture or hay, but some grass pasture is produced.

Soils in group A-4 are deep or very deep and are well drained or moderately well drained. They have stones and boulders on the surface that preclude the use of hay-making equipment. Slopes range from 0 to 40 percent.

Soils in group A-5 are well drained or moderately well drained and are subject to flooding. The available water capacity ranges from moderate to very high. Slopes range from 0 to 18 percent. Grazing is limited during periods of stream overflow. Floodwater can deposit sediments that lower the quality of forage in areas of these soils.

Soils in group A-6 are deep or very deep, are well drained or moderately well drained, and are subject to frost action. The available water capacity ranges from moderate to very high. Slopes range from 0 to 18 percent. Frost action can damage

legume stands. Mixing fibrous-rooted grasses with the legumes and using proper grazing management methods help to prevent the damage caused by frost action.

Soils in group B have limited growth and production potential because of droughtiness.

Soils in group B-1 are deep or very deep and are well drained or moderately well drained. The available water capacity is low or very low. Slopes range from 0 to 25 percent. The limited available water capacity restricts forage growth and production.

Soils in group B-2 are deep or very deep and are well drained or moderately well drained. The available water capacity is low or very low. Slopes range from 25 to 40 percent. The limited available water capacity restricts forage growth and production.

Soils in group B-3 are well drained to somewhat poorly drained. They are subject to flooding. Slopes range from 0 to 6 percent.

Soils in group B-4 are deep or very deep and are well drained or moderately well drained. They are in areas of reclaimed mines. The available water capacity is low or very low. Slopes range from 0 to 25 percent. The substratum has a high content of rock fragments. The root zone ranges from 20 to 30 inches.

Soils in group C are wet because of a seasonal high water table.

Soils in group C-1 are deep or very deep and are somewhat poorly drained to very poorly drained. Slopes range from 0 to 12 percent. These soils normally respond well to subsurface drainage.

Soils in group C-2 are deep or very deep and are somewhat poorly drained to very poorly drained. They have a seasonal high water table, which restricts the growth of deep-rooted forage plants or species that have a taproot. Shallow-rooted species grow best on these soils. Subsurface drains are used to lower the seasonal high water table. The effectiveness of subsurface drainage is typically restricted by the permeability of the subsoil, by a high content of clay in the subsoil, or by a fragipan. Slopes range from 0 to 12 percent.

Soils in group C-3 are somewhat poorly drained to very poorly drained and are subject to flooding. The soils have a seasonal high water table, which restricts the rooting depth of forage plants. Shallow-rooted species grow best on these soils. The available water capacity ranges from moderate to very high. Slopes range from 0 to 6 percent. Grazing is limited during periods of stream overflow.

Soils in group D have a high content of organic matter.

Soils in group D-1 formed entirely or partially in organic material. Slopes range from 0 to 2 percent.

Soils in group E are shallow soils in which root growth is restricted to a depth of less than 20 inches.

Soils in group E-1 are shallow or very shallow. The available water capacity is low or very low. Slopes range from 0 to 25 percent. The limited available water capacity restricts forage production. These soils are well suited to native warm-season grasses.

Soils in group E-2 are shallow or very shallow or have a high bulk density and cobbles and stones in the upper part. The available water capacity is low or very low. Slopes range from 25 to 40 percent. Shallow-rooted species should be selected for planting in areas of these soils.

Soils in group E-3 have a high bulk density and cobbles and stones in the upper part. The available water capacity is low or very low. Slopes range from 0 to 25 percent.

Soils in group F have a root zone that extends to a depth of 20 to 40 inches. These soils are better suited to forage species that do not have a taproot than to other species.

Soils in group F-1 are moderately deep and are well drained or moderately well drained. Slopes range from 0 to 25 percent.

Soils in group F-2 are moderately deep and are well drained or moderately well drained. Slopes range from 25 to 40 percent. These soils are generally not suited to hay.

Soils in group F-3 are well drained or moderately well drained. They are moderately deep to a fragipan. Slopes range from 0 to 25 percent.

Soils in group F-4 are well drained or moderately well drained. They are moderately deep to a fragipan. Slopes range from 25 to 40 percent.

Soils in group F-5 are well drained or moderately well drained. Rooting depth is restricted in the subsoil by a high bulk density, a high content of clay, slow permeability, or a combination of these factors. Slopes range from 0 to 25 percent.

Soils in group F-6 are well drained or moderately well drained. Rooting depth is restricted in the subsoil by a high bulk density, a high content

of clay, slow permeability, or a combination of these factors. Slopes range from 25 to 40 percent.

Soils in group F-7 are somewhat poorly drained to very poorly drained. A high content of clay in the subsoil and very slow permeability restrict the rooting depth of forage plants. Slopes range from 0 to 12 percent.

Soils in group G have chemical properties that are unfavorable for many climatically adapted plants.

Soils in group G-1 are well drained or moderately well drained and are shallow or moderately deep to toxic spoil from surface mining operations. The available water capacity is low or very low in the root zone. Slopes range from 0 to 25 percent.

Soils in group G-2 are well drained or moderately well drained and are shallow or moderately deep to toxic spoil from surface mining operations. Slopes range from 25 to 40 percent.

Soils in group H are toxic or are too steep for forage production.

Soils in group H-1 are toxic as a result of surface mining operations or have slopes of 40 percent or more. These soils are generally not suited to pasture and hay.

Woodland Management and Productivity

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

Woodland Management

In table 11 (p. 301), table 13 (p. 328), and table 14 (p. 338), interpretive ratings are given for various aspects of woodland management. The ratings are both verbal and numerical.

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

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

Rating class terms for fire damage and seedling mortality are expressed as *low, moderate,* and *high*. Where these terms are used, the numerical ratings indicate gradations between the point at which the potential for fire damage or seedling mortality is highest (1.00) and the point at which the potential is lowest (0.00).

The paragraphs that follow indicate the soil properties considered in rating the soils for woodland management practices. More detailed information about the criteria used in the ratings is available in the "National Forestry Manual," which is available in local offices of the Natural Resources Conservation Service or on the Internet .

Ratings in the column *erosion hazard* are based on slope and on soil erodibility factor K. The soil loss is caused by sheet or rill erosion in off-road or off-trail areas where 50 to 75 percent of the surface has been exposed by logging, grazing, mining, or other kinds of disturbance. The hazard is described as slight, moderate, severe, or very severe. A rating of *slight* indicates that erosion is unlikely under ordinary climatic conditions; *moderate* indicates that some erosion is likely and that erosion-control measures may be needed; *severe* indicates that erosion is very likely and that erosion-control measures, including revegetation of bare areas, are advised; and *very severe* indicates that significant erosion is expected, loss of soil productivity and off–site damage are likely, and erosion–control measures are costly and generally impractical.

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

Ratings in the column *soil rutting hazard* are based on depth to a water table, rock fragments on or below the surface, the Unified classification, depth to a restrictive layer, and slope. Ruts form as a result of the operation of woodland equipment. The hazard is described as slight, moderate, or severe. A rating of *slight* indicates that the soil is subject to little or no rutting, *moderate* indicates that rutting is likely, and *severe* indicates that ruts form readily.

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

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

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

Ratings in the column *suitability for mechanical planting* are based on slope, depth to a restrictive layer, content of sand, plasticity index, rock fragments on or below the surface, depth to a water table, and ponding. The soils are described as well suited, moderately suited, poorly suited, or unsuited to these methods of planting. It is assumed that necessary site preparation is completed before seedlings are planted.

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

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

Woodland Productivity

In table 12 (p. 309), 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 woodland managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability. More detailed information regarding site index is available in the "National Forestry Manual," which is available in local offices of the Natural Resources Conservation Service or on the Internet.

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

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

Windbreaks and Environmental Plantings

Farm and homestead windbreaks are rows of trees or shrubs established adjacent to farm buildings, feedlots, and homes. These windbreaks are usually planted perpendicular to the prevailing winter wind. Planting multiple rows of various species provides the best protection from winds and results in more varied wildlife habitat. 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 15 (p. 349) shows the height that locally grown trees and shrubs are expected to reach in 20 years on various soils. The estimates in table 15 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, the Ohio Department of Natural Resources, Division of Forestry, or of the Cooperative Extension Service or from a commercial nursery.

Recreational Development

The soils of the survey area are rated in table 16 (p. 359) and table 17 (p. 371) 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 table 16 (p. 359) and table 17 (p. 371) 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

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 18 (p. 381), the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in determining the intensity of management needed for each element of the habitat.

The potential of the soil is rated good, fair, poor, or very poor. A rating of *good* indicates that the element or kind of habitat is easily established, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected. A rating of *fair* indicates that the element or kind of habitat can be established, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. A rating of *poor* indicates

that limitations are severe for the designated element or kind of habitat. Habitat can be created, improved, or maintained in most places, but management is difficult and must be intensive. A rating of *very poor* indicates that restrictions for the element or kind of habitat are very severe and that unsatisfactory results can be expected. Creating, improving, or maintaining habitat is impractical or impossible.

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

Grain and seed crops are domestic grains and seed-producing herbaceous plants. Soil properties and features that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, surface stoniness, and flooding. Soil temperature and soil moisture also are considerations. Examples of grain and seed crops are corn, wheat, oats, soybeans, and barley.

Grasses and legumes are domestic perennial grasses and herbaceous legumes. Soil properties and features that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, flooding, and slope. Soil temperature and soil moisture also are considerations. Examples of grasses and legumes are fescue, lovegrass, bromegrass, clover, and alfalfa.

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

Hardwood trees and woody understory produce nuts or other fruit, buds, catkins, twigs, bark, and foliage. Soil properties and features that affect the growth of hardwood trees and shrubs are depth of the root zone, available water capacity, and wetness. Examples of these plants are oak, poplar, cherry, sweetgum, apple, hawthorn, dogwood, hickory, blackberry, raspberry, and blueberry. Examples of fruit-producing shrubs that are suitable for planting on soils rated *good* are autumn-olive, and crabapple.

Coniferous plants furnish browse and seeds. Soil properties and features that affect the growth of coniferous trees, shrubs, and ground cover are depth of the root zone, available water capacity, and wetness. Examples of coniferous plants are pine, spruce, fir, cedar, and juniper.

Wetland plants are annual and perennial wild herbaceous plants that grow on moist or wet sites. Submerged or floating aquatic plants are excluded. Soil properties and features affecting wetland plants are texture of the surface layer, wetness, reaction, salinity, slope, and surface stoniness. Examples of wetland plants are smartweed, wild millet, wildrice, saltgrass, cordgrass, rushes, sedges, and reeds.

Shallow water areas have an average depth of less than 5 feet. Some are naturally wet areas. Others are created by dams, levees, or other water-control structures. Soil properties and features affecting shallow water areas are depth to bedrock, wetness, surface stoniness, slope, and permeability. Examples of shallow water areas are marshes, waterfowl feeding areas, and ponds.

The habitat for various kinds of wildlife is described in the following paragraphs.

Habitat for openland wildlife consists of cropland, pasture, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. Wildlife attracted to these areas include bobwhite quail, pheasant, meadowlark, field sparrow, cottontail, and red fox.

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

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

Engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. Ratings are given for building site development, sanitary facilities, construction materials, and water management. The ratings are based on

observed performance of the soils and on the data in the tables described under the heading "Soil Properties."

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

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

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations should be considered in planning, in site selection, and in design. Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about particle-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 to 7 feet of the surface, soil wetness, depth to a water table, ponding, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kinds of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses. This information can be used to evaluate the potential of areas for residential, commercial, industrial, and recreational uses; make preliminary estimates of construction conditions; evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; plan detailed onsite investigations of soils and geology; locate potential sources of gravel, sand, earth fill, and topsoil; plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; and predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils. The information in the tables, along with the soil maps, the soil descriptions, and other data provided in this survey, can be used to make additional interpretations. Some of the terms used in this soil survey have a special meaning in soil science and are defined in the Glossary.

Construction Materials

Table 19 (p. 389) and table 20 (p. 400) give information about the soils as potential sources of gravel, sand, topsoil, reclamation material, and roadfill. Normal compaction, minor processing, and other standard construction practices are assumed.

Sand and *gravel* are natural aggregates suitable for commercial use with a minimum of processing. They are used in many kinds of construction. Specifications for each use vary widely. In table 19 (p. 389), 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.

The soils are rated *good, fair,* or *poor* as potential sources of reclamation material, roadfill, and topsoil. The features that limit the soils as sources of these materials are specified in the tables. The numerical ratings given after the specified features indicate the degree to which the features limit the soils as sources of reclamation material, roadfill, 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.

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. Table 21 (p. 415) and table 22 (p. 426) 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.

Figure 13. Building site erosion

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 building*s 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

Table 23 (p. 440) and table 24 (p. 457) 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 down slope 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. Groundwater 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 groundwater 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.

Agricultural Waste Management

Soil properties are important considerations in areas where soils are used as sites for the treatment and disposal of organic waste and wastewater. Selection of soils with properties that favor waste management can help to prevent environmental damage.

Table 25 (p. 469) shows the degree and kind of soil limitations affecting the treatment of agricultural waste, including municipal and food-processing wastewater and effluent from lagoons or storage ponds. Municipal wastewater is the waste stream from a municipality. It contains domestic waste and may contain industrial waste. It may have received primary or secondary treatment. It is rarely untreated sewage. Food-processing wastewater results from the preparation of fruits, vegetables, milk, cheese, and meats for public consumption. In places it is high in content of sodium and chloride. In the context of these tables, the effluent in lagoons and storage ponds is from facilities used to treat or store food-processing wastewater or domestic or animal waste. Domestic and food-processing wastewater is very dilute, and the effluent from the facilities that treat or store it commonly is very low in content of carbonaceous and nitrogenous material; the content of nitrogen commonly ranges from 10 to 30 milligrams per liter. The wastewater from animal waste treatment lagoons or storage

ponds, however, has much higher concentrations of these materials, mainly because the manure has not been diluted as much as the domestic waste. The content of nitrogen in this wastewater generally ranges from 50 to 2,000 milligrams per liter. When wastewater is applied, checks should be made to ensure that nitrogen, heavy metals, and salts are not added in excessive amounts.

The ratings in the tables are for waste management systems that not only dispose of and treat organic waste or wastewater but also are beneficial to crops (application of manure and food-processing waste, application of sewage sludge, and disposal of wastewater by irrigation) and for waste management systems that are designed only for the purpose of wastewater disposal and treatment (overland flow of wastewater, rapid infiltration of wastewater, and slow rate treatment of wastewater).

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

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

Application of manure and food-processing waste not only disposes of waste material but also can improve crop production by increasing the supply of nutrients in the soils where the material is applied. Manure is the excrement of livestock and poultry, and food-processing waste is damaged fruit and vegetables and the peelings, stems, leaves, pits, and soil particles removed in food preparation. The manure and food-processing waste are either solid, slurry, or liquid. Their nitrogen content varies. A high content of nitrogen limits the application rate. Toxic or otherwise dangerous wastes, such as those mixed with the lye used in food processing, are not considered in the ratings.

The ratings are based on the soil properties that affect absorption, plant growth, microbial activity, erodibility, the rate at which the waste is applied, and the method by which the waste is applied. The properties that affect absorption include permeability, depth to a water table, ponding, the sodium adsorption ratio, depth to bedrock or a cemented pan, and available water capacity. The properties that affect plant growth and microbial activity include reaction, the sodium adsorption ratio, salinity, and bulk density. The wind erodibility group, the soil erodibility factor K, and slope are considered in estimating the likelihood that wind erosion or water erosion will transport the waste material from the application site. Stones, cobbles, a water table, ponding, and flooding can hinder the application of waste. Permanently frozen soils are unsuitable for waste treatment.

Application of sewage sludge not only disposes of waste material but also can improve crop production by increasing the supply of nutrients in the soils where the material is applied. In the context of this table, sewage sludge is the residual product of the treatment of municipal sewage. The solid component consists mainly of cell mass, primarily bacteria cells that developed during secondary treatment and have incorporated soluble organics into their own bodies. The sludge has small amounts of sand, silt, and other solid debris. The content of nitrogen varies. Some sludge has constituents that are toxic to plants or hazardous to the food chain, such as heavy metals and exotic organic compounds, and should be analyzed chemically prior to use.

The content of water in the sludge ranges from about 98 percent to less than 40 percent. The sludge is considered liquid if it is more than about 90 percent water, slurry if it is about 50 to 90 percent water, and solid if it is less than about 50 percent water.

The ratings in the table are based on the soil properties that affect absorption, plant growth, microbial activity, erodibility, the rate at which the sludge is applied, and the method by which the sludge is applied. The properties that affect absorption, plant growth, and microbial activity include permeability, depth to a water table, ponding, the sodium adsorption

ratio, depth to bedrock or a cemented pan, available water capacity, reaction, salinity, and bulk density. The wind erodibility group, the soil erodibility factor K, and slope are considered in estimating the likelihood that wind erosion or water erosion will transport the waste material from the application site. Stones, cobbles, a water table, ponding, and flooding can hinder the application of sludge. Permanently frozen soils are unsuitable for waste treatment.

Disposal of wastewater by irrigation not only disposes of municipal wastewater and wastewater from food-processing plants, lagoons, and storage ponds but also can improve crop production by increasing the amount of water available to crops. The ratings in the table are based on the soil properties that affect the design, construction, management, and performance of the irrigation system. The properties that affect design and management include the sodium adsorption ratio, depth to a water table, ponding, available water capacity, permeability, slope, and flooding. The properties that affect construction include stones, cobbles, depth to bedrock or a cemented pan, depth to a water table, and ponding. The properties that affect performance include depth to bedrock or a cemented pan, bulk density, the sodium adsorption ratio, salinity, reaction, and the cation–exchange capacity, which is used to estimate the capacity of a soil to adsorb heavy metals. Permanently frozen soils are not suitable for disposal of wastewater by irrigation.

Water Management

Table 26 (p. 488) and table 27 (p. 498) 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; terraces and diversions; and drainage. 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).

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 groundwater 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 are natural or constructed channels, generally broad and shallow, that conduct surface water to outlets at a nonerosive velocity. Large stones, wetness, slope, and depth to bedrock or a cemented pan affect the construction of grassed waterways. A hazard of water 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 or a cemented pan affect the construction of terraces and diversions. A restricted rooting depth, a severe hazard of wind erosion or water erosion, an excessively coarse texture, and restricted permeability adversely affect maintenance.

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, a cemented pan, or other layers that affect the rate of water movement; permeability; depth to a high water table or depth of standing water if the soil is subject to ponding; slope; susceptibility to flooding; subsidence of organic layers; and the potential for frost action. Excavating and grading and the stability of ditchbanks are affected by depth to bedrock or a cemented pan, large stones, slope, and the hazard of cutbanks caving. The productivity of the soil after drainage is adversely affected by extreme acidity or by toxic substances in the root zone, such as salts, sodium, and sulfur. Availability of drainage outlets is not considered in the ratings.

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 at the Ohio State University, School of Natural Resources, Columbus, Ohio; the Ohio Department of Natural Resources, Division of Soil and Water Conservation, Columbus, Ohio; and the USDA–Natural Resources Conservation Service, state office, Columbus, Ohio.

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 28 (p. 513) 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 (figure 14). "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, 2001) and the system adopted

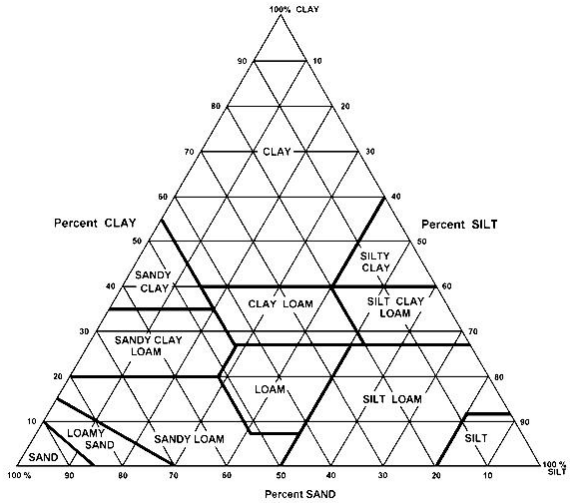


Figure 14. Textural Triangle

by the American Association of State Highway and Transportation Officials (AASHTO, 2000).

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

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

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-

7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest. The AASHTO classification for soils tested, with group index numbers in parentheses, is given in table 28 (p. 513).

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 29 (p. 529) shows estimates of some physical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

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

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

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In table 29 (p. 529), 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 refers to the ability of a soil to transmit water or air. The estimates in the table indicate the rate of water movement, in inches per hour (in/hr), 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.

Shrink-swell potential is the potential for volume change in a soil with a loss or gain in moisture. Volume change occurs mainly because of the interaction of clay minerals with water and varies with the amount and type of clay minerals in the soil. The size of the load on the soil and the magnitude of the change in soil moisture content influence the amount of swelling of soils in place. Laboratory measurements of swelling of undisturbed clods were made for many soils. For others, swelling was estimated on the basis of the kind and amount of clay minerals in the soil and on the basis of measurements of similar soils.

If the shrink-swell potential is rated moderate to very high, shrinking and swelling can cause damage to buildings, roads, and other structures. Special design is often needed.

Shrink-swell potential classes are based on the change in length of an unconfined clod as moisture content is increased from air–dry to field capacity. The classes are low, a change of 3 percent; moderate, 3 to 6 percent; high, more than 6 percent; and very high, greater than 9 percent.

Erosion factors are shown in table 29 (p. 529) 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 as follows:

1.—Coarse sands, sands, fine sands, and very fine sands.

2.—Loamy coarse sands, loamy sands, loamy fine sands, loamy very fine sands, ash material, and sapric soil material.

3.—Coarse sandy loams, sandy loams, fine sandy loams, and very fine sandy loams.

4L.—Calcareous loams, silt loams, clay loams, and silty clay loams.

4.—Clays, silty clays, noncalcareous clay loams, and silty clay loams that are more than 35 percent clay.

5.—Noncalcareous loams and silt loams that are less than 20 percent clay and sandy clay loams, sandy clays, and hemic soil material.

6.—Noncalcareous loams and silt loams that are more than 20 percent clay and noncalcareous clay loams that are less than 35 percent clay.

7.—Silts, noncalcareous silty clay loams that are less than 35 percent clay, and fibric soil material.

8.—Soils that are not subject to wind erosion because of rock fragments on the surface or because of surface wetness.

Chemical Properties

Table 30 (p. 541) 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.

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.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In table 30 (p. 541), 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.

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 groundwater pollution.

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.

Water Features

Table 31 (p. 553) 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.

The *months* in the table indicate the portion of the year in which the feature is most likely to be a concern.

Water table refers to a saturated zone in the soil. Table K1 indicates, by month, depth to the top (*upper limit*) and base (*lower limit*) of the saturated zone in most years. Estimates of the upper and lower limits are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors or mottles (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

Ponding is standing water in a closed depression. Unless a drainage system is installed, the water is removed only by percolation, transpiration, or evaporation. Table 31 indicates *surface water depth* and the *duration* and *frequency* of ponding. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, rare, occasional, and frequent. *None* means that ponding is not probable; *rare* that it is unlikely but possible under unusual weather conditions (the chance of ponding is nearly 0 percent to 5 percent in any year); *occasional* that it occurs, on the average, once or less in 2 years (the chance of ponding is 5 to 50 percent in any year); and *frequent* that it occurs, on the average, more than once in 2 years (the chance of ponding is more than 50 percent in any year).

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

Duration and *frequency* are estimated. Duration is expressed as *extremely brief* if 0.1 hour to 4 hours, *very brief* if 4 hours to 2 days,

brief if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, very rare, rare, occasional, frequent, and very frequent. *None* means that flooding is not probable; *very rare* that it is very unlikely but possible under extremely unusual weather conditions (the chance of flooding is less than 1 percent in any year); *rare* that it is unlikely but possible under unusual weather conditions (the chance of flooding is 1 to 5 percent in any year); *occasional* that it occurs infrequently under normal weather conditions (the chance of flooding is 5 to 50 percent in any year); *frequent* that it is likely to occur often under normal weather conditions (the chance of flooding is more than 50 percent in any year but is less than 50 percent in all months in any year); and *very frequent* that it is likely to occur very often under normal weather conditions (the chance of flooding is more than 50 percent in all months of any year).

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

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

Soil Features

Table 32 (p. 559) gives estimates of various soil features. The estimates are used in land use planning that involves engineering considerations.

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

Subsidence is the settlement of organic soils or of saturated mineral soils of very low density. Subsidence generally results from either desiccation and shrinkage or oxidation of organic material, or both, following drainage. Subsidence takes place gradually, usually over a period of several years. The table shows the expected initial subsidence, which usually is a result of drainage, and total subsidence, which results from a combination of factors.

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

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

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

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

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories (Soil Survey Staff, 1998 and 1999). Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. Table 33 (p. 565) shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER.—Twelve soil orders are recognized. The differences among orders reflect the dominant soil–forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Alfisol.

SUBORDER.—Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Udalf (*Ud*, meaning humid, plus *alf*, from Alfisol).

GREAT GROUP.—Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; type of saturation; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Hapludalfs (*Hapl*, meaning minimal horizonation, plus *udalf*, the suborder of the Alfisols that has a udic moisture regime).

SUBGROUP.—Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic subgroup is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other taxonomic class. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that typifies the great group. An example is Typic Hapludalfs.

FAMILY.—Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle–size class, mineralogy class, cation–exchange activity class, soil temperature regime, soil depth, and reaction class. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is fine-loamy, mixed, active, mesic Typic Hapludalfs.

SERIES.—The series consists of soils within a family that have horizons similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile.

Soil Series and Their Morphology

In this section, each soil series recognized in the survey area is described. Characteristics of the soil and the material in which it formed are identified for each series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. Pedon descriptions published in this survey come from Greene County or adjacent counties. 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 indicated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

Algiers Series

The Algiers series consists of nearly level, somewhat poorly drained soils that formed in 14 to 30 inches of recent alluvium and in the older underlying alluvial or lacustrine sediments. These soils are on flood plains along streams, on alluvial fans, or in depressions on uplands. The upper layers of the very poorly drained buried soil are darker colored than the overlying recent alluvium.

In a representative profile the surface layer is dark grayish brown silt loam 8 inches thick. Below this is 8 inches of dark grayish brown and brown silt loam, 11 inches of very dark gray silty clay loam, and 21 inches of dark gray, and gray, mottled silty clay loam. Below this, to a depth of 60 inches, is brown loam.

Available water capacity is high, and permeability is moderate. These soils have a seasonal high water table. They are subject to frequent flooding. The rooting zone is deep when the water table is low.

Most areas of Algiers soils are used for cultivated crops. The main crops are corn and soybeans. These soils are well suited to row crops if optimum management practices are used. Fall sown crops such as wheat are more likely to be damaged by flooding. Some areas of these soils are used for grass-legume meadow or for pasture. A few areas are in woodland.

Representative profile for Algiers silt loam, in Beavercreek Township, NE¼ SW¼ sec. 16; 600 feet west of Beaver Creek, and 650 feet south of quarter section line and farm boundary:

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) silt loam; weak fine granular structure; friable; common roots; very dark grayish brown (10YR 3/2) coatings on peds; neutral; abrupt smooth boundary.

Cl—8 to 11 inches; dark grayish brown (10YR 4/2) silt loam; massive; friable; common roots; neutral; clear smooth boundary.

C2—11 to 16 inches; brown (10YR 4/3) silt loam; massive; showing thin platy deposition planes; friable; common roots; black (10YR 2/1) and dark grayish brown (10YR 4/2) fillings in worm holes or root channels, making up about 15 percent of volume; neutral; abrupt smooth boundary.

IIAb—16 to 27 inches; very dark gray (10YR 3/1) heavy silty clay loam; moderate medium angular blocky structure; firm; few roots; black (10YR 2/1) coatings on ped exteriors; neutral; clear smooth boundary.

IIB21bg—27 to 33 inches; dark gray (10YR 4/1) silty clay loam; many medium distinct brown (7.5YR 4/4) mottles; weak fine subangular blocky structure; firm, slightly sticky; few roots; neutral; gradual wavy boundary.

IIB22bg—33 to 37 inches; gray (10YR 5/1) silty clay loam; many coarse distinct dark yellowish brown (10YR 4/4) mottles; weak coarse subangular blocky structure; firm; few roots; neutral; gradual wavy boundary.

IIB23bg—37 to 48 inches; gray (10YR 5/1) silty clay loam; common medium distinct light olive brown (2.5YR 5/4) mottles; weak coarse subangular blocky structure; firm, slightly plastic; neutral; gradual wavy boundary.

IIC—48 to 60 inches; brown (10YR 5/3) loam; massive; very firm; mildly alkaline.

The recent alluvium ranges from 14 to 30 inches in thickness. Reaction of the recent alluvium ranges from slightly acid to neutral and of the underlying soil horizons from slightly acid to mildly alkaline.

The Ap horizon is dark grayish brown (10YR 4/2) or brown (10YR 4/3). The C horizon above the buried horizon is brown (10YR 4/3) and dark grayish brown (10YR 4/2). This horizon is free of mottles above a depth of 20 inches. It is silt loam or loam. The IIAb horizon ranges from very dark gray (10YR 3/1) to black (10YR 2/1). It is silty clay loam, silt loam, or clay loam. The IIB2g horizon matrix has hue of 10YR through 5Y, value of 4 or 5, and chroma of 1 or 2. This horizon has common to many mottles. The IIB horizon is heavy loam, silty clay loam, and clay loam.

Algiers soils are commonly adjacent to Sloan and Eel soils. They have a lighter colored surface layer and are better drained than Sloan soils. They are more poorly drained than Eel soils.

Birkbeck Series

The Birkbeck series consists of nearly level to gently sloping, moderately well drained soils that formed in loess 3 to 5 feet thick over glacial till. These soils are on uplands, mostly in the eastern part of the county.

In a representative profile the surface layer is brown silt loam 8 inches thick. The subsoil is 34 inches of yellowish brown silty clay loam and silt loam that has mottled yellowish brown silt loam to a depth of 60 inches.

Available water capacity is high, and permeability is moderate in the subsoil, but moderately slow in the underlying glacial till. Runoff is moderate. Water generally does not pond on the surface for prolonged periods. These soils have a perched water table for short periods in winter and in spring. The rooting zone is deep.

Most areas of Birkbeck soils are cultivated. These soils are well suited to farming. The main crops are corn, soybeans, and grass-legume meadow.

Representative profile of Birkbeck silt loam, 1 to 4 percent slopes, in Ross Township, 1.9 miles north of Jamestown, 125 feet east of Brickel Road, and 200 yards north of farm lane (Sample GN-21 in Laboratory Data Section):

Ap—0 to 8 inches; brown (10YR 5/3) silt loam; weak fine granular structure; friable; many roots; strongly acid; abrupt smooth boundary.

Bl—8 to 11 inches; yellowish brown (10YR 5/4) silt loam; moderate fine subangular blocky structure; friable; many roots; pale brown (10YR 6/3) silty ped coatings with light gray (10YR 7/2) and light brownish gray (10YR 6/2) silt grains on ped faces; medium acid; clear wavy boundary.

B21t—11 to 16 inches; yellowish brown (10YR 5/4) silty clay loam; strong medium and fine subangular blocky structure; firm; many roots; thin patchy brown (10YR 5/3) clay films on ped faces; few light brownish gray (10YR 6/2) silty coatings; slightly acid; gradual wavy boundary.

B22t—16 to 30 inches; yellowish brown (10YR 5/4) silty clay loam; few fine faint yellowish brown (10YR 5/6) mottles in ped interiors; moderate coarse subangular blocky structure parting to strong medium subangular blocky; firm; many roots; thick continuous dark brown (10YR 3/3) clay films on vertical and horizontal ped faces; neutral; clear irregular boundary.

B3t—30 to 42 inches; yellowish brown (10YR 5/4) silt loam; common coarse faint yellowish brown (10YR 5/6) mottles and common coarse distinct grayish brown (10YR 5/2) mottles; weak very coarse subangular blocky structure; friable; common roots; thin continuous dark brown (10YR 3/3) and dark grayish brown (10YR 4/2) clay films on vertical faces and patchy on horizon faces; common lime concretions ¼ to 1 inch in diameter; mildly alkaline, calcareous in ped interiors; abrupt irregular boundary.

IIC—42 to 60 inches; yellowish brown (10YR 5/4) silt loam; common coarse faint yellowish brown (10YR 5/6) mottles and common medium and coarse distinct grayish brown (10YR 5/2) mottles; massive; firm; 5 to 10 percent coarse fragments; moderately alkaline, calcareous.

The solum ranges from 30 to 48 inches in thickness. Depth to calcareous material ranges from 30 to 40 inches. The loess or silt mantle is 36 to 60 inches thick. Reaction of the A horizon ranges from strongly acid to neutral; the Bl and B2 horizons are medium acid to neutral, and the B3 horizon is neutral to mildly alkaline.

The Ap horizon is dark grayish brown (10YR 4/2), grayish brown (10YR 5/2), and brown (10YR 4/3 or 5/3). The B horizon commonly has hue of 10YR, value of 4 or 5, and chroma of 3 or 4. Faint to distinct mottles are in the lower part. This horizon is silty clay loam or silt loam. The IIC horizon is loam or silt loam. It is yellowish brown (10YR 5/4) or brown (10YR 4/3).

Birkbeck soils in Greene County have a thinner solum and are less acid throughout than other Birkbeck soils. This difference does not affect the use and management of these soils.

Birkbeck soils are the moderately well drained member of a drainage sequence that includes the somewhat poorly drained Reesville soils and the very poorly drained Ragsdale soils. Birkbeck soils are similar to Xenia soils, but they formed entirely in loess, whereas Xenia soils formed partly in the underlying glacial till.

Brookston Series

The Brookston series consists of nearly level and depressional, very poorly drained soils that formed in glacial till. These soils are in upland areas. They are mostly in the eastern part of the county, east of the Reesville glacial moraine, but they are also in the northwestern part of the county, west of Little Miami River and north of Little Beaver Creek.

In a representative profile the surface layer is black silty clay loam 8 inches thick. The subsoil is mottled, mostly dark gray and dark grayish brown silty clay loam 34 inches thick. The substratum is yellowish brown silt loam and loam to a depth of 78 inches.

Available water capacity is high, and runoff is slow and sometimes ponded. Permeability is moderate in the subsoil and moderately slow in the underlying glacial till. These soils are saturated with water for long periods in winter and in spring, and they are slow to dry out in the summer unless artificially drained. The rooting zone during the growing season is deep.

Brookston soils are used mainly for cultivated crops. Many areas have been artificially drained.

Representative profile of Brookston silty clay loam, in Jefferson Township; 2¾ miles northeast of Bowersville, 1,920 feet southeast of Hargrave Road, ⅛ mile northeast of the end of Garringer Road, 4280 feet southeast of farm lane fence, and 330 feet southwest of fence along woodlot (Sample GN-12 in Laboratory Data Section):

Ap—0 to 8 inches; black (10YR 2/1) silty clay loam; weak fine granular structure; friable; many roots; few fine faint dark concretions; neutral; abrupt smooth boundary.

B1g—8 to 11 inches; very dark gray (10YR 3/1) silty clay loam; weak coarse angular blocky structure; friable; many roots; continuous black (10YR 2/1) organic coatings on peds; few pebbles less than ¼ inch in diameter; neutral; clear smooth boundary.

B21tg—11 to 16 inches; dark gray (10YR 4/1) silty clay loam; many medium distinct olive brown (2.5Y 4/4) mottles; strong coarse angular blocky structure parting to strong medium and fine angular blocky; firm; many roots; continuous very dark gray (10YR 3/1) organic coatings on peds; common fine yellowish

brown (10YR 5/6) concretions; thin patchy clay films on ped faces; 5 percent pebbles less than ¼ inch in diameter; mildly alkaline; many roots; clear smooth boundary.

B22tg—16 to 22 inches; dark gray (10YR 4/1) silty clay loam; many medium distinct olive brown (2.5Y 4/4) mottles; moderate medium and coarse prismatic structure parting to moderate medium subangular blocky; firm; common roots; dark gray (10YR 4/1) and very dark gray (10YR 3/1) coatings on ped surfaces; thin very patchy dark gray (10YR 4/1) clay films in pores; 5 percent coarse fragments; mildly alkaline; clear smooth boundary.

B23g—22 to 42 inches; dark grayish brown (2.5Y 4/2) silty clay loam; many medium distinct olive brown (2.5Y 4/4) silty clay loam; many medium distinct olive brown (2.5Y 4/4) mottles and common medium distinct yellowish brown (10YR 5/6) mottles; moderate coarse prismatic structure parting to moderate medium subangular blocky; firm; few roots; medium, continuous, gray (10YR 5/1) and dark gray (10YR 4/1) coatings on ped surfaces; 2 to 5 percent coarse fragments; many black (10YR 2/1) and very dark brown (10YR 2/2) concretions, 1 to 3 millimeters in diameter; mildly alkaline; gradual irregular boundary.

Cl—42 to 55 inches; yellowish brown (10YR 5/4) silt loam; massive; very firm; moderately alkaline, calcareous; gradual wavy boundary.

C2—55 to 67 inches; yellowish brown (10YR 5/4) loam; massive; very firm; moderately alkaline, calcareous; gradual wavy boundary.

C3—67 to 78 inches; yellowish brown (10YR 5/4) loam; massive; very firm; 15 to 20 percent coarse fragments; moderately alkaline, calcareous.

The solum ranges from 36 to 50 inches in thickness. Reaction of the solum is most commonly slightly acid or neutral, but it is mildly alkaline in places.

The dark material (combined A and B horizons) ranges from 10 to 18 inches in thickness and is black (10YR 2/1) or very dark gray (10YR 3/1). The B2 horizon below the surface layer is dark gray (10YR 4/1, N 4/0) and dark grayish brown (10YR 4/2 and 2.5Y 4/2). It contains few to many distinct mottles. It is silty clay loam or clay loam. The C horizon has hue of 10YR or 2.5Y, value of 5 through 7, and chroma of 3 or 4. It is mainly loam but has thin layers of silt loam in places.

Brookston soils in Greene County contain slightly more clay than other Brookston soils. This difference does not affect the use and management of these soils.

Brookston soils are the very poorly drained member of a drainage sequence that includes the well drained Miamian soils, the moderately well drained Celina soils, and the somewhat poorly drained Crosby soils. They are similar to Odell soils but have a more grayish subsoil. In a few areas they are near Millsdale, Patton, Ragsdale, and Westland soils and are similar to these soils. They differ from Millsdale soils in having no limestone bedrock within a depth of 40 inches. They are underlain by glacial till, whereas Patton soils are underlain by lacustrine sediment. They formed in glacial till, whereas Ragsdale soils formed in loess. They lack the underlying sand and gravel of Westland soils.

Casco Series

The Casco series consists of moderately steep to very steep, well drained soils that formed in gravel and sandy glacial outwash. These soils are in small, irregularly shaped areas along outwash terrace escarpments, along streams that have dissected outwash terraces, and on kames. Most areas are in the western and northern parts of the county.

In a representative profile the surface layer is dark brown loam 4 inches thick. The subsoil is brown clay loam, clay, and sandy clay loam 16 inches thick. The substratum is brown, stratified, calcareous sand and gravel to a depth of 60 inches.

Available water capacity is low. Permeability is moderate in the subsoil and rapid in the underlying sand and gravel.

Casco soils are generally not suited to cultivated crops because they are droughty and because they have slopes that are mostly too steep for farm machinery. Most areas are wooded or are used for pasture. Where the soils are not so steep, some areas are used for growing alfalfa.

Representative profile of Casco loam, from an area of Casco-Rodman loams, 18 to 50 percent slopes, moderately eroded, in Beavercreek Township, NW¼ sec. 7; 3½ miles northwest of Xenia, 400 feet east of New Germany-Tremein Road, and 100 yards north of farm lane:

Ap—0 to 4 inches; dark brown (10YR 4/3) loam; weak fine granular structure; friable; many roots; mildly alkaline; abrupt smooth boundary.

B21t—4 to 9 inches; brown (7.5YR 4/4) heavy clay loam; strong very fine and fine subangular blocky structure; firm; common roots; thin continuous dark brown (7.5YR 4/4) clay films; 5 percent coarse fragments; medium acid; gradual smooth boundary.

B22t—9 to 17 inches; brown (7.5YR 4/4) clay; moderate coarse subangular blocky structure; firm; common roots; thin continuous dark brown (7.5YR 4/2) clay films; 5 percent coarse fragments; medium acid; gradual smooth boundary.

B3t—17 to 20 inches; brown (7.5YR 4/4) sandy clay loam; weak coarse subangular blocky structure; friable; dark brown (7.5YR 4/2) clay bridging between some sand grains; 10 to 15 percent coarse fragments and weathered remnants of limestone; mildly alkaline, calcareous; clear irregular boundary.

C—20 to 60 inches; brown (10YR 5/3) stratified sand and gravel; massive; loose; 30 to 40 percent gravel; moderately alkaline, calcareous.

The solum ranges from 10 to 24 inches in thickness. Locally the soil has a silt mantle less than 12 inches thick. Unless limed, the upper part of the solum ranges from neutral to medium acid. In places the lower part of the solum is mildly alkaline.

The A horizon is dark grayish brown (10YR 4/2) or dark brown (10YR 4/3) and in places has a thin dark brown (10YR 3/3) or very dark grayish brown (10YR 3/2) layer in wooded areas. The B horizon commonly has hue of 7.5YR (but ranges from 10YR to 5YR), value of 4 or 5, and chroma of 3 or 4. The Bl and B2 horizons are dominantly clay loam or clay, but they have a thin layer of silty clay loam near the surface in places. The amount and size of coarse fragments in the B horizon are variable, depending on the nature of the outwash material from which the soil formed. The C horizon is stratified and ranges from sand to coarse gravel. It has thin lenses of fine silty or clayey material, cobbles, and boulders. In kames, the strata of outwash material are often discontinuous, frequently distorted, and quite variable over short distances.

Casco soils in Greene County contain slightly more clay in the solum than other Casco soils. However, this difference does not affect the use and management of these soils.

Casco soils are mostly near Eldean, Rodman, and Miamian soils. They are shallower to sand and gravel than Eldean soils and are deeper to sand and gravel than Rodman soils. They also have a lighter colored surface layer than Rodman soils. They are underlain by sand and gravel, whereas Miamian soils are underlain by glacial till.

Celina Series

The Celina series consists of nearly level or gently sloping moderately well drained soils that formed in loam glacial till. These soils are on uplands, mostly in the eastern and northwestern parts of the county. Most areas are irregular in shape.

In a representative profile the surface layer is dark grayish brown silt loam 10 inches thick. The subsoil is 18 inches of yellowish brown clay loam and clay that has grayish brown mottles in the lower 14 inches. The substratum is mottled yellowish brown and brown loam glacial till to a depth of 60 inches.

Available water capacity is moderate, and permeability is moderately slow. Runoff is slow to medium depending on slope. Water generally does not pond on the surface for prolonged periods. Celina soils have a seasonal high water table for short periods in winter and in spring. The rooting zone is moderately deep.

Celina soils are generally suited to cultivated crops. Corn, soybeans, wheat, oats, and grass-legume meadow are the main crops.

Representative profile of Celina silt loam, 2 to 6 percent slopes, in Jefferson Township; 1¾ miles east of Bowersville, 75 feet south of Hargrave Road, 0.1 mile west of intersection of Smith Road:

Ap—0 to 10 inches; dark grayish brown (10YR 4/2) silt loam; weak thick platy structure parting to moderate fine granular; friable; many roots; neutral; abrupt smooth boundary.

B21t—10 to 14 inches; yellowish brown (10YR 5/4) heavy clay loam; moderate medium and fine subangular blocky structure; friable; many roots; thin very patchy brown (10YR 5/3) clay films; 3 percent coarse fragments; slightly acid; clear smooth boundary.

B22t—14 to 21 inches; yellowish brown (10YR 5/4) clay; common medium distinct grayish brown (10YR 5/2) mottles; moderate medium subangular blocky structure; firm; many roots; thin continuous dark brown (10YR 4/3) clay films on horizontal and vertical ped faces; 2 percent dark concretions; 2 to 3 percent coarse fragments; medium acid; clear smooth boundary.

B3t—21 to 28 inches; yellowish brown (10YR 5/4) clay loam; common medium distinct grayish brown (10YR 5/2) mottles; weak medium subangular blocky structure; firm; common roots; thin patchy brown (10YR 4/3) clay films on vertical ped faces; 3 to 4 percent coarse fragments; mildly alkaline, weak effervescence; clear wavy boundary.

Cl—28 to 36 inches; yellowish brown (10YR 5/4) loam; common medium distinct grayish brown (10YR 5/2) mottles; massive; firm; 3 to 4 percent coarse fragments; moderately alkaline, calcareous; gradual wavy boundary.

C2—36 to 60 inches; brown (10YR 5/3) loam; common medium faint grayish brown (10YR 5/2) mottles; massive; very firm; 3 to 4 percent coarse fragments; moderately alkaline, calcareous.

The solum ranges from 20 to 40 inches in thickness. Depth to carbonates is 18 to 32 inches. A silty mantle less than 18 inches thick is in most areas. Below the silty mantle the

material is 2 to 15 percent coarse fragments. Reaction of the A horizon ranges from medium acid to neutral. The upper part of the B horizon is very strongly acid to neutral, and the lower part is slightly acid to mildly alkaline.

The Ap horizon is dark grayish brown (10YR 4/2) or brown (10YR 5/3). The B2 horizon ranges from brown (10YR 4/3) to yellowish brown (10YR 5/6) and has mottles that range from high to low in chroma. The B2 horizon is heavy clay loam, heavy silty clay loam, or clay. The B3 horizon is clay loam or heavy loam. The C horizon is brown (10YR 5/3) or yellowish brown (10YR 5/4) and is generally mottled.

Celina soils are the moderately well drained member of a drainage sequence that includes the well drained Miamian soils, the somewhat poorly drained Crosby soils, and the very poorly drained Brookston soils.

Celina soils are similar to Xenia soils but have a thinner silt mantle than those soils.

Crosby Series

The Crosby series consists of nearly level to gently sloping, somewhat poorly drained soils that formed in loam glacial till. These soils are on uplands in the eastern and northwestern parts of the county.

In a representative profile the surface layer is dark grayish brown silt loam 9 inches thick. The subsoil is mottled mostly dark grayish brown and yellowish brown silty clay loam and silty clay 19 inches thick. The substratum is mottled, yellowish brown loam glacial till to a depth of 60 inches.

Available water capacity is moderate. Permeability is moderately slow in the subsoil and slow in the underlying glacial till. Runoff is slow to medium, and water sometimes ponds on the surface. There is a perched water table in winter and in spring. The rooting zone is moderately deep.

Most areas of Crosby soils are cultivated. Corn, soybeans, and grass-legume meadow are the main crops. These soils are well suited to cultivated crops if they are drained. In undrained areas, cultivation is sometimes delayed in spring because of wetness.

Representative profile of Crosby silt loam, 0 to 2 percent slopes, in Jefferson Township; 2¾ miles northeast of Bowersville, and about 2,000 feet southeast of the intersection of Garringer Road and Hargrave Road (Sample GN-18 in Laboratory Data Section):

Ap—0 to 9 inches; dark grayish brown (10YR 4/2) silt loam; weak fine granular structure; friable; many roots; strongly acid; abrupt smooth boundary.

B1t—9 to 13 inches; brown (10YR 5/3) silty clay loam; many fine distinct dark grayish brown (10YR 4/2) mottles and few fine distinct yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure parting to weak fine subangular blocky; firm; common roots; thin very patchy brown (10YR 4/3) clay films; strongly acid; clear smooth boundary.

B2t—13 to 24 inches; mixed dark grayish brown (10YR 4/2) and yellowish brown (10YR 5/4) silty clay; common fine distinct dark gray (10YR 4/1) mottles; moderate medium subangular blocky structure; firm; common roots; medium continuous dark grayish brown (10YR 4/2) clay films on both vertical and horizontal ped faces; a few very dark grayish brown (10YR 3/2) concretions; 1 to 2 percent coarse fragments; medium acid; clear irregular boundary.

B3t—24 to 28 inches; yellowish brown (10YR 5/4) silty clay loam; common medium faint yellowish brown (10YR 5/6) mottles and common medium and fine distinct dark grayish brown (10YR 4/2) mottles; weak medium and fine subangular blocky structure; friable; few roots; medium continuous brown (10YR 5/3) clay films; few light gray (10YR 7/1) weathered remnants of limestone; 1 to 2 percent coarse fragments; neutral; gradual wavy boundary.

Cl—28 to 36 inches; yellowish brown (10YR 5/4) loam; common fine faint grayish brown (10YR 5/2) mottles; weak medium and thick platy structure; firm; 2 to 5 percent coarse fragments; moderately alkaline, calcareous; gradual smooth boundary.

C2—36 to 60 inches; yellowish brown (10YR 5/4) loam; common to fine faint yellowish brown (10YR 5/6) mottles and few fine and medium distinct very dark brown (10YR 2/2) and gray (10YR 6/1) mottles; massive; firm; 2 to 5 percent coarse fragments; moderately alkaline, calcareous.

The solum ranges from 20 to 40 inches in thickness. Depth to carbonates ranges from 18 to 36 inches. The silt mantle is 5 to 18 inches thick. Coarse fragments are few to common in the lower part of the profile. Unless limed, the solum is mainly strongly acid to neutral, but is mildly alkaline in the lower part in places.

The Ap horizon is dominantly dark grayish brown (10YR 4/2) but is grayish brown (10YR 5/2) in places. The A2 horizon is present in some places. It is silt loam as much as 6 inches thick and is generally grayish brown (10YR 5/2) to light grayish brown (10YR 6/2). In most places the A2 horizon has been mixed with the Ap horizon by cultivation and is absent. The B2 horizon has hue of 10YR or 2.5Y, value of 4 through 6, and chroma of 2 through 6. Mottles are common to many. The B2 horizon is heavy silty clay loam, heavy clay loam, silty clay, or clay. The B3 horizon is clay

loam, silty clay loam, or loam. The C horizon is loam glacial till.

Crosby soils are the somewhat poorly drained member of a drainage sequence that includes the well drained Miamian soils, the moderately well drained Celina soils, and the very poorly drained Brookston soils. Crosby soils are similar to Fincastle soils but have a thinner silt mantle. They have a lighter colored surface layer than the nearby Odell soils, and they differ from the nearby Randolph soils in lacking bedrock within a depth of 20 to 40 inches.

Edenton Series

The Edenton series consists of gently sloping to moderately steep, well drained, moderately deep soils that formed partly in a thin layer of loess and partly in the underlying loam glacial till and residuum of shale and limestone bedrock. These soils are in convex areas in partly dissected landscapes where relatively thin layers of loess and till overlie bedrock.

In a representative profile the surface layer is brown and yellowish brown silt loam 7 inches thick. The subsoil extends to a depth of 33 inches. The upper 4 inches is dark yellowish brown silty clay loam, the next 11 inches is dark yellowish brown and yellowish brown clay loam. Below that is 7 inches of yellowish brown silty clay and 4 inches of olive silty clay loam. Brownish yellow clay shale and limestone bedrock are at a depth of 33 inches.

Available water capacity is moderate, and permeability is moderately slow. The rooting zone is moderately deep over bedrock.

The areas of less sloping Edenton soils are used mostly for cultivated crops. The areas of steeper soils are used mainly for pasture.

Representative profile of Edenton silt loam, 6 to 12 percent slopes, moderately eroded, in Sugar Creek Township, NE¼ NW¼ sec. 35; 1,300 feet east of Waynesville Road and 900 feet south of Centerville Road:

Ap1—0 to 3 inches; brown (10YR 4/3) silt loam; moderate fine granular structure; friable; slightly acid; clear smooth boundary.

Ap2—3 to 7 inches; yellowish brown (10YR 5/4) silt loam; weak thin platy structure parting to moderate fine granular; friable; common brown (10YR 4/3) zones; neutral; clear smooth boundary.

Bl—7 to 11 inches; dark yellowish brown (10YR 4/4) light silty clay loam; moderate medium subangular blocky structure; friable; thin very patchy brown (10YR 4/3) clay films on ped surfaces; neutral; clear smooth boundary.

IIB21t—11 to 16 inches; dark yellowish brown (10YR 4/4) heavy clay loam; moderate medium subangular blocky structure; firm; thin patchy dark brown (10YR 4/3) clay films on ped surfaces; 2 to 3 percent coarse fragments; neutral; clear smooth boundary.

IIB22t—16 to 22 inches; yellowish brown (10YR 5/4) heavy clay loam; moderate coarse subangular blocky structure; firm; brown (10YR 5/3) ped surfaces; thin patchy dark brown (10YR 4/3) clay films on ped faces; 2 to 3 percent coarse fragments; neutral; abrupt wavy boundary.

IIIB23t—22 to 29 inches; yellowish brown (10YR 5/4) silty clay; moderate coarse subangular blocky structure; firm; brown (10YR 5/3) ped surfaces; medium patchy brown (10YR 4/3) clay films on ped surfaces; neutral; clear wavy boundary.

IIIB3—29 to 33 inches; olive (5Y 5/3) heavy silty clay loam; weak coarse angular blocky structure; firm; thin very patchy brown (10YR 4/3) clay films on vertical ped surfaces and in pores; mildly alkaline; abrupt wavy boundary.

IIIC—33 inches; brownish yellow (10YR 6/6) clay shale and thin bedded limestone.

Thickness of the solum and the depth to soft clay shale and limestone range from 20 to 40 inches. Reaction of the solum is slightly acid or neutral in the upper part and neutral or mildly alkaline in the lower part.

The A horizon is brown (10YR 4/3), yellowish brown (10YR 5/4), or dark grayish brown (10YR 4/2) silt loam or light silty clay loam. The B2 horizon is dark yellowish brown (10YR 4/4) or yellowish brown (10YR 5/4). The B2 and B3 horizons are heavy silty clay loam, heavy clay loam, or silty clay. The C horizon is interbedded clay shale and thin jointed strata of limestone and shale predominate.

Edenton soils are commonly adjacent to Russell soils, Fairmount variant soils, Miamian soils, and Raub soils. They have bedrock within a depth of 40 inches, whereas Raub, Miamian, and Russell soils have no bedrock within a depth of 40 inches. Edenton soils have a lighter colored surface layer than Fairmount variant soils.

Eel Series

The Eel series consists of nearly level, moderately well drained soils that formed in loamy alluvium washed mainly from nearby uplands where soils formed in glacial till. These soils are on flood plains throughout the county.

In a representative profile the surface layer is dark grayish brown loam 8 inches thick. The upper part of the subsoil is 10 inches of mottled brown loam and the lower part is 6 inches of mottled brown silt loam. The

substratum is mottled dark grayish brown and dark gray silt loam to a depth of 60 inches.

Available water capacity is high, and permeability is moderate. These soils are subject to frequent flooding. The rooting zone is deep.

Eel soils are used for pasture and cultivated crops. Corn and soybeans are the main cultivated crops.

Representative profile of Eel loam, in Beavercreek Township, 0.5 mile northeast of intersection of Xenia Road and Valley Road, and 200 feet east of Little Miami River:

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) loam; weak fine granular structure; friable; common roots; neutral; clear smooth boundary.

B1—8 to 18 inches; brown (10YR 4/3) loam; common medium faint grayish brown (10YR 5/2) mottles; moderate fine granular structure; friable; common roots; neutral; clear smooth boundary.

B2—18 to 24 inches; brown (10YR 4/3 to 5/3) silt loam; common medium faint dark grayish brown (10YR 4/2) mottles; weak medium granular structure; friable; few roots; thin lenses of brown (10YR 5/3) very fine sand; mildly alkaline, weakly calcareous; gradual smooth boundary.

C1—24 to 40 inches; dark grayish brown (10YR 4/2) silt loam; many medium faint dark gray (10YR 4/1) and common fine distinct yellowish brown (10YR 5/4) mottles; massive; stratified; friable; thin lenses of very fine sand; moderately alkaline, calcareous; abrupt smooth boundary.

C2—40 to 60 inches; dark gray (10YR 4/1) silt loam; massive; friable; moderately alkaline, calcareous.

The solum ranges from 20 to 40 inches in thickness. Reaction of the solum ranges from slightly acid to moderately alkaline.

The Ap horizon is dark grayish brown (10YR 4/2) or grayish brown (10YR 5/2). The B horizon is brown (10YR 4/3 to 5/3), yellowish brown (10YR 5/4), or dark yellowish brown (10YR 4/4). Mottles are common to many. The B horizon is typically silt loam or loam but individual subhorizons are sandy loam. The C horizon is dark grayish brown (10YR 4/2) or dark gray (10YR 4/1). It is commonly stratified, and ranges from loam or silt loam to loamy sand, but strata of loamy sand are less than 6 inches thick.

Eel soils are the moderately well drained member of a drainage sequence that includes the well drained Genesee soils and the very poorly drained Sloan soils. Eel soils are near Algiers and Ross soils. They are better drained than Algiers soils and not so well drained and lighter colored than Ross soils.

Eldean Series

The Eldean series consists of nearly level to moderately steep, well drained soils that formed in glacial outwash deposits. These soils are on valley train terraces along Little Miami River and Mad River and their tributaries. The terraces are in an intermediate position slightly above the recent alluvial soils and generally below the upland till soils. Eldean soils also are in a complex with other soils on kames, mostly in the western part of the county, and on some parts of a silted outwash plain in the west-central part in the county.

In a representative profile the surface layer is dark grayish brown silt loam 8 inches thick. Below this is 5 inches of dark brown silt loam. The subsoil is dark brown. The upper 6 inches is silty clay loam, the middle 14 inches is gravelly clay loam and gravelly clay, and the lower 5 inches is very gravelly coarse sandy loam. The substratum is brown very gravelly loamy coarse sand to a depth of 60 inches.

Available water capacity is moderate, and permeability is moderate in the subsoil and rapid in the underlying stratified sand and gravel. The rooting zone is deep. Eldean soils dry out early in the spring. They are sometimes droughty during prolonged dry periods.

The larger areas of Eldean soils along the larger stream valleys are most commonly used for cultivated crops. The main crops are corn, soybeans, and grass-legume meadow. Some areas are used as a source of gravel and sand for construction.

Representative profile of Eldean silt loam, 2 to 6 percent slopes, in Spring Valley Township NW¼ NE¼ sec. 23; 0.9 mile southwest of the village of Spring Valley, 200 feet south of Centerville Road, and 1,500 feet west of intersection with U.S. Route 42 (Sample GN-19 in Laboratory Data Section):

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) silt loam; weak fine granular structure; friable; many roots; common worm holes; few rounded pebbles; slightly acid; abrupt smooth boundary.

A&B—8 to 13 inches; dark brown (10YR 4/3) silt loam; moderate fine and medium subangular blocky structure; friable; common roots; dark yellowish brown (10YR 4/4) silty ped coatings; common worm holes; few pebbles; medium acid; clear wavy boundary.

B1t—13 to 19 inches; dark brown (7.5YR 4/4) silty clay loam; strong coarse and medium subangular blocky structure parting to fine subangular blocky; firm; few roots; thin patchy dark brown (7.5YR 3/2) clay films; few worm

holes; 5 to 10 percent coarse fragments; strongly acid; clear wavy boundary.

IIB21t—19 to 24 inches; dark brown (7.5YR 4/4) gravelly clay loam; moderate coarse subangular blocky structure parting to strong medium and fine angular blocky; firm; few roots; medium continuous dark brown (7.5YR 3/2) clay films; 15 to 20 percent coarse fragments mostly of chert, granite, and quartz; medium acid; clear wavy boundary.

IIB22t—24 to 33 inches; dark brown (7.5YR 4/4) gravelly clay; weak coarse angular blocky structure; firm; few roots; medium to thick continuous dark reddish brown (5YR 3/3) clay films; 25 to 30 percent coarse fragments; medium acid; abrupt wavy boundary.

IIB3t—33 to 38 inches; dark brown (7.5YR 3/2) very gravelly coarse sandy loam; weak coarse subangular blocky structure; firm; few roots; medium to thick continuous dark brown (7.5YR 3/2), pale brown (10YR 6/3), and light gray (10YR 7/1) coatings and weathered remnants of limestone; about 60 percent coarse fragments dominated by limestone; mildly alkaline; weathered remnants of limestone are calcareous; abrupt wavy boundary.

IIC—38 to 60 inches; brown (10YR 4/3) very gravelly loamy coarse sand; loose; weakly stratified; about 70 percent coarse fragments 1 inch to 3 inches in diameter; mildly alkaline, calcareous.

The solum ranges from 24 to 40 inches in thickness. Depth to calcareous material ranges from 18 to 36 inches. Some areas have a loess mantle as much as 18 inches thick. Reaction of the solum is dominantly medium acid to neutral in the upper part but thin subhorizons range to strongly acid. The lower part is neutral to mildly alkaline. Gravel content ranges from 0 to 20 percent in upper horizons and from 10 to 60 percent in lower B2 and B3 horizons.

The Ap horizon is brown (10YR 4/3 or 5/3) or dark grayish brown (10YR 4/2). It commonly is silt loam and loam but ranges to gravelly loam and clay loam in severely eroded areas. The B1 horizon is dark brown (10YR 4/3 or 7.5YR 4/4) silt loam to clay loam. The B2t horizon has hue of 10YR through 5YR, value of 3 through 5, and chroma of 4 or 5. It is clay, sandy clay, heavy clay loam, or gravelly classes of these textures. The B3 horizon is gravelly or very gravelly sandy loam, loam, or clay loam. The B3 horizon is calcareous in most profiles and contains remnants of weathered limestone pebbles.

Eldean soils are adjacent to Casco, Miamian, Ockley, Thackery, Warsaw, and Wea soils. Eldean soils are deeper to sand and gravel than Casco soils. They are underlain by sand and gravel whereas Miamian soils are underlain by glacial fill. They are not so deep to sand and gravel as Ockley, Thackery, and Wea soils. They have a lighter colored surface layer than Warsaw and Wea soils.

Fairmount Variant

The Fairmount variant consists of moderately deep, well drained soils that formed in residuum of thin bedded limestone and clay shale bedrock. These soils are mostly very steep, and they are on upland slopes along the major streams in the county.

In a representative profile the surface layer is very dark grayish brown silty clay loam 6 inches thick. The upper part of the subsoil is 6 inches of olive brown silty clay loam; the lower part is 11 inches of light olive brown and light yellowish brown channery silty clay. Below the subsoil is 6 inches of light yellowish brown channery silty clay. Limestone and soft shale bedrock is at a depth of 29 inches.

Available water capacity is moderate, and permeability is moderately slow. The rooting zone is moderately deep.

Fairmount variant soils are used mainly for pasture or woodland.

Representative profile of Fairmount silty clay loam, moderately deep variant, 25 to 50 percent slopes, in Sugar Creek Township, SE¼ SE¼ sec. 31; 1¼ mile southeast of Bellbrook and 50 feet northeast of Pennewit Road:

Al—0 to 6 inches; very dark grayish brown (10YR 3/2) silty clay loam; moderate medium granular structure; friable; many fine roots; 5 percent limestone fragments 1 inch to 3 inches in diameter; neutral; clear smooth boundary.

B2—6 to 12 inches; olive brown (2.5Y 4/4) heavy silty clay loam; moderate medium subangular blocky structure; firm; common fine roots; 10 percent limestone fragments 1 inch to 3 inches in diameter; neutral; clear smooth boundary.

B31—12 to 17 inches; light olive brown (2.5Y 5/4) channery silty clay; weak medium subangular blocky structure; firm; few fine roots; thin patchy dark grayish brown (10YR 4/2) coatings on ped faces; 25 percent fragments 1 inch to 3 inches in diameter; mildly alkaline, weakly calcareous; gradual smooth boundary.

B32—17 to 23 inches; light yellowish brown (2.5Y 6/4) channery silty clay; weak coarse subangular blocky structure; firm; few fine roots; thin patchy light olive brown (2.5Y 5/4) coatings on ped faces; 30 percent limestone fragments 1 inch to 3 inches in diameter; mildly alkaline, calcareous; gradual smooth boundary.

C—23 to 29 inches; light yellowish brown (2.5Y 6/4) channery silty clay; massive; firm; few fine roots; 30 percent limestone fragments 1 inch to 3 inches in diameter; mildly alkaline, calcareous; abrupt smooth boundary.

R—29 inches; pale olive (5Y 6/3) interbedded limestone and soft shale bedrock; mildly alkaline.

The solum ranges from 18 to 24 inches in thickness. Depth to bedrock is 20 to 40 inches. Reaction of the solum ranges from neutral to mildly alkaline.

The A horizon ranges from very dark grayish brown (10YR 3/2) to black (10YR 2/1). The B horizon is olive brown (2.5Y 4/4), grayish brown (2.5Y 5/2), light olive brown (2.5Y 5/4), and light yellowish brown (2.5Y 6/4). It is silty clay loam, silty clay, or clay and is channery in places.

Fairmount variant soils are commonly adjacent to Edenton soils. They have a darker colored surface layer than Edenton soils.

Fincastle Series

The Fincastle series consists of nearly level, somewhat poorly drained soils that formed in 18 to 40 inches of loess and in the underlying glacial till. These soils are on uplands in the east-central and southern parts of the county.

In a representative profile the surface layer is dark grayish brown silt loam 9 inches thick. Below that is 2 inches of grayish brown silt loam. The subsoil extends to a depth of 40 inches. The upper 25 inches is mostly mottled, grayish brown and brown silty clay loam, and the lower 4 inches is yellowish brown clay loam. The substratum is yellowish brown loam to a depth of 60 inches.

Available water capacity is high, and permeability is moderately slow. Runoff is slow, and water ponds on some more level areas for short periods. These soils have a seasonal high water table for long periods in winter and early in spring. They are slow to dry out in spring unless they are drained. The rooting zone is deep when the water table is low.

These soils are used mostly for cultivated crops.

A representative profile of Fincastle silt loam, 0 to 2 percent slopes, in Caesars Creek Township; 7½ miles southeast of Xenia, 150 feet east of Eleazer Road, and ½ mile south of intersection with U.S. Route 68:

Ap—0 to 9 inches; dark grayish brown (10YR 4/2) silt loam; moderate fine and medium granular structure; friable; many roots; slightly acid; abrupt smooth boundary.

A2—9 to 11 inches; grayish brown (10YR 5/2) silt loam; moderate medium granular structure; friable; many roots; strongly acid; clear smooth boundary.

B1t—11 to 14 inches; grayish brown (10YR 5/2) silty clay loam; common fine faint dark grayish brown (10YR 4/2) and brown (10YR 5/3) mottles; moderate; medium subangular blocky structure; firm; many roots; strongly acid; clear smooth boundary.

B21t—l4 to 17 inches; grayish brown (10YR 5/2) silty clay loam; common fine faint dark grayish brown (10YR 4/2) and yellowish brown (10YR 5/4) mottles; moderate medium subangular blocky structure; firm; common roots; thin and medium dark grayish brown (10YR 4/2) clay films; medium acid; gradual wavy boundary.

B22t—17 to 30 inches; brown (10YR 5/3) silty clay loam; common fine faint grayish brown (10YR 5/2), dark grayish brown (10YR 4/2), and yellowish brown (10YR 5/4) mottles; moderate medium subangular blocky structure; firm; few roots; medium continuous dark grayish brown (10YR 4/2) clay films; medium acid; gradual wavy boundary.

B3t—30 to 36 inches; brown (10YR 5/3) silty clay loam; weak medium and coarse subangular blocky structure; firm; few roots; thin patchy dark grayish brown (10YR 4/2) clay films; slightly acid; abrupt wavy boundary.

IIB3t—36 to 40 inches; yellowish brown (10YR 5/4) clay loam; weak coarse subangular blocky structure; firm; few roots; thin patchy grayish brown (10YR 5/2) clay films; 2 percent coarse fragments consisting of limestone pebbles and igneous glacial pebbles; neutral; gradual smooth boundary.

IIC1—40 to 48 inches; yellowish brown (10YR 5/4) loam; massive; firm; 10 percent coarse fragments; mildly alkaline; gradual smooth boundary.

IIC2—48 to 60 inches; yellowish brown (10YR 5/4) loam; massive; very firm; 10 percent coarse fragments; moderately alkaline, calcareous.

The solum ranges from 36 to 48 inches in thickness. Unless limed, the solum ranges from strongly acid to medium acid in the upper part, and in most profiles increases to slightly acid or neutral in the lower part.

The Ap horizon is dark grayish brown (10YR 4/2) or grayish brown (10YR 5/2). The A2 horizon is light brownish gray (10YR 6/2) or grayish brown (10YR 5/2). The B2 horizon has hue of 10YR, value of 4 through 6, and chroma of 1 through 4. Mottles are common to many. The B horizon is silty clay loam or silt loam and the IIB horizon, which formed in glacial till, typically is clay loam. The C horizon typically is brown (10YR 5/3) or yellowish brown (10YR 5/4) loam or silt loam.

Fincastle soils are the somewhat poorly drained member of a drainage sequence that includes the well drained Russell soils, the moderately well drained Xenia soils, and the very poorly drained Ragsdale soils. Fincastle soils are commonly adjacent to Xenia and Ragsdale soils. They are similar to Crosby and

Reeseville soils. They have a thicker loess mantle than Crosby soils. The lower part of the subsoil in Fincastle soils formed in glacial till, whereas the Reesville soils formed entirely in loess. Fincastle soils are near Randolph soils. They differ from Randolph soils in having no bedrock at a depth of 20 to 40 inches.

Genesee Series

The Genesee series consists of well drained, nearly level soils that formed in loamy alluvium. These soils are on flood plains along the major streams in the county. They are subject to flooding.

In a representative profile the surface layer is dark grayish brown loam 10 inches thick. The subsoil is 26 inches of dark brown loam and silt loam. Below that, to a depth of 66 inches, is stratified alluvium that is loam, silt loam, and fine sandy loam.

Available water capacity is high, and permeability is moderate. Flooding is a particular hazard in winter and in spring. The rooting zone is deep.

Genesee soils are used mainly for row crops where areas of these soils are large enough to farm. Small areas generally are wooded.

Representative profile of Genesee loam, in Spring Valley Township, NW¼ sec. 17; 250 feet west of Little Miami River:

Ap—0 to 10 inches; dark grayish brown (10YR 4/2) loam; weak coarse granular structure; friable; mildly alkaline, calcareous; clear smooth boundary.

B21—10 to 19 inches; dark brown (10YR 4/3) loam; weak coarse subangular blocky structure; friable; dark grayish brown (10YR 4/2) coatings on ped faces; few worm channels; thin sandy loam strata 1 inch thick; mildly alkaline, calcareous; clear smooth boundary.

B22—19 to 36 inches; dark brown (10YR 4/3) silt loam; weak coarse subangular blocky structure; friable; patchy dark grayish brown (10YR 4/2) coatings on ped faces; few worm channels; mildly alkaline, calcareous; gradual smooth boundary.

Cl—36 to 44 inches; dark yellowish brown (10YR 4/4) loam; massive; friable; sandy loam strata 1 inch thick; mildly alkaline, calcareous; clear smooth boundary.

C2—44 to 55 inches; dark grayish brown (10YR 4/2) silt loam; massive; friable; mildly alkaline, calcareous; clear smooth boundary.

C3—55 to 66 inches; very dark grayish brown (10YR 3/2) fine sandy loam; massive; friable; mildly alkaline, calcareous.

The solum ranges from 30 to 40 inches in thickness. Reaction of the soil is mildly alkaline or moderately alkaline throughout, and the soil is calcareous. The solum is loam or silt loam but in some profiles ranges to light silty clay loam or clay loam in the B horizon. The Ap horizon is dark brown (10YR 3/3), dark grayish brown (10YR 4/2), or brown (10YR 5/3). The B horizon is dark yellowish brown (10YR 4/4) to yellowish brown (10YR 5/4) and dark brown (10YR 4/3). The C horizon is loam, silt loam, and fine sandy loam.

Genesee soils in Greene County differ from other Genesee soils in having carbonates throughout the solum. This difference does not affect the use and management of these soils.

Genesee soils are the well drained member of a drainage sequence that includes the moderately well drained Eel soils and the very poorly drained Sloan soils. Genesee soils are similar to well drained Ross soils. They are lighter colored than Ross soils.

Hennepin Series

The Hennepin series consists of steep and very steep, well drained soils that are shallow to glacial till. These soils are throughout the county, mainly in long narrow areas adjacent to drainageways.

In a representative profile the surface layer is dark grayish brown loam 4 inches thick. The subsoil is 8 inches of a brown clay loam. The substratum is brown loam glacial till to a depth of 60 inches.

Available water capacity is moderate to low. Permeability is moderate in the upper 12 inches and moderately slow in the substratum below a depth of 12 inches. Runoff is rapid to very rapid. The rooting zone is shallow over firm glacial till.

Most areas of Hennepin soils are too steep to be suited to farming. These soils are mostly wooded.

Representative profile of Hennepin loam, from an area of Miamian and Hennepin soils, 25 to 50 percent slopes, in New Jasper Township; 4½ miles southeast of Xenia, 150 yards east of Gultice Road, and 0.7 mile northeast of intersection of Stone Road:

Al—0 to 4 inches; dark grayish brown (10YR 4/2) loam; moderate fine and medium granular structure; friable; many roots; neutral; clear smooth boundary.

B2—4 to 12 inches; brown (10YR 4/3) clay loam; moderate medium subangular blocky structure; firm; common roots; thin very patchy brown (10YR 4/3) clay films and organic stains on ped faces; 2 to 5 percent coarse fragments; neutral; gradual wavy boundary.

C—12 to 60 inches; brown (10YR 5/3) loam; massive; firm; 2 to 5 percent coarse fragments; moderately alkaline, calcareous.

The solum ranges from 12 to 18 inches in thickness. Reaction of the solum is slightly acid to mildly alkaline, and the soil is calcareous in the lower part in places.

The A horizon is commonly loam, but in places it is silt loam. It is dark grayish brown (10YR 4/2) or brown (10YR 4/3). The B horizon is brown (10YR 5/3 or 4/3) loam and clay loam. The C horizon is calcareous loam or light clay loam.

Hennepin soils are commonly associated with Miamian soils. They are thinner over glacial till than Miamian soils. They are near Ritchey soils, but have no limestone bedrock at a depth of 10 to 20 inches, which Ritchey soils have.

In Greene County, Hennepin soils are mapped only with Miamian soils. For descriptions of Miamian and Hennepin soils, see the Miamian series.

Kokomo Series

Depth class: Very deep
Drainage class: Very poorly drained
Parent material: Wisconsinan till
Landform: Flats and depressions on the Wisconsinan till plain
Slope: 0 to 1 percent
Adjacent soils: Celina, Crosby and Miamian
Taxonomic class: Fine, mixed, superactive, mesic Typic Argiaquolls

Figure 15 Soil profile of the Kokomo soil series

Typical Pedon:

Kokomo silty clay loam, 0 to 1 percent slopes, about 4 miles north northwest of Sabina, in Wilson Township, Clinton County, Ohio; about 1920 feet northwest of the intersection of Burristown Road and Peelle Road along Peelle Road, then about 660 feet east. USGS Bowersville topographic quadrangle, lat: 39 degrees 32 minutes 05 seconds N., long: 83 degrees 39 minutes 35 seconds W., NAD 27.

Ap—0 to 10 inches; very dark gray (10YR 3/1) silty clay loam, dark gray (10YR 4/1) dry; weak coarse subangular blocky structure; firm; common fine and medium roots; a few pebbles; moderately acid; clear smooth boundary.

Bg—10 to 15 inches; very dark gray (10YR 3/1) silty clay loam; moderate medium subangular blocky structure; firm; many fine and common medium roots; common medium faint dark gray (10YR 4/1) iron depletions in the matrix; many faint very dark gray (10YR 3/1) organic coatings on faces of peds; a few pebbles; slightly acid; gradual wavy boundary.

Btg1—15 to 19 inches; dark gray (10YR 4/1) silty clay loam; moderate medium subangular blocky structure; firm; many fine and common medium roots; common faint dark gray (10YR 4/1) clay films on faces of peds; few faint very dark gray (10YR 3/1) organic coatings on faces of peds; a few pebbles; slightly acid; gradual wavy boundary.

Btg2—19 to 26 inches; gray (2.5Y 5/1) silty clay loam; weak fine prismatic structure parting to moderate medium subangular blocky; firm; few fine and medium roots; common faint gray (10YR 5/1) clay films on vertical faces of prisms; many medium faint gray (10YR 5/1) clay depletions on faces of peds; many medium distinct light olive brown (2.5Y 5/4) and common medium prominent yellowish brown (10YR 5/4) masses of iron accumulation in the matrix; few very dark gray (10YR 3/1) krotovina; a few pebbles; slightly acid; clear wavy boundary.

Btg3—26 to 32 inches; gray (10YR 5/1) silty clay loam; moderate fine prismatic structure parting to moderate medium angular blocky; firm; few fine roots; few faint gray (10YR 5/1) clay films on vertical faces of prisms; common faint gray (10YR 5/1) clay depletions on faces of peds; common coarse prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; few very dark gray (10YR 3/1) krotovina; few fine faint light brownish gray (10YR 6/2) masses of calcium carbonate accumulation on faces of peds; 3 percent pebbles; neutral; clear wavy boundary.

Bt—32 to 42 inches; yellowish brown (10YR 5/6) silty clay; moderate medium prismatic structure parting to moderate fine angular blocky; firm; few fine roots; few faint gray (10YR 5/1) clay films on vertical faces of prisms; common medium prominent gray (10YR 5/1) and dark gray (10YR 4/1) iron depletions in the matrix; few very dark gray (10YR 3/1) krotovina; 3 percent pebbles; neutral; gradual wavy boundary.

BC—42 to 51 inches; brown (7.5YR 4/4) clay loam; weak coarse subangular blocky structure; firm; few fine roots; common medium prominent gray (10YR 5/1) and dark gray (10YR 4/1) iron depletions in the matrix; few medium distinct yellowish brown (10YR 5/6) masses of iron accumulation throughout; few very dark gray (10YR 3/1) krotovina; 10 percent pebbles; slightly effervescent; slightly alkaline; clear wavy boundary.

C—51 to 80 inches; brown (10YR 4/3) loam; massive; firm; very few fine roots along fracture faces; common medium distinct dark gray (10YR 4/1) iron depletions throughout; common medium distinct gray (10YR 6/1) masses of secondary carbonates along fracture faces; 10 percent pebbles; strongly effervescent; moderately alkaline.

Range in Characteristics:

Thickness of the solum: 36 to 60 inches
Thickness of the mollic epipedon: 10 to 24 inches
Thickness of overwash: 8 to 14 inches
Depth to carbonates: 36 to 60 inches
Content of rock fragments: A horizon=0 to 5 percent; Bg or Bt horizon=0 to 5 percent; BC horizon=5 to 14 percent; C horizon=5 to 14 percent

Ap horizon:
Color=hue of 10YR, value of 2 or 3, chroma of 1
Texture=silty clay loam or silt loam

Bg horizon:
Color=hue of 10YR, value of 3 to 5, chroma of 1 or 2
Texture=silty clay loam

Btg or Bt horizon:
Color=hue of 10YR or 2.5Y, value of 4 or 5, chroma of 1 to 6
Texture=silty clay loam, silty clay or clay loam

2BC horizon:
Color=hue of 7.5YR or 10YR, value of 4 or 5, chroma of 3 to 6
Texture=clay loam or loam

2C horizon:
Color=hue of 10YR, value of 4 or 5, chroma of 3 or 4
Texture=loam

Lewisburg Series

These moderately well drained soils are commonly on low knolls and gentle side slopes of the uplands. They formed in loamy calcareous glacial till. Permeability is moderate or moderately slow over slow. The slope range is 0 to 6 percent.

Lewisburg soils are similar to Celina, Kendallville, an Miamian soils and are commonly near Celina, Crosby, and Odell soils. Celina, Kendallville, and Miamian soils have a thicker solum than Lewisburg soils. Crosby and Odell soils are wetter and have mottles just below the horizon. Odell soils also have a mollic epipedon. Kendallville soils, which formed in glacial outwash ove glacial tiil, have a lower clay content in the argillic horizon.

Typical pedon of Lewisburg silt loam in an area of Crosby-Lewisburg silt loams, 2 to 6 percent slopes, Madison County, Pleasant Township, 3.4 miles north of Mount Sterling, 0.2 mile northwest of the intersection of Kiousville-Palestine Road and Anderson-Antioch Road along Kiousville-Palestine Road, then 310 yards west:

Ap-0 to 9 inches; brown (10YR 4/3) silt loam; mode medium granular structure; friable; many roots; fe pebbles; neutral; abrupt smooth boundary.
B2t-9 to 15 inches; dark yellowish brown (10YR 4/4 clay loam; weak coarse prismatic structure parting to moderate medium subangular blocky; firm; corn roots; patchy dark yellowish brown (1 OYR 4/4) clay films on horizontal and vertical faces of peds; 5 percent pebbles; slightly acid; abrupt wavy boundary.
B3t-15 to 21 inches; yellowish brown (10YR 5/4) clay loam; moderate coarse subangular blocky structure firm; few roots; patchy dark yellowish brown (10YR 4/4) clay films on horizontal and vertical faces peds; common light gray (10YR 7/1) weathered limestone fragments; 8 percent pebbles; slight effervescence; mildly alkaline; clear wavy boundary
Cl-21 to 33 inches; yellowish brown (10YR 5/4) io few fine distinct light brownish gray (10YR 6/2) mottles; massive; firm; 12 percent pebbles; strong effervescence; moderately alkaline; gradual wavy boundary.
C2-33 to 45 inches; yellowish brown (10YR 5/4) loam; common medium distinct light brownish gray (1 OYR 6/2) mottles; massive; firm; 12 percent pebbles; strong effervescence; moderately alkaline; gradual wavy boundary.
C3-45 to 60 inches; yellowish brown (10YR 5/4) loam; massive; firm; 12 percent pebbles; strong effervescence; moderately alkaline.

Solum depth ranges from 12 to 22 inches. Depth to carbonates ranges from 10 to 18 inches.

The A horizon has hue of 10YR, value of 4, and chroma of 2 or 3. Texture is dominantly silt loam but is clay loam in some pedons. Reaction ranges from medium acid to neutral.

The B horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4. Texture is clay loam, clay, or silty clay loam. Reaction ranges from medium acid to mildly alkaline.

The C horizon has hue of 10YR, value of 5, and chroma of 3 or 4. Reaction is mildly alkaline or moderately alkaline.

Linwood Series

The Linwood series consists of black, very poorly drained organic soils 16 to 50 inches thick over mineral material. These soils are in depressions in the flood plains or at the margins of glacial outwash valleys below upland seeps. A few areas are in depressions on the uplands.

In a representative profile black organic material extends to a depth of 35 inches. Below this is dark gray, calcareous silt loam to a depth of 60 inches.

Available water capacity is high, and permeability is rapid in the organic layer and moderate in the mineral material. These soils have a high water table for most of the year and are commonly ponded. Many areas are kept saturated by water from springs or seeps from adjacent uplands or from underground aquifers. The rooting zone is moderately deep or deep in areas that have been drained.

Artificially drained areas of Linwood soils are used for crops. Corn is the main crop. Undrained areas are in sedges and water-tolerant trees.

Representative profile of Linwood muck, in Cedarville Township; 1¾ miles northeast of Cedarville and 0.4 mile northeast of intersection of Fishworm and Cortsville Roads:

Oap—0 to 7 inches; black (N 2/0) rubbed sapric material less than 5 percent fiber rubbed; 40 percent mineral; moderate medium granular structure; friable; neutral; abrupt smooth boundary.

Oa2—7 to 16 inches; black (10YR 2/1) rubbed sapric material; 12 to 15 percent dark brown (10YR 4/3) fiber, none rubbed; 15 percent mineral; weak medium angular blocky structure; firm, slightly brittle; neutral; gradual smooth boundary.

Oa3—16 to 22 inches; black (10YR 2/1) sapric material; 30 to 40 percent dark yellowish brown (10YR 4/4) fiber, none rubbed; 10 percent mineral; massive; friable; few calcite shells; neutral; gradual smooth boundary.

Oa4—22 to 25 inches; black (10YR 2/1) sapric material; 12 to 15 percent dark brown (7.5YR 4/4) fiber, 9 percent rubbed; 5 percent mineral; massive; thin olive gray (5Y 5/2) silt strata; many white 2 to 3 millimeter snail shells; friable; neutral; gradual smooth boundary.

Oa5—25 to 30 inches; black (10YR 2/1) sapric material; 15 percent fiber, 2 percent rubbed; weak medium and fine subangular blocky structure; friable; neutral; gradual smooth boundary.

Oa6—30 to 35 inches; black (10YR 2/1) sapric material; 5 percent fiber; 10 percent mineral content in bottom 1 inch; massive; friable; neutral; gradual smooth boundary.

IICg—35 to 60 inches; dark gray (10YR 4/1) silt loam; massive; firm; mildly alkaline, calcareous.

Depth to the IIC horizon ranges from 16 to 50 inches. Reaction throughout the solum ranges from slightly acid to mildly alkaline. The surface tier is black (10YR 2/1) or very dark brown (10YR 2/2). The organic part of the subsurface and bottom tiers has hue of 10YR or 7.5YR, value of 2 or 3, and chroma of 1 or 2 or broken face and rubbed. The subsurface and bottom tiers are from 0 to 10 percent coarse woody fragments. The IICg horizon has hue of 10YR through 5Y, value of 4 through 6, and chroma of 1 or 2. It is silt loam, loam, and silty clay loam. Snail shells are commonly in the organic part of the subsurface and bottom tiers.

Linwood soils are commonly adjacent to Westland soils. They have organic layers, whereas Westland soils have none.

Losantville Series

Depth class: Very deep
Drainage class: Moderately well drained
Parent material: Wisconsinan till
Landform: Slight rises on the Wisconsinan till plain
Position on the landform: Summits and shoulders
Slope: 2 to 6 percent
Adjacent soils: Celina, Miamian and Wapahani

Typical Pedon:

Losantville silt loam, 2 to 6 percent slopes, eroded, about 2 miles east of New Lisbon, in Henry County, Indiana; about 45 feet west and 738 feet south of the northeast corner of sec. 7, T. 16 N., R. 12 E., USGS Cambridge City, Indiana topographic quadrangle, lat: 39 degrees 51 minutes 33.4 seconds N., long: 85 degrees 13 minutes 15.6 seconds W., NAD 27.

Ap—0 to 7 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; moderate fine granular structure; friable; common fine and medium roots; 4 percent rock fragments; neutral; abrupt smooth boundary.

Bt1—7 to 12 inches; dark yellowish brown (10YR 4/4) clay; moderate medium prismatic structure parting to moderate medium subangular blocky; firm; many faint dark yellowish brown (10YR 3/4) clay films on faces of peds; 3 percent rock fragments; neutral; clear wavy boundary.

Bt2—12 to 16 inches; dark yellowish brown (10YR 4/4) clay; moderate medium subangular blocky structure; firm; many faint brown (10YR 4/3) clay films on faces of peds; 4 percent rock fragments; neutral; abrupt wavy boundary.

Cd—16 to 60 inches; yellowish brown (10YR 5/4) loam; massive; very firm; common fine distinct grayish

brown (10YR 5/2) iron depletions in the matrix; 10 percent rock fragments; strongly effervescent; moderately alkaline.

Range in Characteristics:

Thickness of the solum: 12 to 20 inches
Depth to carbonates: 8 to 20 inches
Content of rock fragments: A horizon=0 to 10 percent; Bt horizon=1 to 12 percent; Cd horizon=2 to 12 percent

Ap horizon:
Color=hue of 10YR, value of 4 or 5, chroma of 2 to 6
Texture=silt loam, loam or clay loam

Bt horizon:
Color=hue of 10YR or 7.5YR, value of 4 or 5, chroma of 3 to 6
Texture=clay or clay loam

BC horizon: (where present)
Color=hue of 10YR or 7.5YR, value of 4 or 5, chroma of 3 to 6
Texture=loam or clay loam

Cd horizon:
Color=hue of 10YR, value of 5 or 6, chroma of 3 to 6
Texture=loam

Lumberton Series

Depth class: Deep
Drainage class: Well drained
Parent material: Loess and loamy outwash over limestone residuum
Landform: Strath terraces, stream terraces and valley walls
Position on the landform: Treads, risers, footslopes, and backslopes
Slope: 0 to 50 percent
Adjacent soils: Ockley

Typical Pedon:

Lumberton silt loam, 0 to 2 percent slopes, about 1600 feet south of Port William, in Liberty Township, Clinton County, Ohio; about 1050 feet south of the junction of OH 134 and Sabina Road, along Sabina Road then 350 feet west. USGS Port William topographic quadrangle, lat: 39 degrees 32 minutes 54 seconds N., long: 83 degrees 46 minutes 50 seconds W., NAD 27.

Ap—0 to 9 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; moderate medium and coarse granular structure; friable; common fine and few medium roots; 2 percent pebbles; slightly acid; abrupt smooth boundary.

Bt1—9 to 14 inches; brown (7.5YR 4/4) silt loam; moderate medium subangular blocky structure; friable; few fine roots; few faint brown (7.5YR 4/4) clay films on faces of peds; common faint brown (10YR 4/3) organic coatings on faces of peds; 2 percent pebbles; moderately acid; clear smooth boundary.

2Bt2—14 to 26 inches; brown (7.5YR 4/4) clay loam; moderate medium subangular blocky structure; firm; few fine roots; common prominent brown (7.5YR 4/4) clay films on faces of peds; 5 percent pebbles; moderately acid; clear wavy boundary.

2Bt3—26 to 32 inches; brown (10YR 4/3) clay loam; moderate medium subangular blocky structure; firm; few fine roots; many faint brown (10YR 4/3) clay films on faces of peds; 5 percent pebbles; moderately acid; clear wavy boundary.

2BC—32 to 38 inches; dark yellowish brown (10YR 4/4) clay loam; weak coarse subangular blocky structure; friable; few fine roots; few distinct brown (7.5YR 4/4) clay films on faces of peds; 5 percent limestone pararock fragments; slightly effervescent; neutral; diffuse wavy boundary.

3C—38 to 54 inches; dark yellowish brown (10YR 4/4) and pale brown (10YR 6/3) very channery fine sandy loam; massive; friable; common fine faint brown (10YR 4/3) masses of iron accumulation throughout; 55 percent channers; slightly effervescent; moderately alkaline; clear irregular boundary.

3R—54 to 58 inches; brownish yellow (10YR 6/6) limestone bedrock.

Range in Characteristics:

Thickness of the solum: 24 to 38 inches.
Depth to bedrock: 40 to 60 inches
Depth to carbonates: 22 to 37 inches
Content of rock fragments: A horizon=0 to 2 percent; Bt and 2Bt horizon=2 to 10 percent; 2BC horizon=5 to 14 percent; 2C horizon=30 to 70 percent.

Ap horizon:
Color=hue of 10YR, value of 4 or 5, chroma of 2 or 3
Texture=silt loam

Bt horizon:
Color=hue of 10YR or 7.5YR, value of 4 or 5, chroma of 3 to 6
Texture=silt loam or silty clay loam

2Bt horizon:
Color=hue of 10YR or 7.5YR, value of 4 or 5, chroma of 3 to 6
Texture=silty clay loam, loam, or clay loam

2BC horizon:
Color=hue of 10YR to 5Y, value of 3 to 5, chroma of 3 to 6
Texture=clay loam or clay

3*C horizon:*
Color=hue of 10YR, value of 3 to 5, chroma of 3 to 6
Texture=sandy loam or fine sandy loam in the fine earth fraction

Miamian Series

The Miamian series consists of nearly level to very steep, well drained soils that formed in medium textured glacial till. These soils are on uplands throughout the county.

In a representative profile the surface layer is brown silt loam about 7 inches thick. The subsoil extends to a depth of 38 inches. The upper 7 inches is brown silty clay loam, the middle 16 inches is yellowish brown and brown clay and clay loam, and the lower 8 inches is brown loam. The substratum is yellowish brown loam to a depth of 60 inches.

Available water capacity is moderate, and permeability is moderately slow. The compact till tends to limit roots to a moderate depth.

Miamian soils are used mainly for crops. The main crops are corn, wheat, oats, soybeans, and grass-legume meadow. Some areas, especially those in which the soils are steeper or are severely eroded, are in permanent pasture or woodland.

Representative profile of Miamian silt loam, 2 to 6 percent slopes, in Xenia Township, NE¼ NW¼ sec. 35; 4 miles southwest of Yellow Springs, 2,000 feet east of West Enon Road, and 100 yards south of section line, behind Greene County Vocational School (Sample GN-8 in Laboratory Data Section):

Ap—0 to 7 inches; brown (10YR 5/3) silt loam; weak medium and fine granular structure; friable; many roots; strongly acid; abrupt smooth boundary.

Bl—7 to 14 inches; brown (7.5YR 5/4) silty clay loam; moderate medium subangular blocky structure; friable; many roots; very strongly acid; clear wavy boundary.

IIB21t—14 to 22 inches; brown (7.5YR 5/4) clay; strong medium prismatic structure parting to strong medium subangular blocky; firm; many roots; medium patchy dark brown (7.5YR 4/4) clay films on vertical and horizontal faces; 2 to 5 percent coarse fragments; strongly acid; gradual wavy boundary.

IIB22t—22 to 30 inches; yellowish brown (10YR 5/4) clay loam; moderate medium prismatic structure parting to strong coarse subangular blocky; firm; common roots; thick patchy brown (10YR 4/3) clay films on vertical and horizontal ped faces; 2 to 5 percent coarse fragments; neutral; clear wavy boundary.

IIB3t—30 to 38 inches; brown (10YR 4/3) loam; weak coarse subangular blocky structure; firm; few roots; thin patchy dark yellowish brown (10YR 3/4) clay films on vertical ped faces; light gray (10YR 7/2) remnants of weathered calcite on matrix; about 5 percent coarse fragments; mildly alkaline; diffuse irregular boundary.

IIC1—38 to 42 inches; yellowish brown (10YR 5/4) loam; massive; firm; about 10 percent coarse fragments; mildly alkaline; calcareous; clear smooth boundary.

IIC2—42 to 60 inches; dark yellowish brown (10YR 4/4) loam; massive; firm; about 10 percent coarse fragments; mildly alkaline, calcareous.

Figure 16. Soil profile of the Miamian soil series (scale in feet).

The solum ranges from 20 to 40 inches in thickness. A loess mantle, less than 18 inches thick, is in uneroded areas. Reaction of the solum ranges from very strongly acid to moderately alkaline in the lower part.

The Ap horizon is dark grayish brown (10YR 4/2) or brown (10YR 5/3). It is commonly silt loam but is clay loam in places. The Bl horizon is brown (7.5YR 5/4 or 10YR 5/3) or yellowish brown (10YR 5/4). It is heavy silt loam or silty clay loam. The B2 horizon is dark yellowish brown (10YR 4/4), yellowish brown (10YR 5/4), or brown (7.5YR 4/4 or 5/4). It is silty clay loam, clay loam, and clay. The B3 horizon commonly is clay loam or loam. The C horizon is brown (10YR 5/3), yellowish brown (10YR 5/4), or dark yellowish brown

(10YR 4/4). It is loam or silt loam and is 5 to 15 percent coarse fragments.

Miamian soils are the well drained member of a drainage sequence that includes the moderately well drained Celina soils, the somewhat poorly drained Crosby soils, and the very poorly drained Brookston soils. They are commonly adjacent to Hennepin, Casco, Russell, Eldean, Edenton, and Milton soils. They are thicker over glacial till than Hennepin soils. They have a thinner loess mantle than Russell soils and differ from Milton and Edenton soils in lacking bedrock at a depth of 20 to 40 inches. They differ from Casco and Eldean soils in lacking sand and gravel below the subsoil.

Millsdale Series

The Millsdale series consists of nearly level, moderately deep, very poorly drained soils that formed in glacial till. These soils are 20 to 40 inches thick over limestone bedrock. They are on uplands in the northeastern part of the county.

In a representative profile the surface layer is black silty clay loam 14 inches thick. The subsoil is mottled gray clay loam 12 inches thick. Light gray limestone bedrock is at a depth of 26 inches.

Available water capacity is high, and permeability is moderately slow. The surface layer is high in organic matter content. These soils have a seasonal high water table in winter and in spring. They often receive seepage water from adjacent higher soils. The rooting zone is moderately deep over bedrock.

Millsdale soils are used mostly for pasture and cultivated crops. Most cultivated areas are artificially drained. In some areas, drainage is difficult because the depth to limestone bedrock varies.

Representative profile of Millsdale silty clay loam, in Miami Township, NW¼ NE¼ sec. 24; 2 miles south of Village of Yellow Springs, 0.5 mile east of U.S. Route 68, and 600 feet south of Hyde Road:

Ap—0 to 8 inches; black (10YR 2/1) silty clay loam; strong medium granular structure; firm; many roots; neutral; clear smooth boundary.

B21t—8 to 14 inches; black (10YR 2/1) heavy silty clay loam; strong fine columnar structure parting to strong fine angular blocky; firm; many roots; thin patchy clay films on ped faces; neutral; clear irregular boundary.

B22tg—14 to 26 inches; gray (10YR 5/1) heavy clay loam; few fine distinct dark brown (7.5YR 4/4) mottles; moderate medium and coarse subangular blocky structure; firm; few roots; thin patchy clay films on ped faces; mildly alkaline; abrupt smooth boundary.

IIR—26 inches; light gray (10YR 7/1) hard dolomitic limestone; exterior coated with dark brown (7.5YR 4/4) and gray (10YR 5/1) stains; roots penetrate into widely spaced joints in the bedrock.

The thickness of the solum and depth to bedrock range from 20 to 40 inches. The lower part of the solum in some profiles formed in limestone residuum. Reaction ranges from slightly acid to neutral in the upper part of the B horizon and from neutral to mildly alkaline in the lower part.

The A horizon and upper part of the B horizon to a depth of 10 to 16 inches are black (10YR 2/1) or very dark gray (10YR 3/1) silty clay loam or clay loam. The lower part of the B horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 0 through 2. It is heavy silty clay loam, silty clay, clay, or heavy clay loam. A thin C horizon is in some profiles. It is loam or clay loam, and is calcareous.

Millsdale soils are the very poorly drained members of a drainage sequence that includes the somewhat poorly drained Randolph soils and the well drained Milton soils. In a few areas Millsdale soils are near Brookston, Ragsdale, and Westland soils. Millsdale soils have limestone bedrock at a depth of less than 40 inches, whereas Brookston, Ragsdale, and Westland soils are underlain by glacial till or by sand and gravel and have no bedrock within a depth of 40 inches.

Milton Series

The Milton series consists of nearly level to sloping, well drained, moderately deep soils that formed in glacial till. Limestone bedrock is at a depth of 20 to 40 inches.

In a representative profile the surface layer is dark grayish brown and brown silt loam 6 inches thick. The upper part of the subsoil is 13 inches of brown silty clay loam, and the lower part is 11 inches of brown clay loam. Light gray limestone bedrock is at a depth of 30 inches.

Available water capacity is moderate. Permeability is moderate in the subsoil, but the underlying limestone bedrock is fractured and water moves rapidly through it. The rooting zone is moderately deep over bedrock.

Milton soils are used mostly for crops. Some areas, especially those in which soils are sloping, are used for pasture or woodland.

Representative profile of Milton silt loam, 2 to 6 percent slopes, in Miami Township; ½ mile

east of village of Yellow Springs, 100 yards northwest of Outdoor Education Center Office (Sample GN-22 in Laboratory Data Section):

Apl—0 to 3 inches; dark grayish brown (10YR 4/2) silt loam, strong fine granular structure; friable; many roots; medium acid; clear smooth boundary.

Ap2—3 to 6 inches; brown (10YR 4/3) silt loam; weak fine subangular blocky structure; friable; many roots; medium acid; abrupt irregular boundary.

B1t—6 to 10 inches; brown (7.5YR 4/4) light silty clay loam; moderate medium subangular blocky structure; friable; many roots; thin patchy dark yellowish brown (10YR 4/4) clay films; strongly acid; gradual smooth boundary.

B21t—10 to 19 inches; brown (7.5YR 5/4) silty clay loam; moderate medium subangular blocky structure parting to moderate fine subangular and angular blocky; firm; many roots; thin and medium continuous brown (7.5YR 4/4) clay films; about 5 percent coarse material consisting of glacial erratics; strongly acid; gradual wavy boundary.

B22t—19 to 30 inches; brown (7.5YR 4/4) clay loam; strong medium subangular blocky structure parting to moderate fine subangular and angular blocky; very firm; common roots; medium continuous dark yellowish brown (10YR 4/4) clay films; 5 to 10 percent coarse fragments consisting of glacial erratics to a depth of 28 inches and sandstone fragments between depths of 28 and 30 inches; strongly acid; abrupt wavy boundary.

IIR—30 inches; light gray (10YR 7/1) hard dolomitic limestone; yellowish brown (10YR 5/4 or 5/6) stains on rock surface.

The thickness of the solum and depth to bedrock range from 20 to 40 inches. Reaction of the solum ranges from strongly acid to neutral in the upper part and ranges to mildly alkaline in the lower part.

The Ap horizon is dark grayish brown (10YR 4/2) or brown (10YR 4/3). The B horizon is brown (7.5YR 5/4 or 4/4) or reddish brown (5YR 4/4). It is silty clay loam, heavy clay loam, or clay. Some profiles have a thin C horizon several inches thick in till or in residuum weathered from limestone.

Milton soils are the well drained members of a drainage sequence that includes the somewhat poorly drained Randolph soils and the very poorly drained Millsdale soils. Milton soils are near these soils and are also near Ritchey, Miamian, and Milton variant soils. Milton soils are deeper to limestone bedrock than Ritchey soils. They are shallower to limestone than Miamian soils. They have a lighter colored surface layer and contain fewer coarse fragments than Milton variant soils.

Milton Variant

The Milton variant consists of very steep, well drained soils that formed mostly in residuum and colluvium of limestone bedrock. These soils are moderately deep over limestone bedrock. They are on side slopes of the valley of the Little Miami River.

In a representative profile the surface layer is very dark brown very channery silt loam 12 inches thick. The upper 7 inches of the subsoil is dark brown channery silty clay loam, the middle 5 inches is yellowish brown very channery silty clay loam, and the lower 6 inches is yellowish brown very channery loam. Limestone bedrock is at a depth of 30 inches.

Available water capacity is low, and permeability is moderate. The rooting zone is moderately deep.

Most areas of Milton variant soils are in woodland.

Representative profile of Milton soils, channery variant, 25 to 50 percent slopes, in Miami Township; about 0.8 mile southwest of Clifton, 500 feet north-northwest of 4-H Camp recreation building, and 150 feet east of the Little Miami River:

Al—0 to 12 inches; very dark brown (10YR 2/2) very channery silt loam; strong medium granular structure; friable; many fine roots; dark gray (N 4/0) coatings on ped faces; 50 to 60 percent coarse fragments; neutral; gradual wavy boundary.

B21—12 to 19 inches; dark brown (10YR 4/3) channery silty clay loam; moderate fine and medium subangular blocky structure; firm; common fine roots; thin very patchy brown (10YR 5/3) coatings on ped faces; about 25 percent coarse fragments; neutral; gradual wavy boundary.

B22—19 to 24 inches; yellowish brown (10YR 5/4) very channery light silty clay loam; weak medium subangular blocky structure; friable; few fine roots; thin patchy pale brown (10YR 6/3) coatings on ped faces; about 50 percent coarse fragments; neutral; gradual wavy boundary.

B3—24 to 30 inches; yellowish brown (10YR 5/4) very channery loam; weak medium subangular blocky structure; friable; few fine roots; thin very patchy dark yellowish brown (10YR 4/4) coatings on ped faces; about 50 percent coarse fragments; mildly alkaline; gradual wavy boundary.

R—30 inches; light yellowish brown (2.5Y 6/4) limestone.

The thickness of the solum and depth to bedrock range from 20 to 40 inches. Reaction of the B horizon is neutral to mildly alkaline.

The A horizon is very dark grayish brown (10YR 3/2), very dark brown (10YR 2/2), or

black (10YR 2/1). It is very channery silt loam and channery silt loam. The B horizon is dark brown (10YR 4/3), yellowish brown (10YR 5/4), and dark yellowish brown (10YR 4/4). The B2 horizon is channery or very channery and is mainly silty clay loam, but individual horizons are clay, silty clay, or clay loam. The B3 horizon, where present, is very channery loam or very channery clay loam.

Milton variant soils are commonly adjacent to Ritchey and Milton soils. They have a darker colored surface layer and contain more coarse fragments than these soils.

Ockley Series

The Ockley series consists of nearly level to gently sloping, well drained soils that formed in a thin loess mantle and loamy glacial outwash underlain by sand and gravel at a depth of 40 to 60 inches. These soils are on valley train terraces along the major streams and on broad outwash terraces on the uplands.

In a representative profile the surface layer is brown silt loam 10 inches thick. The subsoil extends to a depth of 45 inches. The upper 12 inches is dark brown silty clay loam, the middle 12 inches is dark brown clay loam, and the lower 11 inches is dark yellowish brown and dark brown gravelly sandy clay loam. The substratum is stratified gravelly sand to a depth of 60 inches.

Available water capacity is high, and permeability is moderate in the subsoil and rapid in the underlying sand and gravel. Runoff is moderate to slow. Water seldom ponds on the surface for prolonged periods. The rooting zone is deep.

Most areas of Ockley soils are used for crops. Corn, soybeans, and meadow crops are the main crops. These soils generally dry out quickly in spring, and they are suited to specialty and truck crops. They make desirable building sites.

Representative profile of Ockley silt loam, 2 to 6 percent slopes, in Beaver Creek Township, NE¼ SE¼ sec. 22; 6 miles northwest of Xenia, 1,500 feet east of Beaver Valley Road, and 100 yards south of 1/2 section line:

Ap—0 to 10 inches; brown (10YR 4/3) silt loam; moderate medium granular structure; friable; many roots; slightly acid; clear smooth boundary.

B1t—10 to 19 inches; dark brown (7.5YR 4/4) light silty clay loam; moderate medium subangular blocky structure; friable; many roots; thin patchy dark brown (7.5YR 4/2) clay films; medium acid; clear wavy boundary.

B21t—19 to 22 inches; dark brown (7.5YR 4/4) light silty clay loam; moderate medium subangular blocky structure; firm; common roots; thin and medium continuous dark brown (7.5YR 4/2) clay films; medium acid; clear wavy boundary.

IIB22t—22 to 34 inches; dark brown (7.5YR 4/4) clay loam, moderate coarse and medium subangular blocky structure; firm; common roots; medium continuous dark brown (7.5YR 4/2) clay films; about 5 percent gravel; medium acid; gradual irregular boundary.

IIB23t—34 to 39 inches; dark yellowish brown (10YR 4/4) gravelly sandy clay loam; moderate medium subangular blocky structure; firm; few roots; medium continuous dark brown (7.5YR 4.2) clay films; about 25 percent gravel; slightly acid; gradual irregular boundary.

IIB3—39 to 45 inches; dark brown (10YR 4/3) gravelly sandy clay loam; weak coarse and medium subangular blocky structure; firm; few roots; medium continuous dark brown (7.5YR 4/2) clay film coating sand grains; about 25 percent gravel; neutral; clear irregular boundary.

IIC—45 to 60 inches; dark grayish brown (10YR 4/2) stratified gravelly sand; single grained; loose; moderately alkaline, calcareous.

The solum ranges from 42 to 60 inches in thickness. The loess mantle is as much as 24 inches thick. Unless limed, the upper part of the solum ranges from medium acid to strongly acid; reaction gradually becomes less acid as depth increases. Calcareous material commonly is at a depth of 40 to 50 inches.

The Ap horizon is brown (10YR 4/3) or dark yellowish brown (10YR 4/4). The upper part of the B horizon is silty clay loam or clay loam. The B horizon has hue of 7.5YR and 10YR, value of 3 through 5, and chroma of 3 or 4. The lower part of the solum is clay loam, gravelly clay loam, or gravelly sandy clay loam. The C horizon is dark grayish brown (10YR 4/2), yellowish brown (10YR 5/4), or brown (10YR 5/3).

Ockley soils are the well drained member of a drainage sequence that includes the moderately well drained Thackery soils, the somewhat poorly drained Sleeth soils, and the very poorly drained Westland soils. Ockley soils are commonly near Rush, Eldean, and Wea soils. They are deeper to sand and gravel than Eldean soils, and they have a lighter colored surface layer than Wea soils. They have more sand in the subsoil than Rush soils.

Odell Series

The Odell series consists of gently sloping, somewhat poorly drained soils that formed in loam glacial till. These soils are in small areas

on the uplands in the eastern and northwestern parts of the county.

In a representative profile the upper part of the surface layer is 7 inches of black silt loam and the lower part is 4 inches of silty clay loam. The subsoil is 13 inches of mottled dark yellowish brown and brown clay loam. The substratum is mottled grayish brown loam to a depth of 60 inches.

Available water capacity is high, and permeability is moderate in the subsoil and moderately slow in the underlying glacial till. These soils have a seasonal high water table in winter and in spring if not artificially drained. The rooting zone is moderately deep.

Odell soils are used mostly for crops.

Representative profile of Odell silt loam, 2 to 6 percent slopes, in Bath Township; 75 feet north of drainage ditch along north side of Herr Road, directly north of farm lane that enters Herr Road from the south:

Ap—0 to 7 inches; black (10YR 2/1) silt loam; moderate medium and fine granular structure; friable; many roots; mildly alkaline; clear smooth boundary.

A12—7 to 11 inches; black (10YR 2/1) light silty clay loam; few fine distinct brown (10YR 4/3) and grayish brown (10YR 5/2) mottles; moderate medium and coarse subangular blocky structure; friable; many roots; neutral; clear smooth boundary.

B2t—11 to 15 inches; dark yellowish brown (10YR 4/4) clay loam; many medium faint brown (10YR 4/3) mottles and common medium faint dark grayish brown (10YR 4/2) mottles; moderate medium subangular blocky structure; friable; many roots; thin patchy very dark grayish brown (10YR 3/2) organic coatings and clay films on ped faces; neutral; clear wavy boundary.

B3—15 to 24 inches; brown (10YR 5/3) light clay loam; many fine distinct yellowish brown (10YR 5/6) mottles and common fine faint grayish brown (10YR 5/2) mottles; weak coarse subangular blocky structure; friable; few thin roots; thin patchy brown (10YR 4/3) clay films; few gray to light gray (10YR 5/1 to 7/1) weathered limestone pebbles; mildly alkaline; gradual wavy boundary.

C—24 to 60 inches; grayish brown (10YR 5/2) loam; many fine distinct yellowish brown (10YR 5/4) and brownish yellow (10YR 6/6) mottles and stains; massive; very firm; moderately alkaline, calcareous.

The solum ranges from 20 to 30 inches in thickness. The A horizon is 10 to 14 inches thick. Reaction of the solum is slightly acid or neutral in the upper part and neutral or mildly alkaline and, in places, slightly calcareous in the lower part.

The A horizon is black (10YR 2/1), very dark gray (10YR 3/1), and very dark grayish brown (10YR 3/2). The B horizon has hue of 10YR, value of 4 through 6, and chroma of 3 or 4. Chroma of 2 is in individual horizons. This horizon is heavy loam or clay loam and includes thin horizons of silty clay loam in places. The C horizon is grayish brown (10YR 5/2), brown (10YR 5/3), and yellowish brown (10YR 5/4).

Odell soils are near Brookston and Crosby soils. They have a more brownish and less grayish subsoil than Brookston soils. They have a darker colored surface layer than Crosby soils.

Patton Series

The Patton series consists of nearly level to depressional, very poorly drained soils that formed in silty lacustrine material. These soils are in areas that formerly were glacial lakes.

In a representative profile the surface layer is very dark grayish brown silty clay loam 8 inches thick. The upper part of the subsoil is 10 inches of very dark gray silty clay loam. The lower part is 14 inches of mottled, dark gray and light brownish gray silty clay loam. The substratum is light brownish gray stratified silt loam to a depth of 60 inches.

Available water capacity is high, and permeability is moderately slow. The water table is high for long periods in winter and in spring unless these soils are drained. The organic matter content is high. The rooting zone is moderately deep.

Drained areas of Patton soils are used for most field crops commonly grown in the county. Undrained areas are used mostly for pasture.

Representative profile of Patton silty clay loam, in Xenia Township, NW¼ sec. 5; ¼ mile west of State Route 235, along Ludlow Creek:

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) light silty clay loam; strong medium and fine granular structure; friable; many roots; neutral; clear smooth boundary.

B1g—8 to 18 inches; very dark gray (10YR 3/1) silty clay loam; strong medium and coarse angular blocky structure; firm; many roots; neutral; gradual smooth boundary.

B2g—18 to 26 inches; dark gray (10YR 4/1) heavy silty clay loam; common medium faint dark grayish brown (10YR 4/2) mottles and few fine distinct brown (10YR 5/3) and yellowish brown (10YR 5/4) mottles; strong medium and coarse angular blocky structure; firm, sticky when wet; thin patchy very dark grayish brown (10YR 3/2) coatings; neutral; gradual smooth boundary.

B3g—26 to 32 inches; light brownish gray (10YR 6/2) silty clay loam; many medium distinct

yellowish brown (10YR 5/6) mottles; weak coarse angular blocky structure; firm, sticky when wet; few roots; thin patchy clay films on ped faces; neutral; clear smooth boundary.

Clg—32 to 36 inches; light brownish gray (2.5Y 6/2) silt loam; few medium distinct brown (10YR 5/3) mottles; weak thick platy structure; friable; neutral to mildly alkaline; gradual wavy boundary.

C2g—36 to 60 inches; light brownish gray (2.5Y 6/2) silt loam; thin laminations of silty clay loam; friable; moderately alkaline, calcareous.

The solum ranges from 30 to 40 inches in thickness. Reaction of the solum is generally neutral, but it ranges from slightly acid to mildly alkaline.

The A horizon is black (10YR 2/1), very dark gray (10YR 3/1), and very dark grayish brown (10YR 3/2). The B2g and B3g horizons have hue of 2.5Y or 10YR, value of 4 through 6, and chroma of 1 or 2. They are mainly silty clay loam but thin layers of silty clay or clay are in some profiles. Mottles range from few to many. The C horizon has hue of 10YR or 2.5Y, value of 4 through 6, and chroma of 2 through 4. It is silty clay loam or silt loam and is laminated.

Patton soils are commonly adjacent to Brookston, Ragsdale, and Westland soils. They are underlain by silty lacustrine material instead of loam glacial till that underlies Brookston soils. Patton soils are similar to Ragsdale soils. They have stratification in the underlying material, and Ragsdale soils have no stratification. They contain more silt and less sand than Westland soils, and are underlain by silt loam, whereas Westland soils are underlain by sand and gravel.

Ragsdale Series

The Ragsdale series consists of nearly level, very poorly drained soils that formed in loess 40 to more than 60 inches thick over glacial till. These soils are mostly in broad upland areas in the east-central part of the county. In the more rolling western part of the county, they are less extensive and are in slightly depressional upland areas and in areas along small drainageways.

In a representative profile the surface layer is black silty clay loam 16 inches thick. The upper part of the subsoil is 9 inches of dark grayish brown silty clay loam; the lower part is 25 inches of yellowish brown silty clay loam and silt loam. The upper part of the substratum is 15 inches of yellowish brown silt loam and the lower part is yellowish brown loam to a depth of 96 inches.

Available water capacity is high, and permeability is slow. Runoff is slow or ponded. These soils are saturated with water for a significant period in winter and in spring, and they are slow to dry out unless they are artificially drained. Some areas adjacent to drainageways are subject to flooding. The rooting zone is deep during the growing season when the water table is low.

Ragsdale soils are used mostly for cultivated crops. Most areas have been artificially drained.

Representative profile of Ragsdale silty clay loam, in Xenia Township; 2.9 miles south of Xenia, 250 feet west of State Route 380, and ½ mile south of intersection of Washington Road and State Route 380 (Sample GN-11 in Laboratory Data Section):

Ap—0 to 8 inches; black (10YR 2/1) light silty clay loam; weak fine granular structure; friable; many roots; slightly acid; abrupt smooth boundary.

Al—8 to 16 inches; black (10YR 2/1) silty clay loam; common medium faint very dark grayish brown (10YR 3/2) mottles and common medium distinct dark grayish brown (10YR 4/2) mottles; strong fine subangular blocky structure; firm; many roots; slightly acid; clear wavy boundary.

B21tg—16 to 25 inches; dark grayish brown (10YR 4/2) silty clay loam; common fine distinct yellowish brown (10YR 5/6) mottles; weak medium prismatic structure parting to strong medium and fine angular blocky; firm; many roots; nearly continuous very dark grayish brown (10YR 3/2) organic stains on ped faces; thin patchy clay films on ped faces; neutral; clear wavy boundary.

B22t—25 to 39 inches; yellowish brown (10YR 5/4) light silty clay loam; common fine and medium distinct grayish brown (2.5Y 5/2) mottles and common medium faint yellowish brown (10YR 5/6) mottles; weak medium prismatic structure parting to moderate medium and coarse subangular blocky; firm; many roots; continuous dark grayish brown (10YR 4/2) coatings on ped faces; thin patchy clay films; on ped faces; mildly alkaline; diffuse wavy boundary.

B3—39 to 50 inches; yellowish brown (10YR 5/4) silt loam; common medium distinct grayish brown (2.5Y 5/2) mottles and common fine and medium faint yellowish brown (10YR 5/6) mottles; moderate very coarse subangular blocky structure (some peds are 6 to 10 inches across); firm; few roots on surfaces of large peds; continuous dark grayish brown (10YR 4/2) silty coatings on ped faces; mildly alkaline; diffuse irregular boundary.

Cl—50 to 66 inches; yellowish brown (10YR 5/4) silt loam; common fine and medium faint yellowish brown (10YR 5/6) mottles and common fine distinct grayish brown (2.5Y 5/2) mottles; massive; firm; common dark concretions; common krotovinas that contain dark gray (10YR 4/1), dark grayish brown (10YR 4/2), and very dark grayish brown (10YR

3/2) silty clay loam material extending into the C horizon. These are 1 inch to 2 inches in diameter and range from 1 foot to 10 feet apart; mildly alkaline; abrupt irregular boundary.

IIC2—66 to 96 inches; yellowish brown (10YR 5/4) loam; massive; firm; about 10 percent coarse fragments; moderately alkaline, calcareous.

The solum ranges from 40 to 60 inches in thickness. Unless limed, the solum is slightly acid to neutral in the upper part and neutral to mildly alkaline in the lower part.

The A horizon is black (10YR 2/1), very dark grayish brown (10YR 3/2), and very dark gray (10YR 3/1). It ranges from 10 to 18 inches in thickness. The B horizon to a depth of 25 to 40 inches has hue of 10YR through 5Y, value of 4 through 6, and chroma of 1 or 2. Mottles are common to many. This horizon is typically silty clay loam. The lower part of the B horizon commonly has higher chroma than the upper part; it is brown (10YR 5/3) or yellowish brown (10YR 5/6 or 5/4) silty clay loam or silt loam. The C horizon is yellowish brown (10YR 5/4) and brown (10YR 5/3) silt loam or loam. The thickness of the silt mantle in which these soils formed, which is the depth to the IIC horizon, ranges from 40 inches to more than 60 inches.

Ragsdale soils are the very poorly drained members of a drainage sequence that includes the somewhat poorly drained Reesville soils and the moderately well drained Birkbeck soils. Ragsdale soils are commonly adjacent to Westland, Raub, and Millsdale soils. They differ from Westland soils in that they formed in silty material, whereas Westland soils formed in loamy material over sand and gravel. They have more gray in the subsoil than Raub soils. They differ from Millsdale soils in not having bedrock within a depth of 20 to 40 inches. Rags-dale soils are similar to Brookston and Patton soils. They formed in loess, whereas Brookston soils formed in loam glacial till. They differ from Patton soils in having no stratification in the underlying material.

Randolph Series

The Randolph series consists of nearly level, somewhat poorly drained, moderately deep soils that formed in glacial till. These soils are in small areas in the northern and northeastern parts of the county.

In a representative profile the surface layer is dark grayish brown silt loam 9 inches thick. A subsurface layer is mottled brown silt loam 4 inches thick. The subsoil is mottled yellowish brown and brown. The upper part is 9 inches of silty clay loam, and the lower part is 13 inches of silty clay. Limestone bedrock is at a depth of 37 inches.

Available water capacity is moderate, and permeability is moderately slow. These soils have a high water table in winter and in spring. The rooting zone is moderately deep over limestone bedrock.

Areas of Randolph soils that can be drained are used for farming. Corn, soybeans, and grass-legume meadows are the main crops. Undrained areas are used for meadow, pasture, or woodland.

Representative profile of Randolph silt loam, 0 to 2 percent slopes, in Miami Township; about ½ mile southwest of the village of Clifton, ¼ mile west of Wilberforce-Clifton Road, and 160 feet north of Clifton Road:

Ap—0 to 9 inches; dark grayish brown (10YR 4/2) silt loam; weak fine granular structure; friable; many roots; medium acid; clear smooth boundary.

A2—9 to 13 inches; brown (10YR 5/3) silt loam; many medium faint grayish brown (10YR 5/2) mottles and few fine faint yellowish brown (10YR 5/4) mottles; weak medium subangular blocky structure; friable; many roots; medium acid; clear smooth boundary.

Bl—13 to 18 inches; yellowish brown (10YR 5/4) silty clay loam; many medium distinct grayish brown (10YR 5/2) and brown (10YR 5/3) mottles; moderate medium subangular blocky structure; firm; common roots; continuous light brownish gray (10YR 6/2) silty coatings on ped faces; strongly acid; clear smooth boundary.

B21t—18 to 24 inches; brown (10YR 5/3) heavy silty clay loam; many medium faint grayish brown (10YR 5/2) mottles and many fine and medium distinct yellowish brown (10YR 5/6) mottles; strong medium subangular blocky structure; firm; common roots; common dark concretions; thin continuous grayish brown (10YR 5/2) clay films on vertical and horizontal ped faces; about 2 percent coarse fragments; strongly acid; gradual smooth boundary.

B22t—24 to 37 inches; yellowish brown (10YR 5/4) silty clay; many medium distinct grayish brown (10YR 5/2) and many medium faint yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; firm, sticky when wet; medium continuous grayish brown (10YR 5/2) clay films on ped faces; common roots; about 2 percent coarse fragments; neutral; abrupt irregular boundary.

IIR—37 inches; light gray (10YR 7/1) limestone bedrock.

The solum thickness and depth to bedrock range from 20 to 40 inches. Unless limed, the upper part of the solum ranges from slightly acid to strongly acid, and reaction in the lower part increases to neutral as depth increases.

The Ap horizon is dark grayish brown (10YR 4/2) and brown (10YR 5/3). The A2

horizon has hue of 10YR, value of 4 through 6, and chroma of 1 through 3. The B horizon has hue of 10YR and 2.5Y, value of 4 or 5, and chroma dominantly of 3 or 4, but chroma of 1 or 2 in subhorizons. Coatings on peds dominantly have chroma of 2 or less. The B2 horizon is heavy clay loam, heavy silty clay loam, silty clay, or clay. Some profiles have a thin layer of calcareous loam or sandy loam material above the bedrock. A thin dark grayish brown (10YR 4/2) very plastic clay layer several inches thick is in some profiles immediately at the contact with the limestone bedrock.

Randolph soils are the somewhat poorly drained members of a drainage sequence that includes the very poorly drained Millsdale soils and the well drained Milton soils. Randolph soils are near these soils and also near Crosby and Fincastle soils. They have limestone bedrock at a depth of 20 to 40 inches, and Crosby and Fincastle soils have no limestone bedrock at these depths.

Raub Series

The Raub series consists of nearly level to gently sloping, somewhat poorly drained soils that formed in 22 to 40 inches of loess and in the underlying glacial till. These soils are on uplands, commonly below wet-weather seep zones. These seeps dry up early in summer.

In a representative profile the surface layer is very dark gray silt loam 8 inches thick. A subsurface layer is very dark grayish brown silty clay loam 6 inches thick. The subsoil is mottled yellowish brown. The upper 13 inches is silty clay loam, and the lower 17 inches is clay loam. The substratum is mottled yellowish brown clay loam to a depth of 60 inches.

Available water capacity is high. Permeability is moderate in the subsoil and slow in the underlying glacial till. Runoff is slow, but water does not generally pond on the surface. These soils have a seasonal high water table that is fed by seeps and springs. The rooting zone is deep. The water table and seep condition can be a hazard to houses with basements or to septic tanks built on these soils.

Most Raub soils are used for farming. Corn, soybeans, wheat, and grass-legume meadow are the main crops.

Representative profile of Raub silt loam, 2 to 6 percent slopes, in Sugar Creek Township, NW¼ SW¼ sec. 4; ½ mile east-northeast of the village of Ferry, 0.2 mile south of Middle Run Road, and 100 feet east of Haines Road (Sample GN-23 in Laboratory Data Section):

Ap—0 to 8 inches; very dark gray (10YR 3/1) silt loam; moderate medium and fine granular structure; friable; many roots; slightly acid; clear smooth boundary.

A12—8 to 14 inches; very dark grayish brown (10YR 3/2) light silty clay loam; common fine distinct brown (10YR 4/3) mottles; strong medium and fine subangular blocky structure; firm; many roots; continuous very dark gray (10YR 3/1) organic stains on ped faces; slightly acid; gradual smooth boundary.

B21t—14 to 27 inches; yellowish brown (10YR 5/4) silty clay loam; few fine distinct light brownish gray (2.5Y 6/2) mottles; strong fine and medium subangular blocky structure; firm; common roots; thin continuous dark yellowish brown (10YR 4/4) clay films; very dark grayish brown (10YR 3/2) and very dark gray (10YR 3/1) organic stains on ped faces in the upper 3 inches of this horizon; slightly acid; abrupt wavy boundary.

IIB22t—27 to 36 inches; yellowish brown (10YR 5/6) clay loam; few medium distinct grayish brown (2.5Y 5/2) mottles; strong coarse subangular blocky structure; very firm; common roots; thin continuous brown (10YR 5/3) and dark yellowish brown (10YR 4/4) clay films on vertical and horizontal ped faces; 2 to 5 percent coarse fragments; slightly acid; gradual irregular boundary.

IIB3t—36 to 44 inches; yellowish brown (10YR 5/4) light clay loam; few fine faint yellowish brown (10YR 5/6) mottles; weak very coarse subangular blocky structure; firm; few roots; thin continuous dark yellowish brown (10YR 4/4) clay films on surface of large peds; common dark grayish brown (10YR 4/2) organic stains on ped faces; 5 to 19 percent coarse fragments; neutral on ped faces, mildly alkaline in ped interiors; gradual wavy to irregular boundary.

IIC—44 to 60 inches; yellowish brown (10YR 5/4) light clay loam; few fine faint yellowish brown (10YR 5/6) and common medium distinct light olive brown (2.5Y 5/4) mottles; massive; very firm; 10 to 15 percent coarse fragments; mildly alkaline, calcareous.

The solum ranges from 36 to 60 inches in thickness. Unless limed, the solum is medium acid to slightly acid in the upper part and neutral to mildly alkaline in the lower part.

The A horizon is very dark gray (10YR 3/1), very dark grayish brown (10YR 3/2), very dark brown (10YR 2/2), and black (10YR 2/1). It is 11 to 17 inches thick. The B horizon has hue of 10YR and value of 4 or 5. Dominant chroma is 3 or more and the range is 2 through 6. Mottles are few to many. The upper part of the B horizon is silty clay loam and the lower part is clay loam. The C horizon is yellowish brown (10YR 5/4) or light olive brown (2.5Y 5/4) loam or light clay loam.

Raub soils are near Xenia, Edenton, and Ragsdale soils. They have a darker colored surface layer than Xenia soils and less gray in the subsoil than Ragsdale soils. They have a darker colored surface layer than Edenton soils and have no bedrock at a depth of 20 to 40 inches.

Reesville Series

The Reesville series consists of nearly level, somewhat poorly drained soils that formed in loess 34 to 60 inches thick over glacial till. These soils are mostly on upland areas in the east-central part of the county. They are less extensive in the southern and southwestern parts of the county.

In a representative profile the surface layer is dark grayish brown silt loam 8 inches thick. A subsurface layer is mottled grayish brown silt loam 4 inches thick. The upper 18 inches of the subsoil is mottled brown silty clay loam, and the lower 7 inches is mottled light olive brown silt loam. The upper part of the substratum is 5 inches of mottled light olive brown silt loam and the lower part is mottled brown loam to a depth of 72 inches.

Available water capacity is high, and permeability is moderate to moderately slow. Runoff is medium to slow. Ponding may occur but is generally of short duration. These soils are saturated with water for significant periods in winter and in spring unless they are artificially drained. The rooting zone during the growing season is deep.

Reesville soils are used mostly for cultivated crops.

Representative profile of Reesville silt loam, 0 to 2 percent slopes, in Jefferson Township; 3 miles west-northwest of Bowersville, 1¼ miles north of Hussey Road on Hite Road, 75 yards east of Hite Road, and 40 yards northeast of farm buildings:

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

A2—8 to 12 inches; grayish brown (10YR 5/2) silt loam; common medium distinct yellowish brown (10YR 5/6) mottles; weak thick platy structure parting to weak fine subangular blocky; friable; medium acid; clear smooth boundary.

B21tg—12 to 18 inches; yellowish brown (10YR 5/4) silty clay loam; common fine distinct dark grayish brown (10YR 4/2) mottles and few fine faint yellowish brown (10YR 5/6) mottles; moderate medium and fine subangular blocky structure; firm; many fine black concretions; thin patchy dark grayish brown (10YR 4/2) clay films; thin grayish brown (2.5Y 5/2) silty coatings in upper part; medium acid; gradual smooth boundary.

B22tg—18 to 30 inches; yellowish brown (10YR 5/4) silty clay loam; many medium faint light olive brown (2.5Y 5/4) mottles and common fine distinct grayish brown (10YR 5/2) mottles; moderate medium subangular blocky structure; firm; few fine and medium black concretions; thin continuous dark grayish brown (10YR 4/2) clay films; slightly acid; clear wavy boundary.

B3tg—30 to 37 inches; light olive brown (2.5Y 5/4) silt loam; common medium distinct yellowish brown (10YR 5/6) and grayish brown (10YR 5/2) mottles; weak coarse subangular blocky structure; friable; thin patchy grayish brown (10YR 5/2) clay films on vertical ped faces; mildly alkaline, calcareous; clear wavy boundary.

Cl—37 to 42 inches; light olive brown (2.5Y 5/4) silt loam; many medium distinct yellowish brown (10YR 5/6) mottles and common medium distinct grayish brown (10YR 5/2) mottles; massive; friable; moderately alkaline, calcareous; clear wavy boundary.

IIC2—42 to 72 inches; brown (10YR 4/3) loam; common medium distinct yellowish brown (10YR 5/6) mottles; weak medium platy structure; firm; moderately alkaline, calcareous.

The solum ranges from 30 to 60 inches in thickness. Depth to carbonates commonly is the same as solum thickness, although some profiles have a calcareous B3 horizon a few inches thick. Thickness of the loess is 34 to 60 inches, and is highly variable in many areas. Unless limed, the solum ranges from slightly acid to strongly acid in the upper part and from slightly acid to mildly alkaline in the lower part.

The Ap horizon ranges from dark grayish brown (10YR 4/2) to grayish brown (10YR 5/2). The B horizon is dominantly yellowish brown (10YR 5/4), but in places it is also brown (10YR 5/3 and 4/3), grayish brown (10YR 5/2), dark yellowish brown (10YR 4/4), and light olive brown (2.5Y 5/4). Mottles are few to many. This horizon is silty clay loam or silt loam. A calcareous C horizon of silt loam that is as much as 30 inches thick is in most profiles. An IIC horizon of loam or coarse silt loam is below this.

Reesville soils are the somewhat poorly drained member of a drainage sequence that includes the moderately well drained Birkbeck soils and the very poorly drained Ragsdale soils. Reesville soils are similar to Fincastle soils, but they formed entirely in loess, whereas Fincastle soils formed partly in the underlying glacial till.

Ritchey Series

The Ritchey series consists of gently sloping to steep, shallow, well drained soils that formed in glacial till. These soils are on the uplands along valley side slopes in the northern part of the county.

In a representative profile the surface layer is very dark grayish brown silt loam 4 inches thick. A subsurface layer is yellowish brown silt loam 3 inches thick. The upper part of the subsoil is 4 inches of yellowish brown silty clay loam, and the lower part is 7 inches of dark yellowish brown clay. Limestone bedrock is at a depth of 18 inches.

Available water capacity is low, and permeability is moderate. These soils are droughty. The rooting zone is shallow over bedrock. Tree roots often penetrate joints and cracks in the upper layers of bedrock.

Ritchey soils are used mostly for woodland or permanent pasture.

Representative profile of Ritchey silt loam, 2 to 6 percent slopes, in Miami Township; ½ mile southwest of the village of Clifton and 500 feet north of Clifton Road:

Ap—0 to 4 inches; dark grayish brown (10YR 4/2) silt loam; weak fine granular structure; friable; neutral; clear smooth boundary.

A2—4 to 7 inches; yellowish brown (10YR 5/4) silt loam; moderate fine granular structure; friable; neutral; clear smooth boundary.

Bl—7 to 11 inches; yellowish brown (10YR 5/4) silty clay loam; moderate fine subangular blocky structure; firm; thin patchy brown coatings on ped surfaces; 2 to 5 percent limestone and granitic fragments; neutral; gradual smooth boundary.

B2t—11 to 18 inches; dark yellowish brown (10YR 4/4) clay; moderate medium subangular blocky structure; firm; thin patchy clay films on ped surfaces; 5 to 10 percent limestone and granitic fragments; mildly alkaline; clear wavy boundary.

IIR—18 inches; hard limestone bedrock.

The solum thickness and depth to limestone bedrock range from 10 to 20 inches. Reaction of the solum ranges from medium acid to neutral in the upper part and from neutral to mildly alkaline in the lower part.

The Ap horizon is dark grayish brown (10YR 4/2) or dark brown (10YR 4/3). A thin A2 horizon is commonly in uncultivated areas and below the Ap horizon in some cultivated areas. The Bt horizon is brown (7.5YR 4/4) or dark yellowish brown (10YR 4/4) silty clay loam, silty clay, or clay. Tongues of material from the B2 horizon commonly extend into fractures of the limestone bedrock. The B horizon is 2 to 10 percent limestone and granitic coarse fragments.

Ritchey soils in Greene County contain slightly more clay in the subsoil than other Ritchey soils. This difference does not affect the use and management of these soils.

Ritchey soils are near Hennepin, Milton, and Milton variant soils. They are underlain by bedrock at a depth of 10 to 20 inches, and Hennepin soils have no bedrock at these depths. They are shallower to limestone bedrock than Milton soils. They contain fewer coarse fragments and have a lighter colored surface layer than Milton variant soils.

Rodman Series

The Rodman series consists of steep to very steep, excessively drained soils that formed in loamy material over sand and gravel outwash. These soils are on terrace escarpments along streams and on kames on the uplands.

In a representative profile the surface layer is very dark gray gravelly loam 6 inches thick. The subsoil is dark brown gravelly sandy loam 4 inches thick. The substratum is yellowish brown stratified sand and gravel to a depth of 60 inches.

Available water capacity is low, and permeability is rapid. The rooting zone is shallow. These soils are droughty.

Most Rodman soils are in woodland or pasture; a small acreage is cropped.

Representative profile of Rodman gravelly loam, from an area of Casco-Rodman loams, 18 to 50 percent slopes, moderately eroded, in Bath Township, NE¼ SW¼ sec. 9; 2 miles northeast of Fairborn and 150 yards south of Yellow Springs-Fairfield Road (Sample GN-24 in Laboratory Data Section):

Al—0 to 6 inches; very dark gray (10YR 3/1) gravelly loam; moderate fine granular structure; friable; many roots; 20 percent coarse fragments; mildly alkaline; clear smooth boundary.

B2—6 to 10 inches; dark brown (7.5YR 4/4) gravelly sandy loam; moderate fine granular structure; friable; many roots; 30 to 40 percent coarse fragments; mildly alkaline, weakly calcareous; gradual wavy boundary.

C—10 to 60 inches; yellowish brown (10YR 5/4) very gravelly loamy coarse sand; single grained; stratified; loose; few fine roots in upper part; 50 percent coarse fragments, variable from one stratum to the next; moderately alkaline, calcareous.

The solum ranges from 8 to 15 inches in thickness. Reaction of the solum is neutral or mildly alkaline.

The A horizon is very dark gray (10YR 3/1), very dark grayish brown (10YR 3/2), very dark brown (10YR 2/2), and dark brown (7.5YR 3/2). The B horizon generally has hue of 7.5YR, but has 10YR in places; it has value of 4 or 5 and chroma of 3 or 4. The C horizon consists of stratified sand and gravel. The outwash strata are variable over short distances, ranging from sand to gravel or a mixture of sand and gravel. In kames the bedding is generally tilted and more irregular than in valley trains or outwash terraces.

Rodman soils in Greene County have a higher calcium carbonate content immediately below the surface layer than other Rodman soils. This difference does not affect the use and management of these soils.

Rodman soils are most commonly near Casco soils. They have a darker colored surface layer and are shallower to sand and gravel than these soils.

Rodman soils in Greene County are mapped only in complex with Casco soils. For description of Casco-Rodman loams, see Casco series.

Ross Series

The Ross series consists of nearly level, well drained soils that formed in recent alluvium on flood plains. These soils are mainly along Little Miami River and its larger tributaries.

In a representative profile the surface layer is dark brown loam in the upper 12 inches and very dark grayish brown loam in the lower 16 inches. The subsoil is yellowish brown loam 12 inches thick. The substratum is brown loam in the upper 16 inches and brown gravelly sand to a depth of 78 inches.

Available water capacity is high, and permeability is moderate. These soils are subject to occasional flooding, generally in winter and in spring. A high water table persists in these soils for an extended period after the floodwater subsides. The rooting zone is deep in summer.

Most Ross soils are used for crops. Corn is the main crop. Some areas are also used for soybeans, grass-legume meadow, or pasture.

Representative profile of Ross loam, in Spring Valley Township; 4½ miles southeast of the village of Spring Valley, 100 feet south of Andersons Fork, and 200 feet east of Cemetery Road:

A11—0 to 8 inches; dark brown (10YR 3/3) loam; weak fine and medium granular structure; friable; many roots; neutral; clear smooth boundary.

A12—8 to 12 inches; dark brown (10YR 3/3) loam; weak medium granular structure; friable; many roots; neutral; clear irregular boundary.

A13—12 to 28 inches; very dark grayish brown (10YR 3/2) loam; moderate medium and fine subangular blocky structure; friable; common roots; neutral; gradual wavy boundary.

B—28 to 40 inches; yellowish brown (10YR 5/4) loam; weak medium and coarse subangular blocky structure; friable; few roots; very dark grayish brown (10YR 3/2) organic stains on ped faces in upper part of horizon and as filling in old root channels or worm casts; neutral; gradual smooth boundary.

Cl—40 to 56 inches; brown (10YR 5/3) loam; massive; friable; neutral; clear wavy boundary.

C2—56 to 78 inches; brown (10YR 5/3) gravelly sand; single grained; loose; moderately alkaline; abrupt smooth boundary.

The solum ranges from 24 to 40 inches in thickness. Reaction of the solum ranges from neutral to mildly alkaline.

The A horizon ranges from very dark brown (10YR 2/2) to dark brown (10YR 3/3). The B horizon has hue of 10YR, value of 4, and chroma of 3 or 4. It is generally loam, but strata of silt loam are common. The C horizon is brown (10YR 4/3 or 5/3), yellowish brown (10YR 5/4) and dark yellowish brown (10YR 4/4) loam, gravelly sand, or gravelly sandy loam.

Ross soils are near Eel, Genesee, and Sloan soils. They have a darker surface layer than Genesee and Eel soils. They differ from Sloan soils in having no gray mottles in the subsoil. They have less clay in the subsoil than Wea soils.

Rush Series

The Rush series consists of nearly level to gently sloping, well drained soils that formed in loess 24 to 45 inches thick and in the underlying loamy glacial outwash. These soils are on outwash plains and terraces in the central part of the county.

In a representative profile the surface layer is brown silt loam 13 inches thick. The upper part of the subsoil is 25 inches of brown silty clay loam. The lower part is 9 inches of dark brown sandy clay loam, 7 inches of dark reddish brown sandy clay, and 6 inches of brown gravelly coarse sandy loam. The

substratum is stratified sand and gravel to a depth of 120 inches.

Available water capacity is high, and permeability is moderate. Runoff is slow to medium, but water seldom ponds on this soil for extended periods. The rooting zone is deep.

Most areas of Rush soils are used for cultivated crops. Corn and soybeans are the main crops.

Representative profile of Rush silt loam, 0 to 2 percent slopes, in Xenia Township; 2¼ miles west of center of Xenia, 200 yards west of U.S. Route 35 bypass, and 250 yards south of Upper Bellbrook Road (Sample GN-16 in Laboratory Data Section):

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

A2—10 to 13 inches; brown (10YR 5/3) silt loam; weak medium and thin platy structure; friable; common roots; medium acid; gradual wavy boundary.

B1t—13 to 21 inches; brown (7.5YR 5/4) silty clay loam; moderate medium and fine subangular blocky structure; firm; common roots; thin very patchy brown (7.5YR 4/4) clay films on ped faces and thin patchy clay films in pores and root channels; patchy brown (7.5YR 5/4) silt coatings on ped faces; very strongly acid; gradual wavy boundary.

B21t—21 to 28 inches; brown (7.5YR 4/4) silty clay loam; strong medium subangular blocky structure parting to fine subangular blocky; firm; common roots; thin continuous dark yellowish brown (10YR 4/4) clay films on primary ped faces and most secondary ped faces; few very dark grayish brown (10YR 3/2) stains on faces of larger peds; very strongly acid; gradual wavy boundary.

B22t—28 to 38 inches; brown (7.5YR 4/4) silty clay loam; moderate coarse subangular blocky structure parting to moderate medium subangular blocky; firm; common roots; medium to thick continuous dark yellowish brown (10YR 4/4) clay films on primary ped faces and most secondary ped faces; common very dark grayish brown (10YR 3/2) and black (10YR 2/1) stains on faces of larger peds; very strongly acid; abrupt smooth boundary.

IIB23t—38 to 47 inches; dark brown (7.5YR 4/4) sandy clay loam; weak coarse subangular blocky structure parting to medium and fine subangular blocky; firm; few roots; medium and thick continuous dark yellowish brown (10YR 4/4) clay films on ped faces, and coating's on sand grains and gravel; 2 to 5 percent coarse fragments; very strongly acid; abrupt wavy boundary.

IIB24t—47 to 54 inches; dark reddish brown (5YR 3/3) sandy clay; weak coarse and medium subangular blocky structure; firm, sticky when wet; few roots; dark brown (7.5YR 3/2) clay films coating sand and gravel; 10 to 14 percent coarse fragments; slightly acid; clear irregular boundary.

IIB3—54 to 60 inches; brown (10YR 4/3) gravelly coarse sandy loam; single grained; loose; thin very patchy dark reddish brown (5YR 3/3) and dark brown (7.5YR 3/2) clay films coating some sand and gravel; remnants of weathered limestone and weathering rind on limestone gravel; 40 percent coarse fragments; mildly alkaline, calcareous; clear irregular boundary.

IIC—60 to 120 inches; brown (10YR 4/3) gravelly coarse sand; single grained; stratified; loose; strata range from 25 to 75 percent coarse fragments a few sandy lenses that have little or no coarse fragments; moderately alkaline, calcareous.

The solum ranges from 45 to 70 inches in thickness. These soils formed in 24 to 45 inches of silty material over loamy outwash. Unless limed, the solum is medium acid to very strongly acid in the upper part and slightly acid to mildly alkaline in the lower part.

The Ap horizon is brown (10YR 4/3) or dark grayish brown (10YR 4/2). The A2 horizon has hue of 10YR, value of 4 or 5, and chroma of 2 through 4. The Bl and B2 horizons have hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 through 6. They are silt loam or silty clay loam. The IIB2 horizon has hue of 7.5YR or 5YR, and value and chroma of 3 through 5. The IIB2 horizon is clay loam, sandy clay loam, or sandy clay, and is gravelly in places. The C horizon is brown (10YR 4/3 or 5/3) calcareous sand and gravel.

Rush soils are commonly near Ockley, Thackery, and Wea soils. They have less sand in the subsoil than Ockley and Wea soils. They are not so dark colored in the surface layer as Wea soils. They are better drained than Thackery soils.

Russell Series

The Russell series consists of nearly level to gently sloping, well drained soils that formed partly in loess and partly in the underlying loam glacial till. These soils are on uplands in the central, southern, and southwestern parts of the county.

In a representative profile the surface layer is dark grayish brown silt loam 8 inches thick. A subsurface layer is brown silt loam 5 inches thick. The subsoil is yellowish brown. It is silty clay loam in the upper 16 inches and clay loam in the lower 8 inches. The substratum is yellowish brown and dark yellowish brown loam to a depth of 60 inches.

Available water capacity is high. Permeability is moderate in the upper part of the subsoil and moderately slow in the lower part and in the underlying glacial till. Runoff is

slow to rapid, depending on the slope. Water seldom ponds on the surface for extended periods. The rooting zone is deep.

Most Russell soils are cultivated. Corn, soybeans, wheat, and grass-legume meadow are the main crops.

Representative profile of Russell silt loam, from an area of Russell-Miamian silt loams, 2 to 6 percent slopes, in Silvercreek Township; 100 feet east of Quarry Road, and 0.2 mile south of Cottonville Road:

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) silt loam; weak fine granular structure; friable; many roots; slightly acid; clear smooth boundary.

A2—8 to 13 inches; brown (10YR 5/3) silt loam; weak fine granular structure; friable; many roots; slightly acid; clear smooth boundary.

B1t—13 to 17 inches; yellowish brown (10YR 5/4) silty clay loam; moderate fine and medium subangular blocky structure; firm; many roots; thin patchy dark yellowish brown (10YR 4/4) clay films; medium acid; clear wavy boundary.

B21t—17 to 22 inches; yellowish brown (10YR 5/4) silty clay loam; strong medium subangular blocky structure; firm; many roots; medium patchy brown (10YR 4/3) clay films; medium acid; clear smooth boundary.

IIB22t—22 to 29 inches; yellowish brown (10YR 5/4) heavy silty clay loam; moderate medium subangular blocky structure; firm; common roots; medium continuous brown (10YR 4/3) clay films on vertical and horizontal ped faces; 5 percent coarse fragments; slightly acid; gradual wavy boundary.

IIB3t—29 to 37 inches; yellowish brown (10YR 5/4) light clay loam; weak coarse subangular blocky structure; firm; few roots; thick continuous brown (10YR 4/3) clay films on ped faces; 5 percent coarse fragments; neutral, weakly calcareous in ped interiors; gradual irregular boundary.

C—37 to 60 inches; yellowish brown (10YR 5/4) and dark yellowish brown (10YR 4/4) loam; massive; firm; few roots; common gray (10YR 5/1) lime segregations; 10 percent coarse fragments; moderately alkaline, calcareous.

The solum is commonly 36 to 48 inches in thickness. The upper part of the solum formed in loess about 22 to 40 inches thick. Unless limed, the solum is medium acid to strongly acid in the upper part and slightly acid or neutral in the lower part.

The A horizon is dark grayish brown (10YR 4/2) or brown (10YR 5/3). The B and IIB horizons have hue of 10YR, value of 4 or 5, and chroma of 4 through 6. The B horizon is silty clay loam or heavy silt loam, and the IIB horizon is silty clay loam and clay loam. The C horizon is yellowish brown (10YR 5/4) and dark yellowish brown (10YR 4/4).

Russell soils are the well drained member of a drainage sequence that includes the moderately well drained Xenia soils and the somewhat poorly drained Fincastle soils. Russell soils are commonly adjacent to Miamian and Edenton soils. They formed in a thicker loess mantle than Miamian soils. They differ from Edenton soils in not having limestone bedrock at a depth of 20 to 40 inches.

Sleeth Series

The Sleeth series consists of nearly level, somewhat poorly drained soils that formed in medium textured material over sand and gravel glacial outwash. These soils are on outwash deposits on terraces and uplands.

In a representative profile the surface layer is dark grayish brown silt loam 6 inches thick. The subsurface layer is 4 inches of mottled grayish brown silt loam. The subsoil extends to a depth of 52 inches, and is mottled. The upper part is 5 inches of brown silt loam. Next is 9 inches of yellowish brown and light brownish gray silty clay loam and 8 inches of grayish brown gravelly clay loam. The lower part is 8 inches of pale brown gravelly loam. The substratum is brown gravelly coarse sandy loam to a depth of 60 inches.

Available water capacity is high. Permeability is moderate in the subsoil and rapid in the underlying sand and gravel. These soils have a seasonal high water table. The rooting zone is deep. Artificial drainage is often difficult because of inadequate drainage outlets.

Some areas of Sleeth soils are used for crops. Corn, soybeans, and meadow crops most commonly are grown. Some areas that are difficult to drain are woodland.

Representative profile of Sleeth silt loam, 0 to 2 percent slopes, in Spring Valley Township; 100 yards south of Spring Valley-Paintersville Road, and ¾ mile east of U.S. Route 42 and village of Spring Valley (Sample GN-29 in Laboratory Data Section):

Ap—0 to 6 inches; dark grayish brown (10YR 4/2) silt loam; moderate medium granular structure; friable; many roots; medium acid; abrupt smooth boundary.

A2—6 to 10 inches; grayish brown (10YR 5/2) silt loam; common medium faint light brownish gray (10YR 6/2) mottles and few fine faint dark yellowish brown (10YR 4/4) mottles; weak medium platy structure; friable; many roots; many dark grayish brown (10YR 4/2) stains and fillings in worm holes or root channels; medium acid; clear smooth boundary.

Bl—10 to 15 inches; brown (10YR 5/3) silt loam; many medium faint light brownish gray (10YR

6/2) and light gray (10YR 7/2) mottles and common medium faint yellowish brown (10YR 5/4) mottles; weak coarse subangular blocky structure; friable; common roots; about 2 percent coarse fragments; medium acid; clear wavy boundary.

B21t—15 to 24 inches; yellowish brown (10YR 5/4) and light brownish gray (10YR 6/2) light silty clay loam; common faint brownish yellow (10YR 6/6) mottles and common medium distinct gray (10YR 6/1) mottles; moderate coarse subangular blocky structure parting to moderate fine subangular blocky; firm; common roots; few dark concretions; light brownish gray (10YR 6/2) ped coatings; thin very patchy clay films on ped faces; about 2 percent chert fragments as much as ½ inch in diameter; strongly acid; clear wavy boundary.

IIB22t—24 to 36 inches; light brownish gray (10YR 6/2) clay loam; many medium distinct yellowish brown (10YR 5/4) mottles and common fine faint grayish brown (10YR 5/2) and dark grayish brown (10YR 4/2) mottles; weak coarse subangular blocky structure; firm; few roots; thin continuous clay films that are light brownish gray (10YR 6/2) on vertical and horizontal ped faces and that are grayish brown (10YR 5/2) on linings of root channels and worm holes; medium acid; about 5 percent coarse fragments; clear smooth boundary.

IIB23t-36 to 44 inches; grayish brown (10YR 5/2) gravelly clay loam; many medium and large distinct yellowish brown (10YR 5/4 and 5/6) mottles; weak coarse subangular blocky structure; firm, sticky when wet; few roots; medium continuous grayish brown (10YR 5/2) clay films on vertical and horizontal ped faces; about 17 percent coarse fragments; neutral; clear irregular boundary.

IIB3t—44 to 52 inches; pale brown (10YR 6/3) gravelly loam; many fine and medium distinct yellowish brown (10YR 5/4 and 5/6), grayish brown (10YR 5/2), light gray (10YR 7/2), and very pale brown (10YR 8/3) mottles; weak coarse subangular blocky structure; firm; few roots; medium continuous grayish brown (10YR 5/2) clay films coating sand grains and gravel; about 32 percent coarse fragments; mildly alkaline; gradual irregular boundary.

IIC—52 to 60 inches; brown (10YR 5/3, 4/3) gravelly coarse sandy loam; single grained; loose; about 40 percent coarse fragments; moderately alkaline; calcareous.

The solum ranges from 40 to 55 inches in thickness. A silt mantle as much as 24 inches thick is on some areas. Unless limed, the solum is medium acid to strongly acid in the upper part and ranges to mildly alkaline in the lower part.

The Ap horizon is dark grayish brown (10YR 4/2 or 2.5Y 4/2). The A2 horizon is light brownish gray (10YR 6/2) or grayish brown (10YR 5/2). The B2 horizon has hue of 10YR or 2.5Y, value of 4 through 6, and chroma of 1 through 4. Mottles are common to many. The B2t horizon is silty clay loam or clay loam in the upper part and gravelly clay loam in the lower part. In places, individual horizons are loam, sandy clay loam, or sandy loam, and they are gravelly in places.

Sleeth soils are the somewhat poorly drained members of a drainage sequence that includes the well drained Ockley soils, the moderately well drained Thackery soils, and the very poorly drained Westland soils. They are most commonly associated with these soils.

Sligo Series

Depth class: Very deep
Drainage class: Moderately well drained
Parent material: Loamy alluvium
Landform: Flood plain
Slope: 0 to 2 percent
Adjacent soils: Miamian, Ockley, Sloan and Stringley
Taxonomic class: Fine-loamy, mixed, superactive, nonacid, mesic Oxyaquic Udifluvents

Typical Pedon:

Sligo loam, 0 to 1 percent slopes, occasionally flooded, about 5.5 miles north northeast of Blanchester, in Vernon Township, Clinton County, Ohio; about 180 feet south of the junction of OH 730 and Reeder Road, along OH 730, then about 740 feet west. USGS Blanchester topographic quadrangle, lat: 39 degrees 23 minutes 39 seconds N., long: 83 degrees 56 minutes 30 seconds W., NAD 27.

Ap—0 to 9 inches; brown (10YR 4/3) loam, pale brown (10YR 6/3) dry; moderate fine and medium granular structure; friable; many fine and common medium roots; many faint dark brown (10YR 3/3) organic coatings on faces of peds and in root and worm channels; very slightly effervescent; slightly alkaline; clear wavy boundary.

C1—9 to 25 inches; brown (10YR 4/3) loam; weak medium and fine subangular blocky structure; friable; few fine and medium roots; common faint dark brown (10YR 3/3) organic coatings on faces of peds and in root channels; slightly alkaline; clear smooth boundary.

C2—25 to 31 inches; brown (10YR 4/3) loam; weak medium subangular blocky structure; friable; common fine roots; common fine distinct yellowish brown (10YR 5/6) masses of iron accumulation throughout; common faint brown (10YR 4/3) organic coatings on faces of peds and in root channels; neutral; clear smooth boundary.

C3—31 to 36 inches; brown (10YR 4/3) sandy loam; weak fine subangular blocky structure; friable; common fine roots; common fine faint brown (7.5YR 4/4) masses of iron accumulation throughout; common faint brown (10YR 4/3) organic coatings on ped faces and in root channels; neutral; clear smooth boundary.

C4—36 to 49 inches; brown (10YR 4/3) sandy loam; weak fine subangular blocky structure; friable; few fine roots; common medium faint grayish

brown (10YR 5/2) iron depletions in the matrix; many medium faint brown (7.5YR 4/4) masses of iron accumulation throughout; 2 percent pebbles; neutral; clear smooth boundary.

Cg1—49 to 58 inches; grayish brown (10YR 5/2) loamy coarse sand; weak coarse subangular blocky structure; friable; few fine roots; common medium distinct brown (7.5YR 4/4) masses of iron accumulation throughout; 2 percent pebbles; slightly alkaline; clear smooth boundary.

C'—58 to 66 inches; yellowish brown (10YR 5/4) coarse sand; single grain; loose; common medium distinct strong brown (7.5YR 5/6) masses of iron accumulation throughout; 6 percent pebbles; very slightly effervescent; slightly alkaline; clear wavy boundary.

Cg2—66 to 76 inches; grayish brown (2.5Y 5/2) very gravelly coarse sand; single grain; loose; common medium prominent yellowish brown (10YR 5/6) masses of iron accumulation throughout; 50 percent pebbles consisting of granite, some flint and limestone; strongly effervescent; moderately alkaline; clear wavy boundary.

Cg3—76 to 80 inches; light brownish gray (10YR 6/2) extremely gravelly loamy coarse sand; single grain; loose; 65 percent pebbles; violently effervescent; moderately alkaline.

Range in Characteristics:

Depth to carbonates: Greater than 40 inches

Content of rock fragments: Ap horizon=0 to 5 percent; C horizon=0 to 20 percent above 40 inches and 0 to 65 percent below 40 inches

Ap horizon:

Color=hue of 10YR, value of 3 or 4, chroma of 3 or 4

Texture=loam

C horizon:

Color=hue of 10YR or 2.5Y, value of 4 or 5, chroma of 2 to 4

Texture=silt loam, loam, sandy loam, or loamy coarse sand in the fine earth fraction

Cg horizon:

Color=hue of 10YR or 2.5Y, value of 4 to 6, chroma of 1 or 2

Texture=loamy coarse sand or coarse sand in the fine earth fraction

Sloan Series

The Sloan series consists of level, very poorly drained soils that formed in alluvium. These soils are on flood plains along Little Miami River, Mad River, and their tributaries.

In a representative profile the surface layer is very dark gray silty clay loam 24 inches thick. The subsoil is mottled gray silty clay loam 21 inches thick. The substratum is mottled gray stratified loam, silt loam, sandy loam, and clay loam to a depth of 60 inches.

Available water capacity is high, and permeability is moderate. Runoff is slow. Sloan soils have a high water table for prolonged periods and are generally saturated in winter and in spring. They are commonly adjacent to streams and are subject to frequent flooding. The rooting zone is deep in summer after the water table drops. Artificial drainage is helpful in lowering the water table but it is often difficult to establish drainage outlets.

Where drained, Sloan soils are used for crops. Corn and soybeans are the main crops. Undrained areas are in swamp grasses, reeds, and water tolerant deciduous trees.

Representative profile of Sloan silty clay loam, in Beavercreek Township, SE¼ sec. 23; 4½ miles northwest of Xenia, and 0.75 mile east of Beaver Valley Road, on the west side of Beaver Creek:

Ap—0 to 8 inches; very dark gray (10YR 3/1) silty clay loam; moderate fine and medium granular structure; firm; many roots; neutral; gradual smooth boundary.

A12—8 to 24 inches; very dark gray (10YR 3/1) silty clay loam; moderate fine and medium subangular blocky structure; firm; many roots; neutral; gradual wavy boundary.

B2g—24 to 45 inches; gray (10YR 5/1) silty clay loam; many fine and medium faint gray (10YR 6/1) and dark gray (10YR 4/1) mottles and few fine distinct brown (10YR 5/3) and yellowish brown (10YR 5/4) mottles; weak coarse subangular blocky structure; firm; common roots; mildly alkaline; clear wavy boundary.

C—45 to 60 inches; gray (10YR 5/1) stratified loam, silt loam, sandy loam, and clay loam; common medium distinct grayish brown (10YR 5/2) and brown (10YR 5/3) mottles; massive; friable; mildly alkaline, calcareous.

The solum ranges from 36 to 48 inches in thickness. Reaction of the solum ranges from slightly acid to mildly alkaline in the upper part and from neutral to mildly alkaline in the lower part. Depth to calcareous material ranges from 30 to 50 inches.

The Ap and Al horizons are very dark gray (10YR 3/1), black (10YR 2/1), and very dark grayish brown (10YR 3/2). The A horizon ranges from 15 to 24 inches in thickness. The B horizon has hue of 10YR, value of 4 or 5, and chroma of 1 or 2, and has few to many bright mottles. It is silty clay loam, clay loam, silt loam, or loam. The C horizon is stratified and has variable texture.

Sloan soils are the very poorly drained member of a drainage sequence that includes the well drained Genesee soils and the

moderately well drained Eel soils. Sloan soils have a darker colored surface layer and are not as well drained as nearby Algiers soils. They are similar to Ross soils but have grayer colors in the subsoil.

Strawn Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Parent material: Glacial till
*Landform:*Till plains
Position on the landform: Backslopes, shoulders,
summits, micro-highs
Slope range: 0 to 35 percent
Adjacent soils: Celina, Crosby, Kokomo, Miamian

Typical Pedon

Strawn silty clay loam, in an area of Celina-Strawn complex, 2 to 6 percent slopes, about 3 miles east of South Charleston, in Madison Township; about 1,850 feet west of the intersection of Huntington Road and Correll-Maxey Road (Township Road 57 in Madison County), along Huntington Road, then 260 feet south:

Ap-0 to 10 inches; brown (10YR 4/3) silty clay loam, pale brown (10YR 6/3) dry; about 30 percent dark yellowish brown (10YR 4/4) material mixed from the subsoil; weak coarse subangular blocky structure; firm; few fine and very fine roots; few rock fragments; neutral; clear wavy boundary.

Bt-10 to 16 inches; dark yellowish brown (10YR 4/4)silty clay loam; moderate medium and fine subangular blocky structure; firm; few fine and very fine roots; common distinct brown (10YR 4/3 clay films on faces of peds; few light gray (10YR 7/2), soft weathered limestone fragments; few rock fragments; slightly alkaline; gradual wavy boundary.

BC-16 to 23 inches; dark yellowish brown (10YR 4/4) silty clay loam; few medium distinct yellowish brown (10YR 5/4) mottles; weak coarse and medium subangular blocky structure; firm; few fine and very fine roots; few faint brown (10YR 4/3) clay films on faces of peds; common distinct grayish brown (10YR 5/2) coatings of secondary lime on faces of peds; few rock fragments; slightly effervescent; slightly alkaline; gradual wavy boundary.

Cl-23 to 52 inches; yellowish brown (10YR 5/4) Silt loam; few fine distinct yellowish brown (10YR 5/6) mottles; massive; very firm; few very fine roots in the upper part; common distinct light brownish gray (10YR 6/2) coatings of lime in vertical partings; few rock fragments; strongly effervescent; moderately alkaline; gradual wavy boundary.

C2-52 to 80 inches; yellowish brown (10YR 5/4) clay loam; few distinct yellowish brown (10YR 5/6) mottles; massive; firm; common distinct light brownish gray (10YR 6/2) coatings of lime in vertical partings; about 10 percent rock fragments; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the solum: 16 to 24 inches *Depth to carbonates:* 14 to 24 inches

Ap horizon:
Color-hue of 10YR, value of 4 or 5, chroma of 2 to 4
Texture-silt loam, silty clay loam

Bt horizon:
Color-hue of 10YR or 7.5YR, value of 4 or 5, chroma of 3 or 4
Texture-silty clay loam, clay loam

BC horizon:
Color-hue of 10YR, value of 4 or 5, chroma of 3 or 4
Texture-silty clay loam, clay loam

C horizon:
Color-hue of 10YR, value of 5 or 6, chroma of 2 to 6
Texture-silt loam, loam, clay loam

Thackery Series

The Thackery series consists of nearly level to gently sloping, moderately well drained soils that formed in silty material and in the underlying loamy glacial outwash. These soils are on valley trains, terraces, and upland outwash deposits.

In a representative profile the surface layer is dark grayish brown silt loam 8 inches thick. The subsurface layer is about 4 inches of brown silt loam. The upper part of the subsoil is 6 inches of brown silt loam. Below this, the subsoil is mottled. It is dark yellowish brown, brown, and grayish brown clay loam to a depth of about 40 inches and is yellowish brown very gravelly loam between the depths of 40 and 50 inches. The substratum is brown gravelly loamy sand to a depth of 72 inches.

Available water capacity is high. Permeability is moderate in the subsoil and rapid in the substratum. Runoff is slow to medium. A perched water table is in these

soils for short periods in winter and in spring. The rooting zone is deep.

Most areas of Thackery soils are used for cultivated crops. Corn, soybeans, wheat, and grass-legume meadow are the main crops.

Representative profile of Thackery silt loam, 0 to 2 percent slopes, in Xenia Township; 1.6 miles north of Xenia on U.S. Route 68, and ⅓ mile east of the intersection of U.S. Route 68 and Township Road T88 (Kinsey Road):

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) silt loam; weak fine and medium granular structure; friable; medium acid; abrupt smooth boundary.

A2—8 to 12 inches; brown (10YR 5/3) silt loam; few fine faint grayish brown (10YR 5/2) and yellowish brown (10YR 5/4) mottles; weak medium platy structure; friable; dark grayish brown (10YR 4/2) worm casts; medium acid; abrupt smooth boundary.

Bl—12 to 18 inches; brown (10YR 5/3) heavy silt loam; moderate fine subangular blocky structure; friable; thin patchy grayish brown (10YR 5/2) silt coatings and thin very patchy brown (10YR 4/3) clay films on ped faces; medium acid; clear smooth boundary.

IIB21t—18 to 26 inches; dark yellowish brown (10YR 4/4) clay loam; few fine distinct grayish brown (10YR 5/2) and yellowish brown (10YR 5/4) mottles; moderate medium subangular blocky structure; firm; thin patchy brown (10YR 4/3) clay films; 5 percent coarse fragments; strongly acid; clear wavy boundary.

IIB22t—26 to 33 inches; brown (10YR 4/3) clay loam; common fine and medium distinct grayish brown (10YR 5/2) and yellowish brown (10YR 5/6) mottles; moderate medium and coarse subangular blocky structure; firm; thin continuous dark grayish brown (10YR 4/2) clay films on ped faces; few dark concretions and stains; 5 percent coarse fragments; slightly acid; clear wavy boundary.

IIB23t—33 to 40 inches; grayish brown (10YR 5/2) clay loam; few fine faint gray (10YR 5/1) mottles and many medium distinct brown (10YR 4/3) and yellowish brown (10YR 5/4) mottles; weak coarse subangular blocky structure; firm; thin patchy dark grayish brown (10YR 4/2) clay films; few dark concretions; 10 percent coarse fragments; neutral; abrupt wavy boundary.

IIB3—40 to 50 inches; yellowish brown (10YR 5/4) very gravelly loam; many medium distinct dark grayish brown (10YR 4/2) mottles; massive; friable; many large distinct light brownish gray (10YR 6/2) lime segregations; 55 percent coarse fragments; mildly alkaline, calcareous; gradual wavy boundary.

IIC—50 to 72 inches; brown (10YR 5/3) gravelly loamy sand; single grained; loose; moderately alkaline, calcareous.

The solum ranges from 40 to 60 inches in thickness. Unless limed, the solum is strongly acid to slightly acid in the upper part and slightly acid to mildly alkaline in the lower part.

The Ap horizon is dark grayish brown (10YR 4/2) or brown (10YR 5/3), and the A2 horizon is brown (10YR 5/3) or grayish brown (10YR 5/2). The Bl or B&A horizon is brown (10YR 4/3, 5/3) or yellowish brown (10YR 5/4) heavy silt loam or silty clay loam. The B2t horizon has hue of 10YR and 7.5YR, value of 4 or 5, and chroma of 3 or 4, and subhorizons have chroma of 2 or 6. This horizon is silty clay loam, clay loam, sandy clay loam, and gravelly clay loam. Low chroma mottles are in the upper 10 inches of the B2 horizon. The IIB3 horizon is brown (10YR 4/3), yellowish brown (10YR 5/4), or dark yellowish brown (10YR 4/4) and gravelly or very gravelly loam, sandy clay loam, or sandy loam. The IIC horizon is gravelly or very gravelly loamy sand or sandy loam.

Thackery soils are the moderately well drained members of a drainage sequence that includes the well drained Ockley soils, the somewhat poorly drained Sleeth soils, and the very poorly drained Westland soils. Thackery soils are also associated with Eldean and Rush soils. They have mottles in the subsoil and are wetter than Eldean and Rush soils. They are deeper to sand and gravel than Eldean soils.

Thrifton Series

Depth class: Very deep
Drainage class: Moderately well drained
Parent material: Wisconsinan till
Landform: Wisconsinan till plain
Position on the landform: Footslopes and backslopes
Slope: 18 to 50 percent
Adjacent soils: Miamian

Typical Pedon:

Thrifton loam, from an area of Miamian-Thrifton complex, 25 to 50 percent slopes, eroded, about 1.9 miles west of Lumberton, in Liberty Township, Clinton County, Ohio; about 990 feet east northeast of the intersection of Hackney Road and New Burlington Road, along New Burlington Road, then 600 feet south. USGS New Burlington topographic quadrangle, lat: 39 degrees 33 minutes 33 seconds N., long: 83 degrees 53 minutes 08 seconds W., NAD 27.

A—0 to 4 inches; brown (10YR 4/3) loam, light grayish brown (10YR 6/2) dry; moderate fine subangular blocky structure; friable; many fine and few medium roots; 10 percent pebbles; slightly effervescent; slightly alkaline; abrupt wavy boundary.

BC1—4 to 7 inches; yellowish brown (10YR 5/4) gravelly loam; moderate fine and medium subangular blocky structure; firm; common fine

and few medium roots; few faint yellowish brown (10YR 5/4) clay films on faces of peds; few fine distinct yellowish brown (10YR 5/6) masses of iron accumulation throughout; few very fine distinct very dark grayish brown (10YR 3/2) masses of iron and manganese accumulation throughout; many faint brown (10YR 4/3) organic coatings on faces of peds and in root channels; 15 percent limestone fragments with some shale; strongly effervescent; moderately alkaline; clear wavy boundary.

BC2—7 to 18 inches; dark yellowish brown (10YR 4/4) gravelly loam; weak medium subangular blocky structure; firm; few fine roots; few faint yellowish brown (10YR 5/4) clay films on faces of peds; few distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; few fine distinct black (10YR 2/1) masses of manganese accumulation throughout; few medium distinct light gray (10YR 7/2) calcium carbonate accumulation throughout in the lower part; common faint brown (10YR 4/3) organic coatings on vertical faces of peds; 15 percent limestone fragments; strongly effervescent; moderately alkaline; clear wavy boundary.

Cd1—18 to 30 inches; dark yellowish brown (10YR 4/4) gravelly loam; massive in place parting to weak coarse subangular blocky; firm; few fine roots on fracture faces; few distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; few fine distinct black (10YR 2/1) masses of manganese accumulation in seams or partings; few medium distinct light gray (10YR 7/2) calcium carbonate accumulation throughout; 20 percent limestone fragments; strongly effervescent; moderately alkaline; clear smooth boundary.

Cd2—30 to 80 inches; yellowish brown (10YR 5/4) gravelly loam; massive; very firm; few fine roots in fractures; common medium distinct light brownish gray (10YR 6/2) masses of iron depletions in the matrix; common distinct yellowish brown (10YR 5/6) and few distinct yellowish red (5YR 4/6) masses of iron accumulation throughout; few fine distinct black (10YR 2/1) masses of manganese accumulation throughout; few medium distinct light gray (10YR 7/2) calcium carbonate accumulation throughout; 20 percent limestone fragments; strongly effervescent; moderately alkaline; clear wavy boundary.

Range in Characteristics:

Thickness of the solum: 10 to 20 inches
Depth to carbonates: 0 to 15 inches
Content of rock fragments: A horizon=5 to 15 percent; BC horizon=10 to 20 percent; C horizon=10 to 20 percent

A horizon:
Color=hue of 10YR, value of 4 or 5, chroma of 3 or 4
Texture=loam

BCt horizon:
Color=hue of 10YR, or 7.5YR, value of 4 or 5, chroma of 4 to 6
Texture=loam or clay loam in the fine earth fraction

Cd horizon:
Color=hue of 10YR, value of 4 or 5, chroma of 3 or 4
Texture=loam in the fine earth fraction

Treaty Series

Depth class: Very deep
Drainage class: Poorly drained
Parent material: Loess and the underlying Wisconsinan till
Landform: Depressions and flats on the Wisconsinan till plain*Slope:* 0 to 1 percent
Adjacent soils: Fincastle, Reesville, and Xenia
Taxonomic class: Fine-silty, mixed, superactive, mesic Typic Argiaquolls

Typical Pedon:

Treaty silty clay loam, 0 to 1 percent slopes, about 3/4 mile west northwest of Melvin, in Richland Township, Clinton County, Ohio; about 2100 feet southwest of intersection of Melvin Road and Stone Road along Stone Road, then 350 feet south. USGS Sabina topographic quadrangle, lat: 39 degrees 30 minutes 55 seconds N., long: 83 degrees 47 minutes 56 seconds W. NAD 27.

Ap—0 to 8 inches; very dark gray (10YR 3/1) silty clay loam, grayish brown (10YR 5/2) dry; weak medium subangular blocky structure; firm; common fine roots; few prominent brown (7.5YR 4/4) masses of iron and manganese accumulation throughout; neutral; abrupt smooth boundary.

A—8 to 16 inches; very dark gray (10YR 3/1) silty clay loam, grayish brown (10YR 5/2) dry; moderate medium subangular blocky structure; firm; common fine roots; few prominent brown (7.5YR 4/4) masses of iron and manganese accumulation throughout; neutral; clear wavy boundary.

Btg1—16 to 21 inches; dark gray (10YR 4/1) silty clay loam; moderate medium and fine subangular blocky structure; firm; few fine roots; common distinct gray (10YR 5/1) clay films on faces of peds; common medium prominent light olive brown (2.5Y 5/4) masses of iron accumulation in the matrix; common fine faint black (10YR 2/1) manganese concretions throughout; many faint dark gray (10YR 3/1) organic coatings on faces of peds; neutral; clear wavy boundary.

Btg2—21 to 32 inches; gray (10YR 5/1) silty clay loam; moderate medium subangular blocky structure; firm; few fine roots; common distinct gray (10YR 5/1) clay films on faces of peds; common medium prominent light olive brown (2.5Y 5/4) masses of iron accumulation in the matrix; common fine distinct black (10YR 2/1) manganese concretions throughout; neutral; clear smooth boundary.

Bt—32 to 37 inches; yellowish brown (10YR 5/6) silty clay loam; moderate medium subangular blocky structure; firm; common distinct gray (10YR 5/1) clay films on faces of peds; many medium prominent gray (10YR 6/1) iron depletions in the

matrix; many fine distinct strong brown (7.5YR 5/8) masses of iron accumulation throughout; common fine prominent black (10YR 2/1) manganese concretions throughout; slightly alkaline; clear wavy boundary.

2BC—37 to 63 inches; yellowish brown (10YR 5/6) silty clay loam; weak coarse subangular blocky structure; firm; few faint gray (10YR 6/1) clay films on faces of peds; many medium prominent gray (10YR 6/1) iron depletions in the matrix; many fine prominent white (10YR 8/1) masses of calcium carbonate accumulation throughout; a few pebbles; slightly effervescent; moderately alkaline; clear wavy boundary.

2C—63 to 80 inches; dark yellowish brown (10YR 4/4) loam; massive; very firm; few fine distinct brown (7.5YR 5/2) iron depletions throughout; 10 percent pebbles; strongly effervescent; moderately alkaline.

Range in Characteristics:

Thickness of the solum: 40 to 65 inches
Thickness of the mollic epipedon: 10 to 18 inches
Thickness of overwash: 8 to 14 inches
Depth to bedrock: greater than 80 inches
Depth to carbonates: 30 to 65 inches
Thickness of the loess mantle: 24 to 40 inches
Content of rock fragments: 2Bt and 2BC horizon=2 to 10 percent; 2C horizon=5 to 10 percent

Ap horizon:
Color=hue of 10YR, value of 2 or 3, chroma of 1 or 2
Texture=silt loam or silty clay loam

Btg and Bt horizon:
Color=hue of 10YR, value of 3 to 5, chroma of 1 to 6
Texture=silty clay loam

2Bt horizon:
Color=hue of 10YR or 2.5Y, value of 4 to 6, chroma of 1 to 4
Texture=loam, clay loam, or silty clay loam

2BC horizon:
Color=hue of 10YR or 2.5Y, value of 4 to 6, chroma of 1 to 6
Texture=loam, clay loam, or silty clay loam

2C horizon:
Color=hue of 10YR or 2.5Y, value of 4 to 6, chroma of 3 or 4
Texture=loam or fine sandy loam

Tremont Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderate
Parent material:Alluvium
Landform: Flood plains
Position on the landform: Steps *Slope range: 0* to 2 percent
Adjacent soils: Lippincott, Ross, Sloan
Taxonomic classification: Fine-loamy, mixed (calcareous), mesic Cumulic Haplaquolls

Typical Pedon:

Tremont silty clay loam, rarely flooded, about 2 miles west of Enon, in Mad River Township; about 130 feet north and 460 feet west of the southeast corner of sec. 13, T 3, R. 9:

Ap-0 to 7 inches; very dark gray (10YR 3/1) silty clay loam, very dark grayish brown (10YR 3/2) dry; firm; few medium and fine roots; few pebbles; slightly effervescent; moderately alkaline; abrupt wavy boundary.

A-7 to 13 inches; very dark gray (10YR 3/1) clay loam, very dark grayish brown (10YR 3/2) dry; weak coarse and medium subangular blocky structure; firm; few medium and fine roots; few pebbles; slightly effervescent; moderately alkaline; abrupt wavy boundary.

Abl -1 3 to 21 inches; black (10YR 2/1) clay loam,very dark gray (10YR 3/1) dry; weak fine and very fine granular structure; friable; few medium and fine roots; few pebbles; slightly effervescent; slightly alkaline; clear wavy boundary.

Ab2-21 to 29 inches; very dark gray (10YR 3/1) loam, very dark grayish brown (10YR 3/2) dry; weak medium prismatic structure parting to moderate medium and fine subangular blocky; firm; few medium and fine roots; few pebbles; slightly effervescent; moderately alkaline; clear wavy boundary.

Bgbl -29 to 37 inches; dark gray (10YR 4/1) loam; common medium prominent olive brown (2.5Y 4/4) and light olive brown (2.5Y 5/4) mottles; moderate medium and fine subangular blocky structure; firm; about 5 percent gravel; few black (10YR 2/1) krotovinas; slightly effervescent; moderately alkaline; clear wavy boundary.

Bgb2-37 to 54 inches; gray (10YR 5/1) clay loam; common medium distinct yellowish brown (10YR 5/4) mottles; weak coarse subangular blocky structure; firm; about 5 percent gravel; few black (10YR 2/1) krotovinas; slightly effervescent; slightly alkaline; clear wavy boundary. 2Cg 1 -54 to 64 inches; dark grayish brown (10YR 4/2) gravelly loam; single grain; loose; about 15 percent gravel; slightly effervescent; moderately alkaline; gradual wavy boundary.

2Cg2-64 to 80 inches; dark gray (10YR 4/1) very gravelly coarse sandy loam; single grain; loose; about 40 percent gravel; slightly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the solum: 40 to 72 inches
Thickness of the mollic epipedon: 24 to 36 inches

Content of rock fragments: A horizon-0 to 5 percent;
C or Cg horizon-0 to 1 0. percent; 2C or 2Cg horizon-1 5 to 60 percent

Ap and A horizons:
Color-hue of 10YR, value of 3 (4 or 5 dry), chroma of 1 to 3
Texture-silt loam, silty clay loam, clay loam

Ab horizon:
Color-hue of 10YR, value of 2 or 3, chroma of 1 or 2
Texture-clay loam, silty clay loam, silt loam, loam

Bgb horizon:
Color-hue of 10YR, value of 4 or 5, chroma of 1 or 2
Texture-clay loam, silty clay loam, silt loam, loam

Cg or C horizon (if it occurs):
Color-hue of 10YR or 2.5Y, value of 4 to 6, chroma of 1 to 4
Texture-clay loam, silty clay loam, silt loam, loam, and subhorizons of sandy loam or coarse sandy loam

2Cg or 2C horizon:
Color-hue of 1 OYR, 2.5Y, or neutral, value of 4 to 6, chroma of 0 to 4
Texture-the gravelly or very gravelly analogs of silt loam, loam, sandy loam, or coarse sandy loam; subhorizons of gravelly or very gravelly loamy sand

Wapahani Series

Depth class: Very deep
Drainage class: Moderately well drained
Parent material: Wisconsinan till
Landform: Wisconsinan till plain
Position on the landform: Footslopes, backslopes, and shoulders
Slope: 6 to 18 percent
Adjacent soils: Losantville and Miamian

Typical Pedon:

Wapahani clay loam, 6 to 12 percent slopes, about .5 mile northwest of Daleville, in Delaware County, Indiana; 2,050 feet west and 2,900 feet south of the northeast corner of sec. 1, T. 19 N., R. 8 E., USGS Gilman, Ind. topographic quadrangle; lat: 40 degrees 07 minutes 36 seconds N., long: 85 degrees 33 minutes 52 seconds W., NAD 27

Ap—0 to 5 inches; dark yellowish brown (10YR 4/4) clay loam, light yellowish brown (10YR 6/4) dry; weak medium subangular blocky structure; firm; common fine roots; common fine tubular pores; 3 percent rock fragments; neutral; clear smooth boundary.

Bt—5 to 16 inches; dark yellowish brown (10YR 4/4) clay loam; moderate medium subangular blocky structure; firm; common fine roots; common fine tubular pores; common distinct dark yellowish brown (10YR 3/4) clay films on faces of peds; many fine irregular very dark gray (10YR 3/1) masses of iron and manganese accumulation in the matrix; 5 percent rock fragments; neutral; clear smooth boundary.

BCt—16 to 20 inches; yellowish brown (10YR 5/4) loam; weak coarse subangular blocky structure; firm; few very fine and fine roots; few very fine and fine tubular pores; few distinct brown (10YR 4/3) clay films on faces of peds; common fine distinct grayish brown (10YR 5/2) iron depletions in the matrix; many fine irregular very dark gray (10YR 3/1) masses of iron and manganese accumulation in the matrix; 7 percent rock fragments; slightly effervescent; slightly alkaline; clear smooth boundary.

Cd—20 to 80 inches; yellowish brown (10YR 5/4) loam; massive; very firm; common fine distinct grayish brown (10YR 5/2) iron depletions in the matrix; many fine irregular very dark gray (10YR 3/1) masses of iron and manganese accumulation in the matrix; 8 percent rock fragments; strongly effervescent; moderately alkaline.

Range in Characteristics:

Thickness of the solum: 10 to 20 inches
Depth to carbonates: 8 to 18 inches
Depth to dense till: 12 to 24 inches
Content of rock fragments: A horizon=0 to 10 percent; Bt horizon=0 to 10 percent; BCt horizon=1 to 10 percent; Cd horizon=1 to 10 percent

A horizon:
Color=hue of 10YR, value of 4 or 5, chroma of 3 to 6
Texture=clay loam

Bt horizon:
Color=hue of 10YR, value of 4 or 5, chroma of 3 to 6
Texture=clay loam or loam

BCt horizon:
Color=hue of 10YR, value of 4 or 5, chroma of 3 to 6
Texture=clay loam, fine sandy loam or loam

Cd horizon:
Color=hue of 10YR, value of 4 or 5, chroma of 3 or 4
Texture=loam or fine sandy loam

Warsaw Series

The Warsaw series consists of nearly level, well drained soils that formed in loamy glacial outwash over sand and gravel at a depth of 24 to 40 inches. These soils are on terraces along the major streams and their larger tributaries.

In a representative profile the surface layer is very dark grayish brown loam 11 inches thick. The subsoil extends to a depth of 33 inches. The upper 4 inches is dark brown clay loam, the middle 9 inches is brown and very dark gray clay, and the lower 10 inches is dark grayish brown gravelly clay loam. The substratum is yellowish brown very gravelly loamy sand to a depth of 60 inches.

Available water capacity is moderate. Permeability is moderate in the upper part and rapid in the underlying sand and gravel. The surface layer is high in organic matter content. The rooting zone is moderately deep above the sand and gravel. These soils dry out and warm up early in the spring. Warsaw soils have a moderate hazard of drought. Crops may be affected by lack of moisture during the growing season.

Warsaw soils are used mostly for crops or for urban development. They are well suited to field crops and specialty crops.

Representative profile of a Warsaw loam, 0 to 2 percent slopes, in Bath Township, SE¼ NW¼ sec. 28:

Ap—0 to 11 inches; very dark grayish brown (10YR 3/2) loam; moderate medium and fine granular structure; friable; about 5 percent gravel; neutral; clear smooth boundary.

Bl—11 to 14 inches; dark brown (7.5YR 3/2) clay loam; moderate medium subangular blocky structure; friable thin patchy very dark grayish brown (10YR 3/2) coatings on ped surfaces; about 10 percent gravel; slightly acid; clear smooth boundary.

B21t—14 to 21 inches; brown (7.5YR 4/4) clay; moderate medium and fine subangular blocky structure; firm; thin patchy dark brown (7.5YR 3/2) clay films and thin patchy very dark gray (10YR 3/1) organic coatings on ped surfaces; about 10 percent gravel; slightly acid; gradual wavy boundary.

B22t—21 to 23 inches; very dark gray (10YR 3/1) clay; moderate fine subangular blocky structure; firm, sticky; medium patchy clay films on ped surfaces; about 10 percent gravel; neutral; clear wavy boundary.

B3—23 to 33 inches; dark grayish brown (10YR 4/2) gravelly clay loam; weak medium subangular blocky structure; firm; about 35 percent gravel; mildly alkaline; clear irregular boundary.

C—33 to 60 inches; yellowish brown (10YR 5/4) very gravelly loamy sand; about 50 percent gravel; single grained; loose; moderately alkaline, calcareous.

The solum ranges from 24 to 40 inches in thickness but it is dominantly 30 to 40 inches thick. Some profiles have a silty mantle as much as 24 inches thick. The dark colored material (combined A & B horizons) ranges from 11 to 20 inches in thickness. The A horizon and the upper part of the B horizon are commonly 10 percent gravel or less, and the horizon overlying the C horizon generally is more than 20 percent gravel. Unless limed, the solum ranges from medium acid to slightly acid in the upper part and from neutral to mildly alkaline in the lower part.

The Ap or Al horizons are black (10YR 2/1), very dark grayish brown (10YR 3/2), or very dark brown (10YR 2/2). The B2t horizon has hue of 10YR through 5YR, value of 3 through 5, and chroma of 1 through 4. It is typically sandy clay loam, clay, clay loam, or gravelly phases of these textures. In some profiles, tongues of material, from the B2t horizon extend several feet into the C horizon.

Warsaw soils in Greene County have slightly more clay in the subsoil and have a higher reaction in the upper part of the subsoil than other Warsaw soils. This difference does not affect the use and management of these soils.

Warsaw soils are adjacent to Eldean and Wea soils. They have a darker colored surface layer than Eldean soils, and they are shallower to sand and gravel than Wea soils.

Wea Series

The Wea series consists of nearly level to gently sloping, well drained soils that formed in a thin layer of silty material and in the underlying loamy glacial outwash. These soils are on terraces along Little Miami River, Mad River, and some of their larger tributaries.

In a representative profile the surface layer is very dark grayish brown silt loam 12 inches thick. The subsoil is brown silty clay loam in the upper 12 inches, and brown clay loam in the lower 21 inches. The substratum is brown gravelly sand to a depth of 60 inches.

Available water capacity is high, and permeability is moderate in the subsoil and rapid in the underlying sand and gravel. The rooting zone is deep. The surface layer of these soils has a high organic matter content.

Wea soils are used mostly for crops. Corn, soybeans, wheat, and grass-legume meadow are the main crops. Some areas are used for pasture.

Representative profile of Wea silt loam, 1 to 3 percent slopes, in Beavercreek Township, NE¼ SE¼ sec. 22; 6½ miles northwest of Xenia, ¾ mile north of Fairground Road, and 1,500 feet east of Beaver Valley Road:

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) silt loam; moderate fine and medium granular structure; friable; many roots; neutral; clear smooth boundary.

A12—8 to 12 inches; very dark grayish brown (10YR 3/2) silt loam; moderate medium subangular blocky structure; friable; many roots; slightly acid; clear wavy boundary.

B1t—12 to 18 inches; brown (7.5YR 4/4) light silty clay loam; moderate medium subangular blocky structure; firm; common roots; very dark grayish brown (10YR 3/2) organic stains; thin patchy brown (10YR 4/3) clay films on ped faces; slightly acid; gradual wavy boundary.

IIB21t—18 to 24 inches; brown (7.5YR 4/4) silty clay loam; strong medium subangular blocky structure; firm; common roots; medium continuous brown (7.5YR 4/2) clay films on ped faces and in soil pores; common very dark grayish brown (10YR 3/2) organic stains on ped faces; few coarse fragments; medium acid; gradual wavy boundary.

IIB22t—24 to 34 inches; brown (7.5YR 4/4) clay loam; strong medium subangular blocky structure; firm; few roots; medium continuous brown (7.5YR 4/2) clay films; few coarse fragments in upper part increasing to common in lower part of horizon; slightly acid; gradual wavy boundary.

IIB3t—34 to 45 inches; brown (7.5YR 4/4) clay loam; weak medium and coarse subangular blocky structure; firm; few roots; medium continuous brown (7.5YR 4/2) clay films; about 10 percent coarse fragments; neutral; clear irregular boundary.

IIC—45 to 60 inches; brown (10YR 4/3) gravelly sand; single grained; loose; mildly alkaline, calcareous.

The thickness of the solum and depth to sand and gravel range from 40 to 60 inches. Unless limed, the solum is medium acid to slightly acid in the upper part and slightly acid to neutral in the lower part.

The A horizon is black (10YR 2/1), very dark gray (10YR 3/1), very dark brown (10YR 2/2), and very dark grayish brown (10YR 3/2). The B horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 3 or 4. The B2 horizon commonly is clay loam but individual horizons in the upper part include silty clay loam. The IIB3 horizon is clay loam or gravelly clay loam.

Wea soils are near Ross, Ockley, Rush, Warsaw, and Eldean soils. They have a darker colored surface layer than Ockley, Rush, and Eldean soils. They are deeper to the underlying sand and gravel than Warsaw and Eldean soils. They are better developed and have a heavier textured subsoil than Ross soils.

Westland Series

The Westland series consists of nearly level, very poorly drained soils that formed in loamy material in slight depressions on outwash terraces.

In a representative profile the surface layer is very dark gray silty clay loam 14 inches thick. The subsoil is mottled dark gray and gray clay loam in the upper 24 inches and mottled gray gravelly silt loam in the lower 14 inches. The substratum is stratified gravelly loam, clay loam, and very gravelly loamy sand to a depth of 108 inches.

Available water capacity is high, and permeability is moderately slow in the upper part and rapid in the underlying coarser material. If these soils are drained, the rooting zone is deep. If they are not artificially drained, they have a seasonal high water table for long periods in winter and in spring.

Westland soils are used mostly for crops. Corn and soybeans are the most common crops grown. Most areas are artificially drained.

Representative profile of Westland silty clay loam in Ross Township; about 3 miles east of Cedarville, 100 yards north of the South Fork of Massie Creek, and 25 feet west of Cummings Road (Sample GN-28 in Laboratory Data Section):

Ap—0 to 10 inches; very dark gray (10YR 3/1) silty clay loam; weak fine granular structure; friable; about 3 percent pebbles; neutral; clear smooth boundary.

A12—10 to 14 inches; very dark gray (10YR 3/1) silty clay loam; moderate fine subangular blocky structure; firm; about 1 percent pebbles; neutral; clear smooth boundary.

B21tg—14 to 24 inches; dark gray (10YR 4/1) clay loam; common medium distinct yellowish brown (10YR 5/6) mottles; strong medium angular blocky structure; firm; thin very patchy dark gray (10YR 4/1) clay films in pores and channels; about 2 percent pebbles; neutral; gradual wavy boundary.

B22tg—24 to 30 inches; gray (5Y 5/1) clay loam; many fine prominent yellowish brown (10YR 5/6) mottles; weak coarse prismatic structure parting to moderate medium angular blocky; firm; thin very patchy gray (10YR 5/1) clay films in pores and root channels; very dark gray (10YR 3/1) organic coatings on some ped

faces; about 2 percent pebbles; mildly alkaline; clear smooth boundary.

B23g—30 to 38 inches; gray (10YR 5/1, 6/1) clay loam; many medium distinct yellowish brown (10YR 5/4) mottles; weak coarse prismatic structure parting to weak medium subangular blocky; firm; patchy very dark gray (10YR 3/1) and dark gray (10YR 4/1) stains on ped faces; some channels filled with very dark gray (10YR 3/1) silty clay loam material; about 5 percent pebbles; mildly alkaline; gradual wavy boundary.

B3g—38 to 52 inches; gray (10YR 6/1) gravelly silt loam; common coarse distinct yellowish brown (10YR 5/6) and brownish yellow (10YR 6/6) mottles; weak coarse prismatic structure; firm; about 30 percent gravel; common channels filled with very dark grayish brown (10YR 3/2) silty clay loam; moderately alkaline, weakly calcareous; clear wavy boundary.

C—52 to 108 inches; brown (10YR 5/3), pale brown (10YR 6/3), and gray (10YR 5/1) stratified gravelly loam, clay loam, and very gravelly loamy sand; moderately alkaline, calcareous.

Figure 17. Soil profile of the Westland soil series (scale in inches).

The solum ranges from 40 to 60 inches in thickness. Reaction of the solum ranges from medium acid to neutral in the upper part and increases to moderately alkaline in the lower part.

The A horizon is black (10YR 2/1), very dark gray (10YR 3/1), or very dark grayish brown (10YR 3/2). The thickness of the A horizon ranges from 11 to 17 inches. The B horizon has hue of 10YR through 5Y, value of 4 through 6, and chroma of 1 or 2. Mottles range from common to many. The B2 horizon is commonly clay loam, but thin layers of silty clay loam or clay are included. The B3 horizon is clay loam, gravelly loam, gravelly silt loam, and sandy loam.

Westland soils are the very poorly drained member of a drainage sequence that includes the well drained Ockley soils, the moderately well drained Thackery soils, and the somewhat poorly drained Sleeth soils. Westland soils are in positions similar to those of Millsdale, Ragsdale, Patton, and Brookston soils. They differ from Millsdale soils in having no limestone bedrock at a depth of 20 to 40 inches. They have a higher sand content than Ragsdale and Patton soils, and are underlain by sand and gravel. They have more gravel in the lower part of the subsoil than Brookston soils. They are commonly adjacent to Linwood soils, but they lack the organic layers of these soils.

Xenia Series

The Xenia series consists of nearly level to gently sloping, moderately well drained soils that formed partly in loess and partly in the underlying glacial till. These soils are on uplands in the central, southern, and southwestern parts of the county.

In a representative profile the surface layer is dark grayish brown silt loam 8 inches thick. The subsoil is yellowish brown. It is silty clay loam in the upper 26 inches and loam in the lower 8 inches. It is mottled below a depth of 13 inches. The substratum is mottled yellowish brown loam to a depth of 60 inches.

Available water capacity is high. Permeability is moderate in the upper part of the soil and moderately slow in the lower part of the subsoil and in the underlying till. These soils have a seasonal high water table for short periods in winter and in spring. The rooting zone is deep.

Most areas of Xenia soils are cultivated, and these soils are well suited to farming. Corn, soybeans, and grass-legume meadow are the main crops.

Representative profile of Xenia silt loam, 2 to 6 percent slopes, in Sugar Creek Township, SW¼ NW¼ sec. 4; 4 miles south-southwest of Bellbrook, 0.1 mile south of Middle Run Road, and 75 feet east of Haines Road (Sample GN-17 in Laboratory Data Section):

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) silt loam; weak fine granular structure; friable; many roots; medium acid; abrupt smooth boundary.

Bl—8 to 13 inches; yellowish brown (10YR 5/4) silty clay loam; moderate fine and medium subangular blocky structure; friable; many roots; brown (10YR 4/3) ped coatings; thin very patchy clay films in pores and root channels; few very dark grayish brown (10YR 3/2) soft concretions; medium acid; gradual smooth boundary.

B21t—13 to 20 inches; yellowish brown (10YR 5/4) silty clay loam; common fine faint yellowish brown (10YR 5/6) mottles and few fine distinct grayish brown (10YR 5/2) mottles; moderate medium and fine subangular blocky structure; friable; common roots; brown (10YR 4/3) ped coatings; thin patchy dark grayish brown (10YR 4/2) clay films; few very dark grayish brown soft concretions; slightly acid; clear smooth boundary.

B22t—20 to 28 inches; yellowish brown (10YR 5/4) silty clay loam; common medium distinct light brownish gray (2.5Y 6/2) and grayish brown (10YR 5/2) mottles; moderate medium subangular blocky structure; firm; common roots; medium continuous dark yellowish brown (10YR 4/4) clay films; few very dark grayish brown (10YR 3/2) concretions; slightly acid; abrupt wavy boundary.

IIB23t—28 to 34 inches; yellowish brown (10YR 5/4) silty clay loam; many medium faint yellowish brown (10YR 5/6) mottles and few fine distinct light brownish gray (2.5Y 6/2) mottles; moderate medium subangular blocky structure; firm; common roots; medium continuous dark grayish brown (10YR 4/2) clay films; common very dark grayish brown (10YR 3/2) concretions; 3 percent coarse fragments; neutral; clear irregular boundary.

IIB3t—34 to 42 inches; yellowish brown (10YR 5/4) loam; many medium faint yellowish brown (10YR 5/6), mottles many medium distinct grayish brown (10YR 5/2) mottles, and common large distinct gray (10YR 6/1) mottles; weak coarse subangular blocky structure; firm; few roots; medium continuous dark brown (10YR 3/3) clay films, becoming thin and very patchy below a depth of 40 inches; 5 percent coarse fragments; mildly alkaline, calcareous; gradual wavy boundary.

IIC1—42 to 52 inches; yellowish brown (10YR 5/4) loam; many coarse distinct gray (10YR 5/1) mottles and common medium faint yellowish brown (10YR 5/6) mottles; massive; firm; few dark brown (10YR 3/3) stains; 5 to 10 percent coarse fragments; mildly alkaline, calcareous; gradual smooth boundary.

IIC2—52 to 60 inches; yellowish brown (10YR 5/4) loam; common fine faint yellowish brown (10YR 5/6) mottles and common coarse distinct light gray (10YR 7/1) mottles; massive; firm; 10 to 15 percent coarse fragments as much as 3 inches across; moderately alkaline, calcareous.

The solum ranges from 36 to 60 inches in thickness. Unless limed, the solum is medium acid to slightly acid in the upper part and neutral to mildly alkaline in the lower part.

The Ap horizon is dark grayish brown (10YR 4/2) or brown (10YR 4/3). The B2 and IIB2 horizons are dark yellowish brown (10YR 4/4) or yellowish brown (10YR 5/4) and few to many mottles. The B2 horizon is silty clay loam, and the IIB2 horizon is silty clay loam or clay loam. The IIB3 horizon has color similar to that of the B2 and IIB2 horizons. It is typically clay loam or loam.

Xenia soils are the moderately well drained members of a drainage sequence that includes the well drained Russell soils and the somewhat poorly drained Fincastle soils. Xenia soils are adjacent to Birkbeck and Raub soils in some areas. They formed in loess and the underlying glacial till, whereas Birkbeck soils formed entirely in loess. They have a lighter colored surface layer than Raub soils. They are similar to Celina soils but have a thicker loess mantle.

Formation of the Soils

This section relates the factors of soil formation to the soils in Greene County and explains the processes of soil formation.

Factors of Soil Formation

A soil is a three-dimensional natural body consisting of mineral and organic material that can support plant growth. The nature of any soil at a given site is the result of the interaction of five general factors—parent material, climate, plants and animals, relief, and time. Climate and plants and animals have an effect on parent material that is modified by relief over time. Theoretically, if all these factors were identical at different sites, the soils at these sites would be identical. Differences among the soils are caused by variations in one or more of these factors.

Parent Material

Parent material is the raw material acted on by the soil-forming processes. It largely determines soil texture, which, in turn, affects other properties, such as natural soil drainage and permeability. The physical and chemical composition of parent material has an important effect on the kind of soil that forms.

The soils in Greene County formed in many different kinds of parent material. Many of the soils formed in material deposited by the glaciers that covered much of the survey area thousands of years ago or by the meltwater from these glaciers. Other soils formed in loess, which is silty windblown material, or in alluvium, which is material recently deposited by streams. In unglaciated areas, the soils formed in material that was either weathered from bedrock in place or moved by gravity. A few soils formed in organic material that resulted from the slow accumulation of plant residue in marshes or ponds over thousands of years.

Glacial till is material that was deposited directly by glacial ice with little or no water action. It typically has particles that vary in size, including sand, silt, clay, and some pebbles, cobblestones, and larger rock fragments. The smaller rock fragments generally are angular. The composition of the till depends on the nature of the area over which the ice passed before the till was deposited. Some of the material was transported great distances by the ice, but most of the till was of local origin. All of the till in Greene County was deposited during the latest major glaciation, the Wisconsinan Glaciation.

The glacial plains in Greene County are either ground moraines or end moraines. The soils that formed in these two types of deposits have different properties, reflecting variations in the method and rate of till deposition.

Till deposits on ground moraines generally are massive, compact, and dense. They make up the nearly level and gently undulating till plains in Greene County. The soils that formed in this kind of till generally are compact and are slowly or moderately slowly permeable. Brookston, Celina, and Crosby soils typically formed in ground moraine till of Wisconsinan age

Till deposits on end moraines can vary more in texture than those on ground moraines. In some areas they are stratified and tend to be less dense. They make up the moderately rolling bands of ridges that trend in a northeast to southwest direction through the central part of the county. The soils that formed in this kind of till generally are less compact and more permeable than the soils on ground moraines. Miamian and Celina soils typically formed in till of Wisconsinan age on end moraines.

Outwash deposits, laid down by moving water, and lacustrine deposits, laid down in still water, are two general kinds of meltwater deposits. The size of the particles that can be carried suspended in water depends on the speed of the moving water. When the water slows to a given speed, the suspended particles that are larger than a given size will settle in the water. Water slows wherever a stream loses grade or flows into a body of still water. At that time, the coarser sand and gravel particles settle near the mouth of the stream and the silt and fine clay particles are carried farther into the lake, where they slowly settle.

The soils that formed in outwash deposits are of moderate extent in Greene County. They formed in deposits laid down as surging meltwater poured from the glacier, depositing sand and gravel as outwash terraces, deltas, kames, and kame terraces. The meltwater

washed away the smaller particles of silt and clay, leaving behind sand and gravel. The soils that formed in outwash generally are permeable. Outwash of Wisconsinan age is deposited in Greene County.

The amount of natural lime and the proportion of shale, sandstone, limestone, and igneous pebbles in the glacial outwash are determined by the source of the outwash. The Wisconsinan outwash deposits along the major terraces in Greene County were derived from limestone-influenced glacial drift. Eldean and Casco soils formed in limy glacial outwash of Wisconsinan age. Some Wisconsinan outwash deposits along terraces in the eastern part of the county were derived from drift that was influenced very little by limestone.

The outwash deposits generally have a mantle of loess. The thickness of the loess on the outwash terraces varies inversely with the slope. The nearly level to sloping Rush soils formed in a thick deposit of loess. The sloping Ockley soils formed in thinner deposits of loess, partly because of erosion. The sloping to very steep Rodman soils formed in sandy or gravelly deposits in areas where the loess mantle is very thin or does not occur.

Soils that formed in lacustrine deposits are of relatively minor extent throughout Greene County, although they are locally extensive in places. They formed in deposits laid down in scattered old glacial or post-glacial lakes. Patton soils formed in these silty deposits.

Loess is wind-deposited soil material. Soils that formed in loess are of major extent throughout Greene County, although they are locally extensive in the eastern and central parts. The loess was deposited as the outwash terraces were forming. Strong winds swept across these open, level terraces, picked up silt particles, and later deposited them, commonly on landforms at higher elevations. Birkbeck and Reesville soils formed mainly in loess that was deposited on Wisconsinan till plain.

Some areas in the northwestern part of the county were glaciated, but the glacier had little or no influence on soil morphology, especially on the steeper slopes. In areas Milton and Edenton soils formed in a thin layer of till and in the underlying material weathered from interbedded limestone and clay shale.

Recent alluvium is soil material deposited by floodwater along streams. The texture of the soil material varies, depending on the speed of the floodwater, the duration of flooding, and the distance from the streambank. Soils that formed in recent alluvium can be highly stratified. The soil horizons are weakly expressed because the soil-forming processes are interrupted with each new deposition. The source of the alluvium generally is material eroded from other soils farther upstream in the watershed. Eel, Genesee, and Ross soils formed in slightly acid to calcareous recent alluvium derived from soils that formed in limy Wisconsinan glacial till and outwash.

Organic soils formed in decomposed plant material that accumulated under water when ponds were filling with water. Ponds and marshes naturally age as they fill with organic material derived from algae, sedges, rushes, and other water-tolerant plants. The plant residue accumulates because the permanently wet condition of the soils prevents oxidation and slows decomposition. Freshly exposed organic material commonly has a reddish brown color that rapidly turns black when the material is exposed to the air. Linwood soils formed in decomposed plant material.

Climate

The climate in Greene County has significantly affected the soil-forming processes. Climatic factors, such as precipitation and temperature, have influenced the existing plant and animal communities and the physical and chemical weathering of the parent material.

During the colder glacial epoch, the advancing glaciers spread over the glaciated part of the county and buried the boreal forest and the underlying soils. The cold temperatures in the soil reduced the rate of chemical reactions in the existing soils and in the raw parent material. Increased frost action, resulting from a periglacial climate, caused frost churning in some soils. Strong winds swept across the recently deposited glacial parent material, which was largely devoid of vegetation, and carried away large amounts of silt-sized particles, which were later deposited as loess. When the glacial ice retreated and the climate gradually warmed, deciduous forests eventually succeeded the boreal vegetation.

The county currently has a humid, temperate climate, which has persisted for thousands of years. In this climatic environment, physical and chemical weathering of the parent material can occur along with the accumulation of organic matter, the decomposition of minerals, the formation

and translocation of clay, the leaching of soluble compounds, and alternating periods of freezing and thawing.

The microclimate in a given area can affect soil formation. Brookston soils, which are in depressional or low lying areas, receive runoff from the higher adjacent slopes. The runoff creates a wet microclimate that results in prolonged saturation, the reduction of iron, and a gray subsoil. Sloping soils, such as Miamian soils, formed under a drier microclimate because of runoff. This better external drainage results in better aeration, the oxidation of iron, and a yellowish brown subsoil. Through its effect on the amount of sunlight and heat energy reaching the soil, the trees that grow on the soil, and the accumulation of organic matter in the soil, aspect also affects the microclimate.

Living Organisms

The vegetation under which a soil forms influences soil properties, such as color, structure, reaction, and content and distribution of organic matter. Vegetation extracts water from the soil, recycles nutrients, and adds organic matter to the soil. Gases derived from root respiration combine with water to form acids that influence the weathering of minerals. Because of a lower content of organic matter, soils that formed under forest vegetation are generally lighter colored than those that formed under grasses.

At the time Greene County was settled, the native vegetation consisted mainly of hardwood forests. Red oak, white oak, sugar maple, and American beech commonly grew on the better drained soils on the Wisconsinan till plains. Pin oak, shagbark hickory, red maple, American elm, and white ash were common on the wetter soils on these till plains. Water-tolerant reeds and sedges, willow, tamarack, and alder grew in scattered small fens or marshes.

Bacteria, fungi, and many other micro-organisms decompose organic matter and release nutrients to growing plants. They influence the formation of peds. Soil properties, such as drainage, temperature, and reaction, influence the type of micro-organisms that live in the soil. Fungi are generally more active in the more acid soils, while bacteria are more active in the less active soils.

Earthworms, insects, and small burrowing animals mix the soil and create small channels that influence soil aeration and the percolation of water. Earthworms help to incorporate crop residue or other organic matter into the soil. The organic material improves tilth. In areas that are well populated with earthworms, the leaf litter that accumulates on the soil in the fall is generally incorporated into the soil by the following spring. If the earthworm population is low, part of the leaf fall can remain on the surface of the soil for several years.

Human activities have significantly influenced soil formation. Native forests have been cleared and developed for farming and other uses. Cultivation has accelerated erosion on sloping soils, wet soils have been drained, and manure, lime, chemical fertilizer, and pesticides have been applied in cultivated areas. Cultivation has affected soil structure and compaction and lowered the content of organic matter. The development of land for urban uses or for mining has significantly influenced the soils in some areas.

Relief

Relief influences soil formation mainly through its effect on runoff and erosion. To a lesser extent, it also influences soil temperature, the plant cover, depth to the water table, and the accumulation and removal of organic matter.

Because it causes differences in external soil drainage, relief can differentiate soils that formed in the same kind of parent material. Water that runs off the more sloping soils can collect in depressions or swales. Brookston and Miamian soils both formed in loamy till. The gently sloping to steep Miamian soils on knolls and side slopes are well drained. They are in areas where external drainage is good. The nearly level Brookston soils are very poorly drained. They are in swales or depressions that receive runoff from the higher adjacent soils, such as Miamian soils.

Relief varies very little in Greene County. On the ground moraines in the eastern part of the county, the soils generally are nearly level to gently undulating. Relief becomes more pronounced in the central and western part of the county, where undulating to rolling, dissected end moraines grade to the valleys of the Little Miami River and the Mad River valley.

Time

The length of time that the parent material has been exposed to soil-forming processes influences the nature of the soil that forms. The youngest soils in Greene County, such as

Eel, Genesee, and Ross soils, formed in recent alluvium. These soils can be stratified and have weakly expressed horizons because the soil-forming processes are interrupted with each new deposition.

Glaciers advanced over much of Greene County during the Wisconsinan Glaciation and the Illinoian Glaciation, possibly as much as 100,000 years apart. Glacial deposits of Wisconsinan age are geologically young, yet enough time has elapsed for the initially raw parent material to weather into soils that have distinct horizons. In most of the soils, including Celina, Crosby, and Miamian soils, carbonates have been leached to a depth of about 2 to 3 feet, clay has been translocated from the A horizon to the B horizon, and organic matter has accumulated in the A horizon.

Processes of Soil Formation

Soil forms through complex processes that are grouped into four general categories. These are additions, removals, transfers, and transformations. These processes affect soil formation, although in differing degrees.

The accumulation of organic matter in the A horizon of the mineral soils in Greene County is an example of an addition. This accumulation is the main reason for the dark color of the A horizon. The color of the raw parent material is uniform with increasing depth.

The leaching of lime from the upper 2 to 3 feet in many of the soils in Greene County that formed in till is an example of a removal. The parent material of these soils was initially limy, but the lime has been leached from the upper part of the profile by percolating water.

The translocation of clay from the A horizon to the B horizon in many soils on uplands in the county is an example of a transfer. The A horizon or an E horizon is a zone of eluviation, or loss. The B horizon is a zone of illuviation, or gain. In Celina, Miamian, and other soils, the B horizon has more clay than the parent material and the A horizon has less clay. In the B horizon of some soils, thin clay films are in pores and on faces of peds. This clay has been transferred from the A horizon.

An example of a transformation is the reduction and solubilization of ferrous iron. This process takes place under wet, saturated conditions in which there is no molecular oxygen. Gleying, or the reduction of iron, is evident in Brookston, Ragsdale, and Patton soils, which have a dominantly gray subsoil. The gray color indicates the presence of reduced ferrous iron, which, in turn, implies wetness. Reduced iron is soluble, but it commonly has been moved short distances in the soils in Greene County, stopping either in the horizon where it originated or in an underlying horizon. Part of this iron can be reoxidized and segregated in the form of stains, concretions, or bright yellow and red mottles.

References

1. American Association of State Highway and Transportation Officials (AASHTO). 2000. Standard specifications for transportation materials and methods of sampling and testing. 20th edition, 2 volumes.

2. American Society for Testing and Materials (ASTM). 2001. Standard classification of soils for engineering purposes. ASTM Standard D 2487-00.

3. Birkeland, Peter W. 1974. Pedology, weathering, and geomorphological research.

4. Birkeland, Peter W. 1984. Soils and geomorphology. 2nd edition.

5. Black, C.A. 1968. Soil-plant relationships. 2nd edition.

6. Buol, S.W., F.D. Hole, and R.J. McCracken. 1980. Soil genesis and classification. 3rd edition.

7. Carman, J. E. 1946. The Geologic Interpretation of Scenic Features in Ohio. Ohio Journal of Science 46: 241-283.

8. Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

9. Eyre, F.H., editor. 1980. Forest cover types of the United States and Canada. Society of American Forestry.

10. Federal Register. July 13, 1994. Changes in hydric soils of the United States.

11. Federal Register. February 24, 1995. Hydric soils of the United States.

12. Forsyth, J.L. 1959. The Beach Ridges of Northern Ohio. Ohio Division of Geological Survey Information Circular 25: 10.

13. Hurt, G.W., P.M. Whited, and R.F. Pringle, editors. Version 4.0, 1998. Field indicators of hydric soils in the United States.

14. Jenny, Hans. 1941. Factors of soil formation.

15. Jenny, Hans. 1980. The soil resource: Origin and behavior. Ecological Studies 37.

16. Kaatz, M. R.. 1955. The Black Swamp: A Study In Historical geography. The Association of American Geographers. 45: 1-35.

17. Munson, Robert D., editor. 1985. Potassium in agriculture. American Society of Agronomy.

18. National Research Council. 1995. Wetlands: Characteristics and boundaries.

19. Ruhe, Robert V. 1956. Geomorphic surfaces and the nature of soils. Soil Science 82:

20. Simonson, Roy W. 1959. Outline of a generalized theory of soil genesis. Soil Science Society of America Proceedings 23: 152-156.

21. Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18.

22. Soil Survey Staff. 1998. Keys to soil taxonomy. 8th edition. U.S. Department of Agriculture, Natural Resources Conservation Service.

23. Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service. U.S. Department of Agriculture Handbook 436.

24. Stevenson, F.J. 1982. Humus chemistry: Genesis, composition,

reactions.

25. Stevenson, F.J., editor. 1982. Nitrogen in agricultural soils. American Society of Agronomy, Agronomy Monograph 22.

26. Storie, R.E. 1976. Storie index rating. University of California, Division of Agricultural Science Special Publication 3203.

27. Stout, W., Ver Steeg, K., and Lamb G. F. 1943. Soil Conservation Service. 1987. Geology of Water in Ohio. Ohio Geological Survey Bulletin. 44. 694.

28. Thornbury, William D. 1969. Principles of geomorphology. 2nd edition.

29. United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

30. United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual.

31. United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. (http://www.statlab.iastate.edu/soils/nssh/)

32. United States Department of Agriculture, Natural Resources Conservation Service. 1996. Soil survey laboratory methods manual. Soil Survey Investigations Report 42.

33. United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210.

34. United States Department of Agriculture, Soil Conservation Service. 1981. Land resource regions and major land resource areas of the United States. U.S. Department of Agriculture Handbook 296.

35. United States Department of Agriculture, Soil Conservation Service. 1985. Site index and yield of second growth baldcypress. Soil Conservation Service Technical Note 5.

36. United States Department of Agriculture, Soil Conservation Service. 1987. Basic statistics, 1982 national resources inventory. Statistical Bulletin 756.

37. United States Department of Agriculture, Soil Conservation Service. 1978. Soil Survey of Greene County Ohio.

Glossary

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

Ablation till. Loose, permeable till deposited during the final downwasting of glacial ice. Lenses of crudely sorted sand and gravel are common.

AC soil. A soil having only an A and a C horizon. Commonly, such soil formed in recent alluvium or on steep, rocky slopes.

Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alluvial fan. The fanlike deposit of a stream where it issues from a gorge upon a plain or of a tributary stream near or at its junction with its main stream.

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Alpha, alpha-dipyridyl. A dye that when dissolved in 1N ammonium acetate is used to detect the presence of reduced iron (Fe II) in the soil. A positive reaction indicates a type of redoximorphic feature.

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

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

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

Aspect. The direction in which a slope faces.

Association, soil. A group of soils or miscellaneous areas geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Available water capacity (available water capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low	0 to 3
Low	3 to 6
Moderate	6 to 9
High	9 to 12
Very high	more than 12

Backslope. The position that forms the steepest and generally linear, middle portion of a hillslope. In profile, backslopes are commonly bounded by a convex shoulder above and a concave footslope below.

Backswamp. A floodplain landform. Extensive, marshy or swampy, depressed areas of flood plains between natural levees and valley sides or terraces.

Basal area. The area of a cross section of a tree, generally referring to the section at breast height and measured outside the bark. It is a measure of stand density, commonly expressed in square feet.

Basal till. Compact till deposited beneath the ice.

Base saturation. The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.

Base slope. 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).

Beach ridge. A low, essentially continuous mound of beach or beach and dune material heaped up by the action of waves and currents on the backshore of a beach, beyond the present limit of storm waves, and occurring singly or as one of a series of approximately parallel deposits. These ridges define the limits of relict lakes.

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

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

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

Bedrock-controlled topography. A landscape where the configuration and relief of the landforms are determined or strongly influenced by the underlying bedrock.

Beta horizon. A special type of lower Bt horizon with a significant accumulation of translocated silicate clay between two contrasting parent materials.

Borrow pit. An open excavation from which soil and underlying material have been removed, usually for construction purposes. Typically less than 2 acres in size. Larger areas are mapped as Udorthents.

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

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

Breaks. The steep and very steep broken land at the border of an upland summit that is dissected by ravines.

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.

Bulk density. The mass of a dry soil per unit bulk volume. The bulk volume is determined before drying to a constant weight at 105 degrees C. The value is expressed in grams per cubic centimeter.

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

Calcareous soil. A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

California bearing ratio (CBR). The load-supporting capacity of a soil as compared to that of standard crushed limestone, expressed as a ratio. First standardized in California. A soil having a CBR of 16 supports 16 percent of the load that would be supported by standard crushed limestone, per unit area, with the same degree of distortion.

Canopy. The leafy crown of trees or shrubs. (See Crown.)

Capillary water. Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

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

relief and drainage.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

Cement rock. Shaly limestone used in the manufacture of cement.

Channery soil material. Soil material that has, by volume, 15 to 35 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches (15 centimeters) along the longest axis. A single piece is called a channer.

Chemical treatment. Control of unwanted vegetation through the use of chemicals.

Chiseling. Tillage with an implement having one or more soil-penetrating points that shatter or loosen hard, compacted layers to a depth below normal plow depth.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay depletions. Low-chroma zones having a low content of iron, manganese, and clay because of the chemical reduction of iron and manganese and the removal of iron, manganese, and clay. A type of redoximorphic depletion.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Clayey. Containing more than 35 percent clay.

Claypan. A slowly permeable soil horizon that contains much more clay than the horizons above it. A claypan is commonly hard when dry and plastic or stiff when wet.

Climax plant community. The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.

Closed depression. A shallow, saucer-shaped area that is slightly lower on the landscape than the surrounding area and is without a natural outlet for surface drainage.

Coarse textured soil. Sand or loamy sand.

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

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

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

Colluvium. Soil material or rock fragments, or both, moved by creep, slide, or local wash and deposited at the base of steep slopes.

Compaction. Any process by which the mineral grains of soil are rearranged to decrease void space and bring them into closer contact with one another, thereby increasing the weight of solid material per cubic foot. In agronomy, usually associated with machinery traffic across the soil during farming operations.

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.

Complex slope. Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.

Concretions. Cemented bodies with crude internal symmetry organized around a point, a line, or a plane. They typically take the form of concentric layers visible to the naked eye. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up concretions. If formed in place, concretions of iron oxide or manganese oxide are generally considered a type of redoximorphic concentration.

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

Conservation cropping system. Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, the soil-improving crops and practices more than offset the effects of the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the soil. Other practices include the use of green manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.

Conservation tillage. A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

Consistence, soil. Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the "Soil Survey Manual."

Contour. An imaginary line on the surface of the earth connecting points of the same elevation.

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). Fecal material deposited in water by aquatic organisms.

Corrosion. Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

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.

Cropland. Land used primarily for the production of adapted cultivated, close-growing crops, fruit, or nut crops for harvest, alone or in association with sod crops.

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.

Delta. A body of alluvium having a surface that is nearly flat and fan shaped; 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 material. A very firm, massive, noncemented, root-restrictive layer (commonly till) that has no cracks or in which the spacing of cracks that roots can enter is 10 centimeters or more. The materials within the survey area have a bulk density of more than 1.8 grams per cubic centimeter.

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

Depth to bedrock (in tables). Bedrock is too near the surface for the specified use.

Depth to 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.

Dip slope. A slope of the land surface, roughly determined by and approximately conforming to the dip of the underlying bedrock.

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

Divided-slope farming. A form of field stripcropping in which crops are grown in a systematic arrangement of two strips, or bands, across the slope to reduce the hazard of water erosion. One strip is in a close-growing crop that provides protection from erosion, and the other strip is in a crop that provides less protection from erosion. This practice is used where slopes are not long enough to permit a full stripcropping pattern to be used.

Dolostone. A term used for the sedimentary rock dolomite in order to avoid confusion with the mineral of the same name. A carbonate sedimentary rock consisting mostly (more than 50 percent by weight) of the mineral dolomite [$CaMg(CO_3)_2$].

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

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."

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.

Draw. A small stream valley that generally is more open and has broader bottom land than a ravine or gulch.

Drift. Pulverized and other rock material transported by glacial ice and then deposited. Also, the sorted and unsorted material deposited by streams flowing from glaciers.

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.

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.

Effervescence. The gaseous response (observed as bubbles) of soil to applied hydrochloric acid (HCl) or other chemicals. A field or laboratory test to determine the presence of carbonates in the soil.

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 moraine produced at the front 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 soil material. Earthy parent material accumulated through wind action; commonly refers to sandy material in dunes or to loess in blankets on the surface.

Ephemeral stream. A stream, or reach of a stream, that flows only in direct response to precipitation. It receives no long-continued supply from melting snow or other source, and its channel is above the water table at all times.

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

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

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

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

Escarpment. A relatively continuous and steep slope or cliff, generally produced by erosion or faulting, breaking the general continuity of more gently sloping land surfaces. Exposed nonbedrock material is nonsoil material or very shallow, poorly developed soil. Typically 0.1 acre to 2 acres in size. Synonym: scarp.

Esker. A narrow, winding ridge of stratified gravelly and sandy drift deposited by a stream flowing in a tunnel beneath a glacier.

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*.

Filtering capacity (in tables). Because of rapid or very rapid permeability, the soil may not adequately filter effluent from a waste disposal system.

Fine textured soil. Sandy clay, silty clay, or

clay.

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

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

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

Floodplain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Fluvial. Of or pertaining to rivers; produced by river action, as a fluvial plain.

Footslope. The geomorphic component that forms the inner, gently inclined surface at the base of a hillslope. The surface profile is dominantly concave. In terms of gradational processes, the footslope is a transition zone between upslope sites of erosion and transport (shoulders and backslopes) and downslope sites of deposition (toeslopes).

Forb. Any herbaceous plant not a grass or a sedge.

Forest cover. All trees and other woody plants (underbrush) covering the ground in a forest.

Forest type. A stand of trees similar in composition and development because of given physical and biological factors by which it may be differentiated from other stands.

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

Frost action (in tables). Freezing and thawing of soil moisture. Frost action can damage roads, buildings and other structures, and plant roots.

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

Glaciofluvial deposits. Material moved by glaciers and subsequently sorted and deposited by streams flowing from the melting ice. The deposits are stratified and occur as kames, eskers, deltas, and outwash plains.

Glaciolacustrine deposits. Material ranging from fine clay to sand derived from glaciers and deposited in glacial lakes mainly by glacial meltwater. Many deposits are interbedded or laminated.

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

Graded stripcropping. Growing crops in strips that grade toward a protected waterway.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravel pit. An open excavation from which soil and the loose underlying material have been removed and used as a source of sand or gravel, usually for construction purposes.

Gravelly soil material. Material that has 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.

Gravelly spot. An area in which the surface layer has more than 35 percent, by

volume, rock fragments (mostly less than 3 inches in diameter) in an area of surrounding soil that has less than 15 percent rock fragments.

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 that has an uneven, undulating surface; a deposit of rock and mineral debris dragged along, in, on, and beneath a glacier and emplaced by processes including basal lodgment and release from downwasting stagnant ice by ablation.

Ground water. Water filling all the unblocked pores of the material below the water table.

Gully. A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Hard bedrock. Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.

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 out. To form a flower head.

Head slope. A geomorphic component of hills consisting of a laterally concave area of a hillside, especially at the head of a drainageway. The overland waterflow is converging.

Hemic soil material (mucky peat). Organic soil material intermediate in degree of decomposition between the less decomposed fibric material and the more decomposed sapric material.

High–residue crops. Such crops as small grain and corn used for grain. If properly managed, residue from these crops can be used to control erosion until the next crop in the rotation is established. These crops return large amounts of organic matter to the soil.

Hill. A natural elevation of the land surface, rising as much as 1,000 feet above surrounding lowlands, commonly of limited summit area and having a well defined outline; hillsides generally have slopes of more than 15 percent. The distinction between a hill and a mountain is arbitrary and is dependent on local usage.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil–forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the "Soil Survey Manual." The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil–forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

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

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

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

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

Igneous rock. Rock formed by solidification from a molten or partially molten state. Major varieties include plutonic and volcanic rock. Examples are andesite, basalt, and granite.

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

Impervious soil. A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration capacity. The maximum rate at which water can infiltrate into a soil under a given set of conditions.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Intake rate. The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

Less than 0.2	very low
0.2 to 0.4	low
0.4 to 0.75	moderately low
0.75 to 1.25	moderate
1.25 to 1.75	moderately high
1.75 to 2.5	high
More than 2.5	very high

Interfluve. An elevated area between two drainageways that sheds water to those drainageways.

Intermittent stream. A stream, or reach of a stream, that flows for prolonged periods only when it receives ground–water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Iron depletions. Low–chroma zones having a low content of iron and manganese oxide because of chemical reduction and removal, but having a clay content similar to that of the adjacent matrix. A type of redoximorphic depletion.

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are:

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

Border.—Water is applied at the upper end of a strip in which the lateral flow of water is

controlled by small earth ridges called border dikes, or borders.

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

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

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

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

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

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

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

Kame. An irregular, short ridge or hill of stratified drift.

Karst (topography). The relief of an area underlain by limestone that dissolves in differing degrees, thus forming numerous depressions or small basins.

Knoll. A small, low, rounded hill rising above adjacent landforms.

Lacustrine deposit. Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

Landfill. An area where waste products of human habitation are disposed. These products can be above or below natural ground level.

Landslide. The rapid downhill movement of a mass of soil and loose rock, generally when wet or saturated. The speed and distance of movement, as well as the amount of soil and rock material, vary greatly.

Large stones (in tables). Rock fragments 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.

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

Limestone. A sedimentary rock composed of calcium carbonate. There are many impure varieties.

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.

Lithic contact. A boundary between soil and continuous, coherent underlying material. The underlying material must be sufficiently coherent to make hand digging with a spade impractical.

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

Loess. Fine grained material, dominantly of silt–sized particles, deposited by wind.

Longshore bar. A narrow, elongate, coarse textured ridge that once rose near to, or barely above, a pluvial or glacial lake and extended generally parallel to the shore but was separated from it by an intervening trough or lagoon; both the bar and lagoon are now relict features.

Low–residue crops. Such crops as corn used for silage, peas, beans, and potatoes. Residue from these crops is not adequate to control erosion until the next crop in the rotation is established. These crops return little organic matter to the soil.

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

Marl. An earthy, unconsolidated deposit consisting chiefly of calcium carbonate mixed with clay in approximately equal amounts.

Marsh. A water–saturated, very poorly drained area, intermittently or permanently covered by water. Marsh areas dominantly support sedges, cattails, and rushes. Not used in map units where poorly drained or very poorly drained soils are the named components. Typically 0.5 acre to 2 acres in size.

Masses. Concentrations of substances in the soil matrix that do not have a clearly defined boundary with the surrounding soil material and cannot be removed as a discrete unit. Common compounds making up masses are calcium carbonate, gypsum or other soluble salts, iron oxide, and manganese oxide. Masses consisting of iron oxide or manganese oxide generally are considered a type of redoximorphic concentration.

Mechanical treatment. Use of mechanical equipment for seeding, brush management, and other management practices.

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

Metamorphic rock. Rock of any origin altered in mineralogical composition, chemical composition, or structure by heat, pressure, and movement. Nearly all such rocks are crystalline.

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

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

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

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

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

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

Moraine. An accumulation of earth, stones, and other debris deposited by a glacier. Some types are terminal, lateral, medial, and ground.

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

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

Muck. Dark, finely divided, well decomposed organic soil material. (See Sapric soil material.)

Mudstone. Sedimentary rock formed by induration of silt and clay in approximately equal amounts.

Mulch. Any material, such as straw, sawdust, leaves, plastic film, or loose soil, that is spread upon the surface of the soil to protect the soil and plant roots from the effects of raindrops, soil crusting, freezing, and evaporation.

Munsell notation. A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Neutral soil. A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)

Nodules. Cemented bodies lacking visible internal structure. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up nodules. If formed in place, nodules of iron oxide or manganese oxide are considered types of redoximorphic concentrations.

No–till farming. A method of planting crops that involves no seedbed preparation other than opening the soil for the purpose of placing the seed at the intended depth, which typically involves opening a small slit or punching a hole into the soil. There is usually no cultivation during crop production. Chemical weed control is normally used.

Nose slope. A geomorphic component of hills consisting of the projecting end (laterally convex area) of a hillside. The overland waterflow is predominantly divergent.

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter. Plant and animal residue in the soil in various stages of decomposition. The content of organic matter in the surface layer is described as follows:

Very low	less than 0.5 percent
Low	0.5 to 1.0 percent
Moderately low	1.0 to 2.0 percent
Moderate	2.0 to 4.0 percent
High	4.0 to 8.0 percent
Very high	more than 8.0 percent

Outwash. Gravel, sand, and silt, commonly stratified, deposited by glacial meltwater.

Outwash plain. A landform of mainly sandy or coarse textured material of glaciofluvial origin. An outwash plain is commonly smooth; where pitted, it generally is low in relief.

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

Paralithic contact. Similar to a lithic contact, except that the underlying material is softer and can be dug with difficulty with a spade.

Parent material. The unconsolidated organic and mineral material in which soil forms.

Peat. Unconsolidated material, largely undecomposed organic matter, that has accumulated under excess moisture. (See Fibric soil material.)

Pebbles. Rounded or partially rounded rock or mineral fragments between 2 and 75 millimeters in diameter.

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

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

Percolation. The movement of water through the soil.

Perennial water. A natural or manmade lake, pool, pit, or stream course that contains water for most of the year.

Permafrost. Layers of soil, or even bedrock, occurring in arctic or subarctic regions, in which a temperature below freezing has existed continuously for a long time.

Permeability. The quality of the soil that enables water or air to move downward through the profile. The rate at which a saturated soil transmits water is accepted as a measure of this quality. In soil physics, the rate is referred to as "saturated hydraulic conductivity," which is defined in the "Soil Survey Manual." In line with conventional usage in the engineering profession and with traditional usage in

published soil surveys, this rate of flow continues to be expressed as "permeability." Terms describing permeability, measured in inches per hour, are as follows:

Impermeable	less than 0.0015
Very slow	0.0015 to 0.06
Slow	0.06 to 0.2
Moderately slow	0.2 to 0.6
Moderate	0.6 to 2.0
Moderately rapid	2.0 to 6.0
Rapid	6.0 to 20
Very rapid	more than 20

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Phase, soil. A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

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.

Plowpan. A compacted layer formed in the soil directly below the plowed layer.

Ponding. Standing water on soils in 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.

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.

Quarry. An open excavation from which bedrock has been removed.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Ultra acid	less than 3.5
Extremely acid	3.5 to 4.4
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Moderately acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Slightly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Red beds. Sedimentary strata that are mainly red and are made up largely of sandstone and shale.

Redoximorphic concentrations. Nodules, concretions, soft masses, pore linings, and other features resulting from the accumulation of iron or manganese oxide. An indication of chemical reduction and oxidation resulting from saturation.

Redoximorphic depletions. Low–chroma zones from which iron and manganese oxide or a combination of iron and manganese oxide and clay has been removed. These zones are indications of the chemical reduction of iron resulting from saturation.

Redoximorphic features. Redoximorphic concentrations, redoximorphic depletions, reduced matrices, a positive reaction to alpha, alpha-dipyridyl, and other features indicating the chemical reduction and oxidation of iron and manganese compounds resulting from saturation.

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

Regolith. The unconsolidated mantle of weathered rock and soil material on the earth's surface; the loose earth material above the solid rock.

Relief. The elevations or inequalities of a land surface, considered collectively.

Residuum (residual soil material). Unconsolidated, weathered or partly weathered mineral material that accumulated as consolidated rock disintegrated in place.

Restricted permeability (in tables). The slow movement of water through the soil adversely affects the specified use.

Rill. A steep–sided channel resulting from accelerated erosion. A rill generally is a few inches deep and not wide enough to be an obstacle to farm machinery.

Rise. A geomorphic component of flat plains (e.g., lake plain, low coastal plain, low–gradient till plain) consisting of a slightly elevated but low, broad area with slow slope gradients (*i.e., slopes of 1 to 3 percent); typically a microfeature but can be fairly extensive. Commonly, soils on a rise are better drained than those in the surrounding flat area.*

Riser. The sloping surface of a series of natural steplike landforms, as those of 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.

Rock outcrop. Exposures of base bedrock, typically hard rock, at the surface of the earth.

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

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

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandstone. Sedimentary rock containing dominantly sand–sized particles.

Sapric soil material (muck). The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

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

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. Rock made up of particles deposited from suspension in water. The chief kinds of sedimentary rock are conglomerate, formed from gravel; sandstone, formed from sand; shale, formed from clay; and limestone, formed from soft masses of calcium carbonate. There are many intermediate types. Some wind–deposited sand is consolidated into sandstone.

Seepage (in tables). The movement of water through the soil. Seepage adversely affects the specified use.

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

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

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

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

Short steep slope. A narrow area in which the soil has slopes that are at least two slope classes steeper than the slope class of the surrounding map unit.

Shoulder. The position that forms the uppermost inclined surface near the top of a hillslope. It is a transition from backslope to summit. The surface is dominantly convex in profile and erosional in origin.

Shrink–swell (in tables). The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

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

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

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Siltstone. Sedimentary rock made up of dominantly silt–sized particles.

Sinkhole. A depression in the landscape where limestone has been dissolved.

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.

Slick spot. A small area of soil having a puddled, crusted, or smooth surface and an excess of exchangeable sodium. The soil generally is silty or clayey, is slippery when wet, and is low in productivity.

Slickensides. Polished and grooved surfaces produced by one mass sliding past another. In soils, slickensides may occur at the bases of slip surfaces on the steeper slopes; on faces of blocks, prisms, and columns; and in swelling clayey soils, where there is marked change in moisture content.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance.

Slope (in tables). Slope is great enough that special practices are required to ensure satisfactory performance of the soil for a specific use.

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 over periods of time.

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

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

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

Stone line. A concentration of coarse fragments in a soil. Generally, it is indicative of an old weathered surface. In a cross section, the line may be one fragment or more thick. It generally overlies material that weathered in place and is overlain by recent sediment of variable thickness.

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.

Stony. Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Stripcropping. Growing crops in a systematic arrangement of strips or bands that provide vegetative barriers to wind erosion and water erosion.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Stubble mulch. Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from wind erosion and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

Subsidence. The loss in volume that occurs in muck soils when they oxidize or dry.

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

Subsoiling. Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

Substratum. The part of the soil below the solum.

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

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

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

Surface soil. The A, E, AB, and EB horizons, considered collectively. It includes all subdivisions of these horizons.

Swamp. An area that is saturated with water throughout much of the year but in which

the surface of the soil is generally not deeply submerged. Swamp areas dominantly support trees and shrubs.

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. A belt of thick drift that generally marks the termination of important glacial advances.

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field generally is built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

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

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

Thin layer (in tables). Otherwise suitable soil material that is too thin for the specified use.

Till. Unsorted, nonstratified drift consisting of clay, silt, sand, and boulders transported and deposited by glacial ice.

Till plain. An extensive area of nearly level to undulating soils underlain by till.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toeslope. The position that forms the gently inclined surface at the base of a hillslope. Toeslopes in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hillslope continuum that grades to valley or closed–depression floors.

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

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

Tread. The flat or gently sloping surface of natural steplike landforms, commonly one of a series, such as successive stream terraces.

Typical pedon. The site of the pedon described as typical for the series in the survey area.

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

Valley fill. In glaciated regions, material deposited in stream valleys by glacial meltwater. In nonglaciated regions, alluvium deposited by heavily loaded streams.

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

Varve. A sedimentary layer or a lamina or sequence of laminae deposited in a body of still water within a year. Specifically, a thin pair of graded glaciolacustrine layers seasonally deposited, usually by meltwater streams, in a glacial lake or other body of still water in front of a glacier.

Water bars. Smooth, shallow ditches or depressional areas that are excavated at

an angle across a sloping road. They are used to reduce the downward velocity of water and divert it off and away from the road surface. Water bars can easily be driven over if constructed properly.

Water table. The upper surface of ground water, or the level below which the soil is saturated with water.

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

Well graded. Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wet spot. An area of soil that is somewhat poorly drained to very poorly drained and that is at least two drainage classes wetter than the named soils in the surrounding map unit.

Wilting point (or permanent wilting point). The moisture content of soil, on an ovendry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Windthrow. The uprooting and tipping over of trees by the wind.

TABLES

TABLE 1.--TEMPERATURE AND PRECIPITATION

(Recorded in the period 1971-2000 at: XENIA 6 SSE, OH9361)

Month	Temperature (Degrees F.) avg daily max	avg daily min	avg	2 yrs in 10 will have max temp. >than	2 yrs in 10 will have min temp. <than	avg # of grow deg days*	Precipitation (Inches) avg	2 yrs in 10 will have less than	2 yrs in 10 will have more than	avg # of days w/.1 or more	avg total snow fall
January	35.8	19.5	27.7	63	-14	3	2.61	1.42	3.79	6	9.1
February	40.9	22.8	31.8	69	-8	7	2.30	1.15	3.33	5	5.5
March	52.3	32.0	42.1	78	6	56	3.13	1.99	4.15	6	2.9
April	63.2	40.3	51.8	83	20	145	3.88	2.13	5.47	8	0.4
May	72.9	50.6	61.8	87	31	370	4.45	2.65	6.12	8	0.0
June	80.3	59.2	69.7	92	42	592	4.01	2.41	5.64	7	0.0
July	83.6	62.6	73.1	95	48	715	4.13	2.37	5.82	7	0.0
August	82.0	60.2	71.1	93	44	652	3.64	2.11	4.90	6	0.0
September	76.2	53.3	64.7	90	32	443	2.69	1.03	4.15	5	0.0
October	65.1	42.4	53.8	83	22	177	2.82	1.54	4.04	5	0.2
November	52.2	33.8	43.0	75	12	50	3.25	1.76	4.63	7	0.9
December	40.7	24.5	32.6	65	-6	9	3.00	1.83	4.17	6	3.5
Yearly :											
Average	62.1	41.8	51.9	---	---	---	----	----	----	---	---
Extreme	102	-28	---	96	-17	---	----	----	----	---	---
Total	---	---	---	---	---	3220	39.91	34.51	44.73	76	22.6

Average # of days per year with at least 1 inch of snow on the ground: 2

*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 (Threshold: 50.0 deg. F)

TABLE 2.--FREEZE DATES IN SPRING AND FALL

(Recorded in the period 1971-2000 at: XENIA 6 SSE, OH9361)

Probability	Temperature		
	24F or lower	28F or lower	32F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	April 15	April 26	May 9
2 year in 10 later than--	April 10	April 21	May 4
5 year in 10 later than--	April 1	April 13	April 25
First freezing temperature in fall:			
1 yr in 10 earlier than--	October 14	September 30	September 25
2 yr in 10 earlier than--	October 21	October 7	October 1
5 yr in 10 earlier than--	November 3	October 20	October 11

TABLE 3.--GROWING SEASON

(Recorded for the period 1971-2000 at: XENIA 6 SSE, OH9361)

Probability	Daily Minimum Temperature		
	# days > 24F	# days > 28F	# days > 32F
9 years in 10	186	161	146
8 years in 10	195	171	154
5 years in 10	213	189	168
2 years in 10	231	207	182
1 year in 10	241	217	189

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE MAP UNITS

Map symbol	Soil name	Acres	Percent
Ag	Algiers silt loam	2,241	0.8
BbB	Birkbeck silt loam, 1 to 4 percent slopes	2,207	0.8
BcB	Birkbeck silt loam, 2 to 6 percent slopes	9	*
Bs	Brookston silty clay loam	12,396	4.7
Bt	Brookston-Urban land complex	157	*
CaE2	Casco silt loam, 18 to 50 percent slopes, eroded	1	*
CbD2	Casco gravelly loam, 12 to 20 percent slopes, eroded	12	*
CcD2	Casco-Eldean loams, 12 to 18 percent slopes, moderately eroded	1,247	0.5
CdE2	Casco-Rodman loams, 18 to 50 percent slopes, moderately eroded	2,337	0.9
CeA	Celina silt loam, 0 to 2 percent slopes	2,129	0.8
CeB	Celina silt loam, 2 to 6 percent slopes	8,068	3.0
CfB	Celina-Losantville silt loams, 2 to 6 percent slopes	32	*
ChB	Celina-Strawn complex, 2 to 6 percent slopes	36	*
CrA	Crosby silt loam, 0 to 2 percent slopes	4,657	1.7
CrB	Crosby silt loam, 2 to 6 percent slopes	242	*
CsA	Crosby-Lewisburg silt loams, 0 to 2 percent slopes	33	*
CsB	Crosby-Lewisburg silt loams, 2 to 6 percent slopes	18	*
CtA	Crosby-Celina silt loams, 0 to 2 percent slopes	2	*
CtB	Crosby-Celina silt loams, 2 to 4 percent slopes	6	*
Du	Dumps	5	*
EdB	Edenton silt loam, 2 to 6 percent slopes	86	*
EdC2	Edenton silt loam, 6 to 12 percent slopes, moderately eroded	89	*
EdD2	Edenton silt loam, 12 to 18 percent slopes, moderately eroded	180	*
Ee	Eel loam	1,231	0.5
EmA	Eldean silt loam, 0 to 2 percent slopes	1,565	0.6
EmB	Eldean silt loam, 2 to 6 percent slopes	3,561	1.3
EmB2	Eldean silt loam, 2 to 6 percent slopes, moderately eroded	1,237	0.5
EmC2	Eldean silt loam, 6 to 12 percent slopes, moderately eroded	3,080	1.2
EnC3	Eldean clay loam, 6 to 12 percent slopes, severely eroded	278	0.1
EoC2	Eldean-Miamian complex, 6 to 12 percent slopes, eroded	22	*
EoD2	Eldean-Miamian complex, 12 to 18 percent slopes, eroded	5	*
EpC	Eldean-Urban land complex, rolling	188	*
FaF	Fairmount silty clay loam, moderately deep variant, 25 to 50 percent slopes	550	0.2
FnA	Fincastle silt loam, 0 to 2 percent slopes	6,034	2.3
Gn	Genesee loam	1,831	0.7
Ko	Kokomo silty clay loam	3,646	1.4
Lh	Linwood mucky silt loam, drained	11	*
Ln	Linwood muck	1,083	0.4
LuF2	Lumberton silt loam, 25 to 50 percent slopes, eroded	2	*
MhA	Miamian silt loam, 0 to 2 percent slopes	368	0.1
MhB	Miamian silt loam, 2 to 6 percent slopes	17,454	6.6
MhB2	Miamian silt loam, 2 to 6 percent slopes, moderately eroded	12,089	4.5
MhC2	Miamian silt loam, 6 to 12 percent slopes, moderately eroded	19,188	7.2
MhD2	Miamian silt loam, 12 to 18 percent slopes, moderately eroded	4,090	1.5
MlB3	Miamian clay loam, 2 to 6 percent slopes, severely eroded	361	0.1
MlC3	Miamian clay loam, 6 to 12 percent slopes, severely eroded	2,993	1.1
MlD3	Miamian clay loam, 12 to 18 percent slopes, severely eroded	1,110	0.4
MmD2	Miamian-Casco complex, 12 to 18 percent slopes, moderately eroded	785	0.3
MmE2	Miamian-Casco complex, 18 to 35 percent slopes, moderately eroded	1,474	0.6
MoB2	Miamian-Eldean silt loams, 2 to 6 percent slopes, moderately eroded	514	0.2
MoC2	Miamian-Eldean silt loams, 6 to 12 percent slopes, moderately eroded	1,747	0.7
MpE	Miamian and Hennepin soils, 18 to 25 percent slopes	1,811	0.7
MpF	Miamian and Hennepin soils, 25 to 50 percent slopes	1,717	0.6
MqE2	Miamian-Thrifton complex, 18 to 25 percent slopes, eroded	18	*
MqF2	Miamian-Thrifton complex, 25 to 50 percent slopes, eroded	33	*
MrB	Miamian-Urban land complex, undulating	6,519	2.4
MrC	Miamian-Urban land complex, rolling	2,400	0.9
Ms	Millsdale silty clay loam	564	0.2
MtA	Milton silt loam, 0 to 2 percent slopes	355	0.1
MtB	Milton silt loam, 2 to 6 percent slopes	1,940	0.7
MtC2	Milton silt loam, 6 to 12 percent slopes, moderately eroded	624	0.2
MUF	Milton soils, channery variant, 25 to 50 percent slopes	839	0.3
OcA	Ockley silt loam, 0 to 2 percent slopes	2,767	1.0
OcB	Ockley silt loam, 2 to 6 percent slopes	3,904	1.5
OcB2	Ockley silt loam, 2 to 6 percent slopes, moderately eroded	539	0.2
OdB	Ockley-Urban land complex, undulating	2,133	0.8
OeB	Odell silt loam, 2 to 6 percent slopes	237	*
Pa	Patton silty clay loam	367	0.1
Pg	Pits, gravel	894	0.3
Pu	Pits, quarry	1,055	0.4
Ra	Ragsdale silty clay loam	20,209	7.6
RbA	Randolph silt loam, 0 to 2 percent slopes	164	*

* See footnote at end of table.
Values in table are estimates

Table 4.--Acreage and Proportionate Extent of the Map Units--Continued

Map symbol	Soil name	Acres	Percent
RdA	Raub silt loam, 0 to 2 percent slopes	215	*
RdB	Raub silt loam, 2 to 6 percent slopes	1,350	0.5
ReA	Reesville silt loam, 0 to 2 percent slopes	15,941	6.0
RhB	Ritchey silt loam, 2 to 6 percent slopes	304	0.1
RhC	Ritchey silt loam, 6 to 12 percent slopes	219	*
RhD	Ritchey silt loam, 12 to 18 percent slopes	367	0.1
RhE2	Ritchey silt loam, 18 to 25 percent slopes, moderately eroded	261	*
RkE	Rodman gravelly loam, 18 to 35 percent slopes	50	*
RpA	Ross loam, 0 to 1 percent slopes, occasionally flooded	404	0.2
RqA	Ross silt loam, 0 to 1 percent slopes, frequently flooded	16	*
Rs	Ross loam	3,601	1.4
RtA	Rush silt loam, 0 to 2 percent slopes	2,036	0.8
RtB	Rush silt loam, 2 to 6 percent slopes	1,932	0.7
RuA	Russell silt loam, 0 to 2 percent slopes	112	*
RvB	Russell-Miamian silt loams, 2 to 6 percent slopes	15,633	5.9
RvB2	Russell-Miamian silt loams, 2 to 6 percent slopes, moderately eroded	3,602	1.4
RwB2	Russell-Xenia silt loams, 2 to 6 percent slopes, eroded	195	*
SkA	Sligo silt loam, 0 to 1 percent slopes, occasionally flooded	18	*
SlA	Sleeth silt loam, 0 to 2 percent slopes	623	0.2
SnA	Sloan silt loam, sandy substratum, 0 to 1 percent slopes, occasionally flooded	67	*
So	Sloan silty clay loam	8,824	3.3
Sp	Sloan-Fill land complex	1,240	0.5
Sr	Sloan-Urban land complex	326	0.1
ThA	Thackery silt loam, 0 to 2 percent slopes	919	0.3
ThB	Thackery silt loam, 2 to 6 percent slopes	475	0.2
Ts	Tremont silt loam, occasionally flooded	4	*
TtA	Treaty silty clay loam, 0 to 1 percent slopes	8,486	3.2
Ud	Udorthents	606	0.2
Ur	Urban land	89	*
W	Water	881	0.3
WaA	Warsaw loam, 0 to 2 percent slopes	148	*
WbA	Warsaw-Fill land complex, nearly level	1,240	0.5
WcA	Warsaw-Urban land complex, nearly level	1,392	0.5
WeB	Wea silt loam, 1 to 3 percent slopes	1,187	0.4
WpC3	Wapahani-Miamian clay loams, 6 to 12 percent slopes, severely eroded	40	*
WpD3	Wapahani-Miamian clay loams, 12 to 18 percent slopes, severely eroded	1	*
Ws	Westland silty clay loam	6,063	2.3
Wt	Westland-Urban land complex	720	0.3
XeA	Xenia silt loam, 0 to 2 percent slopes	2,956	1.1
XeB	Xenia silt loam, 2 to 6 percent slopes	12,106	4.5
	Total	266,425	100.0

* Less than 0.1 percent
Values in table are estimates

TABLE 5.--PRIME FARMLAND

(Only the soils considered important farmland are listed.. Urban or built-up areas of the soils listed are not considered important farmland. If a soil is important farmland only under certain conditions, the conditions are specified in parentheses after the soil name. **See text on page 185 for additional information.)**

Map symbol	Soil name
Ag	Algiers silt loam (Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season)
BbB	Birkbeck silt loam, 1 to 4 percent slopes
BcB	Birkbeck silt loam, 2 to 6 percent slopes
Bs	Brookston silty clay loam (Prime farmland if drained)
CeA	Celina silt loam, 0 to 2 percent slopes
CeB	Celina silt loam, 2 to 6 percent slopes
CfB	Celina-Losantville silt loams, 2 to 6 percent slopes
ChB	Celina-Strawn complex, 2 to 6 percent slopes
CrA	Crosby silt loam, 0 to 2 percent slopes (Prime farmland if drained)
CrB	Crosby silt loam, 2 to 6 percent slopes (Prime farmland if drained)
CsA	Crosby-Lewisburg silt loams, 0 to 2 percent slopes (Prime farmland if drained)
CsB	Crosby-Lewisburg silt loams, 2 to 6 percent slopes (Prime farmland if drained)
CtA	Crosby-Celina silt loams, 0 to 2 percent slopes (Prime farmland if drained)
CtB	Crosby-Celina silt loams, 2 to 4 percent slopes (Prime farmland if drained)
EdB	Edenton silt loam, 2 to 6 percent slopes
Ee	Eel loam (Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season)
EmA	Eldean silt loam, 0 to 2 percent slopes
EmB	Eldean silt loam, 2 to 6 percent slopes
EmB2	Eldean silt loam, 2 to 6 percent slopes, moderately eroded
FnA	Fincastle silt loam, 0 to 2 percent slopes (Prime farmland if drained)
Gn	Genesee loam (Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season)
Ko	Kokomo silty clay loam (Prime farmland if drained)
MhA	Miamian silt loam, 0 to 2 percent slopes
MhB	Miamian silt loam, 2 to 6 percent slopes
MhB2	Miamian silt loam, 2 to 6 percent slopes, moderately eroded
MoB2	Miamian-Eldean silt loams, 2 to 6 percent slopes, moderately eroded
Ms	Millsdale silty clay loam (Prime farmland if drained)
MtA	Milton silt loam, 0 to 2 percent slopes
MtB	Milton silt loam, 2 to 6 percent slopes
OcA	Ockley silt loam, 0 to 2 percent slopes
OcB	Ockley silt loam, 2 to 6 percent slopes
OcB2	Ockley silt loam, 2 to 6 percent slopes, moderately eroded
OeB	Odell silt loam, 2 to 6 percent slopes (Prime farmland if drained)
Pa	Patton silty clay loam (Prime farmland if drained)
Ra	Ragsdale silty clay loam (Prime farmland if drained)
RbA	Randolph silt loam, 0 to 2 percent slopes (Prime farmland if drained)
RdA	Raub silt loam, 0 to 2 percent slopes (Prime farmland if drained)
RdB	Raub silt loam, 2 to 6 percent slopes (Prime farmland if drained)
ReA	Reesville silt loam, 0 to 2 percent slopes (Prime farmland if drained)
RpA	Ross loam, 0 to 1 percent slopes, occasionally flooded
RqA	Ross silt loam, 0 to 1 percent slopes, frequently flooded (Prime farmland if protected from flooding or not frequently flooded during the growing season)
Rs	Ross loam (Prime farmland if protected from flooding or not frequently flooded during the growing season)
RtA	Rush silt loam, 0 to 2 percent slopes
RtB	Rush silt loam, 2 to 6 percent slopes
RuA	Russell silt loam, 0 to 2 percent slopes
RvB	Russell-Miamian silt loams, 2 to 6 percent slopes
RvB2	Russell-Miamian silt loams, 2 to 6 percent slopes, moderately eroded
RwB2	Russell-Xenia silt loams, 2 to 6 percent slopes, eroded
SkA	Sligo silt loam, 0 to 1 percent slopes, occasionally flooded
SlA	Sleeth silt loam, 0 to 2 percent slopes (Prime farmland if drained)
SnA	Sloan silt loam, sandy substratum, 0 to 1 percent slopes, occasionally flooded (Prime farmland if drained)
So	Sloan silty clay loam (Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season)
ThA	Thackery silt loam, 0 to 2 percent slopes
ThB	Thackery silt loam, 2 to 6 percent slopes
Ts	Tremont silt loam, occasionally flooded
TtA	Treaty silty clay loam, 0 to 1 percent slopes (Prime farmland if drained)
WaA	Warsaw loam, 0 to 2 percent slopes
WeB	Wea silt loam, 1 to 3 percent slopes
Ws	Westland silty clay loam (Prime farmland if drained)
XeA	Xenia silt loam, 0 to 2 percent slopes
XeB	Xenia silt loam, 2 to 6 percent slopes

The following map units are Farmland of Local Importance:
(See text on page 186 for additional information)

Symbol	Map Unit Name
CcD2	Casco-Eldean loams, 12 to 18 percent slopes, moderately eroded
EdC2	Edenton silt loam, 6 to 12 percent slopes, moderately eroded
EdD2	Edenton silt loam, 12 to 18 percent slopes, moderately eroded
EmC2	Eldean silt loam, 6 to 12 percent slopes, moderately eroded
EoC2	Eldean-Miamian complex, 6 to 12 percent slopes, eroded
Lh	Linwood mucky silt loam, drained
MhC2	Miamian silt loam, 6 to 12 percent slopes, moderately eroded
MhD2	Miamian silt loam, 12 to 18 percent slopes, moderately eroded
MmD2	Miamian-Casco complex, 12 to 18 percent slopes, moderately eroded
MoC2	Miamian-Eldean silt loams, 6 to 12 percent slopes, moderately eroded
MtC2	Milton silt loam, 6 to 12 percent slopes, moderately eroded
RhC	Ritchey silt loam, 6 to 12 percent slopes
RhD	Ritchey silt loam, 12 to 18 percent slopes

TABLE 6.--HYDRIC SOILS LIST

(See text on page 187 for additional information)

Map symbol	Soil name
Bs	Brookston silty clay loam
Bt	Brookston-Urban land complex
Ko	Kokomo silty clay loam
Lh	Linwood mucky silt loam, drained
Ln	Linwood muck
Ms	Millsdale silty clay loam
Pa	Patton silty clay loam
Ra	Ragsdale silty clay loam
SnA	Sloan silt loam, sandy substratum, 0 to 1 percent slopes, occasionally flooded
So	Sloan silty clay loam
Sp	Sloan-Fill land complex
Sr	Sloan-Urban land complex
TtA	Treaty silty clay loam, 0 to 1 percent slopes
Ws	Westland silty clay loam
Wt	Westland-Urban land complex

TABLE 7.--NON-HYDRIC MAPUNITS WITH HYDRIC COMPONENTS

(See text on page 187 for additional information)

Map symbol and map unit name	Hydric Component	Landform
Ag:		
Algiers silt loam		
	Sloan	swale
		oxbow
BcB:		
Birkbeck silt loam, 2 to 6 percent slopes		
	Treaty	depression on till plain
CeA:		
Celina silt loam, 0 to 2 percent slopes		
	Brookston	depression
		drainageway
CeB:		
Celina silt loam, 2 to 6 percent slopes		
	Brookston	depression
		drainageway
ChB:		
Celina-Strawn complex, 2 to 6 percent slopes		
	Kokomo	depression
		drainageway
CrA:		
Crosby silt loam, 0 to 2 percent slopes		
	Brookston	depression
		drainageway
CrB:		
Crosby silt loam, 2 to 6 percent slopes		
	Brookston	depression
		drainageway
CsA:		
Crosby-Lewisburg silt loams, 0 to 2 percent slopes		
	Kokomo	depression
CsB:		
Crosby-Lewisburg silt loams, 2 to 6 percent slopes		
	Kokomo	depression
CtA:		
Crosby-Celina silt loams, 0 to 2 percent slopes		
	Kokomo	depression on till plain
Ee:		
Eel loam		
	Sloan	swale
		slough
EoC2:		
Eldean-Miamian complex, 6 to 12 percent slopes, eroded		
	Westland	depression
		draw
FnA:		
Fincastle silt loam, 0 to 2 percent slopes		
	Ragsdale	depression
Gn:		
Genesee loam		
	Sloan	swale
		oxbow
OeB:		
Odell silt loam, 2 to 6 percent slopes		
	Brookston	depression

Table 7.--Non-hydric Mapunits With Hydric Components—Continued

Map symbol and map unit name	Hydric Component	Landform
RbA: Randolph silt loam, 0 to 2 percent slopes	Millsdale	depression drainageway
RdA: Raub silt loam, 0 to 2 percent slopes	Ragsdale	depression drainageway
RdB: Raub silt loam, 2 to 6 percent slopes	Ragsdale	depression drainageway
ReA: Reesville silt loam, 0 to 2 percent slopes	Ragsdale	depression
RpA: Ross loam, 0 to 1 percent slopes, occasionally flooded	Sloan	depression on flood plain
RqA: Ross silt loam, 0 to 1 percent slopes, frequently flooded	Sloan	depression on flood plain
Rs: Ross loam	Sloan	swale oxbow
SkA: Sligo silt loam, 0 to 1 percent slopes, occasionally flooded	Sloan	depression on flood plain
SlA: Sleeth silt loam, 0 to 2 percent slopes	Westland	depression
ThA: Thackery silt loam, 0 to 2 percent slopes	Westland	drainageway depression
ThB: Thackery silt loam, 2 to 6 percent slopes	Westland	drainageway depression
Ts: Tremont silt loam, occasionally flooded	Sloan	slough oxbow
XeA: Xenia silt loam, 0 to 2 percent slopes	Ragsdale	drainageway depression
XeB: Xenia silt loam, 2 to 6 percent slopes	Ragsdale	drainageway depression

TABLE 8.--CROPLAND LIMITATIONS AND HAZARDS

(See text on page 192 for a description of the limitations and hazards listed in this table. Only soils suitable for cultivated crops are listed in this table.)

Soil name and map symbol	Cropland limitations and hazards
Ag:	
Algiers	Frequent flooding, seasonal high water table, surface compaction, moderate potential for ground-water pollution, frost action, surface crusting,
BbB:	
Birkbeck	Surface compaction, moderate potential for ground-water pollution, frost action, surface crusting,
BcB:	
Birkbeck	Surface compaction, moderate potential for ground-water pollution, frost action, surface crusting, erosion hazard,
Bs:	
Brookston	Ponding, surface compaction, moderate potential for ground-water pollution, frost action, fair tilth,
Bt:	
Brookston	Not rated
Urban land	Not rated
CaE2:	
Casco	Part of the surface layer removed by erosion, excessive slope, surface compaction, high potential for ground-water pollution, fair tilth, surface crusting, easily eroded, erosion hazard, limited available water capacity, root restrictive layer,
CbD2:	
Casco	Part of the surface layer removed by erosion, high potential for ground-water pollution, easily eroded, erosion hazard, limited available water capacity, root restrictive layer,
CcD2:	
Casco	Part of the surface layer removed by erosion, high potential for ground-water pollution, fair tilth, easily eroded, erosion hazard, limited available water capacity, root restrictive layer,
Eldean	Part of the surface layer removed by erosion, high potential for ground-water pollution, fair tilth, easily eroded, erosion hazard, limited available water capacity, high clay content,
CdE2:	
Casco	Part of the surface layer removed by erosion, excessive slope, high potential for ground-water pollution, fair tilth, easily eroded, erosion hazard, limited available water capacity, root restrictive layer,
Rodman	Part of the surface layer removed by erosion, excessive slope, high potential for ground-water pollution, easily eroded, erosion hazard, limited available water capacity, sandy layers,
CeA:	
Celina	Surface compaction, surface crusting, high clay content,
CeB:	
Celina	Surface compaction, surface crusting, erosion hazard, high clay content,
CfB:	
Celina	Surface compaction, frost action, surface crusting, erosion hazard, limited available water capacity, restricted permeability, root restrictive layer,
Losantville	Seasonal high water table, surface compaction, surface crusting, erosion hazard, limited available water capacity, restricted permeability, root restrictive layer, high clay content,
ChB:	
Celina	Surface compaction, frost action, surface crusting, erosion hazard, limited available water capacity, root restrictive layer,
Strawn	Surface compaction, fair tilth, surface crusting, erosion hazard, limited available water capacity, root restrictive layer,
CrA:	
Crosby	Seasonal high water table, surface compaction, frost action, surface crusting, high clay content,
CrB:	
Crosby	Seasonal high water table, surface compaction, frost action, surface crusting, erosion hazard, high clay content,

TABLE 8.--CROPLAND LIMITATIONS AND HAZARDS--Continued

Soil name and map symbol	Cropland limitations and hazards
CsA:	
Crosby	Seasonal high water table, surface compaction, moderate potential for ground-water pollution, frost action, surface crusting, limited available water capacity, root restrictive layer,
Lewisburg	Surface compaction, surface crusting, limited available water capacity, root restrictive layer,
CsB:	
Crosby	Seasonal high water table, surface compaction, moderate potential for ground-water pollution, frost action, surface crusting, erosion hazard, limited available water capacity, root restrictive layer,
Lewisburg	Surface compaction, surface crusting, erosion hazard, limited available water capacity, root restrictive layer,
CtA:	
Crosby	Seasonal high water table, surface compaction, frost action, surface crusting, limited available water capacity, restricted permeability, root restrictive layer, high clay content,
Celina	Surface compaction, frost action, surface crusting, limited available water capacity, restricted permeability, root restrictive layer,
CtB:	
Crosby	Seasonal high water table, surface compaction, frost action, surface crusting, erosion hazard, limited available water capacity, restricted permeability, root restrictive layer, high clay content,
Celina	Surface compaction, frost action, surface crusting, erosion hazard, limited available water capacity, restricted permeability, root restrictive layer,
Du:	
Dumps	Not rated
EdB:	
Edenton	Surface compaction, depth to bedrock, high potential for ground-water pollution, surface crusting, erosion hazard, limited available water capacity, high clay content,
EdC2:	
Edenton	Part of the surface layer removed by erosion, surface compaction, depth to bedrock, high potential for ground-water pollution, fair tilth, surface crusting, easily eroded, erosion hazard, limited available water capacity, high clay content,
EdD2:	
Edenton	Part of the surface layer removed by erosion, surface compaction, depth to bedrock, high potential for ground-water pollution, fair tilth, surface crusting, easily eroded, erosion hazard, limited available water capacity, high clay content,
Ee:	
Eel	Frequent flooding, moderate potential for ground-water pollution, frost action,
EmA:	
Eldean	Surface compaction, high potential for ground-water pollution, surface crusting, limited available water capacity, high clay content,
EmB:	
Eldean	Surface compaction, high potential for ground-water pollution, surface crusting, erosion hazard, limited available water capacity, high clay content,
EmB2:	
Eldean	Part of the surface layer removed by erosion, surface compaction, high potential for ground-water pollution, fair tilth, surface crusting, erosion hazard, limited available water capacity,
EmC2:	
Eldean	Part of the surface layer removed by erosion, surface compaction, high potential for ground-water pollution, fair tilth, surface crusting, easily eroded, erosion hazard, limited available water capacity, high clay content,
EnC3:	
Eldean	Most of the surface layer removed by erosion, surface compaction, high potential for ground-water pollution, poor tilth, easily eroded, erosion hazard, limited available water capacity,

TABLE 8.--CROPLAND LIMITATIONS AND HAZARDS--Continued

Soil name and map symbol	Cropland limitations and hazards
EoC2:	
Eldean	Part of the surface layer removed by erosion, surface compaction, high potential for ground-water pollution, fair tilth, surface crusting, easily eroded, erosion hazard, limited available water capacity, root restrictive layer, high clay content,
Miamian	Part of the surface layer removed by erosion, surface compaction, fair tilth, surface crusting, easily eroded, erosion hazard, limited available water capacity, root restrictive layer,
EoD2:	
Eldean	Part of the surface layer removed by erosion, surface compaction, high potential for ground-water pollution, fair tilth, surface crusting, easily eroded, erosion hazard, limited available water capacity, root restrictive layer, high clay content,
Miamian	Part of the surface layer removed by erosion, surface compaction, fair tilth, surface crusting, easily eroded, erosion hazard, limited available water capacity, root restrictive layer,
EpC:	
Eldean	Not rated
Urban land	Not rated
FaF:	
Fairmount variant	Excessive slope, surface compaction, depth to bedrock, high potential for ground-water pollution, fair tilth, surface crusting, easily eroded, erosion hazard, limited available water capacity, clodding, high clay content,
FnA:	
Fincastle	Seasonal high water table, surface compaction, frost action, surface crusting,
Gn:	
Genesee	Frequent flooding,
Ko:	
Kokomo	Ponded for extended periods, surface compaction, moderate potential for ground-water pollution, frost action, fair tilth,
Lh:	
Linwood	Ponded for extended periods, moderate potential for ground-water pollution, excessive acidity, frost action, subsidence of the muck, very high organic matter content,
Ln:	
Linwood	Ponded for extended periods, high potential for ground-water pollution, poor tilth, excessive acidity, frost action, subsidence of the muck, wind erosion,
LuF2:	
Lumberton	Part of the surface layer removed by erosion, excessive slope, surface compaction, depth to bedrock, high potential for ground-water pollution, frost action, fair tilth, surface crusting, easily eroded, erosion hazard, limited available water capacity,
MhA:	
Miamian	Surface compaction, surface crusting,
MhB:	
Miamian	Surface compaction, surface crusting, erosion hazard,
MhB2:	
Miamian	Part of the surface layer removed by erosion, surface compaction, fair tilth, surface crusting, erosion hazard,
MhC2:	
Miamian	Part of the surface layer removed by erosion, surface compaction, fair tilth, surface crusting, easily eroded, erosion hazard,
MhD2:	
Miamian	Part of the surface layer removed by erosion, surface compaction, fair tilth, surface crusting, easily eroded, erosion hazard,
MlB3:	
Miamian	Most of the surface layer removed by erosion, surface compaction, poor tilth, erosion hazard,
MlC3:	
Miamian	Most of the surface layer removed by erosion, surface compaction, poor tilth, easily eroded, erosion hazard,

TABLE 8.--CROPLAND LIMITATIONS AND HAZARDS--Continued

Soil name and map symbol	Cropland limitations and hazards
MlD3:	
Miamian	Most of the surface layer removed by erosion, surface compaction, poor tilth, easily eroded, erosion hazard,
MmD2:	
Miamian	Part of the surface layer removed by erosion, surface compaction, fair tilth, surface crusting, easily eroded, erosion hazard,
Casco	Part of the surface layer removed by erosion, high potential for ground-water pollution, fair tilth, easily eroded, erosion hazard, limited available water capacity, root restrictive layer,
MmE2:	
Miamian	Part of the surface layer removed by erosion, excessive slope, surface compaction, fair tilth, surface crusting, easily eroded, erosion hazard,
Casco	Part of the surface layer removed by erosion, excessive slope, high potential for ground-water pollution, fair tilth, easily eroded, erosion hazard, limited available water capacity, root restrictive layer,
MoB2:	
Miamian	Part of the surface layer removed by erosion, surface compaction, fair tilth, surface crusting, erosion hazard,
Eldean	Part of the surface layer removed by erosion, surface compaction, high potential for ground-water pollution, fair tilth, surface crusting, erosion hazard, limited available water capacity, high clay content,
MoC2:	
Miamian	Part of the surface layer removed by erosion, surface compaction, fair tilth, surface crusting, easily eroded, erosion hazard,
Eldean	Part of the surface layer removed by erosion, surface compaction, high potential for ground-water pollution, fair tilth, surface crusting, easily eroded, erosion hazard, limited available water capacity, high clay content,
MpE:	
Miamian	Excessive slope, surface compaction, surface crusting, easily eroded, erosion hazard,
Hennepin	Excessive slope, easily eroded, erosion hazard,
MpF:	
Miamian	Excessive slope, surface compaction, surface crusting, easily eroded, erosion hazard,
Hennepin	Excessive slope, easily eroded, erosion hazard, limited available water capacity,
MqE2:	
Miamian	Part of the surface layer removed by erosion, excessive slope, surface compaction, fair tilth, surface crusting, easily eroded, erosion hazard, root restrictive layer,
Thrifton	Part of the surface layer removed by erosion, excessive slope, seasonal high water table, fair tilth, easily eroded, erosion hazard, limited available water capacity, root restrictive layer,
MqF2:	
Miamian	Part of the surface layer removed by erosion, excessive slope, surface compaction, fair tilth, surface crusting, easily eroded, erosion hazard, root restrictive layer,
Thrifton	Part of the surface layer removed by erosion, excessive slope, seasonal high water table, fair tilth, easily eroded, erosion hazard, limited available water capacity, root restrictive layer,
MrB:	
Miamian	Not rated
Urban land	Not rated
MrC:	
Miamian	Not rated
Urban land	Not rated
Ms:	
Millsdale	Ponding, surface compaction, depth to bedrock, high potential for ground-water pollution, frost action, fair tilth, limited available water capacity,

TABLE 8.--CROPLAND LIMITATIONS AND HAZARDS--Continued

Soil name and map symbol	Cropland limitations and hazards
MtA:	
Milton	Surface compaction, depth to bedrock, high potential for ground-water pollution, surface crusting, limited available water capacity,
MtB:	
Milton	Surface compaction, depth to bedrock, high potential for ground-water pollution, surface crusting, erosion hazard, limited available water capacity,
MtC2:	
Milton	Part of the surface layer removed by erosion, surface compaction, depth to bedrock, high potential for ground-water pollution, fair tilth, surface crusting, easily eroded, erosion hazard, limited available water capacity,
MUF:	
Milton variant	Excessive slope, gravelly surface, depth to bedrock, high potential for ground-water pollution, easily eroded, erosion hazard, limited available water capacity,
OcA:	
Ockley	Surface compaction, high potential for ground-water pollution, surface crusting,
OcB:	
Ockley	Surface compaction, high potential for ground-water pollution, surface crusting, erosion hazard,
OcB2:	
Ockley	Part of the surface layer removed by erosion, surface compaction, high potential for ground-water pollution, fair tilth, surface crusting, erosion hazard,
OdB:	
Ockley	Not rated
Urban land	Not rated
OeB:	
Odell	Seasonal high water table, surface compaction, frost action, surface crusting, erosion hazard,
Pa:	
Patton	Ponding, surface compaction, moderate potential for ground-water pollution, frost action, fair tilth,
Pg:	
Pits, gravel	Not rated
Pu:	
Pits, quarry	Not rated
Ra:	
Ragsdale	Ponding, surface compaction, moderate potential for ground-water pollution, frost action, fair tilth,
RbA:	
Randolph	Seasonal high water table, surface compaction, depth to bedrock, high potential for ground-water pollution, surface crusting, limited available water capacity,
RdA:	
Raub	Seasonal high water table, surface compaction, frost action, surface crusting,
RdB:	
Raub	Seasonal high water table, surface compaction, frost action, surface crusting, erosion hazard,
ReA:	
Reesville	Seasonal high water table, surface compaction, frost action, surface crusting,
RhB:	
Ritchey	Surface compaction, depth to bedrock, high potential for ground-water pollution, surface crusting, erosion hazard, limited available water capacity, high clay content,
RhC:	
Ritchey	Surface compaction, depth to bedrock, high potential for ground-water pollution, surface crusting, easily eroded, erosion hazard, limited available water capacity, high clay content,
RhD:	
Ritchey	Surface compaction, depth to bedrock, high potential for ground-water pollution, surface crusting, easily eroded, erosion hazard, limited available water capacity, high clay content,

TABLE 8.--CROPLAND LIMITATIONS AND HAZARDS--Continued

Soil name and map symbol	Cropland limitations and hazards
RhE2:	
Ritchey	Part of the surface layer removed by erosion, excessive slope, surface compaction, depth to bedrock, high potential for ground-water pollution, fair tilth, surface crusting, easily eroded, erosion hazard, limited available water capacity, high clay content,
RkE:	
Rodman	Excessive slope, high potential for ground-water pollution, easily eroded, erosion hazard, limited available water capacity, sandy layers,root restrictive layer,
RpA:	
Ross	Occasional flooding,
RqA:	
Ross	Frequent flooding, surface compaction,
Rs:	
Ross	Occasional flooding,
RtA:	
Rush	Surface compaction, high potential for ground-water pollution, frost action, surface crusting,
RtB:	
Rush	Surface compaction, high potential for ground-water pollution, frost action, surface crusting, erosion hazard,
RuA:	
Russell	Surface compaction, surface crusting,
RvB:	
Russell	Surface compaction, frost action, surface crusting, erosion hazard,
Miamian	Surface compaction, surface crusting, erosion hazard,
RvB2:	
Russell	Part of the surface layer removed by erosion, surface compaction, frost action, fair tilth, surface crusting, erosion hazard,
Miamian	Part of the surface layer removed by erosion, surface compaction, fair tilth, surface crusting, erosion hazard,
RwB2:	
Russell	Part of the surface layer removed by erosion, surface compaction, frost action, fair tilth, surface crusting, erosion hazard,
Xenia	Part of the surface layer removed by erosion, surface compaction, frost action, fair tilth, surface crusting, erosion hazard,
SkA:	
Sligo	Occasional flooding, high potential for ground-water pollution,
SlA:	
Sleeth	Seasonal high water table, surface compaction, high potential for ground-water pollution, frost action, surface crusting,
SnA:	
Sloan	Occasional flooding, ponded for extended periods, surface compaction, moderate potential for ground-water pollution, frost action,
So:	
Sloan	Frequent flooding, seasonal high water table, surface compaction, moderate potential for ground-water pollution, frost action, fair tilth,
Sp:	
Fill land	Poor tilth, limited available water capacity,
Sloan	Frequent flooding, seasonal high water table, surface compaction, moderate potential for ground-water pollution, frost action, fair tilth,
Sr:	
Urban land	Not rated
Sloan	Not rated
ThA:	
Thackery	Surface compaction, high potential for ground-water pollution, surface crusting,
ThB:	
Thackery	Surface compaction, high potential for ground-water pollution, surface crusting, erosion hazard,
Ts:	
Tremont	Occasional flooding, surface compaction, moderate potential for ground-water pollution, frost action,

TABLE 8.--CROPLAND LIMITATIONS AND HAZARDS--Continued

Soil name and map symbol	Cropland limitations and hazards
TtA:	
Treaty	Ponded for extended periods, surface compaction, moderate potential for ground-water pollution, frost action, fair tilth,
Ud:	
Udorthents	Not rated
Ur:	
Urban land	Not rated
W:	
Water	Not rated
WaA:	
Warsaw	High potential for ground-water pollution,
WbA:	
Fill land	Not rated
Warsaw	High potential for ground-water pollution,
WcA:	
Warsaw	Not rated
Urban land	Not rated
WeB:	
Wea	Surface compaction, high potential for ground-water pollution,
WpC3:	
Wapahani	Most of the surface layer removed by erosion, seasonal high water table, surface compaction, poor tilth, easily eroded, erosion hazard, limited available water capacity, restricted permeability, root restrictive layer,
Miamian	Most of the surface layer removed by erosion, surface compaction, poor tilth, easily eroded, erosion hazard, limited available water capacity, root restrictive layer,
WpD3:	
Wapahani	Most of the surface layer removed by erosion, seasonal high water table, surface compaction, poor tilth, easily eroded, erosion hazard, limited available water capacity, restricted permeability, root restrictive layer,
Miamian	Most of the surface layer removed by erosion, surface compaction, poor tilth, easily eroded, erosion hazard, limited available water capacity, root restrictive layer,
Ws:	
Westland	Ponding, surface compaction, high potential for ground-water pollution, frost action, fair tilth,
Wt:	
Westland	Not rated
Urban land	Not rated
XeA:	
Xenia	Surface compaction, frost action, surface crusting,
XeB:	
Xenia	Surface compaction, frost action, surface crusting,

TABLE 9.--CROP YIELD INDEX

(Estimated yields for soils with a yield index of 100 are: corn - 185 bushels; soybeans – 65 bushels; and wheat - 70 bushels. Refer to Crop Yield Index section on page 194 for more information on how this table was developed, and instructions on converting yield index numbers to estimated yields. Absence of a yield index indicates that the soil is not suited to the crop or the crop is generally not grown on the soil.)

Map symbol and soil name	Corn	Soybeans	Winter Wheat
Ag:			
Algiers	79	85	80
BbB:			
Birkbeck	83	88	84
BcB:			
Birkbeck	78	80	100
Bs:			
Brookston	97	100	100
Bt:			
Brookston	---	---	---
Urban Land			
CaE2:			
Casco	---	---	---
CbD2:			
Casco	35	---	---
CcD2:			
Casco	---	---	---
Eldean			
CdE2:			
Casco	---	---	---
Rodman			
CeA:			
Celina	81	85	90
CeB:			
Celina	78	78	84
CfB:			
Celina	73	71	96
Losantville			
ChB:			
Celina	59	62	69
Strawn			
CrA:			
Crosby	81	88	84
CrB:			
Crosby	76	86	80
CsA:			
Crosby	62	58	64
Lewisburg			
CsB:			
Crosby	59	54	64
Lewisburg			
CtA:			
Crosby	73	69	100
Celina			
CtB:			
Crosby	70	65	100
Celina			

TABLE 9.--CROP YIELD INDEX--Continued

Map symbol and soil name	Corn	Soybeans	Winter Wheat
Du:	---	---	---
Dumps			
EdB:	69	74	73
Edenton			
EdC2:	58	71	70
Edenton			
EdD2:	46	---	49
Edenton			
Ee:	93	92	80
Eel			
EmA:	76	74	89
Eldean			
EmB:	75	71	84
Eldean			
EmB2:	70	63	80
Eldean			
EmC2:	63	55	71
Eldean			
EnC3:	45	48	51
Eldean			
EoC2:	57	54	66
Eldean			
Miamian			
EoD2:	42	34	49
Eldean			
Miamian			
EpC:	---	---	---
Eldean			
Urban Land			
FaF:	---	---	---
Fairmount Variant			
FnA:	75	92	89
Fincastle			
Gn:	94	92	80
Genesee			
Ko:	94	72	93
Kokomo			
Lh:	57	54	71
Linwood			
Ln:	84	---	---
Linwood			
LuF2:	---	---	---
Lumberton			
MhA:	78	85	83
Miamian			
MhB:	75	80	81
Miamian			
MhB2:	70	74	80
Miamian			
MhC2:	63	65	76
Miamian			

TABLE 9.--CROP YIELD INDEX--Continued

Map symbol and soil name	Corn	Soybeans	Winter Wheat
MhD2:			
Miamian	51	58	61
MlB3:			
Miamian	53	51	56
MlC3:			
Miamian	41	49	50
MlD3:			
Miamian	---	---	---
MmD2:			
Miamian	---	---	---
Casco			
MmE2:			
Miamian	---	---	---
Casco			
MoB2:			
Miamian	69	71	81
Eldean			
MoC2:			
Miamian	62	71	76
Eldean			
MpE:			
Miamian	---	---	---
Hennepin			
MpF:			
Miamian	---	---	---
Hennepin			
MqE2:			
Miamian	---	---	---
Thrifton			
MqF2:			
Miamian	---	---	---
Thrifton			
MrB:			
Miamian	---	---	---
Urban Land			
MrC:			
Miamian	---	---	---
Urban Land			
Ms:			
Millsdale	87	91	89
MtA:			
Milton	68	71	79
MtB:			
Milton	65	71	70
MtC2:			
Milton	54	51	61
MUF:			
Milton Variant	---	---	---
OcA:			
Ockley	81	86	90
OcB:			
Ockley	78	82	81
OcB2:			
Ockley	75	71	71

TABLE 9.--CROP YIELD INDEX--Continued

Map symbol and soil name	Corn	Soybeans	Winter Wheat
OdB:	---	---	---
Ockley			
Urban Land			
OeB:	82	88	90
Odell			
Pa:	91	86	86
Patton			
Pg:	---	---	---
Pits, Gravel			
Pu:	---	---	---
Pits, Quarry			
Ra:	100	100	100
Ragsdale			
RbA:	67	77	80
Randolph			
RdA:	85	88	90
Raub			
RdB:	81	85	84
Raub			
ReA:	82	86	84
Reesville			
RhB:	47	55	59
Ritchey			
RhC:	34	35	50
Ritchey			
RhD:	---	---	---
Ritchey			
RhE2:	---	---	---
Ritchey			
RkE:	---	---	---
Rodman			
RpA:	86	68	---
Ross			
RqA:	81	62	---
Ross			
Rs:	100	98	90
Ross			
RtA:	82	86	90
Rush			
RtB:	79	82	84
Rush			
RuA:	81	86	87
Russell			
RvB:	79	85	86
Russell			
Miamian			
RvB2:	72	74	79
Russell			
Miamian			
RwB2:	70	62	71
Russell			
Xenia			

TABLE 9.--CROP YIELD INDEX--Continued

Map symbol and soil name	Corn	Soybeans	Winter Wheat
SkA: Sligo	65	63	---
SlA: Sleeth	81	88	90
SnA: Sloan	81	65	---
So: Sloan	96	92	---
Sp: Sloan, Fill Land	---	---	---
Sr: Urban Land, Sloan	---	---	---
ThA: Thackery	81	86	90
ThB: Thackery	78	82	84
Ts: Tremont	73	69	---
TtA: Treaty	95	92	97
Ud: Udorthents	---	---	---
Ur: Urban Land	---	---	---
W: Water	---	---	---
WaA: Warsaw	78	85	89
WbA: Warsaw, Fill Land	---	---	---
WcA: Warsaw, Urban Land	---	---	---
WeB: Wea	88	95	97
WpC3: Wapahani, Miamian	43	43	46
WpD3: Wapahani, Miamian	32	32	34
Ws: Westland	96	95	97
Wt: Westland, Urban Land	---	---	---
XeA: Xenia	82	85	91
XeB: Xenia	78	77	80

TABLE 10.--ACREAGE BY CAPABILITY CLASSES AND SUBCLASSES

(See text on page 194 for additional information.)

Capability class	Capability subclass	Acreage
Unclassified	---	17,365
1	---	11,287
2	e	88,659
	w	89,112
	s	3,308
3	e	25,415
	w	10,859
4	e	8,590
6	e	4,199
7	e	7,581
	s	50

Acreages are estimates

TABLE 11.--WOODLAND 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 potential limitation. See text on page 197 for further explanation of ratings in this table.)

Map symbol and soil name	Erosion hazard		Seedling mortality		Soil rutting hazard	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Ag:						
Algiers	Slight		High		Severe	
			Wetness	1.00	Low strength	1.00
BbB:						
Birkbeck	Slight		Low		Severe	
					Low strength	1.00
BcB:						
Birkbeck	Slight		Low		Severe	
					Low strength	1.00
Bs:						
Brookston	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
Bt:						
Brookston	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
Urban Land	Not rated		Not rated		Not rated	
CaE2:						
Casco	Moderate		Low		Severe	
	Water erosion	0.58			Low strength	1.00
CbD2:						
Casco	Moderate		Low		Moderate	
	Water erosion	0.23			Low strength	0.50
CcD2:						
Casco	Moderate		Low		Severe	
	Water erosion	0.25			Low strength	1.00
Eldean	Moderate		Low		Severe	
	Slope/erodibility	0.50			Low strength	1.00
CdE2:						
Casco	Moderate		Low		Severe	
	Water erosion	0.42			Low strength	1.00
Rodman	Moderate		Moderate		Severe	
	Water erosion	0.42	Carbonate content	0.50	Low strength	1.00
			Soil reaction	0.50		
CeA:						
Celina	Slight		Low		Severe	
					Low strength	1.00
CeB:						
Celina	Slight		Low		Severe	
					Low strength	1.00
CfB:						
Celina	Slight		Low		Severe	
					Low strength	1.00
Losantville	Slight		Low		Severe	
					Low strength	1.00
ChB:						
Celina	Slight		Low		Severe	
					Low strength	1.00
Strawn	Slight		Low		Severe	
					Low strength	1.00

Table 11.--Woodland Management--Continued

Map symbol and soil name	Erosion hazard		Seedling mortality		Soil rutting hazard	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
CrA:						
Crosby	Slight		High		Severe	
			Wetness	1.00	Low strength	1.00
CrB:						
Crosby	Slight		High		Severe	
			Wetness	1.00	Low strength	1.00
CsA:						
Crosby	Slight		Moderate		Severe	
			Carbonate content	0.50	Low strength	1.00
Lewisburg	Slight		Low		Severe	
					Low strength	1.00
CsB:						
Crosby	Slight		Moderate		Severe	
			Carbonate content	0.50	Low strength	1.00
Lewisburg	Slight		Low		Severe	
					Low strength	1.00
CtA:						
Crosby	Slight		High		Severe	
			Wetness	1.00	Low strength	1.00
Celina	Slight		Low		Severe	
					Low strength	1.00
CtB:						
Crosby	Slight		High		Severe	
			Wetness	1.00	Low strength	1.00
Celina	Slight		Low		Severe	
					Low strength	1.00
Du:						
Dumps	Not rated		Not rated		Not rated	
EdB:						
Edenton	Slight		Low		Severe	
					Low strength	1.00
EdC2:						
Edenton	Slight		Low		Severe	
					Low strength	1.00
EdD2:						
Edenton	Moderate		Low		Severe	
	Slope/erodibility	0.50			Low strength	1.00
Ee:						
Eel	Slight		Low		Severe	
	Water erosion	0.01			Low strength	1.00
EmA:						
Eldean	Slight		Low		Severe	
					Low strength	1.00
EmB:						
Eldean	Slight		Low		Severe	
					Low strength	1.00
EmB2:						
Eldean	Slight		Low		Severe	
					Low strength	1.00
EmC2:						
Eldean	Slight		Low		Severe	
					Low strength	1.00

Table 11.--Woodland Management--Continued

Map symbol and soil name	Erosion hazard: Rating class and limiting features	Value	Seedling mortality: Rating class and limiting features	Value	Soil rutting hazard: Rating class and limiting features	Value
EnC3:						
Eldean	Slight		Low		Severe	
	Water erosion	0.15			Low strength	1.00
EoC2:						
Eldean	Slight		Low		Severe	
	Water erosion	0.12			Low strength	1.00
Miamian	Slight		Low		Severe	
					Low strength	1.00
EoD2:						
Eldean	Moderate		Low		Severe	
	Water erosion	0.23			Low strength	1.00
Miamian	Moderate		Low		Severe	
	Slope/erodibility	0.50			Low strength	1.00
EpC:						
Eldean	Slight		Low		Severe	
					Low strength	1.00
Urban Land	Not rated		Not rated		Not rated	
FaF:						
Fairmount Variant	Severe		Low		Severe	
	Slope/erodibility	0.75			Low strength	1.00
FnA:						
Fincastle	Slight		High		Severe	
			Wetness	1.00	Low strength	1.00
Gn:						
Genesee	Slight		Moderate		Severe	
			Soil reaction	0.50	Low strength	1.00
Ko:						
Kokomo	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
Lh:						
Linwood	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
Ln:						
Linwood	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
LuF2:						
Lumberton	Severe		Low		Severe	
	Slope/erodibility	0.75			Low strength	1.00
MhA:						
Miamian	Slight		Low		Severe	
					Low strength	1.00
MhB:						
Miamian	Slight		Low		Severe	
					Low strength	1.00
MhB2:						
Miamian	Slight		Low		Severe	
					Low strength	1.00
MhC2:						
Miamian	Slight		Low		Severe	
					Low strength	1.00
MhD2:						
Miamian	Moderate		Low		Severe	
	Slope/erodibility	0.50			Low strength	1.00

Table 11.--Woodland Management--Continued

Map symbol and soil name	Erosion hazard		Seedling mortality		Soil rutting hazard	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
MlB3:						
Miamian	Slight		Low		Severe	
	Water erosion	0.07			Low strength	1.00
MlC3:						
Miamian	Slight		Low		Severe	
	Water erosion	0.12			Low strength	1.00
MlD3:						
Miamian	Moderate		Low		Severe	
	Water erosion	0.27			Low strength	1.00
MmD2:						
Miamian	Moderate		Low		Severe	
	Slope/erodibility	0.50			Low strength	1.00
Casco	Moderate		Low		Severe	
	Water erosion	0.25			Low strength	1.00
MmE2:						
Miamian	Moderate		Low		Severe	
	Slope/erodibility	0.50			Low strength	1.00
Casco	Moderate		Low		Severe	
	Water erosion	0.35			Low strength	1.00
MoB2:						
Miamian	Slight		Low		Severe	
					Low strength	1.00
Eldean	Slight		Low		Severe	
					Low strength	1.00
MoC2:						
Miamian	Slight		Low		Severe	
					Low strength	1.00
Eldean	Slight		Low		Severe	
					Low strength	1.00
MpE:						
Miamian	Moderate		Low		Severe	
	Slope/erodibility	0.50			Low strength	1.00
Hennepin	Moderate		Moderate		Severe	
	Water erosion	0.35	Carbonate content	0.50	Low strength	1.00
			Soil reaction	0.50		
MpF:						
Miamian	Severe		Low		Severe	
	Slope/erodibility	0.75			Low strength	1.00
Hennepin	Moderate		Moderate		Severe	
	Water erosion	0.60	Carbonate content	0.50	Low strength	1.00
			Soil reaction	0.50		
MqE2:						
Miamian	Moderate		Low		Severe	
	Slope/erodibility	0.50			Low strength	1.00
Thrifton	Moderate		Moderate		Severe	
	Water erosion	0.37	Carbonate content	0.50	Low strength	1.00
			Soil reaction	0.50		
MqF2:						
Miamian	Severe		Low		Severe	
	Slope/erodibility	0.75			Low strength	1.00
Thrifton	Severe		Moderate		Severe	
	Water erosion	0.68	Carbonate content	0.50	Low strength	1.00
			Soil reaction	0.50		

Table 11.--Woodland Management--Continued

Map symbol and soil name	Erosion hazard: Rating class and limiting features	Erosion hazard: Value	Seedling mortality: Rating class and limiting features	Seedling mortality: Value	Soil rutting hazard: Rating class and limiting features	Soil rutting hazard: Value
MrB:						
Miamian	Slight		Low		Severe	
	Water erosion	0.05			Low strength	1.00
Urban Land	Not rated		Not rated		Not rated	
MrC:						
Miamian	Slight		Low		Severe	
	Water erosion	0.13			Low strength	1.00
Urban Land	Not rated		Not rated		Not rated	
Ms:						
Millsdale	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
MtA:						
Milton	Slight		Low		Severe	
					Low strength	1.00
MtB:						
Milton	Slight		Low		Severe	
					Low strength	1.00
MtC2:						
Milton	Slight		Low		Severe	
					Low strength	1.00
MUF:						
Milton Variant	Moderate		Low		Severe	
	Water erosion	0.60			Low strength	1.00
OcA:						
Ockley	Slight		Low		Severe	
					Low strength	1.00
OcB:						
Ockley	Slight		Low		Severe	
					Low strength	1.00
OcB2:						
Ockley	Slight		Low		Severe	
					Low strength	1.00
OdB:						
Ockley	Slight		Low		Severe	
					Low strength	1.00
Urban Land	Not rated		Not rated		Not rated	
OeB:						
Odell	Slight		High		Severe	
	Water erosion	0.03	Wetness	1.00	Low strength	1.00
Pa:						
Patton	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
Pg:						
Pits, Gravel	Not rated		Not rated		Not rated	
Pu:						
Pits, Quarry	Not rated		Not rated		Not rated	
Ra:						
Ragsdale	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
RbA:						
Randolph	Slight		High		Severe	
			Wetness	1.00	Low strength	1.00

Table 11.--Woodland Management--Continued

Map symbol and soil name	Erosion hazard		Seedling mortality		Soil rutting hazard	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
RdA:						
Raub	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
RdB:						
Raub	Slight		High		Severe	
	Water erosion	0.03	Wetness	1.00	Low strength	1.00
ReA:						
Reesville	Slight		High		Severe	
			Wetness	1.00	Low strength	1.00
			Carbonate content	0.50		
RhB:						
Ritchey	Slight		Low		Severe	
					Low strength	1.00
RhC:						
Ritchey	Slight		Low		Severe	
					Low strength	1.00
RhD:						
Ritchey	Moderate		Low		Severe	
	Slope/erodibility	0.50			Low strength	1.00
RhE2:						
Ritchey	Moderate		Low		Severe	
	Slope/erodibility	0.50			Low strength	1.00
RkE:						
Rodman	Moderate		Moderate		Severe	
	Water erosion	0.42	Carbonate content	0.50	Low strength	1.00
			Soil reaction	0.50		
RpA:						
Ross	Slight		Low		Severe	
	Water erosion	0.01			Low strength	1.00
RqA:						
Ross	Slight		Low		Severe	
	Water erosion	0.01			Low strength	1.00
Rs:						
Ross	Slight		Low		Severe	
	Water erosion	0.01			Low strength	1.00
RtA:						
Rush	Slight		Low		Severe	
					Low strength	1.00
RtB:						
Rush	Slight		Low		Severe	
					Low strength	1.00
RuA:						
Russell	Slight		Low		Severe	
					Low strength	1.00
RvB:						
Russell	Slight		Low		Severe	
					Low strength	1.00
Miamian	Slight		Low		Severe	
					Low strength	1.00
RvB2:						
Russell	Slight		Low		Severe	
					Low strength	1.00
Miamian	Slight		Low		Severe	
					Low strength	1.00

Table 11.--Woodland Management--Continued

Map symbol and soil name	Erosion hazard		Seedling mortality		Soil rutting hazard	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
RwB2:						
Russell	Slight		Low		Severe	
					Low strength	1.00
Xenia	Slight		Low		Severe	
					Low strength	1.00
SkA:						
Sligo	Slight		Low		Severe	
					Low strength	1.00
SlA:						
Sleeth	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
SnA:						
Sloan	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
So:						
Sloan	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
Sp:						
Fill Land	Not rated		Not rated		Not rated	
Sloan	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
Sr:						
Urban Land	Not rated		Not rated		Not rated	
Sloan	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
ThA:						
Thackery	Slight		Low		Severe	
					Low strength	1.00
ThB:						
Thackery	Slight		Low		Severe	
					Low strength	1.00
Ts:						
Tremont	Slight		Moderate		Severe	
	Water erosion	0.01	Soil reaction	0.50	Low strength	1.00
TtA:						
Treaty	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
Ud:						
Udorthents	Not rated		Not rated		Not rated	
Ur:						
Urban Land	Not rated		Not rated		Not rated	
W:						
Water	Not rated		Not rated		Not rated	
WaA:						
Warsaw	Slight		Low		Severe	
	Water erosion	0.01			Low strength	1.00
WbA:						
Fill Land	Not rated		Not rated		Not rated	
Warsaw	Slight		Low		Severe	
	Water erosion	0.01			Low strength	1.00

Table 11.--Woodland Management--Continued

Map symbol and soil name	Erosion hazard		Seedling mortality		Soil rutting hazard	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
WcA:						
Warsaw	Slight		Low		Severe	
	Water erosion	0.01			Low strength	1.00
Urban Land	Not rated		Not rated		Not rated	
WeB:						
Wea	Slight		Low		Severe	
	Water erosion	0.01			Low strength	1.00
WpC3:						
Wapahani	Slight		Low		Severe	
	Water erosion	0.13			Low strength	1.00
Miamian	Slight		Low		Severe	
	Water erosion	0.13			Low strength	1.00
WpD3:						
Wapahani	Moderate		Low		Severe	
	Water erosion	0.25			Low strength	1.00
Miamian	Moderate		Low		Severe	
	Water erosion	0.25			Low strength	1.00
Ws:						
Westland	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
Wt:						
Westland	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
Urban Land	Not rated		Not rated		Not rated	
XeA:						
Xenia	Slight		Low		Severe	
					Low strength	1.00
XeB:						
Xenia	Slight		Low		Severe	
					Low strength	1.00

TABLE 12.--WOODLAND PRODUCTIVITY

(See text on page 198 for additional information.)

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber (cu ft/ac)	Trees to manage
Ag:				
Algiers	black cherry	---	---	American sycamore, black cherry, black locust, eastern cottonwood, eastern white pine, green ash, northern red oak, red pine, tuliptree, white ash, white oak
	northern red oak	76	57	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	---	---	
BbB:				
Birkbeck	green ash	---	---	Scotch pine, black walnut, eastern white pine, green ash, northern red oak, red pine, white oak
	northern red oak	---	---	
	white oak	86	72	
BcB:				
Birkbeck	green ash	---	---	Norway spruce, Scotch pine, black walnut, eastern white pine, green ash, northern red oak, white oak
	northern red oak	---	---	
	white oak	86	72	
Bs:				
Brookston	northern red oak	78	57	baldcypress, eastern white pine, red maple, sweetgum, white ash
	pin oak	86	72	
	sweetgum	90	100	
	white oak	75	57	
Bt:				
Brookston	northern red oak	78	57	baldcypress, eastern white pine, red maple, sweetgum, white ash
	pin oak	86	72	
	sweetgum	90	100	
	white oak	75	57	
Urban Land	---	---	---	---
CaE2:				
Casco	eastern white pine	85	72	eastern white pine
	red pine	78	72	
	white oak	70	57	
CbD2:				
Casco	eastern white pine	85	---	red pine
	jack pine	68	---	
	red pine	78	---	
	white oak	70	---	

Table 12.--Woodland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber (cu ft/ac)	Trees to manage
CcD2:				
Casco	eastern white pine	85	172	eastern white pine, jack pine, red pine
	jack pine	68	100	
	red pine	78	114	
	white oak	70	57	
Eldean	black cherry	---	---	black walnut, eastern white pine, red pine, tuliptree, white ash, white oak
	black oak	80	57	
	black walnut	---	---	
	northern red oak	80	57	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	80	57	
CdE2:				
Casco	eastern white pine	85	172	eastern white pine, jack pine, red pine
	jack pine	68	100	
	red pine	78	114	
	white oak	70	57	
Rodman	eastern white pine	85	172	eastern white pine, jack pine, red pine
	northern red oak	70	57	
	red pine	75	114	
	white oak	70	57	
CeA:				
Celina	Douglas fir	---	---	black walnut, eastern white pine, northern red oak, red pine, tuliptree, white ash, white oak
	Fraser's fir	---	---	
	black cherry	---	---	
	black walnut	---	---	
	northern red oak	90	72	
	sugar maple	---	---	
	tuliptree	110	129	
	white ash	---	---	
	white oak	---	---	
CeB:				
Celina	black cherry	---	---	black walnut, eastern white pine, northern red oak, red pine, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	90	72	
	sugar maple	---	---	
	tuliptree	110	129	
	white ash	---	---	
	white oak	---	---	
CfB:				
Celina	black cherry	---	---	Norway spruce, black walnut, chinkapin oak, eastern white pine, northern red oak, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	90	72	
	sugar maple	---	---	
	tuliptree	110	129	
	white ash	---	---	
	white oak	---	---	

Table 12.--Woodland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber (cu ft/ac)	Trees to manage
Losantville	northern red oak	78	72	Norway spruce, chinkapin oak, eastern white pine, northern red oak, shagbark hickory, sugar maple, tuliptree, white ash, white oak
	sugar maple	---	---	
	white ash	---	---	
	white oak	---	---	
ChB:				
Celina	black cherry	---	---	black walnut, eastern white pine, northern red oak, red pine, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	90	72	
	sugar maple	---	---	
	tuliptree	110	129	
	white ash	---	---	
	white oak	---	---	
Strawn	black walnut	---	---	black walnut, eastern white pine, green ash, northern red oak, red pine, sugar maple, white oak
	northern red oak	80	57	
	tuliptree	90	86	
	white oak	80	57	
CrA:				
Crosby	northern red oak	75	57	American sycamore, eastern white pine, northern red oak, red maple, tuliptree, white ash
	pin oak	85	72	
	tuliptree	85	86	
	white oak	75	57	
CrB:				
Crosby	northern red oak	75	57	American sycamore, eastern white pine, northern red oak, red maple, tuliptree, white ash
	pin oak	85	72	
	tuliptree	85	86	
	white oak	75	57	
CsA:				
Crosby	white oak	75	57	eastern white pine, baldcypress, white ash, red maple, tuliptree, American sycamore
	pin oak	85	72	
	tuliptree	85	86	
	sweetgum	80	---	
	northern red oak	75	57	
Lewisburg	white oak	75	57	eastern white pine, tuliptree
	northern red oak	80	57	
CsB:				
Crosby	white oak	75	57	eastern white pine, baldcypress, white ash, red maple, tuliptree, American sycamore
	pin oak	85	72	
	tuliptree	85	86	
	sweetgum	80	---	
	northern red oak	75	57	
Lewisburg	white oak	75	57	eastern white pine, tuliptree
	northern red oak	80	57	

Table 12.--Woodland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber (cu ft/ac)	Trees to manage
CtA:				
Crosby	black oak	88	72	American sycamore, black oak, eastern white pine, green ash, northern red oak, red maple, river birch, tuliptree, white ash, white oak
	northern red oak	86	72	
	tuliptree	94	100	
	white ash	87	86	
Celina	black cherry	---	---	Norway spruce, black walnut, chinkapin oak, eastern white pine, northern red oak, sugar maple, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	90	72	
	sugar maple	---	---	
	tuliptree	110	129	
	white ash	---	---	
	white oak	---	---	
CtB:				
Crosby	black oak	88	72	American sycamore, black oak, eastern white pine, green ash, northern red oak, red maple, river birch, tuliptree, white ash, white oak
	northern red oak	86	72	
	tuliptree	94	100	
	white ash	87	86	
Celina	black cherry	---	---	Norway spruce, black walnut, eastern white pine, northern red oak, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	90	72	
	sugar maple	---	---	
	tuliptree	110	129	
	white ash	---	---	
	white oak	---	---	
Du:				
Dumps	---	---	---	---
EdB:				
Edenton	eastern white pine	80	172	Virginia pine, eastern white pine, tuliptree
	northern red oak	70	57	
	tuliptree	80	72	
EdC2:				
Edenton	eastern white pine	80	172	Virginia pine, eastern white pine, tuliptree
	northern red oak	70	57	
	tuliptree	80	72	
EdD2:				
Edenton	eastern white pine	80	172	Virginia pine, eastern white pine, tuliptree
	northern red oak	70	57	
	tuliptree	80	72	
Ee:				
Eel	black walnut	---	---	black locust, black walnut, eastern white pine, tuliptree
	eastern cottonwood	---	---	
	tuliptree	100	114	
	white ash	---	---	

Table 12.--Woodland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber (cu ft/ac)	Trees to manage
EmA:				
Eldean	black cherry	---	---	black walnut, eastern white pine, red pine, tuliptree, white ash, white oak
	black oak	80	57	
	black walnut	---	---	
	northern red oak	80	57	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	80	57	
EmB:				
Eldean	black cherry	---	---	black walnut, eastern white pine, red pine, tuliptree, white ash, white oak
	black oak	80	57	
	black walnut	---	---	
	northern red oak	80	57	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	80	57	
EmB2:				
Eldean	black cherry	---	---	black walnut, eastern white pine, red pine, tuliptree, white ash, white oak
	black oak	80	57	
	black walnut	---	---	
	northern red oak	80	57	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	80	57	
EmC2:				
Eldean	black cherry	---	---	black walnut, eastern white pine, red pine, tuliptree, white ash, white oak
	black oak	80	57	
	black walnut	---	---	
	northern red oak	80	57	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	80	57	
EnC3:				
Eldean	black cherry	---	---	black walnut, eastern white pine, red pine, tuliptree, white ash, white oak
	black oak	80	57	
	black walnut	---	---	
	northern red oak	80	57	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	80	57	
EoC2:				
Eldean	black cherry	---	---	black walnut, eastern white pine, red pine, tuliptree, white ash, white oak
	black oak	80	57	
	black walnut	---	---	
	northern red oak	80	57	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	80	57	

Table 12.--Woodland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber (cu ft/ac)	Trees to manage
Miamian	black cherry	---	---	black walnut, eastern white pine, northern red oak, red pine, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	87	72	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	---	---	
EoD2:				
Eldean	black cherry	---	---	black walnut, eastern white pine, red pine, tuliptree, white ash, white oak
	black oak	80	57	
	black walnut	---	---	
	northern red oak	80	57	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	80	57	
Miamian	black cherry	---	---	black walnut, eastern white pine, northern red oak, red pine, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	87	72	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	---	---	
EpC:				
Eldean	black cherry	---	---	black walnut, eastern white pine, red pine, tuliptree, white ash, white oak
	black oak	80	57	
	black walnut	---	---	
	northern red oak	80	57	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	80	57	
Urban Land	---	---	---	---
FaF:				
Fairmount Variant	black cherry	---	---	American sycamore, black cherry, black locust, eastern cottonwood, eastern white pine, green ash, northern red oak, red pine, tuliptree, white ash, white oak
	black oak	60	43	
	green ash	---	---	
	shagbark hickory	---	---	
	tuliptree	---	---	
	white oak	---	---	
FnA:				
Fincastle	northern red oak	75	57	American sycamore, baldcypress, eastern white pine, red maple, tuliptree, white ash
	pin oak	85	72	
	sweetgum	80	86	
	tuliptree	85	86	
	white oak	75	57	

Table 12.--Woodland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber (cu ft/ac)	Trees to manage
Gn:				
Genesee	tuliptree	100	114	black locust, black walnut, eastern white pine, tuliptree
Ko:				
Kokomo	northern red oak	75	57	American sycamore, Norway spruce, blackgum, bur oak, eastern cottonwood, green ash, pin oak, red maple, river birch, swamp white oak, sweetgum
	pin oak	85	72	
	sweetgum	90	100	
	white oak	75	57	
Lh:				
Linwood	American sycamore	---	---	American sycamore, baldcypress, eastern cottonwood, green ash, pin oak, red maple, swamp white oak, sweetgum
	eastern cottonwood	---	---	
	green ash	---	---	
	pin oak	---	---	
	red maple	46	29	
Ln:				
Linwood	American sycamore	---	0	American sycamore, baldcypress, eastern cottonwood, green ash, pin oak, red maple, swamp white oak, sweetgum
	eastern cottonwood	---	0	
	green ash	---	0	
	pin oak	---	0	
	red maple	46	29	
LuF2:				
Lumberton	black cherry	---	---	chinkapin oak, eastern white pine, northern red oak, sugar maple, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	80	57	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	---	---	
MhA:				
Miamian	Douglas fir	---	---	black walnut, eastern white pine, northern red oak, red pine, tuliptree, white ash, white oak
	Fraser's fir	---	---	
	black cherry	---	---	
	black walnut	---	---	
	northern red oak	87	72	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	---	---	

Table 12.--Woodland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber (cu ft/ac)	Trees to manage
MhB:				
Miamian	Douglas fir	---	---	black walnut,
	Fraser's fir	---	---	eastern white
	black cherry	---	---	pine, northern red
	black walnut	---	---	oak, red pine,
	northern red oak	87	72	tuliptree, white
	sugar maple	---	---	ash, white oak
	tuliptree	---	---	
	white ash	---	---	
	white oak	---	---	
MhB2:				
Miamian	black cherry	---	---	black walnut,
	black walnut	---	---	eastern white
	northern red oak	87	72	pine, northern red
	sugar maple	---	---	oak, red pine,
	tuliptree	---	---	tuliptree, white
	white ash	---	---	ash, white oak
	white oak	---	---	
MhC2:				
Miamian	black cherry	---	---	black walnut,
	black walnut	---	---	eastern white
	northern red oak	87	72	pine, northern red
	sugar maple	---	---	oak, red pine,
	tuliptree	---	---	tuliptree, white
	white ash	---	---	ash, white oak
	white oak	---	---	
MhD2:				
Miamian	black cherry	---	---	black walnut,
	black walnut	---	---	eastern white
	northern red oak	87	72	pine, northern red
	sugar maple	---	---	oak, red pine,
	tuliptree	---	---	tuliptree, white
	white ash	---	---	ash, white oak
	white oak	---	---	
MlB3:				
Miamian	black cherry	---	---	black walnut,
	black walnut	---	---	eastern white
	northern red oak	87	72	pine, northern red
	sugar maple	---	---	oak, red pine,
	tuliptree	---	---	tuliptree, white
	white ash	---	---	ash, white oak
	white oak	---	---	
MlC3:				
Miamian	black cherry	---	---	black walnut,
	black walnut	---	---	eastern white
	northern red oak	87	72	pine, northern red
	sugar maple	---	---	oak, red pine,
	tuliptree	---	---	tuliptree, white
	white ash	---	---	ash, white oak
	white oak	---	---	

Table 12.--Woodland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber (cu ft/ac)	Trees to manage
MlD3:				
Miamian	black cherry	---	---	black walnut,
	black walnut	---	---	eastern white
	northern red oak	87	72	pine, northern red
	sugar maple	---	---	oak, red pine,
	tuliptree	---	---	tuliptree, white
	white ash	---	---	ash, white oak
	white oak	---	---	
MmD2:				
Miamian	black cherry	---	---	black walnut,
	black walnut	---	---	eastern white
	northern red oak	87	72	pine, northern red
	sugar maple	---	---	oak, red pine,
	tuliptree	---	---	tuliptree, white
	white ash	---	---	ash, white oak
	white oak	---	---	
Casco	eastern white pine	85	172	eastern white pine,
	jack pine	68	100	jack pine, red
	red pine	78	114	pine
	white oak	70	57	
MmE2:				
Miamian	black cherry	---	---	black walnut,
	black walnut	---	---	eastern white
	northern red oak	87	72	pine, northern red
	sugar maple	---	---	oak, red pine,
	tuliptree	---	---	tuliptree, white
	white ash	---	---	ash, white oak
	white oak	---	---	
Casco	eastern white pine	85	172	eastern white pine,
	jack pine	68	100	jack pine, red
	red pine	78	114	pine
	white oak	70	57	
MoB2:				
Miamian	black cherry	---	---	black walnut,
	black walnut	---	---	eastern white
	northern red oak	87	72	pine, northern red
	sugar maple	---	---	oak, red pine,
	tuliptree	---	---	tuliptree, white
	white ash	---	---	ash, white oak
	white oak	---	---	
Eldean	black cherry	---	---	black walnut,
	black oak	80	57	eastern white
	black walnut	---	---	pine, red pine,
	northern red oak	80	57	tuliptree, white
	sugar maple	---	---	ash, white oak
	tuliptree	---	---	
	white ash	---	---	
	white oak	80	57	

Table 12.--Woodland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber (cu ft/ac)	Trees to manage
MoC2:				
Miamian	black cherry	---	---	black walnut, eastern white pine, northern red oak, red pine, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	87	72	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	---	---	
Eldean	black cherry	---	---	black walnut, eastern white pine, red pine, tuliptree, white ash, white oak
	black oak	80	57	
	black walnut	---	---	
	northern red oak	80	57	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	80	57	
MpE:				
Miamian	black cherry	---	---	black walnut, eastern white pine, northern red oak, red pine, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	87	72	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	---	---	
Hennepin	northern red oak	85	72	black walnut, eastern redcedar, eastern white pine, green ash, northern red oak, red pine, white oak
	white oak	---	---	
MpF:				
Miamian	black cherry	---	---	black walnut, eastern white pine, northern red oak, red pine, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	87	72	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	---	---	
Hennepin	northern red oak	85	72	black walnut, eastern redcedar, eastern white pine, green ash, northern red oak, red pine, white oak
	white oak	---	---	
MqE2:				
Miamian	black cherry	---	---	Norway spruce, chinkapin oak, eastern white pine, northern red oak, shagbark hickory, sugar maple, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	87	72	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	---	---	

Table 12.--Woodland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
Thrifton	black cherry	---	---	Norway spruce, eastern white pine, northern red oak, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	87	72	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	---	---	
MqF2:				
Miamian	black cherry	---	---	Norway spruce, chinkapin oak, eastern white pine, northern red oak, shagbark hickory, sugar maple, white ash, white oak
	black walnut	---	---	
	northern red oak	87	72	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	---	---	
Thrifton	northern red oak	87	72	Norway spruce, eastern white pine, northern red oak
	sugar maple	---	---	
	white ash	---	---	
	white oak	---	---	
MrB:				
Miamian	black cherry	---	---	black walnut, eastern white pine, northern red oak, red pine, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	87	72	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	---	---	
Urban Land	---	---	---	---
MrC:				
Miamian	black cherry	---	---	black walnut, eastern white pine, northern red oak, red pine, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	87	72	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	---	---	
Urban Land	---	---	---	---
Ms:				
Millsdale	black cherry	---	---	American sycamore, baldcypress, eastern cottonwood, green ash, pin oak, red maple, swamp white oak, sweetgum
	eastern cottonwood	---	---	
	green ash	---	---	
	pin oak	86	72	
	red maple	---	---	
	swamp white oak	---	---	
MtA:				
Milton	black cherry	---	---	black walnut, eastern white pine, northern red oak, red pine, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	80	57	
	sugar maple	---	---	
	tuliptree	95	100	
	white ash	---	---	
	white oak	---	---	

Table 12.--Woodland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber (cu ft/ac)	Trees to manage
MtB:				
Milton	black cherry	---	---	black walnut, eastern white pine, northern red oak, red pine, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	80	57	
	sugar maple	---	---	
	tuliptree	95	100	
	white ash	---	---	
	white oak	---	---	
MtC2:				
Milton	black cherry	---	---	black walnut, eastern white pine, northern red oak, red pine, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	80	57	
	sugar maple	---	---	
	tuliptree	95	100	
	white ash	---	---	
	white oak	---	---	
MUF:				
Milton Variant	black cherry	---	---	Virginia pine, black oak, eastern white pine, red pine, tuliptree, white ash
	black oak	70	57	
	red maple	---	---	
	scarlet oak	---	---	
	tuliptree	---	---	
OcA:				
Ockley	northern red oak	90	72	black walnut, eastern white pine, red pine, tuliptree, white ash
	sweetgum	76	72	
	tuliptree	98	100	
	white oak	90	72	
OcB:				
Ockley	northern red oak	90	72	black walnut, eastern white pine, red pine, tuliptree, white ash
	sweetgum	76	72	
	tuliptree	98	100	
	white oak	90	72	
OcB2:				
Ockley	northern red oak	90	72	black walnut, eastern white pine, red pine, tuliptree, white ash
	sweetgum	76	72	
	tuliptree	98	100	
	white oak	90	72	
OdB:				
Ockley	northern red oak	90	72	black walnut, eastern white pine, red pine, tuliptree, white ash
	sweetgum	76	72	
	tuliptree	98	100	
	white oak	90	72	
Urban Land	---	---	---	---
OeB:				
Odell	northern red oak	75	57	---
	pin oak	85	72	
	sweetgum	80	86	
	tuliptree	85	86	
	white oak	75	57	

Table 12.--Woodland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber (cu ft/ac)	Trees to manage
Pa:				
Patton	northern red oak	75	57	Norway spruce, baldcypress, eastern white pine, pin oak, red maple, sweetgum, white ash
	pin oak	85	72	
	sweetgum	80	86	
	white oak	75	57	
Pg:				
Pits, Gravel	---	---	---	---
Pu:				
Pits, Quarry	---	---	---	---
Ra:				
Ragsdale	pin oak	90	72	Norway spruce, baldcypress, eastern white pine, red maple, sweetgum, white ash
	sweetgum	90	100	
	white oak	75	57	
RbA:				
Randolph	northern red oak	75	57	eastern white pine, tuliptree
	sugar maple	90	57	
	tuliptree	85	86	
RdA:				
Raub	northern red oak	75	57	---
	pin oak	85	72	
	sweetgum	80	86	
	tuliptree	85	86	
	white oak	75	57	
RdB:				
Raub	northern red oak	75	57	---
	pin oak	85	72	
	sweetgum	80	86	
	tuliptree	85	86	
	white oak	75	57	
ReA:				
Reesville	black cherry	---	---	American sycamore, baldcypress, eastern cottonwood, green ash, pin oak, red maple, red pine, silver maple, swamp white oak, sweetgum
	eastern cottonwood	---	---	
	green ash	---	---	
	northern red oak	76	57	
	pin oak	---	---	
	red maple	---	---	
	sugar maple	90	57	
	swamp white oak	---	---	
	tuliptree	86	86	
RhB:				
Ritchey	bur oak	---	---	eastern redcedar, shortleaf pine, white oak
	eastern redcedar	---	---	
	northern red oak	50	29	
	white oak	50	29	

Table 12.--Woodland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber (cu ft/ac)	Trees to manage
RhC:				
Ritchey	bur oak	---	---	eastern redcedar, shortleaf pine, white oak
	eastern redcedar	---	---	
	northern red oak	50	29	
	white oak	50	29	
RhD:				
Ritchey	bur oak	---	---	eastern redcedar, shortleaf pine, white oak
	eastern redcedar	---	---	
	northern red oak	50	29	
	white oak	50	29	
RhE2:				
Ritchey	bur oak	---	---	eastern redcedar, shortleaf pine, white oak
	eastern redcedar	---	---	
	northern red oak	50	29	
	white oak	50	29	
RkE:				
Rodman	eastern white pine	85	200	eastern white pine, jack pine, red pine
	northern red oak	75	57	
	red pine	75	143	
	white oak	75	57	
RpA:				
Ross	black cherry	---	---	Norway spruce, black walnut, eastern white pine, tuliptree, white ash
	black walnut	---	---	
	northern red oak	86	72	
	sugar maple	85	57	
	tuliptree	96	100	
	white ash	---	---	
	white oak	---	---	
RqA:				
Ross	black cherry	---	---	Norway spruce, black walnut, eastern white pine, tuliptree, white ash
	black walnut	---	---	
	northern red oak	86	72	
	sugar maple	85	57	
	tuliptree	96	100	
	white ash	---	---	
	white oak	---	---	
Rs:				
Ross	black cherry	---	---	Norway spruce, black walnut, eastern white pine, tuliptree, white ash
	black walnut	---	---	
	northern red oak	86	72	
	sugar maple	85	57	
	tuliptree	96	100	
	white ash	---	---	
	white oak	---	---	
RtA:				
Rush	northern red oak	90	72	black locust, black walnut, eastern white pine, red pine, tuliptree, white ash
	sweetgum	---	---	
	tuliptree	98	100	
	white oak	90	72	

Table 12.--Woodland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber (cu ft/ac)	Trees to manage
RtB:				
Rush	northern red oak	90	72	black locust, black walnut, eastern white pine, red pine, tuliptree, white ash
	sweetgum	---	---	
	tuliptree	98	100	
	white oak	90	72	
RuA:				
Russell	northern red oak	90	72	black cherry, black locust, black walnut, eastern white pine, green ash, northern red oak, red pine, tuliptree, white ash, white oak
	sweetgum	76	72	
	tuliptree	98	100	
	white oak	90	72	
RvB:				
Russell	Douglas fir	---	---	black cherry, black locust, black walnut, eastern white pine, green ash, northern red oak, red pine, tuliptree, white ash, white oak
	Fraser's fir	---	---	
	northern red oak	90	72	
	sweetgum	76	72	
	tuliptree	98	100	
	white oak	90	72	
Miamian	black cherry	---	---	black walnut, eastern white pine, northern red oak, red pine, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	87	72	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	---	---	
RvB2:				
Russell	northern red oak	90	72	black cherry, black locust, black walnut, eastern white pine, green ash, northern red oak, red pine, tuliptree, white ash, white oak
	sweetgum	76	72	
	tuliptree	98	100	
	white oak	90	72	
Miamian	black cherry	---	---	black walnut, eastern white pine, northern red oak, red pine, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	87	72	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	---	---	

Table 12.--Woodland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber (cu ft/ac)	Trees to manage
RwB2:				
Russell	northern red oak	90	72	Norway spruce, black cherry, black locust, black walnut, chinkapin oak, eastern white pine, green ash, northern red oak, tuliptree, white ash, white oak
	sweetgum	76	72	
	tuliptree	98	100	
	white oak	90	72	
Xenia	sweetgum	76	72	Norway spruce, black walnut, chinkapin oak, eastern white pine, northern red oak, tuliptree, white ash, white oak
	tuliptree	98	100	
	white oak	90	72	
SkA:				
Sligo	American sycamore	---	---	American sycamore, black walnut, bur oak, eastern cottonwood, tuliptree, white ash
	black walnut	---	---	
	eastern cottonwood	---	---	
	northern red oak	80	57	
	red maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
SlA:				
Sleeth	pin oak	85	72	American sycamore, baldcypress, eastern white pine, red maple, tuliptree, white ash
	sweetgum	80	86	
	tuliptree	85	86	
	white oak	70	57	
SnA:				
Sloan	eastern cottonwood	---	---	American sycamore, green ash, pin oak, red maple, swamp white oak, sweetgum
	green ash	---	---	
	pin oak	86	57	
	red maple	---	---	
	swamp white oak	---	57	
So:				
Sloan	eastern cottonwood	---	---	American sycamore, eastern cottonwood, green ash, pin oak, red maple, silver maple, swamp white oak, sweetgum
	green ash	---	---	
	pin oak	86	72	
	red maple	---	---	
	swamp white oak	---	---	

Table 12.--Woodland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber (cu ft/ac)	Trees to manage
Sp:				
Fill Land	---	---	---	---
Sloan	eastern cottonwood	---	---	American sycamore, eastern cottonwood, green ash, pin oak, red maple, silver maple, swamp white oak, sweetgum
	green ash	---	---	
	pin oak	86	72	
	red maple	---	---	
	swamp white oak	---	---	
Sr:				
Urban Land	---	---	---	---
Sloan	eastern cottonwood	---	---	American sycamore, eastern cottonwood, green ash, pin oak, red maple, silver maple, swamp white oak, sweetgum
	green ash	---	---	
	pin oak	86	72	
	red maple	---	---	
	swamp white oak	---	---	
ThA:				
Thackery	black cherry	---	---	American sycamore, black cherry, black locust, black walnut, eastern cottonwood, eastern white pine, green ash, northern red oak, red pine, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	90	72	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	90	72	
ThB:				
Thackery	black cherry	---	---	American sycamore, black cherry, black locust, black walnut, eastern cottonwood, eastern white pine, green ash, northern red oak, red pine, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	90	72	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	90	72	
Ts:				
Tremont	black cherry	---	---	black walnut, eastern white pine, northern red oak, red pine, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	86	68	
	sugar maple	---	---	
	tuliptree	96	100	
	white ash	---	---	
	white oak	---	---	

Table 12.--Woodland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber (cu ft/ac)	Trees to manage
TtA:				
Treaty	northern red oak	75	---	eastern cottonwood, green ash, pin oak, red maple, river birch, sweetgum
	pin oak	85	57	
	sweetgum	90	---	
	white oak	75	---	
Ud:				
Udorthents	---	---	---	---
Ur:				
Urban Land	---	---	---	---
W:				
Water	---	---	---	---
WaA:				
Warsaw	eastern white pine	80	172	---
	northern red oak	70	57	
	tuliptree	80	72	
WbA:				
Fill Land	---	---	---	---
Warsaw	eastern white pine	80	172	---
	northern red oak	70	57	
	tuliptree	80	72	
WcA:				
Warsaw	eastern white pine	80	172	---
	northern red oak	70	57	
	tuliptree	80	72	
Urban Land	---	---	---	---
WeB:				
Wea	northern red oak	90	72	---
	sweetgum	76	72	
	tuliptree	98	100	
	white oak	90	72	
WpC3:				
Wapahani	black cherry	---	---	Norway spruce, chinkapin oak, eastern white pine, northern red oak, shagbark hickory, sugar maple, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	87	72	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	---	---	
Miamian	black cherry	---	---	Norway spruce, black locust, chinkapin oak, eastern white pine, northern red oak, shagbark hickory, sugar maple, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	87	72	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	---	---	

Table 12.--Woodland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber (cu ft/ac)	Trees to manage
WpD3:				
Wapahani	black cherry	---	---	Norway spruce, chinkapin oak, eastern white pine, northern red oak, shagbark
	black walnut	---	---	
	northern red oak	87	72	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	hickory, sugar maple, tuliptree, white ash, white oak
	white oak	---	---	
Miamian	black cherry	---	---	Norway spruce, black locust, chinkapin oak, eastern white pine, northern red oak, shagbark hickory, sugar maple, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	87	72	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	---	---	
Ws:				
Westland	pin oak	85	72	baldcypress, eastern white pine, red maple, sweetgum, white ash
	sweetgum	90	100	
	white oak	75	57	
Wt:				
Westland	pin oak	85	72	baldcypress, eastern white pine, red maple, sweetgum, white ash
	sweetgum	90	100	
	white oak	75	57	
Urban Land	---	---	---	---
XeA:				
Xenia	sweetgum	76	72	black walnut, eastern white pine, red pine, tuliptree, white ash
	tuliptree	98	100	
	white oak	90	72	
XeB:				
Xenia	sweetgum	76	72	black walnut, eastern white pine, red pine, tuliptree, white ash
	tuliptree	98	100	
	white oak	90	72	

TABLE 13.--WOODLAND HARVESTING ACTIVITIES

(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 potential limitation. See text on page 197 for further explanation of ratings in this table.)

Map symbol and soil name	Limitations affecting construction of haul roads and log landings		Suitability for roads (natural surface)		Harvest equipment operability	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Ag:						
Algiers	Severe		Poorly suited		Moderately suited	
	Flooding	1.00	Flooding	1.00	Low strength	0.50
	Low strength	0.50	Depth to saturated zone	1.00		
			Low strength	0.50		
BbB:						
Birkbeck	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
BcB:						
Birkbeck	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
Bs:						
Brookston	Moderate		Poorly suited		Moderately suited	
	Low strength	0.50	Ponding	1.00	Low strength	0.50
			Depth to saturated zone	1.00		
			Low strength	0.50		
Bt:						
Brookston	Moderate		Poorly suited		Moderately suited	
	Low strength	0.50	Ponding	1.00	Low strength	0.50
			Depth to saturated zone	1.00		
			Low strength	0.50		
Urban Land	Not Rated		Not rated		Not rated	
CaE2:						
Casco	Severe		Poorly suited		Moderately suited	
	Slope	1.00	Slope	1.00	Slope	0.50
			Low strength	0.50	Low strength	0.50
CbD2:						
Casco	Slight		Poorly suited		Moderately suited	
			Slope	1.00	Low strength	0.50
			Low strength	0.50		
CcD2:						
Casco	Moderate		Poorly suited		Moderately suited	
	Slope	0.50	Slope	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
Eldean	Moderate		Poorly suited		Moderately suited	
	Slope	0.50	Slope	1.00	Low strength	0.50
	Low strength	0.50	Sandiness	0.50	Too sandy	0.50
	Sandiness	0.50	Low strength	0.50		
CdE2:						
Casco	Moderate		Poorly suited		Moderately suited	
	Slope	0.50	Slope	1.00	Slope	0.50
	Low strength	0.50	Low strength	0.50	Low strength	0.50
Rodman	Moderate		Poorly suited		Moderately suited	
	Slope	0.50	Slope	1.00	Slope	0.50
			Low strength	0.50	Low strength	0.50
CeA:						
Celina	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50

Table 13.--Woodland Harvesting Activities--Continued

Map symbol and soil name	Limitations affecting construction of haul roads and log landings		Suitability for roads (natural surface)		Harvest equipment operability	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
CeB:						
Celina	Moderate Low strength	0.50	Moderately suited Low strength	0.50	Moderately suited Low strength	0.50
CfB:						
Celina	Moderate Low strength	0.50	Moderately suited Low strength	0.50	Moderately suited Low strength	0.50
Losantville	Moderate Low strength	0.50	Moderately suited Low strength Depth to saturated zone	0.50 0.50	Moderately suited Low strength	0.50
ChB:						
Celina	Moderate Low strength	0.50	Moderately suited Low strength	0.50	Moderately suited Low strength	0.50
Strawn	Moderate Low strength	0.50	Moderately suited Low strength	0.50	Moderately suited Low strength	0.50
CrA:						
Crosby	Moderate Low strength	0.50	Moderately suited Depth to saturated zone Low strength	0.50 0.50	Moderately suited Low strength	0.50
CrB:						
Crosby	Moderate Low strength	0.50	Moderately suited Depth to saturated zone Low strength	0.50 0.50	Moderately suited Low strength	0.50
CsA:						
Crosby	Moderate Low strength	0.50	Moderately suited Low strength	0.50	Moderately suited Low strength	0.50
Lewisburg	Moderate Low strength	0.50	Moderately suited Low strength	0.50	Moderately suited Low strength	0.50
CsB:						
Crosby	Moderate Low strength	0.50	Moderately suited Low strength	0.50	Moderately suited Low strength	0.50
Lewisburg	Moderate Low strength	0.50	Moderately suited Low strength	0.50	Moderately suited Low strength	0.50
CtA:						
Crosby	Moderate Low strength	0.50	Moderately suited Depth to saturated zone Low strength	0.50 0.50	Moderately suited Low strength	0.50
Celina	Moderate Low strength	0.50	Moderately suited Low strength	0.50	Moderately suited Low strength	0.50
CtB:						
Crosby	Moderate Low strength	0.50	Moderately suited Depth to saturated zone Low strength	0.50 0.50	Moderately suited Low strength	0.50
Celina	Moderate Low strength	0.50	Moderately suited Low strength	0.50	Moderately suited Low strength	0.50
Du:						
Dumps	Not Rated		Not rated		Not rated	
EdB:						
Edenton	Moderate Low strength	0.50	Moderately suited Low strength	0.50	Moderately suited Low strength	0.50

Table 13.--Woodland Harvesting Activities--Continued

Map symbol and soil name	Limitations affecting construction of haul roads and log landings		Suitability for roads (natural surface)		Harvest equipment operability	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
EdC2:						
Edenton	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Slope	0.50	Low strength	0.50
			Low strength	0.50		
EdD2:						
Edenton	Moderate		Poorly suited		Moderately suited	
	Soil slippage	0.50	Slope	1.00	Low strength	0.50
	Slope	0.50	Low strength	0.50		
	Low strength	0.50	Soil slippage	0.50		
Ee:						
Eel	Severe		Poorly suited		Moderately suited	
	Flooding	1.00	Flooding	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
EmA:						
Eldean	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Sandiness	0.50	Low strength	0.50
	Sandiness	0.50	Low strength	0.50	Too sandy	0.50
EmB:						
Eldean	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Sandiness	0.50	Low strength	0.50
	Sandiness	0.50	Low strength	0.50	Too sandy	0.50
EmB2:						
Eldean	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Sandiness	0.50	Low strength	0.50
	Sandiness	0.50	Low strength	0.50	Too sandy	0.50
EmC2:						
Eldean	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Slope	0.50	Low strength	0.50
	Sandiness	0.50	Sandiness	0.50	Too sandy	0.50
			Low strength	0.50		
EnC3:						
Eldean	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Slope	0.50	Low strength	0.50
	Sandiness	0.50	Sandiness	0.50	Too sandy	0.50
			Low strength	0.50		
EoC2:						
Eldean	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Slope	0.50	Low strength	0.50
			Low strength	0.50		
Miamian	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Slope	0.50	Low strength	0.50
			Low strength	0.50		
EoD2:						
Eldean	Moderate		Poorly suited		Moderately suited	
	Low strength	0.50	Slope	1.00	Low strength	0.50
			Low strength	0.50		
Miamian	Moderate		Poorly suited		Moderately suited	
	Low strength	0.50	Slope	1.00	Low strength	0.50
			Low strength	0.50		
EpC:						
Eldean	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Slope	0.50	Low strength	0.50
	Sandiness	0.50	Sandiness	0.50	Too sandy	0.50
			Low strength	0.50		
Urban Land	Not Rated		Not rated		Not rated	

Table 13.--Woodland Harvesting Activities--Continued

Map symbol and soil name	Limitations affecting construction of haul roads and log landings: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value	Harvest equipment operability: Rating class and limiting features	Value
FaF:						
Fairmount Variant	Severe		Poorly suited		Poorly suited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Soil slippage	0.50	Large stones on the surface	0.50	Large stones on the surface	0.50
	Low strength	0.50	Low strength	0.50	Low strength	0.50
			Soil slippage	0.50		
FnA:						
Fincastle	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Depth to saturated zone	0.50	Low strength	0.50
			Low strength	0.50		
Gn:						
Genesee	Severe		Poorly suited		Moderately suited	
	Flooding	1.00	Flooding	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
Ko:						
Kokomo	Moderate		Poorly suited		Moderately suited	
	Low strength	0.50	Ponding	1.00	Low strength	0.50
			Depth to saturated zone	1.00		
			Low strength	0.50		
Lh:						
Linwood	Moderate		Poorly suited		Moderately suited	
	Low strength	0.50	Ponding	1.00	Low strength	0.50
			Depth to saturated zone	1.00		
			Low strength	0.50		
Ln:						
Linwood	Slight		Poorly suited		Poorly suited	
			Ponding	1.00	Low strength	1.00
			Low strength	1.00		
			Depth to saturated zone	1.00		
LuF2:						
Lumberton	Severe		Poorly suited		Poorly suited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Low strength	0.50	Low strength	0.50	Low strength	0.50
MhA:						
Miamian	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
MhB:						
Miamian	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
MhB2:						
Miamian	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
MhC2:						
Miamian	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Slope	0.50	Low strength	0.50
			Low strength	0.50		
MhD2:						
Miamian	Moderate		Poorly suited		Moderately suited	
	Slope	0.50	Slope	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
MlB3:						
Miamian	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50

Table 13.--Woodland Harvesting Activities--Continued

Map symbol and soil name	Limitations affecting construction of haul roads and log landings		Suitability for roads (natural surface)		Harvest equipment operability	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
MlC3:						
Miamian	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Slope	0.50	Low strength	0.50
			Low strength	0.50		
MlD3:						
Miamian	Moderate		Poorly suited		Moderately suited	
	Slope	0.50	Slope	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
MmD2:						
Miamian	Moderate		Poorly suited		Moderately suited	
	Slope	0.50	Slope	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
Casco	Moderate		Poorly suited		Moderately suited	
	Slope	0.50	Slope	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
MmE2:						
Miamian	Moderate		Poorly suited		Moderately suited	
	Slope	0.50	Slope	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50	Slope	0.50
Casco	Moderate		Poorly suited		Moderately suited	
	Slope	0.50	Slope	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50	Slope	0.50
MoB2:						
Miamian	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
Eldean	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Sandiness	0.50	Low strength	0.50
	Sandiness	0.50	Low strength	0.50	Too sandy	0.50
MoC2:						
Miamian	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Slope	0.50	Low strength	0.50
			Low strength	0.50		
Eldean	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Slope	0.50	Low strength	0.50
	Sandiness	0.50	Sandiness	0.50	Too sandy	0.50
			Low strength	0.50		
MpE:						
Miamian	Moderate		Poorly suited		Moderately suited	
	Slope	0.50	Slope	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50	Slope	0.50
Hennepin	Moderate		Poorly suited		Moderately suited	
	Slope	0.50	Slope	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50	Slope	0.50
MpF:						
Miamian	Severe		Poorly suited		Moderately suited	
	Slope	1.00	Slope	1.00	Slope	0.50
	Low strength	0.50	Low strength	0.50	Low strength	0.50
Hennepin	Severe		Poorly suited		Moderately suited	
	Slope	1.00	Slope	1.00	Slope	0.50
	Low strength	0.50	Low strength	0.50	Low strength	0.50

Table 13.--Woodland Harvesting Activities--Continued

Map symbol and soil name	Limitations affecting construction of haul roads and log landings: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value	Harvest equipment operability: Rating class and limiting features	Value
MqE2:						
Miamian	Moderate		Poorly suited		Moderately suited	
	Slope	0.50	Slope	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50	Slope	0.50
Thrifton	Moderate		Poorly suited		Moderately suited	
	Slope	0.50	Slope	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50	Slope	0.50
			Depth to saturated zone	0.50		
MqF2:						
Miamian	Severe		Poorly suited		Poorly suited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Low strength	0.50	Low strength	0.50	Low strength	0.50
Thrifton	Severe		Poorly suited		Poorly suited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Low strength	0.50	Low strength	0.50	Low strength	0.50
			Depth to saturated zone	0.50		
MrB:						
Miamian	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
Urban Land	Not Rated		Not rated		Not rated	
MrC:						
Miamian	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Slope	0.50	Low strength	0.50
			Low strength	0.50		
Urban Land	Not Rated		Not rated		Not rated	
Ms:						
Millsdale	Moderate		Poorly suited		Moderately suited	
	Low strength	0.50	Ponding	1.00	Low strength	0.50
	Restrictive layer	0.50	Depth to saturated zone	1.00		
			Low strength	0.50		
MtA:						
Milton	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
	Restrictive layer	0.50				
MtB:						
Milton	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
	Restrictive layer	0.50				
MtC2:						
Milton	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Slope	0.50	Low strength	0.50
	Restrictive layer	0.50	Low strength	0.50		
MUF:						
Milton Variant	Severe		Poorly suited		Moderately suited	
	Slope	1.00	Slope	1.00	Slope	0.50
	Low strength	0.50	Low strength	0.50	Low strength	0.50
OcA:						
Ockley	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Sandiness	0.50	Low strength	0.50
	Sandiness	0.50	Low strength	0.50	Too sandy	0.50
OcB:						
Ockley	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Sandiness	0.50	Low strength	0.50
	Sandiness	0.50	Low strength	0.50	Too sandy	0.50

Table 13.--Woodland Harvesting Activities--Continued

Map symbol and soil name	Limitations affecting construction of haul roads and log landings		Suitability for roads (natural surface)		Harvest equipment operability	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
OcB2:						
Ockley	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Sandiness	0.50	Low strength	0.50
	Sandiness	0.50	Low strength	0.50	Too sandy	0.50
OdB:						
Ockley	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Sandiness	0.50	Low strength	0.50
	Sandiness	0.50	Low strength	0.50	Too sandy	0.50
Urban Land	Not Rated		Not rated		Not rated	
OeB:						
Odell	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Depth to saturated zone	0.50	Low strength	0.50
			Low strength	0.50		
Pa:						
Patton	Moderate		Poorly suited		Moderately suited	
	Low strength	0.50	Ponding	1.00	Low strength	0.50
			Depth to saturated zone	1.00		
			Low strength	0.50		
Pg:						
Pits, Gravel	Not Rated		Not rated		Not rated	
Pu:						
Pits, Quarry	Not Rated		Not rated		Not rated	
Ra:						
Ragsdale	Moderate		Poorly suited		Moderately suited	
	Low strength	0.50	Ponding	1.00	Low strength	0.50
			Depth to saturated zone	1.00		
			Low strength	0.50		
RbA:						
Randolph	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Depth to saturated zone	0.50	Low strength	0.50
	Restrictive layer	0.50	Low strength	0.50		
RdA:						
Raub	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Depth to saturated zone	0.50	Low strength	0.50
			Low strength	0.50		
RdB:						
Raub	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Depth to saturated zone	0.50	Low strength	0.50
			Low strength	0.50		
ReA:						
Reesville	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Depth to saturated zone	0.50	Low strength	0.50
			Low strength	0.50		
RhB:						
Ritchey	Severe		Moderately suited		Moderately suited	
	Restrictive layer	1.00	Low strength	0.50	Low strength	0.50
	Low strength	0.50				
RhC:						
Ritchey	Severe		Moderately suited		Moderately suited	
	Restrictive layer	1.00	Slope	0.50	Low strength	0.50
	Low strength	0.50	Low strength	0.50		

Table 13.--Woodland Harvesting Activities--Continued

Map symbol and soil name	Limitations affecting construction of haul roads and log landings: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value	Harvest equipment operability: Rating class and limiting features	Value
RhD:						
Ritchey	Severe		Poorly suited		Moderately suited	
	Restrictive layer	1.00	Slope	1.00	Low strength	0.50
	Slope	0.50	Low strength	0.50		
	Low strength	0.50				
RhE2:						
Ritchey	Severe		Poorly suited		Moderately suited	
	Restrictive layer	1.00	Slope	1.00	Low strength	0.50
	Slope	0.50	Low strength	0.50	Slope	0.50
	Low strength	0.50				
RkE:						
Rodman	Moderate		Poorly suited		Moderately suited	
	Slope	0.50	Slope	1.00	Low strength	0.50
			Low strength	0.50	Slope	0.50
RpA:						
Ross	Severe		Poorly suited		Moderately suited	
	Flooding	1.00	Flooding	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
RqA:						
Ross	Severe		Poorly suited		Moderately suited	
	Flooding	1.00	Flooding	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
Rs:						
Ross	Severe		Poorly suited		Moderately suited	
	Flooding	1.00	Flooding	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
RtA:						
Rush	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Sandiness	0.50	Low strength	0.50
	Sandiness	0.50	Low strength	0.50	Too sandy	0.50
RtB:						
Rush	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Sandiness	0.50	Low strength	0.50
	Sandiness	0.50	Low strength	0.50	Too sandy	0.50
RuA:						
Russell	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
RvB:						
Russell	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
Miamian	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
RvB2:						
Russell	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
Miamian	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
RwB2:						
Russell	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
Xenia	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
SkA:						
Sligo	Severe		Poorly suited		Moderately suited	
	Flooding	1.00	Flooding	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50		

Table 13.--Woodland Harvesting Activities--Continued

Map symbol and soil name	Limitations affecting construction of haul roads and log landings		Suitability for roads (natural surface)		Harvest equipment operability	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
SlA:						
Sleeth	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Depth to saturated zone	0.50	Low strength	0.50
	Sandiness	0.50	Sandiness	0.50	Too sandy	0.50
			Low strength	0.50		
SnA:						
Sloan	Severe		Poorly suited		Moderately suited	
	Flooding	1.00	Ponding	1.00	Low strength	0.50
	Low strength	0.50	Flooding	1.00	Too sandy	0.50
	Sandiness	0.50	Depth to saturated zone	1.00		
			Sandiness	0.50		
			Low strength	0.50		
So:						
Sloan	Severe		Poorly suited		Moderately suited	
	Flooding	1.00	Flooding	1.00	Low strength	0.50
	Low strength	0.50	Depth to saturated zone	1.00		
			Low strength	0.50		
Sp:						
Fill Land	Not Rated		Not rated		Not rated	
Sloan	Severe		Poorly suited		Moderately suited	
	Flooding	1.00	Flooding	1.00	Low strength	0.50
	Low strength	0.50	Depth to saturated zone	1.00		
			Low strength	0.50		
Sr:						
Urban Land	Not Rated		Not rated		Not rated	
Sloan	Severe		Poorly suited		Moderately suited	
	Flooding	1.00	Flooding	1.00	Low strength	0.50
	Low strength	0.50	Depth to saturated zone	1.00		
			Low strength	0.50		
ThA:						
Thackery	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
ThB:						
Thackery	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
Ts:						
Tremont	Severe		Poorly suited		Moderately suited	
	Flooding	1.00	Flooding	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
TtA:						
Treaty	Moderate		Poorly suited		Moderately suited	
	Low strength	0.50	Ponding	1.00	Low strength	0.50
			Depth to saturated zone	1.00		
			Low strength	0.50		
Ud:						
Udorthents	Not Rated		Not rated		Not rated	
Ur:						
Urban Land	Not Rated		Not rated		Not rated	
W:						
Water	Not Rated		Not rated		Not rated	

Table 13.--Woodland Harvesting Activities--Continued

Map symbol and soil name	Limitations affecting construction of haul roads and log landings		Suitability for roads (natural surface)		Harvest equipment operability	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
WaA:						
Warsaw	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
WbA:						
Fill Land	Not Rated		Not rated		Not rated	
Warsaw	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
WcA:						
Warsaw	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
Urban Land	Not Rated		Not rated		Not rated	
WeB:						
Wea	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
WpC3:						
Wapahani	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Slope	0.50	Low strength	0.50
			Low strength	0.50		
			Depth to saturated zone	0.50		
Miamian	Slight		Moderately suited		Moderately suited	
			Slope	0.50	Low strength	0.50
			Low strength	0.50		
WpD3:						
Wapahani	Moderate		Poorly suited		Moderately suited	
	Slope	0.50	Slope	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
			Depth to saturated zone	0.50		
Miamian	Moderate		Poorly suited		Moderately suited	
	Slope	0.50	Slope	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
Ws:						
Westland	Moderate		Poorly suited		Moderately suited	
	Low strength	0.50	Ponding	1.00	Low strength	0.50
	Sandiness	0.50	Depth to saturated zone	1.00	Too sandy	0.50
			Sandiness	0.50		
			Low strength	0.50		
Wt:						
Westland	Moderate		Poorly suited		Moderately suited	
	Low strength	0.50	Ponding	1.00	Low strength	0.50
	Sandiness	0.50	Depth to saturated zone	1.00	Too sandy	0.50
			Sandiness	0.50		
			Low strength	0.50		
Urban Land	Not Rated		Not rated		Not rated	
XeA:						
Xenia	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
XeB:						
Xenia	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50

TABLE 14.--WOODLAND REGENERATION ACTIVITIES

(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 potential limitation. See text on page 197 for further explanation of ratings in this table.)

Map symbol and soil name	Suitability for mechanical planting		Suitability for site preparation		Potential for damage to soil by fire	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Ag:						
Algiers	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
BbB:						
Birkbeck	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
BcB:						
Birkbeck	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
Bs:						
Brookston	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.30
Bt:						
Brookston	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.30
Urban Land	Not rated		Not rated		Not rated	
CaE2:						
Casco	Unsuited		Poorly suited		Low	
	Slope	1.00	Slope	0.75	Texture/slope/rock fragments	0.30
	Rock fragment content	0.47				
CbD2:						
Casco	Moderately suited		Well suited		Moderate	
	Slope	0.50			Texture/rock fragments	0.50
	Rock fragment content	0.14				
CcD2:						
Casco	Moderately suited		Poorly suited		Low	
	Slope	0.50	Slope	0.75	Texture/surface depth/rock fragments	0.30
Eldean	Moderately suited		Poorly suited		Low	
	Slope	0.50	Slope	0.75	Texture/rock fragments	0.01
	Too sandy	0.50				
CdE2:						
Casco	Poorly suited		Poorly suited		Low	
	Slope	0.75	Slope	0.75	Texture/surface depth/rock fragments	0.30
	Rock fragment content	0.50				
	Stickiness	0.50				

Table 14.--Woodland Regeneration Activities--Continued

Map symbol and soil name	Suitability for mechanical planting		Suitability for site preparation		Potential for damage to soil by fire	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Rodman	Unsuited		Poorly suited		Low	
	Rock fragment content	0.90	Slope	0.75	Texture/rock fragments	0.01
	Slope	0.75	Rock fragment content	0.50		
CeA:						
Celina	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
CeB:						
Celina	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
CfB:						
Celina	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
Losantville	Moderately suited		Well suited		Moderate	
	Stickiness	0.50			Texture/rock fragments	0.50
ChB:						
Celina	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
Strawn	Well suited		Well suited		Moderate	
					Texture/rock fragments	0.70
CrA:						
Crosby	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
CrB:						
Crosby	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
CsA:						
Crosby	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
Lewisburg	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
CsB:						
Crosby	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
Lewisburg	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
CtA:						
Crosby	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
Celina	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01

Table 14.--Woodland Regeneration Activities--Continued

Map symbol and soil name	Suitability for mechanical planting		Suitability for site preparation		Potential for damage to soil by fire	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
CtB:						
Crosby	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
Celina	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
Du:						
Dumps	Not rated		Not rated		Not rated	
EdB:						
Edenton	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
EdC2:						
Edenton	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
	Slope	0.50				
EdD2:						
Edenton	Moderately suited		Poorly suited		Low	
	Slope	0.50	Slope	0.75	Texture/rock fragments	0.01
	Stickiness	0.50				
Ee:						
Eel	Well suited		Well suited		Moderate	
					Texture/rock fragments	0.50
EmA:						
Eldean	Moderately suited		Well suited		Low	
	Too sandy	0.50			Texture/rock fragments	0.01
EmB:						
Eldean	Moderately suited		Well suited		Low	
	Too sandy	0.50			Texture/rock fragments	0.01
EmB2:						
Eldean	Moderately suited		Well suited		Low	
	Too sandy	0.50			Texture/rock fragments	0.01
	Slope	0.50				
EmC2:						
Eldean	Moderately suited		Well suited		Low	
	Slope	0.50			Texture/rock fragments	0.01
	Too sandy	0.50				
EnC3:						
Eldean	Moderately suited		Well suited		Moderate	
	Slope	0.50			Texture/rock fragments	0.50
	Too sandy	0.50				
EoC2:						
Eldean	Moderately suited		Well suited		Moderate	
	Slope	0.50			Texture/rock fragments	0.50
Miamian	Moderately suited		Well suited		Low	
	Slope	0.50			Texture/rock fragments	0.01
	Stickiness	0.50				

Table 14.--Woodland Regeneration Activities--Continued

Map symbol and soil name	Suitability for mechanical planting		Suitability for site preparation		Potential for damage to soil by fire	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
EoD2:						
Eldean	Moderately suited		Well suited		Low	
	Slope	0.50			Texture/rock fragments	0.01
Miamian	Moderately suited		Well suited		Moderate	
	Slope	0.50			Texture/rock fragments	0.50
	Stickiness	0.50				
EpC:						
Eldean	Moderately suited		Well suited		Low	
	Slope	0.50			Texture/rock fragments	0.01
	Too sandy	0.50				
Urban Land	Not rated		Not rated		Not rated	
FaF:						
Fairmount Variant	Unsuited		Unsuited		Moderate	
	Rock fragment content	1.00	Slope	1.00	Texture/slope/rock fragments	0.50
	Slope	1.00	Rock fragment content	0.50		
	Stickiness	0.75	Stickiness	0.50		
FnA:						
Fincastle	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
Gn:						
Genesee	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
Ko:						
Kokomo	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.30
Lh:						
Linwood	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
Ln:						
Linwood	Well suited		Well suited		Low	
LuF2:						
Lumberton	Unsuited		Unsuited		High	
	Slope	1.00	Slope	1.00	Texture/slope/surface depth/rock fragments	1.00
	Stickiness	0.50				
MhA:						
Miamian	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
MhB:						
Miamian	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
MhB2:						
Miamian	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01

Table 14.--Woodland Regeneration Activities--Continued

Map symbol and soil name	Suitability for mechanical planting		Suitability for site preparation		Potential for damage to soil by fire	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
MhC2:						
Miamian	Moderately suited		Well suited		Low	
	Slope	0.50			Texture/rock fragments	0.01
	Stickiness	0.50				
MhD2:						
Miamian	Moderately suited		Poorly suited		Low	
	Slope	0.50	Slope	0.75	Texture/rock fragments	0.01
	Stickiness	0.50				
MlB3:						
Miamian	Moderately suited		Well suited		Moderate	
	Slope	0.50			Texture/rock fragments	0.50
	Stickiness	0.50				
MlC3:						
Miamian	Moderately suited		Well suited		Moderate	
	Slope	0.50			Texture/rock fragments	0.50
	Stickiness	0.50				
MlD3:						
Miamian	Poorly suited		Poorly suited		Moderate	
	Slope	0.75	Slope	0.75	Texture/rock fragments	0.50
	Stickiness	0.50				
MmD2:						
Miamian	Moderately suited		Poorly suited		Low	
	Slope	0.50	Slope	0.75	Texture/rock fragments	0.01
	Stickiness	0.50				
Casco	Moderately suited		Poorly suited		Low	
	Slope	0.50	Slope	0.75	Texture/surface depth/rock fragments	0.30
	Stickiness	0.50				
MmE2:						
Miamian	Poorly suited		Poorly suited		Low	
	Slope	0.75	Slope	0.75	Texture/rock fragments	0.01
	Stickiness	0.50				
Casco	Poorly suited		Poorly suited		Low	
	Slope	0.75	Slope	0.75	Texture/surface depth/rock fragments	0.30
	Stickiness	0.50				
MoB2:						
Miamian	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
Eldean	Moderately suited		Well suited		Low	
	Too sandy	0.50			Texture/rock fragments	0.01
MoC2:						
Miamian	Moderately suited		Well suited		Low	
	Slope	0.50			Texture/rock fragments	0.01
	Stickiness	0.50				

Table 14.--Woodland Regeneration Activities--Continued

Map symbol and soil name	Suitability for mechanical planting		Suitability for site preparation		Potential for damage to soil by fire	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Eldean	Moderately suited		Well suited		Low	
	Slope	0.50			Texture/rock fragments	0.01
	Too sandy	0.50				
MpE:						
Miamian	Poorly suited		Poorly suited		Low	
	Slope	0.75	Slope	0.75	Texture/rock fragments	0.01
	Stickiness	0.50				
Hennepin	Poorly suited		Poorly suited		Moderate	
	Slope	0.75	Slope	0.75	Texture/surface depth/rock fragments	0.50
MpF:						
Miamian	Unsuited		Poorly suited		Low	
	Slope	1.00	Slope	0.75	Texture/slope/rock fragments	0.30
	Stickiness	0.50				
Hennepin	Unsuited		Poorly suited		High	
	Slope	1.00	Slope	0.75	Texture/slope/surface depth/rock fragments	1.00
MqE2:						
Miamian	Poorly suited		Poorly suited		Low	
	Slope	0.75	Slope	0.75	Texture/surface depth/rock fragments	0.30
Thrifton	Poorly suited		Poorly suited		Moderate	
	Slope	0.75	Slope	0.75	Texture/surface depth/rock fragments	0.50
	Stickiness	0.50				
MqF2:						
Miamian	Unsuited		Unsuited		Low	
	Slope	1.00	Slope	1.00	Texture/slope/rock fragments	0.30
Thrifton	Unsuited		Unsuited		High	
	Slope	1.00	Slope	1.00	Texture/slope/surface depth/rock fragments	1.00
	Stickiness	0.50				
MrB:						
Miamian	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
Urban Land	Not rated		Not rated		Not rated	
MrC:						
Miamian	Moderately suited		Well suited		Low	
	Slope	0.50			Texture/rock fragments	0.01
	Stickiness	0.50				
Urban Land	Not rated		Not rated		Not rated	
Ms:						
Millsdale	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.30

Table 14.--Woodland Regeneration Activities--Continued

Map symbol and soil name	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for site preparation: Rating class and limiting features	Value	Potential for damage to soil by fire: Rating class and limiting features	Value
MtA:						
Milton	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
MtB:						
Milton	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
MtC2:						
Milton	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
	Slope	0.50				
MUF:						
Milton Variant	Unsuited		Poorly suited		Low	
	Slope	1.00	Slope	0.75	Texture/rock fragments	0.30
	Rock fragment content	0.75				
OcA:						
Ockley	Moderately suited		Well suited		Moderate	
	Too sandy	0.50			Texture/rock fragments	0.50
OcB:						
Ockley	Moderately suited		Well suited		Moderate	
	Too sandy	0.50			Texture/rock fragments	0.50
OcB2:						
Ockley	Moderately suited		Well suited		Moderate	
	Too sandy	0.50			Texture/rock fragments	0.50
OdB:						
Ockley	Moderately suited		Well suited		Moderate	
	Too sandy	0.50			Texture/rock fragments	0.50
Urban Land	Not rated		Not rated		Not rated	
OeB:						
Odell	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
Pa:						
Patton	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.30
Pg:						
Pits, Gravel	Not rated		Not rated		Not rated	
Pu:						
Pits, Quarry	Not rated		Not rated		Not rated	
Ra:						
Ragsdale	Well suited		Well suited		Low	
					Texture/rock fragments	0.30
RbA:						
Randolph	Well suited		Well suited		Low	
					Texture/rock fragments	0.01

Table 14.--Woodland Regeneration Activities--Continued

Map symbol and soil name	Suitability for mechanical planting		Suitability for site preparation		Potential for damage to soil by fire	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
RdA:						
Raub	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
RdB:						
Raub	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
ReA:						
Reesville	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
RhB:						
Ritchey	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
	Rock fragment content	0.10				
RhC:						
Ritchey	Moderately suited		Well suited		Low	
	Slope	0.50			Texture/rock fragments	0.01
	Stickiness	0.50				
	Rock fragment content	0.10				
RhD:						
Ritchey	Moderately suited		Poorly suited		Low	
	Slope	0.50	Slope	0.75	Texture/rock fragments	0.01
	Stickiness	0.50				
	Rock fragment content	0.10				
RhE2:						
Ritchey	Poorly suited		Poorly suited		Low	
	Slope	0.75	Slope	0.75	Texture/rock fragments	0.01
	Stickiness	0.50				
	Rock fragment content	0.10				
RkE:						
Rodman	Poorly suited		Poorly suited		Low	
	Slope	0.75	Slope	0.75	Texture/rock fragments	0.01
	Rock fragment content	0.25				
RpA:						
Ross	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
RqA:						
Ross	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
Rs:						
Ross	Well suited		Well suited		Low	
					Texture/rock fragments	0.01

Table 14.--Woodland Regeneration Activities--Continued

Map symbol and soil name	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for site preparation: Rating class and limiting features	Value	Potential for damage to soil by fire: Rating class and limiting features	Value
RtA:						
Rush	Moderately suited Too sandy	0.50	Well suited		Moderate Texture/rock fragments	0.50
RtB:						
Rush	Moderately suited Too sandy	0.50	Well suited		Moderate Texture/rock fragments	0.50
RuA:						
Russell	Well suited		Well suited		Moderate Texture/rock fragments	0.50
RvB:						
Russell	Well suited		Well suited		Moderate Texture/rock fragments	0.50
Miamian	Moderately suited Stickiness	0.50	Well suited		Low Texture/rock fragments	0.01
RvB2:						
Russell	Well suited		Well suited		Moderate Texture/rock fragments	0.50
Miamian	Moderately suited Stickiness	0.50	Well suited		Low Texture/rock fragments	0.01
RwB2:						
Russell	Moderately suited Stickiness	0.50	Well suited		Moderate Texture/rock fragments	0.50
Xenia	Moderately suited Stickiness	0.50	Well suited		Low Texture/rock fragments	0.01
SkA:						
Sligo	Well suited		Well suited		Moderate Texture/rock fragments	0.50
SlA:						
Sleeth	Moderately suited Too sandy	0.50	Well suited		Moderate Texture/rock fragments	0.50
SnA:						
Sloan	Moderately suited Too sandy	0.50	Well suited		Low Texture/rock fragments	0.01
So:						
Sloan	Well suited		Well suited		Low Texture/rock fragments	0.30
Sp:						
Fill Land	Not rated		Not rated		Not rated	
Sloan	Well suited		Well suited		Low Texture/rock fragments	0.30

Table 14.--Woodland Regeneration Activities--Continued

Map symbol and soil name	Suitability for mechanical planting		Suitability for site preparation		Potential for damage to soil by fire	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Sr:						
Urban Land	Not rated		Not rated		Not rated	
Sloan	Well suited		Well suited		Low Texture/rock fragments	0.30
ThA:						
Thackery	Well suited		Well suited		Low Texture/rock fragments	0.01
ThB:						
Thackery	Well suited		Well suited		Low Texture/rock fragments	0.01
Ts:						
Tremont	Well suited		Well suited		Low Texture/rock fragments	0.01
TtA:						
Treaty	Moderately suited Stickiness	0.50	Well suited		Low Texture/rock fragments	0.30
Ud:						
Udorthents	Not rated		Not rated		Not rated	
Ur:						
Urban Land	Not rated		Not rated		Not rated	
W:						
Water	Not rated		Not rated		Not rated	
WaA:						
Warsaw	Well suited		Well suited		Low Texture/rock fragments	0.01
WbA:						
Fill Land	Not rated		Not rated		Not rated	
Warsaw	Well suited		Well suited		Low Texture/rock fragments	0.01
WcA:						
Warsaw	Well suited		Well suited		Low Texture/rock fragments	0.01
Urban Land	Not rated		Not rated		Not rated	
WeB:						
Wea	Well suited		Well suited		Low Texture/rock fragments	0.01

Table 14.--Woodland Regeneration Activities--Continued

Map symbol and soil name	Suitability for mechanical planting		Suitability for site preparation		Potential for damage to soil by fire	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
WpC3:						
Wapahani	Moderately suited		Well suited		Moderate	
	Stickiness	0.50			Texture/surface depth/rock fragments	0.50
	Slope	0.50				
Miamian	Moderately suited		Well suited		Moderate	
	Slope	0.50			Texture/surface depth/rock fragments	0.50
	Stickiness	0.50				
WpD3:						
Wapahani	Moderately suited		Poorly suited		Moderate	
	Slope	0.50	Slope	0.75	Texture/surface depth/rock fragments	0.50
	Stickiness	0.50				
Miamian	Moderately suited		Poorly suited		Moderate	
	Slope	0.50	Slope	0.75	Texture/surface depth/rock fragments	0.50
	Stickiness	0.50				
Ws:						
Westland	Moderately suited		Well suited		Low	
	Too sandy	0.50			Texture/rock fragments	0.30
Wt:						
Westland	Moderately suited		Well suited		Low	
	Too sandy	0.50			Texture/rock fragments	0.30
Urban Land	Not rated		Not rated		Not rated	
XeA:						
Xenia	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
XeB:						
Xenia	Well suited		Well suited		Low	
					Texture/rock fragments	0.01

TABLE 15.--WINDBREAKS AND ENVIRONMENTAL PLANTINGS

(Absence of an entry indicates that trees generally do not grow to the given height. See text on page 199 for additional information.)

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
Ag:					
Algiers	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
BbB:					
Birkbeck	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
BcB:					
Birkbeck	silky dogwood	American cranberrybush; American hazelnut	blue spruce; northern white-cedar; serviceberry; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine
Bs:					
Brookston	silky dogwood	American cranberrybush	Austrian pine; blue spruce; northern white-cedar; Washington hawthorn; white fir	eastern white pine; Norway spruce	pin oak
Bt:					
Brookston	silky dogwood	American cranberrybush	Austrian pine; blue spruce; northern white-cedar; Washington hawthorn; white fir	eastern white pine; Norway spruce	pin oak
Urban land	---	---	---	---	---
CaE2:					
Casco	---	eastern redcedar; Washington hawthorn	Austrian pine; red pine	eastern white pine	blue spruce
CbD2:					
Casco	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
CcD2:					
Casco	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
Eldean	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
CdE2:					
Casco	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
Rodman	gray dogwood; Siberian peashrub; silky dogwood	eastern redcedar; radiant crabapple; Washington hawthorn	black locust; jack pine; Virginia pine	---	---
CeA:					
Celina	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	Douglas fir; eastern white pine; pin oak
CeB:					
Celina	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
CfB:					
Celina	silky dogwood	American cranberrybush	American witchhazel; blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine

TABLE 15.--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
Losantville	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine
ChB:					
Celina	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
Strawn	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
CrA:					
Crosby	American cranberrybush	southern arrowwood	Austrian pine; eastern redcedar; green ash; osageorange; Washington hawthorn	eastern white pine; pin oak	---
CrB:					
Crosby	American cranberrybush	southern arrowwood	Austrian pine; eastern redcedar; green ash; osageorange; Washington hawthorn	eastern white pine; pin oak	---
CsA:					
Crosby	American cranberrybush	southern arrowwood	Austrian pine; eastern redcedar; green ash; osageorange; Washington hawthorn	eastern white pine; pin oak	---
Lewisburg	Siberian peashrub	eastern redcedar; jack pine; osageorange; Russian olive; Washington hawthorn	honeylocust; northern catalpa	---	---
CsB:					
Crosby	American cranberrybush	southern arrowwood	Austrian pine; eastern redcedar; green ash; osageorange; Washington hawthorn	eastern white pine; pin oak	---
Lewisburg	Siberian peashrub	eastern redcedar; jack pine; osageorange; Russian olive; Washington hawthorn	honeylocust; northern catalpa	---	---
CtA:					
Crosby	American cranberrybush	southern arrowwood	American witchhazel; Austrian pine; eastern redcedar; green ash; northern white-cedar; osageorange; Washington hawthorn	eastern white pine; pin oak	---
Celina	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
CtB:					
Crosby	American cranberrybush	southern arrowwood	American witchhazel; Austrian pine; eastern redcedar; green ash; northern white-cedar; osageorange; Washington hawthorn	eastern white pine; pin oak	---
Celina	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
Du:					
Dumps	---	---	---	---	---

TABLE 15.--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
EdB:					
Edenton	American cranberrybush	southern arrowwood	Austrian pine; eastern redcedar; green ash; osageorange; Washington hawthorn	eastern white pine; pin oak	---
EdC2:					
Edenton	American cranberrybush	southern arrowwood	Austrian pine; eastern redcedar; green ash; osageorange; Washington hawthorn	eastern white pine; pin oak	---
EdD2:					
Edenton	American cranberrybush	southern arrowwood	Austrian pine; eastern redcedar; green ash; osageorange; Washington hawthorn	eastern white pine; pin oak	---
Ee:					
Eel	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
EmA:					
Eldean	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
EmB:					
Eldean	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
EmB2:					
Eldean	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
EmC2:					
Eldean	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
EnC3:					
Eldean	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
EoC2:					
Eldean	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
Miamian	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
EoD2:					
Eldean	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
Miamian	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
EpC:					
Eldean	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
Urban land	---	---	---	---	---
FaF:					
Fairmount variant	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---

TABLE 15.--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
FnA:					
Fincastle	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
Gn:					
Genesee	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
Ko:					
Kokomo	silky dogwood	American cranberrybush; redosier dogwood	American witchhazel; Austrian pine; blue spruce; nannyberry; northern white-cedar; Washington hawthorn; white fir	boxelder; Norway spruce	pin oak
Lh:					
Linwood	common ninebark; silky dogwood; whitebelle honeysuckle	nannyberry	tall purple willow	black willow; golden willow	imperial Carolina poplar
Ln:					
Linwood	common ninebark; silky dogwood; whitebelle honeysuckle	nannyberry	tall purple willow	black willow; golden willow	imperial Carolina poplar
LuF2:					
Lumberton	silky dogwood	American hazelnut; southern arrowwood	northern white-cedar; serviceberry; Washington hawthorn	Austrian pine; Norway spruce	eastern white pine
MhA:					
Miamian	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
MhB:					
Miamian	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
MhB2:					
Miamian	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
MhC2:					
Miamian	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
MhD2:					
Miamian	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
MlB3:					
Miamian	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
MlC3:					
Miamian	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
MlD3:					
Miamian	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak

TABLE 15.--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
MmD2:					
Miamian	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
Casco	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
MmE2:					
Miamian	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
Casco	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
MoB2:					
Miamian	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
Eldean	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
MoC2:					
Miamian	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
Eldean	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
MpE:					
Miamian	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
Hennepin	gray dogwood; Siberian peashrub; silky dogwood	American cranberrybush; eastern redcedar; jack pine; osageorange; Russian olive; Washington hawthorn	honeylocust; northern catalpa	---	---
MpF:					
Miamian	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
Hennepin	gray dogwood; Siberian peashrub; silky dogwood	American cranberrybush; eastern redcedar; jack pine; osageorange; Russian olive; Washington hawthorn	honeylocust; northern catalpa	---	---
MqE2:					
Miamian	silky dogwood	American cranberrybush; American hazelnut; southern arrowwood	American plum; blue spruce; northern white-cedar; serviceberry; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine
Thrifton	silky dogwood	American cranberrybush; American hazelnut; southern arrowwood	American plum; northern white-cedar; serviceberry; Washington hawthorn	Austrian pine; Norway spruce	eastern white pine
MqF2:					
Miamian	silky dogwood	American cranberrybush; American hazelnut; southern arrowwood	American plum; northern white-cedar; serviceberry; Washington hawthorn	Austrian pine; Norway spruce	eastern white pine

TABLE 15.--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
Thrifton	silky dogwood	American cranberrybush; American hazelnut; southern arrowwood	American plum; northern white-cedar; serviceberry; Washington hawthorn	Austrian pine; Norway spruce	eastern white pine
MrB:					
Miamian	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
Urban land	---	---	---	---	---
MrC:					
Miamian	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
Urban land	---	---	---	---	---
Ms:					
Millsdale	silky dogwood	American cranberrybush	Austrian pine; blue spruce; northern white-cedar; Washington hawthorn; white fir	eastern white pine; Norway spruce	---
MtA:					
Milton	Japanese tree lilac; redbud; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; osageorange	---	---
MtB:					
Milton	Japanese tree lilac; redbud; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; osageorange	---	---
MtC2:					
Milton	Japanese tree lilac; redbud; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; osageorange	---	---
MUF:					
Milton variant	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
OcA:					
Ockley	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
OcB:					
Ockley	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
OcB2:					
Ockley	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
OdB:					
Ockley	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
Urban land	---	---	---	---	---
OeB:					
Odell	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
Pa:					
Patton	silky dogwood	American cranberrybush	Austrian pine; blue spruce; northern white-cedar; Washington hawthorn; white fir	eastern white pine; Norway spruce	pin oak

TABLE 15.--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
Pg:					
Pits, gravel	---	---	---	---	---
Pu:					
Pits, quarry	---	---	---	---	---
Ra:					
Ragsdale	silky dogwood	American cranberrybush	Austrian pine; blue spruce; northern white-cedar; Washington hawthorn; white fir	eastern white pine; Norway spruce	pin oak
RbA:					
Randolph	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
RdA:					
Raub	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
RdB:					
Raub	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
ReA:					
Reesville	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
RhB:					
Ritchey	Siberian peashrub	eastern redcedar; Japanese tree lilac; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine	---	---
RhC:					
Ritchey	Siberian peashrub	eastern redcedar; Japanese tree lilac; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine	---	---
RhD:					
Ritchey	Siberian peashrub	eastern redcedar; Japanese tree lilac; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine	---	---
RhE2:					
Ritchey	Siberian peashrub	eastern redcedar; Japanese tree lilac; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine	---	---
RkE:					
Rodman	gray dogwood; Siberian peashrub; silky dogwood	eastern redcedar; radiant crabapple; Washington hawthorn	black locust; jack pine; Virginia pine	---	---
RpA:					
Ross	silky dogwood	American cranberrybush; American hazelnut; southern arrowwood	blue spruce; northern white-cedar; serviceberry; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
RqA:					
Ross	silky dogwood	American cranberrybush; American hazelnut; southern arrowwood	blue spruce; northern white-cedar; serviceberry; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak

TABLE 15.--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
Rs:					
Ross	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
RtA:					
Rush	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
RtB:					
Rush	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
RuA:					
Russell	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
RvB:					
Russell	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
Miamian	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
RvB2:					
Russell	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
Miamian	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
RwB2:					
Russell	silky dogwood	American cranberrybush; American hazelnut; southern arrowwood	blue spruce; northern white-cedar; serviceberry; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine
Xenia	silky dogwood	American cranberrybush; American hazelnut; southern arrowwood	blue spruce; northern white-cedar; serviceberry; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine
SkA:					
Sligo	silky dogwood	American hazelnut; southern arrowwood	blue spruce; northern white-cedar; serviceberry; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
SlA:					
Sleeth	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
SnA:					
Sloan	silky dogwood	American cranberrybush	Austrian pine; Washington hawthorn; white fir	boxelder	baldcypress; pin oak
So:					
Sloan	silky dogwood	American cranberrybush	Austrian pine; blue spruce; northern white-cedar; Washington hawthorn; white fir	eastern white pine; Norway spruce	pin oak

TABLE 15.--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
Sp:					
Fill land	---	---	---	---	---
Sloan	silky dogwood	American cranberrybush	Austrian pine; blue spruce; northern white-cedar; Washington hawthorn; white fir	eastern white pine; Norway spruce	pin oak
Sr:					
Urban land	---	---	---	---	---
Sloan	silky dogwood	American cranberrybush	Austrian pine; blue spruce; northern white-cedar; Washington hawthorn; white fir	eastern white pine; Norway spruce	pin oak
ThA:					
Thackery	silky dogwood	American cranberrybush; European alder; Washington hawthorn	arborvitae; baldcypress; blue spruce; eastern redcedar; white fir	Austrian pine; green ash; Norway spruce; pin oak	eastern white pine
ThB:					
Thackery	silky dogwood	American cranberrybush; European alder; Washington hawthorn	arborvitae; baldcypress; blue spruce; eastern redcedar; white fir	Austrian pine; green ash; Norway spruce; pin oak	eastern white pine
Ts:					
Tremont	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
TtA:					
Treaty	silky dogwood	American cranberrybush; redosier dogwood	American witchhazel; Austrian pine; northern white-cedar; Washington hawthorn	boxelder; nannyberry	pin oak
Ud:					
Udorthents	---	---	---	---	---
Ur:					
Urban land	---	---	---	---	---
W:					
Water	---	---	---	---	---
WaA:					
Warsaw	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
WbA:					
Fill land	---	---	---	---	---
Warsaw	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
WcA:					
Warsaw	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
Urban land	---	---	---	---	---
WeB:					
Wea	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
WpC3:					
Wapahani	silky dogwood	American cranberrybush; American hazelnut; southern arrowwood	American plum; eastern redcedar; northern white-cedar; serviceberry; Washington hawthorn	Austrian pine; Norway spruce	eastern white pine

TABLE 15.--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
Miamian	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine
WpD3:					
Wapahani	silky dogwood	American cranberrybush; American hazelnut; southern arrowwood	American plum; eastern redcedar; northern white-cedar; serviceberry; Washington hawthorn	Austrian pine; Norway spruce	eastern white pine
Miamian	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine
Ws:					
Westland	silky dogwood	American cranberrybush	Austrian pine; blue spruce; northern white-cedar; Washington hawthorn; white fir	eastern white pine; Norway spruce	pin oak
Wt:					
Westland	silky dogwood	American cranberrybush	Austrian pine; blue spruce; northern white-cedar; Washington hawthorn; white fir	eastern white pine; Norway spruce	pin oak
Urban land	---	---	---	---	---
XeA:					
Xenia	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
XeB:					
Xenia	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak

TABLE 16.—RECREATION PART 1

(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 potential limitation. See text on page 199 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
Ag:						
Algiers	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Flooding	0.40	Flooding	1.00
BbB:						
Birkbeck	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.10	Depth to saturated zone	0.05	Depth to saturated zone	0.10
BcB:						
Birkbeck	Not limited		Not limited		Somewhat limited	
					Slope	0.50
Bs:						
Brookston	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
Bt:						
Brookston	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
Urban Land	Not rated		Not rated		Not rated	
CaE2:						
Casco	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
					Gravel content	0.03
					Large stones content	0.01
CbD2:						
Casco	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.88	Slope	0.88	Gravel content	1.00
	Gravel content	0.18	Gravel content	0.18	Slope	1.00
CcD2:						
Casco	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.99	Slope	0.99	Slope	1.00
					Gravel content	0.06
Eldean	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.99	Slope	0.99	Slope	1.00
					Gravel content	0.06
CdE2:						
Casco	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
					Gravel content	0.06
Rodman	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Gravel content	0.02	Gravel content	0.02	Gravel content	1.00
CeA:						
Celina	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
	Depth to saturated zone	0.10	Depth to saturated zone	0.05	Depth to saturated zone	0.10

Table 16.—Recreation Part 1--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
CeB:						
Celina	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
	Depth to saturated zone	0.10	Depth to saturated zone	0.05	Slope	0.13
					Depth to saturated zone	0.10
CfB:						
Celina	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Slope	0.50
	Depth to saturated zone	0.10	Depth to saturated zone	0.05	Restricted permeability	0.21
					Depth to saturated zone	0.10
Losantville	Very limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.99	Depth to saturated zone	0.76	Depth to saturated zone	0.99
	Restricted permeability	0.21	Restricted permeability	0.21	Slope	0.50
					Restricted permeability	0.21
ChB:						
Celina	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
					Slope	0.13
Strawn	Not limited		Not limited		Somewhat limited	
					Slope	0.13
CrA:						
Crosby	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.97	Restricted permeability	0.97	Restricted permeability	0.97
CrB:						
Crosby	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96
					Slope	0.13
CsA:						
Crosby	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96
	Depth to saturated zone	0.47	Depth to saturated zone	0.21	Depth to saturated zone	0.47
Lewisburg	Not limited		Not limited		Not limited	
CsB:						
Crosby	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96
	Depth to saturated zone	0.47	Depth to saturated zone	0.21	Slope	0.50
					Depth to saturated zone	0.47
Lewisburg	Not limited		Not limited		Somewhat limited	
					Slope	0.50

Table 16.—Recreation Part 1--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
CtA:						
Crosby	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.99	Depth to saturated zone	1.00
	Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96
Celina	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
	Depth to saturated zone	0.10	Depth to saturated zone	0.05	Depth to saturated zone	0.10
CtB:						
Crosby	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.99	Depth to saturated zone	1.00
	Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96
					Slope	0.13
Celina	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
	Depth to saturated zone	0.10	Depth to saturated zone	0.05	Slope	0.13
					Depth to saturated zone	0.10
Du:						
Dumps	Not rated		Not rated		Not rated	
EdB:						
Edenton	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.43	Restricted permeability	0.43	Restricted permeability	0.43
					Depth to bedrock	0.20
					Slope	0.13
EdC2:						
Edenton	Somewhat limited		Somewhat limited		Very limited	
	Restricted permeability	0.43	Restricted permeability	0.43	Slope	1.00
	Slope	0.16	Slope	0.16	Restricted permeability	0.43
					Depth to bedrock	0.20
EdD2:						
Edenton	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.99	Slope	0.99	Slope	1.00
	Restricted permeability	0.43	Restricted permeability	0.43	Restricted permeability	0.43
					Depth to bedrock	0.20
Ee:						
Eel	Very limited		Somewhat limited		Very limited	
	Flooding	1.00	Flooding	0.40	Flooding	1.00
	Depth to saturated zone	0.10	Depth to saturated zone	0.05	Depth to saturated zone	0.10
EmA:						
Eldean	Not limited		Not limited		Somewhat limited	
					Gravel content	0.06
EmB:						
Eldean	Not limited		Not limited		Somewhat limited	
					Slope	0.13
					Gravel content	0.06
EmB2:						
Eldean	Not limited		Not limited		Somewhat limited	
					Slope	0.88
					Gravel content	0.06

Table 16.—Recreation Part 1--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
EmC2:						
Eldean	Not limited		Not limited		Very limited	
					Slope	1.00
					Gravel content	0.06
EnC3:						
Eldean	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.32	Slope	0.32	Slope	1.00
					Gravel content	0.04
EoC2:						
Eldean	Slightly limited		Slightly limited		Very limited	
	Slope	0.01	Slope	0.01	Slope	1.00
					Gravel content	0.04
Miamian	Somewhat limited		Somewhat limited		Very limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Slope	1.00
	Slope	0.01	Slope	0.01	Restricted permeability	0.21
EoD2:						
Eldean	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.88	Slope	0.88	Slope	1.00
					Gravel content	0.04
Miamian	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.88	Slope	0.88	Slope	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
EpC:						
Eldean	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.16	Slope	0.16	Slope	1.00
					Gravel content	0.08
Urban Land	Not rated		Not rated		Not rated	
FaF:						
Fairmount Variant	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Depth to bedrock	0.54
					Gravel content	0.45
					Restricted permeability	0.21
FnA:						
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
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
Gn:						
Genesee	Very limited		Somewhat limited		Very limited	
	Flooding	1.00	Flooding	0.40	Flooding	1.00
Ko:						
Kokomo	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
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
Lh:						
Linwood	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

Table 16.—Recreation Part 1--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
Ln:						
Linwood	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	Organic matter content	1.00
	Organic matter content	1.00	Organic matter content	1.00	Ponding	1.00
LuF2:						
Lumberton	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
					Depth to bedrock	0.16
MhA:						
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
MhB:						
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
					Slope	0.13
MhB2:						
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Slope	0.50
					Restricted permeability	0.21
MhC2:						
Miamian	Somewhat limited		Somewhat limited		Very limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Slope	1.00
	Slope	0.16	Slope	0.16	Restricted permeability	0.21
MhD2:						
Miamian	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.99	Slope	0.99	Slope	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
MlB3:						
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Slope	0.88
					Restricted permeability	0.21
MlC3:						
Miamian	Somewhat limited		Somewhat limited		Very limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Slope	1.00
	Slope	0.01	Slope	0.01	Restricted permeability	0.21
MlD3:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
MmD2:						
Miamian	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.99	Slope	0.99	Slope	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21

Table 16.—Recreation Part 1--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
Casco	Somewhat limited Slope	 0.99	Somewhat limited Slope	 0.99	Very limited Slope Gravel content	 1.00 0.08
MmE2:						
Miamian	Very limited Slope Restricted permeability	 1.00 0.21	Very limited Slope Restricted permeability	 1.00 0.21	Very limited Slope Restricted permeability	 1.00 0.21
Casco	Very limited Slope	 1.00	Very limited Slope	 1.00	Very limited Slope Gravel content	 1.00 0.08
MoB2:						
Miamian	Somewhat limited Restricted permeability	 0.21	Somewhat limited Restricted permeability	 0.21	Somewhat limited Slope Restricted permeability	 0.50 0.21
Eldean	Not limited		Not limited		Somewhat limited Slope Gravel content	 0.50 0.08
MoC2:						
Miamian	Somewhat limited Restricted permeability Slope	 0.21 0.01	Somewhat limited Restricted permeability Slope	 0.21 0.01	Very limited Slope Restricted permeability	 1.00 0.21
Eldean	Slightly limited Slope	 0.01	Slightly limited Slope	 0.01	Very limited Slope Gravel content	 1.00 0.08
MpE:						
Miamian	Very limited Slope Restricted permeability	 1.00 0.21	Very limited Slope Restricted permeability	 1.00 0.21	Very limited Slope Restricted permeability	 1.00 0.21
Hennepin	Very limited Slope Restricted permeability	 1.00 0.21	Very limited Slope Restricted permeability	 1.00 0.21	Very limited Slope Restricted permeability	 1.00 0.21
MpF:						
Miamian	Very limited Slope Restricted permeability	 1.00 0.21	Very limited Slope Restricted permeability	 1.00 0.21	Very limited Slope Restricted permeability	 1.00 0.21
Hennepin	Very limited Slope Restricted permeability	 1.00 0.21	Very limited Slope Restricted permeability	 1.00 0.21	Very limited Slope Restricted permeability	 1.00 0.21
MqE2:						
Miamian	Very limited Slope Restricted permeability	 1.00 0.21	Very limited Slope Restricted permeability	 1.00 0.21	Very limited Slope Restricted permeability	 1.00 0.21
Thrifton	Very limited Slope Depth to saturated zone Restricted permeability	 1.00 0.99 0.21	Very limited Slope Depth to saturated zone Restricted permeability	 1.00 0.76 0.21	Very limited Slope Depth to saturated zone Restricted permeability	 1.00 0.99 0.21

Table 16.—Recreation Part 1--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
MqF2:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
Thrifton	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Depth to saturated zone	0.99	Depth to saturated zone	0.76	Depth to saturated zone	0.99
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
MrB:						
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Slope	0.50
					Restricted permeability	0.21
Urban Land	Not rated		Not rated		Not rated	
MrC:						
Miamian	Somewhat limited		Somewhat limited		Very limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Slope	1.00
	Slope	0.16	Slope	0.16	Restricted permeability	0.21
Urban Land	Not rated		Not rated		Not rated	
Ms:						
Millsdale	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
MtA:						
Milton	Not limited		Not limited		Not limited	
MtB:						
Milton	Not limited		Not limited		Somewhat limited	
					Slope	0.50
					Depth to bedrock	0.46
MtC2:						
Milton	Slightly limited		Slightly limited		Very limited	
	Slope	0.01	Slope	0.01	Slope	1.00
					Depth to bedrock	0.46
MUF:						
Milton Variant	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Gravel content	0.44	Gravel content	0.44	Gravel content	1.00
					Depth to bedrock	0.46
					Large stones content	0.03
OcA:						
Ockley	Not limited		Not limited		Not limited	
OcB:						
Ockley	Not limited		Not limited		Somewhat limited	
					Slope	0.13
OcB2:						
Ockley	Not limited		Not limited		Somewhat limited	
					Slope	0.50

Table 16.—Recreation Part 1--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
OdB:						
Ockley	Not limited		Not limited		Somewhat limited	
					Slope	0.50
Urban Land	Not rated		Not rated		Not rated	
OeB:						
Odell	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
					Slope	0.13
Pa:						
Patton	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
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
Pg:						
Pits, Gravel	Not rated		Not rated		Not rated	
Pu:						
Pits, Quarry	Not rated		Not rated		Not rated	
Ra:						
Ragsdale	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
	Restricted permeability	0.97	Restricted permeability	0.97	Restricted permeability	0.97
RbA:						
Randolph	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
RdA:						
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
RdB:						
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
					Slope	0.13
ReA:						
Reesville	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
RhB:						
Ritchey	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
					Slope	0.13
RhC:						
Ritchey	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
	Slope	0.01	Slope	0.01	Depth to bedrock	1.00

Table 16.—Recreation Part 1--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
RhD:						
Ritchey	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
	Slope	0.99	Slope	0.99	Depth to bedrock	1.00
RhE2:						
Ritchey	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
RkE:						
Rodman	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Gravel content	0.07	Gravel content	0.07	Gravel content	1.00
RpA:						
Ross	Very limited		Not limited		Somewhat limited	
	Flooding	1.00			Flooding	0.60
RqA:						
Ross	Very limited		Somewhat limited		Very limited	
	Flooding	1.00	Flooding	0.40	Flooding	1.00
Rs:						
Ross	Very limited		Not limited		Somewhat limited	
	Flooding	1.00			Flooding	0.60
RtA:						
Rush	Not limited		Not limited		Not limited	
RtB:						
Rush	Not limited		Not limited		Somewhat limited	
					Slope	0.13
RuA:						
Russell	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
RvB:						
Russell	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Slope	0.50
					Restricted permeability	0.21
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Slope	0.50
					Restricted permeability	0.21
RvB2:						
Russell	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Slope	0.50
					Restricted permeability	0.21
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Slope	0.50
					Restricted permeability	0.21

Table 16.—Recreation Part 1--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
RwB2:						
Russell	Not limited		Not limited		Somewhat limited	
					Slope	0.50
Xenia	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Slope	0.50
					Restricted permeability	0.21
SkA:						
Sligo	Very limited		Not limited		Somewhat limited	
	Flooding	1.00			Flooding	0.60
SlA:						
Sleeth	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
SnA:						
Sloan	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	Ponding	1.00
	Ponding	1.00			Flooding	0.60
So:						
Sloan	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Flooding	0.40	Flooding	1.00
Sp:						
Fill Land	Not rated		Not rated		Not rated	
Sloan	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Flooding	0.40	Flooding	1.00
Sr:						
Urban Land	Not rated		Not rated		Not rated	
Sloan	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Flooding	0.40	Flooding	1.00
ThA:						
Thackery	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.10	Depth to saturated zone	0.05	Depth to saturated zone	0.10
ThB:						
Thackery	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.10	Depth to saturated zone	0.05	Slope	0.50
					Depth to saturated zone	0.10
Ts:						
Tremont	Very limited		Somewhat limited		Somewhat limited	
	Flooding	1.00	Depth to saturated zone	0.06	Flooding	0.60
	Depth to saturated zone	0.13			Depth to saturated zone	0.13

Table 16.—Recreation Part 1--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
TtA:						
Treaty	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
Ud:						
Udorthents	Not rated		Not rated		Not rated	
Ur:						
Urban Land	Not rated		Not rated		Not rated	
W:						
Water	Not rated		Not rated		Not rated	
WaA:						
Warsaw	Not limited		Not limited		Not limited	
WbA:						
Fill Land	Not rated		Not rated		Not rated	
Warsaw	Not limited		Not limited		Not limited	
WcA:						
Warsaw	Not limited		Not limited		Not limited	
Urban Land	Not rated		Not rated		Not rated	
WeB:						
Wea	Not limited		Not limited		Not limited	
WpC3:						
Wapahani	Very limited		Somewhat limited		Very limited	
	Depth to saturated zone	0.99	Depth to saturated zone	0.76	Slope	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Depth to saturated zone	0.99
	Slope	0.16	Slope	0.16	Restricted permeability	0.21
Miamian	Somewhat limited		Somewhat limited		Very limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Slope	1.00
	Slope	0.16	Slope	0.16	Restricted permeability	0.21
WpD3:						
Wapahani	Very limited		Somewhat limited		Very limited	
	Depth to saturated zone	0.99	Slope	0.99	Slope	1.00
	Slope	0.99	Depth to saturated zone	0.76	Depth to saturated zone	0.99
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
Miamian	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.99	Slope	0.99	Slope	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
Ws:						
Westland	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
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21

Table 16.—Recreation Part 1--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
Wt:						
Westland	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
Urban Land	Not rated		Not rated		Not rated	
XeA:						
Xenia	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
XeB:						
Xenia	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21

TABLE 17.—RECREATION PART 2

(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 potential limitation. See text on page 199 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
Ag:						
Algiers	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Flooding	1.00
	Flooding	0.40	Flooding	0.40	Depth to saturated zone	1.00
BbB:						
Birkbeck	Not limited		Not limited		Somewhat limited	
					Depth to saturated zone	0.03
BcB:						
Birkbeck	Not limited		Not limited		Not limited	
Bs:						
Brookston	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
Bt:						
Brookston	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
Urban Land	Not rated		Not rated		Not rated	
CaE2:						
Casco	Very limited		Somewhat limited		Very limited	
	Slope	1.00	Slope	0.74	Slope	1.00
					Droughty	0.01
					Large stones content	0.01
CbD2:						
Casco	Somewhat limited		Not limited		Very limited	
	Slope	0.05			Droughty	0.99
					Slope	0.96
					Gravel content	0.18
CcD2:						
Casco	Somewhat limited		Not limited		Very limited	
	Slope	0.11			Slope	1.00
					Droughty	0.93
Eldean	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	1.00
	Slope	0.11			Carbonate content	1.00
CdE2:						
Casco	Very limited		Somewhat limited		Very limited	
	Slope	0.99	Slope	0.10	Slope	1.00
					Droughty	0.93
Rodman	Very limited		Somewhat limited		Very limited	
	Slope	0.99	Slope	0.10	Slope	1.00
					Droughty	0.89
					Gravel content	0.02
CeA:						
Celina	Not limited		Not limited		Somewhat limited	
					Depth to saturated zone	0.03

Table 17.—Recreation Part 2--Continued

Map symbol and soil name	Paths and trails		Off-road motorcycle trails		Golf fairways	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
CeB:						
Celina	Not limited		Not limited		Somewhat limited	
					Depth to saturated zone	0.03
CfB:						
Celina	Not limited		Not limited		Somewhat limited	
					Depth to saturated zone	0.03
Losantville	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.44	Depth to saturated zone	0.44	Depth to saturated zone	0.75
					Droughty	0.70
ChB:						
Celina	Not limited		Not limited		Not limited	
Strawn	Not limited		Not limited		Not limited	
CrA:						
Crosby	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
CrB:						
Crosby	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
CsA:						
Crosby	Not limited		Not limited		Somewhat limited	
					Depth to saturated zone	0.19
Lewisburg	Not limited		Not limited		Somewhat limited	
					Droughty	0.05
CsB:						
Crosby	Not limited		Not limited		Somewhat limited	
					Depth to saturated zone	0.19
Lewisburg	Not limited		Not limited		Somewhat limited	
					Droughty	0.05
CtA:						
Crosby	Very limited		Very limited		Very limited	
	Depth to saturated zone	0.99	Depth to saturated zone	0.99	Depth to saturated zone	0.99
Celina	Not limited		Not limited		Somewhat limited	
					Depth to saturated zone	0.03
CtB:						
Crosby	Very limited		Very limited		Very limited	
	Depth to saturated zone	0.99	Depth to saturated zone	0.99	Depth to saturated zone	0.99
Celina	Not limited		Not limited		Somewhat limited	
					Depth to saturated zone	0.03
Du:						
Dumps	Not rated		Not rated		Not rated	
EdB:						
Edenton	Not limited		Not limited		Somewhat limited	
					Depth to bedrock	0.20

Table 17.—Recreation Part 2--Continued

Map symbol and soil name	Paths and trails		Off-road motorcycle trails		Golf fairways	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
EdC2:						
Edenton	Very limited		Very limited		Somewhat limited	
	Water erosion	1.00	Water erosion	1.00	Depth to bedrock	0.20
					Slope	0.04
EdD2:						
Edenton	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	1.00
	Slope	0.11			Depth to bedrock	0.20
Ee:						
Eel	Somewhat limited		Somewhat limited		Very limited	
	Flooding	0.40	Flooding	0.40	Flooding	1.00
					Depth to saturated zone	0.03
EmA:						
Eldean	Not limited		Not limited		Very limited	
					Carbonate content	1.00
EmB:						
Eldean	Not limited		Not limited		Very limited	
					Carbonate content	1.00
EmB2:						
Eldean	Not limited		Not limited		Very limited	
					Carbonate content	1.00
EmC2:						
Eldean	Not limited		Not limited		Very limited	
					Carbonate content	1.00
EnC3:						
Eldean	Not limited		Not limited		Very limited	
					Carbonate content	1.00
					Slope	0.16
EoC2:						
Eldean	Not limited		Not limited		Very limited	
					Carbonate content	1.00
					Droughty	0.06
					Slope	0.01
Miamian	Not limited		Not limited		Somewhat limited	
					Slope	0.01
EoD2:						
Eldean	Somewhat limited		Not limited		Very limited	
	Slope	0.05			Carbonate content	1.00
					Slope	0.96
					Droughty	0.31
Miamian	Very limited		Very limited		Somewhat limited	
	Water erosion	1.00	Water erosion	1.00	Slope	0.96
	Slope	0.05			Droughty	0.35
EpC:						
Eldean	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Carbonate content	1.00
					Slope	0.04
Urban Land	Not rated		Not rated		Not rated	
FaF:						
Fairmount Variant	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	1.00
	Slope	1.00	Slope	0.99	Depth to bedrock	0.54
					Droughty	0.01

Table 17.—Recreation Part 2--Continued

Map symbol and soil name	Paths and trails		Off-road motorcycle trails		Golf fairways	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
FnA:						
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
Gn:						
Genesee	Somewhat limited		Somewhat limited		Very limited	
	Flooding	0.40	Flooding	0.40	Flooding	1.00
Ko:						
Kokomo	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
Lh:						
Linwood	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
Ln:						
Linwood	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Organic matter content	1.00	Organic matter content	1.00	Organic matter content	1.00
	Ponding	1.00	Ponding	1.00	Depth to saturated zone	1.00
LuF2:						
Lumberton	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	1.00
	Slope	1.00	Slope	0.95	Depth to bedrock	0.16
MhA:						
Miamian	Not limited		Not limited		Not limited	
MhB:						
Miamian	Not limited		Not limited		Not limited	
MhB2:						
Miamian	Not limited		Not limited		Not limited	
MhC2:						
Miamian	Very limited		Very limited		Somewhat limited	
	Water erosion	1.00	Water erosion	1.00	Slope	0.04
MhD2:						
Miamian	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	1.00
	Slope	0.11				
MlB3:						
Miamian	Not limited		Not limited		Not limited	
MlC3:						
Miamian	Not limited		Not limited		Somewhat limited	
					Slope	0.01
MlD3:						
Miamian	Somewhat limited		Not limited		Very limited	
	Slope	0.19			Slope	1.00

Table 17.—Recreation Part 2--Continued

Map symbol and soil name	Paths and trails		Off-road motorcycle trails		Golf fairways	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
MmD2:						
Miamian	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	1.00
	Slope	0.11				
Casco	Somewhat limited		Not limited		Very limited	
	Slope	0.11			Slope	1.00
					Droughty	0.93
MmE2:						
Miamian	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	1.00
	Slope	0.81				
Casco	Somewhat limited		Not limited		Very limited	
	Slope	0.81			Slope	1.00
					Droughty	0.93
MoB2:						
Miamian	Not limited		Not limited		Not limited	
Eldean	Not limited		Not limited		Very limited	
					Carbonate content	1.00
MoC2:						
Miamian	Not limited		Not limited		Somewhat limited	
					Slope	0.01
Eldean	Not limited		Not limited		Very limited	
					Carbonate content	1.00
					Slope	0.01
MpE:						
Miamian	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	1.00
	Slope	0.81				
Hennepin	Somewhat limited		Not limited		Very limited	
	Slope	0.81			Slope	1.00
MpF:						
Miamian	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	1.00
	Slope	1.00	Slope	0.80		
Hennepin	Very limited		Somewhat limited		Very limited	
	Slope	1.00	Slope	0.80	Slope	1.00
MqE2:						
Miamian	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	1.00
	Slope	0.89				
Thrifton	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.89	Depth to saturated zone	0.44	Slope	1.00
	Depth to saturated zone	0.44			Depth to saturated zone	0.75
					Droughty	0.65
MqF2:						
Miamian	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	1.00
	Slope	1.00	Slope	0.95		
Thrifton	Very limited		Somewhat limited		Very limited	
	Slope	1.00	Slope	0.95	Slope	1.00
	Depth to saturated zone	0.44	Depth to saturated zone	0.44	Depth to saturated zone	0.75
					Droughty	0.74

Table 17.—Recreation Part 2--Continued

Map symbol and soil name	Paths and trails		Off-road motorcycle trails		Golf fairways	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
MrB:						
Miamian	Not limited		Not limited		Not limited	
Urban Land	Not rated		Not rated		Not rated	
MrC:						
Miamian	Not limited		Not limited		Somewhat limited	
					Slope	0.04
Urban Land	Not rated		Not rated		Not rated	
Ms:						
Millsdale	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
					Depth to bedrock	0.80
MtA:						
Milton	Not limited		Not limited		Somewhat limited	
					Depth to bedrock	0.46
MtB:						
Milton	Not limited		Not limited		Somewhat limited	
					Depth to bedrock	0.46
MtC2:						
Milton	Not limited		Not limited		Somewhat limited	
					Depth to bedrock	0.46
					Slope	0.01
MUF:						
Milton Variant	Very limited		Somewhat limited		Very limited	
	Slope	1.00	Slope	0.80	Slope	1.00
					Depth to bedrock	0.46
					Gravel content	0.44
					Droughty	0.30
					Large stones content	0.03
OcA:						
Ockley	Not limited		Not limited		Not limited	
OcB:						
Ockley	Not limited		Not limited		Not limited	
OcB2:						
Ockley	Not limited		Not limited		Not limited	
OdB:						
Ockley	Not limited		Not limited		Not limited	
Urban Land	Not rated		Not rated		Not rated	
OeB:						
Odell	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Pa:						
Patton	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
Pg:						
Pits, Gravel	Not rated		Not rated		Not rated	

Table 17.—Recreation Part 2--Continued

Map symbol and soil name	Paths and trails		Off-road motorcycle trails		Golf fairways	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Pu:						
Pits, Quarry	Not rated		Not rated		Not rated	
Ra:						
Ragsdale	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
RbA:						
Randolph	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
					Depth to bedrock	0.03
RdA:						
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
RdB:						
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
ReA:						
Reesville	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
RhB:						
Ritchey	Not limited		Not limited		Very limited	
					Depth to bedrock	1.00
					Droughty	0.82
RhC:						
Ritchey	Not limited		Not limited		Very limited	
					Depth to bedrock	1.00
					Droughty	0.82
					Slope	0.01
RhD:						
Ritchey	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to bedrock	1.00
	Slope	0.11			Slope	1.00
					Droughty	0.82
RhE2:						
Ritchey	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	1.00
	Slope	0.81			Depth to bedrock	1.00
					Droughty	0.82
RkE:						
Rodman	Very limited		Somewhat limited		Very limited	
	Slope	0.99	Slope	0.10	Slope	1.00
					Droughty	1.00
					Gravel content	0.07
RpA:						
Ross	Not limited		Not limited		Somewhat limited	
					Flooding	0.60
RqA:						
Ross	Somewhat limited		Somewhat limited		Very limited	
	Flooding	0.40	Flooding	0.40	Flooding	1.00
Rs:						
Ross	Not limited		Not limited		Somewhat limited	
					Flooding	0.60

Table 17.—Recreation Part 2--Continued

Map symbol and soil name	Paths and trails		Off-road motorcycle trails		Golf fairways	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
RtA:						
Rush	Not limited		Not limited		Not limited	
RtB:						
Rush	Not limited		Not limited		Not limited	
RuA:						
Russell	Not limited		Not limited		Not limited	
RvB:						
Russell	Not limited		Not limited		Not limited	
Miamian	Not limited		Not limited		Not limited	
RvB2:						
Russell	Not limited		Not limited		Not limited	
Miamian	Not limited		Not limited		Not limited	
RwB2:						
Russell	Not limited		Not limited		Not limited	
Xenia	Not limited		Not limited		Not limited	
SkA:						
Sligo	Not limited		Not limited		Somewhat limited	
					Flooding	0.60
SlA:						
Sleeth	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
SnA:						
Sloan	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
					Flooding	0.60
So:						
Sloan	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Flooding	1.00
	Flooding	0.40	Flooding	0.40	Depth to saturated zone	1.00
Sp:						
Fill Land	Not rated		Not rated		Not rated	
Sloan	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Flooding	1.00
	Flooding	0.40	Flooding	0.40	Depth to saturated zone	1.00
Sr:						
Urban Land	Not rated		Not rated		Not rated	
Sloan	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Flooding	1.00
	Flooding	0.40	Flooding	0.40	Depth to saturated zone	1.00
ThA:						
Thackery	Not limited		Not limited		Somewhat limited	
					Depth to saturated zone	0.03

Table 17.—Recreation Part 2--Continued

Map symbol and soil name	Paths and trails		Off-road motorcycle trails		Golf fairways	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
ThB:						
Thackery	Not limited		Not limited		Somewhat limited	
					Depth to saturated zone	0.03
Ts:						
Tremont	Not limited		Not limited		Somewhat limited	
					Flooding	0.60
					Depth to saturated zone	0.05
TtA:						
Treaty	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
Ud:						
Udorthents	Not rated		Not rated		Not rated	
Ur:						
Urban Land	Not rated		Not rated		Not rated	
W:						
Water	Not rated		Not rated		Not rated	
WaA:						
Warsaw	Not limited		Not limited		Not limited	
WbA:						
Fill Land	Not rated		Not rated		Not rated	
Warsaw	Not limited		Not limited		Not limited	
WcA:						
Warsaw	Not limited		Not limited		Not limited	
Urban Land	Not rated		Not rated		Not rated	
WeB:						
Wea	Not limited		Not limited		Not limited	
WpC3:						
Wapahani	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.44	Depth to saturated zone	0.44	Droughty	0.96
					Depth to saturated zone	0.75
					Slope	0.04
Miamian	Not limited		Not limited		Somewhat limited	
					Slope	0.04
WpD3:						
Wapahani	Somewhat limited		Somewhat limited		Very limited	
	Depth to saturated zone	0.44	Depth to saturated zone	0.44	Slope	1.00
	Slope	0.11			Droughty	0.92
					Depth to saturated zone	0.75
Miamian	Somewhat limited		Not limited		Very limited	
	Slope	0.11			Slope	1.00
					Droughty	0.05
Ws:						
Westland	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

Table 17.—Recreation Part 2--Continued

Map symbol and soil name	Paths and trails		Off-road motorcycle trails		Golf fairways	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Wt:						
Westland	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
Urban Land	Not rated		Not rated		Not rated	
XeA:						
Xenia	Not limited		Not limited		Not limited	
XeB:						
Xenia	Not limited		Not limited		Not limited	

TABLE 18.--WILDLIFE HABITAT

(See text on page 200 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 herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
Ag:										
Algiers	Poor	Fair	Fair	Good	Good	Fair	Fair	Fair	Good	Fair.
BbB:										
Birkbeck	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
BcB:										
Birkbeck	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
Bs:										
Brookston	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Bt:										
Brookston	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Urban land	---	---	---	---	---	---	---	---	---	---
CaE2:										
Casco	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
CbD2:										
Casco	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
CcD2:										
Casco	Poor	Fair	Good	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Eldean	Fair	Good	Good	Fair	Fair	Poor	Very poor.	Good	Fair	Very poor.
CdE2:										
Casco	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Fair	Very poor.
Rodman	Very poor.	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
CeA:										
Celina	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
CeB:										
Celina	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
CfB:										
Celina	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Losantville	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
ChB:										
Celina	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Strawn	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
CrA:										
Crosby	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
CrB:										
Crosby	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.

Table 18.—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
CsA:										
Crosby	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
Lewisburg	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
CsB:										
Crosby	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Lewisburg	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
CtA:										
Crosby	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
Celina	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
CtB:										
Crosby	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Celina	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Du:										
Dumps	---	---	---	---	---	---	---	---	---	---
EdB:										
Edenton	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
EdC2:										
Edenton	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
EdD2:										
Edenton	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Ee:										
Eel	Poor	Fair	Fair	Good	Good	Poor	Poor	Fair	Good	Poor.
EmA:										
Eldean	Fair	Good	Good	Fair	Fair	Poor	Very poor.	Good	Fair	Very poor.
EmB:										
Eldean	Fair	Good	Good	Fair	Fair	Poor	Very poor.	Good	Fair	Very poor.
EmB2:										
Eldean	Fair	Good	Good	Fair	Fair	Poor	Very poor.	Good	Fair	Very poor.
EmC2:										
Eldean	Fair	Good	Good	Fair	Fair	Very poor.	Very poor.	Good	Fair	Very poor.
EnC3:										
Eldean	Fair	Good	Good	Fair	Fair	Very poor.	Very poor.	Good	Fair	Very poor.
EoC2:										
Eldean	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Miamian	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.

Table 18.—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
EoD2:										
Eldean	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Miamian	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
EpC:										
Eldean	Fair	Good	Good	Fair	Fair	Very poor.	Very poor.	Good	Fair	Very poor.
Urban land	---	---	---	---	---	---	---	---	---	---
FaF:										
Fairmount variant	Very poor.	Poor	Good	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
FnA:										
Fincastle	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
Gn:										
Genesee	Poor	Fair	Fair	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
Ko:										
Kokomo	Fair	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Lh:										
Linwood	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Ln:										
Linwood	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
LuF2:										
Lumberton	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
MhA:										
Miamian	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
MhB:										
Miamian	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
MhB2:										
Miamian	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
MhC2:										
Miamian	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
MhD2:										
Miamian	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
MlB3:										
Miamian	Fair	Good	Good	Fair	Fair	Poor	Very poor.	Good	Fair	Very poor.
MlC3:										
Miamian	Fair	Good	Good	Fair	Fair	Very poor.	Very poor.	Good	Fair	Very poor.
MlD3:										
Miamian	Poor	Fair	Good	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.

Table 18.—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
MmD2:										
Miamian	Poor	Fair	Good	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Casco	Poor	Fair	Good	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
MmE2:										
Miamian	Very poor.	Fair	Good	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Casco	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
MoB2:										
Miamian	Fair	Good	Good	Fair	Fair	Very poor.	Very poor.	Good	Fair	Very poor.
Eldean	Fair	Good	Good	Fair	Fair	Poor	Very poor.	Good	Fair	Very poor.
MoC2:										
Miamian	Fair	Good	Good	Fair	Fair	Very poor.	Very poor.	Good	Fair	Very poor.
Eldean	Fair	Good	Good	Fair	Fair	Very poor.	Very poor.	Good	Fair	Very poor.
MpE:										
Miamian	Poor	Fair	Good	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Hennepin	Poor	Fair	Good	Good	Fair	Very poor.	Very poor.	Fair	Good	Very poor.
MpF:										
Miamian	Very poor.	Poor	Good	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
Hennepin	Very poor.	Poor	Good	Good	Fair	Very poor.	Very poor.	Poor	Good	Very poor.
MqE2:										
Miamian	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Thrifton	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
MqF2:										
Miamian	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
Thrifton	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
MrB:										
Miamian	Fair	Good	Good	Fair	Fair	Poor	Very poor.	Good	Fair	Very poor.
Urban land	---	---	---	---	---	---	---	---	---	---
MrC:										
Miamian	Fair	Good	Good	Fair	Fair	Very poor.	Very poor.	Good	Fair	Very poor.
Urban land	---	---	---	---	---	---	---	---	---	---
Ms:										
Millsdale	Very poor.	Poor	Poor	Poor	Poor	Good	Fair	Poor	Poor	Fair.

Table 18.—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
MtA:										
Milton	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
MtB:										
Milton	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
MtC2:										
Milton	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
MUF:										
Milton variant	Very poor.	Very poor.	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
OcA:										
Ockley	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
OcB:										
Ockley	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
OcB2:										
Ockley	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
OdB:										
Ockley	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Urban land	---	---	---	---	---	---	---	---	---	---
OeB:										
Odell	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Pa:										
Patton	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Pg:										
Pits, gravel	---	---	---	---	---	---	---	---	---	---
Pu:										
Pits, quarry	---	---	---	---	---	---	---	---	---	---
Ra:										
Ragsdale	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
RbA:										
Randolph	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
RdA:										
Raub	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
RdB:										
Raub	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
ReA:										
Reesville	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
RhB:										
Ritchey	Poor	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Poor	Very poor.
RhC:										
Ritchey	Poor	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Poor	Very poor.

Table 18.—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
RhD:										
Ritchey	Poor	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Poor	Very poor.
RhE2:										
Ritchey	Poor	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Poor	Very poor.
RkE:										
Rodman	Very poor.	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
RpA:										
Ross	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
RqA:										
Ross	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Rs:										
Ross	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
RtA:										
Rush	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
RtB:										
Rush	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
RuA:										
Russell	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
RvB:										
Russell	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Miamian	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
RvB2:										
Russell	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Miamian	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
RwB2:										
Russell	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Xenia	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
SkA:										
Sligo	Good	Good	Good	Good	Good	Poor	Good	Good	Good	Fair.
SlA:										
Sleeth	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
SnA:										
Sloan	Fair	Fair	Fair	Poor	Poor	Good	Good	Fair	Poor	Good.
So:										
Sloan	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Sp:										
Fill land	---	---	---	---	---	---	---	---	---	---
Sloan	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.

Table 18.—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
Sr:										
Urban land	---	---	---	---	---	---	---	---	---	---
Sloan	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
ThA:										
Thackery	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
ThB:										
Thackery	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Ts:										
Tremont	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
TtA:										
Treaty	Fair	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Ud:										
Udorthents	---	---	---	---	---	---	---	---	---	---
Ur:										
Urban land	---	---	---	---	---	---	---	---	---	---
W:										
Water	---	---	---	---	---	---	---	---	---	---
WaA:										
Warsaw	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
WbA:										
Fill land	---	---	---	---	---	---	---	---	---	---
Warsaw	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
WcA:										
Warsaw	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Urban land	---	---	---	---	---	---	---	---	---	---
WeB:										
Wea	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
WpC3:										
Wapahani	Poor	Poor	Fair	Fair	Fair	Poor	Very poor.	Poor	Fair	Very poor.
Miamian	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
WpD3:										
Wapahani	Poor	Poor	Fair	Fair	Fair	Poor	Very poor.	Poor	Fair	Very poor.
Miamian	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Ws:										
Westland	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Wt:										
Westland	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Urban land	---	---	---	---	---	---	---	---	---	---

Table 18.—Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
XeA:										
Xenia	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
XeB:										
Xenia	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.

TABLE 19.--CONSTRUCTION MATERIALS PART 1

(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 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 on page 202 for further explanation of ratings in this table.)

Map symbol and soil name	Potential source of gravel		Potential source of sand	
	Rating class	Value	Rating class	Value
Ag:				
Algiers	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
BbB:				
Birkbeck	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
BcB:				
Birkbeck	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Bs:				
Brookston	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Bt:				
Brookston	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Urban Land	Not rated		Not rated	
CaE2:				
Casco	Fair		Good	
	Thickest layer	0.57	Bottom layer	1.00
	Bottom layer	0.67	Thickest layer	1.00
CbD2:				
Casco	Good		Fair	
	Bottom layer	1.00	Bottom layer	0.57
	Thickest layer	1.00	Thickest layer	0.91
CcD2:				
Casco	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Eldean	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
CdE2:				
Casco	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Rodman	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00

Table 19.--Construction Materials Part 1--Continued

Map symbol and soil name	Potential source of gravel		Potential source of sand	
	Rating class	Value	Rating class	Value
CeA:				
Celina	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
CeB:				
Celina	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
CfB:				
Celina	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Losantville	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
ChB:				
Celina	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Strawn	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
CrA:				
Crosby	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
CrB:				
Crosby	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
CsA:				
Crosby	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Lewisburg	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
CsB:				
Crosby	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Lewisburg	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
CtA:				
Crosby	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Celina	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00

Table 19.--Construction Materials Part 1--Continued

Map symbol and soil name	Potential source of gravel		Potential source of sand	
	Rating class	Value	Rating class	Value
CtB:				
Crosby	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Celina	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Du:				
Dumps	Not rated		Not rated	
EdB:				
Edenton	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
EdC2:				
Edenton	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
EdD2:				
Edenton	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Ee:				
Eel	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
EmA:				
Eldean	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
EmB:				
Eldean	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
EmB2:				
Eldean	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
EmC2:				
Eldean	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
EnC3:				
Eldean	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
EoC2:				
Eldean	Good		Good	
	Thickest layer	0.91	Bottom layer	1.00
	Bottom layer	1.00	Thickest layer	1.00

Table 19.--Construction Materials Part 1--Continued

Map symbol and soil name	Potential source of gravel		Potential source of sand	
	Rating class	Value	Rating class	Value
Miamian	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
EoD2:				
Eldean	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Miamian	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
EpC:				
Eldean	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Urban Land	Not rated		Not rated	
FaF:				
Fairmount Variant	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
FnA:				
Fincastle	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Gn:				
Genesee	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Ko:				
Kokomo	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Lh:				
Linwood	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Ln:				
Linwood	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
LuF2:				
Lumberton	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MhA:				
Miamian	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00

Table 19.--Construction Materials Part 1--Continued

Map symbol and soil name	Potential source of gravel		Potential source of sand	
	Rating class	Value	Rating class	Value
MhB:				
Miamian	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MhB2:				
Miamian	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MhC2:				
Miamian	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MhD2:				
Miamian	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MlB3:				
Miamian	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MlC3:				
Miamian	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MlD3:				
Miamian	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MmD2:				
Miamian	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Casco	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MmE2:				
Miamian	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Casco	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MoB2:				
Miamian	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Eldean	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00

Table 19.--Construction Materials Part 1--Continued

Map symbol and soil name	Potential source of gravel		Potential source of sand	
	Rating class	Value	Rating class	Value
MoC2:				
Miamian	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Eldean	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MpE:				
Miamian	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Hennepin	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MpF:				
Miamian	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Hennepin	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MqE2:				
Miamian	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Thrifton	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MqF2:				
Miamian	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Thrifton	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MrB:				
Miamian	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Urban Land	Not rated		Not rated	
MrC:				
Miamian	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Urban Land	Not rated		Not rated	

Table 19.--Construction Materials Part 1--Continued

Map symbol and soil name	Potential source of gravel		Potential source of sand	
	Rating class	Value	Rating class	Value
Ms:				
Millsdale	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MtA:				
Milton	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MtB:				
Milton	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MtC2:				
Milton	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MUF:				
Milton Variant	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
OcA:				
Ockley	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
OcB:				
Ockley	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
OcB2:				
Ockley	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
OdB:				
Ockley	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Urban Land	Not rated		Not rated	
OeB:				
Odell	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Pa:				
Patton	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Pg:				
Pits, Gravel	Not rated		Not rated	

Table 19.--Construction Materials Part 1--Continued

Map symbol and soil name	Potential source of gravel		Potential source of sand	
	Rating class	Value	Rating class	Value
Pu:				
Pits, Quarry	Not rated		Not rated	
Ra:				
Ragsdale	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
RbA:				
Randolph	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
RdA:				
Raub	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
RdB:				
Raub	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
ReA:				
Reesville	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
RhB:				
Ritchey	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
RhC:				
Ritchey	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
RhD:				
Ritchey	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
RhE2:				
Ritchey	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
RkE:				
Rodman	Good		Fair	
	Bottom layer	1.00	Thickest layer	0.87
	Thickest layer	1.00	Bottom layer	0.91
RpA:				
Ross	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
RqA:				
Ross	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00

Table 19.--Construction Materials Part 1--Continued

Map symbol and soil name	Potential source of gravel		Potential source of sand	
	Rating class	Value	Rating class	Value
Rs:				
Ross	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
RtA:				
Rush	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
RtB:				
Rush	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
RuA:				
Russell	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
RvB:				
Russell	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Miamian	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
RvB2:				
Russell	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Miamian	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
RwB2:				
Russell	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Xenia	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
SkA:				
Sligo	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
SlA:				
Sleeth	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
SnA:				
Sloan	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00

Table 19.--Construction Materials Part 1--Continued

Map symbol and soil name	Potential source of gravel		Potential source of sand	
	Rating class	Value	Rating class	Value
So:				
Sloan	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Sp:				
Fill Land	Not rated		Not rated	
Sloan	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Sr:				
Urban Land	Not rated		Not rated	
Sloan	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
ThA:				
Thackery	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
ThB:				
Thackery	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Ts:				
Tremont	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
TtA:				
Treaty	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Ud:				
Udorthents	Not rated		Not rated	
Ur:				
Urban Land	Not rated		Not rated	
W:				
Water	Not rated		Not rated	
WaA:				
Warsaw	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
WbA:				
Fill Land	Not rated		Not rated	

Table 19.--Construction Materials Part 1--Continued

Map symbol and soil name	Potential source of gravel		Potential source of sand	
	Rating class	Value	Rating class	Value
Warsaw	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
WcA:				
Warsaw	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Urban Land	Not rated		Not rated	
WeB:				
Wea	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
WpC3:				
Wapahani	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Miamian	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
WpD3:				
Wapahani	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Miamian	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Ws:				
Westland	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Wt:				
Westland	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Urban Land	Not rated		Not rated	
XeA:				
Xenia	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
XeB:				
Xenia	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00

TABLE 20.--CONSTRUCTION MATERIALS PART 2

(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 on page 202 for further explanation of ratings in this table.)

Map symbol and soil name	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Ag:						
Algiers	Fair		Poor		Poor	
	Water erosion	0.99	Wetness depth	0.00	Wetness depth	0.00
			Slope	0.00		
			Low strength	0.00		
BbB:						
Birkbeck	Fair		Poor		Fair	
	Organic matter content low	0.94	Slope	0.00	Wetness depth	0.76
	Water erosion	0.99	Low strength	0.00		
			Wetness depth	0.76		
			Shrink-swell	0.99		
BcB:						
Birkbeck	Fair		Poor		Fair	
	Organic matter content low	0.99	Slope	0.00	Wetness depth	0.99
	Water erosion	0.99	Low strength	0.00		
			Shrink-swell	0.94		
Bs:						
Brookston	Fair		Poor		Poor	
	Too clayey	0.84	Wetness depth	0.00	Wetness depth	0.00
	Carbonate content	0.92	Slope	0.00	Too clayey	0.79
			Shrink-swell	0.99		
Bt:						
Brookston	Fair		Poor		Poor	
	Too clayey	0.84	Wetness depth	0.00	Wetness depth	0.00
	Carbonate content	0.92	Slope	0.00	Too clayey	0.79
			Shrink-swell	0.99		
Urban Land	Not rated		Not rated		Not rated	
CaE2:						
Casco	Fair		Good		Poor	
	Organic matter content low	0.79			Slope	0.00
	Droughty	0.85			Rock fragments	0.33
CbD2:						
Casco	Poor		Poor		Fair	
	Droughty	0.00	Slope	0.00	Rock fragments	0.02
	Organic matter content low	0.87	Shrink-swell	0.87	Slope	0.04
					Hard to reclaim (rock fragments)	0.82
CcD2:						
Casco	Poor		Poor		Poor	
	Droughty	0.00	Slope	0.00	Slope	0.00
	Organic matter content low	0.67	Low strength	0.00	Rock fragments	0.97
			Shrink-swell	0.87		
Eldean	Poor		Poor		Poor	
	Carbonate content	0.00	Slope	0.00	Slope	0.00
	Droughty	0.96			Hard to reclaim (rock fragments)	0.00
	Water erosion	0.99			Rock fragments	0.69
	Too clayey	0.99			Too clayey	0.81

Table 20.--Construction Materials Part 2--Continued

Map symbol and soil name	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
CdE2:						
Casco	Poor		Poor		Poor	
	Droughty	0.00	Low strength	0.00	Slope	0.00
	Organic matter content low	0.67	Shrink-swell	0.87	Rock fragments	0.97
Rodman	Fair		Good		Poor	
	Droughty	0.02			Slope	0.00
	Too sandy	0.39			Rock fragments	0.00
	Carbonate content	0.46			Hard to reclaim (rock fragments)	0.00
	Organic matter content low	0.82			Too sandy	0.39
					Carbonate content	0.88
CeA:						
Celina	Fair		Poor		Fair	
	Carbonate content	0.08	Slope	0.00	Hard to reclaim (dense layer)	0.35
	Organic matter content low	0.89	Wetness depth	0.76	Wetness depth	0.76
	Water erosion	0.99			Too clayey	0.77
	Too clayey	0.99				
CeB:						
Celina	Fair		Poor		Fair	
	Carbonate content	0.08	Slope	0.00	Hard to reclaim (dense layer)	0.35
	Organic matter content low	0.89	Wetness depth	0.76	Wetness depth	0.76
	Water erosion	0.99			Too clayey	0.77
	Too clayey	0.99				
CfB:						
Celina	Fair		Poor		Fair	
	Carbonate content	0.08	Slope	0.00	Hard to reclaim (dense layer)	0.35
	Droughty	0.96	Low strength	0.00	Wetness depth	0.76
	Water erosion	0.99	Wetness depth	0.76	Too clayey	0.83
	Too clayey	0.99	Shrink-swell	0.92		
Losantville	Poor		Poor		Poor	
	Droughty	0.00	Slope	0.00	Hard to reclaim (dense layer)	0.00
	Carbonate content	0.08	Low strength	0.00	Wetness depth	0.14
	Too clayey	0.89	Wetness depth	0.14	Too clayey	0.65
	Water erosion	0.90	Shrink-swell	0.87		
	Organic matter content low	0.91				
ChB:						
Celina	Fair		Poor		Fair	
	Carbonate content	0.08	Slope	0.00	Hard to reclaim (dense layer)	0.54
	Too clayey	0.85	Low strength	0.00	Too clayey	0.69
	Water erosion	0.99	Shrink-swell	0.87	Wetness depth	0.98
	Droughty	0.99	Wetness depth	0.98		
Strawn	Fair		Poor		Good	
	Droughty	0.36	Slope	0.00		
	Carbonate content	0.97	Low strength	0.00		
	Water erosion	0.99	Shrink-swell	0.87		
	No organic matter limitation	0.99				
CrA:						
Crosby	Fair		Poor		Poor	
	Organic matter content low	0.53	Wetness depth	0.00	Wetness depth	0.00
	Carbonate content	0.68	Slope	0.00	Hard to reclaim (dense layer)	0.35
	Water erosion	0.90				

Table 20.--Construction Materials Part 2--Continued

Map symbol and soil name	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
CrB:						
Crosby	Fair		Poor		Poor	
	Organic matter content low	0.53	Wetness depth	0.00	Wetness depth	0.00
	Carbonate content	0.68	Slope	0.00	Hard to reclaim (dense layer)	0.35
	Water erosion	0.90				
CsA:						
Crosby	Fair		Poor		Fair	
	Carbonate content	0.68	Slope	0.00	Wetness depth	0.53
	Water erosion	0.90	Low strength	0.00	Hard to reclaim (dense layer)	0.65
	Organic matter content low	0.92	Wetness depth	0.53	Too clayey	0.68
	Too clayey	0.93	Shrink-swell	0.87	Carbonate content	0.99
Lewisburg	Fair		Poor		Fair	
	Carbonate content	0.01	Slope	0.00	Hard to reclaim (dense layer)	0.01
	Droughty	0.12	Low strength	0.00	Too clayey	0.84
	Water erosion	0.90	Shrink-swell	0.87		
	Too clayey	0.96				
CsB:						
Crosby	Fair		Poor		Fair	
	Carbonate content	0.68	Slope	0.00	Wetness depth	0.53
	Water erosion	0.90	Low strength	0.00	Hard to reclaim (dense layer)	0.65
	Organic matter content low	0.92	Wetness depth	0.53	Too clayey	0.68
	Too clayey	0.93	Shrink-swell	0.87	Carbonate content	0.99
Lewisburg	Fair		Poor		Fair	
	Carbonate content	0.01	Slope	0.00	Hard to reclaim (dense layer)	0.01
	Droughty	0.12	Low strength	0.00	Too clayey	0.84
	Water erosion	0.90	Shrink-swell	0.87		
	Too clayey	0.96				
CtA:						
Crosby	Fair		Poor		Poor	
	Carbonate content	0.08	Slope	0.00	Wetness depth	0.00
	Droughty	0.84	Low strength	0.00	Too clayey	0.70
	Too clayey	0.90	Wetness depth	0.00	Hard to reclaim (dense layer)	0.84
	Water erosion	0.90	Shrink-swell	0.97		
Celina	Fair		Poor		Fair	
	Carbonate content	0.08	Slope	0.00	Hard to reclaim (dense layer)	0.10
	Droughty	0.68	Low strength	0.00	Wetness depth	0.76
	Too clayey	0.99	Wetness depth	0.76	Too clayey	0.83
	Water erosion	0.99	Shrink-swell	0.87		
CtB:						
Crosby	Fair		Poor		Poor	
	Carbonate content	0.08	Slope	0.00	Wetness depth	0.00
	Too clayey	0.75	Low strength	0.00	Too clayey	0.57
	Droughty	0.83	Wetness depth	0.00	Hard to reclaim (dense layer)	0.90
	Water erosion	0.90	Shrink-swell	0.98		
	Organic matter content low	0.99				
Celina	Fair		Poor		Fair	
	Carbonate content	0.08	Slope	0.00	Hard to reclaim (dense layer)	0.20
	Droughty	0.81	Low strength	0.00	Too clayey	0.70
	Too clayey	0.87	Wetness depth	0.76	Wetness depth	0.76
	Water erosion	0.99	Shrink-swell	0.87		

Table 20.--Construction Materials Part 2--Continued

Map symbol and soil name	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
Du:						
Dumps	Not rated		Not rated		Not rated	
EdB:						
Edenton	Fair		Poor		Fair	
	Too clayey	0.13	Slope	0.00	Too clayey	0.09
	Organic matter content low	0.59	Depth to bedrock	0.00	Depth to bedrock	0.79
	Droughty	0.77	Low strength	0.00		
	Depth to bedrock	0.79	Shrink-swell	0.87		
	Water erosion	0.90				
EdC2:						
Edenton	Fair		Poor		Fair	
	Too clayey	0.13	Slope	0.00	Too clayey	0.09
	Organic matter content low	0.59	Depth to bedrock	0.00	Depth to bedrock	0.79
	Droughty	0.77	Low strength	0.00	Slope	0.96
	Depth to bedrock	0.79	Shrink-swell	0.87		
	Water erosion	0.90				
EdD2:						
Edenton	Fair		Poor		Poor	
	Too clayey	0.13	Depth to bedrock	0.00	Slope	0.00
	Organic matter content low	0.59	Slope	0.00	Too clayey	0.09
	Droughty	0.77	Low strength	0.00	Depth to bedrock	0.79
	Depth to bedrock	0.79	Shrink-swell	0.87		
	Water erosion	0.90				
Ee:						
Eel	Fair		Poor		Fair	
	Organic matter content low	0.88	Slope	0.00	Wetness depth	0.76
	Water erosion	0.99	Wetness depth	0.76		
EmA:						
Eldean	Poor		Poor		Poor	
	Carbonate content	0.00	Slope	0.00	Hard to reclaim (rock fragments)	0.00
	Droughty	0.96			Rock fragments	0.69
	Water erosion	0.99			Too clayey	0.81
	Too clayey	0.99				
EmB:						
Eldean	Poor		Poor		Poor	
	Carbonate content	0.00	Slope	0.00	Hard to reclaim (rock fragments)	0.00
	Droughty	0.96			Rock fragments	0.69
	Water erosion	0.99			Too clayey	0.81
	Too clayey	0.99				
EmB2:						
Eldean	Poor		Poor		Poor	
	Carbonate content	0.00	Slope	0.00	Hard to reclaim (rock fragments)	0.00
	Droughty	0.96			Rock fragments	0.69
	Water erosion	0.99				
EmC2:						
Eldean	Poor		Poor		Poor	
	Carbonate content	0.00	Slope	0.00	Hard to reclaim (rock fragments)	0.00
	Droughty	0.96			Rock fragments	0.68
	Water erosion	0.99			Too clayey	0.81
	Too clayey	0.99				

Table 20.--Construction Materials Part 2--Continued

Map symbol and soil name	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
EnC3:						
Eldean	Poor		Poor		Poor	
	Carbonate content	0.00	Slope	0.00	Hard to reclaim (rock fragments)	0.00
	Too clayey	0.90			Rock fragments	0.66
	Droughty	0.96			Too clayey	0.68
	Organic matter content low	0.96			Slope	0.84
	Water erosion	0.99				
EoC2:						
Eldean	Poor		Poor		Fair	
	Carbonate content	0.00	Slope	0.00	Rock fragments	0.28
	Droughty	0.11	Low strength	0.00	Too clayey	0.29
	Too clayey	0.40	Shrink-swell	0.99		
	Organic matter content low	0.95				
	Water erosion	0.99				
Miamian	Fair		Poor		Fair	
	Carbonate content	0.08	Slope	0.00	Hard to reclaim (dense layer)	0.29
	Too clayey	0.50	Low strength	0.00	Too clayey	0.39
	Droughty	0.54	Shrink-swell	0.87		
	Water erosion	0.99				
	Organic matter content low	0.99				
EoD2:						
Eldean	Poor		Poor		Fair	
	Carbonate content	0.00	Slope	0.00	Slope	0.04
	Droughty	0.02	Low strength	0.00	Too clayey	0.34
	Too clayey	0.44	Shrink-swell	0.98	Rock fragments	0.38
	Water erosion	0.99				
Miamian	Fair		Poor		Poor	
	Droughty	0.01	Slope	0.00	Hard to reclaim (dense layer)	0.00
	Carbonate content	0.08			Slope	0.04
	Water erosion	0.99				
	No organic matter limitation	0.99				
EpC:						
Eldean	Poor		Poor		Poor	
	Carbonate content	0.00	Slope	0.00	Hard to reclaim (rock fragments)	0.00
	Droughty	0.96			Rock fragments	0.65
	Water erosion	0.99			Too clayey	0.81
	Too clayey	0.99			Slope	0.96
Urban Land	Not rated		Not rated		Not rated	
FaF:						
Fairmount Variant	Poor		Poor		Poor	
	Too clayey	0.00	Low strength	0.00	Slope	0.00
	Droughty	0.23	Depth to bedrock	0.00	Too clayey	0.00
	Depth to bedrock	0.46	Shrink-swell	0.87	Rock fragments	0.11
	Water erosion	0.90			Depth to bedrock	0.46
	Organic matter content low	0.99				
FnA:						
Fincastle	Fair		Poor		Poor	
	Organic matter content low	0.63	Wetness depth	0.00	Wetness depth	0.00
	Carbonate content	0.68	Slope	0.00		
	Water erosion	0.99	Low strength	0.00		

Table 20.--Construction Materials Part 2--Continued

Map symbol and soil name	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
Gn:						
Genesee	Fair		Poor		Good	
	Carbonate content	0.84	Slope	0.00		
	Organic matter content low	0.96				
	Water erosion	0.99				
Ko:						
Kokomo	Fair		Poor		Poor	
	Too clayey	0.41	Wetness depth	0.00	Wetness depth	0.00
	Carbonate content	0.68	Slope	0.00	Too clayey	0.39
			Low strength	0.00		
			Shrink-swell	0.94		
Lh:						
Linwood	Good		Poor		Poor	
			Wetness depth	0.00	Wetness depth	0.00
			Slope	0.00	Organic matter content high	0.00
					Hard to reclaim (dense layer)	0.35
Ln:						
Linwood	Poor		Poor		Poor	
	Wind erosion	0.00	Wetness depth	0.00	Wetness depth	0.00
			Slope	0.00	Organic matter content high	0.00
					Hard to reclaim (dense layer)	0.90
LuF2:						
Lumberton	Fair		Poor		Poor	
	Organic matter content low	0.24	Low strength	0.00	Slope	0.00
	Depth to bedrock	0.84	Depth to bedrock	0.00	Depth to bedrock	0.84
	Droughty	0.97	Shrink-swell	0.87		
	Water erosion	0.99				
MhA:						
Miamian	Fair		Poor		Fair	
	Carbonate content	0.03	Slope	0.00	Too clayey	0.35
	Too clayey	0.46	Low strength	0.00	Hard to reclaim (dense layer)	0.99
	Organic matter content low	0.83				
	Water erosion	0.99				
MhB:						
Miamian	Fair		Poor		Fair	
	Carbonate content	0.03	Slope	0.00	Too clayey	0.35
	Too clayey	0.46			Hard to reclaim (dense layer)	0.99
	Organic matter content low	0.83				
	Water erosion	0.99				
MhB2:						
Miamian	Fair		Poor		Fair	
	Carbonate content	0.03	Slope	0.00	Too clayey	0.35
	Too clayey	0.46	Low strength	0.00	Hard to reclaim (dense layer)	0.99
	Organic matter content low	0.83				
	Water erosion	0.99				
MhC2:						
Miamian	Fair		Poor		Fair	
	Carbonate content	0.03	Slope	0.00	Too clayey	0.35
	Too clayey	0.46	Low strength	0.00	Slope	0.96
	Organic matter content low	0.83			Hard to reclaim (dense layer)	0.99
	Water erosion	0.99				

Table 20.--Construction Materials Part 2--Continued

Map symbol and soil name	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
MhD2:						
Miamian	Fair		Poor		Poor	
	Carbonate content	0.03	Slope	0.00	Slope	0.00
	Too clayey	0.46	Low strength	0.00	Too clayey	0.35
	Organic matter content low	0.83			Hard to reclaim (dense layer)	0.99
	Water erosion	0.99				
MlB3:						
Miamian	Fair		Poor		Fair	
	Carbonate content	0.03	Slope	0.00	Too clayey	0.14
	Too clayey	0.20	Low strength	0.00	Hard to reclaim (dense layer)	0.99
	Organic matter content low	0.70				
	Water erosion	0.99				
MlC3:						
Miamian	Fair		Poor		Fair	
	Carbonate content	0.03	Slope	0.00	Too clayey	0.14
	Too clayey	0.20	Low strength	0.00	Hard to reclaim (dense layer)	0.99
	Organic matter content low	0.67				
	Water erosion	0.99				
MlD3:						
Miamian	Fair		Poor		Poor	
	Carbonate content	0.03	Low strength	0.00	Slope	0.00
	Too clayey	0.20	Slope	0.02	Too clayey	0.14
	Organic matter content low	0.67			Hard to reclaim (dense layer)	0.99
	Water erosion	0.99				
MmD2:						
Miamian	Fair		Poor		Poor	
	Carbonate content	0.03	Slope	0.00	Slope	0.00
	Too clayey	0.46	Low strength	0.00	Too clayey	0.35
	Organic matter content low	0.83			Hard to reclaim (dense layer)	0.99
	Water erosion	0.99				
Casco	Poor		Poor		Poor	
	Droughty	0.00	Slope	0.00	Slope	0.00
	Organic matter content low	0.60	Low strength	0.00	Rock fragments	0.95
			Shrink-swell	0.87		
MmE2:						
Miamian	Fair		Poor		Poor	
	Carbonate content	0.03	Low strength	0.00	Slope	0.00
	Too clayey	0.46	Slope	0.68	Too clayey	0.35
	Organic matter content low	0.83			Hard to reclaim (dense layer)	0.99
	Water erosion	0.99				
Casco	Poor		Poor		Poor	
	Droughty	0.00	Low strength	0.00	Slope	0.00
	Organic matter content low	0.73	Slope	0.68	Rock fragments	0.95
			Shrink-swell	0.87		
MoB2:						
Miamian	Fair		Poor		Fair	
	Carbonate content	0.03	Slope	0.00	Too clayey	0.35
	Too clayey	0.46	Low strength	0.00	Hard to reclaim (dense layer)	0.99
	Organic matter content low	0.83				
	Water erosion	0.99				

Table 20.--Construction Materials Part 2--Continued

Map symbol and soil name	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
Eldean	Poor		Poor		Poor	
	Carbonate content	0.00	Slope	0.00	Hard to reclaim (rock fragments)	0.00
	Droughty	0.96			Rock fragments	0.67
	Water erosion	0.99			Too clayey	0.81
	Too clayey	0.99				
MoC2:						
Miamian	Fair		Poor		Fair	
	Carbonate content	0.03	Slope	0.00	Too clayey	0.35
	Too clayey	0.46	Low strength	0.00	Hard to reclaim (dense layer)	0.99
	Organic matter content low	0.83				
	Water erosion	0.99				
Eldean	Poor		Poor		Poor	
	Carbonate content	0.00	Slope	0.00	Hard to reclaim (rock fragments)	0.00
	Droughty	0.96			Rock fragments	0.67
	Water erosion	0.99			Too clayey	0.81
	Too clayey	0.99				
MpE:						
Miamian	Fair		Poor		Poor	
	Carbonate content	0.03	Low strength	0.00	Slope	0.00
	Organic matter content low	0.86	Slope	0.68	Hard to reclaim (dense layer)	0.99
	Water erosion	0.99				
Hennepin	Fair		Fair		Poor	
	Carbonate content	0.03	Low strength	0.22	Slope	0.00
	Organic matter content low	0.36	Slope	0.68	Hard to reclaim (dense layer)	0.00
					Carbonate content	0.52
MpF:						
Miamian	Fair		Poor		Poor	
	Carbonate content	0.03	Low strength	0.00	Slope	0.00
	Organic matter content low	0.83			Hard to reclaim (dense layer)	0.99
	Water erosion	0.99				
Hennepin	Fair		Good		Poor	
	Carbonate content	0.03			Slope	0.00
	Organic matter content low	0.36			Hard to reclaim (dense layer)	0.00
	Droughty	0.99			Carbonate content	0.52
MqE2:						
Miamian	Fair		Poor		Poor	
	Carbonate content	0.01	Low strength	0.00	Slope	0.00
	Too clayey	0.56	Slope	0.82	Too clayey	0.41
	Organic matter content low	0.93	Shrink-swell	0.87	Hard to reclaim (dense layer)	0.99
	Water erosion	0.99				
Thrifton	Poor		Poor		Poor	
	Droughty	0.00	Low strength	0.00	Slope	0.00
	Carbonate content	0.08	Wetness depth	0.14	Hard to reclaim (dense layer)	0.00
	Organic matter content low	0.50	Slope	0.82	Wetness depth	0.14
			Shrink-swell	0.87	Carbonate content	0.94
MqF2:						
Miamian	Fair		Poor		Poor	
	Carbonate content	0.01	Low strength	0.00	Slope	0.00
	Too clayey	0.70	Shrink-swell	0.87	Too clayey	0.53
	Organic matter content low	0.99			Hard to reclaim (dense layer)	0.99
	Water erosion	0.99				

Table 20.--Construction Materials Part 2--Continued

Map symbol and soil name	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
Thrifton	Poor		Poor		Poor	
	Droughty	0.00	Low strength	0.00	Slope	0.00
	Carbonate content	0.08	Wetness depth	0.14	Hard to reclaim (dense layer)	0.00
	Organic matter content low	0.51	Shrink-swell	0.87	Wetness depth	0.14
					Carbonate content	0.94
MrB:						
Miamian	Fair		Poor		Fair	
	Carbonate content	0.03	Slope	0.00	Hard to reclaim (dense layer)	0.99
	Organic matter content low	0.83	Low strength	0.00		
	Water erosion	0.99				
Urban Land	Not rated		Not rated		Not rated	
MrC:						
Miamian	Fair		Poor		Fair	
	Carbonate content	0.03	Slope	0.00	Slope	0.96
	Organic matter content low	0.83	Low strength	0.00	Hard to reclaim (dense layer)	0.99
	Water erosion	0.99				
Urban Land	Not rated		Not rated		Not rated	
Ms:						
Millsdale	Fair		Poor		Poor	
	Depth to bedrock	0.21	Wetness depth	0.00	Wetness depth	0.00
	Too clayey	0.30	Slope	0.00	Depth to bedrock	0.21
	Droughty	0.36	Low strength	0.00	Too clayey	0.30
			Depth to bedrock	0.00		
			Shrink-swell	0.12		
MtA:						
Milton	Fair		Poor		Fair	
	Too clayey	0.43	Slope	0.00	Too clayey	0.34
	Depth to bedrock	0.54	Depth to bedrock	0.00	Depth to bedrock	0.54
	Droughty	0.68	Low strength	0.00		
	Water erosion	0.99	Shrink-swell	0.87		
	No organic matter limitation	0.99				
MtB:						
Milton	Fair		Poor		Fair	
	Too clayey	0.43	Slope	0.00	Too clayey	0.34
	Depth to bedrock	0.54	Depth to bedrock	0.00	Depth to bedrock	0.54
	Droughty	0.68	Low strength	0.00		
	Water erosion	0.99	Shrink-swell	0.87		
	No organic matter limitation	0.99				
MtC2:						
Milton	Fair		Poor		Fair	
	Too clayey	0.43	Slope	0.00	Too clayey	0.34
	Depth to bedrock	0.54	Depth to bedrock	0.00	Depth to bedrock	0.54
	Droughty	0.68	Low strength	0.00		
	Water erosion	0.99	Shrink-swell	0.87		
	No organic matter limitation	0.99				
MUF:						
Milton Variant	Poor		Poor		Poor	
	Stone content	0.00	Depth to bedrock	0.00	Slope	0.00
	Droughty	0.02	Stone content	0.00	Rock fragments	0.00
	Depth to bedrock	0.54	Shrink-swell	0.92	Depth to bedrock	0.54

Table 20.--Construction Materials Part 2--Continued

Map symbol and soil name	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
OcA:						
Ockley	Fair		Poor		Fair	
	Organic matter content low	0.42	Slope	0.00	Hard to reclaim (rock fragments)	0.17
	Carbonate content	0.68	Low strength	0.00		
	Water erosion	0.99	Shrink-swell	0.98		
OcB:						
Ockley	Fair		Poor		Fair	
	Organic matter content low	0.42	Slope	0.00	Hard to reclaim (rock fragments)	0.38
	Carbonate content	0.68	Low strength	0.00		
	Water erosion	0.99	Shrink-swell	0.98		
OcB2:						
Ockley	Fair		Poor		Fair	
	Organic matter content low	0.42	Slope	0.00	Hard to reclaim (rock fragments)	0.17
	Carbonate content	0.68	Low strength	0.00		
	Water erosion	0.99	Shrink-swell	0.98		
OdB:						
Ockley	Fair		Poor		Fair	
	Organic matter content low	0.42	Slope	0.00	Hard to reclaim (rock fragments)	0.17
	Carbonate content	0.68	Low strength	0.00		
	Water erosion	0.99	Shrink-swell	0.98		
Urban Land	Not rated		Not rated		Not rated	
OeB:						
Odell	Fair		Poor		Poor	
	Carbonate content	0.92	Wetness depth	0.00	Wetness depth	0.00
	Organic matter content low	0.96	Slope	0.00	Hard to reclaim (dense layer)	0.10
	Water erosion	0.99				
Pa:						
Patton	Fair		Poor		Poor	
	Water erosion	0.90	Wetness depth	0.00	Wetness depth	0.00
	Not too clayey	0.99	Slope	0.00	Too clayey	0.88
			Low strength	0.00		
			Shrink-swell	0.87		
Pg:						
Pits, Gravel	Not rated		Not rated		Not rated	
Pu:						
Pits, Quarry	Not rated		Not rated		Not rated	
Ra:						
Ragsdale	Fair		Poor		Poor	
	Carbonate content	0.92	Wetness depth	0.00	Wetness depth	0.00
			Slope	0.00		
			Low strength	0.22		
RbA:						
Randolph	Fair		Poor		Poor	
	Too clayey	0.84	Wetness depth	0.00	Wetness depth	0.00
	Droughty	0.89	Slope	0.00	Too clayey	0.68
	Depth to bedrock	0.97	Low strength	0.00	Depth to bedrock	0.97
	Water erosion	0.99	Depth to bedrock	0.00	Rock fragments	0.99
			Shrink-swell	0.19		
RdA:						
Raub	Fair		Poor		Poor	
	Carbonate content	0.84	Wetness depth	0.00	Wetness depth	0.00
	Water erosion	0.99	Slope	0.00		
			Low strength	0.00		
			Shrink-swell	0.99		

Table 20.--Construction Materials Part 2--Continued

Map symbol and soil name	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
RdB:						
Raub	Fair		Poor		Poor	
	Carbonate content	0.84	Wetness depth	0.00	Wetness depth	0.00
	Water erosion	0.99	Slope	0.00		
			Low strength	0.00		
			Shrink-swell	0.99		
ReA:						
Reesville	Fair		Poor		Poor	
	Carbonate content	0.68	Wetness depth	0.00	Wetness depth	0.00
	Organic matter content low	0.98	Slope	0.00	No carbonate limitation	0.99
	Water erosion	0.99	Low strength	0.00		
			Shrink-swell	0.99		
RhB:						
Ritchey	Poor		Poor		Poor	
	Droughty	0.00	Depth to bedrock	0.00	Depth to bedrock	0.00
	Depth to bedrock	0.00	Slope	0.00	Too clayey	0.66
	Too clayey	0.80	Low strength	0.00		
	Water erosion	0.99	Shrink-swell	0.87		
RhC:						
Ritchey	Poor		Poor		Poor	
	Droughty	0.00	Depth to bedrock	0.00	Depth to bedrock	0.00
	Depth to bedrock	0.00	Slope	0.00	Too clayey	0.66
	Too clayey	0.80	Low strength	0.00		
	Water erosion	0.99	Shrink-swell	0.87		
RhD:						
Ritchey	Poor		Poor		Poor	
	Droughty	0.00	Depth to bedrock	0.00	Depth to bedrock	0.00
	Depth to bedrock	0.00	Low strength	0.00	Slope	0.00
	Too clayey	0.80	Slope	0.00	Too clayey	0.66
	Water erosion	0.99	Shrink-swell	0.87		
RhE2:						
Ritchey	Poor		Poor		Poor	
	Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
	Depth to bedrock	0.00	Low strength	0.00	Depth to bedrock	0.00
	Too clayey	0.80	Slope	0.68	Too clayey	0.66
	Water erosion	0.99	Shrink-swell	0.87		
RkE:						
Rodman	Poor		Good		Poor	
	Droughty	0.00			Slope	0.00
	Carbonate content	0.46			Rock fragments	0.01
					Hard to reclaim (rock fragments)	0.92
RpA:						
Ross	Good		Poor		Good	
			Slope	0.00		
RqA:						
Ross	Good		Poor		Good	
			Slope	0.00		
Rs:						
Ross	Good		Poor		Good	
			Slope	0.00		
RtA:						
Rush	Fair		Poor		Fair	
	Carbonate content	0.84	Slope	0.00	Too acid	0.99
	Organic matter content low	0.87	Low strength	0.00		
	Water erosion	0.99	Shrink-swell	0.90		

Table 20.--Construction Materials Part 2--Continued

Map symbol and soil name	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
RtB:						
Rush	Fair		Poor		Fair	
	Organic matter content low	0.84	Slope	0.00	Hard to reclaim (rock fragments)	0.97
	Carbonate content	0.84	Low strength	0.00	Too acid	0.99
	Water erosion	0.99	Shrink-swell	0.90		
RuA:						
Russell	Fair		Poor		Good	
	Organic matter content low	0.69	Slope	0.00		
	Carbonate content	0.84				
	Water erosion	0.99				
RvB:						
Russell	Fair		Poor		Good	
	Organic matter content low	0.69	Slope	0.00		
	Carbonate content	0.84				
	Water erosion	0.99				
Miamian	Fair		Poor		Fair	
	Carbonate content	0.03	Slope	0.00	Hard to reclaim (dense layer)	0.99
	Organic matter content low	0.83	Low strength	0.00		
	Water erosion	0.99				
RvB2:						
Russell	Fair		Poor		Good	
	Organic matter content low	0.69	Slope	0.00		
	Carbonate content	0.84				
	Water erosion	0.99				
Miamian	Fair		Poor		Fair	
	Carbonate content	0.03	Slope	0.00	Hard to reclaim (dense layer)	0.99
	Organic matter content low	0.83	Low strength	0.00		
	Water erosion	0.99				
RwB2:						
Russell	Fair		Poor		Fair	
	Carbonate content	0.68	Slope	0.00	Hard to reclaim (dense layer)	0.20
	Organic matter content low	0.84	Low strength	0.00		
	Water erosion	0.99	Shrink-swell	0.87		
Xenia	Fair		Poor		Fair	
	Carbonate content	0.16	Slope	0.00	Hard to reclaim (dense layer)	0.20
	Organic matter content low	0.88	Low strength	0.00	Wetness depth	0.98
	Water erosion	0.99	Shrink-swell	0.87		
			Wetness depth	0.98		
SkA:						
Sligo	Fair		Poor		Good	
	Water erosion	0.99	Slope	0.00		
			Low strength	0.22		
SlA:						
Sleeth	Fair		Poor		Poor	
	Organic matter content low	0.65	Wetness depth	0.00	Wetness depth	0.00
	Carbonate content	0.92	Slope	0.00	Hard to reclaim (rock fragments)	0.77
			Low strength	0.00	Rock fragments	0.96
			Shrink-swell	0.94		

Table 20.--Construction Materials Part 2--Continued

Map symbol and soil name	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
SnA:						
Sloan	Good		Poor		Poor	
			Wetness depth	0.00	Wetness depth	0.00
			Slope	0.00		
			Low strength	0.00		
So:						
Sloan	Fair		Poor		Poor	
	Carbonate content	0.84	Wetness depth	0.00	Wetness depth	0.00
	Water erosion	0.99	Slope	0.00		
			Low strength	0.00		
			Shrink-swell	0.98		
Sp:						
Fill Land	Not rated		Not rated		Not rated	
Sloan	Fair		Poor		Poor	
	Carbonate content	0.84	Wetness depth	0.00	Wetness depth	0.00
	Water erosion	0.99	Slope	0.00		
			Low strength	0.00		
			Shrink-swell	0.98		
Sr:						
Urban Land	Not rated		Not rated		Not rated	
Sloan	Fair		Poor		Poor	
	Carbonate content	0.84	Wetness depth	0.00	Wetness depth	0.00
	Water erosion	0.99	Slope	0.00		
			Low strength	0.00		
			Shrink-swell	0.98		
ThA:						
Thackery	Poor		Poor		Poor	
	Carbonate content	0.00	Slope	0.00	Hard to reclaim (rock fragments)	0.00
	Organic matter content low	0.70	Wetness depth	0.76	Wetness depth	0.76
	Water erosion	0.99			No rock fragments	0.99
ThB:						
Thackery	Poor		Poor		Poor	
	Carbonate content	0.00	Slope	0.00	Hard to reclaim (rock fragments)	0.00
	Organic matter content low	0.70	Wetness depth	0.76	Wetness depth	0.76
	Water erosion	0.99			No rock fragments	0.99
Ts:						
Tremont	Poor		Poor		Fair	
	Carbonate content	0.00	Slope	0.00	Wetness depth	0.73
			Wetness depth	0.73		
TtA:						
Treaty	Fair		Poor		Poor	
	Carbonate content	0.46	Wetness depth	0.00	Hard to reclaim (dense layer)	0.00
	Water erosion	0.99	Slope	0.00	Wetness depth	0.00
	Too clayey	0.99	Low strength	0.00	Too clayey	0.99
			Shrink-swell	0.87		
Ud:						
Udorthents	Not rated		Not rated		Not rated	
Ur:						
Urban Land	Not rated		Not rated		Not rated	
W:						
Water	Not rated		Not rated		Not rated	

Table 20.--Construction Materials Part 2--Continued

Map symbol and soil name	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
WaA:						
Warsaw	Fair		Poor		Poor	
	Carbonate content	0.92	Slope	0.00	Hard to reclaim (rock fragments)	0.00
					Rock fragments	0.35
WbA:						
Fill Land	Not rated		Not rated		Not rated	
Warsaw	Fair		Poor		Poor	
	Carbonate content	0.92	Slope	0.00	Hard to reclaim (rock fragments)	0.00
					Rock fragments	0.35
WcA:						
Warsaw	Fair		Poor		Poor	
	Carbonate content	0.92	Slope	0.00	Hard to reclaim (rock fragments)	0.00
					Rock fragments	0.35
Urban Land	Not rated		Not rated		Not rated	
WeB:						
Wea	Fair		Poor		Good	
	Carbonate content	0.99	Slope	0.00		
			Low strength	0.00		
			Shrink-swell	0.90		
WpC3:						
Wapahani	Poor		Poor		Poor	
	Droughty	0.00	Slope	0.00	Hard to reclaim (dense layer)	0.00
	Carbonate content	0.08	Low strength	0.00	Wetness depth	0.14
	Organic matter content low	0.23	Wetness depth	0.14	Slope	0.96
	Water erosion	0.90	Shrink-swell	0.87		
Miamian	Fair		Poor		Fair	
	Carbonate content	0.01	Slope	0.00	Too clayey	0.18
	Too clayey	0.26	Low strength	0.00	Hard to reclaim (dense layer)	0.35
	Droughty	0.50	Shrink-swell	0.87	Slope	0.96
	Organic matter content low	0.86				
	Water erosion	0.99				
WpD3:						
Wapahani	Poor		Poor		Poor	
	Droughty	0.00	Slope	0.00	Hard to reclaim (dense layer)	0.00
	Carbonate content	0.08	Low strength	0.00	Slope	0.00
	Organic matter content low	0.22	Wetness depth	0.14	Wetness depth	0.14
	Water erosion	0.90	Shrink-swell	0.87		
Miamian	Fair		Poor		Poor	
	Carbonate content	0.01	Low strength	0.00	Slope	0.00
	Too clayey	0.10	Slope	0.00	Too clayey	0.07
	Droughty	0.13	Shrink-swell	0.87	Hard to reclaim (dense layer)	0.10
	Organic matter content low	0.85				
	Water erosion	0.99				
Ws:						
Westland	Fair		Poor		Poor	
	Carbonate content	0.84	Wetness depth	0.00	Wetness depth	0.00
			Slope	0.00	Hard to reclaim (rock fragments)	0.34
			Low strength	0.00		

Table 20.--Construction Materials Part 2--Continued

Map symbol and soil name	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
Wt:						
Westland	Fair		Poor		Poor	
	Carbonate content	0.92	Wetness depth	0.00	Wetness depth	0.00
			Slope	0.00	Hard to reclaim (rock fragments)	0.34
			Low strength	0.00		
Urban Land	Not rated		Not rated		Not rated	
XeA:						
Xenia	Fair		Poor		Fair	
	Carbonate content	0.20	Slope	0.00	Hard to reclaim (dense layer)	0.84
	Organic matter content low	0.73	Wetness depth	0.89	Wetness depth	0.89
	Water erosion	0.99				
XeB:						
Xenia	Fair		Poor		Fair	
	Carbonate content	0.20	Slope	0.00	Hard to reclaim (dense layer)	0.84
	Organic matter content low	0.73	Wetness depth	0.89	Wetness depth	0.89
	Water erosion	0.99				

Table

TABLE 21.--BUILDING SITE DEVELOPMENT PART 1

(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 potential limitation. See text on page 203 for further explanation of ratings in this table.)

Map symbol and soil name	Dwellings without basements		Dwellings with basements		Small commercial buildings	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Ag:						
Algiers	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
BbB:						
Birkbeck	Somewhat limited		Very limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	1.00	Shrink-swell	0.50
	Depth to saturated zone	0.10	Shrink-swell	0.50	Depth to saturated zone	0.10
BcB:						
Birkbeck	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	0.97	Shrink-swell	0.50
			Shrink-swell	0.50	Slope	0.10
Bs:						
Brookston	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	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Bt:						
Brookston	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	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Urban Land	Not rated		Not rated		Not rated	
CaE2:						
Casco	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
CbD2:						
Casco	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.96	Slope	0.96	Slope	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
CcD2:						
Casco	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Eldean	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Shrink-swell	0.50			Shrink-swell	0.50
CdE2:						
Casco	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Rodman	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
CeA:						
Celina	Somewhat limited		Very limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	1.00	Shrink-swell	0.50
	Depth to saturated zone	0.10			Depth to saturated zone	0.10

Table 21.--Building Site Development Part 1--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
CeB:						
Celina	Somewhat limited		Very limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	1.00	Shrink-swell	0.50
	Depth to saturated zone	0.10			Depth to saturated zone	0.10
CfB:						
Celina	Somewhat limited		Very limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	1.00	Shrink-swell	0.50
	Depth to saturated zone	0.10	Shrink-swell	0.50	Depth to saturated zone	0.10
					Slope	0.10
Losantville	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.99	Depth to saturated zone	1.00	Depth to saturated zone	0.99
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
					Slope	0.10
ChB:						
Celina	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	0.99	Shrink-swell	0.50
			Shrink-swell	0.50		
Strawn	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
CrA:						
Crosby	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
CrB:						
Crosby	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
CsA:						
Crosby	Somewhat limited		Very limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	1.00	Shrink-swell	0.50
	Depth to saturated zone	0.47	Shrink-swell	0.50	Depth to saturated zone	0.47
Lewisburg	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	0.95	Shrink-swell	0.50
			Shrink-swell	0.50		
CsB:						
Crosby	Somewhat limited		Very limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	1.00	Shrink-swell	0.50
	Depth to saturated zone	0.47	Shrink-swell	0.50	Depth to saturated zone	0.47
					Slope	0.10
Lewisburg	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	0.95	Shrink-swell	0.50
			Shrink-swell	0.50	Slope	0.10
CtA:						
Crosby	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

Table 21.--Building Site Development Part 1--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
Celina	Somewhat limited		Very limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	1.00	Shrink-swell	0.50
	Depth to saturated zone	0.10	Shrink-swell	0.50	Depth to saturated zone	0.10
CtB:						
Crosby	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
Celina	Somewhat limited		Very limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	1.00	Shrink-swell	0.50
	Depth to saturated zone	0.10	Shrink-swell	0.50	Depth to saturated zone	0.10
Du:						
Dumps	Not rated		Not rated		Not rated	
EdB:						
Edenton	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
			Depth to soft bedrock	0.20		
EdC2:						
Edenton	Somewhat limited		Somewhat limited		Very limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Slope	1.00
	Slope	0.04	Depth to soft bedrock	0.20	Shrink-swell	0.50
			Slope	0.04		
EdD2:						
Edenton	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
	Slippage	0.50	Slippage	0.50	Slippage	0.50
			Depth to soft bedrock	0.20		
Ee:						
Eel	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	0.10	Depth to saturated zone	1.00	Depth to saturated zone	0.10
EmA:						
Eldean	Somewhat limited		Not limited		Somewhat limited	
	Shrink-swell	0.50			Shrink-swell	0.50
EmB:						
Eldean	Somewhat limited		Not limited		Somewhat limited	
	Shrink-swell	0.50			Shrink-swell	0.50
EmB2:						
Eldean	Somewhat limited		Not limited		Somewhat limited	
	Shrink-swell	0.50			Slope	0.68
					Shrink-swell	0.50
EmC2:						
Eldean	Somewhat limited		Not limited		Somewhat limited	
	Shrink-swell	0.50			Slope	0.81
					Shrink-swell	0.50
EnC3:						
Eldean	Somewhat limited		Somewhat limited		Very limited	
	Shrink-swell	0.50	Slope	0.16	Slope	1.00
	Slope	0.16			Shrink-swell	0.50

Table 21.--Building Site Development Part 1--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
EoC2:						
Eldean	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Slope	0.99
	Slope	0.01	Slope	0.01	Shrink-swell	0.50
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Slope	0.99
	Slope	0.01	Slope	0.01	Shrink-swell	0.50
EoD2:						
Eldean	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.96	Slope	0.96	Slope	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Miamian	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.96	Slope	0.96	Slope	1.00
EpC:						
Eldean	Somewhat limited		Somewhat limited		Very limited	
	Shrink-swell	0.50	Slope	0.04	Slope	1.00
	Slope	0.04			Shrink-swell	0.50
Urban Land	Not rated		Not rated		Not rated	
FaF:						
Fairmount Variant	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Depth to hard bedrock	0.54	Depth to hard bedrock	1.00	Depth to hard bedrock	0.54
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
	Slippage	0.50	Slippage	0.50	Slippage	0.50
FnA:						
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
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Gn:						
Genesee	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
Ko:						
Kokomo	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	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Lh:						
Linwood	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Subsidence	1.00	Subsidence	1.00	Subsidence	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Organic matter content	1.00			Organic matter content	1.00
Ln:						
Linwood	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Subsidence	1.00	Subsidence	1.00	Subsidence	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Organic matter content	1.00			Organic matter content	1.00

Table 21.--Building Site Development Part 1--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
LuF2:						
Lumberton	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Shrink-swell	0.50	Depth to hard bedrock	1.00	Shrink-swell	0.50
	Depth to hard bedrock	0.15	Shrink-swell	0.50	Depth to hard bedrock	0.15
MhA:						
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
MhB:						
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
MhB2:						
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
					Slope	0.10
MhC2:						
Miamian	Somewhat limited		Somewhat limited		Very limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Slope	1.00
	Slope	0.04	Slope	0.04	Shrink-swell	0.50
MhD2:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
MlB3:						
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Slope	0.68
					Shrink-swell	0.50
MlC3:						
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Slope	0.99
	Slope	0.01	Slope	0.01	Shrink-swell	0.50
MlD3:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
MmD2:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Casco	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
MmE2:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Casco	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
MoB2:						
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
					Slope	0.10
Eldean	Somewhat limited		Not limited		Somewhat limited	
	Shrink-swell	0.50			Shrink-swell	0.50
					Slope	0.10

Table 21.--Building Site Development Part 1--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
MoC2:						
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Slope	0.99
	Slope	0.01	Slope	0.01	Shrink-swell	0.50
Eldean	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Slope	0.01	Slope	0.99
	Slope	0.01			Shrink-swell	0.50
MpE:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Hennepin	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
MpF:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Hennepin	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
MqE2:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Shrink-swell	0.50	Depth to saturated zone	0.95	Shrink-swell	0.50
			Shrink-swell	0.50		
Thrifton	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Depth to saturated zone	0.99	Depth to saturated zone	1.00	Depth to saturated zone	0.99
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
MqF2:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Shrink-swell	0.50	Depth to saturated zone	0.95	Shrink-swell	0.50
			Shrink-swell	0.50		
Thrifton	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Depth to saturated zone	0.99	Depth to saturated zone	1.00	Depth to saturated zone	0.99
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
MrB:						
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
					Slope	0.10
Urban Land	Not rated		Not rated		Not rated	
MrC:						
Miamian	Somewhat limited		Somewhat limited		Very limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Slope	1.00
	Slope	0.04	Slope	0.04	Shrink-swell	0.50
Urban Land	Not rated		Not rated		Not rated	
Ms:						
Millsdale	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	1.00	Shrink-swell	1.00
	Depth to hard bedrock	0.79	Depth to hard bedrock	1.00	Depth to hard bedrock	0.79

Table 21.--Building Site Development Part 1--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
MtA:						
Milton	Somewhat limited		Very limited		Somewhat limited	
	Shrink-swell	0.50	Depth to hard bedrock	1.00	Shrink-swell	0.50
	Depth to hard bedrock	0.46	Shrink-swell	0.50	Depth to hard bedrock	0.46
MtB:						
Milton	Somewhat limited		Very limited		Somewhat limited	
	Shrink-swell	0.50	Depth to hard bedrock	1.00	Shrink-swell	0.50
	Depth to hard bedrock	0.46	Shrink-swell	0.50	Depth to hard bedrock	0.46
					Slope	0.10
MtC2:						
Milton	Somewhat limited		Very limited		Somewhat limited	
	Shrink-swell	0.50	Depth to hard bedrock	1.00	Slope	0.99
	Depth to hard bedrock	0.46	Shrink-swell	0.50	Shrink-swell	0.50
	Slope	0.01	Slope	0.01	Depth to hard bedrock	0.46
MUF:						
Milton Variant	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Shrink-swell	0.50	Depth to hard bedrock	1.00	Shrink-swell	0.50
	Depth to hard bedrock	0.46	Shrink-swell	0.50	Depth to hard bedrock	0.46
	Large stones content	0.01	Large stones content	0.01	Large stones content	0.01
OcA:						
Ockley	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
OcB:						
Ockley	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
OcB2:						
Ockley	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
					Slope	0.10
OdB:						
Ockley	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
					Slope	0.10
Urban Land	Not rated		Not rated		Not rated	
OeB:						
Odell	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Pa:						
Patton	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	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Pg:						
Pits, Gravel	Not rated		Not rated		Not rated	
Pu:						
Pits, Quarry	Not rated		Not rated		Not rated	

Table 21.--Building Site Development Part 1--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
Ra:						
Ragsdale	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	0.50			Shrink-swell	0.50
RbA:						
Randolph	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
	Depth to hard bedrock	0.03	Depth to hard bedrock	1.00	Depth to hard bedrock	0.03
RdA:						
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
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
RdB:						
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
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
ReA:						
Reesville	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
RhB:						
Ritchey	Very limited		Very limited		Very limited	
	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
RhC:						
Ritchey	Very limited		Very limited		Very limited	
	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Slope	0.99
	Slope	0.01	Slope	0.01	Shrink-swell	0.50
RhD:						
Ritchey	Very limited		Very limited		Very limited	
	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Slope	1.00
	Slope	1.00	Slope	1.00	Depth to hard bedrock	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
RhE2:						
Ritchey	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
RkE:						
Rodman	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
RpA:						
Ross	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
			Depth to saturated zone	0.15		

Table 21.--Building Site Development Part 1--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
RqA:						
Ross	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
			Depth to saturated zone	0.15		
Rs:						
Ross	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
			Depth to saturated zone	0.15		
RtA:						
Rush	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
RtB:						
Rush	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
RuA:						
Russell	Somewhat limited		Not limited		Somewhat limited	
	Shrink-swell	0.50			Shrink-swell	0.50
RvB:						
Russell	Somewhat limited		Not limited		Somewhat limited	
	Shrink-swell	0.50			Shrink-swell	0.50
					Slope	0.10
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
					Slope	0.10
RvB2:						
Russell	Somewhat limited		Not limited		Somewhat limited	
	Shrink-swell	0.50			Shrink-swell	0.50
					Slope	0.10
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
					Slope	0.10
RwB2:						
Russell	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
			Depth to saturated zone	0.24	Slope	0.10
Xenia	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	0.99	Shrink-swell	0.50
			Shrink-swell	0.50	Slope	0.10
SkA:						
Sligo	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
			Depth to saturated zone	0.95		
SlA:						
Sleeth	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
SnA:						
Sloan	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	0.50	Shrink-swell	0.50	Shrink-swell	0.50

Table 21.--Building Site Development Part 1--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
So:						
Sloan	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
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Sp:						
Fill Land	Not rated		Not rated		Not rated	
Sloan	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
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Sr:						
Urban Land	Not rated		Not rated		Not rated	
Sloan	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
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
ThA:						
Thackery	Somewhat limited		Very limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	1.00	Shrink-swell	0.50
	Depth to saturated zone	0.10	Shrink-swell	0.50	Depth to saturated zone	0.10
ThB:						
Thackery	Somewhat limited		Very limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	1.00	Shrink-swell	0.50
	Depth to saturated zone	0.10	Shrink-swell	0.50	Depth to saturated zone	0.10
					Slope	0.10
Ts:						
Tremont	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	0.13	Depth to saturated zone	1.00	Depth to saturated zone	0.13
TtA:						
Treaty	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	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Ud:						
Udorthents	Not rated		Not rated		Not rated	
Ur:						
Urban Land	Not rated		Not rated		Not rated	
W:						
Water	Not rated		Not rated		Not rated	
WaA:						
Warsaw	Somewhat limited		Not limited		Somewhat limited	
	Shrink-swell	0.50			Shrink-swell	0.50
WbA:						
Fill Land	Not rated		Not rated		Not rated	
Warsaw	Somewhat limited		Not limited		Somewhat limited	
	Shrink-swell	0.50			Shrink-swell	0.50

Table 21.--Building Site Development Part 1--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
WcA:						
Warsaw	Somewhat limited		Not limited		Somewhat limited	
	Shrink-swell	0.50			Shrink-swell	0.50
Urban Land	Not rated		Not rated		Not rated	
WeB:						
Wea	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
WpC3:						
Wapahani	Somewhat limited		Very limited		Very limited	
	Depth to saturated zone	0.99	Depth to saturated zone	1.00	Slope	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Depth to saturated zone	0.99
	Slope	0.04	Slope	0.04	Shrink-swell	0.50
Miamian	Somewhat limited		Somewhat limited		Very limited	
	Shrink-swell	0.50	Depth to saturated zone	0.95	Slope	1.00
	Slope	0.04	Shrink-swell	0.50	Shrink-swell	0.50
			Slope	0.04		
WpD3:						
Wapahani	Very limited		Very limited		Very limited	
	Slope	1.00	Depth to saturated zone	1.00	Slope	1.00
	Depth to saturated zone	0.99	Slope	1.00	Depth to saturated zone	0.99
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Shrink-swell	0.50	Depth to saturated zone	0.95	Shrink-swell	0.50
			Shrink-swell	0.50		
Ws:						
Westland	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	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Wt:						
Westland	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	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Urban Land	Not rated		Not rated		Not rated	
XeA:						
Xenia	Somewhat limited		Very limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	0.99	Shrink-swell	0.50
XeB:						
Xenia	Somewhat limited		Very limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	0.99	Shrink-swell	0.50

TABLE 22.--BUILDING SITE DEVELOPMENT PART 2

(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 potential limitation. See text on page 203 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
Ag:						
Algiers	Very limited		Very limited		Very limited	
	Flooding	1.00	Depth to saturated zone	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Flooding	0.80	Depth to saturated zone	1.00
	Frost action	1.00				
	Low strength	1.00				
BbB:						
Birkbeck	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				
	Shrink-swell	0.50				
	Depth to saturated zone	0.03				
BcB:						
Birkbeck	Very limited		Somewhat limited		Not limited	
	Frost action	1.00	Depth to saturated zone	0.97		
	Low strength	1.00				
	Shrink-swell	0.50				
Bs:						
Brookston	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
	Low strength	1.00				
	Frost action	1.00				
	Shrink-swell	0.50				
Bt:						
Brookston	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
	Low strength	1.00				
	Frost action	1.00				
	Shrink-swell	0.50				
Urban Land	Not rated		Not rated		Not rated	
CaE2:						
Casco	Very limited		Very limited		Very limited	
	Slope	1.00	Cutbanks cave	1.00	Slope	1.00
			Slope	1.00	Droughty	0.01
					Large stones content	0.01
CbD2:						
Casco	Somewhat limited		Very limited		Very limited	
	Slope	0.96	Cutbanks cave	1.00	Droughty	0.99
			Slope	0.96	Slope	0.96
					Gravel content	0.18
CcD2:						
Casco	Very limited		Very limited		Very limited	
	Slope	1.00	Cutbanks cave	1.00	Slope	1.00
			Slope	1.00	Droughty	0.93
Eldean	Very limited		Very limited		Very limited	
	Slope	1.00	Cutbanks cave	1.00	Slope	1.00
	Low strength	1.00	Slope	1.00	Carbonate content	1.00
	Shrink-swell	0.50	Too clayey	0.50		

Table 22.--Building Site Development Part 2--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
CdE2:						
Casco	Very limited		Very limited		Very limited	
	Slope	1.00	Cutbanks cave	1.00	Slope	1.00
			Slope	1.00	Droughty	0.93
Rodman	Very limited		Very limited		Very limited	
	Slope	1.00	Cutbanks cave	1.00	Slope	1.00
			Slope	1.00	Droughty	0.89
					Gravel content	0.02
CeA:						
Celina	Very limited		Very limited		Somewhat limited	
	Low strength	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.03
	Shrink-swell	0.50	Too clayey	0.50		
	Frost action	0.50				
	Depth to saturated zone	0.03				
CeB:						
Celina	Very limited		Very limited		Somewhat limited	
	Low strength	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.03
	Shrink-swell	0.50	Too clayey	0.50		
	Frost action	0.50				
	Depth to saturated zone	0.03				
CfB:						
Celina	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				
	Shrink-swell	0.50				
	Depth to saturated zone	0.03				
Losantville	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.75	Depth to saturated zone	1.00	Depth to saturated zone	0.75
	Frost action	0.50	Depth to dense layer	0.50	Droughty	0.70
ChB:						
Celina	Very limited		Somewhat limited		Not limited	
	Frost action	1.00	Depth to saturated zone	0.99		
	Low strength	1.00				
	Shrink-swell	0.50				
Strawn	Somewhat limited		Not limited		Not limited	
	Frost action	0.50				
	Low strength	0.28				
CrA:						
Crosby	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	0.50		
	Low strength	1.00	Depth to dense layer	0.50		
	Shrink-swell	0.50				
CrB:						
Crosby	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	0.50		
	Low strength	1.00	Depth to dense layer	0.50		
	Shrink-swell	0.50				

Table 22.--Building Site Development Part 2--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
CsA:						
Crosby	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.19
	Low strength	1.00	Depth to dense layer	0.50		
	Shrink-swell	0.50				
	Depth to saturated zone	0.19				
Lewisburg	Somewhat limited		Somewhat limited		Somewhat limited	
	Frost action	0.50	Depth to saturated zone	0.95	Droughty	0.05
CsB:						
Crosby	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.19
	Low strength	1.00	Depth to dense layer	0.50		
	Shrink-swell	0.50				
	Depth to saturated zone	0.19				
Lewisburg	Somewhat limited		Somewhat limited		Somewhat limited	
	Frost action	0.50	Depth to saturated zone	0.95	Droughty	0.05
CtA:						
Crosby	Very limited		Very limited		Very limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.99
	Low strength	1.00	Too clayey	0.50		
	Depth to saturated zone	0.99	Depth to dense layer	0.50		
	Shrink-swell	0.50				
Celina	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.03
	Depth to saturated zone	0.03				
CtB:						
Crosby	Very limited		Very limited		Very limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.99
	Low strength	1.00	Too clayey	0.50		
	Depth to saturated zone	0.99	Depth to dense layer	0.50		
	Shrink-swell	0.50				
Celina	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				
	Shrink-swell	0.50				
	Depth to saturated zone	0.03				
Du:						
Dumps	Not rated		Not rated		Not rated	
EdB:						
Edenton	Very limited		Somewhat limited		Somewhat limited	
	Low strength	1.00	Too clayey	0.50	Depth to bedrock	0.20
	Shrink-swell	0.50	Depth to soft bedrock	0.20		
	Frost action	0.50				

Table 22.--Building Site Development Part 2--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
EdC2:						
Edenton	Very limited		Somewhat limited		Somewhat limited	
	Low strength	1.00	Too clayey	0.50	Depth to bedrock	0.20
	Shrink-swell	0.50	Depth to soft bedrock	0.20	Slope	0.04
	Frost action	0.50	Slope	0.04		
	Slope	0.04				
EdD2:						
Edenton	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Low strength	1.00	Slippage	0.50	Depth to bedrock	0.20
	Shrink-swell	0.50	Too clayey	0.50		
	Slippage	0.50	Depth to soft bedrock	0.20		
	Frost action	0.50				
Ee:						
Eel	Very limited		Very limited		Very limited	
	Flooding	1.00	Depth to saturated zone	1.00	Flooding	1.00
	Frost action	1.00	Flooding	0.80	Depth to saturated zone	0.03
	Depth to saturated zone	0.03				
EmA:						
Eldean	Very limited		Very limited		Very limited	
	Low strength	1.00	Cutbanks cave	1.00	Carbonate content	1.00
	Shrink-swell	0.50	Too clayey	0.50		
EmB:						
Eldean	Very limited		Very limited		Very limited	
	Low strength	1.00	Cutbanks cave	1.00	Carbonate content	1.00
	Shrink-swell	0.50	Too clayey	0.50		
EmB2:						
Eldean	Very limited		Very limited		Very limited	
	Low strength	1.00	Cutbanks cave	1.00	Carbonate content	1.00
	Shrink-swell	0.50				
EmC2:						
Eldean	Very limited		Very limited		Very limited	
	Low strength	1.00	Cutbanks cave	1.00	Carbonate content	1.00
	Shrink-swell	0.50	Too clayey	0.50		
EnC3:						
Eldean	Very limited		Very limited		Very limited	
	Low strength	1.00	Cutbanks cave	1.00	Carbonate content	1.00
	Shrink-swell	0.50	Slope	0.16	Slope	0.16
	Slope	0.16				
EoC2:						
Eldean	Very limited		Very limited		Very limited	
	Low strength	1.00	Cutbanks cave	1.00	Carbonate content	1.00
	Shrink-swell	0.50	Too clayey	0.50	Droughty	0.06
	Frost action	0.50	Slope	0.01	Slope	0.01
	Slope	0.01				
Miamian	Very limited		Somewhat limited		Somewhat limited	
	Low strength	1.00	Slope	0.01	Slope	0.01
	Shrink-swell	0.50				
	Frost action	0.50				
	Slope	0.01				
EoD2:						
Eldean	Somewhat limited		Very limited		Very limited	
	Slope	0.96	Cutbanks cave	1.00	Carbonate content	1.00
	Frost action	0.50	Slope	0.96	Slope	0.96
			Too clayey	0.50	Droughty	0.31

Table 22.--Building Site Development Part 2--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
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Slope	0.96	Slope	0.96	Slope	0.96
	Frost action	0.50			Droughty	0.35
EpC:						
Eldean	Very limited		Very limited		Very limited	
	Low strength	1.00	Cutbanks cave	1.00	Carbonate content	1.00
	Shrink-swell	0.50	Too clayey	0.50	Slope	0.04
	Slope	0.04	Slope	0.04		
Urban Land	Not rated		Not rated		Not rated	
FaF:						
Fairmount Variant	Very limited		Very limited		Very limited	
	Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
	Low strength	1.00	Slope	1.00	Depth to bedrock	0.54
	Depth to hard bedrock	0.54	Slippage	0.50	Droughty	0.01
	Shrink-swell	0.50	Too clayey	0.50		
	Slippage	0.50				
FnA:						
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
	Frost action	1.00				
	Low strength	1.00				
	Shrink-swell	0.50				
Gn:						
Genesee	Very limited		Somewhat limited		Very limited	
	Flooding	1.00	Flooding	0.80	Flooding	1.00
	Frost action	0.50				
	Low strength	0.28				
Ko:						
Kokomo	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				
	Low strength	1.00				
	Shrink-swell	0.50				
Lh:						
Linwood	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
	Subsidence	1.00	Organic matter content	1.00		
	Frost action	1.00				
Ln:						
Linwood	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	Organic matter content	1.00
	Subsidence	1.00	Organic matter content	1.00	Depth to saturated zone	1.00
	Frost action	1.00				
LuF2:						
Lumberton	Very limited		Very limited		Very limited	
	Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
	Low strength	1.00	Slope	1.00	Depth to bedrock	0.16
	Frost action	1.00				
	Shrink-swell	0.50				
	Depth to hard bedrock	0.15				

Table 22.--Building Site Development Part 2--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
MhA:						
Miamian	Very limited		Not limited		Not limited	
	Low strength	1.00				
	Shrink-swell	0.50				
	Frost action	0.50				
MhB:						
Miamian	Somewhat limited		Not limited		Not limited	
	Shrink-swell	0.50				
	Frost action	0.50				
	Low strength	0.05				
MhB2:						
Miamian	Very limited		Not limited		Not limited	
	Low strength	1.00				
	Shrink-swell	0.50				
	Frost action	0.50				
MhC2:						
Miamian	Very limited		Somewhat limited		Somewhat limited	
	Low strength	1.00	Slope	0.04	Slope	0.04
	Shrink-swell	0.50				
	Frost action	0.50				
	Slope	0.04				
MhD2:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Low strength	1.00				
	Shrink-swell	0.50				
	Frost action	0.50				
MlB3:						
Miamian	Very limited		Not limited		Not limited	
	Low strength	1.00				
	Shrink-swell	0.50				
	Frost action	0.50				
MlC3:						
Miamian	Very limited		Somewhat limited		Somewhat limited	
	Low strength	1.00	Slope	0.01	Slope	0.01
	Shrink-swell	0.50				
	Frost action	0.50				
	Slope	0.01				
MlD3:						
Miamian	Very limited		Very limited		Very limited	
	Low strength	1.00	Slope	1.00	Slope	1.00
	Slope	1.00				
	Shrink-swell	0.50				
	Frost action	0.50				
MmD2:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Low strength	1.00				
	Shrink-swell	0.50				
	Frost action	0.50				
Casco	Very limited		Very limited		Very limited	
	Slope	1.00	Cutbanks cave	1.00	Slope	1.00
			Slope	1.00	Droughty	0.93
MmE2:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Low strength	1.00				
	Shrink-swell	0.50				
	Frost action	0.50				

Table 22.--Building Site Development Part 2--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
Casco	Very limited		Very limited		Very limited	
	Slope	1.00	Cutbanks cave	1.00	Slope	1.00
			Slope	1.00	Droughty	0.93
MoB2:						
Miamian	Very limited		Not limited		Not limited	
	Low strength	1.00				
	Shrink-swell	0.50				
	Frost action	0.50				
Eldean	Very limited		Very limited		Very limited	
	Low strength	1.00	Cutbanks cave	1.00	Carbonate content	1.00
	Shrink-swell	0.50	Too clayey	0.50		
MoC2:						
Miamian	Very limited		Somewhat limited		Somewhat limited	
	Low strength	1.00	Slope	0.01	Slope	0.01
	Shrink-swell	0.50				
	Frost action	0.50				
	Slope	0.01				
Eldean	Somewhat limited		Very limited		Very limited	
	Shrink-swell	0.50	Cutbanks cave	1.00	Carbonate content	1.00
	Slope	0.01	Too clayey	0.50	Slope	0.01
			Slope	0.01		
MpE:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Low strength	1.00				
	Shrink-swell	0.50				
	Frost action	0.50				
Hennepin	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Low strength	0.50				
	Frost action	0.50				
MpF:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Low strength	1.00				
	Shrink-swell	0.50				
	Frost action	0.50				
Hennepin	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Frost action	0.50				
	Low strength	0.05				
MqE2:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Low strength	1.00	Depth to saturated zone	0.95		
	Shrink-swell	0.50	Depth to dense layer	0.50		
	Frost action	0.50				
Thrifton	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Depth to saturated zone	0.75	Depth to saturated zone	1.00	Depth to saturated zone	0.75
	Frost action	0.50	Depth to dense layer	0.50	Droughty	0.65
MqF2:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Low strength	1.00	Depth to saturated zone	0.95		
	Shrink-swell	0.50	Depth to dense layer	0.50		
	Frost action	0.50				

Table 22.--Building Site Development Part 2--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
Thrifton	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Depth to saturated zone	0.75	Depth to saturated zone	1.00	Depth to saturated zone	0.75
	Frost action	0.50	Depth to dense layer	0.50	Droughty	0.74
MrB:						
Miamian	Very limited		Not limited		Not limited	
	Low strength	1.00				
	Shrink-swell	0.50				
	Frost action	0.50				
Urban Land	Not rated		Not rated		Not rated	
MrC:						
Miamian	Very limited		Somewhat limited		Somewhat limited	
	Low strength	1.00	Slope	0.04	Slope	0.04
	Shrink-swell	0.50				
	Frost action	0.50				
	Slope	0.04				
Urban Land	Not rated		Not rated		Not rated	
Ms:						
Millsdale	Very limited		Very limited		Very limited	
	Ponding	1.00	Depth to hard bedrock	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Low strength	1.00	Depth to saturated zone	1.00	Depth to bedrock	0.80
	Frost action	1.00				
	Shrink-swell	1.00				
MtA:						
Milton	Very limited		Very limited		Somewhat limited	
	Low strength	1.00	Depth to hard bedrock	1.00	Depth to bedrock	0.46
	Shrink-swell	0.50				
	Frost action	0.50				
	Depth to hard bedrock	0.46				
MtB:						
Milton	Very limited		Very limited		Somewhat limited	
	Low strength	1.00	Depth to hard bedrock	1.00	Depth to bedrock	0.46
	Shrink-swell	0.50				
	Frost action	0.50				
	Depth to hard bedrock	0.46				
MtC2:						
Milton	Very limited		Very limited		Somewhat limited	
	Low strength	1.00	Depth to hard bedrock	1.00	Depth to bedrock	0.46
	Shrink-swell	0.50	Slope	0.01	Slope	0.01
	Frost action	0.50				
	Depth to hard bedrock	0.46				
	Slope	0.01				

Table 22.--Building Site Development Part 2--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
MUF:						
Milton Variant	Very limited		Very limited		Very limited	
	Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
	Shrink-swell	0.50	Slope	1.00	Depth to bedrock	0.46
	Depth to hard bedrock	0.46	Large stones content	0.01	Gravel content	0.44
	Large stones content	0.01			Droughty	0.30
					Large stones content	0.03
OcA:						
Ockley	Somewhat limited		Very limited		Not limited	
	Low strength	0.90	Cutbanks cave	1.00		
	Shrink-swell	0.50				
	Frost action	0.50				
OcB:						
Ockley	Somewhat limited		Very limited		Not limited	
	Low strength	0.90	Cutbanks cave	1.00		
	Shrink-swell	0.50				
	Frost action	0.50				
OcB2:						
Ockley	Somewhat limited		Very limited		Not limited	
	Low strength	0.90	Cutbanks cave	1.00		
	Shrink-swell	0.50				
	Frost action	0.50				
OdB:						
Ockley	Somewhat limited		Very limited		Not limited	
	Low strength	0.90	Cutbanks cave	1.00		
	Shrink-swell	0.50				
	Frost action	0.50				
Urban Land	Not rated		Not rated		Not rated	
OeB:						
Odell	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				
Pa:						
Patton	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
	Low strength	1.00				
	Frost action	1.00				
	Shrink-swell	0.50				
Pg:						
Pits, Gravel	Not rated		Not rated		Not rated	
Pu:						
Pits, Quarry	Not rated		Not rated		Not rated	
Ra:						
Ragsdale	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				
	Low strength	1.00				
	Shrink-swell	0.50				

Table 22.--Building Site Development Part 2--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
RbA:						
Randolph	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to hard bedrock	1.00	Depth to saturated zone	1.00
	Low strength	1.00	Depth to saturated zone	1.00	Depth to bedrock	0.03
	Shrink-swell	1.00				
	Frost action	0.50				
	Depth to hard bedrock	0.03				
RdA:						
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
	Frost action	1.00				
	Low strength	1.00				
	Shrink-swell	0.50				
RdB:						
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
	Frost action	1.00				
	Low strength	1.00				
	Shrink-swell	0.50				
ReA:						
Reesville	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				
	Low strength	1.00				
	Shrink-swell	0.50				
RhB:						
Ritchey	Very limited		Very limited		Very limited	
	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
	Low strength	1.00			Droughty	0.82
	Shrink-swell	0.50				
	Frost action	0.50				
RhC:						
Ritchey	Very limited		Very limited		Very limited	
	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
	Low strength	1.00	Slope	0.01	Droughty	0.82
	Shrink-swell	0.50			Slope	0.01
	Frost action	0.50				
	Slope	0.01				
RhD:						
Ritchey	Very limited		Very limited		Very limited	
	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
	Low strength	1.00	Slope	1.00	Slope	1.00
	Slope	1.00			Droughty	0.82
	Shrink-swell	0.50				
	Frost action	0.50				
RhE2:						
Ritchey	Very limited		Very limited		Very limited	
	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Slope	1.00
	Slope	1.00	Slope	1.00	Depth to bedrock	1.00
	Low strength	1.00			Droughty	0.82
	Shrink-swell	0.50				
	Frost action	0.50				

Table 22.--Building Site Development Part 2--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
RkE:						
Rodman	Very limited		Very limited		Very limited	
	Slope	1.00	Cutbanks cave	1.00	Slope	1.00
			Slope	1.00	Droughty	1.00
					Gravel content	0.07
RpA:						
Ross	Very limited		Somewhat limited		Somewhat limited	
	Flooding	1.00	Flooding	0.60	Flooding	0.60
	Low strength	0.50	Depth to saturated zone	0.15		
	Frost action	0.50				
RqA:						
Ross	Very limited		Somewhat limited		Very limited	
	Flooding	1.00	Flooding	0.80	Flooding	1.00
	Frost action	0.50	Depth to saturated zone	0.15		
Rs:						
Ross	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Cutbanks cave	1.00	Flooding	0.60
	Frost action	0.50	Flooding	0.60		
	Low strength	0.05	Depth to saturated zone	0.15		
RtA:						
Rush	Very limited		Not limited		Not limited	
	Low strength	1.00				
	Frost action	1.00				
	Shrink-swell	0.50				
RtB:						
Rush	Very limited		Not limited		Not limited	
	Low strength	1.00				
	Frost action	1.00				
	Shrink-swell	0.50				
RuA:						
Russell	Very limited		Not limited		Not limited	
	Low strength	1.00				
	Shrink-swell	0.50				
	Frost action	0.50				
RvB:						
Russell	Very limited		Not limited		Not limited	
	Frost action	1.00				
	Low strength	1.00				
	Shrink-swell	0.50				
Miamian	Very limited		Not limited		Not limited	
	Low strength	1.00				
	Shrink-swell	0.50				
	Frost action	0.50				
RvB2:						
Russell	Very limited		Not limited		Not limited	
	Frost action	1.00				
	Low strength	1.00				
	Shrink-swell	0.50				
Miamian	Very limited		Not limited		Not limited	
	Low strength	1.00				
	Shrink-swell	0.50				
	Frost action	0.50				
RwB2:						
Russell	Very limited		Somewhat limited		Not limited	
	Low strength	1.00	Depth to dense layer	0.50		
	Frost action	1.00	Depth to saturated zone	0.24		
	Shrink-swell	0.50				

Table 22.--Building Site Development Part 2--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
Xenia	Very limited		Somewhat limited		Not limited	
	Low strength	1.00	Depth to saturated zone	0.99		
	Frost action	1.00				
	Shrink-swell	0.50				
SkA:						
Sligo	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Cutbanks cave	1.00	Flooding	0.60
	Low strength	0.50	Depth to saturated zone	0.95		
	Frost action	0.50	Flooding	0.60		
SlA:						
Sleeth	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Cutbanks cave	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Depth to saturated zone	1.00		
	Low strength	1.00				
	Shrink-swell	0.50				
SnA:						
Sloan	Very limited		Very limited		Very limited	
	Flooding	1.00	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	Flooding	0.60	Flooding	0.60
	Frost action	1.00				
	Low strength	1.00				
So:						
Sloan	Very limited		Very limited		Very limited	
	Flooding	1.00	Depth to saturated zone	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Flooding	0.80	Depth to saturated zone	1.00
	Frost action	1.00				
	Low strength	1.00				
	Shrink-swell	0.50				
Sp:						
Fill Land	Not rated		Not rated		Not rated	
Sloan	Very limited		Very limited		Very limited	
	Flooding	1.00	Depth to saturated zone	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Flooding	0.80	Depth to saturated zone	1.00
	Frost action	1.00				
	Low strength	1.00				
	Shrink-swell	0.50				
Sr:						
Urban Land	Not rated		Not rated		Not rated	
Sloan	Very limited		Very limited		Very limited	
	Flooding	1.00	Depth to saturated zone	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Flooding	0.80	Depth to saturated zone	1.00
	Frost action	1.00				
	Low strength	1.00				
	Shrink-swell	0.50				

Table 22.--Building Site Development Part 2--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
ThA:						
Thackery	Very limited		Very limited		Somewhat limited	
	Low strength	1.00	Cutbanks cave	1.00	Depth to saturated zone	0.03
	Shrink-swell	0.50	Depth to saturated zone	1.00		
	Frost action	0.50				
	Depth to saturated zone	0.03				
ThB:						
Thackery	Very limited		Very limited		Somewhat limited	
	Low strength	1.00	Cutbanks cave	1.00	Depth to saturated zone	0.03
	Shrink-swell	0.50	Depth to saturated zone	1.00		
	Frost action	0.50				
	Depth to saturated zone	0.03				
Ts:						
Tremont	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Depth to saturated zone	1.00	Flooding	0.60
	Frost action	1.00	Flooding	0.60	Depth to saturated zone	0.05
	Low strength	0.05				
	Depth to saturated zone	0.05				
TtA:						
Treaty	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				
	Low strength	1.00				
	Shrink-swell	0.50				
Ud:						
Udorthents	Not rated		Not rated		Not rated	
Ur:						
Urban Land	Not rated		Not rated		Not rated	
W:						
Water	Not rated		Not rated		Not rated	
WaA:						
Warsaw	Very limited		Very limited		Not limited	
	Low strength	1.00	Cutbanks cave	1.00		
	Shrink-swell	0.50				
	Frost action	0.50				
WbA:						
Fill Land	Not rated		Not rated		Not rated	
Warsaw	Very limited		Very limited		Not limited	
	Low strength	1.00	Cutbanks cave	1.00		
	Shrink-swell	0.50				
	Frost action	0.50				
WcA:						
Warsaw	Somewhat limited		Very limited		Not limited	
	Shrink-swell	0.50	Cutbanks cave	1.00		
	Frost action	0.50				
Urban Land	Not rated		Not rated		Not rated	

Table 22.--Building Site Development Part 2--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
WeB:						
Wea	Very limited		Very limited		Not limited	
	Low strength	1.00	Cutbanks cave	1.00		
	Shrink-swell	0.50				
	Frost action	0.50				
WpC3:						
Wapahani	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.75	Depth to saturated zone	1.00	Droughty	0.96
	Frost action	0.50	Depth to dense layer	0.50	Depth to saturated zone	0.75
	Slope	0.04	Slope	0.04	Slope	0.04
Miamian	Very limited		Somewhat limited		Somewhat limited	
	Low strength	1.00	Depth to saturated zone	0.95	Slope	0.04
	Shrink-swell	0.50	Depth to dense layer	0.50		
	Frost action	0.50	Slope	0.04		
	Slope	0.04				
WpD3:						
Wapahani	Very limited		Very limited		Very limited	
	Slope	1.00	Depth to saturated zone	1.00	Slope	1.00
	Depth to saturated zone	0.75	Slope	1.00	Droughty	0.92
	Frost action	0.50	Depth to dense layer	0.50	Depth to saturated zone	0.75
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Frost action	0.50	Depth to saturated zone	0.95	Droughty	0.05
	Low strength	0.05	Depth to dense layer	0.50		
Ws:						
Westland	Very limited		Very limited		Very limited	
	Ponding	1.00	Cutbanks cave	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Depth to saturated zone	1.00		
	Low strength	1.00				
	Shrink-swell	0.50				
Wt:						
Westland	Very limited		Very limited		Very limited	
	Ponding	1.00	Cutbanks cave	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Depth to saturated zone	1.00		
	Low strength	1.00				
	Shrink-swell	0.50				
Urban Land	Not rated		Not rated		Not rated	
XeA:						
Xenia	Very limited		Very limited		Not limited	
	Low strength	1.00	Depth to saturated zone	0.99		
	Frost action	1.00				
	Shrink-swell	0.50				
XeB:						
Xenia	Very limited		Very limited		Not limited	
	Low strength	1.00	Depth to saturated zone	0.99		
	Frost action	1.00				
	Shrink-swell	0.50				

TABLE 23.--SANITARY FACILITIES PART 1

(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 potential limitation. See text on page 204 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
Ag:				
Algiers	Very limited		Very limited	
	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Flooding	1.00
	Restricted permeability	0.46	Seepage	0.53
BbB:				
Birkbeck	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Seepage	0.53
BcB:				
Birkbeck	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Seepage	0.53
			Slope	0.34
Bs:				
Brookston	Very limited		Very limited	
	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Seepage	0.53
Bt:				
Brookston	Very limited		Very limited	
	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Seepage	0.53
Urban Land	Not rated		Not rated	
CaE2:				
Casco	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Filtering capacity	1.00	Seepage	1.00
CbD2:				
Casco	Very limited		Very limited	
	Filtering capacity	1.00	Slope	1.00
	Slope	0.96	Seepage	1.00

Table 23.--Sanitary Facilities Part 1--Continued

Map symbol and soil name	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
CcD2:				
Casco	Very limited		Very limited	
	Filtering capacity	1.00	Slope	1.00
	Slope	1.00	Seepage	1.00
Eldean	Very limited		Very limited	
	Filtering capacity	1.00	Slope	1.00
	Slope	1.00	Seepage	1.00
	Restricted permeability	0.46		
CdE2:				
Casco	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Filtering capacity	1.00	Seepage	1.00
Rodman	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Filtering capacity	1.00	Seepage	1.00
CeA:				
Celina	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00		
CeB:				
Celina	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Slope	0.09
CfB:				
Celina	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	0.34
Losantville	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	0.34
ChB:				
Celina	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Slope	0.09
Strawn	Very limited		Somewhat limited	
	Restricted permeability	1.00	Seepage	0.53
			Slope	0.09

Table 23.--Sanitary Facilities Part 1--Continued

Map symbol and soil name	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
CrA:				
Crosby	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00		
CrB:				
Crosby	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	0.09
CsA:				
Crosby	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	0.01
Lewisburg	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	0.28
CsB:				
Crosby	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	0.34
Lewisburg	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	0.34
			Seepage	0.28
CtA:				
Crosby	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	0.53
Celina	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00		
CtB:				
Crosby	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	0.53
			Slope	0.09

Table 23.--Sanitary Facilities Part 1--Continued

Map symbol and soil name	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
Celina	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	0.09
Du:				
Dumps	Not rated		Not rated	
EdB:				
Edenton	Very limited		Very limited	
	Restricted permeability	1.00	Depth to soft bedrock	1.00
	Depth to bedrock	1.00	Slope	0.09
EdC2:				
Edenton	Very limited		Very limited	
	Restricted permeability	1.00	Depth to soft bedrock	1.00
	Depth to bedrock	1.00	Slope	1.00
	Slope	0.04		
EdD2:				
Edenton	Very limited		Very limited	
	Restricted permeability	1.00	Depth to soft bedrock	1.00
	Depth to bedrock	1.00	Slope	1.00
	Slope	1.00		
	Slippage	0.50		
Ee:				
Eel	Very limited		Very limited	
	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Flooding	1.00
	Restricted permeability	0.46	Seepage	0.53
EmA:				
Eldean	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
	Restricted permeability	0.72		
EmB:				
Eldean	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
	Restricted permeability	0.72	Slope	0.09
EmB2:				
Eldean	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
	Restricted permeability	0.72	Slope	0.69

Table 23.--Sanitary Facilities Part 1--Continued

Map symbol and soil name	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
EmC2:				
Eldean	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
	Restricted permeability	0.72	Slope	0.92
EnC3:				
Eldean	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
	Restricted permeability	0.72	Slope	1.00
	Slope	0.16		
EoC2:				
Eldean	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
	Restricted permeability	0.46	Slope	1.00
	Slope	0.01		
Miamian	Very limited		Very limited	
	Restricted permeability	1.00	Slope	1.00
	Slope	0.01		
EoD2:				
Eldean	Very limited		Very limited	
	Filtering capacity	1.00	Slope	1.00
	Slope	0.96	Seepage	1.00
	Restricted permeability	0.46		
Miamian	Very limited		Very limited	
	Restricted permeability	1.00	Slope	1.00
	Slope	0.96		
EpC:				
Eldean	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
	Restricted permeability	0.72	Slope	1.00
	Slope	0.04		
Urban Land	Not rated		Not rated	
FaF:				
Fairmount Variant	Very limited		Very limited	
	Slope	1.00	Depth to hard bedrock	1.00
	Restricted permeability	1.00	Slope	1.00
	Depth to bedrock	1.00		
	Slippage	0.50		

Table 23.--Sanitary Facilities Part 1--Continued

Map symbol and soil name	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
FnA:				
Fincastle	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00		
Gn:				
Genesee	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Restricted permeability	0.46	Seepage	0.53
Ko:				
Kokomo	Very limited		Very limited	
	Restricted permeability	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00		
Lh:				
Linwood	Very limited		Very limited	
	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Subsidence	1.00	Seepage	1.00
	Restricted permeability	0.72	Organic matter content	1.00
Ln:				
Linwood	Very limited		Very limited	
	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Filtering capacity	1.00	Seepage	1.00
	Subsidence	1.00	Organic matter content	1.00
	Restricted permeability	0.72		
LuF2:				
Lumberton	Very limited		Very limited	
	Slope	1.00	Depth to hard bedrock	1.00
	Depth to bedrock	1.00	Slope	1.00
	Restricted permeability	0.46	Seepage	0.53
MhA:				
Miamian	Very limited		Somewhat limited	
	Restricted permeability	1.00	Slope	0.01
MhB:				
Miamian	Very limited		Somewhat limited	
	Restricted permeability	1.00	Slope	0.09

Table 23.--Sanitary Facilities Part 1--Continued

Map symbol and soil name	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
MhB2:				
Miamian	Very limited		Somewhat limited	
	Restricted permeability	1.00	Slope	0.34
MhC2:				
Miamian	Very limited		Very limited	
	Restricted permeability	1.00	Slope	1.00
	Slope	0.04		
MhD2:				
Miamian	Very limited		Very limited	
	Restricted permeability	1.00	Slope	1.00
	Slope	1.00		
MlB3:				
Miamian	Very limited		Somewhat limited	
	Restricted permeability	1.00	Slope	0.69
MlC3:				
Miamian	Very limited		Very limited	
	Restricted permeability	1.00	Slope	1.00
	Slope	0.01		
MlD3:				
Miamian	Very limited		Very limited	
	Restricted permeability	1.00	Slope	1.00
	Slope	1.00		
MmD2:				
Miamian	Very limited		Very limited	
	Restricted permeability	1.00	Slope	1.00
	Slope	1.00		
Casco	Very limited		Very limited	
	Filtering capacity	1.00	Slope	1.00
	Slope	1.00	Seepage	1.00
MmE2:				
Miamian	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Restricted permeability	1.00		
Casco	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Filtering capacity	1.00	Seepage	1.00
MoB2:				
Miamian	Very limited		Somewhat limited	
	Restricted permeability	1.00	Slope	0.34

Table 23.--Sanitary Facilities Part 1--Continued

Map symbol and soil name	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
Eldean	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
	Restricted permeability	0.72	Slope	0.34
MoC2:				
Miamian	Very limited		Very limited	
	Restricted permeability	1.00	Slope	1.00
	Slope	0.01		
Eldean	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
	Restricted permeability	0.72	Slope	1.00
	Slope	0.01		
MpE:				
Miamian	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Restricted permeability	1.00		
Hennepin	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Restricted permeability	1.00		
MpF:				
Miamian	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Restricted permeability	1.00		
Hennepin	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Restricted permeability	1.00		
MqE2:				
Miamian	Very limited		Very limited	
	Slope	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Slope	1.00
	Depth to saturated zone	1.00		
Thrifton	Very limited		Very limited	
	Slope	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Slope	1.00
	Depth to saturated zone	1.00		

Table 23.--Sanitary Facilities Part 1--Continued

Map symbol and soil name	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
MqF2:				
Miamian	Very limited		Very limited	
	Slope	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Slope	1.00
	Depth to saturated zone	1.00		
Thrifton	Very limited		Very limited	
	Slope	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Slope	1.00
	Depth to saturated zone	1.00		
MrB:				
Miamian	Very limited		Somewhat limited	
	Restricted permeability	1.00	Slope	0.34
Urban Land	Not rated		Not rated	
MrC:				
Miamian	Very limited		Very limited	
	Restricted permeability	1.00	Slope	1.00
	Slope	0.04		
Urban Land	Not rated		Not rated	
Ms:				
Millsdale	Very limited		Very limited	
	Ponding	1.00	Depth to hard bedrock	1.00
	Depth to saturated zone	1.00	Ponding	1.00
	Depth to bedrock	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.60	Seepage	0.40
MtA:				
Milton	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to hard bedrock	1.00
	Restricted permeability	0.46	Seepage	0.53
MtB:				
Milton	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to hard bedrock	1.00
	Restricted permeability	0.46	Seepage	0.53
			Slope	0.34

Table 23.--Sanitary Facilities Part 1--Continued

Map symbol and soil name	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
MtC2:				
Milton	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to hard bedrock	1.00
	Restricted permeability	0.46	Slope	1.00
	Slope	0.01	Seepage	0.53
MUF:				
Milton Variant	Very limited		Very limited	
	Slope	1.00	Depth to hard bedrock	1.00
	Depth to bedrock	1.00	Slope	1.00
	Restricted permeability	0.46	Seepage	0.53
	Large stones content	0.01	Large stones content	0.01
OcA:				
Ockley	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
	Restricted permeability	0.46		
OcB:				
Ockley	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
	Restricted permeability	0.46	Slope	0.09
OcB2:				
Ockley	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
	Restricted permeability	0.46	Slope	0.34
OdB:				
Ockley	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
	Restricted permeability	0.46	Slope	0.34
Urban Land	Not rated		Not rated	
OeB:				
Odell	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Seepage	0.53
			Slope	0.09

Table 23.--Sanitary Facilities Part 1--Continued

Map symbol and soil name	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
Pa:				
Patton	Very limited		Very limited	
	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00		
Pg:				
Pits, Gravel	Not rated		Not rated	
Pu:				
Pits, Quarry	Not rated		Not rated	
Ra:				
Ragsdale	Very limited		Very limited	
	Restricted permeability	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	0.53
RbA:				
Randolph	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to hard bedrock	1.00
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to bedrock	1.00	Seepage	0.53
RdA:				
Raub	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	0.53
RdB:				
Raub	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	0.53
			Slope	0.09
ReA:				
Reesville	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.72	Seepage	0.28
RhB:				
Ritchey	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to hard bedrock	1.00
			Seepage	0.53
			Slope	0.09

Table 23.--Sanitary Facilities Part 1--Continued

Map symbol and soil name	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
RhC:				
Ritchey	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to hard bedrock	1.00
	Slope	0.01	Slope	1.00
			Seepage	0.53
RhD:				
Ritchey	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to hard bedrock	1.00
	Slope	1.00	Slope	1.00
			Seepage	0.53
RhE2:				
Ritchey	Very limited		Very limited	
	Slope	1.00	Depth to hard bedrock	1.00
	Depth to bedrock	1.00	Slope	1.00
			Seepage	0.53
RkE:				
Rodman	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Filtering capacity	1.00	Seepage	1.00
RpA:				
Ross	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Restricted permeability	0.46	Seepage	1.00
	Depth to saturated zone	0.40		
RqA:				
Ross	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Restricted permeability	0.46	Seepage	1.00
	Depth to saturated zone	0.40		
Rs:				
Ross	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Restricted permeability	0.46	Seepage	0.53
	Depth to saturated zone	0.40		
RtA:				
Rush	Somewhat limited		Somewhat limited	
	Restricted permeability	0.46	Seepage	0.53
RtB:				
Rush	Somewhat limited		Somewhat limited	
	Restricted permeability	0.46	Seepage	0.53
			Slope	0.09

Table 23.--Sanitary Facilities Part 1--Continued

Map symbol and soil name	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
RuA:				
Russell	Very limited		Somewhat limited	
	Restricted permeability	1.00	Seepage	0.53
RvB:				
Russell	Very limited		Somewhat limited	
	Restricted permeability	1.00	Seepage	0.53
			Slope	0.34
Miamian	Very limited		Somewhat limited	
	Restricted permeability	1.00	Slope	0.34
RvB2:				
Russell	Very limited		Somewhat limited	
	Restricted permeability	1.00	Seepage	0.53
			Slope	0.34
Miamian	Very limited		Somewhat limited	
	Restricted permeability	1.00	Slope	0.34
RwB2:				
Russell	Very limited		Somewhat limited	
	Restricted permeability	1.00	Seepage	0.53
	Depth to saturated zone	0.65	Slope	0.34
			Depth to saturated zone	0.02
Xenia	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	0.53
			Slope	0.34
SkA:				
Sligo	Very limited		Very limited	
	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Flooding	1.00
	Filtering capacity	1.00	Seepage	1.00
	Restricted permeability	0.46		
SlA:				
Sleeth	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Filtering capacity	1.00	Seepage	1.00
	Restricted permeability	0.46		

Table 23.--Sanitary Facilities Part 1--Continued

Map symbol and soil name	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
SnA:				
Sloan	Very limited		Very limited	
	Flooding	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Flooding	1.00
	Restricted permeability	0.46	Seepage	0.53
So:				
Sloan	Very limited		Very limited	
	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Flooding	1.00
	Restricted permeability	0.72	Seepage	0.53
Sp:				
Fill Land	Not rated		Not rated	
Sloan	Very limited		Very limited	
	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Flooding	1.00
	Restricted permeability	0.72	Seepage	0.53
Sr:				
Urban Land	Not rated		Not rated	
Sloan	Very limited		Very limited	
	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Flooding	1.00
	Restricted permeability	0.46	Seepage	0.53
ThA:				
Thackery	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Filtering capacity	1.00	Seepage	1.00
	Restricted permeability	0.46	Slope	0.01
ThB:				
Thackery	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Filtering capacity	1.00	Seepage	1.00
	Restricted permeability	0.46	Slope	0.34

Table 23.--Sanitary Facilities Part 1--Continued

Map symbol and soil name	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
Ts:				
Tremont	Very limited		Very limited	
	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Flooding	1.00
	Restricted permeability	0.46	Seepage	1.00
TtA:				
Treaty	Very limited		Very limited	
	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.46	Seepage	0.53
Ud:				
Udorthents	Not rated		Not rated	
Ur:				
Urban Land	Not rated		Not rated	
W:				
Water	Not rated		Not rated	
WaA:				
Warsaw	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
	Restricted permeability	0.46		
WbA:				
Fill Land	Not rated		Not rated	
Warsaw	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
	Restricted permeability	0.46		
WcA:				
Warsaw	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
	Restricted permeability	0.46		
Urban Land	Not rated		Not rated	
WeB:				
Wea	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
	Restricted permeability	0.46		

Table 23.--Sanitary Facilities Part 1--Continued

Map symbol and soil name	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
WpC3:				
Wapahani	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	1.00
	Slope	0.04		
Miamian	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	1.00
	Slope	0.04		
WpD3:				
Wapahani	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	1.00
	Slope	1.00		
Miamian	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	1.00
	Slope	1.00		
Ws:				
Westland	Very limited		Very limited	
	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Filtering capacity	1.00	Seepage	1.00
	Restricted permeability	1.00		
Wt:				
Westland	Very limited		Very limited	
	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Filtering capacity	1.00	Seepage	1.00
	Restricted permeability	1.00		
Urban Land	Not rated		Not rated	

Table 23.--Sanitary Facilities Part 1--Continued

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons	
	Rating class and limiting features	Value	Rating class and limiting features	Value
XeA:				
Xenia	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Seepage	0.53
XeB:				
Xenia	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Seepage	0.53
			Slope	0.01

TABLE 24.--SANITARY FACILITIES PART 2

(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 potential limitation. See text on page 204 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
Ag:						
Algiers	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
	Too clayey	0.50				
BbB:						
Birkbeck	Very limited		Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.68
	Too clayey	0.50			Too clayey	0.50
BcB:						
Birkbeck	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	0.14
Bs:						
Brookston	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
Bt:						
Brookston	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
Urban Land	Not rated		Not rated		Not rated	
CaE2:						
Casco	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Seepage, bottom layer	1.00	Seepage	1.00	Seepage	1.00
	Too sandy	0.50			Too sandy	0.50
					Gravel content	0.11
CbD2:						
Casco	Very limited		Very limited		Very limited	
	Seepage, bottom layer	1.00	Seepage	1.00	Seepage	1.00
	Slope	0.96	Slope	0.96	Slope	0.96
	Too clayey	0.50			Too clayey	0.50
					Gravel content	0.02
CcD2:						
Casco	Very limited		Very limited		Very limited	
	Seepage, bottom layer	1.00	Seepage	1.00	Slope	1.00
	Slope	1.00	Slope	1.00	Too clayey	0.50
	Too clayey	0.50				
Eldean	Very limited		Very limited		Very limited	
	Seepage, bottom layer	1.00	Seepage	1.00	Too sandy	1.00
	Too sandy	1.00	Slope	1.00	Slope	1.00
	Slope	1.00			Carbonate content	1.00
					Gravel content	0.03

Table 24.--Sanitary Facilities Part 2--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
CdE2:						
Casco	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Seepage, bottom layer	1.00	Seepage	1.00	Too clayey	0.50
	Too clayey	0.50				
Rodman	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Seepage, bottom layer	1.00	Seepage	1.00	Too sandy	1.00
	Too sandy	1.00			Gravel content	1.00
CeA:						
Celina	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	0.44	Depth to saturated zone	0.68
CeB:						
Celina	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	0.44	Depth to saturated zone	0.68
CfB:						
Celina	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
Losantville	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.99	Too clayey	1.00
	Too clayey	1.00			Depth to saturated zone	0.99
ChB:						
Celina	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
Strawn	Somewhat limited		Not limited		Somewhat limited	
	Too clayey	0.50			Too clayey	0.50
CrA:						
Crosby	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
CrB:						
Crosby	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
CsA:						
Crosby	Very limited		Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.86
	Too clayey	0.50			Too clayey	0.50
Lewisburg	Somewhat limited		Not limited		Somewhat limited	
	Too clayey	0.50			Too clayey	0.50
	Depth to saturated zone	0.44			Depth to saturated zone	0.09
CsB:						
Crosby	Very limited		Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.86
	Too clayey	0.50			Too clayey	0.50

Table 24.--Sanitary Facilities Part 2--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
Lewisburg	Somewhat limited		Not limited		Somewhat limited	
	Too clayey	0.50			Too clayey	0.50
	Depth to saturated zone	0.44			Depth to saturated zone	0.09
CtA:						
Crosby	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	1.00
Celina	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
CtB:						
Crosby	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	1.00
					Hard to compact	1.00
Celina	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
Du:						
Dumps	Not rated		Not rated		Not rated	
EdB:						
Edenton	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Too clayey	0.50			Too clayey	0.50
EdC2:						
Edenton	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Too clayey	0.50	Slope	0.04	Too clayey	0.50
	Slope	0.04			Slope	0.04
EdD2:						
Edenton	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Slope	1.00	Slope	1.00	Slope	1.00
	Too clayey	0.50	Slippage	0.50	Too clayey	0.50
Ee:						
Eel	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Flooding	1.00	Depth to saturated zone	0.68
	Depth to saturated zone	1.00	Depth to saturated zone	1.00		
EmA:						
Eldean	Very limited		Very limited		Very limited	
	Seepage, bottom layer	1.00	Seepage	1.00	Too sandy	1.00
	Too sandy	1.00			Carbonate content	1.00
					Gravel content	0.03
EmB:						
Eldean	Very limited		Very limited		Very limited	
	Seepage, bottom layer	1.00	Seepage	1.00	Too sandy	1.00
	Too sandy	1.00			Carbonate content	1.00
					Gravel content	0.03

Table 24.--Sanitary Facilities Part 2--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
EmB2:						
Eldean	Very limited		Very limited		Very limited	
	Seepage, bottom layer	1.00	Seepage	1.00	Too sandy	1.00
	Too sandy	1.00			Carbonate content	1.00
					Gravel content	0.03
EmC2:						
Eldean	Very limited		Very limited		Very limited	
	Seepage, bottom layer	1.00	Seepage	1.00	Too sandy	1.00
	Too sandy	1.00			Carbonate content	1.00
					Gravel content	0.03
EnC3:						
Eldean	Very limited		Very limited		Very limited	
	Seepage, bottom layer	1.00	Seepage	1.00	Too sandy	1.00
	Too sandy	1.00	Slope	0.16	Carbonate content	1.00
	Slope	0.16			Slope	0.16
					Gravel content	0.03
EoC2:						
Eldean	Very limited		Very limited		Very limited	
	Seepage, bottom layer	1.00	Seepage	1.00	Seepage	1.00
	Too clayey	1.00	Slope	0.01	Too clayey	1.00
	Slope	0.01			Slope	0.01
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Too clayey	0.50	Slope	0.01	Too clayey	0.50
	Slope	0.01			Slope	0.01
EoD2:						
Eldean	Very limited		Very limited		Very limited	
	Seepage, bottom layer	1.00	Seepage	1.00	Too clayey	1.00
	Too clayey	1.00	Slope	0.96	Slope	0.96
	Slope	0.96				
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Slope	0.96	Slope	0.96	Slope	0.96
EpC:						
Eldean	Very limited		Very limited		Very limited	
	Seepage, bottom layer	1.00	Seepage	1.00	Too sandy	1.00
	Too sandy	1.00	Slope	0.04	Carbonate content	1.00
	Slope	0.04			Slope	0.04
					Gravel content	0.04
Urban Land	Not rated		Not rated		Not rated	
FaF:						
Fairmount Variant	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Too clayey	1.00
	Too clayey	1.00	Slippage	0.50	Hard to compact	1.00
					Depth to bedrock	1.00
FnA:						
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
Gn:						
Genesee	Very limited		Very limited		Not limited	
	Flooding	1.00	Flooding	1.00		

Table 24.--Sanitary Facilities Part 2--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
Ko:						
Kokomo	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			Hard to compact	1.00
					Too clayey	0.50
Lh:						
Linwood	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
			Seepage	1.00		
Ln:						
Linwood	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Organic matter content	1.00
	Ponding	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Organic matter content	1.00	Seepage	1.00	Depth to saturated zone	1.00
LuF2:						
Lumberton	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Too clayey	0.50			Too clayey	0.50
MhA:						
Miamian	Somewhat limited		Not limited		Somewhat limited	
	Too clayey	0.50			Too clayey	0.50
MhB:						
Miamian	Somewhat limited		Not limited		Somewhat limited	
	Too clayey	0.50			Too clayey	0.50
MhB2:						
Miamian	Somewhat limited		Not limited		Somewhat limited	
	Too clayey	0.50			Too clayey	0.50
MhC2:						
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Too clayey	0.50	Slope	0.04	Too clayey	0.50
	Slope	0.04			Slope	0.04
MhD2:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Too clayey	0.50			Too clayey	0.50
MlB3:						
Miamian	Somewhat limited		Not limited		Somewhat limited	
	Too clayey	0.50			Too clayey	0.50
MlC3:						
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Too clayey	0.50	Slope	0.01	Too clayey	0.50
	Slope	0.01			Slope	0.01
MlD3:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Too clayey	0.50			Too clayey	0.50
MmD2:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Too clayey	0.50			Too clayey	0.50

Table 24.--Sanitary Facilities Part 2--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
Casco	Very limited		Very limited		Very limited	
	Seepage, bottom layer	1.00	Seepage	1.00	Slope	1.00
	Slope	1.00	Slope	1.00	Too clayey	0.50
	Too clayey	0.50				
MmE2:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Too clayey	0.50			Too clayey	0.50
Casco	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Seepage, bottom layer	1.00	Seepage	1.00	Too clayey	0.50
	Too clayey	0.50				
MoB2:						
Miamian	Somewhat limited		Not limited		Somewhat limited	
	Too clayey	0.50			Too clayey	0.50
Eldean	Very limited		Very limited		Very limited	
	Seepage, bottom layer	1.00	Seepage	1.00	Carbonate content	1.00
	Too sandy	0.50			Too sandy	0.50
					Gravel content	0.03
MoC2:						
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Too clayey	0.50	Slope	0.01	Too clayey	0.50
	Slope	0.01			Slope	0.01
Eldean	Very limited		Very limited		Very limited	
	Seepage, bottom layer	1.00	Seepage	1.00	Too sandy	1.00
	Too sandy	1.00	Slope	0.01	Carbonate content	1.00
	Slope	0.01			Gravel content	0.03
					Slope	0.01
MpE:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Too clayey	0.50			Too clayey	0.50
Hennepin	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
MpF:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Too clayey	0.50			Too clayey	0.50
Hennepin	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
MqE2:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Too clayey	0.50			Too clayey	0.50
	Depth to saturated zone	0.44			Depth to saturated zone	0.09
Thrifton	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Slope	1.00	Slope	1.00
	Slope	1.00	Depth to saturated zone	0.99	Depth to saturated zone	0.99
MqF2:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Too clayey	0.50			Too clayey	0.50
	Depth to saturated zone	0.44			Depth to saturated zone	0.09

Table 24.--Sanitary Facilities Part 2--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
Thrifton	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Slope	1.00	Slope	1.00
	Slope	1.00	Depth to saturated zone	0.99	Depth to saturated zone	0.99
MrB:						
Miamian	Somewhat limited		Not limited		Somewhat limited	
	Too clayey	0.50			Too clayey	0.50
Urban Land	Not rated		Not rated		Not rated	
MrC:						
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Too clayey	0.50	Slope	0.04	Too clayey	0.50
	Slope	0.04			Slope	0.04
Urban Land	Not rated		Not rated		Not rated	
Ms:						
Millsdale	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
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Too clayey	0.50			Too clayey	0.50
MtA:						
Milton	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Too clayey	0.50			Too clayey	0.50
MtB:						
Milton	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Too clayey	0.50			Too clayey	0.50
MtC2:						
Milton	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Too clayey	0.50	Slope	0.01	Too clayey	0.50
	Slope	0.01			Slope	0.01
MUF:						
Milton Variant	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Too clayey	0.50			Too clayey	0.50
	Large stones content	0.01			Gravel content	0.13
					Large stones content	0.01
OcA:						
Ockley	Very limited		Not limited		Somewhat limited	
	Seepage, bottom layer	1.00			Too clayey	0.50
	Too clayey	0.50				
OcB:						
Ockley	Very limited		Not limited		Somewhat limited	
	Seepage, bottom layer	1.00			Too clayey	0.50
	Too clayey	0.50				
OcB2:						
Ockley	Very limited		Not limited		Somewhat limited	
	Seepage, bottom layer	1.00			Too clayey	0.50
	Too clayey	0.50				

Table 24.--Sanitary Facilities Part 2--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
OdB:						
Ockley	Very limited		Not limited		Somewhat limited	
	Seepage, bottom layer	1.00			Too clayey	0.50
	Too clayey	0.50				
Urban Land	Not rated		Not rated		Not rated	
OeB:						
Odell	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Pa:						
Patton	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
Pg:						
Pits, Gravel	Not rated		Not rated		Not rated	
Pu:						
Pits, Quarry	Not rated		Not rated		Not rated	
Ra:						
Ragsdale	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
RbA:						
Randolph	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Too clayey	0.50			Too clayey	0.50
RdA:						
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			Too clayey	0.50
RdB:						
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			Too clayey	0.50
ReA:						
Reesville	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
RhB:						
Ritchey	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Too clayey	1.00			Too clayey	1.00
RhC:						
Ritchey	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Too clayey	1.00	Slope	0.01	Too clayey	1.00
	Slope	0.01			Slope	0.01

Table 24.--Sanitary Facilities Part 2--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
RhD:						
Ritchey	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Too clayey	1.00	Slope	1.00	Too clayey	1.00
	Slope	1.00			Slope	1.00
RhE2:						
Ritchey	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
	Too clayey	1.00			Too clayey	1.00
RkE:						
Rodman	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Seepage, bottom layer	1.00	Seepage	1.00	Seepage	1.00
					Gravel content	0.04
RpA:						
Ross	Very limited		Very limited		Not limited	
	Flooding	1.00	Flooding	1.00		
	Depth to saturated zone	1.00	Depth to saturated zone	1.00		
	Seepage, bottom layer	1.00	Seepage	1.00		
RqA:						
Ross	Very limited		Very limited		Not limited	
	Flooding	1.00	Flooding	1.00		
	Depth to saturated zone	1.00	Depth to saturated zone	1.00		
	Seepage, bottom layer	1.00	Seepage	1.00		
Rs:						
Ross	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Too sandy	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00		
	Too sandy	1.00				
RtA:						
Rush	Very limited		Not limited		Somewhat limited	
	Seepage, bottom layer	1.00			Too clayey	0.50
	Too clayey	0.50				
RtB:						
Rush	Very limited		Not limited		Somewhat limited	
	Seepage, bottom layer	1.00			Too clayey	0.50
	Too clayey	0.50				
RuA:						
Russell	Not limited		Not limited		Not limited	
RvB:						
Russell	Not limited		Not limited		Not limited	
Miamian	Somewhat limited		Not limited		Somewhat limited	
	Too clayey	0.50			Too clayey	0.50
RvB2:						
Russell	Not limited		Not limited		Not limited	
Miamian	Somewhat limited		Not limited		Somewhat limited	
	Too clayey	0.50			Too clayey	0.50

Table 24.--Sanitary Facilities Part 2--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
RwB2:						
Russell	Somewhat limited		Not limited		Somewhat limited	
	Too clayey	0.50			Too clayey	0.50
Xenia	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
SkA:						
Sligo	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Flooding	1.00	Depth to saturated zone	0.09
	Depth to saturated zone	1.00	Depth to saturated zone	1.00		
	Seepage, bottom layer	1.00				
SlA:						
Sleeth	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, bottom layer	1.00			Too clayey	0.50
	Too clayey	0.50				
SnA:						
Sloan	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		
So:						
Sloan	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
	Too clayey	0.50				
Sp:						
Fill Land	Not rated		Not rated		Not rated	
Sloan	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
	Too clayey	0.50				
Sr:						
Urban Land	Not rated		Not rated		Not rated	
Sloan	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
	Too clayey	0.50				
ThA:						
Thackery	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Carbonate content	1.00
	Seepage, bottom layer	1.00			Depth to saturated zone	0.68
	Too clayey	0.50			Too clayey	0.50
					Gravel content	0.01

Table 24.--Sanitary Facilities Part 2--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
ThB:						
Thackery	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Carbonate content	1.00
	Seepage, bottom layer	1.00			Depth to saturated zone	0.68
	Too clayey	0.50			Too clayey	0.50
					Gravel content	0.01
Ts:						
Tremont	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Carbonate content	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.71
	Seepage, bottom layer	1.00				
TtA:						
Treaty	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
Ud:						
Udorthents	Not rated		Not rated		Not rated	
Ur:						
Urban Land	Not rated		Not rated		Not rated	
W:						
Water	Not rated		Not rated		Not rated	
WaA:						
Warsaw	Very limited		Very limited		Somewhat limited	
	Seepage, bottom layer	1.00	Seepage	1.00	Too sandy	0.50
	Too sandy	0.50			Gravel content	0.09
WbA:						
Fill Land	Not rated		Not rated		Not rated	
Warsaw	Very limited		Very limited		Somewhat limited	
	Seepage, bottom layer	1.00	Seepage	1.00	Too sandy	0.50
	Too sandy	0.50			Gravel content	0.09
WcA:						
Warsaw	Very limited		Very limited		Somewhat limited	
	Seepage, bottom layer	1.00	Seepage	1.00	Too sandy	0.50
	Too sandy	0.50			Gravel content	0.08
Urban Land	Not rated		Not rated		Not rated	
WeB:						
Wea	Very limited		Not limited		Somewhat limited	
	Seepage, bottom layer	1.00			Too clayey	0.50
	Too clayey	0.50				
WpC3:						
Wapahani	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.99	Depth to saturated zone	0.99
	Too clayey	0.50	Slope	0.04	Too clayey	0.50
	Slope	0.04			Slope	0.04

Table 24.--Sanitary Facilities Part 2--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
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Too clayey	0.50	Slope	0.04	Too clayey	0.50
	Depth to saturated zone	0.44			Depth to saturated zone	0.09
	Slope	0.04			Slope	0.04
WpD3:						
Wapahani	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Slope	1.00	Slope	1.00
	Slope	1.00	Depth to saturated zone	0.99	Depth to saturated zone	0.99
	Too clayey	0.50			Too clayey	0.50
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Too clayey	0.50			Too clayey	0.50
	Depth to saturated zone	0.44			Depth to saturated zone	0.09
Ws:						
Westland	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
	Seepage, bottom layer	1.00			Too clayey	0.50
	Too clayey	0.50				
Wt:						
Westland	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
	Seepage, bottom layer	1.00			Too clayey	0.50
	Too clayey	0.50				
Urban Land	Not rated		Not rated		Not rated	
XeA:						
Xenia	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.86	Depth to saturated zone	0.19	Depth to saturated zone	0.47
XeB:						
Xenia	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.86	Depth to saturated zone	0.19	Depth to saturated zone	0.47

TABLE 25.--AGRICULTURAL WASTE 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 on page 206 for further explanation of ratings in this table.)

Map symbol and soil name	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Ag:						
Algiers	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Leaching	0.50				
BbB:						
Birkbeck	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Depth to saturated zone	0.95
	Slow water movement	0.41	Slow water movement	0.31	Slow water movement	0.31
	Too acid	0.02	Too acid	0.07	Too acid	0.07
BcB:						
Birkbeck	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.53	Depth to saturated zone	0.53	Depth to saturated zone	0.53
	Slow water movement	0.41	Slow water movement	0.31	Slow water movement	0.31
	Too acid	0.02	Too acid	0.07	Too steep for surface application	0.08
					Too acid	0.07
Bs:						
Brookston	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
	Leaching	0.70	Slow water movement	0.31	Slow water movement	0.31
	Slow water movement	0.41				
Bt:						
Brookston	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
	Leaching	0.70	Slow water movement	0.31	Slow water movement	0.31
	Slow water movement	0.41				
Urban Land	Not rated		Not rated		Not rated	
CaE2:						
Casco	Very limited		Very limited		Very limited	
	Slope	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Filtering capacity	1.00	Slope	1.00	Too steep for surface application	1.00
	Strongly contrasting textural stratification	0.99	Strongly contrasting textural stratification	0.99	Too steep for sprinkler application	1.00
	Droughty	0.45	Droughty	0.45	Droughty	0.45

Table 25.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
CbD2:						
Casco	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Droughty	1.00	Droughty	1.00
	Strongly contrasting textural stratification	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Droughty	1.00	Strongly contrasting textural stratification	1.00	Too steep for surface application	1.00
	Slope	0.96	Slope	0.96	Too steep for sprinkler application	0.98
CcD2:						
Casco	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Droughty	1.00	Droughty	1.00
	Droughty	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Slope	1.00	Slope	1.00	Too steep for surface application	1.00
	Strongly contrasting textural stratification	0.99	Strongly contrasting textural stratification	0.99	Too steep for sprinkler application	1.00
Eldean	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Slope	1.00	Slope	1.00	Too steep for surface application	1.00
	Droughty	0.04	Droughty	0.04	Too steep for sprinkler application	1.00
					Droughty	0.04
CdE2:						
Casco	Very limited		Very limited		Very limited	
	Slope	1.00	Droughty	1.00	Droughty	1.00
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Droughty	1.00	Slope	1.00	Too steep for surface application	1.00
	Strongly contrasting textural stratification	0.99	Strongly contrasting textural stratification	0.99	Too steep for sprinkler application	1.00
Rodman	Very limited		Very limited		Very limited	
	Slope	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Filtering capacity	1.00	Slope	1.00	Too steep for surface application	1.00
	Droughty	0.98	Droughty	0.98	Too steep for sprinkler application	1.00
	Leaching	0.45			Droughty	0.98
CeA:						
Celina	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Depth to saturated zone	0.95
	Slow water movement	0.41	Slow water movement	0.31	Slow water movement	0.31

Table 25.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
CeB:						
Celina	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Depth to saturated zone	0.95
	Slow water movement	0.41	Slow water movement	0.31	Slow water movement	0.31
CfB:						
Celina	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Depth to saturated zone	0.95
	Shallow to densic materials	0.64	Shallow to densic materials	0.64	Slow water movement	0.31
	Slow water movement	0.41	Slow water movement	0.31	Too steep for surface application	0.08
	Droughty	0.04	Droughty	0.04	Droughty	0.04
Losantville	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Dense layer	1.00	Shallow to densic materials	1.00	Droughty	1.00
	Shallow to densic materials	1.00	Droughty	1.00	Slow water movement	0.31
	Droughty	1.00	Slow water movement	0.31	Too steep for surface application	0.08
	Slow water movement	0.41				
ChB:						
Celina	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.68	Depth to saturated zone	0.68	Depth to saturated zone	0.68
	Shallow to densic materials	0.46	Shallow to densic materials	0.46	Slow water movement	0.31
	Slow water movement	0.41	Slow water movement	0.31	Droughty	0.01
	Droughty	0.01	Droughty	0.01		
Strawn	Somewhat limited		Somewhat limited		Somewhat limited	
	Shallow to densic materials	0.95	Shallow to densic materials	0.95	Droughty	0.64
	Droughty	0.64	Droughty	0.64		
CrA:						
Crosby	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slow water movement	1.00	Slow water movement	1.00	Slow water movement	1.00
	Too acid	0.02	Too acid	0.07	Too acid	0.07
CrB:						
Crosby	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slow water movement	1.00	Slow water movement	1.00	Slow water movement	1.00
	Too acid	0.02	Too acid	0.07	Too acid	0.07
CsA:						
Crosby	Very limited		Very limited		Very limited	
	Slow water movement	1.00	Slow water movement	1.00	Slow water movement	1.00
	Depth to saturated zone	0.99	Depth to saturated zone	0.99	Depth to saturated zone	0.99
	Shallow to densic materials	0.35	Too acid	0.42	Too acid	0.42
	Too acid	0.11	Shallow to densic materials	0.35		

Table 25.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
Lewisburg	Very limited		Very limited		Somewhat limited	
	Dense layer	1.00	Shallow to densic materials	0.99	Droughty	0.88
	Shallow to densic materials	0.99	Droughty	0.88	Depth to saturated zone	0.43
	Droughty	0.88	Depth to saturated zone	0.43		
	Depth to saturated zone	0.43				
CsB:						
Crosby	Very limited		Very limited		Very limited	
	Slow water movement	1.00	Slow water movement	1.00	Slow water movement	1.00
	Depth to saturated zone	0.99	Depth to saturated zone	0.99	Depth to saturated zone	0.99
	Shallow to densic materials	0.35	Too acid	0.42	Too acid	0.42
	Too acid	0.11	Shallow to densic materials	0.35	Too steep for surface application	0.08
Lewisburg	Very limited		Very limited		Somewhat limited	
	Dense layer	1.00	Shallow to densic materials	0.99	Droughty	0.88
	Shallow to densic materials	0.99	Droughty	0.88	Depth to saturated zone	0.43
	Droughty	0.88	Depth to saturated zone	0.43	Too steep for surface application	0.08
	Depth to saturated zone	0.43				
CtA:						
Crosby	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slow water movement	1.00	Slow water movement	1.00	Slow water movement	1.00
	Droughty	0.16	Droughty	0.16	Droughty	0.16
	Shallow to densic materials	0.15	Shallow to densic materials	0.15	Too acid	0.07
	Too acid	0.02	Too acid	0.07		
Celina	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Depth to saturated zone	0.95
	Shallow to densic materials	0.90	Shallow to densic materials	0.90	Droughty	0.32
	Slow water movement	0.41	Droughty	0.32	Slow water movement	0.31
	Droughty	0.32	Slow water movement	0.31		
CtB:						
Crosby	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slow water movement	1.00	Slow water movement	1.00	Slow water movement	1.00
	Droughty	0.17	Droughty	0.17	Droughty	0.17
	Shallow to densic materials	0.10	Shallow to densic materials	0.10	Too acid	0.07
	Too acid	0.02	Too acid	0.07		
Celina	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Depth to saturated zone	0.95
	Shallow to densic materials	0.79	Shallow to densic materials	0.79	Slow water movement	0.31
	Slow water movement	0.41	Slow water movement	0.31	Droughty	0.19
	Droughty	0.19	Droughty	0.19		

Table 25.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
Du:						
Dumps	Not rated		Not rated		Not rated	
EdB:						
Edenton	Somewhat limited		Very limited		Somewhat limited	
	Slow water movement	0.74	Low adsorption	1.00	Slow water movement	0.60
	Droughty	0.23	Slow water movement	0.60	Droughty	0.23
	Depth to bedrock	0.20	Droughty	0.23	Depth to bedrock	0.20
			Depth to bedrock	0.20		
EdC2:						
Edenton	Somewhat limited		Very limited		Very limited	
	Slow water movement	0.74	Low adsorption	1.00	Too steep for surface application	1.00
	Droughty	0.23	Slow water movement	0.60	Slow water movement	0.60
	Depth to bedrock	0.20	Droughty	0.23	Droughty	0.23
	Slope	0.04	Depth to bedrock	0.20	Too steep for sprinkler application	0.22
			Slope	0.04	Depth to bedrock	0.20
EdD2:						
Edenton	Very limited		Very limited		Very limited	
	Slope	1.00	Low adsorption	1.00	Too steep for surface application	1.00
	Slow water movement	0.74	Slope	1.00	Too steep for sprinkler application	1.00
	Droughty	0.23	Slow water movement	0.60	Slow water movement	0.60
	Depth to bedrock	0.20	Droughty	0.23	Droughty	0.23
			Depth to bedrock	0.20	Depth to bedrock	0.20
Ee:						
Eel	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Depth to saturated zone	0.95
EmA:						
Eldean	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Droughty	0.04	Droughty	0.04	Droughty	0.04
EmB:						
Eldean	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Droughty	0.04	Droughty	0.04	Droughty	0.04
EmB2:						
Eldean	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Droughty	0.04	Droughty	0.04	Too steep for surface application	0.32
					Droughty	0.04

Table 25.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
EmC2:						
Eldean	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Droughty	0.04	Droughty	0.04	Too steep for surface application	0.68
					Droughty	0.04
EnC3:						
Eldean	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Slope	0.16	Slope	0.16	Too steep for surface application	1.00
	Droughty	0.04	Droughty	0.04	Too steep for sprinkler application	0.40
					Droughty	0.04
EoC2:						
Eldean	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Droughty	0.89	Droughty	0.89	Too steep for surface application	1.00
	Strongly contrasting textural stratification	0.46	Strongly contrasting textural stratification	0.46	Droughty	0.89
	Slope	0.01	Slope	0.01	Too steep for sprinkler application	0.10
Miamian	Somewhat limited		Somewhat limited		Very limited	
	Shallow to densic materials	0.71	Shallow to densic materials	0.71	Too steep for surface application	1.00
	Droughty	0.46	Droughty	0.46	Droughty	0.46
	Slow water movement	0.41	Slow water movement	0.31	Slow water movement	0.31
	Slope	0.01	Slope	0.01	Too steep for sprinkler application	0.10
EoD2:						
Eldean	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Droughty	0.98	Droughty	0.98	Too steep for surface application	1.00
	Slope	0.96	Slope	0.96	Droughty	0.98
	Strongly contrasting textural stratification	0.79	Strongly contrasting textural stratification	0.79	Too steep for sprinkler application	0.98
Miamian	Very limited		Somewhat limited		Very limited	
	Dense layer	1.00	Droughty	0.99	Too steep for surface application	1.00
	Droughty	0.99	Shallow to densic materials	0.97	Droughty	0.99
	Shallow to densic materials	0.97	Slope	0.96	Too steep for sprinkler application	0.98
	Slope	0.96	Slow water movement	0.31	Slow water movement	0.31
	Slow water movement	0.41				

Table 25.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
EpC:						
Eldean	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Slope	0.04	Slope	0.04	Too steep for surface application	1.00
	Droughty	0.04	Droughty	0.04	Too steep for sprinkler application	0.22
					Droughty	0.04
Urban Land	Not rated		Not rated		Not rated	
FaF:						
Fairmount Variant	Very limited		Very limited		Very limited	
	Slope	1.00	Low adsorption	1.00	Too steep for surface application	1.00
	Droughty	0.77	Slope	1.00	Too steep for sprinkler application	1.00
	Depth to bedrock	0.54	Droughty	0.77	Droughty	0.77
	Slow water movement	0.41	Depth to bedrock	0.54	Depth to bedrock	0.54
	Runoff	0.40	Slow water movement	0.31	Slow water movement	0.31
FnA:						
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
	Slow water movement	0.41	Slow water movement	0.31	Slow water movement	0.31
	Too acid	0.02	Too acid	0.07	Too acid	0.07
Gn:						
Genesee	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
Ko:						
Kokomo	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
	Slow water movement	1.00	Slow water movement	1.00	Slow water movement	1.00
	Too acid	0.02	Too acid	0.07	Too acid	0.07
Lh:						
Linwood	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
	Leaching	0.90	Low adsorption	1.00	Too acid	0.07
	Too acid	0.02	Too acid	0.07		
Ln:						
Linwood	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	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
	Leaching	0.90	Low adsorption	1.00		

Table 25.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
LuF2:						
Lumberton	Very limited		Very limited		Very limited	
	Slope	1.00	Low adsorption	1.00	Too steep for surface application	1.00
	Depth to bedrock	0.16	Slope	1.00	Too steep for sprinkler application	1.00
	Droughty	0.03	Depth to bedrock	0.16	Depth to bedrock	0.16
			Droughty	0.03	Droughty	0.03
MhA:						
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Slow water movement	0.41	Slow water movement	0.31	Slow water movement	0.31
MhB:						
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Slow water movement	0.41	Slow water movement	0.31	Slow water movement	0.31
	Too acid	0.05	Too acid	0.21	Too acid	0.21
MhB2:						
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Slow water movement	0.41	Slow water movement	0.31	Slow water movement	0.31
	Too acid	0.05	Too acid	0.21	Too acid	0.21
					Too steep for surface application	0.08
MhC2:						
Miamian	Somewhat limited		Somewhat limited		Very limited	
	Slow water movement	0.41	Slow water movement	0.31	Too steep for surface application	1.00
	Too acid	0.05	Too acid	0.21	Slow water movement	0.31
	Slope	0.04	Slope	0.04	Too steep for sprinkler application	0.22
					Too acid	0.21
MhD2:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Too steep for surface application	1.00
	Slow water movement	0.41	Slow water movement	0.31	Too steep for sprinkler application	1.00
	Too acid	0.05	Too acid	0.21	Slow water movement	0.31
					Too acid	0.21
MlB3:						
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Slow water movement	0.41	Too acid	0.31	Too steep for surface application	0.32
	Too acid	0.08	Slow water movement	0.31	Too acid	0.31
					Slow water movement	0.31

Table 25.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
MlC3:						
Miamian	Somewhat limited		Somewhat limited		Very limited	
	Slow water movement	0.41	Slow water movement	0.31	Too steep for surface application	1.00
	Too acid	0.05	Too acid	0.21	Slow water movement	0.31
	Slope	0.01	Slope	0.01	Too acid	0.21
					Too steep for sprinkler application	0.10
MlD3:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Too steep for surface application	1.00
	Slow water movement	0.41	Slow water movement	0.31	Too steep for sprinkler application	1.00
	Too acid	0.05	Too acid	0.21	Slow water movement	0.31
					Too acid	0.21
MmD2:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Too steep for surface application	1.00
	Slow water movement	0.41	Slow water movement	0.31	Too steep for sprinkler application	1.00
	Too acid	0.05	Too acid	0.21	Slow water movement	0.31
					Too acid	0.21
Casco	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Droughty	1.00	Droughty	1.00
	Droughty	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Slope	1.00	Slope	1.00	Too steep for surface application	1.00
	Strongly contrasting textural stratification	0.99	Strongly contrasting textural stratification	0.99	Too steep for sprinkler application	1.00
MmE2:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Too steep for surface application	1.00
	Slow water movement	0.41	Slow water movement	0.31	Too steep for sprinkler application	1.00
	Too acid	0.05	Too acid	0.21	Slow water movement	0.31
					Too acid	0.21
Casco	Very limited		Very limited		Very limited	
	Slope	1.00	Droughty	1.00	Droughty	1.00
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Droughty	1.00	Slope	1.00	Too steep for surface application	1.00
	Strongly contrasting textural stratification	0.99	Strongly contrasting textural stratification	0.99	Too steep for sprinkler application	1.00

Table 25.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
MoB2:						
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Slow water movement	0.41	Slow water movement	0.31	Slow water movement	0.31
	Too acid	0.05	Too acid	0.21	Too acid	0.21
					Too steep for surface application	0.08
Eldean	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Droughty	0.04	Droughty	0.04	Too steep for surface application	0.08
					Droughty	0.04
MoC2:						
Miamian	Somewhat limited		Somewhat limited		Very limited	
	Slow water movement	0.41	Slow water movement	0.31	Too steep for surface application	1.00
	Too acid	0.05	Too acid	0.21	Slow water movement	0.31
	Slope	0.01	Slope	0.01	Too acid	0.21
					Too steep for sprinkler application	0.10
Eldean	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Droughty	0.04	Droughty	0.04	Too steep for surface application	1.00
	Slope	0.01	Slope	0.01	Too steep for sprinkler application	0.10
					Droughty	0.04
MpE:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Too steep for surface application	1.00
	Slow water movement	0.41	Slow water movement	0.31	Too steep for sprinkler application	1.00
	Too acid	0.05	Too acid	0.21	Slow water movement	0.31
					Too acid	0.21
Hennepin	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Too steep for surface application	1.00
	Dense layer	1.00	Slow water movement	0.31	Too steep for sprinkler application	1.00
	Slow water movement	0.41			Slow water movement	0.31
MpF:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Too steep for surface application	1.00
	Slow water movement	0.41	Slow water movement	0.31	Too steep for sprinkler application	1.00
	Too acid	0.05	Too acid	0.21	Slow water movement	0.31
					Too acid	0.21

Table 25.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
Hennepin	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Too steep for surface application	1.00
	Dense layer	1.00	Slow water movement	0.31	Too steep for sprinkler application	1.00
	Slow water movement	0.41	Droughty	0.01	Slow water movement	0.31
	Droughty	0.01			Droughty	0.01
MqE2:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Too steep for surface application	1.00
	Depth to saturated zone	0.43	Depth to saturated zone	0.43	Too steep for sprinkler application	1.00
	Slow water movement	0.41	Slow water movement	0.31	Depth to saturated zone	0.43
	Shallow to densic materials	0.01	Shallow to densic materials	0.01	Slow water movement	0.31
Thrifton	Very limited		Very limited		Very limited	
	Slope	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	1.00	Too steep for surface application	1.00
	Dense layer	1.00	Shallow to densic materials	1.00	Too steep for sprinkler application	1.00
	Shallow to densic materials	1.00	Droughty	1.00	Droughty	1.00
	Droughty	1.00	Slow water movement	0.31	Slow water movement	0.31
MqF2:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Too steep for surface application	1.00
	Depth to saturated zone	0.43	Depth to saturated zone	0.43	Too steep for sprinkler application	1.00
	Slow water movement	0.41	Slow water movement	0.31	Depth to saturated zone	0.43
	Shallow to densic materials	0.01	Shallow to densic materials	0.01	Slow water movement	0.31
Thrifton	Very limited		Very limited		Very limited	
	Slope	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	1.00	Too steep for surface application	1.00
	Dense layer	1.00	Shallow to densic materials	1.00	Too steep for sprinkler application	1.00
	Shallow to densic materials	1.00	Droughty	1.00	Droughty	1.00
	Droughty	1.00	Slow water movement	0.31	Slow water movement	0.31
MrB:						
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Slow water movement	0.41	Slow water movement	0.31	Slow water movement	0.31
	Too acid	0.05	Too acid	0.21	Too acid	0.21
					Too steep for surface application	0.08

Table 25.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
Urban Land	Not rated		Not rated		Not rated	
MrC:						
Miamian	Somewhat limited		Somewhat limited		Very limited	
	Slow water movement	0.41	Too acid	0.42	Too steep for surface application	1.00
	Too acid	0.11	Slow water movement	0.31	Too acid	0.42
	Slope	0.04	Slope	0.04	Slow water movement	0.31
					Too steep for sprinkler application	0.22
Urban Land	Not rated		Not rated		Not rated	
Ms:						
Millsdale	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
	Depth to bedrock	0.80	Low adsorption	1.00	Depth to bedrock	0.80
	Droughty	0.64	Depth to bedrock	0.80	Droughty	0.64
	Leaching	0.50	Droughty	0.64	Too acid	0.21
MtA:						
Milton	Somewhat limited		Very limited		Somewhat limited	
	Depth to bedrock	0.46	Low adsorption	1.00	Depth to bedrock	0.46
	Droughty	0.32	Depth to bedrock	0.46	Droughty	0.32
	Too acid	0.02	Droughty	0.32	Too acid	0.07
			Too acid	0.07		
MtB:						
Milton	Somewhat limited		Very limited		Somewhat limited	
	Depth to bedrock	0.46	Low adsorption	1.00	Depth to bedrock	0.46
	Droughty	0.32	Depth to bedrock	0.46	Droughty	0.32
	Too acid	0.02	Droughty	0.32	Too steep for surface application	0.08
			Too acid	0.07	Too acid	0.07
MtC2:						
Milton	Somewhat limited		Very limited		Very limited	
	Depth to bedrock	0.46	Low adsorption	1.00	Too steep for surface application	1.00
	Droughty	0.32	Depth to bedrock	0.46	Depth to bedrock	0.46
	Too acid	0.02	Droughty	0.32	Droughty	0.32
	Slope	0.01	Too acid	0.07	Too steep for sprinkler application	0.10
			Slope	0.01	Too acid	0.07
MUF:						
Milton Variant	Very limited		Very limited		Very limited	
	Slope	1.00	Low adsorption	1.00	Too steep for surface application	1.00
	Droughty	0.98	Slope	1.00	Too steep for sprinkler application	1.00
	Depth to bedrock	0.46	Droughty	0.98	Droughty	0.98
			Depth to bedrock	0.46	Depth to bedrock	0.46
OcA:						
Ockley	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Too acid	0.03	Too acid	0.14	Too acid	0.14

Table 25.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
OcB:						
Ockley	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Too acid	0.05	Too acid	0.21	Too acid	0.21
OcB2:						
Ockley	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Too acid	0.05	Too acid	0.21	Too acid	0.21
					Too steep for surface application	0.08
OdB:						
Ockley	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Too acid	0.03	Too acid	0.14	Too acid	0.14
					Too steep for surface application	0.08
Urban Land	Not rated		Not rated		Not rated	
OeB:						
Odell	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	0.41	Slow water movement	0.31	Slow water movement	0.31
Pa:						
Patton	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
	Leaching	0.70	Slow water movement	0.31	Slow water movement	0.31
	Slow water movement	0.41				
Pg:						
Pits, Gravel	Not rated		Not rated		Not rated	
Pu:						
Pits, Quarry	Not rated		Not rated		Not rated	
Ra:						
Ragsdale	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
	Slow water movement	1.00	Slow water movement	1.00	Slow water movement	1.00
	Leaching	0.70				
RbA:						
Randolph	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	0.41	Low adsorption	1.00	Slow water movement	0.31
	Droughty	0.11	Slow water movement	0.31	Droughty	0.11
	Depth to bedrock	0.03	Droughty	0.11	Too acid	0.07
	Too acid	0.02	Too acid	0.07	Depth to bedrock	0.03

Table 25.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
RdA:						
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
	Slow water movement	1.00	Slow water movement	1.00	Slow water movement	1.00
	Too acid	0.05	Too acid	0.21	Too acid	0.21
RdB:						
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
	Slow water movement	1.00	Slow water movement	1.00	Slow water movement	1.00
	Too acid	0.05	Too acid	0.21	Too acid	0.21
ReA:						
Reesville	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 acid	0.05	Too acid	0.21	Too acid	0.21
RhB:						
Ritchey	Very limited		Very limited		Very limited	
	Droughty	1.00	Low adsorption	1.00	Droughty	1.00
	Depth to bedrock	1.00	Droughty	1.00	Depth to bedrock	1.00
	Runoff	0.40	Depth to bedrock	1.00		
RhC:						
Ritchey	Very limited		Very limited		Very limited	
	Droughty	1.00	Low adsorption	1.00	Droughty	1.00
	Depth to bedrock	1.00	Droughty	1.00	Depth to bedrock	1.00
	Runoff	0.40	Depth to bedrock	1.00	Too steep for surface application	1.00
	Slope	0.01	Slope	0.01	Too steep for sprinkler application	0.10
RhD:						
Ritchey	Very limited		Very limited		Very limited	
	Droughty	1.00	Low adsorption	1.00	Too steep for surface application	1.00
	Depth to bedrock	1.00	Droughty	1.00	Droughty	1.00
	Slope	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Runoff	0.40	Slope	1.00	Too steep for sprinkler application	1.00
RhE2:						
Ritchey	Very limited		Very limited		Very limited	
	Slope	1.00	Low adsorption	1.00	Too steep for surface application	1.00
	Droughty	1.00	Slope	1.00	Too steep for sprinkler application	1.00
	Depth to bedrock	1.00	Droughty	1.00	Droughty	1.00
	Runoff	0.40	Depth to bedrock	1.00	Depth to bedrock	1.00

Table 25.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
RkE:						
Rodman	Very limited		Very limited		Very limited	
	Slope	1.00	Droughty	1.00	Droughty	1.00
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Strongly contrasting textural stratification	1.00	Strongly contrasting textural stratification	1.00	Too steep for surface application	1.00
	Droughty	1.00	Slope	1.00	Too steep for sprinkler application	1.00
	Leaching	0.45				
RpA:						
Ross	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Flooding	1.00	Flooding	0.60
RqA:						
Ross	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
Rs:						
Ross	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Flooding	1.00	Flooding	0.60
RtA:						
Rush	Somewhat limited		Very limited		Very limited	
	Too acid	0.50	Too acid	0.99	Too acid	0.99
RtB:						
Rush	Somewhat limited		Very limited		Very limited	
	Too acid	0.50	Too acid	0.99	Too acid	0.99
RuA:						
Russell	Somewhat limited		Somewhat limited		Somewhat limited	
	Slow water movement	0.41	Slow water movement	0.31	Slow water movement	0.31
	Too acid	0.02	Too acid	0.07	Too acid	0.07
RvB:						
Russell	Somewhat limited		Somewhat limited		Somewhat limited	
	Slow water movement	0.41	Slow water movement	0.31	Slow water movement	0.31
	Too acid	0.02	Too acid	0.07	Too steep for surface application	0.08
					Too acid	0.07
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Slow water movement	0.41	Slow water movement	0.31	Slow water movement	0.31
	Too acid	0.05	Too acid	0.21	Too acid	0.21
					Too steep for surface application	0.08
RvB2:						
Russell	Somewhat limited		Somewhat limited		Somewhat limited	
	Slow water movement	0.41	Slow water movement	0.31	Slow water movement	0.31
	Too acid	0.02	Too acid	0.07	Too steep for surface application	0.08
					Too acid	0.07

Table 25.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Slow water movement	0.41	Slow water movement	0.31	Slow water movement	0.31
	Too acid	0.05	Too acid	0.21	Too acid	0.21
					Too steep for surface application	0.08
RwB2:						
Russell	Somewhat limited		Somewhat limited		Somewhat limited	
	Too acid	0.02	Too acid	0.07	Too steep for surface application	0.08
					Too acid	0.07
Xenia	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.68	Depth to saturated zone	0.68	Depth to saturated zone	0.68
	Slow water movement	0.41	Slow water movement	0.31	Slow water movement	0.31
					Too steep for surface application	0.08
SkA:						
Sligo	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Flooding	1.00	Flooding	1.00	Flooding	0.60
	Depth to saturated zone	0.43	Depth to saturated zone	0.43	Depth to saturated zone	0.43
SlA:						
Sleeth	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too acid	0.05	Too acid	0.21	Too acid	0.21
SnA:						
Sloan	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
	Flooding	1.00	Flooding	1.00	Flooding	0.60
	Leaching	0.70				
So:						
Sloan	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Leaching	0.70				
Sp:						
Fill Land	Not rated		Not rated		Not rated	
Sloan	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Leaching	0.70				
Sr:						
Urban Land	Not rated		Not rated		Not rated	
Sloan	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Leaching	0.70				

Table 25.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
ThA:						
Thackery	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Depth to saturated zone	0.95
	Too acid	0.05	Too acid	0.21	Too acid	0.21
ThB:						
Thackery	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Depth to saturated zone	0.95
	Too acid	0.05	Too acid	0.21	Too acid	0.21
					Too steep for surface application	0.08
Ts:						
Tremont	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Flooding	1.00	Depth to saturated zone	0.96
	Depth to saturated zone	0.96	Depth to saturated zone	0.96	Flooding	0.60
	Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01
TtA:						
Treaty	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
	Slow water movement	0.41	Slow water movement	0.31	Slow water movement	0.31
Ud:						
Udorthents	Not rated		Not rated		Not rated	
Ur:						
Urban Land	Not rated		Not rated		Not rated	
W:						
Water	Not rated		Not rated		Not rated	
WaA:						
Warsaw	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Too acid	0.05	Too acid	0.21	Too acid	0.21
WbA:						
Fill Land	Not rated		Not rated		Not rated	
Warsaw	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Too acid	0.05	Too acid	0.21	Too acid	0.21
WcA:						
Warsaw	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Too acid	0.05	Too acid	0.21	Too acid	0.21
Urban Land	Not rated		Not rated		Not rated	
WeB:						
Wea	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Too acid	0.05	Too acid	0.21	Too acid	0.21

Table 25.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
WpC3:						
Wapahani	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Dense layer	1.00	Shallow to densic materials	1.00	Droughty	1.00
	Shallow to densic materials	1.00	Droughty	1.00	Too steep for surface application	1.00
	Droughty	1.00	Slow water movement	0.31	Slow water movement	0.31
	Slow water movement	0.41	Slope	0.04	Too steep for sprinkler application	0.22
Miamian	Somewhat limited		Somewhat limited		Very limited	
	Shallow to densic materials	0.64	Shallow to densic materials	0.64	Too steep for surface application	1.00
	Droughty	0.50	Droughty	0.50	Droughty	0.50
	Depth to saturated zone	0.43	Depth to saturated zone	0.43	Depth to saturated zone	0.43
	Slow water movement	0.41	Too acid	0.31	Too acid	0.31
	Too acid	0.08	Slow water movement	0.31	Slow water movement	0.31
WpD3:						
Wapahani	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Dense layer	1.00	Shallow to densic materials	1.00	Too steep for surface application	1.00
	Shallow to densic materials	1.00	Droughty	1.00	Droughty	1.00
	Droughty	1.00	Slope	1.00	Too steep for sprinkler application	1.00
	Slope	1.00	Slow water movement	0.31	Slow water movement	0.31
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Too steep for surface application	1.00
	Shallow to densic materials	0.90	Shallow to densic materials	0.90	Too steep for sprinkler application	1.00
	Droughty	0.87	Droughty	0.87	Droughty	0.87
	Depth to saturated zone	0.43	Depth to saturated zone	0.43	Depth to saturated zone	0.43
	Slow water movement	0.41	Too acid	0.31	Too acid	0.31
Ws:						
Westland	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	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
	Leaching	0.70	Slow water movement	0.31	Slow water movement	0.31
	Slow water movement	0.41				

Table 25.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Wt:						
Westland	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	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
	Leaching	0.70	Slow water movement	0.31	Slow water movement	0.31
	Slow water movement	0.41	Too acid	0.07	Too acid	0.07
Urban Land	Not rated		Not rated		Not rated	
XeA:						
Xenia	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.86	Depth to saturated zone	0.86	Depth to saturated zone	0.86
	Slow water movement	0.41	Slow water movement	0.31	Slow water movement	0.31
	Too acid	0.05	Too acid	0.21	Too acid	0.21
XeB:						
Xenia	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.86	Depth to saturated zone	0.86	Depth to saturated zone	0.86
	Slow water movement	0.41	Slow water movement	0.31	Slow water movement	0.31
	Too acid	0.05	Too acid	0.21	Too acid	0.21

Table

TABLE 26.--WATER MANAGEMENT PART 1

(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 on page 208 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
Ag:						
Algiers	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.50	Depth to saturated zone	1.00	Slow refill	0.28
			Piping	0.50	Cutbanks cave	0.10
BbB:						
Birkbeck	Somewhat limited		Somewhat limited		Somewhat limited	
	Seepage	0.50	Depth to saturated zone	0.91	Slow refill	0.28
					Cutbanks cave	0.10
					Depth to saturated zone	0.02
BcB:						
Birkbeck	Somewhat limited		Somewhat limited		Somewhat limited	
	Seepage	0.50	Depth to saturated zone	0.19	Slow refill	0.28
					Depth to saturated zone	0.21
					Cutbanks cave	0.10
Bs:						
Brookston	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.50	Ponding	1.00	Slow refill	0.28
			Depth to saturated zone	1.00	Cutbanks cave	0.10
Bt:						
Brookston	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.50	Ponding	1.00	Slow refill	0.28
			Depth to saturated zone	1.00	Cutbanks cave	0.10
Urban Land	Not rated		Not rated		Not rated	
CaE2:						
Casco	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Seepage	0.18	Depth to water	1.00
	Slope	0.68				
CbD2:						
Casco	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Seepage	0.18	Depth to water	1.00
	Slope	0.02				
CcD2:						
Casco	Very limited		Not limited		Very limited	
	Seepage	1.00			Depth to water	1.00
	Slope	0.03				
Eldean	Very limited		Not limited		Very limited	
	Seepage	1.00			Depth to water	1.00
	Slope	0.03				
CdE2:						
Casco	Very limited		Not limited		Very limited	
	Seepage	1.00			Depth to water	1.00
	Slope	0.28				
Rodman	Very limited		Not limited		Very limited	
	Seepage	1.00			Depth to water	1.00
	Slope	0.28				

Table 26.--Water Management Part 1--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
CeA:						
Celina	Not limited		Somewhat limited		Very limited	
			Piping	0.50	Depth to water	1.00
			Depth to saturated zone	0.25		
CeB:						
Celina	Not limited		Somewhat limited		Very limited	
			Piping	0.50	Depth to water	1.00
			Depth to saturated zone	0.25		
CfB:						
Celina	Not limited		Somewhat limited		Very limited	
			Piping	0.50	Depth to water	1.00
			Depth to saturated zone	0.25		
Losantville	Not limited		Somewhat limited		Very limited	
			Depth to saturated zone	0.85	Depth to water	1.00
			Piping	0.50		
ChB:						
Celina	Not limited		Somewhat limited		Very limited	
			Piping	0.50	Depth to water	1.00
			Depth to saturated zone	0.03		
Strawn	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.50	Piping	0.50	Depth to water	1.00
CrA:						
Crosby	Not limited		Very limited		Very limited	
			Depth to saturated zone	0.99	Depth to water	1.00
			Piping	0.50		
CrB:						
Crosby	Not limited		Very limited		Very limited	
			Depth to saturated zone	0.99	Depth to water	1.00
			Piping	0.50		
CsA:						
Crosby	Not limited		Somewhat limited		Somewhat limited	
			Depth to saturated zone	0.99	Slow refill	0.98
			Piping	0.50	Cutbanks cave	0.10
					Depth to saturated zone	0.01
Lewisburg	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.25	Piping	0.50	Depth to water	1.00
CsB:						
Crosby	Not limited		Somewhat limited		Somewhat limited	
			Depth to saturated zone	0.99	Slow refill	0.98
			Piping	0.50	Cutbanks cave	0.10
					Depth to saturated zone	0.01
Lewisburg	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.25	Piping	0.50	Depth to water	1.00

Table 26.--Water Management Part 1--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
CtA:						
Crosby	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.50	Depth to saturated zone	0.99	Depth to water	1.00
			Piping	0.50		
Celina	Not limited		Somewhat limited		Very limited	
			Piping	0.50	Depth to water	1.00
			Depth to saturated zone	0.25		
CtB:						
Crosby	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.50	Depth to saturated zone	0.99	Depth to water	1.00
			Piping	0.50		
Celina	Not limited		Somewhat limited		Very limited	
			Piping	0.50	Depth to water	1.00
			Depth to saturated zone	0.25		
Du:						
Dumps	Not rated		Not rated		Not rated	
EdB:						
Edenton	Somewhat limited		Somewhat limited		Very limited	
	Depth to bedrock	0.06	Thin layer	0.89	Depth to water	1.00
EdC2:						
Edenton	Somewhat limited		Somewhat limited		Very limited	
	Depth to bedrock	0.06	Thin layer	0.89	Depth to water	1.00
EdD2:						
Edenton	Somewhat limited		Somewhat limited		Very limited	
	Slippage	0.50	Thin layer	0.89	Depth to water	1.00
	Depth to bedrock	0.06				
	Slope	0.03				
Ee:						
Eel	Somewhat limited		Somewhat limited		Somewhat limited	
	Seepage	0.50	Depth to saturated zone	0.91	Slow refill	0.28
					Cutbanks cave	0.10
					Depth to saturated zone	0.02
EmA:						
Eldean	Very limited		Not limited		Very limited	
	Seepage	1.00			Depth to water	1.00
EmB:						
Eldean	Very limited		Not limited		Very limited	
	Seepage	1.00			Depth to water	1.00
EmB2:						
Eldean	Very limited		Not limited		Very limited	
	Seepage	1.00			Depth to water	1.00
EmC2:						
Eldean	Very limited		Not limited		Very limited	
	Seepage	1.00			Depth to water	1.00
EnC3:						
Eldean	Very limited		Not limited		Very limited	
	Seepage	1.00			Depth to water	1.00
EoC2:						
Eldean	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Seepage	0.97	Depth to water	1.00
Miamian	Not limited		Somewhat limited		Very limited	
			Piping	0.50	Depth to water	1.00

Table 26.--Water Management Part 1--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
EoD2:						
Eldean	Very limited		Not limited		Very limited	
	Seepage	1.00			Depth to water	1.00
	Slope	0.02				
Miamian	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.02	Piping	0.50	Depth to water	1.00
EpC:						
Eldean	Very limited		Not limited		Very limited	
	Seepage	1.00			Depth to water	1.00
Urban Land	Not rated		Not rated		Not rated	
FaF:						
Fairmount Variant	Somewhat limited		Very limited		Very limited	
	Depth to bedrock	0.88	Thin layer	1.00	Depth to water	1.00
	Slope	0.88	Hard to compact	1.00		
	Slippage	0.50				
FnA:						
Fincastle	Not limited		Very limited		Very limited	
			Depth to saturated zone	0.99	Depth to water	1.00
Gn:						
Genesee	Somewhat limited		Not limited		Very limited	
	Seepage	0.50			Depth to water	1.00
Ko:						
Kokomo	Not limited		Very limited		Somewhat limited	
			Ponding	1.00	Slow refill	0.28
			Depth to saturated zone	1.00	Cutbanks cave	0.10
			Hard to compact	1.00		
Lh:						
Linwood	Very limited		Very limited		Somewhat limited	
	Seepage	1.00	Ponding	1.00	Cutbanks cave	0.10
			Depth to saturated zone	1.00		
			Piping	0.50		
Ln:						
Linwood	Very limited		Very limited		Somewhat limited	
	Seepage	1.00	Ponding	1.00	Cutbanks cave	0.10
			Depth to saturated zone	1.00		
			Content of organic matter	1.00		
LuF2:						
Lumberton	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.82	Thin layer	0.87	Depth to water	1.00
	Depth to bedrock	0.74				
	Seepage	0.50				
MhA:						
Miamian	Not limited		Not limited		Very limited	
					Depth to water	1.00
MhB:						
Miamian	Not limited		Somewhat limited		Very limited	
			Piping	0.50	Depth to water	1.00
MhB2:						
Miamian	Not limited		Not limited		Very limited	
					Depth to water	1.00
MhC2:						
Miamian	Not limited		Not limited		Very limited	
					Depth to water	1.00

Table 26.--Water Management Part 1--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
MhD2:						
Miamian	Somewhat limited		Not limited		Very limited	
	Slope	0.03			Depth to water	1.00
MlB3:						
Miamian	Not limited		Not limited		Very limited	
					Depth to water	1.00
MlC3:						
Miamian	Not limited		Not limited		Very limited	
					Depth to water	1.00
MlD3:						
Miamian	Somewhat limited		Not limited		Very limited	
	Slope	0.04			Depth to water	1.00
MmD2:						
Miamian	Somewhat limited		Not limited		Very limited	
	Slope	0.03			Depth to water	1.00
Casco	Very limited		Not limited		Very limited	
	Seepage	1.00			Depth to water	1.00
	Slope	0.03				
MmE2:						
Miamian	Somewhat limited		Not limited		Very limited	
	Slope	0.15			Depth to water	1.00
Casco	Very limited		Not limited		Very limited	
	Seepage	1.00			Depth to water	1.00
	Slope	0.15				
MoB2:						
Miamian	Not limited		Not limited		Very limited	
					Depth to water	1.00
Eldean	Very limited		Not limited		Very limited	
	Seepage	1.00			Depth to water	1.00
MoC2:						
Miamian	Not limited		Not limited		Very limited	
					Depth to water	1.00
Eldean	Very limited		Not limited		Very limited	
	Seepage	1.00			Depth to water	1.00
MpE:						
Miamian	Somewhat limited		Not limited		Very limited	
	Slope	0.15			Depth to water	1.00
Hennepin	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.15	Piping	0.50	Depth to water	1.00
MpF:						
Miamian	Somewhat limited		Not limited		Very limited	
	Slope	0.72			Depth to water	1.00
Hennepin	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.72	Piping	0.50	Depth to water	1.00
MqE2:						
Miamian	Somewhat limited		Not limited		Very limited	
	Slope	0.18			Depth to water	1.00
Thrifton	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.18	Depth to saturated zone	0.85	Depth to water	1.00

Table 26.--Water Management Part 1--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
MqF2:						
Miamian	Somewhat limited		Not limited		Very limited	
	Slope	0.82			Depth to water	1.00
Thrifton	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.82	Depth to saturated zone	0.85	Depth to water	1.00
MrB:						
Miamian	Not limited		Not limited		Very limited	
					Depth to water	1.00
Urban Land	Not rated		Not rated		Not rated	
MrC:						
Miamian	Not limited		Not limited		Very limited	
					Depth to water	1.00
Urban Land	Not rated		Not rated		Not rated	
Ms:						
Millsdale	Somewhat limited		Very limited		Very limited	
	Depth to bedrock	0.95	Thin layer	1.00	Depth to bedrock	1.00
	Seepage	0.37	Ponding	1.00	Slow refill	0.28
			Depth to saturated zone	1.00	Cutbanks cave	0.10
MtA:						
Milton	Somewhat limited		Very limited		Very limited	
	Depth to bedrock	0.86	Thin layer	1.00	Depth to water	1.00
	Seepage	0.50				
MtB:						
Milton	Somewhat limited		Very limited		Very limited	
	Depth to bedrock	0.86	Thin layer	1.00	Depth to water	1.00
	Seepage	0.50				
MtC2:						
Milton	Somewhat limited		Very limited		Very limited	
	Depth to bedrock	0.86	Thin layer	1.00	Depth to water	1.00
	Seepage	0.50				
MUF:						
Milton Variant	Somewhat limited		Very limited		Very limited	
	Depth to bedrock	0.86	Thin layer	1.00	Depth to water	1.00
	Slope	0.72	Large stones content	0.01		
	Seepage	0.50				
OcA:						
Ockley	Very limited		Not limited		Very limited	
	Seepage	1.00			Depth to water	1.00
OcB:						
Ockley	Very limited		Not limited		Very limited	
	Seepage	1.00			Depth to water	1.00
OcB2:						
Ockley	Very limited		Not limited		Very limited	
	Seepage	1.00			Depth to water	1.00
OdB:						
Ockley	Very limited		Not limited		Very limited	
	Seepage	1.00			Depth to water	1.00
Urban Land	Not rated		Not rated		Not rated	
OeB:						
Odell	Somewhat limited		Very limited		Very limited	
	Seepage	0.50	Depth to saturated zone	0.99	Depth to water	1.00
			Piping	0.50		

Table 26.--Water Management Part 1--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
Pa:						
Patton	Not limited		Very limited		Somewhat limited	
			Ponding	1.00	Slow refill	0.28
			Depth to saturated zone	1.00	Cutbanks cave	0.10
			Piping	0.50		
Pg:						
Pits, Gravel	Not rated		Not rated		Not rated	
Pu:						
Pits, Quarry	Not rated		Not rated		Not rated	
Ra:						
Ragsdale	Not limited		Very limited		Somewhat limited	
			Ponding	1.00	Slow refill	0.28
			Depth to saturated zone	1.00	Cutbanks cave	0.10
RbA:						
Randolph	Somewhat limited		Very limited		Very limited	
	Depth to bedrock	0.61	Depth to saturated zone	0.99	Depth to water	1.00
			Thin layer	0.76		
RdA:						
Raub	Somewhat limited		Very limited		Very limited	
	Seepage	0.50	Depth to saturated zone	0.99	Depth to water	1.00
RdB:						
Raub	Somewhat limited		Very limited		Very limited	
	Seepage	0.50	Depth to saturated zone	0.99	Depth to water	1.00
ReA:						
Reesville	Somewhat limited		Very limited		Very limited	
	Seepage	0.25	Depth to saturated zone	0.99	Depth to water	1.00
RhB:						
Ritchey	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
RhC:						
Ritchey	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
RhD:						
Ritchey	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
	Slope	0.03				
RhE2:						
Ritchey	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
	Slope	0.15				
RkE:						
Rodman	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Seepage	0.18	Depth to water	1.00
	Slope	0.28				
RpA:						
Ross	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Piping	0.50	Depth to water	1.00
RqA:						
Ross	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Piping	0.50	Depth to water	1.00

Table 26.--Water Management Part 1--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
Rs:						
Ross	Somewhat limited		Not limited		Very limited	
	Seepage	0.50			Depth to water	1.00
					Slow refill	0.28
RtA:						
Rush	Very limited		Not limited		Very limited	
	Seepage	1.00			Depth to water	1.00
RtB:						
Rush	Very limited		Not limited		Very limited	
	Seepage	1.00			Depth to water	1.00
RuA:						
Russell	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.50	Piping	0.50	Depth to water	1.00
RvB:						
Russell	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.50	Piping	0.50	Depth to water	1.00
Miamian	Not limited		Not limited		Very limited	
					Depth to water	1.00
RvB2:						
Russell	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.50	Piping	0.50	Depth to water	1.00
Miamian	Not limited		Not limited		Very limited	
					Depth to water	1.00
RwB2:						
Russell	Somewhat limited		Not limited		Very limited	
	Seepage	0.50			Depth to water	1.00
Xenia	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.50	Depth to saturated zone	0.03	Depth to water	1.00
SkA:						
Sligo	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Depth to saturated zone	0.11	Cutbanks cave	1.00
					Depth to saturated zone	0.25
SlA:						
Sleeth	Very limited		Very limited		Somewhat limited	
	Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	0.50
SnA:						
Sloan	Somewhat limited		Very limited		Very limited	
	Seepage	0.50	Ponding	1.00	Cutbanks cave	1.00
			Depth to saturated zone	1.00	Slow refill	0.28
So:						
Sloan	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.50	Depth to saturated zone	1.00	Slow refill	0.28
			Piping	0.50	Cutbanks cave	0.10
Sp:						
Fill Land	Not rated		Not rated		Not rated	
Sloan	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.50	Depth to saturated zone	1.00	Slow refill	0.28
			Piping	0.50	Cutbanks cave	0.10

Table 26.--Water Management Part 1--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
Sr:						
Urban Land	Not rated		Not rated		Not rated	
Sloan	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.50	Depth to saturated zone	1.00	Slow refill	0.28
			Piping	0.50	Cutbanks cave	0.10
ThA:						
Thackery	Very limited		Somewhat limited		Somewhat limited	
	Seepage	1.00	Depth to saturated zone	0.91	Cutbanks cave	0.50
					Depth to saturated zone	0.02
ThB:						
Thackery	Very limited		Somewhat limited		Somewhat limited	
	Seepage	1.00	Depth to saturated zone	0.91	Cutbanks cave	0.50
					Depth to saturated zone	0.02
Ts:						
Tremont	Very limited		Somewhat limited		Somewhat limited	
	Seepage	1.00	Depth to saturated zone	0.93	Cutbanks cave	0.10
					Depth to saturated zone	0.02
TtA:						
Treaty	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.50	Ponding	1.00	Slow refill	0.28
			Depth to saturated zone	1.00	Cutbanks cave	0.10
Ud:						
Udorthents	Not rated		Not rated		Not rated	
Ur:						
Urban Land	Not rated		Not rated		Not rated	
W:						
Water	Not rated		Not rated		Not rated	
WaA:						
Warsaw	Very limited		Not limited		Very limited	
	Seepage	1.00			Depth to water	1.00
WbA:						
Fill Land	Not rated		Not rated		Not rated	
Warsaw	Very limited		Not limited		Very limited	
	Seepage	1.00			Depth to water	1.00
WcA:						
Warsaw	Very limited		Not limited		Very limited	
	Seepage	1.00			Depth to water	1.00
Urban Land	Not rated		Not rated		Not rated	
WeB:						
Wea	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Piping	0.50	Depth to water	1.00
WpC3:						
Wapahani	Not limited		Somewhat limited		Very limited	
			Depth to saturated zone	0.85	Depth to water	1.00
			Piping	0.50		
Miamian	Not limited		Not limited		Very limited	
					Depth to water	1.00

Table 26.--Water Management Part 1--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
WpD3:						
Wapahani	Somewhat limited Slope	0.03	Somewhat limited Depth to saturated zone Piping	0.85 0.50	Very limited Depth to water	1.00
Miamian	Somewhat limited Slope	0.03	Not limited		Very limited Depth to water	1.00
Ws:						
Westland	Very limited Seepage	1.00	Very limited Ponding Depth to saturated zone	1.00 1.00	Somewhat limited Cutbanks cave	0.50
Wt:						
Westland	Very limited Seepage	1.00	Very limited Ponding Depth to saturated zone	1.00 1.00	Somewhat limited Cutbanks cave	0.50
Urban Land	Not rated		Not rated		Not rated	
XeA:						
Xenia	Somewhat limited Seepage	0.50	Somewhat limited Piping Depth to saturated zone	0.50 0.12	Very limited Depth to water	1.00
XeB:						
Xenia	Somewhat limited Seepage	0.50	Somewhat limited Piping Depth to saturated zone	0.50 0.12	Very limited Depth to water	1.00

TABLE 27.--WATER MANAGEMENT PART 2

(The information in this table indicates the dominant soil condition but does not eliminate the need for on-site investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text on page 208 for further explanation of ratings in this table.)

Map symbol and soil name	Constructing grassed waterways		Constructing terraces and diversions		Drainage	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Ag:						
Algiers	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Flooding	1.00
BbB:						
Birkbeck	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	0.68	Depth to saturated zone	1.00		
BcB:						
Birkbeck	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	0.14	Depth to saturated zone	1.00	Slope	0.04
Bs:						
Brookston	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
			Ponding	1.00	Frost action	1.00
Bt:						
Brookston	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
			Ponding	1.00	Frost action	1.00
Urban Land	Not rated		Not rated		Not rated	
CaE2:						
Casco	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Droughty	1.00	Too sandy	1.00	Cutbanks cave	1.00
	Content of large stones	0.68	Content of large stones	0.68	Depth to saturated zone	1.00
					Content of large stones	0.08
CbD2:						
Casco	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Droughty	1.00			Depth to saturated zone	1.00
CcD2:						
Casco	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Droughty	1.00			Depth to saturated zone	1.00
Eldean	Very limited		Very limited		Very limited	
	Slope	1.00	Water erosion	1.00	Slope	1.00
	Water erosion	1.00	Slope	1.00	Cutbanks cave	1.00
			Too sandy	1.00	Depth to saturated zone	1.00
CdE2:						
Casco	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Droughty	1.00			Depth to saturated zone	1.00

Table 27.--Water Management Part 2--Continued

Map symbol and soil name	Constructing grassed waterways		Constructing terraces and diversions		Drainage	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Rodman	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Droughty	1.00	Too sandy	1.00	Cutbanks cave	1.00
					Depth to saturated zone	1.00
CeA:						
Celina	Very limited		Very limited		Somewhat limited	
	Water erosion	1.00	Water erosion	1.00	Restricted permeability	0.22
	Depth to saturated zone	0.68	Depth to saturated zone	1.00		
	Restricted permeability	0.22	Restricted permeability	0.22		
CeB:						
Celina	Very limited		Very limited		Somewhat limited	
	Water erosion	1.00	Water erosion	1.00	Restricted permeability	0.22
	Depth to saturated zone	0.68	Depth to saturated zone	1.00		
	Restricted permeability	0.22	Restricted permeability	0.22		
CfB:						
Celina	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	0.68	Depth to saturated zone	1.00	Restricted permeability	0.22
	Restricted permeability	0.22	Restricted permeability	0.22	Slope	0.04
Losantville	Very limited		Very limited		Somewhat limited	
	Water erosion	1.00	Water erosion	1.00	Restricted permeability	0.22
	Droughty	1.00	Depth to saturated zone	1.00	Slope	0.04
	Depth to saturated zone	0.99	Restricted permeability	0.22		
	Restricted permeability	0.22				
ChB:						
Celina	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	0.24	Depth to saturated zone	1.00	Restricted permeability	0.22
	Restricted permeability	0.22	Restricted permeability	0.22		
Strawn	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
CrA:						
Crosby	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Restricted permeability	0.92
	Restricted permeability	0.92	Restricted permeability	0.92		
CrB:						
Crosby	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Restricted permeability	0.91
	Restricted permeability	0.91	Restricted permeability	0.91		

Table 27.--Water Management Part 2--Continued

Map symbol and soil name	Constructing grassed waterways		Constructing terraces and diversions		Drainage	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
CsA:						
Crosby	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Restricted permeability	0.91	Depth to saturated zone	1.00	Restricted permeability	0.91
	Depth to saturated zone	0.86	Restricted permeability	0.91		
Lewisburg	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Droughty	1.00				
	Depth to saturated zone	0.09				
CsB:						
Crosby	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Restricted permeability	0.91	Depth to saturated zone	1.00	Restricted permeability	0.91
	Depth to saturated zone	0.86	Restricted permeability	0.91	Slope	0.04
Lewisburg	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Droughty	1.00			Slope	0.04
	Depth to saturated zone	0.09				
CtA:						
Crosby	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Restricted permeability	0.91
	Restricted permeability	0.91	Restricted permeability	0.91		
Celina	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	0.68	Depth to saturated zone	1.00	Restricted permeability	0.22
	Restricted permeability	0.22	Restricted permeability	0.22		
CtB:						
Crosby	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Restricted permeability	0.91
	Restricted permeability	0.91	Restricted permeability	0.91		
Celina	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	0.68	Depth to saturated zone	1.00	Restricted permeability	0.22
	Restricted permeability	0.22	Restricted permeability	0.22		
Du:						
Dumps	Not rated		Not rated		Not rated	
EdB:						
Edenton	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.40	Restricted permeability	0.40	Restricted permeability	0.40
	Depth to soft bedrock	0.20	Depth to soft bedrock	0.20	Depth to bedrock	0.05

Table 27.--Water Management Part 2--Continued

Map symbol and soil name	Constructing grassed waterways		Constructing terraces and diversions		Drainage	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
EdC2:						
Edenton	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Slope	1.00	Slope	1.00	Slope	0.96
	Restricted permeability	0.40	Restricted permeability	0.40	Restricted permeability	0.40
	Depth to soft bedrock	0.20	Depth to soft bedrock	0.20	Depth to bedrock	0.05
EdD2:						
Edenton	Very limited		Very limited		Very limited	
	Slope	1.00	Water erosion	1.00	Slope	1.00
	Water erosion	1.00	Slope	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.40	Restricted permeability	0.40	Restricted permeability	0.40
	Depth to soft bedrock	0.20	Depth to soft bedrock	0.20	Depth to bedrock	0.05
Ee:						
Eel	Somewhat limited		Very limited		Very limited	
	Depth to saturated zone	0.68	Depth to saturated zone	1.00	Frost action	1.00
					Flooding	1.00
EmA:						
Eldean	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Cutbanks cave	1.00
			Too sandy	1.00	Depth to saturated zone	1.00
EmB:						
Eldean	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Cutbanks cave	1.00
			Too sandy	1.00	Depth to saturated zone	1.00
EmB2:						
Eldean	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Cutbanks cave	1.00
			Too sandy	1.00	Depth to saturated zone	1.00
					Slope	0.16
EmC2:						
Eldean	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Cutbanks cave	1.00
			Too sandy	1.00	Depth to saturated zone	1.00
					Slope	0.37
EnC3:						
Eldean	Very limited		Very limited		Very limited	
	Slope	1.00	Too sandy	1.00	Cutbanks cave	1.00
			Slope	1.00	Depth to saturated zone	1.00
					Slope	1.00
EoC2:						
Eldean	Very limited		Not limited		Very limited	
	Droughty	1.00			Depth to saturated zone	1.00
					Slope	0.84
Miamian	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.22	Restricted permeability	0.22	Slope	0.84
					Restricted permeability	0.22

Table 27.--Water Management Part 2--Continued

Map symbol and soil name	Constructing grassed waterways		Constructing terraces and diversions		Drainage	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
EoD2:						
Eldean	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Droughty	1.00			Depth to saturated zone	1.00
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Water erosion	1.00	Slope	1.00
	Water erosion	1.00	Slope	1.00	Depth to saturated zone	1.00
	Droughty	1.00	Restricted permeability	0.22	Restricted permeability	0.22
	Restricted permeability	0.22				
EpC:						
Eldean	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Cutbanks cave	1.00
	Slope	1.00	Too sandy	1.00	Depth to saturated zone	1.00
			Slope	1.00	Slope	0.96
Urban Land	Not rated		Not rated		Not rated	
FaF:						
Fairmount Variant	Very limited		Very limited		Very limited	
	Slope	1.00	Water erosion	1.00	Slope	1.00
	Water erosion	1.00	Slope	1.00	Depth to saturated zone	1.00
	Content of large stones	1.00	Content of large stones	1.00	Content of large stones	0.99
	Depth to hard bedrock	1.00	Depth to hard bedrock	0.54	Restricted permeability	0.22
	Restricted permeability	0.22	Restricted permeability	0.22	Depth to bedrock	0.14
FnA:						
Fincastle	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Restricted permeability	0.22
	Restricted permeability	0.22	Restricted permeability	0.22		
Gn:						
Genesee	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Flooding	1.00
					Depth to saturated zone	1.00
Ko:						
Kokomo	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Restricted permeability	0.22	Ponding	1.00	Frost action	1.00
			Restricted permeability	0.22	Restricted permeability	0.22
Lh:						
Linwood	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Content of large stones	0.03	Ponding	1.00	Frost action	1.00
			Content of large stones	0.03	Subsidence	1.00

Table 27.--Water Management Part 2--Continued

Map symbol and soil name	Constructing grassed waterways		Constructing terraces and diversions		Drainage	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Ln:						
Linwood	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
			Ponding	1.00	Frost action	1.00
					Subsidence	1.00
LuF2:						
Lumberton	Very limited		Very limited		Very limited	
	Slope	1.00	Water erosion	1.00	Frost action	1.00
	Water erosion	1.00	Slope	1.00	Slope	1.00
	Depth to hard bedrock	1.00	Depth to hard bedrock	0.15	Depth to saturated zone	1.00
					Depth to bedrock	0.04
MhA:						
Miamian	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.22	Restricted permeability	0.22	Restricted permeability	0.22
MhB:						
Miamian	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.22	Restricted permeability	0.22	Restricted permeability	0.22
MhB2:						
Miamian	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.22	Restricted permeability	0.22	Restricted permeability	0.22
					Slope	0.04
MhC2:						
Miamian	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Slope	1.00	Slope	1.00	Slope	0.96
	Restricted permeability	0.22	Restricted permeability	0.22	Restricted permeability	0.22
MhD2:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Water erosion	1.00	Slope	1.00
	Water erosion	1.00	Slope	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.22	Restricted permeability	0.22	Restricted permeability	0.22
MlB3:						
Miamian	Somewhat limited		Somewhat limited		Very limited	
	Restricted permeability	0.22	Restricted permeability	0.22	Depth to saturated zone	1.00
					Restricted permeability	0.22
					Slope	0.16
MlC3:						
Miamian	Somewhat limited		Somewhat limited		Very limited	
	Restricted permeability	0.22	Restricted permeability	0.22	Depth to saturated zone	1.00
					Slope	0.84
					Restricted permeability	0.22

Table 27.--Water Management Part 2--Continued

Map symbol and soil name	Constructing grassed waterways		Constructing terraces and diversions		Drainage	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
MlD3:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Restricted permeability	0.22	Restricted permeability	0.22	Depth to saturated zone	1.00
					Restricted permeability	0.22
MmD2:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Water erosion	1.00	Slope	1.00
	Water erosion	1.00	Slope	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.22	Restricted permeability	0.22	Restricted permeability	0.22
Casco	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Droughty	1.00			Depth to saturated zone	1.00
MmE2:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Water erosion	1.00	Slope	1.00
	Water erosion	1.00	Slope	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.22	Restricted permeability	0.22	Restricted permeability	0.22
Casco	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Droughty	1.00			Depth to saturated zone	1.00
MoB2:						
Miamian	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.22	Restricted permeability	0.22	Restricted permeability	0.22
					Slope	0.04
Eldean	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Cutbanks cave	1.00
			Too sandy	1.00	Depth to saturated zone	1.00
					Slope	0.04
MoC2:						
Miamian	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.22	Restricted permeability	0.22	Slope	0.84
					Restricted permeability	0.22
Eldean	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Cutbanks cave	1.00
			Too sandy	1.00	Depth to saturated zone	1.00
					Slope	0.84
MpE:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Water erosion	1.00	Slope	1.00
	Water erosion	1.00	Slope	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.22	Restricted permeability	0.22	Restricted permeability	0.22

Table 27.--Water Management Part 2--Continued

Map symbol and soil name	Constructing grassed waterways		Constructing terraces and diversions		Drainage	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Hennepin----------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Restricted permeability	0.22	Restricted permeability	0.22	Depth to saturated zone	1.00
					Restricted permeability	0.22
MpF:						
Miamian----------	Very limited		Very limited		Very limited	
	Slope	1.00	Water erosion	1.00	Slope	1.00
	Water erosion	1.00	Slope	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.22	Restricted permeability	0.22	Restricted permeability	0.22
Hennepin----------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Restricted permeability	0.22	Restricted permeability	0.22	Depth to saturated zone	1.00
					Restricted permeability	0.22
MqE2:						
Miamian----------	Very limited		Very limited		Very limited	
	Slope	1.00	Water erosion	1.00	Slope	1.00
	Water erosion	1.00	Slope	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.22	Restricted permeability	0.22	Restricted permeability	0.22
	Depth to saturated zone	0.09				
Thrifton----------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Droughty	1.00	Depth to saturated zone	1.00	Restricted permeability	0.22
	Depth to saturated zone	0.99	Restricted permeability	0.22		
	Restricted permeability	0.22				
MqF2:						
Miamian----------	Very limited		Very limited		Very limited	
	Slope	1.00	Water erosion	1.00	Slope	1.00
	Water erosion	1.00	Slope	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.22	Restricted permeability	0.22	Restricted permeability	0.22
	Depth to saturated zone	0.09				
Thrifton----------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Droughty	1.00	Depth to saturated zone	1.00	Restricted permeability	0.22
	Depth to saturated zone	0.99	Restricted permeability	0.22		
	Restricted permeability	0.22				
MrB:						
Miamian----------	Somewhat limited		Somewhat limited		Very limited	
	Restricted permeability	0.22	Restricted permeability	0.22	Depth to saturated zone	1.00
					Restricted permeability	0.22
					Slope	0.04
Urban Land----------	Not rated		Not rated		Not rated	

Table 27.--Water Management Part 2--Continued

Map symbol and soil name	Constructing grassed waterways		Constructing terraces and diversions		Drainage	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
MrC:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.22	Restricted permeability	0.22	Slope	0.96
					Restricted permeability	0.22
Urban Land	Not rated		Not rated		Not rated	
Ms:						
Millsdale	Very limited		Very limited		Very limited	
	Depth to hard bedrock	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Ponding	1.00	Frost action	1.00
			Depth to hard bedrock	0.79	Depth to bedrock	0.23
MtA:						
Milton	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Depth to hard bedrock	1.00	Depth to hard bedrock	0.46	Depth to bedrock	0.12
MtB:						
Milton	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Depth to hard bedrock	1.00	Depth to hard bedrock	0.46	Depth to bedrock	0.12
					Slope	0.04
MtC2:						
Milton	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Depth to hard bedrock	1.00	Depth to hard bedrock	0.46	Slope	0.84
					Depth to bedrock	0.12
MUF:						
Milton Variant	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Depth to hard bedrock	1.00	Content of large stones	1.00	Depth to saturated zone	1.00
	Droughty	1.00	Depth to hard bedrock	0.46	Content of large stones	1.00
	Content of large stones	1.00			Depth to bedrock	0.12
OcA:						
Ockley	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
OcB:						
Ockley	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
OcB2:						
Ockley	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
					Slope	0.04

Table 27.--Water Management Part 2--Continued

Map symbol and soil name	Constructing grassed waterways		Constructing terraces and diversions		Drainage	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
OdB:						
Ockley	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
					Slope	0.04
Urban Land	Not rated		Not rated		Not rated	
OeB:						
Odell	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
	Restricted permeability	0.22	Restricted permeability	0.22	Restricted permeability	0.22
Pa:						
Patton	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Restricted permeability	0.22	Ponding	1.00	Frost action	1.00
			Restricted permeability	0.22	Restricted permeability	0.22
Pg:						
Pits, Gravel	Not rated		Not rated		Not rated	
Pu:						
Pits, Quarry	Not rated		Not rated		Not rated	
Ra:						
Ragsdale	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Restricted permeability	0.92	Ponding	1.00	Frost action	1.00
			Restricted permeability	0.92	Restricted permeability	0.92
RbA:						
Randolph	Very limited		Very limited		Somewhat limited	
	Water erosion	1.00	Water erosion	1.00	Restricted permeability	0.22
	Depth to hard bedrock	1.00	Depth to saturated zone	1.00	Depth to bedrock	0.01
	Depth to saturated zone	1.00	Restricted permeability	0.22		
	Restricted permeability	0.22	Depth to hard bedrock	0.03		
RdA:						
Raub	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
RdB:						
Raub	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
ReA:						
Reesville	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00		
RhB:						
Ritchey	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	0.58
	Droughty	1.00				

Table 27.--Water Management Part 2--Continued

Map symbol and soil name	Constructing grassed waterways		Constructing terraces and diversions		Drainage	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
RhC:						
Ritchey	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Slope	0.84
	Droughty	1.00			Depth to bedrock	0.58
RhD:						
Ritchey	Very limited		Very limited		Very limited	
	Slope	1.00	Water erosion	1.00	Slope	1.00
	Water erosion	1.00	Slope	1.00	Depth to saturated zone	1.00
	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	0.58
	Droughty	1.00				
RhE2:						
Ritchey	Very limited		Very limited		Very limited	
	Slope	1.00	Water erosion	1.00	Slope	1.00
	Water erosion	1.00	Slope	1.00	Depth to saturated zone	1.00
	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	0.58
	Droughty	1.00				
RkE:						
Rodman	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Droughty	1.00			Depth to saturated zone	1.00
RpA:						
Ross	Not limited		Not limited		Very limited	
					Flooding	1.00
					Depth to saturated zone	1.00
RqA:						
Ross	Not limited		Not limited		Very limited	
					Flooding	1.00
					Depth to saturated zone	1.00
Rs:						
Ross	Not limited		Very limited		Very limited	
			Too sandy	1.00	Flooding	1.00
					Depth to saturated zone	1.00
RtA:						
Rush	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
					Depth to saturated zone	1.00
RtB:						
Rush	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
					Depth to saturated zone	1.00
RuA:						
Russell	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.22	Restricted permeability	0.22	Restricted permeability	0.22

Table 27.--Water Management Part 2--Continued

Map symbol and soil name	Constructing grassed waterways		Constructing terraces and diversions		Drainage	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
RvB:						
Russell	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Restricted permeability	0.22	Restricted permeability	0.22	Depth to saturated zone	1.00
					Restricted permeability	0.22
					Slope	0.04
Miamian	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.22	Restricted permeability	0.22	Restricted permeability	0.22
					Slope	0.04
RvB2:						
Russell	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Restricted permeability	0.22	Restricted permeability	0.22	Depth to saturated zone	1.00
					Restricted permeability	0.22
					Slope	0.04
Miamian	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.22	Restricted permeability	0.22	Restricted permeability	0.22
					Slope	0.04
RwB2:						
Russell	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
					Depth to saturated zone	1.00
					Slope	0.04
Xenia	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	0.24	Depth to saturated zone	1.00	Restricted permeability	0.22
	Restricted permeability	0.22	Restricted permeability	0.22	Slope	0.04
SkA:						
Sligo	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Flooding	1.00
	Depth to saturated zone	0.09			Depth to saturated zone	1.00
SlA:						
Sleeth	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
SnA:						
Sloan	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
			Ponding	1.00	Frost action	1.00
					Flooding	1.00
So:						
Sloan	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
					Flooding	1.00

Table 27.--Water Management Part 2--Continued

Map symbol and soil name	Constructing grassed waterways		Constructing terraces and diversions		Drainage	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Sp:						
Fill Land	Not rated		Not rated		Not rated	
Sloan	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
					Flooding	1.00
Sr:						
Urban Land	Not rated		Not rated		Not rated	
Sloan	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
					Flooding	1.00
ThA:						
Thackery	Very limited		Very limited		Not limited	
	Water erosion	1.00	Water erosion	1.00		
	Depth to saturated zone	0.68	Depth to saturated zone	1.00		
ThB:						
Thackery	Very limited		Very limited		Somewhat limited	
	Water erosion	1.00	Water erosion	1.00	Slope	0.04
	Depth to saturated zone	0.68	Depth to saturated zone	1.00		
Ts:						
Tremont	Somewhat limited		Very limited		Very limited	
	Depth to saturated zone	0.71	Depth to saturated zone	1.00	Frost action	1.00
					Flooding	1.00
TtA:						
Treaty	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
			Ponding	1.00	Frost action	1.00
Ud:						
Udorthents	Not rated		Not rated		Not rated	
Ur:						
Urban Land	Not rated		Not rated		Not rated	
W:						
Water	Not rated		Not rated		Not rated	
WaA:						
Warsaw	Not limited		Very limited		Very limited	
			Too sandy	1.00	Cutbanks cave	1.00
					Depth to saturated zone	1.00
WbA:						
Fill Land	Not rated		Not rated		Not rated	
Warsaw	Not limited		Very limited		Very limited	
			Too sandy	1.00	Cutbanks cave	1.00
					Depth to saturated zone	1.00
WcA:						
Warsaw	Somewhat limited		Very limited		Very limited	
	Content of large stones	0.01	Too sandy	1.00	Cutbanks cave	1.00
			Content of large stones	0.01	Depth to saturated zone	1.00
Urban Land	Not rated		Not rated		Not rated	

Table 27.--Water Management Part 2--Continued

Map symbol and soil name	Constructing grassed waterways		Constructing terraces and diversions		Drainage	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
WeB:						
Wea	Not limited		Not limited		Very limited	
					Depth to saturated zone	1.00
WpC3:						
Wapahani	Very limited		Very limited		Very limited	
	Droughty	1.00	Depth to saturated zone	1.00	Slope	0.96
	Slope	1.00	Slope	1.00	Restricted permeability	0.22
	Depth to saturated zone	0.99	Restricted permeability	0.22		
	Restricted permeability	0.22				
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.22	Restricted permeability	0.22	Slope	0.96
	Depth to saturated zone	0.09			Restricted permeability	0.22
WpD3:						
Wapahani	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Droughty	1.00	Depth to saturated zone	1.00	Restricted permeability	0.22
	Depth to saturated zone	0.99	Restricted permeability	0.22		
	Restricted permeability	0.22				
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Droughty	1.00	Restricted permeability	0.22	Depth to saturated zone	1.00
	Restricted permeability	0.22			Restricted permeability	0.22
	Depth to saturated zone	0.09				
Ws:						
Westland	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Restricted permeability	0.22	Ponding	1.00	Frost action	1.00
			Restricted permeability	0.22	Restricted permeability	0.22
Wt:						
Westland	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Restricted permeability	0.22	Ponding	1.00	Frost action	1.00
			Restricted permeability	0.22	Restricted permeability	0.22
Urban Land	Not rated		Not rated		Not rated	

Table 27.--Water Management Part 2--Continued

Map symbol and soil name	Constructing grassed waterways		Constructing terraces and diversions		Drainage	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
XeA:						
Xenia	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	0.47	Depth to saturated zone	1.00	Restricted permeability	0.22
	Restricted permeability	0.22	Restricted permeability	0.22		
XeB:						
Xenia	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	0.47	Depth to saturated zone	1.00	Restricted permeability	0.22
	Restricted permeability	0.22	Restricted permeability	0.22		

TABLE 28.--ENGINEERING INDEX PROPERTIES

(Absence of an entry indicates that the data were not estimated. See text on page 210 for additional information.)

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	
Ag:												
Algiers---------	0-16	Silt loam	ML	A-4	0	0	100	90-100	80-95	70-85	30-40	4-10
	16-48	Silty clay loam, silt loam, clay loam	CL, ML	A-6, A-7	0	0	100	90-100	80-95	70-85	25-45	9-19
	48-60	Loam	CL, ML	A-4, A-6	0	0	90-100	85-100	75-90	70-85	20-35	5-15
BbB:												
Birkbeck--------	0-11	Silt loam	ML	A-4	0	0	100	100	95-100	85-100	25-40	4-10
	11-42	Silty clay loam, silt loam	CL, ML	A-6	0	0	100	95-100	90-100	85-100	30-40	11-22
	42-60	Loam, silt loam	CL, ML	A-4, A-6	0	0	90-100	85-95	70-95	60-90	22-40	4-16
BcB:												
Birkbeck--------	0-10	Silt loam	ML	A-4, A-6, A-7	0	0	100	100	95-100	95-100	28-45	5-15
	10-52	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	95-100	95-100	85-100	30-50	10-25
	52-65	Loam, silty clay loam, clay loam, silt loam	CL, CL-ML	A-4, A-6	0-1	0-5	95-100	85-100	70-100	55-85	25-40	5-20
	65-80	Loam, silt loam, silty clay loam, clay loam	CL, CL-ML	A-4, A-6	0-1	0-5	95-100	85-100	70-100	55-85	20-40	5-20
Bs:												
Brookston-------	0-12	Silty clay loam	CL	A-6	0	0	100	95-100	95-100	85-95	30-40	10-20
	8-42	Clay loam, silty clay loam	CL, CH	A-6, A-7	0	0	95-100	95-100	85-95	75-85	35-52	16-28
	42-78	Loam, silt loam	ML, CL	A-4, A-6	0	0	90-100	85-95	75-90	55-70	25-40	4-16
Bt:												
Brookston-------	0-12	Silty clay loam	CL	A-6	0	0	100	95-100	95-100	85-95	30-40	10-20
	8-42	Clay loam, silty clay loam	CL	A-6, A-7	0	0	95-100	95-100	85-95	75-85	35-52	16-28
	42-78	Loam, silt loam	ML, CL	A-4, A-6	0	0	90-100	85-95	75-90	55-70	25-40	4-16
Urban Land------	---	---	---	---	---	---	---	---	---	---	---	---
CaE2:												
Casco----------	0-5	Silt loam	CL, CL-ML, ML	A-4	0	0-9	80-100	75-100	65-95	50-80	20-30	3-10
	5-21	Clay loam, sandy clay loam, gravelly loam, gravelly clay loam	CL, GC, SC	A-2, A-6, A-7	0-1	0-9	55-100	50-100	40-90	20-80	25-46	11-26
	21-80	Gravelly loamy sand, extremely gravelly loamy coarse sand	GP, GP-GM, SP, SP-SM	A-1, A-2, A-3	0-3	0-30	25-100	20-95	10-75	2-10	0-14	NP
CbD2:												
Casco----------	0-7	Gravelly loam	SC-SM, SM	A-1, A-2	0	0	55-90	50-75	30-60	15-50	0-20	2-7
	7-17	Clay loam, sandy clay loam, gravelly loam	CL, GC, SC	A-2, A-6, A-7	0-1	0-5	55-100	50-100	40-90	20-80	25-46	11-26
	17-80		GP, GP-GM, SP, SP-SM	A-1, A-2, A-3	0-3	0-30	25-100	20-95	10-75	2-10	0-14	NP
CcD2:												
Casco----------	0-4	Loam	ML	A-4	0	0	80-100	75-100	70-95	60-80	25-40	2-10
	4-20	Clay loam, sandy clay loam, clay	CL	A-6, A-7	0	0-5	80-100	75-100	70-95	50-80	35-50	14-25
	20-60		SM, GP, SP, GM	A-1, A-2	0	0-10	40-75	30-65	10-50	4-25	---	NP

Table 28.--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	
Eldean----------	0-13	Loam	ML	A-4	0	0	80-100	75-100	65-100	60-95	25-40	4-10
	13-33	Silty clay loam, gravelly clay, gravelly clay loam	CL	A-6, A-7	0	0-5	80-100	75-100	65-95	55-90	35-50	14-25
	33-38	Gravelly loam, very gravelly sandy loam	CL, GC, SC	A-4, A-6	0	0-10	45-80	40-70	40-70	35-50	20-35	6-15
	38-60	Stratified sand to very gravelly loamy coarse sand	GP, SP, GM, SM	A-1, A-2	0	0-15	40-75	30-65	10-50	4-25	---	NP
CdE2:												
Casco----------	0-4	Loam	ML	A-4	0	0	80-100	75-100	70-95	60-80	25-40	2-10
	4-20	Clay loam, sandy clay loam, clay	CL	A-6, A-7	0	0-5	80-100	75-100	70-95	50-80	35-50	14-25
	20-60		SM, GP, SP, GM	A-1, A-2	0	0-10	40-75	30-65	10-50	4-25	---	NP
Rodman----------	0-10	Gravelly sandy loam, gravelly loam	CL, ML, SM	A-4, A-6	0	0-2	65-95	55-90	50-85	35-65	0-40	4-22
	10-60	Stratified sand to very gravelly loamy coarse sand	GM, SM, GP, SP	A-1, A-2	0	0-5	40-85	30-65	10-50	4-25	---	NP
CeA:												
Celina----------	0-10	Silt loam	ML, CL-ML	A-4	0	0	100	90-100	90-100	70-90	26-40	5-10
	10-28	Clay, clay loam, silty clay loam	CL	A-6, A-7	0	0	100	90-100	80-95	70-85	32-48	12-28
	28-60	Loam	CL, CL-ML	A-4, A-6	0	0	75-90	70-90	65-85	55-75	20-36	4-16
CeB:												
Celina----------	0-10	Silt loam	ML, CL-ML	A-4	0	0	100	90-100	90-100	70-90	26-40	5-10
	10-28	Clay, clay loam, silty clay loam	CL	A-6, A-7	0	0	100	90-100	80-95	70-85	32-48	12-28
	28-60	Loam	CL, CL-ML	A-4, A-6	0	0	75-90	70-90	65-85	55-75	20-36	4-16
CfB:												
Celina----------	0-12	Silt loam	ML	A-4	0	0	100	90-100	90-100	70-85	26-40	3-10
	12-28	Clay, clay loam, silty clay loam	CL	A-6, A-7	0	0	100	90-100	80-95	70-85	32-48	12-28
	28-80	Loam, silt loam, clay loam	CL, CL-ML	A-6, A-4	0	0	75-95	75-90	65-90	50-80	20-36	4-16
Losantville-----	0-8	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0-2	90-100	85-100	80-95	50-85	15-40	NP-15
	8-18	Clay, clay loam	CH, CL	A-6, A-7, A-7-6	0	0-2	90-100	80-98	75-95	55-80	30-60	10-35
	18-80	Loam	CL, ML, SC, SM	A-4, A-6	0	0-5	100	80-95	75-90	45-70	15-30	NP-15
ChB:												
Celina----------	0-10	Silt loam	ML	A-4	0	0	100	90-100	90-100	70-85	26-42	9-18
	10-30	Clay, clay loam, silty clay loam	CL	A-6, A-7	0	0	100	90-100	80-95	70-85	32-48	12-28
	30-80	Loam, silt loam, clay loam	CL, CL-ML	A-4, A-6	0	0	75-95	75-90	65-90	50-80	20-36	4-16
Strawn----------	0-10	Silty clay loam	CL	A-6, A-7	0	0	90-100	90-100	80-95	80-95	30-45	10-25
	10-23	Silty clay loam, clay loam	CL	A-6, A-7	0-1	0-5	90-100	80-100	75-95	50-95	25-45	10-25
	23-80	Loam, silt loam, clay loam	CL, SC	A-4, A-6	0-1	0-5	75-100	70-100	60-95	40-95	20-35	7-20
CrA:												
Crosby----------	0-9	Silt loam	CL, ML	A-4, A-6	0	0	100	90-100	90-100	80-95	26-40	5-13
	9-28	Silty clay, clay loam, silty clay loam, clay	CL, CH	A-6, A-7	0	0	100	90-100	80-100	70-90	32-56	12-32
	28-60	Loam	CL, CL-ML	A-4, A-6	0	0	75-100	70-100	65-90	55-80	20-36	4-20

Table 28.--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	
CrB:												
Crosby----------	0-9	Silt loam	CL, ML	A-4, A-6	0	0	100	90-100	90-100	80-95	26-40	5-13
	9-28	Silty clay, clay loam, silty clay loam, clay	CL, CH	A-6, A-7	0	0	100	90-100	80-100	70-90	32-56	12-32
	28-60	Loam	CL, CL-ML	A-4, A-6	0	0	75-100	70-100	65-90	55-80	20-36	4-20
CsA:												
Crosby----------	0-10	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	95-100	80-100	50-90	22-34	6-15
	10-31	Clay loam, silty clay loam	CH, CL	A-6, A-7	0	0-3	92-99	89-97	78-93	64-76	37-55	17-31
	31-60	Loam, clay loam, sandy loam	CL, CL-ML, ML	A-4, A-6	0	0-3	88-94	83-89	74-87	50-64	17-30	2-14
Lewisburg-------	0-9	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0-2	95-100	90-100	85-100	75-90	24-40	4-14
	9-21	Clay loam, clay, silty clay loam	CL	A-6, A-7	0	0-2	90-100	85-100	80-100	65-90	32-48	14-30
	21-60	Loam, silt loam	CL, CL-ML, ML	A-4, A-6	0	0-5	85-100	80-95	65-90	50-75	20-35	3-13
CsB:												
Crosby----------	0-10	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	95-100	80-100	50-90	22-34	6-15
	10-31	Clay loam, silty clay loam	CH, CL	A-6, A-7	0	0-3	92-99	89-97	78-93	64-76	37-55	17-31
	31-60	Loam, clay loam, sandy loam	CL, CL-ML, ML	A-4, A-6	0	0-3	88-94	83-89	74-87	50-64	17-30	2-14
Lewisburg-------	0-9	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0-2	95-100	90-100	85-100	75-90	24-40	4-14
	9-21	Clay loam, clay, silty clay loam	CL	A-6, A-7	0	0-2	90-100	85-100	80-100	65-90	32-48	14-30
	21-60	Loam, silt loam	CL, CL-ML, ML	A-4, A-6	0	0-5	85-100	80-95	65-90	50-75	20-35	3-13
CtA:												
Crosby----------	0-10	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	95-100	90-100	80-95	60-85	15-40	NP-15
	10-28	Clay loam, silty clay loam, silty clay, clay	CH, CL	A-6, A-7-6	0-1	0-3	90-100	85-100	75-95	55-90	30-60	10-35
	28-34	Loam, clay loam	CL, ML, SC, SM	A-4, A-6	0-1	0-3	85-100	80-98	65-90	40-70	15-35	NP-20
	34-80	Loam	CL, ML, SC, SM	A-4, A-6	0-1	0-3	85-100	80-98	65-90	40-70	15-30	NP-15
Celina----------	0-10	Silt loam	ML	A-4	0	0	100	90-100	90-100	70-85	26-40	3-10
	10-24	Clay, clay loam, silty clay loam	CL	A-6, A-7	0	0	100	90-100	80-95	70-85	32-48	12-28
	24-80	Loam, silt loam, clay loam	CL, CL-ML	A-4, A-6	0	0	75-95	75-90	65-90	50-80	20-36	4-16
CtB:												
Crosby----------	0-8	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	95-100	90-100	80-95	60-85	15-40	NP-15
	8-28	Clay loam, silty clay loam, silty clay, clay	CH, CL	A-6, A-7-6	0-1	0-3	90-100	85-100	75-95	55-90	30-60	10-35
	28-35	Loam, fine sandy loam, clay loam	CL, ML, SC, SM	A-4, A-6	0-1	0-3	85-100	80-98	65-90	40-70	15-35	NP-20
	35-80	Loam	CL, ML, SC, SM	A-4, A-6	0-1	0-3	85-100	80-98	65-90	40-70	15-30	NP-15
Celina----------	0-8	Silt loam	ML	A-4	0	0	100	90-100	90-100	70-85	26-40	3-10
	8-26	Clay, clay loam, silty clay loam	CL	A-6, A-7	0	0	100	90-100	80-95	70-85	32-48	12-28
	26-80	Loam, silt loam, clay loam	CL, CL-ML	A-4, A-6	0	0	75-95	75-90	65-90	50-80	20-36	4-16
Du:												
Dumps----------	---	---	---	---	---	---	---	---	---	---	---	---

Table 28.--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	
EdB:												
Edenton---------	0-7	Silt loam	CL-ML, ML	A-4	0	0	100	100	85-95	80-90	24-38	4-10
	7-22	Clay loam, silty clay loam, silty clay	CH, CL	A-6, A-7	0	0-10	100	100	75-95	60-95	32-55	12-35
	22-33	Silty clay, silty clay loam	CH, CL	A-6, A-7	0	0-10	80-100	80-100	75-95	60-95	32-55	12-35
	33-43	Weathered bedrock			---	---	---	---	---	---	---	---
EdC2:												
Edenton---------	0-7	Silt loam	CL-ML, ML	A-4	0	0	100	100	85-95	80-90	24-38	4-10
	7-22	Clay loam, silty clay loam, silty clay	CH, CL	A-6, A-7	0	0-10	100	100	75-95	60-95	32-55	12-35
	22-33	Silty clay, silty clay loam	CH, CL	A-6, A-7	0	0-10	80-100	80-100	75-95	60-95	32-55	12-35
	33-43	Weathered bedrock			---	---	---	---	---	---	---	---
EdD2:												
Edenton---------	0-7	Silt loam	CL-ML, ML	A-4	0	0	100	100	85-95	80-90	24-38	4-10
	7-22	Clay loam, silty clay loam, silty clay	CH, CL	A-6, A-7	0	0-10	100	100	75-95	60-95	32-55	12-35
	22-33	Silty clay, silty clay loam	CH, CL	A-6, A-7	0	0-10	80-100	80-100	75-95	60-95	32-55	12-35
	33-43	Weathered bedrock			---	---	---	---	---	---	---	---
Ee:												
Eel----------	0-8	Loam	ML	A-4	0	0	100	100	90-100	70-90	28-40	4-10
	8-24	Silt loam, loam	CL, ML	A-4, A-6	0	0	100	100	85-100	70-85	26-40	6-14
	24-60	Stratified silt loam to loam to fine sandy loam	CL, ML	A-4	0	0	100	95-100	75-100	50-80	0-30	NP-8
EmA:												
Eldean----------	0-13	Silt loam	ML	A-4	0	0	80-100	75-100	65-100	60-95	25-40	4-10
	13-33	Silty clay loam, gravelly clay, gravelly clay loam	CL	A-6, A-7	0	0-5	80-100	75-100	65-95	55-90	35-50	14-25
	33-38	Gravelly clay loam, gravelly loam, very gravelly sandy loam	GC, SC, SM	A-4, A-6	0	0-10	45-80	40-70	40-70	35-50	20-35	6-15
	38-60	Stratified sand to very gravelly loamy coarse sand	GM, SM, GP, SP	A-1, A-2	0	0-15	40-75	30-65	10-50	4-25	---	NP
EmB:												
Eldean----------	0-13	Silt loam	ML	A-4	0	0	80-100	75-100	65-100	60-95	25-40	4-10
	13-33	Silty clay loam, gravelly clay, gravelly clay loam	CL	A-6, A-7	0	0-5	80-100	75-100	65-95	55-90	35-50	14-25
	33-38	Gravelly clay loam, gravelly loam, very gravelly sandy loam	GC, SC, SM	A-4, A-6	0	0-10	45-80	40-70	40-70	35-50	20-35	6-15
	38-60	Stratified sand to very gravelly loamy coarse sand	GM, SM, GP, SP	A-1, A-2	0	0-15	40-75	30-65	10-50	4-25	---	NP

Table 28.--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	
EmB2:												
Eldean----------	0-13	Silt loam	ML	A-4	0	0	80-100	75-100	65-100	60-95	25-40	4-10
	13-33	Silty clay loam, gravelly clay, gravelly clay loam	CL	A-7, A-6	0	0-5	80-100	75-100	65-95	55-90	35-50	14-23
	33-38	Gravelly clay loam, gravelly loam, very gravelly sandy loam	GC, SC, SM	A-4, A-6	0	0-10	45-80	40-70	40-70	35-50	20-35	6-15
	38-60	Stratified sand to very gravelly loamy coarse sand	GM, SM, GP, SP	A-1, A-2	0	0-15	40-75	30-65	10-50	4-25	---	NP
EmC2:												
Eldean----------	0-13	Silt loam	ML	A-4	0	0	80-100	75-100	65-100	60-95	25-40	4-10
	13-33	Silty clay loam, gravelly clay, gravelly clay loam	CL	A-6, A-7	0	0-5	80-100	75-100	65-95	55-90	35-50	14-25
	33-38	Gravelly clay loam, gravelly loam, very gravelly sandy loam	GC, SC, SM	A-4, A-6	0	0-10	45-80	40-70	40-70	35-50	20-35	6-15
	38-60	Stratified sand to very gravelly loamy coarse sand	GM, SM, GP, SP	A-1, A-2	0	0-15	40-75	30-65	10-50	4-25	---	NP
EnC3:												
Eldean----------	0-13	Clay loam	CL	A-7, A-6	0	0-5	80-100	75-100	65-100	60-95	25-40	4-10
	13-33	Silty clay loam, gravelly clay, gravelly clay loam	CL	A-6, A-7	0	0-5	80-100	75-100	65-95	55-90	35-50	14-25
	33-38	Gravelly loam, very gravelly sandy loam, gravelly clay loam	GC, SC, SM	A-4, A-6	0	0-10	45-80	40-70	40-70	35-50	20-35	6-15
	38-60	Stratified sand to very gravelly loamy coarse sand	GM, SM, GP, SP	A-1, A-2	0	0-15	40-75	30-65	10-50	4-25	---	NP
EoC2:												
Eldean----------	0-6	Silt loam	CL	A-4, A-6	0	0-5	85-100	75-100	65-100	55-90	25-40	9-18
	6-22	Clay, clay loam, gravelly clay loam	CL, ML	A-6, A-7	0	0-5	75-100	60-100	55-95	50-80	38-50	12-23
	22-30	Gravelly clay loam, loam, gravelly sandy loam	CL, GC, SC	A-2, A-6, A-7	0	0-10	55-85	45-85	45-75	30-60	38-50	12-23
	30-80	Stratified sand to extremely gravelly coarse sandy loam	GM, GP-GM, SM, SP-SM	A-1, A-2	0	0-15	30-70	20-50	5-40	0-35	0-14	NP
Miamian---------	0-6	Silt loam	CL-ML, ML	A-4, A-6	0	0	95-100	95-100	90-100	70-95	25-40	4-12
	6-27	Silty clay loam, clay loam, clay	CL	A-6, A-7	0	0-5	85-100	80-100	75-95	70-85	35-50	15-30
	27-80	Loam, silt loam, clay loam	CL, CL-ML, ML	A-4, A-6	0	0-5	75-95	75-90	65-85	50-75	20-35	3-13
EoD2:												
Eldean----------	0-6	Silt loam	CL	A-4, A-6	0	0-5	85-100	75-100	65-100	55-90	25-40	9-18
	6-21	Clay, clay loam, gravelly clay loam	CL, ML	A-6, A-7	0	0-5	75-100	60-100	55-95	50-80	38-50	12-23
	21-26	Gravelly clay loam, loam, gravelly sandy loam	CL, GC, SC	A-2, A-6, A-7	0	0-10	55-85	45-85	45-75	30-60	38-50	12-23
	26-80	Stratified sand to extremely gravelly coarse sandy loam	GM, GP-GM, SM, SP-SM	A-1, A-2	0	0-15	30-70	20-50	5-40	0-35	---	NP

Table 28.--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	
Miamian---------	0-5	Silt loam	ML, CL-ML	A-6, A-4	0	0	95-100	95-100	90-95	70-95	25-40	4-12
	5-15	Silty clay loam, clay loam, clay	CL	A-6, A-7	0	0-5	85-100	80-100	75-95	70-85	35-50	15-30
	15-80	Loam, silt loam, clay loam	CL, CL-ML, ML	A-4, A-6	0	0-5	75-95	75-90	65-85	50-75	20-35	3-13
EpC:												
Eldean----------	0-13	Silt loam	ML	A-4	0	0	80-100	75-100	65-100	60-95	25-40	4-10
	13-33	Silty clay loam, gravelly clay, gravelly clay loam	CL	A-6, A-7	0	0-5	80-100	75-100	65-95	55-90	35-50	14-25
	33-38	Very gravelly sandy loam, gravelly loam	GC, SC, SM	A-4, A-6	0	0-10	45-80	40-70	40-70	35-50	20-35	6-15
	38-60	Stratified sand to very gravelly loamy coarse sand	GM, SM, GP, SP	A-1, A-2	0	0-15	40-75	30-65	10-50	4-25	---	NP
Urban Land------	---	---	---	---	---	---	---	---	---	---	---	---
FaF:												
Fairmount Variant--------	0-6	Silty clay loam	CL	A-6, A-7	0	0-5	80-100	70-95	65-90	60-85	35-45	14-25
	6-29	Silty clay loam, channery silty clay	CH	A-7	0	20-30	70-95	65-90	60-90	55-85	50-65	28-40
	29-39	Weathered bedrock			---	---	---	---	---	---	---	---
FnA:												
Fincastle-------	0-11	Silt loam	ML	A-4	0	0	100	100	95-100	90-100	25-40	4-10
	11-40	Silt loam, clay loam, silty clay loam	CL	A-6, A-7	0	0	95-100	90-100	85-100	75-100	25-50	11-28
	40-60	Loam, silt loam	CL-ML, CL	A-4, A-6	0	0-5	90-100	85-100	70-95	60-85	25-40	4-16
Gn:												
Genesee---------	0-10	Loam	ML	A-4	0	0	100	100	90-100	70-90	28-40	4-10
	10-36	Silt loam, loam	CL, ML	A-4, A-6	0	0	100	100	85-100	70-85	26-40	6-14
	36-66	Stratified fine sandy loam to silt loam	ML	A-4	0	0	100	95-100	75-100	50-80	0-30	NP-8
Ko:												
Kokomo----------	0-10	Silty clay loam	CH, CL, MH, ML	A-6, A-7-6	0	0	90-100	85-100	75-100	55-95	35-55	10-30
	10-51	Silty clay loam, clay loam, silty clay	CL, CH	A-7-6	0	0-1	90-100	85-100	75-100	55-95	40-60	20-35
	51-80	Loam	CL, CL-ML, ML, SC	A-4, A-6	0-1	0-3	90-100	85-100	70-95	45-70	15-30	NP-15
Lh:												
Linwood---------	0-9	Mucky silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	90-100	70-90	20-30	6-11
	9-28	Muck	PT	A-8	0	0-20	---	---	---	---	---	---
	28-80	Silt loam, sandy loam, silty clay loam	CL, ML, SC, SC-SM	A-1, A-2, A-4, A-6	0	0-10	90-100	75-100	45-100	20-95	15-40	NP-20
Ln:												
Linwood---------	0-35	Muck	PT	A-1-a	0	0	---	---	---	---	---	---
	35-60	Silt loam, loam, silty clay loam	CL, ML	A-4, A-6	0	0	100	95-100	80-95	60-90	20-35	4-15
LuF2:												
Lumberton-------	0-3	Silt loam	CL-ML, ML	A-4	0	0	95-100	95-100	90-100	70-90	26-30	4-12
	3-8	Clay loam, silt loam	CL	A-6, A-7	0	0	95-100	95-100	90-100	70-95	30-45	15-25
	8-34	Clay loam, silty clay loam	CL	A-7	0	0	90-100	90-100	90-100	75-95	32-45	15-30
	34-40	Unweathered bedrock			---	---	---	---	---	---	---	---

Table 28.--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	
MhA:												
Miamian---------	0-7	Silt loam	CL-ML, ML	A-4, A-6	0	0	95-100	90-100	90-100	70-90	26-40	4-10
	7-38	Clay, loam, clay loam, silty clay loam	CL	A-6, A-7	0	0	90-100	85-100	75-100	70-90	32-50	14-30
	38-60	Silt loam, loam	CL, ML	A-4, A-6	0	0-5	75-100	70-100	65-85	55-75	20-36	4-16
MhB:												
Miamian---------	0-7	Silt loam	CL-ML, ML	A-4	0	0	95-100	90-100	90-100	70-90	26-40	4-10
	7-38	Loam, clay, clay loam, silty clay loam	CL	A-6, A-7	0	0	90-100	85-100	75-100	70-90	26-40	4-10
	38-60	Silt loam, loam	CL, ML	A-4, A-6	0	0-5	75-100	70-100	65-85	55-75	20-36	4-16
MhB2:												
Miamian---------	0-7	Silt loam	CL-ML, ML	A-4	0	0	95-100	90-100	90-100	70-90	26-40	4-10
	7-38	Clay, loam, clay loam, silty clay loam	CL	A-6, A-7	0	0	90-100	85-100	75-100	70-90	32-50	14-30
	38-60	Silt loam, loam	CL, ML	A-4, A-6	0	0-5	75-100	70-100	65-85	55-75	20-36	4-16
MhC2:												
Miamian---------	0-7	Silt loam	CL-ML, ML	A-4	0	0	95-100	90-100	90-100	70-90	26-40	4-10
	7-38	Clay, loam, clay loam, silty clay loam	CL	A-7, A-6	0	0	90-100	85-100	75-100	70-90	32-50	14-30
	38-60	Silt loam, loam	CL, ML	A-4, A-6	0	0-5	75-100	70-100	65-85	55-75	20-36	4-16
MhD2:												
Miamian---------	0-7	Silt loam	CL-ML, ML	A-4	0	0	95-100	90-100	90-100	70-90	26-40	4-10
	7-38	Clay loam, clay, loam, silty clay loam	CL	A-6, A-7	0	0	90-100	85-100	75-100	70-90	32-50	14-30
	38-60	Silt loam, loam	CL, ML	A-4, A-6	0	0-5	75-100	70-100	65-85	55-75	20-36	4-16
MlB3:												
Miamian---------	0-7	Clay loam	CL	A-6, A-7	0	0	90-100	90-100	90-100	70-90	25-40	4-10
	7-38	Loam, clay, clay loam, silty clay loam	CL	A-6, A-7	0	0	90-100	85-100	75-100	70-90	32-50	14-30
	38-60	Silt loam, loam	CL, ML	A-4, A-6	0	0-5	75-100	70-100	65-85	55-75	20-36	4-16
MlC3:												
Miamian---------	0-7	Clay loam	CL	A-6, A-7	0	0	95-100	90-100	90-100	70-90	26-40	4-10
	7-38	Clay, loam, clay loam, silty clay loam	CL	A-6, A-7	0	0	90-100	85-100	75-95	70-90	32-50	14-30
	38-60	Silt loam, loam	CL, ML	A-4, A-6	0	0-5	75-100	70-100	65-85	55-75	20-36	4-16
MlD3:												
Miamian---------	0-7	Clay loam	CL	A-6, A-7	0	0	95-100	90-100	90-100	70-90	26-40	4-10
	7-38	Clay, loam, clay loam, silty clay loam	CL	A-6, A-7	0	0	90-100	85-100	75-100	70-90	35-50	14-30
	38-60	Silt loam, loam	CL, ML	A-4, A-6	0	0-5	75-100	70-100	65-85	55-75	20-36	4-16
MmD2:												
Miamian---------	0-7	Silt loam	CL-ML, ML	A-4	0	0	95-100	90-100	90-100	70-90	26-40	4-10
	7-38	Loam, clay, clay loam, silty clay loam	CL	A-6, A-7	0	0	90-100	85-100	75-100	70-90	32-50	14-30
	38-60	Silt loam, loam	CL, ML	A-4, A-6	0	0-5	75-100	70-100	65-85	55-75	20-36	4-16
Casco----------	0-4	Loam	ML	A-4	0	0	80-100	75-100	70-95	60-80	25-40	2-10
	4-20	Clay, clay loam, sandy clay loam	CL	A-6, A-7	0	0-5	80-100	75-100	70-95	50-80	35-50	14-25
	20-60		GP, SP, GM, SM	A-1, A-2	0	0-10	40-75	30-65	10-50	4-25	---	NP

Table 28.--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	
MmE2:												
Miamian---------	0-7	Silt loam	CL-ML, ML	A-4	0	0	95-100	90-100	90-100	70-90	26-40	4-10
	7-38	Loam, clay, clay loam, silty clay loam	CL	A-6, A-7	0	0	90-100	85-100	75-100	70-90	32-50	14-30
	38-60	Silt loam, loam	CL, ML	A-4, A-6	0	0-5	75-100	70-100	65-85	55-75	20-36	4-16
Casco----------	0-4	Loam	ML	A-4	0	0	80-100	75-100	70-95	60-80	25-40	2-10
	4-20	Clay loam, sandy clay loam, clay	CL	A-6, A-7	0	0-5	80-100	75-100	70-95	50-80	35-50	14-25
	20-60		GP, SP, GM, SM	A-1, A-2	0	0-10	40-75	30-65	10-50	4-25	---	NP
MoB2:												
Miamian---------	0-7	Silt loam	CL-ML, ML	A-4	0	0	95-100	80-100	80-100	70-90	26-40	4-10
	7-38	Silty clay loam, clay, clay loam, loam	CL	A-6, A-7	0	0	90-100	85-100	75-100	70-90	32-50	14-30
	38-60	Silt loam, loam	CL, ML	A-4, A-6	0	0-5	75-100	70-100	65-85	55-75	20-36	4-16
Eldean----------	0-13	Silt loam	ML	A-4	0	0	80-100	75-100	65-100	60-95	25-40	4-10
	13-33	Silty clay loam, gravelly clay, gravelly clay loam	CL	A-6, A-7	0	0-5	80-100	75-100	65-95	55-90	35-50	14-25
	33-38	Gravelly loam, very gravelly sandy loam	GC, SC, SM	A-4, A-6	0	0-10	45-80	40-70	40-70	35-50	20-35	6-15
	38-60	Stratified very gravelly loamy coarse sand to sand	GM, SM, GP, SP	A-1, A-2	0	0-15	40-75	30-65	10-50	4-25	---	NP
MoC2:												
Miamian---------	0-7	Silt loam	CL-ML, ML	A-4	0	0	95-100	90-100	90-100	70-90	26-40	4-10
	7-38	Loam, silty clay loam, clay loam	CL	A-6, A-7	0	0	90-100	85-100	75-100	70-90	32-50	14-30
	38-60	Silt loam, loam	CL, ML	A-4, A-6	0	0-5	75-100	70-100	65-85	55-75	20-36	4-16
Eldean----------	0-13	Silt loam	ML	A-4	0	0	80-100	75-100	65-100	60-95	25-40	4-10
	13-33	Silty clay loam, gravelly clay, gravelly clay loam	CL	A-6, A-7	0	0-5	80-100	75-100	65-95	55-90	35-50	14-25
	33-38	Gravelly loam, very gravelly sandy loam	GC, SC, SM	A-4, A-6	0	0-10	45-80	40-70	40-70	35-50	20-35	6-15
	38-60	Stratified sand to very gravelly loamy coarse sand	GM, SM, GP, SP	A-1, A-2	0	0-15	40-75	30-65	10-50	4-25	---	NP
MpE:												
Miamian---------	0-7	Silt loam	ML, CL-ML	A-4	0	0	95-100	90-100	90-100	70-90	26-40	4-10
	7-38	Loam, silty clay loam, clay loam	CL	A-6, A-7	0	0	90-100	85-100	75-100	70-90	32-50	14-30
	38-60	Silt loam, loam	CL, ML	A-4, A-6	0	0-5	75-100	70-100	65-85	55-75	20-36	4-16
Hennepin--------	0-4	Loam, silt loam	CL, ML	A-4, A-6	0	0	95-100	90-100	80-95	70-90	20-40	4-12
	4-12	Loam, clay loam	CL	A-6, A-7	0	0	95-100	90-100	75-95	60-80	25-40	5-15
	12-60	Clay loam, loam	CL	A-4, A-6	0	0-5	85-100	75-100	65-100	35-95	20-50	5-25
MpF:												
Miamian---------	0-7	Silt loam	CL-ML, ML	A-4	0	0	95-100	90-100	90-100	70-90	26-40	4-10
	7-38	Loam, clay loam, silty clay loam	CL	A-6, A-7	0	0	90-100	85-100	75-100	70-90	32-50	14-30
	38-60	Silt loam, loam	CL, ML	A-4, A-6	0	0-5	75-100	70-100	65-85	55-75	20-36	4-16
Hennepin--------	0-4	Loam, silt loam	CL, ML	A-4, A-6	0	0	95-100	90-100	80-95	70-90	20-40	4-12
	4-12	Loam, clay loam	CL	A-6, A-7	0	0	95-100	90-100	75-95	70-90	25-45	12-25
	12-60	Clay loam, loam	ML, CL	A-4, A-6	0	0	95-100	90-100	75-85	60-80	25-40	5-15

Table 28.--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	
MqE2:												
Miamian---------	0-4	Silt loam	CL-ML, ML	A-4, A-6	0	0	95-100	95-100	90-100	70-95	25-40	7-12
	4-14	Silt loam, clay loam, silty clay loam	CL	A-6, A-7	0	0	85-100	80-100	75-95	70-85	35-45	10-20
	14-38	Clay loam, clay	CL	A-6, A-7-6	0	0-5	85-100	80-100	75-95	70-85	40-55	20-30
	38-80	Loam, gravelly loam	CL-ML, ML	A-4, A-6	0	0-5	75-95	75-90	65-85	50-75	20-45	6-15
Thrifton--------	0-4	Loam	CL	A-6, A-7	0	0-5	85-100	80-100	75-95	70-85	35-50	15-30
	4-19	Clay loam, loam	CL	A-6, A-7	0	0-5	85-100	80-100	75-95	70-85	35-50	15-30
	19-80	Loam, channery loam, gravelly loam	CL-ML	A-4, A-6	0	0-5	75-95	75-90	65-85	50-75	20-35	3-13
MqF2:												
Miamian---------	0-7	Silt loam	CL-ML, ML	A-4, A-6	0	0	95-100	95-100	90-100	70-95	25-40	7-12
	7-14	Silt loam, clay loam, silty clay loam	CL	A-6, A-7	0	0	85-100	80-100	75-95	70-85	35-45	10-20
	14-38	Clay loam, clay	CL	A-6, A-7-6	0	0-5	85-100	80-100	75-95	70-85	40-55	20-30
	38-80	Loam, gravelly loam	CL-ML, ML	A-4, A-6	0	0-5	75-95	75-90	65-85	50-75	20-45	6-15
Thrifton--------	0-4	Loam	CL	A-6, A-7	0	0-5	85-100	80-100	75-95	70-85	35-50	15-30
	4-18	Clay loam, loam, gravelly loam	CL	A-6, A-7	0	0-5	85-100	80-100	75-95	70-85	35-50	15-30
	18-80	Loam, gravelly loam	CL-ML	A-4, A-6	0	0-5	75-95	75-90	65-85	50-75	20-35	3-13
MrB:												
Miamian---------	0-7	Loam, clay loam, silt loam	CL-ML, ML	A-4	0	0	95-100	90-100	90-100	70-90	26-40	4-10
	7-38	Loam, clay loam, silty clay loam	CL	A-6, A-7	0	0	90-100	85-100	75-100	70-90	32-50	14-30
	38-60	Silt loam, loam	CL, ML	A-4, A-6	0	0-5	75-100	70-100	65-85	55-75	20-36	4-16
Urban Land------	---	---	---	---	---	---	---	---	---	---	---	---
MrC:												
Miamian---------	0-7	Clay loam, loam, silt loam	CL-ML, ML	A-4	0	0	95-100	90-100	90-100	70-90	26-40	4-10
	7-38	Loam, clay loam, silty clay loam	CL	A-6, A-7	0	0	90-100	85-100	75-100	70-90	32-50	14-30
	38-60	Silt loam, loam	CL, ML	A-4, A-6	0	0-5	75-100	75-100	65-85	55-75	20-36	4-16
Urban Land------	---	---	---	---	---	---	---	---	---	---	---	---
Ms:												
Millsdale-------	0-8	Silty clay loam	CL	A-6, A-7	0	0	95-100	90-100	85-100	80-95	32-50	12-25
	8-26	Clay, silty clay loam, clay loam	CH, CL	A-7, A-6	0	0-5	90-100	90-100	85-100	80-95	35-60	20-35
	26-28	Unweathered bedrock			---	---	---	---	---	---	---	---
MtA:												
Milton----------	0-6	Silt loam	ML, CL-ML	A-4	0	0	95-100	90-100	85-100	75-95	20-36	4-10
	6-30	Silty clay loam, clay loam, clay	CL, CH	A-6, A-7	0	0-5	95-100	80-100	75-95	70-95	32-60	14-34
	30-32	Unweathered bedrock			---	---	---	---	---	---	---	---
MtB:												
Milton----------	0-6	Silt loam	ML, CL-ML	A-4	0	0	95-100	90-100	85-100	70-95	26-36	4-10
	6-30	Silty clay loam, clay loam, clay	CL, CH	A-6, A-7	0	0-5	95-100	80-100	75-95	70-95	32-60	14-34
	30-32	Unweathered bedrock			---	---	---	---	---	---	---	---
MtC2:												
Milton----------	0-6	Silt loam	ML, CL-ML	A-4	0	0	95-100	90-100	85-100	70-95	26-36	4-10
	6-30	Silty clay loam, clay loam, clay	CL, CH	A-6, A-7	0	0-5	95-100	80-100	75-95	70-95	32-60	14-34
	30-32	Unweathered bedrock			---	---	---	---	---	---	---	---

Table 28.--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	
MUF:												
Milton Variant--	0-12	Channery silt loam, very channery silt loam	GM, ML	A-4	0	5-10	45-85	40-80	35-75	35-70	26-40	4-10
	12-30	Channery silty clay loam, very channery silty clay loam, very channery loam	CL, GC, GM, ML	A-6, A-7	10-50	5-10	45-75	40-70	35-65	30-60	35-48	12-22
	30-32	Unweathered bedrock			---	---	---	---	---	---	---	---
OcA:												
Ockley----------	0-10	Silt loam	ML	A-4	0	0	100	95-100	90-100	75-100	25-40	4-10
	10-22	Clay loam, silty clay loam	CL	A-6	0	0	100	90-100	85-100	80-95	25-40	11-18
	22-45	Gravelly clay loam, clay loam, gravelly sandy clay loam	CL, SC	A-6	0	0-5	75-100	70-100	65-90	45-75	30-40	14-25
	45-60	Stratified gravelly coarse sand to gravelly sand	GP, SP, GM, SM	A-1, A-2	0	0-15	40-75	30-65	10-50	4-25	---	NP
OcB:												
Ockley----------	0-10	Silt loam	ML	A-4	0	0	100	95-100	90-100	75-100	25-40	4-10
	10-22	Clay loam, silty clay loam	CL	A-6	0	0	100	90-100	85-100	80-95	25-40	11-18
	22-45	Gravelly clay loam, clay loam, gravelly sandy clay loam	CL, SC	A-6	0	0-5	75-100	70-100	65-90	45-75	30-40	14-25
	45-60	Stratified gravelly coarse sand to gravelly sand	GM, SM, GP, SP	A-1, A-2	0	0-15	40-75	30-65	10-50	4-25	---	NP
OcB2:												
Ockley----------	0-10	Silt loam	ML	A-4	0	0	100	95-100	90-100	75-100	25-40	4-10
	10-22	Clay loam, silty clay loam	CL	A-6	0	0	100	90-100	85-100	80-95	25-40	11-18
	22-45	Gravelly clay loam, clay loam, gravelly sandy clay loam	CL, SC	A-6	0	0-5	75-100	70-100	65-90	45-75	30-40	14-25
	45-60	Stratified gravelly coarse sand to gravelly sand	GP, SP, GM, SM	A-1, A-2	0	5-15	40-75	30-65	10-50	4-25	---	NP
OdB:												
Ockley----------	0-10	Silt loam	ML	A-4	0	0	100	95-100	90-100	75-100	25-40	4-10
	10-22	Clay loam, silty clay loam	CL	A-4, A-6	0	0	100	90-100	85-100	80-95	25-40	11-18
	22-45	Gravelly clay loam, clay loam, gravelly sandy clay loam	CL, SC	A-6	0	0-5	75-100	70-100	65-90	45-75	30-40	14-25
	45-60	Stratified gravelly coarse sand to gravelly sand	GP, SP, GM, SM	A-1, A-2	0	0-15	40-75	30-65	10-50	4-25	---	NP
Urban Land------	---	---	---	---	---	---	---	---	---	---	---	---
OeB:												
Odell----------	0-11	Silty clay loam, silt loam	CL-ML, ML	A-4, A-6	0	0	100	100	90-100	75-95	25-40	4-10
	11-24	Clay loam, loam, silty clay loam	CL	A-6, A-7	0	0	95-100	90-100	80-100	70-85	30-45	12-28
	24-60	Loam	CL, CL-ML	A-4, A-6	0	0-5	80-95	70-90	65-85	55-75	20-36	4-16

Table 28.--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	
Pa:												
Patton----------	0-8	Silty clay loam	CL	A-6, A-7	0	0	100	100	95-100	85-100	30-45	11-22
	8-32	Silty clay loam	CL	A-7, A-6	0	0	100	100	95-100	85-100	35-45	15-25
	32-60	Stratified silt loam to silty clay loam	CL, CL-ML	A-6, A-4, A-7	0	0	100	100	95-100	80-100	25-42	6-20
Pg:												
Pits, Gravel----	---	---	---	---	---	---	---	---	---	---	---	---
Pu:												
Pits, Quarry----	---	---	---	---	---	---	---	---	---	---	---	---
Ra:												
Ragsdale--------	0-16	Silty clay loam	CL, ML	A-6, A-7	0	0	100	100	90-100	85-100	30-46	11-20
	16-39	Silty clay loam, silt loam	CL, ML	A-6, A-7	0	0	100	100	90-100	85-100	30-48	11-22
	39-96	Silt loam, loam	CL, ML	A-4, A-6	0	0	90-100	85-100	80-100	70-100	20-40	4-16
RbA:												
Randolph--------	0-13	Silt loam	CL-ML, ML	A-4, A-6	0	0	95-100	95-100	90-100	75-100	22-40	4-12
	13-37	Silty clay, silty clay loam	CH, CL	A-6, A-7	0	0-5	75-100	75-100	75-100	70-100	35-60	18-38
	37-39	Unweathered bedrock			---	---	---	---	---	---	---	---
RdA:												
Raub----------	0-14	Silty clay loam, silt loam	CL-ML, ML	A-4, A-6	0	0	100	100	95-100	85-100	25-40	4-10
	14-27	Silty clay loam	CL	A-6, A-7	0	0	100	100	95-100	90-100	30-45	11-25
	27-44	Clay loam, silty clay loam	CL	A-6, A-7	0	0	95-100	90-100	80-95	65-80	32-45	12-28
	44-60	Loam, clay loam	CL, CL-ML	A-4	0	0-5	85-95	80-95	70-85	55-70	20-36	4-16
RdB:												
Raub----------	0-14	Silty clay loam, silt loam	CL-ML, ML	A-4, A-6	0	0	100	100	95-100	85-100	25-40	4-10
	14-27	Silty clay loam	CL	A-6, A-7	0	0	100	100	95-100	90-100	30-45	11-25
	27-44	Clay loam, silty clay loam	CL	A-6, A-7	0	0	95-100	90-100	80-95	65-80	32-45	12-28
	44-60	Loam, clay loam	CL, CL-ML	A-4	0	0-5	85-95	80-95	70-85	40-65	20-36	4-16
ReA:												
Reesville-------	0-12	Silt loam	CL-ML, ML	A-4	0	0	100	90-100	90-100	85-100	22-40	4-10
	12-42	Silt loam, silty clay loam	CL, ML	A-4, A-6, A-7	0	0	100	90-100	90-100	90-100	22-40	4-28
	42-72	Loam, silt loam	CL, ML	A-4, A-6	0	0	80-100	75-100	70-100	60-100	22-36	4-16
RhB:												
Ritchey---------	0-7	Silt loam	CL-ML, ML	A-4, A-6	0	0	95-100	95-100	80-95	75-90	24-40	4-12
	7-18	Silty clay, silty clay loam, clay	CL, CH	A-6, A-7	0	2-5	90-100	85-100	80-95	75-95	35-55	15-30
	18-20	Unweathered bedrock			---	---	---	---	---	---	---	---
RhC:												
Ritchey---------	0-7	Silt loam	CL-ML, ML	A-4, A-6	0	0	100	95-100	80-95	75-90	24-40	4-12
	7-18	Silty clay, silty clay loam, clay	CL, CH	A-6, A-7	0	2-5	90-100	85-100	80-95	75-95	35-55	15-30
	18-20	Unweathered bedrock			---	---	---	---	---	---	---	---
RhD:												
Ritchey---------	0-7	Silt loam	CL-ML, ML	A-4, A-6	0	0	100	95-100	80-95	75-90	24-40	4-12
	7-18	Silty clay, silty clay loam, clay	CL, CH	A-6, A-7	0	2-5	90-100	85-100	80-95	75-95	35-55	15-30
	18-20	Unweathered bedrock			---	---	---	---	---	---	---	---
RhE2:												
Ritchey---------	0-7	Silt loam	CL-ML, ML	A-4, A-6	0	0	100	95-100	80-95	75-90	24-40	4-12
	7-18	Silty clay, silty clay loam, clay	CL, CH	A-6, A-7	0	2-5	90-100	85-100	80-95	75-95	35-55	15-30
	18-20	Unweathered bedrock			---	---	---	---	---	---	---	---

Table 28.--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	
RkE:												
Rodman----------	0-7	Gravelly loam	CL, ML, SC, SM	A-4	0	0-2	70-85	65-75	60-75	36-65	0-30	3-9
	7-12	Gravelly sandy loam, sandy loam, loam	CL, ML, SC, SM	A-1, A-2, A-4	0	0-2	70-85	60-85	40-75	20-55	0-30	NP-10
	12-80	Stratified extremely gravelly coarse sand to sand	GP, GP-GM, SP, SP-SM	A-1	0-1	1-5	30-70	22-50	7-20	2-10	0-14	NP
RpA:												
Ross----------	0-14	Loam	CL, CL-ML, ML	A-4, A-6	0	0	90-100	90-100	80-100	65-95	20-35	NP-12
	14-31	Loam, silt loam, silty clay loam	CL, CL-ML, ML	A-4, A-6, A-7	0	0	90-100	85-100	70-100	55-95	22-45	3-20
	31-80	Stratified gravelly sandy loam to silt loam, stratified coarse sandy loam to sandy loam	CL, GM, ML, SM	A-2, A-4, A-6	0	0-5	65-100	45-100	30-100	25-80	0-30	NP-12
RqA:												
Ross----------	0-25	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	90-100	90-100	80-100	65-95	20-35	NP-12
	25-80	Stratified sandy loam to gravelly sandy loam to loam to silt loam	CL, GM, ML, SM	A-2, A-4, A-6	0	0-5	65-100	45-100	30-100	25-80	0-30	NP-12
Rs:												
Ross----------	0-40	Silt loam, loam	CL-ML, ML	A-4, A-6	0	0	95-100	90-100	80-100	65-90	22-40	4-10
	40-78	Stratified gravelly sand to loam	ML, SM	A-2, A-4	0	0	75-100	70-100	65-95	25-75	15-40	NP-10
RtA:												
Rush----------	0-13	Silt loam	CL-ML, ML	A-4	0	0	100	100	90-100	80-100	22-40	4-10
	13-38	Silt loam, silty clay loam	CL	A-6, A-7	0	0	100	100	95-100	85-100	35-45	14-24
	38-60	Gravelly coarse sandy loam, clay loam, sandy clay loam, sandy clay	CL, SC, SM	A-6, A-4, A-7	0	0-3	75-100	70-100	65-90	35-60	30-45	6-22
	60-75	Stratified extremely gravelly coarse sand to sand	GP, SP, GM, SM	A-1, A-2	0	0-5	40-75	30-65	10-50	4-25	---	NP
RtB:												
Rush----------	0-13	Silt loam	CL-ML, ML	A-4	0	0	100	100	90-100	80-100	22-40	4-10
	13-38	Silt loam, silty clay loam	CL	A-6, A-7	0	0	100	100	95-100	85-100	35-45	14-24
	38-60	Gravelly coarse sandy loam, clay loam, sandy clay loam, sandy clay	CL, SC, SM	A-6, A-4, A-7	0	0-3	75-100	70-100	65-90	35-60	30-45	6-22
	60-75	Stratified extremely gravelly coarse sand to sand	GP, SP, GM, SM	A-1, A-2	0	0-5	40-75	30-65	10-50	4-25	---	NP
RuA:												
Russell---------	0-13	Silt loam	CL-ML, ML	A-4	0	0	100	100	90-100	75-95	22-40	4-10
	13-22	Silt loam, silty clay loam	CL	A-6, A-7	0	0	100	100	90-100	85-95	25-50	11-28
	22-37	Clay loam, silty clay loam	CL, CL-ML	A-6, A-4	0	0	90-100	85-100	80-90	65-85	25-40	5-24
	37-60	Loam	CL, CL-ML	A-4	0	0	80-95	75-95	65-85	55-75	22-36	4-16

Table 28.--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	
RvB:												
Russell---------	0-13	Silt loam	CL-ML, ML	A-4	0	0	100	100	90-100	75-95	22-40	4-10
	13-22	Silt loam, silty clay loam	CL	A-6, A-7	0	0	100	100	90-100	85-95	25-50	11-28
	22-37	Clay loam, silty clay loam	CL, CL-ML	A-6, A-4	0	0	95-100	85-100	80-90	65-85	25-40	5-24
	37-60	Loam	CL, CL-ML	A-4	0	0	80-95	75-95	65-85	55-75	22-36	4-16
Miamian---------	0-7	Silt loam	CL-ML, ML	A-4	0	0	95-100	90-100	90-100	70-90	26-40	4-10
	7-38	Loam, clay, clay loam, silty clay loam	CL	A-6, A-7	0	0	90-100	85-100	75-100	70-90	32-50	14-30
	38-60	Silt loam, loam	CL, ML	A-4, A-6	0	0	75-100	75-100	65-85	55-75	20-36	4-16
RvB2:												
Russell---------	0-13	Silt loam	CL-ML, ML	A-4	0	0	100	100	90-100	75-95	22-40	4-10
	13-22	Silt loam, silty clay loam	CL	A-6, A-7	0	0	100	100	90-100	85-95	25-50	11-28
	22-37	Clay loam, silty clay loam	CL, CL-ML	A-6, A-4	0	0	95-100	85-100	80-90	65-85	25-40	5-24
	37-60	Loam	CL, CL-ML	A-4	0	0	80-95	75-95	65-85	55-75	22-36	4-16
Miamian---------	0-7	Silt loam	CL-ML, ML	A-4	0	0	100	100	90-100	70-90	26-40	4-10
	7-38	Clay, loam, clay loam, silty clay loam	CL	A-6, A-7	0	0	90-100	85-100	75-100	70-90	32-50	14-30
	38-60	Silt loam, loam	CL, ML	A-4, A-6	0	0	75-100	75-100	65-85	55-75	20-36	4-16
RwB2:												
Russell---------	0-8	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	90-100	70-90	20-35	5-15
	8-26	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	100	95-100	85-95	35-45	15-25
	26-49	Clay loam, loam, silty clay loam	CL	A-6, A-7	0	0	95-100	90-95	80-90	60-80	35-45	15-25
	49-80	Loam, fine sandy loam	CL, CL-ML	A-4, A-6	0	0-3	85-95	80-90	75-85	50-65	20-30	5-12
Xenia----------	0-6	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	90-100	70-90	20-35	5-15
	6-26	Silty clay loam	CL	A-6, A-7	0	0	100	100	95-100	85-95	35-45	15-25
	26-43	Clay loam, loam	CL	A-6, A-7	0	0-5	90-100	85-95	70-95	50-80	30-45	10-25
	43-80	Loam	CL, CL-ML	A-4, A-6	0	0-5	90-95	85-95	65-95	50-75	20-30	5-15
SkA:												
Sligo----------	0-9	Loam	CL, CL-ML	A-4, A-6	0	0	100	95-100	80-100	70-85	20-40	5-20
	9-58	Loam, sandy loam, loamy coarse sand	CL-ML, ML	A-4, A-6	0	0	100	95-100	80-100	70-85	20-45	6-15
	58-80	Coarse sand, loamy coarse sand, very gravelly coarse sand, extremely gravelly loamy coarse sand	GM, SM	A-1	0	0-65	35-100	30-100	10-40	5-15	0-15	NP-2
SlA:												
Sleeth----------	0-10	Silt loam	CL-ML, ML	A-4	0	0	95-100	90-100	85-95	70-90	22-40	4-10
	10-24	Clay loam, silt loam, silty clay loam	CL	A-6	0	0	90-100	85-100	80-95	70-95	25-40	11-18
	24-52	Sandy clay loam, clay loam, gravelly clay loam, gravelly loam	CL, CH	A-6, A-7	0	0-5	70-100	60-95	55-90	50-75	30-52	14-29
	52-60	Stratified sand to gravelly coarse sandy loam	GP, SP, GM, SC-SM, SM	A-1, A-2	0	0-5	40-75	30-65	10-50	4-25	0-25	NP-7

Table 28.--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	
SnA:												
Sloan----------	0-21	Silt loam	CL, CL-ML	A-4, A-6	0	0	90-100	90-100	75-95	55-85	20-35	5-15
	21-48	Loam, silty clay loam, clay loam	CL	A-6, A-7	0	0	85-95	85-95	65-95	50-85	30-50	10-30
	48-68	Gravelly loam, stratified sandy loam to gravelly loam	CL, CL-ML, SC	A-4, A-6, A-7	0	0	85-95	50-95	45-95	35-85	20-45	5-20
	68-80	Coarse sand, gravelly sand, gravelly loamy sand	SM, SP, SP-SM	A-1, A-2, A-3	0	0-5	55-90	50-90	20-60	3-15	0-20	NP-5
So:												
Sloan----------	0-24	Silty clay loam	CL	A-6, A-7	0	0	100	95-100	85-100	70-95	25-40	8-16
	24-45	Clay loam, loam, silt loam, silty clay loam	CL	A-6, A-7	0	0	100	90-100	85-100	75-95	30-42	11-20
	45-60	Stratified loam to silt loam to sandy loam to clay loam	CL, ML, SM	A-4, A-6	0	0	95-100	90-100	80-95	45-85	25-40	6-15
Sp:												
Fill Land-------	---	---	---	---	---	---	---	---	---	---	---	---
Sloan----------	0-24	Silty clay loam	CL	A-6, A-7	0	0	100	95-100	85-100	70-95	25-40	8-16
	24-45	Silt loam, clay loam, loam, silty clay loam	CL	A-6, A-7	0	0	100	90-100	85-100	75-95	30-42	11-20
	45-60	Stratified loam to silt loam to sandy loam to clay loam	CL, ML, SM	A-4, A-6	0	0	95-100	90-100	80-95	45-85	25-40	6-15
Sr:												
Urban Land------	---	---	---	---	---	---	---	---	---	---	---	---
Sloan----------	0-24	Silty clay loam	CL	A-6, A-7	0	0	100	95-100	85-100	70-95	25-40	8-16
	24-45	Silt loam, clay loam, loam, silty clay loam	CL	A-6, A-7	0	0	100	90-100	85-100	75-95	30-42	11-20
	45-60	Stratified loam to silt loam to sandy loam to clay loam	CL, ML, SM	A-4, A-6	0	0	95-100	90-100	80-95	45-85	25-40	6-15
ThA:												
Thackery--------	0-12	Silt loam	ML	A-4	0	0	100	90-100	85-100	70-90	25-40	4-10
	12-18	Silt loam, loam, silty clay loam	CL, ML	A-6	0	0	100	90-100	80-95	65-90	25-40	12-20
	18-40	Clay loam, silty clay loam, sandy clay loam	CL	A-6	0	0-2	80-100	75-95	70-85	60-75	25-40	14-25
	40-50	Sandy loam, sandy clay loam, very gravelly loam	GM, SC, SM	A-2, A-4, A-6	0	0-5	50-80	40-70	30-60	25-50	15-35	NP-12
	50-72	Stratified very gravelly loamy sand to gravelly sandy loam	GM, GP, SM, SP	A-1, A-2	0	0-5	40-75	30-65	10-50	4-25	---	NP
ThB:												
Thackery--------	0-12	Silt loam	ML	A-4	0	0	100	90-100	85-100	70-90	25-40	4-10
	12-18	Silt loam, loam, silty clay loam	CL, ML	A-6	0	0	100	90-100	80-95	65-90	25-40	12-20
	18-40	Clay loam, silty clay loam, sandy clay loam	CL	A-6	0	0-2	80-100	75-95	70-85	60-75	25-40	14-25
	40-50	Sandy clay loam, sandy loam, very gravelly loam	GM, SC, SM	A-2, A-4, A-6	0	0-5	50-80	40-70	30-60	25-50	15-35	NP-12
	50-72	Stratified very gravelly loamy sand to gravelly sandy loam	GM, GP, SM, SP	A-1, A-2	0	0-5	40-75	30-65	10-58	4-25	---	NP

Table 28.--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	
Ts:												
Tremont---------	0-18	Silt loam	CL, ML	A-7, A-6, A-4	0	0	95-100	90-100	85-100	70-90	30-45	5-15
	18-28	Clay loam, silty clay loam, loam	CL, ML	A-6, A-4, A-7	0	0	95-100	90-100	80-100	65-95	30-45	5-20
	28-40	Silt loam, silty clay loam, loam	CL-ML, CL, ML	A-4, A-6	0	0	95-100	85-100	75-95	60-90	20-35	5-15
	40-80	Loam, very gravelly coarse sandy loam, coarse sandy loam	SM, GM, GW-GM	A-1, A-2-4	0	0-10	50-90	30-75	20-65	10-50	0-20	NP-5
TtA:												
Treaty----------	0-16	Silty clay loam	CH, CL	A-6, A-7-6	0	0	100	100	95-100	85-100	35-55	11-31
	16-32	Silty clay loam	CH, CL, CL-ML	A-4, A-6, A-7-6	0	0	100	100	90-100	75-100	24-55	5-31
	32-63	Clay loam, silty clay loam, loam	CH, CL, CL-ML	A-4, A-6, A-7-6	0	0	95-100	90-100	90-100	75-100	25-55	6-31
	63-80	Loam, fine sandy loam	SC, SM, CL, ML	A-4, A-6	0-1	0-3	95-100	90-95	65-90	40-70	15-30	NP-15
Ud:												
Udorthents------	---	---	---	---	---	---	---	---	---	---	---	---
Ur:												
Urban Land------	---	---	---	---	---	---	---	---	---	---	---	---
W:												
Water----------	---	---	---	---	---	---	---	---	---	---	---	---
WaA:												
Warsaw----------	0-11	Loam	CL, ML	A-4, A-6	0	0	90-100	85-100	80-100	60-80	20-40	4-14
	11-33	Gravelly clay loam, clay loam, clay	CL	A-6, A-7	0	0-5	65-100	60-100	55-95	50-80	35-50	14-25
	33-60	Very gravelly loamy sand	GP, SP, GM, SM	A-1, A-2	0	0-15	40-75	30-65	10-50	4-25	---	NP
WbA:												
Fill Land-------	---	---	---	---	---	---	---	---	---	---	---	---
Warsaw----------	0-11	Loam	CL, ML	A-4, A-6	0	0	90-100	85-100	80-100	60-80	20-40	4-14
	11-33	Gravelly clay loam, clay loam, clay	CL	A-6, A-7	0	0-5	65-100	60-100	55-95	50-80	35-50	14-25
	33-60	Very gravelly loamy sand	GP, SP, GM, SM	A-1, A-2	0	0-15	40-75	30-65	10-50	4-25	---	NP
WcA:												
Warsaw----------	0-11	Loam	CL, ML	A-4, A-6	0	0	90-100	85-100	80-100	60-80	20-40	4-14
	11-33	Gravelly clay loam, clay loam, clay	CL	A-7, A-6	0	0-15	65-100	60-100	55-95	50-80	35-50	14-25
	33-60	Very gravelly loamy sand	GP, SP, GM, SM	A-1, A-2	0	0-15	40-75	30-65	10-50	4-25	---	NP
Urban Land------	---	---	---	---	---	---	---	---	---	---	---	---
WeB:												
Wea----------	0-12	Silt loam	ML	A-4	0	0	100	90-100	80-95	70-90	25-40	4-10
	12-45	Silty clay loam, clay loam, loam	CL	A-6, A-7	0	0	90-100	80-100	75-95	65-90	30-45	14-25
	45-60	Gravelly sand, gravelly loamy sand	GP, SP, GM, SM	A-1, A-2	0	0-10	40-75	30-65	10-50	4-25	---	NP
WpC3:												
Wapahani--------	0-3	Clay loam	CL	A-6, A-7-6	0-1	0-3	95-100	90-100	85-100	60-85	30-50	12-32
	3-18	Clay loam, loam	CL, CL-ML	A-4, A-6, A-7-6	0-1	0-3	90-100	85-100	75-95	55-75	25-50	7-32
	18-80	Loam, fine sandy loam	CL, ML, SC, SM	A-4, A-6	0-1	0-3	90-98	85-98	65-95	40-70	15-30	NP-15
Miamian---------	0-3	Clay loam	CL	A-6, A-7	0	0	90-100	85-100	75-95	60-80	35-45	15-20
	3-8	Silt loam, clay loam, silty clay loam	CL	A-6, A-7	0	0	85-100	80-100	75-95	70-85	35-45	10-20
	8-28	Clay loam, clay	CL	A-6, A-7-6	0	0-5	85-100	80-100	75-95	70-85	40-55	20-30
	28-80	Loam, gravelly loam	CL-ML, ML	A-4, A-6	0	0-5	75-95	75-90	65-85	50-75	20-45	6-15

Table 28.--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	
WpD3:												
Wapahani--------	0-3	Clay loam	CL	A-6, A-7-6	0-1	0-3	95-100	90-100	85-100	60-85	30-50	12-32
	3-19	Clay loam, loam	CL, CL-ML	A-4, A-6, A-7-6	0-1	0-3	90-100	85-100	75-95	55-75	25-50	7-32
	19-80	Loam, fine sandy loam	CL, ML, SC, SM	A-4, A-6	0-1	0-3	90-98	85-98	65-95	40-70	20-45	6-15
Miamian---------	0-3	Clay loam	CL	A-6, A-7	0	0	90-100	85-100	75-95	60-80	35-45	15-20
	3-24	Clay loam, clay	CL	A-6, A-7-6	0	0-5	85-100	80-100	75-95	70-85	40-55	20-30
	24-80	Loam, gravelly loam	CL-ML, ML	A-4, A-6	0	0-5	75-95	75-90	65-85	50-75	20-45	6-15
Ws:												
Westland--------	0-14	Silty clay loam	CL	A-6, A-7	0	0	95-100	90-100	85-100	80-95	27-49	11-22
	14-38	Clay, clay loam, silty clay loam	CL	A-6, A-7	0	0	95-100	90-100	85-95	65-80	25-47	14-25
	38-52	Clay loam, gravelly loam, gravelly silt loam, gravelly sandy loam	CL	A-6	0	0-5	65-85	60-75	55-70	50-70	25-40	11-18
	52-60	Stratified gravelly loam to clay loam to very gravelly loamy sand	GP, SP, GM, SM	A-1, A-2	0	0-5	40-75	30-65	10-50	4-25	---	NP
Wt:												
Westland--------	0-14	Silty clay loam	CL	A-6, A-7	0	0	95-100	90-100	85-100	80-95	27-49	11-22
	14-38	Clay, clay loam, silty clay loam	CL	A-6, A-7	0	0	95-100	90-100	85-95	65-80	25-47	14-25
	38-52	Gravelly loam, gravelly silt loam, sandy loam, clay loam	CL	A-6	0	0-5	65-85	60-75	55-70	50-70	25-40	11-18
	52-60	Stratified gravelly loam to clay loam to very gravelly loamy sand	GM, SM, GP, SP	A-1, A-2	0	0-5	40-75	30-65	10-50	4-25	---	NP
Urban Land------	---	---	---	---	---	---	---	---	---	---	---	---
XeA:												
Xenia-----------	0-8	Silt loam	ML	A-4	0	0	100	100	90-100	70-100	25-40	4-10
	8-34	Clay loam, silty clay loam	CL	A-6, A-7	0	0	95-100	90-100	90-100	80-95	25-50	11-28
	34-60	Clay loam, loam	CL, CL-ML	A-4, A-6	0	0-5	80-100	70-100	65-90	60-75	22-36	4-16
XeB:												
Xenia-----------	0-8	Silt loam	ML	A-4	0	0	100	100	90-100	70-100	25-40	4-10
	8-34	Clay loam, silty clay loam	CL	A-6, A-7	0	0	95-100	90-100	90-100	80-95	25-50	11-28
	34-60	Clay loam, loam	CL, CL-ML	A-4, A-6	0	0-5	80-100	70-100	65-90	60-75	22-36	4-16

TABLE 29.--PHYSICAL PROPERTIES OF THE SOILS

(Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" apply only to the surface layer. Absence of an entry indicates that data were not estimated. See text on page 211 for additional information.)

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea-bility	Available water capacity	Shrink-swell potential	Erosion factors Kw	Kf	T	Wind erodi-bility group
	In	Pct	g/cc	In/hr	In/in					
Ag:										
Algiers---------	0-16	15-27	1.20-1.45	0.60-2.00	0.18-0.22	Low	.37	.37	5	6
	16-48	20-35	1.25-1.65	0.60-2.00	0.16-0.20	Low	.37	.37		
	48-60	10-20	1.60-1.70	0.60-2.00	0.15-0.19	Low	.10	.20		
BbB:										
Birkbeck--------	0-11	15-27	1.20-1.40	0.60-2.00	0.18-0.22	Low	.37	.37	5	6
	11-42	25-35	1.30-1.50	0.60-2.00	0.15-0.19	Moderate	.37	.37		
	42-60	14-30	1.55-1.90	0.20-0.60	0.07-0.12	Low	.37	.43		
BcB:										
Birkbeck--------	0-10	15-27	1.30-1.50	0.60-2.00	0.22-0.25	Low	.37	.37	5	6
	10-52	25-35	1.35-1.55	0.60-2.00	0.14-0.24	Moderate	.37	.37		
	52-65	15-35	1.35-1.60	0.20-0.60	0.10-0.18	Low	.37	.43		
	65-80	15-35	1.55-1.90	0.20-0.60	0.05-0.19	Low	.37	.43		
Bs:										
Brookston-------	0-12	27-35	1.40-1.55	0.60-2.00	0.21-0.24	Moderate	.28	.28	5	6
	8-42	27-40	1.40-1.60	0.60-2.00	0.15-0.19	Moderate	.28	.32		
	42-78	15-26	1.45-1.70	0.20-0.60	0.07-0.12	Low	.28	.32		
Bt:										
Brookston-------	0-12	27-35	1.40-1.55	0.60-2.00	0.21-0.24	Moderate	.28	.28	5	6
	8-42	27-40	1.40-1.60	0.60-2.00	0.15-0.19	Moderate	.28	.32		
	42-78	15-26	1.45-1.70	0.20-0.60	0.07-0.12	Low	.28	.32		
Urban land------	---	---	---	---	---	---	---	---	-	---
CaE2:										
Casco----------	0-5	10-20	1.35-1.55	0.60-2.00	0.19-0.24	Low	.32	.32	3	5
	5-21	10-35	1.55-1.65	0.60-2.00	0.09-0.19	Moderate	.32	.32		
	21-80	0-6	1.30-1.70	6.00-20.00	0.02-0.04	Low	.10	.10		
CbD2:										
Casco----------	0-7	5-15	1.35-1.60	0.60-2.00	0.08-0.12	Low	.17	.24	3	5
	7-17	18-35	1.55-1.65	0.60-2.00	0.09-0.19	Moderate	.32	.32		
	17-80	0-2	1.30-1.70	6.00-20.00	0.02-0.04	Low	.10	.10		
CcD2:										
Casco----------	0-4	10-20	1.35-1.55	0.60-2.00	0.13-0.17	Low	.32	.32	3	5
	4-20	22-40	1.55-1.65	0.60-2.00	0.09-0.13	Moderate	.32	.32		
	20-60	0-2	1.30-1.70	6.00-20.00	0.02-0.06	Low	.10	.10		
Eldean----------	0-13	15-25	1.30-1.50	0.60-2.00	0.13-0.17	Low	.37	.43	4	5
	13-33	35-48	1.40-1.60	0.60-2.00	0.09-0.13	Moderate	.37	.49		
	33-38	15-45	1.30-1.60	0.60-6.00	0.08-0.11	Low	.37	.64		
	38-60	2-8	1.55-1.70	6.00-20.00	0.02-0.06	Low	.10	.43		
CdE2:										
Casco----------	0-4	10-20	1.35-1.55	0.60-2.00	0.13-0.17	Low	.32	.32	3	5
	4-20	22-40	1.55-1.65	0.60-2.00	0.09-0.13	Moderate	.32	.32		
	20-60	0-2	1.30-1.70	6.00-20.00	0.02-0.06	Low	.10	.10		
Rodman----------	0-10	8-25	1.20-1.50	2.00-6.00	0.10-0.16	Low	.20	.32	3	6
	10-60	0-10	1.60-1.70	6.00-20.00	0.02-0.06	Low	.10	.37		

TABLE 29.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Erosion factors Kw	Kf	T	Wind erodi- bility group
	In	Pct	g/cc	In/hr	In/in					
CeA:										
Celina----------	0-10	14-26	1.30-1.50	0.60-2.00	0.17-0.20	Low	.37	.37	4	6
	10-28	35-48	1.45-1.60	0.20-0.60	0.13-0.17	Moderate	.37	.37		
	28-60	16-27	1.60-1.82	0.20-0.60	0.06-0.10	Low	.37	.49		
CeB:										
Celina----------	0-10	14-26	1.30-1.50	0.60-2.00	0.17-0.20	Low	.37	.37	4	6
	10-28	35-48	1.45-1.60	0.20-0.60	0.13-0.17	Moderate	.37	.37		
	28-60	16-27	1.60-1.82	0.20-0.60	0.06-0.10	Low	.37	.49		
CfB:										
Celina----------	0-12	14-26	1.30-1.50	0.60-2.00	0.20-0.24	Low	.37	.37	4	6
	12-28	10-50	1.45-1.60	0.20-0.60	0.16-0.19	Moderate	.37	.37		
	28-80	20-35	1.60-1.82	0.01-0.06	0.06-0.10	Low	.37	.49		
Losantville-----	0-8	18-30	1.30-1.55	0.20-0.60	0.18-0.24	Low	.43	.43	3	6
	8-18	35-45	1.50-1.70	0.20-0.60	0.07-0.14	Moderate	.28	.32		
	18-80	18-26	1.70-2.00	0.01-0.06	0.02-0.04	Low	.37	.49		
ChB:										
Celina----------	0-10	14-26	1.30-1.50	0.60-2.00	0.20-0.24	Low	.37	.37	4	6
	10-30	35-48	1.45-1.60	0.20-0.60	0.16-0.19	Moderate	.37	.37		
	30-80	16-27	1.60-1.82	0.20-0.60	0.06-0.10	Low	.37	.49		
Strawn----------	0-10	27-30	1.35-1.55	0.60-2.00	0.18-0.20	Moderate	.37	.37	4	6
	10-23	27-35	1.35-1.55	0.60-2.00	0.15-0.20	Moderate	.37	.43		
	23-80	22-30	1.50-1.70	0.20-0.60	0.08-0.12	Low	.37	.32		
CrA:										
Crosby----------	0-9	11-24	1.35-1.45	0.60-2.00	0.17-0.20	Low	.43	.43	4	5
	9-28	35-45	1.50-1.60	0.20-0.60	0.13-0.17	Moderate	.43	.49		
	28-60	15-27	1.70-2.00	0.06-0.20	0.06-0.10	Low	.43	.49		
CrB:										
Crosby----------	0-9	11-24	1.35-1.45	0.60-2.00	0.17-0.20	Low	.43	.43	4	5
	9-28	35-45	1.50-1.60	0.20-0.60	0.13-0.17	Moderate	.43	.49		
	28-60	15-27	1.70-2.00	0.06-0.20	0.06-0.10	Low	.43	.49		
CsA:										
Crosby----------	0-10	11-22	1.40-1.55	0.60-2.00	0.20-0.24	Low	.43	.43	4	5
	10-31	35-45	1.50-1.70	0.06-0.20	0.15-0.20	Moderate	.43	.49		
	31-60	15-32	1.70-2.00	0.06-0.60	0.05-0.19	Low	.43	.49		
Lewisburg-------	0-9	16-27	1.30-1.55	0.60-2.00	0.18-0.24	Low	.43	.43	3	6
	9-21	35-49	1.40-1.75	0.20-2.00	0.11-0.18	Moderate	.32	.37		
	21-60	18-27	1.55-1.85	0.06-0.20	0.08-0.12	Low	.32	.37		
CsB:										
Crosby----------	0-10	11-22	1.40-1.55	0.60-2.00	0.20-0.24	Low	.43	.43	4	5
	10-31	35-45	1.50-1.70	0.06-0.20	0.15-0.20	Moderate	.43	.49		
	31-60	15-32	1.70-2.00	0.06-0.60	0.05-0.19	Low	.43	.49		
Lewisburg-------	0-9	16-27	1.30-1.55	0.60-2.00	0.18-0.24	Low	.43	.43	3	6
	9-21	35-49	1.40-1.75	0.20-2.00	0.11-0.18	Moderate	.32	.37		
	21-60	18-27	1.55-1.85	0.06-0.20	0.08-0.12	Low	.32	.37		
CtA:										
Crosby----------	0-10	10-24	1.30-1.60	0.60-2.00	0.18-0.24	Low	.43	.43	4	5
	10-28	35-45	1.45-1.65	0.60-2.00	0.11-0.16	Moderate	.28	.32		
	28-34	12-30	1.55-1.75	0.06-0.20	0.04-0.12	Low	.28	.37		
	34-80	15-27	1.75-1.95	0.00-0.06	0.02-0.04	Low	.32	.43		

TABLE 29.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea-bility	Available water capacity	Shrink-swell potential	Erosion factors Kw	Kf	T	Wind erodi-bility group
	In	Pct	g/cc	In/hr	In/in					
Celina----------	0-10	14-26	1.30-1.50	0.60-2.00	0.20-0.24	Low	.37	.37	4	6
	10-24	10-50	1.45-1.60	0.20-0.60	0.16-0.19	Moderate	.37	.37		
	24-80	20-35	1.60-1.82	0.00-0.06	0.06-0.10	Low	.37	.49		
CtB:										
Crosby----------	0-8	10-24	1.30-1.60	0.60-2.00	0.18-0.24	Low	.43	.43	4	5
	8-28	35-45	1.45-1.65	0.60-2.00	0.11-0.16	Moderate	.28	.32		
	28-35	12-30	1.55-1.75	0.06-0.20	0.04-0.12	Low	.28	.37		
	35-80	10-25	1.75-1.95	0.00-0.06	0.02-0.04	Low	.32	.43		
Celina----------	0-8	14-26	1.30-1.50	0.60-2.00	0.20-0.24	Low	.37	.37	4	6
	8-26	10-50	1.45-1.60	0.20-0.60	0.16-0.19	Moderate	.37	.37		
	26-80	20-35	1.60-1.82	0.00-0.06	0.06-0.10	Low	.37	.49		
Du:										
Dumps----------	---	---	---	---	---	---	---	---	-	---
EdB:										
Edenton---------	0-7	18-27	1.30-1.50	0.60-2.00	0.16-0.20	Low	.43	.49	3	6
	7-22	35-50	1.40-1.60	0.20-0.60	0.12-0.16	Moderate	.32	.37		
	22-33	40-50	1.40-1.55	0.20-0.60	0.12-0.16	Moderate	.32	.37		
	33-43	---	---	0.00-0.20	---	---	---	---		
EdC2:										
Edenton---------	0-7	18-27	1.30-1.50	0.60-2.00	0.16-0.20	Low	.43	.49	3	6
	7-22	35-50	1.40-1.60	0.20-0.60	0.12-0.16	Moderate	.32	.37		
	22-33	40-50	1.40-1.55	0.20-0.60	0.12-0.16	Moderate	.32	.37		
	33-43	---	---	0.00-0.20	---	---	---	---		
EdD2:										
Edenton---------	0-7	18-27	1.30-1.50	0.60-2.00	0.16-0.20	Low	.43	.49	3	6
	7-22	35-50	1.40-1.60	0.20-0.60	0.12-0.16	Moderate	.32	.37		
	22-33	40-50	1.40-1.55	0.20-0.60	0.12-0.16	Moderate	.32	.37		
	33-43	---	---	0.00-0.20	---	---	---	---		
Ee:										
Eel----------	0-8	18-27	1.30-1.50	0.60-2.00	0.18-0.22	Low	.32	.32	5	6
	8-24	18-27	1.30-1.50	0.60-2.00	0.16-0.20	Low	.37	.37		
	24-60	10-27	1.30-1.50	0.60-2.00	0.15-0.19	Low	.37	.37		
EmA:										
Eldean----------	0-13	15-25	1.30-1.50	0.60-2.00	0.13-0.17	Low	.37	.43	4	5
	13-33	35-48	1.40-1.60	0.60-2.00	0.09-0.13	Moderate	.37	.49		
	33-38	15-45	1.30-1.60	0.60-6.00	0.08-0.11	Low	.37	.64		
	38-60	2-8	1.55-1.70	6.00-20.00	0.02-0.06	Low	.10	.43		
EmB:										
Eldean----------	0-13	15-25	1.30-1.50	0.60-2.00	0.13-0.17	Low	.37	.43	4	5
	13-33	35-48	1.40-1.60	0.60-2.00	0.09-0.13	Moderate	.37	.49		
	33-38	15-45	1.30-1.60	0.60-6.00	0.08-0.11	Low	.37	.64		
	38-60	2-8	1.55-1.70	6.00-20.00	0.02-0.06	Low	.10	.43		
EmB2:										
Eldean----------	0-13	15-25	1.30-1.50	0.60-2.00	0.13-0.17	Low	.37	.43	4	5
	13-33	35-48	1.40-1.60	0.60-2.00	0.09-0.13	Moderate	.37	.49		
	33-38	15-45	1.30-1.60	0.60-6.00	0.08-0.11	Low	.37	.64		
	38-60	2-8	1.55-1.70	6.00-20.00	0.02-0.06	Low	.10	.43		
EmC2:										
Eldean----------	0-13	15-25	1.30-1.50	0.60-2.00	0.13-0.17	Low	.37	.43	4	5
	13-33	35-48	1.40-1.60	0.60-2.00	0.09-0.13	Moderate	.37	.49		
	33-38	15-45	1.30-1.60	0.60-6.00	0.08-0.11	Low	.37	.64		
	38-60	2-8	1.55-1.70	6.00-20.00	0.02-0.06	Low	.10	.43		

TABLE 29.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Erosion factors Kw	Kf	T	Wind erodi- bility group
	In	Pct	g/cc	In/hr	In/in					
EnC3:										
Eldean----------	0-13	27-33	1.35-1.55	0.60-2.00	0.13-0.17	Low	.32	.37	3	6
	13-33	35-48	1.40-1.60	0.60-2.00	0.09-0.13	Moderate	.37	.43		
	33-38	15-45	1.30-1.60	0.60-6.00	0.08-0.11	Low	.37	.64		
	38-60	2-8	1.55-1.70	6.00-20.00	0.02-0.06	Low	.10	.43		
EoC2:										
Eldean----------	0-6	15-25	1.35-1.55	0.60-2.00	0.16-0.18	Moderate	.32	.37	4	5
	6-22	35-48	1.40-1.60	0.20-2.00	0.08-0.14	Moderate	.37	.49		
	22-30	25-45	1.30-1.60	0.60-2.00	0.07-0.14	Low	.37	.64		
	30-80	2-8	1.55-1.70	6.00-20.00	0.01-0.04	Low	.10	.43		
Miamian---------	0-6	14-27	1.30-1.50	0.60-2.00	0.20-0.24	Low	.37	.37	4	6
	6-27	35-48	1.45-1.70	0.20-0.60	0.12-0.17	Moderate	.37	.43		
	27-80	16-31	1.60-1.85	0.20-0.60	0.06-0.10	Low	.37	.49		
EoD2:										
Eldean----------	0-6	15-25	1.35-1.55	0.60-2.00	0.16-0.18	Moderate	.32	.43	4	5
	6-21	35-48	1.40-1.60	0.20-2.00	0.08-0.14	Moderate	.37	.49		
	21-26	25-45	1.30-1.60	0.60-2.00	0.07-0.14	Low	.37	.64		
	26-80	2-8	1.55-1.70	6.00-20.00	0.01-0.04	Low	.10	.43		
Miamian---------	0-5	14-27	1.30-1.50	0.60-2.00	0.20-0.24	Low	.37	.37	4	6
	5-15	35-48	1.45-1.70	0.20-0.60	0.12-0.17	Moderate	.37	.43		
	15-80	16-31	1.60-1.85	0.20-0.60	0.06-0.10	Low	.37	.49		
EpC:										
Eldean----------	0-13	15-25	1.30-1.50	0.60-2.00	0.13-0.17	Low	.37	.43	4	5
	13-33	35-48	1.40-1.60	0.60-2.00	0.09-0.13	Moderate	.37	.49		
	33-38	15-45	1.30-1.60	0.60-6.00	0.08-0.11	Low	.37	.64		
	38-60	2-8	1.55-1.70	6.00-20.00	0.02-0.06	Low	.10	.43		
Urban land------	---	---	---	---	---	---	---	---	-	---
FaF:										
Fairmount variant--------	0-6	27-40	1.20-1.40	0.20-0.60	0.14-0.18	Moderate	.43	.64	2	6
	6-29	35-60	1.40-1.60	0.20-0.60	0.10-0.16	Moderate	.43	.32		
	29-39	---	---	0.00-0.20	---	---	---	---		
FnA:										
Fincastle-------	0-11	11-22	1.40-1.55	0.60-2.00	0.18-0.22	Low	.37	.37	5	5
	11-40	24-32	1.45-1.65	0.20-0.60	0.14-0.18	Moderate	.37	.37		
	40-60	20-26	1.55-1.90	0.20-0.60	0.07-0.12	Low	.37	.43		
Gn:										
Genesee---------	0-10	18-27	1.30-1.50	0.60-2.00	0.18-0.22	Low	.37	.37	5	6
	10-36	18-27	1.30-1.50	0.60-2.00	0.16-0.20	Low	.37	.37		
	36-66	10-20	1.30-1.50	0.60-2.00	0.15-0.19	Low	.37	.37		
Ko:										
Kokomo----------	0-10	27-35	1.30-1.60	0.60-2.00	0.17-0.19	Moderate	.24	.24	5	6
	10-51	35-45	1.40-1.70	0.20-0.60	0.12-0.21	Moderate	.28	.32		
	51-80	16-25	1.50-1.75	0.06-0.20	0.08-0.15	Low	.32	.37		
Lh:										
Linwood---------	0-9	12-20	0.90-1.20	0.60-2.00	0.22-0.24	Low	.24	.24	2	5
	9-28	---	0.15-0.40	0.20-6.00	0.35-0.45	---	---	---		
	28-80	5-35	1.60-1.90	0.20-2.00	0.11-0.20	Low	.24	.28		
Ln:										
Linwood---------	0-35	---	0.15-0.40	6.00-20.00	0.20-0.30	---	---	---	2	2
	35-60	5-35	1.60-1.90	0.60-2.00	0.14-0.18	Low	.28	.28		

TABLE 29.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea-bility	Available water capacity	Shrink-swell potential	Erosion factors Kw	Kf	T	Wind erodi-bility group
	In	Pct	g/cc	In/hr	In/in					
LuF2:										
Lumberton-------	0-3	14-27	1.30-1.50	0.60-2.00	0.18-0.23	Low	.37	.37	3	6
	3-8	20-30	1.35-1.55	0.60-2.00	0.18-0.23	Moderate	.37	.37		
	8-34	27-35	1.45-1.60	0.60-2.00	0.12-0.18	Moderate	.37	.37		
	34-40	---	---	0.00-0.00	---	---	---	---		
MhA:										
Miamian---------	0-7	14-27	1.30-1.50	0.60-2.00	0.17-0.20	Low	.37	.37	4	6
	7-38	35-48	1.45-1.70	0.20-0.60	0.13-0.17	Moderate	.37	.43		
	38-60	16-31	1.60-1.85	0.20-0.60	0.06-0.10	Low	.37	.49		
MhB:										
Miamian---------	0-7	14-27	1.30-1.50	0.60-2.00	0.17-0.20	Low	.37	.37	4	6
	7-38	35-48	1.45-1.70	0.20-0.60	0.13-0.17	Moderate	.37	.43		
	38-60	16-31	1.60-1.85	0.20-0.60	0.06-0.10	Low	.37	.49		
MhB2:										
Miamian---------	0-7	14-27	1.30-1.50	0.60-2.00	0.17-0.20	Low	.37	.37	4	6
	7-38	35-48	1.45-1.70	0.20-0.60	0.13-0.17	Moderate	.37	.43		
	38-60	16-31	1.60-1.85	0.20-0.60	0.06-0.10	Low	.37	.49		
MhC2:										
Miamian---------	0-7	14-27	1.30-1.50	0.60-2.00	0.17-0.20	Low	.37	.37	4	6
	7-38	35-48	1.45-1.70	0.20-0.60	0.13-0.17	Moderate	.37	.43		
	38-60	16-31	1.60-1.85	0.20-0.60	0.06-0.10	Low	.37	.49		
MhD2:										
Miamian---------	0-7	14-27	1.30-1.50	0.60-2.00	0.17-0.20	Low	.37	.37	4	6
	7-38	35-48	1.45-1.70	0.20-0.60	0.13-0.17	Moderate	.37	.43		
	38-60	16-31	1.60-1.85	0.20-0.60	0.06-0.10	Low	.37	.49		
MlB3:										
Miamian---------	0-7	27-32	1.35-1.55	0.20-0.60	0.16-0.19	Moderate	.32	.32	3	6
	7-38	35-48	1.45-1.70	0.20-0.60	0.13-0.17	Moderate	.37	.43		
	38-60	16-31	1.60-1.85	0.20-0.60	0.06-0.10	Low	.37	.49		
MlC3:										
Miamian---------	0-7	27-32	1.35-1.55	0.20-0.60	0.16-0.19	Moderate	.32	.32	3	6
	7-38	35-48	1.45-1.70	0.20-0.60	0.13-0.17	Moderate	.37	.43		
	38-60	16-31	1.60-1.85	0.20-0.60	0.06-0.10	Low	.37	.49		
MlD3:										
Miamian---------	0-7	27-32	1.35-1.55	0.20-0.60	0.16-0.19	Moderate	.32	.32	3	6
	7-38	35-48	1.45-1.70	0.20-0.60	0.13-0.17	Moderate	.37	.43		
	38-60	16-31	1.60-1.85	0.20-0.60	0.06-0.10	Low	.37	.49		
MmD2:										
Miamian---------	0-7	14-27	1.30-1.50	0.60-2.00	0.17-0.20	Low	.37	.37	4	6
	7-38	35-48	1.45-1.70	0.20-0.60	0.13-0.17	Moderate	.37	.43		
	38-60	16-31	1.60-1.85	0.20-0.60	0.06-0.10	Low	.37	.49		
Casco----------	0-4	10-20	1.35-1.55	0.60-2.00	0.13-0.17	Low	.32	.32	3	5
	4-20	18-35	1.55-1.65	0.60-2.00	0.09-0.13	Moderate	.32	.32		
	20-60	0-2	1.30-1.70	6.00-20.00	0.02-0.06	Low	.10	.10		
MmE2:										
Miamian---------	0-7	14-27	1.30-1.50	0.60-2.00	0.17-0.20	Low	.37	.37	4	6
	7-38	35-48	1.45-1.70	0.20-0.60	0.13-0.17	Moderate	.37	.43		
	38-60	16-31	1.60-1.85	0.20-0.60	0.06-0.10	Low	.37	.49		
Casco----------	0-4	10-20	1.35-1.55	0.60-2.00	0.13-0.17	Low	.32	.32	3	5
	4-20	18-35	1.55-1.65	0.60-2.00	0.09-0.13	Moderate	.32	.32		
	20-60	0-2	1.30-1.70	6.00-20.00	0.02-0.06	Low	.10	.10		

TABLE 29.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Erosion factors Kw	Kf	T	Wind erodi- bility group
	In	Pct	g/cc	In/hr	In/in					
MoB2:										
Miamian---------	0-7	14-27	1.30-1.50	0.60-2.00	0.17-0.20	Low	.37	.37	4	6
	7-38	35-48	1.45-1.70	0.20-0.60	0.13-0.17	Moderate	.37	.43		
	38-60	16-31	1.60-1.85	0.20-0.60	0.06-0.10	Low	.37	.49		
Eldean----------	0-13	15-25	1.30-1.50	0.60-2.00	0.13-0.17	Low	.37	.43	4	5
	13-33	35-48	1.40-1.60	0.60-2.00	0.09-0.13	Moderate	.37	.49		
	33-38	15-45	1.30-1.60	0.60-6.00	0.08-0.11	Low	.37	.64		
	38-60	2-8	1.55-1.70	6.00-20.00	0.02-0.06	Low	.10	.43		
MoC2:										
Miamian---------	0-7	14-27	1.30-1.50	0.60-2.00	0.17-0.20	Low	.37	.37	4	6
	7-38	35-48	1.45-1.70	0.20-0.60	0.13-0.17	Moderate	.37	.43		
	38-60	16-31	1.60-1.85	0.20-0.60	0.06-0.10	Low	.37	.49		
Eldean----------	0-13	15-25	1.30-1.50	0.60-2.00	0.13-0.17	Low	.37	.43	4	5
	13-33	35-48	1.40-1.60	0.60-2.00	0.09-0.13	Moderate	.37	.49		
	33-38	15-45	1.30-1.60	0.60-6.00	0.08-0.11	Low	.37	.64		
	38-60	2-8	1.55-1.70	6.00-20.00	0.02-0.06	Low	.10	.43		
MpE:										
Miamian---------	0-7	14-27	1.30-1.50	0.60-2.00	0.17-0.20	Low	.37	.37	4	6
	7-38	25-35	1.45-1.70	0.20-0.60	0.13-0.17	Moderate	.37	.43		
	38-60	16-31	1.60-1.85	0.20-0.60	0.06-0.10	Low	.37	.49		
Hennepin--------	0-4	20-30	1.20-1.40	0.60-2.00	0.16-0.20	Low	.28	.28	5	6
	4-12	18-30	1.30-1.60	0.60-2.00	0.09-0.15	Low	.32	.32		
	12-60	18-30	1.70-1.85	0.20-0.60	0.06-0.12	Low	.32	.32		
MpF:										
Miamian---------	0-7	14-27	1.30-1.50	0.60-2.00	0.17-0.20	Low	.37	.37	4	6
	7-38	25-35	1.45-1.70	0.20-0.60	0.13-0.17	Moderate	.37	.43		
	38-60	16-31	1.60-1.85	0.20-0.60	0.06-0.10	Low	.37	.49		
Hennepin--------	0-4	20-30	1.20-1.40	0.60-2.00	0.16-0.20	Low	.28	.28	5	6
	4-12	18-30	1.30-1.60	0.60-2.00	0.09-0.15	Low	.32	.32		
	12-60	18-30	1.70-1.85	0.20-0.60	0.06-0.12	Low	.32	.32		
MqE2:										
Miamian---------	0-4	14-27	1.30-1.50	0.60-2.00	0.20-0.24	Low	.37	.37	4	6
	4-14	20-40	1.40-1.60	0.20-0.60	0.16-0.20	Moderate	.37	.43		
	14-38	35-48	1.45-1.70	0.20-0.60	0.12-0.17	Moderate	.37	.43		
	38-80	16-26	1.80-2.00	0.01-0.20	0.06-0.10	Low	.37	.49		
Thrifton--------	0-4	20-27	1.45-1.70	0.20-0.60	0.12-0.17	Moderate	.32	.37	5	4L
	4-19	22-35	1.45-1.70	0.20-0.60	0.12-0.17	Moderate	.32	.37		
	19-80	15-25	1.80-1.95	0.06-0.20	0.06-0.20	Low	.32	.32		
MqF2:										
Miamian---------	0-7	14-27	1.30-1.50	0.60-2.00	0.20-0.24	Low	.37	.37	4	6
	7-14	20-40	1.40-1.60	0.20-0.60	0.16-0.20	Moderate	.37	.43		
	14-38	35-48	1.45-1.70	0.20-0.60	0.12-0.17	Moderate	.37	.43		
	38-80	16-26	1.80-2.00	0.01-0.20	0.06-0.10	Low	.37	.49		
Thrifton--------	0-4	20-27	1.45-1.70	0.20-0.60	0.12-0.17	Moderate	.32	.37	5	4L
	4-18	22-35	1.45-1.70	0.20-0.60	0.12-0.17	Moderate	.32	.37		
	18-80	15-25	1.80-1.95	0.06-0.20	0.06-0.20	Low	.32	.32		

TABLE 29.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea-bility	Available water capacity	Shrink-swell potential	Erosion factors Kw	Kf	T	Wind erodi-bility group
	In	Pct	g/cc	In/hr	In/in					
MrB:										
Miamian---------	0-7	14-27	1.30-1.50	0.60-2.00	0.17-0.20	Low	.32	.32	4	6
	7-38	25-35	1.45-1.70	0.20-0.60	0.13-0.17	Moderate	.37	.43		
	38-60	16-31	1.60-1.85	0.20-0.60	0.06-0.10	Low	.37	.49		
Urban land------	---	---	---	---	---	---	---	---	-	---
MrC:										
Miamian---------	0-7	14-27	1.30-1.50	0.60-2.00	0.17-0.20	Low	.32	.32	4	6
	7-38	25-35	1.45-1.70	0.20-0.60	0.13-0.17	Moderate	.37	.43		
	38-60	16-31	1.60-1.85	0.20-0.60	0.06-0.10	Low	.37	.49		
Urban land------	---	---	---	---	---	---	---	---	-	---
Ms:										
Millsdale-------	0-8	27-32	1.30-1.50	0.60-2.00	0.17-0.20	Moderate	.28	.32	2	6
	8-26	35-45	1.40-1.65	0.60-2.00	0.13-0.17	High	.32	.37		
	26-28	---	---	0.00-0.06	---	---	---	---		
MtA:										
Milton----------	0-6	14-27	1.30-1.50	0.60-2.00	0.17-0.20	Low	.37	.37	2	6
	6-30	35-50	1.45-1.65	0.60-2.00	0.13-0.17	Moderate	.37	.43		
	30-32	---	---	0.00-0.06	---	---	---	---		
MtB:										
Milton----------	0-6	14-27	1.30-1.50	0.60-2.00	0.17-0.20	Low	.37	.37	2	6
	6-30	35-50	1.45-1.65	0.60-2.00	0.13-0.17	Moderate	.37	.43		
	30-32	---	---	0.00-0.06	---	---	---	---		
MtC2:										
Milton----------	0-6	14-27	1.30-1.50	0.60-2.00	0.17-0.20	Low	.37	.37	2	6
	6-30	35-50	1.45-1.65	0.60-2.00	0.13-0.17	Moderate	.37	.43		
	30-32	---	---	0.00-0.06	---	---	---	---		
MUF:										
Milton variant--	0-12	14-27	1.30-1.50	0.60-2.00	0.10-0.14	Low	.28	.55	2	6
	12-30	20-35	1.45-1.75	0.60-2.00	0.08-0.12	Moderate	.28	.37		
	30-32	---	---	0.00-0.06	---	---	---	---		
OcA:										
Ockley----------	0-10	11-22	1.30-1.40	0.60-2.00	0.18-0.22	Low	.37	.37	4	5
	10-22	20-35	1.45-1.60	0.60-2.00	0.15-0.19	Moderate	.37	.43		
	22-45	20-35	1.40-1.55	0.60-2.00	0.12-0.15	Moderate	.24	.43		
	45-60	2-5	1.60-1.80	6.00-20.00	0.02-0.06	Low	.10	.37		
OcB:										
Ockley----------	0-10	11-22	1.30-1.40	0.60-2.00	0.18-0.22	Low	.37	.37	4	5
	10-22	20-35	1.45-1.60	0.60-2.00	0.15-0.17	Moderate	.37	.43		
	22-45	20-35	1.40-1.55	0.60-2.00	0.12-0.15	Moderate	.24	.43		
	45-60	2-5	1.60-1.80	6.00-20.00	0.02-0.06	Low	.10	.37		
OcB2:										
Ockley----------	0-10	11-22	1.30-1.40	0.60-2.00	0.18-0.22	Low	.37	.37	4	5
	10-22	20-35	1.45-1.60	0.60-2.00	0.15-0.19	Moderate	.37	.43		
	22-45	20-35	1.40-1.55	0.60-2.00	0.12-0.15	Moderate	.24	.43		
	45-60	2-5	1.60-1.80	6.00-20.00	0.02-0.06	Low	.10	.37		

TABLE 29.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Erosion factors Kw	Kf	T	Wind erodi- bility group
	In	Pct	g/cc	In/hr	In/in					
OdB:										
Ockley----------	0-10	11-22	1.30-1.40	0.60-2.00	0.18-0.22	Low	.37	.37	4	5
	10-22	20-35	1.45-1.60	0.60-2.00	0.15-0.18	Moderate	.37	.43		
	22-45	20-35	1.40-1.55	0.60-2.00	0.12-0.15	Moderate	.24	.43		
	45-60	2-5	1.60-1.80	6.00-20.00	0.02-0.06	Low	.10	.37		
Urban land------	---	---	---	---	---	---	---	---	-	---
OeB:										
Odell----------	0-11	18-27	1.30-1.50	0.60-2.00	0.18-0.22	Low	.28	.28	5	6
	11-24	25-35	1.50-1.70	0.60-2.00	0.15-0.19	Moderate	.28	.28		
	24-60	10-20	1.70-1.90	0.20-0.60	0.10-0.16	Low	.37	.43		
Pa:										
Patton----------	0-8	27-35	1.15-1.35	0.60-2.00	0.15-0.20	Moderate	.28	.28	5	6
	8-32	27-35	1.25-1.45	0.20-2.00	0.14-0.18	Moderate	.43	.43		
	32-60	22-35	1.30-1.50	0.20-0.60	0.12-0.16	Moderate	.43	.43		
Pg:										
Pits, gravel----	---	---	---	---	---	---	---	---	-	---
Pu:										
Pits, quarry----	---	---	---	---	---	---	---	---	-	---
Ra:										
Ragsdale--------	0-16	28-30	1.40-1.60	0.60-2.00	0.16-0.22	Low	.28	.28	5	6
	16-39	20-30	1.50-1.70	0.06-0.20	0.14-0.18	Moderate	.28	.28		
	39-96	10-20	1.50-1.70	0.06-0.20	0.12-0.16	Low	.28	.28		
RbA:										
Randolph--------	0-13	16-27	1.30-1.45	0.60-2.00	0.16-0.20	Moderate	.37	.37	2	6
	13-37	35-50	1.40-1.65	0.20-0.60	0.10-0.14	High	.37	.43		
	37-39	---	---	0.00-0.06	---	---	---	---		
RdA:										
Raub----------	0-14	20-27	1.30-1.50	0.60-2.00	0.18-0.22	Low	.28	.28	5	6
	14-27	27-35	1.50-1.70	0.60-2.00	0.15-0.19	Moderate	.37	.37		
	27-44	27-35	1.50-1.70	0.60-2.00	0.13-0.17	Moderate	.37	.37		
	44-60	20-32	1.50-1.70	0.06-0.20	0.06-0.10	Low	.37	.49		
RdB:										
Raub----------	0-14	20-27	1.30-1.50	0.60-2.00	0.18-0.22	Low	.28	.28	5	6
	14-27	27-35	1.50-1.70	0.60-2.00	0.15-0.19	Moderate	.37	.37		
	27-44	27-35	1.50-1.70	0.60-2.00	0.13-0.17	Moderate	.37	.37		
	44-60	20-32	1.50-1.70	0.06-0.20	0.06-0.10	Low	.37	.49		
ReA:										
Reesville-------	0-12	12-20	1.20-1.45	0.60-2.00	0.17-0.22	Low	.37	.37	5	5
	12-42	27-35	1.30-1.55	0.20-2.00	0.15-0.19	Moderate	.37	.37		
	42-72	12-25	1.45-1.70	0.20-2.00	0.08-0.12	Low	.37	.43		
RhB:										
Ritchey---------	0-7	18-27	1.20-1.40	0.60-2.00	0.16-0.20	Low	.37	.37	1	6
	7-18	27-40	1.35-1.60	0.60-2.00	0.10-0.14	Moderate	.37	.32		
	18-20	---	---	0.00-0.60	---	---	---	---		
RhC:										
Ritchey---------	0-7	18-27	1.20-1.40	0.60-2.00	0.16-0.20	Low	.37	.37	1	6
	7-18	27-40	1.35-1.60	0.60-2.00	0.10-0.14	Moderate	.37	.32		
	18-20	---	---	0.00-0.60	---	---	---	---		

TABLE 29.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea-bility	Available water capacity	Shrink-swell potential	Erosion factors Kw	Kf	T	Wind erodi-bility group
	In	Pct	g/cc	In/hr	In/in					
RhD:										
Ritchey---------	0-7	18-27	1.20-1.40	0.60-2.00	0.16-0.20	Low	.37	.37	1	6
	7-18	27-40	1.35-1.60	0.60-2.00	0.10-0.14	Moderate	.37	.32		
	18-20	---	---	0.00-0.60	---	---	---	---		
RhE2:										
Ritchey---------	0-7	18-27	1.20-1.40	0.60-2.00	0.16-0.20	Low	.37	.37	1	6
	7-18	27-40	1.35-1.60	0.60-2.00	0.10-0.14	Moderate	.37	.32		
	18-20	---	---	0.00-0.60	---	---	---	---		
RkE:										
Rodman----------	0-7	8-25	1.20-1.50	2.00-6.00	0.10-0.12	Low	.20	.32	3	5
	7-12	5-25	1.10-1.50	2.00-6.00	0.09-0.12	Low	.20	.32		
	12-80	0-10	1.60-1.70	20.00-99.90	0.02-0.04	Low	.10	.37		
RpA:										
Ross----------	0-14	15-27	1.20-1.45	0.60-2.00	0.19-0.24	Low	.32	.32	5	6
	14-31	18-32	1.20-1.50	0.60-2.00	0.16-0.22	Low	.32	.32		
	31-80	5-35	1.35-1.60	0.60-6.00	0.05-0.18	Low	.32	.49		
RqA:										
Ross----------	0-25	15-27	1.20-1.45	0.60-2.00	0.19-0.24	Low	.32	.32	5	6
	25-80	0-10	1.35-1.60	0.60-6.00	0.05-0.18	Low	.32	.49		
Rs:										
Ross----------	0-40	15-27	1.20-1.45	0.60-2.00	0.18-0.24	Low	.32	.32	5	5
	40-78	5-25	1.35-1.60	0.60-2.00	0.08-0.14	Low	.32	.49		
RtA:										
Rush----------	0-13	10-20	1.25-1.40	0.60-2.00	0.17-0.22	Low	.37	.37	5	5
	13-38	22-30	1.35-1.50	0.60-2.00	0.14-0.18	Moderate	.37	.37		
	38-60	20-30	1.40-1.55	0.60-2.00	0.08-0.14	Moderate	.37	.43		
	60-75	2-6	1.60-1.80	6.00-20.00	0.02-0.06	Low	.10	.37		
RtB:										
Rush----------	0-13	10-20	1.25-1.40	0.60-2.00	0.17-0.22	Low	.37	.37	5	5
	13-38	22-30	1.35-1.50	0.60-2.00	0.14-0.18	Moderate	.37	.37		
	38-60	20-30	1.40-1.55	0.60-2.00	0.08-0.14	Moderate	.37	.43		
	60-75	2-6	1.60-1.80	6.00-20.00	0.02-0.06	Low	.10	.37		
RuA:										
Russell---------	0-13	11-25	1.30-1.45	0.60-2.00	0.18-0.22	Low	.37	.37	5	5
	13-22	25-33	1.40-1.60	0.60-2.00	0.14-0.18	Moderate	.37	.37		
	22-37	23-33	1.40-1.60	0.20-0.60	0.12-0.16	Moderate	.37	.37		
	37-60	14-27	1.60-1.80	0.20-0.60	0.06-0.12	Low	.37	.43		
RvB:										
Russell---------	0-13	11-25	1.30-1.45	0.60-2.00	0.18-0.22	Low	.37	.37	5	5
	13-22	25-33	1.40-1.60	0.60-2.00	0.14-0.18	Moderate	.37	.37		
	22-37	23-33	1.40-1.60	0.20-0.60	0.12-0.16	Moderate	.37	.37		
	37-60	14-27	1.60-1.80	0.20-0.60	0.06-0.12	Low	.37	.43		
Miamian---------	0-7	14-27	1.30-1.50	0.60-2.00	0.17-0.20	Low	.37	.37	4	6
	7-38	25-35	1.40-1.60	0.20-0.60	0.13-0.17	Moderate	.37	.43		
	38-60	16-31	1.60-1.85	0.20-0.60	0.06-0.10	Low	.37	.49		
RvB2:										
Russell---------	0-13	11-25	1.30-1.45	0.60-2.00	0.18-0.22	Low	.37	.37	5	5
	13-22	25-33	1.40-1.60	0.60-2.00	0.14-0.18	Moderate	.37	.37		
	22-37	23-33	1.40-1.60	0.20-0.60	0.12-0.16	Moderate	.37	.37		
	37-60	14-27	1.60-1.80	0.20-0.60	0.06-0.12	Low	.37	.43		

TABLE 29.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Erosion factors Kw	Kf	T	Wind erodi- bility group
	In	Pct	g/cc	In/hr	In/in					
Miamian---------	0-7	14-27	1.30-1.50	0.60-2.00	0.17-0.20	Low	.37	.37	4	6
	7-38	25-35	1.40-1.60	0.20-0.60	0.13-0.17	Moderate	.37	.43		
	38-60	16-31	1.60-1.85	0.20-0.60	0.06-0.10	Low	.37	.49		
RwB2:										
Russell---------	0-8	11-25	1.30-1.45	0.60-2.00	0.21-0.24	Low	.37	.37	5	5
	8-26	25-33	1.40-1.60	0.60-2.00	0.18-0.20	Moderate	.37	.37		
	26-49	23-33	1.40-1.60	0.60-2.00	0.15-0.19	Moderate	.37	.37		
	49-80	14-27	1.80-2.00	0.06-0.20	0.05-0.19	Low	.37	.43		
Xenia----------	0-6	11-22	1.30-1.50	0.60-2.00	0.22-0.24	Low	.37	.37	5	5
	6-26	27-35	1.45-1.65	0.60-2.00	0.18-0.20	Moderate	.37	.37		
	26-43	24-35	1.45-1.65	0.20-0.60	0.15-0.19	Moderate	.37	.43		
	43-80	12-20	1.70-1.90	0.06-0.20	0.05-0.10	Low	.37	.43		
SkA:										
Sligo----------	0-9	15-25	1.00-1.20	0.60-2.00	0.20-0.24	Low	.37	.37	5	6
	9-58	5-20	1.00-1.20	0.60-2.00	0.17-0.22	Low	.17	.17		
	58-80	0-10	1.25-1.55	6.00-20.00	0.02-0.20	Low	.10	.17		
SlA:										
Sleeth----------	0-10	11-22	1.30-1.45	0.60-2.00	0.16-0.22	Low	.32	.32	4	5
	10-24	20-35	1.45-1.60	0.60-2.00	0.14-0.18	Moderate	.32	.37		
	24-52	20-35	1.40-1.60	0.60-2.00	0.10-0.14	Moderate	.32	.49		
	52-60	2-5	1.60-1.80	6.00-20.00	0.02-0.06	Low	.10	.37		
SnA:										
Sloan----------	0-21	15-30	1.20-1.40	0.60-2.00	0.19-0.24	Low	.28	.28	5	6
	21-48	20-40	1.25-1.55	0.60-2.00	0.17-0.20	Moderate	.32	.32		
	48-68	5-25	1.25-1.55	0.60-2.00	0.19-0.21	Low	.32	.37		
	68-80	0-10	1.20-1.50	0.60-2.00	0.02-0.05	Low	.10	.17		
So:										
Sloan----------	0-24	27-33	1.25-1.50	0.60-2.00	0.20-0.24	Moderate	.28	.28	5	6
	24-45	22-35	1.25-1.55	0.60-2.00	0.15-0.19	Moderate	.37	.37		
	45-60	10-30	1.20-1.50	0.60-2.00	0.13-0.18	Low	.37	.43		
Sp:										
Fill land-------	---	---	---	---	---	---	---	---	-	---
Sloan----------	0-24	27-33	1.25-1.50	0.60-2.00	0.20-0.24	Moderate	.28	.28	5	6
	24-45	22-35	1.25-1.55	0.60-2.00	0.15-0.19	Moderate	.37	.37		
	45-60	10-30	1.20-1.50	0.60-2.00	0.13-0.18	Low	.37	.43		
Sr:										
Urban land------	---	---	---	---	---	---	---	---	-	---
Sloan----------	0-24	27-33	1.25-1.50	0.60-2.00	0.20-0.24	Moderate	.28	.28	5	6
	24-45	22-35	1.25-1.55	0.60-2.00	0.15-0.19	Moderate	.37	.37		
	45-60	10-30	1.20-1.50	0.60-2.00	0.13-0.18	Low	.37	.43		
ThA:										
Thackery--------	0-12	15-25	1.30-1.50	0.60-2.00	0.17-0.22	Low	.37	.37	4	5
	12-18	20-30	1.30-1.55	0.60-2.00	0.14-0.18	Low	.37	.37		
	18-40	25-35	1.35-1.60	0.60-2.00	0.11-0.15	Moderate	.37	.43		
	40-50	15-27	1.25-1.55	2.00-6.00	0.04-0.10	Low	.10	.49		
	50-72	2-12	1.60-1.80	6.00-20.00	0.02-0.06	Low	.10	.49		
ThB:										
Thackery--------	0-12	15-25	1.30-1.50	0.60-2.00	0.17-0.22	Low	.37	.37	4	5
	12-18	20-30	1.30-1.55	0.60-2.00	0.14-0.18	Low	.37	.37		
	18-40	25-35	1.35-1.60	0.60-2.00	0.11-0.15	Moderate	.37	.43		
	40-50	15-27	1.25-1.55	2.00-6.00	0.04-0.10	Low	.10	.49		
	50-72	2-12	1.60-1.80	6.00-20.00	0.02-0.06	Low	.10	.49		

TABLE 29.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea-bility	Available water capacity	Shrink-swell potential	Erosion factors Kw	Kf	T	Wind erodi-bility group
	In	Pct	g/cc	In/hr	In/in					
Ts:										
Tremont---------	0-18	20-27	1.20-1.45	0.60-2.00	0.20-0.24	Low	.28	.28	5	5
	18-28	22-35	1.25-1.50	0.60-2.00	0.18-0.22	Moderate	.28	.24		
	28-40	18-32	1.35-1.55	0.60-2.00	0.15-0.22	Low	.32	.37		
	40-80	5-15	1.50-1.75	2.00-6.00	0.06-0.12	Low	.32	.37		
TtA:										
Treaty----------	0-16	28-35	1.40-1.70	0.60-2.00	0.17-0.24	Moderate	.32	.32	5	6
	16-32	24-35	1.40-1.70	0.60-2.00	0.14-0.21	Moderate	.37	.37		
	32-63	24-35	1.40-1.70	0.60-2.00	0.07-0.21	Moderate	.37	.43		
	63-80	10-20	1.65-1.95	0.20-0.60	0.01-0.15	Low	.43	.49		
Ud:										
Udorthents------	---	---	---	---	---	---	---	---	-	---
Ur:										
Urban land------	---	---	---	---	---	---	---	---	-	---
W:										
Water-----------	---	---	---	---	---	---	---	---	-	---
WaA:										
Warsaw----------	0-11	15-25	1.30-1.50	0.60-2.00	0.20-0.24	Low	.28	.28	4	5
	11-33	20-40	1.35-1.60	0.60-2.00	0.12-0.16	Moderate	.28	.32		
	33-60	2-8	1.40-1.65	6.00-20.00	0.02-0.04	Low	.10	.37		
WbA:										
Fill land-------	---	---	---	---	---	---	---	---	-	---
Warsaw----------	0-11	15-25	1.30-1.50	0.60-2.00	0.20-0.24	Low	.28	.28	4	5
	11-33	20-40	1.35-1.60	0.60-2.00	0.12-0.16	Moderate	.28	.32		
	33-60	2-8	1.40-1.65	6.00-20.00	0.02-0.04	Low	.10	.37		
WcA:										
Warsaw----------	0-11	15-25	1.30-1.50	0.60-2.00	0.20-0.24	Low	.28	.28	4	5
	11-33	20-40	1.35-1.60	0.60-2.00	0.12-0.16	Moderate	.28	.32		
	33-60	2-8	1.40-1.65	6.00-20.00	0.02-0.04	Low	.10	.37		
Urban land------	---	---	---	---	---	---	---	---	-	---
WeB:										
Wea----------	0-12	12-22	1.30-1.45	0.60-2.00	0.18-0.24	Low	.32	.32	4	5
	12-45	20-32	1.40-1.60	0.60-2.00	0.15-0.19	Moderate	.32	.32		
	45-60	1-5	1.60-1.80	6.00-20.00	0.02-0.06	Low	.10	.28		
WpC3:										
Wapahani--------	0-3	27-35	1.40-1.70	0.20-0.60	0.13-0.19	Moderate	.32	.32	2	6
	3-18	22-35	1.40-1.70	0.20-0.60	0.07-0.17	Moderate	.32	.37		
	18-80	10-20	1.75-1.95	0.01-0.06	0.01-0.03	Low	.43	.49		
Miamian---------	0-3	27-32	1.35-1.55	0.60-2.00	0.16-0.19	Moderate	.32	.32	3	6
	3-8	25-35	1.40-1.60	0.20-0.60	0.16-0.20	Moderate	.37	.43		
	8-28	35-48	1.45-1.70	0.20-0.60	0.12-0.17	Moderate	.37	.43		
	28-80	16-26	1.80-2.00	0.06-0.20	0.06-0.10	Low	.37	.49		
WpD3:										
Wapahani--------	0-3	27-35	1.40-1.70	0.20-0.60	0.13-0.19	Moderate	.32	.32	3	6
	3-19	22-35	1.40-1.70	0.20-0.60	0.07-0.17	Moderate	.32	.37		
	19-80	10-20	1.75-1.95	0.01-0.06	0.01-0.03	Low	.43	.49		
Miamian---------	0-3	27-32	1.35-1.55	0.60-2.00	0.16-0.19	Moderate	.32	.32	4	6
	3-24	35-48	1.45-1.70	0.20-0.60	0.12-0.17	Moderate	.37	.43		
	24-80	16-26	1.80-2.00	0.06-0.20	0.06-0.10	Low	.37	.49		

TABLE 29.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Erosion factors Kw	Kf	T	Wind erodi- bility group
	In	Pct	g/cc	In/hr	In/in					
Ws:										
Westland--------	0-14	27-29	1.45-1.55	0.60-2.00	0.20-0.24	Moderate	.24	.28	4	6
	14-38	20-35	1.40-1.65	0.20-0.60	0.14-0.18	Moderate	.28	.32		
	38-52	5-30	1.55-1.70	0.60-2.00	0.10-0.16	Low	.28	.37		
	52-60	1-10	1.65-1.95	6.00-20.00	0.02-0.06	Low	.10	.24		
Wt:										
Westland--------	0-14	27-29	1.45-1.55	0.60-2.00	0.20-0.24	Moderate	.24	.28	4	6
	14-38	20-35	1.40-1.65	0.20-0.60	0.14-0.18	Moderate	.28	.32		
	38-52	5-30	1.55-1.70	0.60-2.00	0.10-0.16	Low	.28	.37		
	52-60	1-10	1.65-1.95	6.00-20.00	0.02-0.06	Low	.10	.24		
Urban land------	---	---	---	---	---	---	---	---	-	---
XeA:										
Xenia----------	0-8	11-22	1.30-1.50	0.60-2.00	0.18-0.22	Low	.37	.37	5	5
	8-34	27-35	1.45-1.65	0.60-2.00	0.14-0.18	Moderate	.37	.37		
	34-60	12-20	1.70-1.90	0.20-0.60	0.06-0.12	Low	.37	.43		
XeB:										
Xenia----------	0-8	11-22	1.30-1.50	0.60-2.00	0.18-0.22	Low	.37	.37	5	5
	8-34	27-35	1.45-1.65	0.60-2.00	0.14-0.18	Moderate	.37	.37		
	34-60	12-20	1.70-1.90	0.20-0.60	0.06-0.12	Low	.37	.43		

TABLE 30.--CHEMICAL PROPERTIES OF THE SOILS

(Absence of an entry indicates that data were not estimated. See text on page 212 for additional information.)

Map symbol and soil name	Depth	Soil reaction	Organic matter	Cation-exchange capacity	Calcium carbonate
	In	pH	Pct	meq/100 g	Pct
Ag:					
Algiers---------	0-16	6.1-7.3	2.0-4.0	10-24	0
	16-48	6.1-7.8	0.5-1.0	10-22	0-5
	48-60	6.1-7.8	0.1-0.5	2.0-8.0	0-10
BbB:					
Birkbeck--------	0-11	5.1-7.3	1.0-3.0	11-23	0
	11-42	5.6-7.8	0.5-1.0	16-23	0
	42-60	7.4-8.4	0.0-0.5	10-19	0-20
BcB:					
Birkbeck--------	0-10	5.1-7.3	1.0-3.0	11-23	0
	10-52	4.5-7.3	0.5-1.0	16-23	0
	52-65	5.6-7.8	0.0-0.5	12-19	0-5
	65-80	6.6-8.4	0.0-0.5	10-19	0-20
Bs:					
Brookston-------	0-12	6.1-7.3	3.0-5.0	27-35	0
	8-42	6.1-7.8	0.5-2.0	8.0-20	0
	42-78	7.4-8.4	0.1-1.0	3.0-16	5-35
Bt:					
Brookston-------	0-12	6.1-7.3	3.0-5.0	27-35	0
	8-42	6.1-7.8	0.5-2.0	8.0-20	0
	42-78	7.4-8.4	0.1-1.0	3.0-16	5-35
Urban land------	---	---	---	---	---
CaE2:					
Casco----------	0-5	5.6-7.3	1.0-3.0	4.0-20	0
	5-21	5.6-7.8	0.0-0.5	4.0-30	0-3
	21-80	7.4-8.4	0.0-0.5	0.0-3.0	1-25
CbD2:					
Casco----------	0-7	5.6-7.3	1.0-2.0	3.0-15	0
	7-17	5.6-7.8	0.0-0.5	4.0-30	0-3
	17-80	7.4-8.4	0.0-0.5	0.0-3.0	1-25
CcD2:					
Casco----------	0-4	5.6-7.3	1.0-3.0	4.0-20	0
	4-20	5.6-7.8	0.0-0.5	4.0-30	0-3
	20-60	7.4-8.4	0.0-0.5	0.0-3.0	1-25
Eldean----------	0-13	5.6-7.3	1.0-3.0	8.0-21	0
	13-33	5.6-7.8	0.5-1.0	20-30	0
	33-38	6.6-8.4	0.5-1.0	20-30	10-50
	38-60	6.6-8.4	0.5-1.0	1.0-8.0	40-65
CdE2:					
Casco----------	0-4	5.6-7.3	1.0-3.0	4.0-20	0
	4-20	5.6-7.8	0.0-0.5	4.0-30	0-3
	20-60	7.4-8.4	0.0-0.5	0.0-3.0	1-25
Rodman----------	0-10	6.6-7.8	2.0-4.0	5.0-18	0
	10-60	7.4-8.4	0.0-0.5	1.0-6.0	10-45
CeA:					
Celina----------	0-10	5.6-7.3	1.0-3.0	9.0-19	0
	10-28	4.5-7.8	0.5-1.0	18-32	0-15
	28-60	7.4-8.4	0.3-0.5	8.0-14	25-45

TABLE 30.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Soil reaction	Organic matter	Cation-exchange capacity	Calcium carbonate
	In	pH	Pct	meq/100 g	Pct
CeB:					
Celina----------	0-10	5.6-7.3	1.0-3.0	9.0-19	0
	10-28	4.5-7.8	0.5-1.0	18-32	0-15
	28-60	7.4-8.4	0.3-0.5	8.0-14	25-45
CfB:					
Celina----------	0-12	5.6-7.3	1.0-3.0	9.0-19	0
	12-28	4.5-7.8	0.5-1.0	18-32	0-15
	28-80	7.4-8.4	0.3-0.5	8.0-14	25-45
Losantville-----	0-8	5.6-7.3	1.0-2.0	9.0-21	0
	8-18	6.1-7.8	0.0-0.5	14-28	0-5
	18-80	7.4-8.4	0.0-0.5	7.0-16	25-45
ChB:					
Celina----------	0-10	5.6-7.3	1.0-3.0	9.0-19	0
	10-30	4.5-7.8	0.5-1.0	18-32	0-15
	30-80	7.4-8.4	0.3-0.5	8.0-14	25-45
Strawn----------	0-10	5.6-7.3	1.0-2.0	18-22	0
	10-23	5.6-7.8	0.2-1.0	16-23	0
	23-80	7.4-8.4	0.2-0.5	12-19	5-30
CrA:					
Crosby----------	0-9	5.1-7.3	1.0-3.0	6.0-20	0
	9-28	5.1-7.8	0.0-0.5	7.0-18	0
	28-60	7.4-8.4	0.0-0.5	15-29	10-40
CrB:					
Crosby----------	0-9	5.1-7.3	1.0-3.0	6.0-20	0
	9-28	5.1-7.8	0.0-0.5	7.0-18	0
	28-60	7.4-8.4	0.0-0.5	15-29	10-40
CsA:					
Crosby----------	0-10	5.1-6.5	1.0-3.0	6.0-20	0
	10-31	5.1-7.3	0.0-0.5	7.0-18	5-40
	31-60	7.9-8.4	0.0-0.5	6.0-17	10-40
Lewisburg-------	0-9	5.6-7.3	1.0-4.0	8.0-19	0
	9-21	5.6-7.8	0.5-1.0	14-28	0-15
	21-60	7.4-8.4	0.0-0.5	8.0-16	30-47
CsB:					
Crosby----------	0-10	5.1-6.5	1.0-3.0	6.0-20	0
	10-31	5.1-7.3	0.0-0.5	7.0-18	5-40
	31-60	7.9-8.4	0.0-0.5	6.0-17	10-40
Lewisburg-------	0-9	5.6-7.3	1.0-4.0	8.0-19	0
	9-21	5.6-7.8	0.5-1.0	14-28	0-15
	21-60	7.4-8.4	0.0-0.5	8.0-16	30-47
CtA:					
Crosby----------	0-10	5.1-7.3	1.0-3.0	6.0-20	0
	10-28	5.1-7.3	0.5-1.0	15-29	0
	28-34	7.4-8.4	0.0-0.5	5.0-17	5-40
	34-80	7.4-8.4	0.0-0.5	4.0-16	20-50
Celina----------	0-10	5.6-7.3	1.0-3.0	9.0-19	0
	10-24	4.5-7.8	0.5-1.0	18-32	0-15
	24-80	7.4-8.4	0.3-0.5	8.0-14	25-45

TABLE 30.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Soil reaction	Organic matter	Cation-exchange capacity	Calcium carbonate
	In	pH	Pct	meq/100 g	Pct
CtB:					
Crosby----------	0-8	5.1-7.3	1.0-3.0	6.0-20	0
	8-28	5.1-7.3	0.5-1.0	15-29	0
	28-35	7.4-8.4	0.0-0.5	5.0-17	5-40
	35-80	7.4-8.4	0.0-0.5	4.0-16	20-50
Celina----------	0-8	5.6-7.3	1.0-3.0	9.0-19	0
	8-26	4.5-7.8	0.5-1.0	18-32	0-15
	26-80	7.4-8.4	0.3-0.5	8.0-14	25-45
Du:					
Dumps----------	---	---	---	---	---
EdB:					
Edenton---------	0-7	6.1-7.3	1.0-3.0	8.0-22	0
	7-22	6.1-7.8	0.0-0.3	14-30	0
	22-33	6.1-7.8	0.0-0.3	16-30	1-25
	33-43	---	---	---	---
EdC2:					
Edenton---------	0-7	6.1-7.3	1.0-3.0	8.0-22	0
	7-22	6.1-7.8	0.0-0.3	14-30	0
	22-33	6.1-7.8	0.0-0.3	16-30	1-25
	33-43	---	---	---	---
EdD2:					
Edenton---------	0-7	6.1-7.3	1.0-3.0	8.0-22	0
	7-22	6.1-7.8	0.0-0.3	14-30	0
	22-33	6.1-7.8	0.0-0.3	16-30	1-25
	33-43	---	---	---	---
Ee:					
Eel----------	0-8	6.1-7.8	1.0-2.0	12-20	0
	8-24	6.1-8.4	0.5-1.0	12-20	0-15
	24-60	7.4-8.4	0.2-1.0	8.0-18	0-25
EmA:					
Eldean----------	0-13	5.6-7.3	1.0-3.0	8.0-21	0
	13-33	5.6-7.8	0.5-1.0	20-30	0
	33-38	6.6-8.4	0.5-1.0	20-30	10-50
	38-60	6.6-8.4	0.5-1.0	1.0-8.0	40-65
EmB:					
Eldean----------	0-13	5.6-7.3	1.0-3.0	8.0-21	0
	13-33	5.6-7.8	0.5-1.0	20-30	0
	33-38	6.6-8.4	0.5-1.0	20-30	10-50
	38-60	6.6-8.4	0.5-1.0	1.0-8.0	40-65
EmB2:					
Eldean----------	0-13	5.6-7.3	1.0-3.0	8.0-21	0
	13-33	5.6-7.8	0.5-1.0	20-30	0
	33-38	6.6-8.4	0.5-1.0	20-30	10-50
	38-60	6.6-8.4	0.5-1.0	1.0-8.0	40-65
EmC2:					
Eldean----------	0-13	5.6-7.3	1.0-3.0	8.0-21	0
	13-33	5.6-7.8	0.5-1.0	20-30	0
	33-38	6.6-8.4	0.5-1.0	20-30	10-50
	38-60	6.6-8.4	0.5-1.0	1.0-8.0	40-65

TABLE 30.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Soil reaction	Organic matter	Cation-exchange capacity	Calcium carbonate
	In	pH	Pct	meq/100 g	Pct
EnC3:					
Eldean----------	0-13	5.6-7.3	0.5-2.0	12-24	0
	13-33	5.6-7.8	0.5-1.0	20-30	0
	33-38	6.6-8.4	0.5-1.0	20-30	10-50
	38-60	6.6-8.4	0.5-1.0	1.0-8.0	40-65
EoC2:					
Eldean----------	0-6	5.6-7.3	0.5-2.0	12-24	0
	6-22	5.6-7.8	0.5-1.0	20-30	0
	22-30	6.6-8.4	0.5-1.0	20-30	10-50
	30-80	7.4-8.4	0.5-1.0	1.0-8.0	40-65
Miamian---------	0-6	5.6-7.3	1.0-3.0	10-18	0
	6-27	5.1-7.8	0.3-1.0	17-28	0-15
	27-80	7.4-8.4	0.1-0.5	7.0-16	25-45
EoD2:					
Eldean----------	0-6	5.6-7.3	1.0-3.0	12-24	0
	6-21	5.6-7.8	0.5-1.0	20-30	0
	21-26	6.6-8.4	0.5-1.0	20-30	10-50
	26-80	7.4-8.4	0.5-1.0	1.0-8.0	40-65
Miamian---------	0-5	5.6-7.3	0.5-2.0	10-18	0
	5-15	5.1-7.8	0.3-1.0	17-28	0-15
	15-80	7.4-8.4	0.1-0.5	7.0-16	25-45
EpC:					
Eldean----------	0-13	5.6-7.3	1.0-3.0	8.0-21	0
	13-33	5.6-7.8	0.5-1.0	20-30	0
	33-38	6.6-8.4	0.5-1.0	20-30	10-50
	38-60	6.6-8.4	0.5-1.0	1.0-8.0	40-65
Urban land------	---	---	---	---	---
FaF:					
Fairmount variant--------	0-6	6.6-7.3	1.0-3.0	13-30	0
	6-29	6.6-7.8	0.3-1.0	14-38	0-25
	29-39	---	---	---	---
FnA:					
Fincastle-------	0-11	5.1-7.3	1.0-3.0	6.0-20	0
	11-40	5.1-7.8	0.0-0.5	10-20	0
	40-60	7.4-8.4	0.0-0.5	8.0-16	15-35
Gn:					
Genesee---------	0-10	7.4-7.8	1.0-3.0	9.0-23	0-10
	10-36	7.4-8.4	0.5-1.0	8.0-19	0-25
	36-66	7.4-8.4	0.2-1.0	4.0-14	5-40
Ko:					
Kokomo----------	0-10	5.1-7.3	3.0-6.0	16-33	0
	10-51	5.6-7.8	1.0-2.0	16-28	0-3
	51-80	7.4-8.4	0.0-1.0	6.0-17	15-35
Lh:					
Linwood---------	0-9	4.5-7.8	10-20	10-30	0
	9-28	4.5-7.8	50-70	150-230	0
	28-80	5.6-8.4	0.0-0.5	2.0-20	5-25

TABLE 30.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Soil reaction	Organic matter	Cation-exchange capacity	Calcium carbonate
	In	pH	Pct	meq/100 g	Pct
Ln:					
Linwood---------	0-35	6.1-7.8	50-70	150-230	0
	35-60	6.1-8.4	0.0-0.5	2.0-20	5-25
LuF2:					
Lumberton-------	0-3	6.1-7.3	0.5-2.0	6.0-12	0
	3-8	5.6-7.3	0.0-0.5	12-18	0
	8-34	5.6-7.3	0.0-0.5	14-21	0
	34-40	---	---	---	---
MhA:					
Miamian---------	0-7	5.6-7.3	1.0-3.0	10-18	0
	7-38	5.1-7.8	0.3-1.0	17-28	0-15
	38-60	7.4-8.4	0.1-0.5	7.0-16	25-50
MhB:					
Miamian---------	0-7	5.1-6.5	1.0-3.0	10-18	0
	7-38	5.1-6.5	0.3-1.0	17-28	0-15
	38-60	7.4-8.4	0.1-0.5	7.0-16	25-50
MhB2:					
Miamian---------	0-7	5.1-6.5	1.0-3.0	10-18	0
	7-38	5.1-6.5	0.3-1.0	17-28	0-15
	38-60	7.4-8.4	0.1-0.5	7.0-16	25-50
MhC2:					
Miamian---------	0-7	5.1-6.5	1.0-3.0	10-18	0
	7-38	5.1-6.5	0.3-1.0	17-28	0-15
	38-60	7.4-8.4	0.1-0.5	7.0-16	25-50
MhD2:					
Miamian---------	0-7	5.1-6.5	1.0-3.0	10-18	0
	7-38	5.1-6.5	0.3-1.0	17-28	0-15
	38-60	7.4-8.4	0.1-0.5	7.0-16	25-50
MlB3:					
Miamian---------	0-7	5.1-6.5	0.5-2.0	14-20	0
	7-38	5.1-6.5	0.3-1.0	17-28	0-15
	38-60	7.4-8.4	0.1-0.5	7.0-16	25-50
MlC3:					
Miamian---------	0-7	5.1-6.5	0.5-2.0	14-20	0
	7-38	5.1-6.5	0.3-1.0	17-28	0-15
	38-60	7.4-8.4	0.1-0.5	7.0-16	25-50
MlD3:					
Miamian---------	0-7	5.1-6.5	0.5-2.0	14-20	0
	7-38	5.1-6.5	0.3-1.0	17-28	0-15
	38-60	7.4-8.4	0.1-0.5	7.0-16	25-50
MmD2:					
Miamian---------	0-7	5.1-6.5	1.0-3.0	10-18	0
	7-38	5.1-6.5	0.3-1.0	17-28	0-15
	38-60	7.4-8.4	0.1-0.5	7.0-16	25-50
Casco----------	0-4	5.6-7.3	1.0-3.0	4.0-20	0
	4-20	5.6-7.8	0.0-0.5	4.0-30	0-3
	20-60	7.4-8.4	0.0-0.5	0.0-3.0	1-25

TABLE 30.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Soil reaction	Organic matter	Cation-exchange capacity	Calcium carbonate
	In	pH	Pct	meq/100 g	Pct
MmE2:					
Miamian---------	0-7	5.1-6.5	1.0-3.0	10-18	0
	7-38	5.1-6.5	0.3-1.0	17-28	0-15
	38-60	7.4-8.4	0.1-0.5	7.0-16	25-50
Casco----------	0-4	5.6-7.3	1.0-3.0	4.0-20	0
	4-20	5.6-7.8	0.0-0.5	4.0-30	0-3
	20-60	7.4-8.4	0.0-0.5	0.0-3.0	1-25
MoB2:					
Miamian---------	0-7	5.1-6.5	1.0-3.0	10-18	0
	7-38	5.1-6.5	0.3-1.0	17-28	0-15
	38-60	7.4-8.4	0.1-0.5	7.0-16	25-50
Eldean----------	0-13	5.6-7.3	1.0-3.0	8.0-21	0
	13-33	5.6-7.8	0.5-1.0	20-30	0
	33-38	6.6-8.4	0.5-1.0	20-30	10-50
	38-60	6.6-8.4	0.5-1.0	1.0-8.0	40-65
MoC2:					
Miamian---------	0-7	5.1-6.5	1.0-3.0	10-18	0
	7-38	5.1-6.5	0.3-1.0	17-28	0-15
	38-60	7.4-8.4	0.1-0.5	7.0-16	25-50
Eldean----------	0-13	5.6-7.3	1.0-3.0	8.0-21	0
	13-33	5.6-7.8	0.5-1.0	20-30	0
	33-38	6.6-8.4	0.5-1.0	20-30	10-50
	38-60	6.6-8.4	0.5-1.0	1.0-8.0	40-65
MpE:					
Miamian---------	0-7	5.1-6.5	1.0-3.0	10-18	0
	7-38	5.1-6.5	0.5-1.0	12-22	0-15
	38-60	7.4-8.4	0.1-0.5	7.0-16	25-50
Hennepin--------	0-4	6.1-7.3	1.0-2.0	14-22	0
	4-12	6.1-7.3	0.3-1.0	11-19	0-15
	12-60	7.4-8.4	0.1-0.5	11-18	25-50
MpF:					
Miamian---------	0-7	5.1-6.5	1.0-3.0	10-18	0
	7-38	5.1-6.5	0.3-1.0	12-22	0-15
	38-60	7.4-8.4	0.1-0.5	7.0-16	25-50
Hennepin--------	0-4	6.1-7.3	1.0-2.0	14-22	0
	4-12	6.1-7.3	0.3-1.0	11-19	0-15
	12-60	7.4-8.4	0.1-0.5	11-18	25-50
MqE2:					
Miamian---------	0-4	5.6-7.3	1.0-3.0	10-18	0
	4-14	5.1-7.3	0.5-1.0	12-22	0
	14-38	5.1-7.8	0.3-1.0	17-28	0-15
	38-80	7.4-8.4	0.1-0.5	7.0-16	25-50
Thrifton--------	0-4	7.4-8.4	0.5-2.0	14-20	2-10
	4-19	7.4-8.4	0.1-0.5	12-22	10-35
	19-80	7.4-8.4	0.0-0.1	7.0-16	25-45
MqF2:					
Miamian---------	0-7	5.6-7.3	1.0-3.0	10-18	0
	7-14	5.1-7.3	0.5-1.0	12-22	0
	14-38	5.1-7.8	0.3-1.0	17-28	0-15
	38-80	7.4-8.4	0.1-0.5	7.0-16	25-50

TABLE 30.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Soil reaction	Organic matter	Cation-exchange capacity	Calcium carbonate
	In	pH	Pct	meq/100 g	Pct
Thrifton--------	0-4	7.4-8.4	0.5-2.0	14-20	2-10
	4-18	7.4-8.4	0.1-0.5	12-22	10-35
	18-80	7.4-8.4	0.0-0.1	7.0-16	25-45
MrB:					
Miamian---------	0-7	5.1-6.5	1.0-3.0	10-18	0
	7-38	5.1-6.5	0.3-1.0	12-22	0-15
	38-60	7.4-8.4	0.1-0.5	7.0-16	25-50
Urban land------	---	---	---	---	---
MrC:					
Miamian---------	0-7	5.1-6.5	1.0-3.0	10-18	0
	7-38	5.1-6.5	0.3-1.0	12-22	0-15
	38-60	7.4-8.4	0.1-0.5	7.0-16	25-50
Urban land------	---	---	---	---	---
Ms:					
Millsdale-------	0-8	5.1-7.3	4.0-7.0	20-36	0
	8-26	6.1-7.8	0.5-2.0	15-30	0-10
	26-28	---	---	---	---
MtA:					
Milton----------	0-6	5.1-7.3	1.0-3.0	10-22	0
	6-30	5.1-7.8	0.5-1.0	16-30	0-15
	30-32	---	---	---	---
MtB:					
Milton----------	0-6	5.1-7.3	1.0-3.0	10-22	0
	6-30	5.1-7.8	0.5-1.0	16-30	0-15
	30-32	---	---	---	---
MtC2:					
Milton----------	0-6	5.1-7.3	1.0-3.0	10-22	0
	6-30	5.1-7.8	0.5-1.0	16-30	0-15
	30-32	---	---	---	---
MUF:					
Milton variant--	0-12	6.6-7.3	4.0-8.0	15-30	0
	12-30	6.6-7.8	0.5-1.0	8.0-20	0-15
	30-32	---	---	---	---
OcA:					
Ockley----------	0-10	5.1-6.5	0.5-3.0	3.0-15	0
	10-22	4.5-6.5	0.0-0.5	5.0-15	0
	22-45	5.6-7.3	0.0-0.5	2.0-15	0
	45-60	6.6-8.4	0.0-0.2	1.0-3.0	10-40
OcB:					
Ockley----------	0-10	5.1-6.5	0.5-3.0	3.0-15	0
	10-22	5.1-6.5	0.0-0.5	5.0-15	0
	22-45	5.6-7.3	0.0-0.5	2.0-15	0
	45-60	6.6-8.4	0.0-0.2	1.0-3.0	10-40
OcB2:					
Ockley----------	0-10	5.1-6.5	0.5-3.0	3.0-15	0
	10-22	5.1-6.5	0.0-0.5	11-19	0
	22-45	5.6-7.3	0.0-0.5	2.0-15	0
	45-60	6.6-8.4	0.0-0.2	1.0-3.0	10-40

TABLE 30.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Soil reaction	Organic matter	Cation-exchange capacity	Calcium carbonate
	In	pH	Pct	meq/100 g	Pct
OdB:					
Ockley----------	0-10	5.1-6.5	0.5-3.0	3.0-15	0
	10-22	5.1-6.5	0.0-0.5	5.0-15	0
	22-45	5.6-7.3	0.0-0.5	2.0-15	0
	45-60	6.6-8.4	0.0-0.2	1.0-3.0	10-40
Urban land------	---	---	---	---	---
OeB:					
Odell----------	0-11	6.1-7.3	2.0-4.0	11-25	0
	11-24	6.1-7.3	0.2-1.0	10-23	0-10
	24-60	7.4-8.4	0.0-0.5	4.0-13	5-35
Pa:					
Patton----------	0-8	6.1-7.3	3.0-5.0	22-31	0
	8-32	6.1-7.8	0.0-2.0	16-25	0
	32-60	7.4-7.8	0.0-1.0	13-22	0-25
Pg:					
Pits, gravel----	---	---	---	---	---
Pu:					
Pits, quarry----	---	---	---	---	---
Ra:					
Ragsdale--------	0-16	6.1-7.3	4.0-6.0	19-30	0
	16-39	6.1-7.8	1.0-2.0	10-22	0
	39-96	6.6-8.4	0.1-1.0	4.0-14	5-35
RbA:					
Randolph--------	0-13	5.1-6.5	1.0-3.0	8.0-22	0
	13-37	5.1-7.3	0.5-1.0	14-30	0-15
	37-39	---	---	---	---
RdA:					
Raub----------	0-14	5.6-6.5	2.0-4.0	12-25	0
	14-27	5.6-6.5	1.0-2.0	12-25	0
	27-44	6.1-7.8	0.0-1.0	10-23	0-10
	44-60	7.4-8.4	0.0-0.5	8.0-21	10-35
RdB:					
Raub----------	0-14	5.6-6.5	2.0-4.0	12-25	0
	14-27	5.6-6.5	1.0-2.0	12-25	0
	27-44	6.1-7.8	0.0-1.0	10-23	0-10
	44-60	7.4-8.4	0.0-0.5	8.0-21	10-35
ReA:					
Reesville-------	0-12	5.6-6.5	2.0-4.0	10-26	0
	12-42	5.1-7.8	0.5-1.0	12-25	10-35
	42-72	7.4-8.4	0.1-0.3	5.0-15	15-35
RhB:					
Ritchey---------	0-7	5.6-7.3	1.0-3.0	13-22	0
	7-18	6.6-8.4	0.5-1.0	17-23	0-20
	18-20	6.1-7.8	---	---	---
RhC:					
Ritchey---------	0-7	5.6-7.3	1.0-3.0	13-22	0
	7-18	6.6-8.4	0.5-1.0	17-23	0-20
	18-20	6.1-7.8	---	---	---

TABLE 30.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Soil reaction	Organic matter	Cation-exchange capacity	Calcium carbonate
	In	pH	Pct	meq/100 g	Pct
RhD:					
Ritchey---------	0-7	5.6-7.8	1.0-3.0	13-22	0
	7-18	6.6-8.4	0.5-1.0	17-23	0-20
	18-20	6.1-7.8	---	---	---
RhE2:					
Ritchey---------	0-7	5.6-7.3	1.0-3.0	13-22	0
	7-18	6.1-7.8	0.5-1.0	17-23	0-20
	18-20	---	---	---	---
RkE:					
Rodman----------	0-7	6.6-8.4	2.0-4.0	5.0-18	0-15
	7-12	6.6-8.4	0.0-2.0	1.0-14	0-25
	12-80	7.4-8.4	0.0-1.0	1.0-6.0	10-45
RpA:					
Ross----------	0-14	6.1-7.8	3.0-5.0	12-26	0
	14-31	6.1-8.4	1.0-3.0	8.0-20	0-20
	31-80	6.1-8.4	0.5-2.0	2.0-15	0-30
RqA:					
Ross----------	0-25	6.1-7.8	3.0-5.0	12-26	0
	25-80	6.1-8.4	0.5-2.0	2.0-15	0-30
Rs:					
Ross----------	0-40	6.6-7.8	3.0-5.0	12-26	0-20
	40-78	6.1-8.4	0.2-1.0	2.0-15	0-30
RtA:					
Rush----------	0-13	4.5-6.5	0.5-2.0	5.0-16	0
	13-38	4.5-6.0	0.5-1.0	9.0-20	0
	38-60	4.5-7.8	0.2-1.0	9.0-20	0-10
	60-75	7.4-8.4	0.0-0.5	1.0-5.0	10-35
RtB:					
Rush----------	0-13	4.5-6.5	0.5-2.0	5.0-16	0
	13-38	4.5-6.0	0.5-1.0	9.0-20	0
	38-60	4.5-7.8	0.2-1.0	9.0-20	0-10
	60-75	7.4-8.4	0.0-0.5	1.0-5.0	10-35
RuA:					
Russell---------	0-13	5.1-6.5	0.5-2.0	5.0-19	0
	13-22	5.1-6.0	0.5-1.0	11-22	0
	22-37	6.1-7.3	0.0-1.0	9.0-22	0-10
	37-60	7.4-8.4	0.0-0.5	5.0-18	10-35
RvB:					
Russell---------	0-13	5.1-6.5	0.5-2.0	5.0-19	0
	13-22	5.1-6.0	0.5-1.0	11-22	0
	22-37	6.1-7.3	0.0-1.0	9.0-22	0-10
	37-60	7.4-8.4	0.0-0.5	5.0-18	10-35
Miamian---------	0-7	5.1-6.5	1.0-3.0	10-18	0
	7-38	5.1-6.5	0.3-1.0	12-22	0-15
	38-60	7.4-8.4	0.1-0.5	7.0-16	25-50
RvB2:					
Russell---------	0-13	5.1-6.5	0.5-2.0	5.0-19	0
	13-22	5.1-6.0	0.5-1.0	11-22	0
	22-37	6.1-7.3	0.0-1.0	9.0-22	0-10
	37-60	7.4-8.4	0.0-0.5	5.0-18	10-35

TABLE 30.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Soil reaction	Organic matter	Cation-exchange capacity	Calcium carbonate
	In	pH	Pct	meq/100 g	Pct
Miamian---------	0-7	5.1-6.5	1.0-3.0	10-18	0
	7-38	5.1-6.5	0.3-1.0	12-22	0-15
	38-60	7.4-8.4	0.1-0.5	7.0-16	25-50
RwB2:					
Russell---------	0-8	5.1-7.3	0.5-2.0	5.0-19	0
	8-26	4.5-6.0	0.5-1.0	11-22	0
	26-49	5.1-7.3	0.0-1.0	9.0-22	0
	49-80	7.4-8.4	0.0-0.5	5.0-18	15-35
Xenia----------	0-6	5.6-7.3	1.0-3.0	6.0-20	0
	6-26	5.1-7.3	0.2-1.0	10-23	0
	26-43	5.6-7.3	0.0-1.0	9.0-23	0
	43-80	7.4-8.4	0.0-0.5	4.0-13	15-50
SkA:					
Sligo----------	0-9	6.6-8.4	1.0-2.0	9.0-15	0
	9-58	6.6-8.4	1.0-2.0	9.0-15	0
	58-80	6.6-8.4	0.0-1.0	3.0-6.0	2-10
SlA:					
Sleeth----------	0-10	5.1-6.5	0.5-3.0	5.0-19	0
	10-24	5.1-6.0	0.0-1.0	9.0-23	0
	24-52	6.1-7.8	0.0-0.5	7.0-22	0-20
	52-60	7.4-8.4	0.0-0.5	0.0-5.0	10-30
SnA:					
Sloan----------	0-21	6.1-7.8	3.0-6.0	13-26	0
	21-48	6.1-8.4	0.5-2.0	10-18	0-10
	48-68	6.6-8.4	0.5-2.0	5.0-15	0-20
	68-80	6.6-8.4	0.5-2.0	2.0-8.0	0-25
So:					
Sloan----------	0-24	6.1-7.8	3.0-6.0	19-29	0
	24-45	6.1-7.8	0.5-1.0	10-20	0-20
	45-60	6.6-7.8	0.1-0.5	4.0-18	5-40
Sp:					
Fill land-------	---	---	---	---	---
Sloan----------	0-24	6.1-7.8	3.0-6.0	19-29	0
	24-45	6.1-7.8	0.5-1.0	10-20	0-20
	45-60	6.6-7.8	0.1-0.5	4.0-18	5-40
Sr:					
Urban land------	---	---	---	---	---
Sloan----------	0-24	6.1-7.8	3.0-6.0	19-29	0-5
	24-45	6.1-7.8	0.5-1.0	10-20	0-20
	45-60	6.6-7.8	0.1-0.5	4.0-18	5-40
ThA:					
Thackery--------	0-12	5.1-6.5	1.0-3.0	8.0-21	0
	12-18	5.1-6.5	0.5-1.0	8.0-20	0
	18-40	5.1-7.3	0.3-0.5	10-21	0-15
	40-50	6.1-7.8	0.1-0.3	6.0-16	30-55
	50-72	7.4-8.4	0.1-0.3	1.0-6.0	30-55
ThB:					
Thackery--------	0-12	5.1-6.5	1.0-3.0	8.0-21	0
	12-18	5.1-6.5	0.5-1.0	8.0-20	0
	18-40	5.1-7.3	0.3-0.5	10-21	0-15
	40-50	6.1-7.8	0.1-0.3	6.0-16	30-55
	50-72	7.4-8.4	0.1-0.3	1.0-6.0	30-55

TABLE 30.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Soil reaction	Organic matter	Cation-exchange capacity	Calcium carbonate
	In	pH	Pct	meq/100 g	Pct
Ts:					
Tremont---------	0-18	7.4-8.4	4.0-7.0	20-24	5-15
	18-28	7.4-8.4	2.0-5.0	16-24	3-12
	28-40	7.4-8.4	0.1-1.0	16-24	3-12
	40-80	7.4-8.4	0.1-0.5	6.0-12	40-60
TtA:					
Treaty----------	0-16	5.6-7.3	4.0-6.0	27-36	0
	16-32	6.1-7.8	1.0-2.0	18-20	0
	32-63	6.6-8.4	0.5-1.0	18-20	0-25
	63-80	7.4-8.4	0.0-1.0	2.0-9.0	15-40
Ud:					
Udorthents------	---	---	---	---	---
Ur:					
Urban land------	---	---	---	---	---
W:					
Water-----------	---	---	---	---	---
WaA:					
Warsaw----------	0-11	5.6-6.5	2.0-5.0	10-25	0
	11-33	5.6-7.8	0.5-2.0	7.0-22	0-10
	33-60	6.6-8.4	0.1-1.0	1.0-7.0	15-25
WbA:					
Fill land-------	---	---	---	---	---
Warsaw----------	0-11	5.6-6.5	2.0-5.0	10-25	0
	11-33	5.6-7.8	0.5-2.0	7.0-22	0-10
	33-60	6.6-8.4	0.0-1.0	1.0-7.0	15-25
WcA:					
Warsaw----------	0-11	5.6-6.5	2.0-5.0	10-25	0
	11-33	5.6-7.8	0.5-2.0	7.0-22	0-10
	33-60	6.6-8.4	0.0-1.0	1.0-7.0	15-25
Urban land------	---	---	---	---	---
WeB:					
Wea----------	0-12	5.6-6.5	2.0-5.0	8.0-24	0
	12-45	5.6-7.3	0.5-2.0	9.0-24	0-10
	45-60	7.4-8.4	0.0-1.0	0.0-5.0	0-35
WpC3:					
Wapahani--------	0-3	6.1-7.3	0.5-1.0	13-16	0
	3-18	6.1-7.8	0.0-0.5	9.0-20	0-5
	18-80	7.4-8.4	0.0-0.5	2.0-9.0	25-45
Miamian---------	0-3	4.5-7.3	0.5-2.0	14-20	0
	3-8	5.1-7.3	0.5-1.0	12-22	0
	8-28	5.1-7.8	0.3-1.0	17-28	0-15
	28-80	7.4-8.4	0.1-0.5	7.0-16	25-50
WpD3:					
Wapahani--------	0-3	6.1-7.3	0.5-1.0	13-16	0
	3-19	6.1-7.8	0.0-0.5	9.0-20	0-5
	19-80	7.4-8.4	0.0-0.5	2.0-9.0	25-45
Miamian---------	0-3	4.5-7.3	0.5-2.0	14-20	0
	3-24	5.1-7.8	0.3-1.0	17-28	0-15
	24-80	7.4-8.4	0.1-0.5	7.0-16	25-50

TABLE 30.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Soil reaction	Organic matter	Cation-exchange capacity	Calcium carbonate
	In	pH	Pct	meq/100 g	Pct
Ws:					
Westland--------	0-14	5.6-7.3	2.0-6.0	15-31	0
	14-38	5.6-7.8	0.5-2.0	9.0-22	0
	38-52	6.6-8.4	0.5-2.0	3.0-15	0-10
	52-60	7.4-8.4	0.2-1.0	0.0-2.0	5-35
Wt:					
Westland--------	0-14	5.6-7.3	2.0-6.0	15-31	0
	14-38	5.6-7.8	0.5-2.0	9.0-22	0
	38-52	6.6-8.4	0.5-2.0	3.0-15	0-10
	52-60	7.4-8.4	0.2-1.0	0.0-2.0	5-35
Urban land------	---	---	---	---	---
XeA:					
Xenia----------	0-8	5.6-6.5	1.0-3.0	6.0-20	0
	8-34	5.6-7.8	0.2-1.0	10-23	0-10
	34-60	7.4-8.4	0.0-0.5	4.0-13	15-50
XeB:					
Xenia----------	0-8	5.6-6.5	1.0-3.0	6.0-20	0
	8-34	5.6-7.8	0.2-1.0	10-23	0-10
	34-60	7.4-8.4	0.0-0.5	4.0-13	15-50

TABLE 31.--WATER FEATURES

(Depths of layers are in feet. 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. See text on page 213 for additional information.)

Map symbol and soil name	Hydrologic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Kind	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
Ag:										
Algiers	C/D	Jan-Jun	0.0-1.5	>6.0	Apparent	---	---	None	Brief	Frequent
		Jul-Nov	---	---	---	---	---	None	---	---
		Dec	---	---	---	---	---	None	Brief	Frequent
BbB:										
Birkbeck	B	Jan-Feb	---	---	---	---	---	None	---	None
		Mar-May	1.5-3.0	>6.0	Apparent	---	---	None	---	None
		Jun-Dec	---	---	---	---	---	None	---	None
BcB:										
Birkbeck	B	Jan-Feb	---	---	---	---	---	None	---	None
		Mar-May	2.5-3.5	>6.0	Apparent	---	---	None	---	None
		Jun-Dec	---	---	---	---	---	None	---	None
Bs:										
Brookston	B/D	Jan-May	0.0-1.0	>6.0	Apparent	0.0-0.5	Long	Frequent	---	None
		Jun-Nov	---	---	---	---	---	---	---	None
		Dec	0.0-1.0	>6.0	Apparent	0.0-0.5	Long	Frequent	---	None
Bt:										
Brookston	B/D	Jan-May	0.0-1.0	>6.0	Apparent	0.0-0.5	Long	Frequent	---	None
		Jun-Nov	---	---	---	---	---	---	---	None
		Dec	0.0-1.0	>6.0	Apparent	0.0-0.5	Long	Frequent	---	None
CaE2:										
Casco	B	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
CbD2:										
Casco	B	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
CcD2:										
Casco	B	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
Eldean	B	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
CdE2:										
Casco	B	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
Rodman	A	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
CeA:										
Celina	C	Jan-Apr	1.5-3.0	1.7-3.5	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
CeB:										
Celina	C	Jan-Apr	1.5-3.0	1.7-3.5	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
CfB:										
Celina	C	Jan-Apr	1.5-3.0	1.6-3.5	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
Losantville	C	Jan-Apr	1.0-2.0	3.0-4.0	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
ChB:										
Celina	C	Jan-Apr	2.0-3.5	2.5-4.0	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
Strawn	B	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
CrA:										
Crosby	C	Jan-Apr	0.5-1.5	1.6-3.5	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
CrB:										
Crosby	C	Jan-Apr	0.5-1.5	1.6-3.5	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
CsA:										
Crosby	C	Jan-Apr	1.0-3.0	>6.0	Apparent	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
Lewisburg	C	Jan-Apr	2.0-4.0	3.0-4.0	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None

TABLE 31.--Water Features Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Water table: Kind	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
CsB:										
Crosby----------	C	Jan-Apr	1.0-3.0	>6.0	Apparent	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
Lewisburg-------	C	Jan-Apr	2.0-4.0	3.0-4.0	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
CtA:										
Crosby----------	C	Jan-Apr	0.5-1.5	1.0-2.0	Perched	---	---	None	---	None
		May-Nov	---	---	---	---	---	None	---	None
		Dec	0.5-1.5	1.0-2.0	Perched	---	---	None	---	None
Celina----------	C	Jan-Apr	1.5-3.0	1.6-3.5	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
CtB:										
Crosby----------	C	Jan-Apr	0.5-1.5	1.0-2.0	Perched	---	---	None	---	None
		May-Nov	---	---	---	---	---	None	---	None
		Dec	0.5-1.5	1.0-2.0	Perched	---	---	None	---	None
Celina----------	C	Jan-Apr	1.5-3.0	1.6-3.5	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
EdB:										
Edenton---------	C	Jan-Dec	>2.8	>2.8	---	---	---	None	---	None
EdC2:										
Edenton---------	C	Jan-Dec	>2.8	>2.8	---	---	---	None	---	None
EdD2:										
Edenton---------	C	Jan-Dec	>2.8	>2.8	---	---	---	None	---	None
Ee:										
Eel----------	B	Jan-Apr	1.5-3.0	>6.0	Apparent	---	---	None	Brief	Frequent
		May-Jun	---	---	---	---	---	None	Brief	Frequent
		Jul-Sep	---	---	---	---	---	None	---	---
		Oct-Dec	---	---	---	---	---	None	Brief	Frequent
EmA:										
Eldean----------	B	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
EmB:										
Eldean----------	B	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
EmB2:										
Eldean----------	B	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
EmC2:										
Eldean----------	B	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
EnC3:										
Eldean----------	B	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
EoC2:										
Eldean----------	B	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
Miamian---------	C	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
EoD2:										
Eldean----------	B	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
Miamian---------	C	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
EpC:										
Eldean----------	B	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
FaF:										
Fairmount variant--------	D	Jan-Dec	>2.4	>2.4	---	---	---	None	---	None
FnA:										
Fincastle-------	C	Jan-Apr	0.5-1.5	3.0-4.0	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
Gn:										
Genesee---------	B	Jan-Jun	>6.0	>6.0	---	---	---	None	Brief	Frequent
		Jul-Sep	>6.0	>6.0	---	---	---	None	---	---
		Oct-Dec	>6.0	>6.0	---	---	---	None	Brief	Frequent
Ko:										
Kokomo----------	B	Jan-May	0	>6.0	Apparent	0.0-1.0	Very long	Frequent	---	None
		Jun-Nov	---	---	---	---	---	---	---	None
		Dec	0	>6.0	Apparent	0.0-1.0	Very long	Frequent	---	None

TABLE 31.--Water Features Continued

Map symbol and soil name	Hydrologic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Kind	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
Lh:										
Linwood---------	A/D	Jan-Jun	0.0-1.0	>6.0	Apparent	0.0-1.0	Very long	Frequent	---	None
		Jul-Oct	---	---	---	---	---	---	---	None
		Nov-Dec	0.0-1.0	>6.0	Apparent	0.0-1.0	Very long	Frequent	---	None
Ln:										
Linwood---------	A/D	Jan-Jun	0.0-1.0	>6.0	Apparent	0.0-1.0	Very long	Frequent	---	None
		Jul-Oct	---	---	---	---	---	---	---	None
		Nov-Dec	0.0-1.0	>6.0	Apparent	0.0-1.0	Very long	Frequent	---	None
LuF2:										
Lumberton-------	B	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
MhA:										
Miamian---------	C	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
MhB:										
Miamian---------	C	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
MhB2:										
Miamian---------	C	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
MhC2:										
Miamian---------	C	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
MhD2:										
Miamian---------	C	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
MlB3:										
Miamian---------	C	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
MlC3:										
Miamian---------	C	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
MlD3:										
Miamian---------	C	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
MmD2:										
Miamian---------	C	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
Casco----------	B	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
MmE2:										
Miamian---------	C	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
Casco----------	B	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
MoB2:										
Miamian---------	C	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
Eldean----------	B	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
MoC2:										
Miamian---------	C	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
Eldean----------	B	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
MpE:										
Miamian---------	C	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
Hennepin--------	B	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
MpF:										
Miamian---------	C	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
Hennepin--------	B	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
MqE2:										
Miamian---------	C	Jan-May	2.5-3.5	3.0-4.0	Perched	---	---	None	---	None
		Jun-Dec	---	---	---	---	---	None	---	None
Thrifton--------	C	Jan-May	1.0-2.0	1.5-2.5	Perched	---	---	None	---	None
		Jun-Nov	---	---	---	---	---	None	---	None
		Dec	1.0-2.0	1.5-2.5	Perched	---	---	None	---	None
MqF2:										
Miamian---------	C	Jan-May	2.5-3.5	3.0-4.0	Perched	---	---	None	---	None
		Jun-Dec	---	---	---	---	---	None	---	None
Thrifton--------	C	Jan-May	1.0-2.0	1.5-2.5	Perched	---	---	None	---	None
		Jun-Nov	---	---	---	---	---	None	---	None
		Dec	1.0-2.0	1.5-2.5	Perched	---	---	None	---	None
MrB:										
Miamian---------	C	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None

TABLE 31.--Water Features Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Water table: Kind	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
MrC:										
Miamian---------	C	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
Ms:										
Millsdale-------	C/D	Jan-Apr	0.0-1.0	1.7-3.5	Apparent	0.0-1.0	Long	Frequent	---	None
		May-Dec	---	---	---	---	---	---	---	None
MtA:										
Milton----------	C	Jan-Dec	>2.5	>2.5	---	---	---	None	---	None
MtB:										
Milton----------	C	Jan-Dec	>2.5	>2.5	---	---	---	None	---	None
MtC2:										
Milton----------	C	Jan-Dec	>2.5	>2.5	---	---	---	None	---	None
MUF:										
Milton variant--	C	Jan-Dec	>2.5	>2.5	---	---	---	None	---	None
OcA:										
Ockley----------	B	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
OcB:										
Ockley----------	B	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
OcB2:										
Ockley----------	B	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
OdB:										
Ockley----------	B	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
OeB:										
Odell-----------	B	Jan-Apr	0.5-1.5	1.5-2.5	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
Pa:										
Patton----------	B/D	Jan-Feb	---	---	---	---	---	---	---	None
		Mar-Jun	0.0-1.0	>6.0	Apparent	0.0-0.5	Long	Frequent	---	None
		Jul-Dec	---	---	---	---	---	---	---	None
Ra:										
Ragsdale--------	B/D	Jan-May	0.0-1.0	>6.0	Apparent	0.0-0.5	Long	Occasional	---	None
		Jun-Nov	---	---	---	---	---	---	---	None
		Dec	0.0-1.0	>6.0	Apparent	0.0-0.5	Long	Occasional	---	None
RbA:										
Randolph--------	C	Jan-Apr	0.5-1.5	1.0-3.0	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
RdA:										
Raub------------	C	Jan-Apr	0.5-1.5	3.0-5.0	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
RdB:										
Raub------------	C	Jan-Apr	0.5-1.5	3.0-5.0	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
ReA:										
Reesville-------	C	Jan-Apr	0.5-1.5	2.5-5.0	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
RhB:										
Ritchey---------	D	Jan-Dec	>1.5	>1.5	---	---	---	None	---	None
RhC:										
Ritchey---------	D	Jan-Dec	>1.5	>1.5	---	---	---	None	---	None
RhD:										
Ritchey---------	D	Jan-Dec	>1.5	>1.5	---	---	---	None	---	None
RhE2:										
Ritchey---------	D	Jan-Dec	>1.5	>1.5	---	---	---	None	---	None
RkE:										
Rodman----------	A	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
RpA:										
Ross------------	B	Jan	---	---	---	---	---	None	Brief	Occasional
		Feb-Apr	4.0-6.0	>6.0	Apparent	---	---	None	Brief	Occasional
		May-Jun	---	---	---	---	---	None	Brief	Occasional
		Jul-Oct	---	---	---	---	---	None	---	---
		Nov-Dec	---	---	---	---	---	None	Brief	Occasional

TABLE 31.--Water Features Continued

Map symbol and soil name	Hydrologic group	Month	Water table: Upper limit	Water table: Lower limit	Water table: Kind	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
RqA:										
Ross----------	B	Jan	---	---	---	---	---	None	Brief	Frequent
		Feb-Apr	4.0-6.0	>6.0	Apparent	---	---	None	Brief	Frequent
		May-Jun	---	---	---	---	---	None	Brief	Frequent
		Jul-Oct	---	---	---	---	---	None	---	---
		Nov-Dec	---	---	---	---	---	None	Brief	Frequent
Rs:										
Ross----------	B	Jan	---	---	---	---	---	None	Brief	Occasional
		Feb-Apr	4.0-6.0	>6.0	Apparent	---	---	None	Brief	Occasional
		May-Jun	---	---	---	---	---	None	Brief	Occasional
		Jul-Oct	---	---	---	---	---	None	---	---
		Nov-Dec	---	---	---	---	---	None	Brief	Occasional
RtA:										
Rush----------	B	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
RtB:										
Rush----------	B	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
RuA:										
Russell---------	B	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
RvB:										
Russell---------	B	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
Miamian---------	C	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
RvB2:										
Russell---------	B	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
Miamian---------	C	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
RwB2:										
Russell---------	B	Jan-Apr	3.5-6.0	4.0-6.0	Perched	---	---	None	---	None
		May-Nov	---	---	---	---	---	None	---	None
		Dec	3.5-6.0	4.0-6.0	Perched	---	---	None	---	None
Xenia----------	B	Jan-Apr	2.0-3.5	4.0-6.0	Perched	---	---	None	---	None
		May-Nov	---	---	---	---	---	None	---	None
		Dec	2.0-3.5	4.0-6.0	Perched	---	---	None	---	None
SkA:										
Sligo----------	B	Jan-May	2.5-3.5	>6.0	Apparent	---	---	None	Brief	Occasional
		Jun	---	---	---	---	---	None	Brief	Occasional
		Jul-Oct	---	---	---	---	---	None	---	---
		Nov-Dec	---	---	---	---	---	None	Brief	Occasional
SlA:										
Sleeth----------	C	Jan-Apr	0.5-1.5	>6.0	Apparent	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
SnA:										
Sloan----------	B/D	Jan-Jun	0.0-1.0	>6.0	Apparent	0.0-1.0	Very long	Frequent	Brief	Occasional
		Jul-Oct	---	---	---	---	---	---	---	---
		Nov-Dec	0.0-1.0	>6.0	Apparent	0.0-1.0	Very long	Frequent	Brief	Occasional
So:										
Sloan----------	B/D	Jan-Jun	0.0-1.0	>6.0	Apparent	---	---	None	Very long	Frequent
		Jul-Oct	---	---	---	---	---	None	---	---
		Nov-Dec	0.0-1.0	>6.0	Apparent	---	---	None	Very long	Frequent
Sp:										
Sloan----------	B/D	Jan-Jun	0.0-1.0	>6.0	Apparent	---	---	None	Very long	Frequent
		Jul-Oct	---	---	---	---	---	None	---	---
		Nov-Dec	0.0-1.0	>6.0	Apparent	---	---	None	Very long	Frequent
Sr:										
Sloan----------	B/D	Jan-Jun	0.0-1.0	>6.0	Apparent	---	---	None	Very long	Frequent
		Jul-Oct	---	---	---	---	---	None	---	---
		Nov-Dec	0.0-1.0	>6.0	Apparent	---	---	None	Very long	Frequent
ThA:										
Thackery--------	B	Jan-Apr	1.5-3.0	>6.0	Apparent	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
ThB:										
Thackery--------	B	Jan-Apr	1.5-3.0	>6.0	Apparent	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
Ts:										
Tremont---------	B	Jan-Mar	1.5-3.0	>6.0	Apparent	---	---	None	Brief	Occasional
		May-Jun	---	---	---	---	---	None	Brief	Occasional
		Jul-Oct	---	---	---	---	---	None	---	---
		Nov-Dec	---	---	---	---	---	None	Brief	Occasional
		Apr	1.5-3.0	>6.0	Apparent	---	---	None	Brief	Occasional

TABLE 31.--Water Features Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Water table: Kind	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
TtA:										
Treaty----------	B	Jan-May	0.0-1.0	>6.0	Apparent	0.0-0.5	Very long	Frequent	---	None
		Jun-Nov	---	---	---	---	---	---	---	None
		Dec	0.0-1.0	>6.0	Apparent	0.0-0.5	Very long	Frequent	---	None
WaA:										
Warsaw----------	B	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
WbA:										
Warsaw----------	B	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
WcA:										
Warsaw----------	B	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
WeB:										
Wea----------	B	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
WpC3:										
Wapahani--------	C	Jan-Apr	1.0-2.0	1.5-2.5	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
Miamian---------	C	Jan-May	2.5-3.5	3.0-4.0	Perched	---	---	None	---	None
		Jun-Dec	---	---	---	---	---	None	---	None
WpD3:										
Wapahani--------	C	Jan-Apr	1.0-2.0	1.5-2.5	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
Miamian---------	C	Jan-May	2.5-3.5	3.0-4.0	Perched	---	---	None	---	None
		Jun-Dec	---	---	---	---	---	None	---	None
Ws:										
Westland--------	B/D	Jan-May	0.0-1.0	>6.0	Apparent	0.0-0.5	Long	Frequent	---	None
		Jun-Nov	---	---	---	---	---	---	---	None
		Dec	0.0-1.0	>6.0	Apparent	0.0-0.5	Long	Frequent	---	None
Wt:										
Westland--------	B/D	Jan-May	0.0-1.0	>6.0	Apparent	0.0-0.5	Long	Frequent	---	None
		Jun-Nov	---	---	---	---	---	---	---	None
		Dec	0.0-1.0	>6.0	Apparent	0.0-0.5	Long	Frequent	---	None
XeA:										
Xenia----------	B	Jan-Apr	2.0-3.0	3.0-5.0	Perched	---	---	None	---	None
		May-Nov	---	---	---	---	---	None	---	None
		Dec	2.0-3.0	3.0-5.0	Perched	---	---	None	---	None
XeB:										
Xenia----------	B	Jan-Apr	2.0-3.0	3.0-5.0	Perched	---	---	None	---	None
		May-Nov	---	---	---	---	---	None	---	None
		Dec	2.0-3.0	3.0-5.0	Perched	---	---	None	---	None

TABLE 32.--SOIL FEATURES

(See text on page 214 for definitions of terms used in this table. Absence of an entry indicates that the feature is not a concern or that data were not estimated.)

Map symbol and soil name	Restrictive layer: Kind	Restrictive layer: Depth to top	Restrictive layer: Thickness	Restrictive layer: Hardness	Subsidence: Initial	Subsidence: Total	Potential for frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
		In	In		In	In			
Ag:									
Algiers	---	> 60	---	---		---	High	High	Low.
BbB:									
Birkbeck	---	> 60	---	---		---	High	High	Moderate.
BcB:									
Birkbeck	---	> 80	---	---	---	0	High	High	Moderate.
Bs:									
Brookston	---	> 78	---	---		---	High	High	Low.
Bt:									
Brookston	---	> 78	---	---		---	High	High	Low.
Urban land	---	---	---	---		---	---	---	---
CaE2:									
Casco	Strongly contrasting textural stratification	10-23	---	Noncemented	---	0	Low	Moderate	Low.
CbD2:									
Casco	Strongly contrasting textural stratification	10-20	---	---		---	Low	Moderate	Low.
CcD2:									
Casco	Strongly contrasting textural stratification	10-24	---	---		---	Low	Low	Low.
Eldean	---	> 60	---	---		---	Low	High	Moderate.
CdE2:									
Casco	Strongly contrasting textural stratification	10-24	---	---		---	Low	Low	Low.
Rodman	---	> 60	---	---		---	Low	Low	Low.
CeA:									
Celina	---	> 60	---	---		---	Moderate	High	Moderate.
CeB:									
Celina	---	> 60	---	---		---	Moderate	High	Moderate.
CfB:									
Celina	Dense material	20-40	---	Strongly cemented	---	0	High	High	Moderate.
Losantville	Dense material	12-20	---	Strongly cemented	---	0	Moderate	Moderate	Low.
ChB:									
Celina	Dense material	20-40	---	---		---	High	High	Moderate.
Strawn	Dense material	20-40	---	---		---	Moderate	Moderate	Moderate.
CrA:									
Crosby	---	> 60	---	---		---	High	High	Moderate.
CrB:									
Crosby	---	> 60	---	---		---	High	High	Moderate.
CsA:									
Crosby	Dense material	20-40	80-80	Moderately cemented		---	High	High	Moderate.
Lewisburg	Dense material	12-22	80-80	Moderately cemented		---	Moderate	Moderate	Moderate.
CsB:									
Crosby	Dense material	20-40	80-80	Moderately cemented		---	High	High	Moderate.
Lewisburg	Dense material	12-22	80-80	Moderately cemented		---	Moderate	Moderate	Moderate.

Table 32.--Soil Features--Continued

Map symbol and soil name	Restrictive layer: Kind	Restrictive layer: Depth to top	Restrictive layer: Thickness	Restrictive layer: Hardness	Subsidence: Initial	Subsidence: Total	Potential for frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
		In	In		In	In			
CtA:									
Crosby	Dense material	20-40	---	Strongly cemented	---	0	High	High	Moderate.
Celina	Dense material	20-40	---	Strongly cemented	---	0	High	High	Moderate.
CtB:									
Crosby	Dense material	20-40	---	Strongly cemented	---	0	High	High	Moderate.
Celina	Dense material	20-40	---	Strongly cemented	---	0	High	High	Moderate.
Du:									
Dumps	---	---	---	---		---	---	---	---
EdB:									
Edenton	Paralithic bedrock	20-40	---	---		---	Moderate	High	Low.
EdC2:									
Edenton	Paralithic bedrock	20-40	---	---		---	Moderate	High	Low.
EdD2:									
Edenton	Paralithic bedrock	20-40	---	---		---	Moderate	High	Low.
Ee:									
Eel	---	> 60	---	---		---	High	Moderate	Low.
EmA:									
Eldean	---	> 60	---	---		---	Low	High	Moderate.
EmB:									
Eldean	---	> 60	---	---		---	Low	High	Moderate.
EmB2:									
Eldean	---	> 60	---	---		---	Low	High	Moderate.
EmC2:									
Eldean	---	> 60	---	---		---	Low	High	Moderate.
EnC3:									
Eldean	---	> 60	---	---		---	Low	High	Moderate.
EoC2:									
Eldean	Strongly contrasting textural stratification	20-40	---	---		---	Moderate	High	Moderate.
Miamian	Dense material	20-40	---	---		---	Moderate	Moderate	Moderate.
EoD2:									
Eldean	Strongly contrasting textural stratification	20-40	---	---		---	Moderate	High	Moderate.
Miamian	Dense material	20-40	---	---		---	Moderate	Moderate	Moderate.
EpC:									
Eldean	---	> 60	---	---		---	Low	High	Moderate.
Urban land	---	---	---	---		---	---	---	---
FaF:									
Fairmount variant	Lithic bedrock	20-40	---	---		---	Moderate	Moderate	Low.
FnA:									
Fincastle	---	> 60	---	---		---	High	High	Moderate.
Gn:									
Genesee	---	> 66	---	---		---	Moderate	Low	Low.
Ko:									
Kokomo	---	> 80	---	---	---	0	High	High	Moderate.
Lh:									
Linwood	---	> 80	---	---		15-40	High	Moderate	Low.
Ln:									
Linwood	---	> 60	---	---	7-20	15-40	High	High	Low.
LuF2:									
Lumberton	Lithic bedrock	33-60	---	Very strongly cemented	---	0	High	High	Moderate.

Table 32.--Soil Features--Continued

Map symbol and soil name	Restrictive layer: Kind	Restrictive layer: Depth to top	Restrictive layer: Thickness	Restrictive layer: Hardness	Subsidence: Initial	Subsidence: Total	Potential for frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
		In	In		In	In			
MhA:									
Miamian	---	> 60	---	---		---	Moderate	Moderate	Moderate.
MhB:									
Miamian	---	> 60	---	---		---	Moderate	Moderate	Moderate.
MhB2:									
Miamian	---	> 60	---	---		---	Moderate	Moderate	Moderate.
MhC2:									
Miamian	---	> 60	---	---		---	Moderate	Moderate	Moderate.
MhD2:									
Miamian	---	> 60	---	---		---	Moderate	Moderate	Moderate.
MlB3:									
Miamian	---	> 60	---	---		---	Moderate	Moderate	Moderate.
MlC3:									
Miamian	---	> 60	---	---		---	Moderate	Moderate	Moderate.
MlD3:									
Miamian	---	> 60	---	---		---	Moderate	Moderate	Moderate.
MmD2:									
Miamian	---	> 60	---	---		---	Moderate	Low	Moderate.
Casco	Strongly contrasting textural stratification	10-24	---	---		---	Low	Moderate	Low.
MmE2:									
Miamian	---	> 60	---	---		---	Moderate	Moderate	Moderate.
Casco	Strongly contrasting textural stratification	10-24	---	---		---	Low	Low	Low.
MoB2:									
Miamian	---	> 60	---	---		---	Moderate	Moderate	Moderate.
Eldean	---	> 60	---	---		---	Low	High	Moderate.
MoC2:									
Miamian	---	> 60	---	---		---	Moderate	Moderate	Moderate.
Eldean	---	> 60	---	---		---	Low	High	Moderate.
MpE:									
Miamian	---	> 60	---	---		---	Moderate	Moderate	Moderate.
Hennepin	---	> 60	---	---		---	Moderate	Low	Low.
MpF:									
Miamian	---	> 60	---	---		---	Moderate	Moderate	Moderate.
Hennepin	---	> 60	---	---		---	Moderate	Low	Low.
MqE2:									
Miamian	Dense material	20-40	---	Strongly cemented	---	0	Moderate	Moderate	Moderate.
Thrifton	Dense material	10-20	---	Strongly cemented	---	0	Moderate	Low	Low.
MqF2:									
Miamian	Dense material	20-40	---	Strongly cemented	---	0	Moderate	Moderate	Moderate.
Thrifton	Dense material	10-20	---	Strongly cemented	---	0	Moderate	Low	Low.
MrB:									
Miamian	---	> 60	---	---		---	Moderate	Moderate	Moderate.
Urban land	---	---	---	---		---	---	---	---
MrC:									
Miamian	---	> 60	---	---		---	Moderate	Moderate	Moderate.
Urban land	---	---	---	---		---	---	---	---
Ms:									
Millsdale	Lithic bedrock	20-40	---	---		---	High	High	Low.
MtA:									
Milton	Lithic bedrock	20-40	---	---		---	Moderate	Moderate	Moderate.

Table 32.--Soil Features--Continued

Map symbol and soil name	Restrictive layer: Kind	Restrictive layer: Depth to top	Restrictive layer: Thickness	Restrictive layer: Hardness	Subsidence: Initial	Subsidence: Total	Potential for frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
		In	In		In	In			
MtB:									
Milton	Lithic bedrock	20-40	---	---		---	Moderate	Moderate	Moderate.
MtC2:									
Milton	Lithic bedrock	20-40	---	---		---	Moderate	Moderate	Moderate.
MUF:									
Milton variant	Lithic bedrock	20-40	---	---		---	Low	Moderate	Low.
OcA:									
Ockley	---	> 60	---	---		---	Moderate	Moderate	Moderate.
OcB:									
Ockley	---	> 60	---	---		---	Moderate	Moderate	Moderate.
OcB2:									
Ockley	---	> 60	---	---		---	Moderate	Moderate	Moderate.
OdB:									
Ockley	---	> 60	---	---		---	Moderate	Moderate	Moderate.
Urban land	---	---	---	---		---	---	---	---
OeB:									
Odell	---	> 60	---	---		---	High	High	Low.
Pa:									
Patton	---	> 60	---	---		---	High	High	Low.
Pg:									
Pits, gravel	---	---	---	---		---	---	---	---
Pu:									
Pits, quarry	---	---	---	---		---	---	---	---
Ra:									
Ragsdale	---	> 96	---	---		---	High	High	Low.
RbA:									
Randolph	Lithic bedrock	20-40	---	---		---	Moderate	High	Moderate.
RdA:									
Raub	---	> 60	---	---		---	High	High	Moderate.
RdB:									
Raub	---	> 60	---	---		---	High	High	Moderate.
ReA:									
Reesville	---	> 72	---	---		---	High	High	Moderate.
RhB:									
Ritchey	Lithic bedrock	10-20	---	---		---	Moderate	Moderate	Low.
RhC:									
Ritchey	Lithic bedrock	10-20	---	---		---	Moderate	Moderate	Low.
RhD:									
Ritchey	Lithic bedrock	10-20	---	---		---	Moderate	Moderate	Low.
RhE2:									
Ritchey	Lithic bedrock	10-20	---	---		---	Moderate	Moderate	Low.
RkE:									
Rodman	Strongly contrasting textural stratification	10-20	---	---		---	Low	Low	Low.
RpA:									
Ross	---	> 80	---	---	---	0	Moderate	Low	Low.
RqA:									
Ross	---	> 80	---	---	---	0	Moderate	Low	Low.
Rs:									
Ross	---	> 78	---	---		---	Moderate	Low	Low.
RtA:									
Rush	---	> 75	---	---		---	High	Moderate	Moderate.
RtB:									
Rush	---	> 75	---	---		---	High	Moderate	Moderate.
RuA:									
Russell	---	> 60	---	---		---	Moderate	Moderate	Moderate.

Table 32.--Soil Features--Continued

Map symbol and soil name	Restrictive layer: Kind	Restrictive layer: Depth to top	Restrictive layer: Thickness	Restrictive layer: Hardness	Subsidence: Initial	Subsidence: Total	Potential for frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
		In	In		In	In			
RvB:									
Russell	---	> 60	---	---		---	High	Moderate	Moderate.
Miamian	---	> 60	---	---		---	Moderate	Moderate	Moderate.
RvB2:									
Russell	---	> 60	---	---		---	High	Moderate	Moderate.
Miamian	---	> 60	---	---		---	Moderate	Moderate	Moderate.
RwB2:									
Russell	Dense material	40-60	---	Moderately cemented	---	0	High	Moderate	Moderate.
Xenia	Dense material	40-60	---	Moderately cemented	---	0	High	High	Moderate.
SkA:									
Sligo	---	> 80	---	---	---	0	Moderate	Low	Low.
SlA:									
Sleeth	---	> 60	---	---		---	High	High	Moderate.
SnA:									
Sloan	---	> 80	---	---	---	0	High	High	Low.
So:									
Sloan	---	> 60	---	---		---	High	High	Low.
Sp:									
Fill land	---	>	---	---		---	---	---	---
Sloan	---	> 60	---	---		---	High	High	Low.
Sr:									
Urban land	---	---	---	---		---	---	---	---
Sloan	---	> 60	---	---		---	High	High	Low.
ThA:									
Thackery	---	> 72	---	---		---	Moderate	Moderate	Moderate.
ThB:									
Thackery	---	> 72	---	---		---	Moderate	Moderate	Moderate.
Ts:									
Tremont	---	> 80	---	---		---	High	Moderate	Low.
TtA:									
Treaty	---	> 80	---	---	---	0	High	High	Low.
Ud:									
Udorthents	---	---	---	---		---	---	---	---
Ur:									
Urban land	---	---	---	---		---	---	---	---
W:									
Water	---	---	---	---		---	---	---	---
WaA:									
Warsaw	---	> 60	---	---		---	Moderate	Moderate	Moderate.
WbA:									
Fill land	---	---	---	---		---	---	---	---
Warsaw	---	> 60	---	---		---	Moderate	Moderate	Moderate.
WcA:									
Warsaw	---	> 60	---	---		---	Moderate	Moderate	Moderate.
Urban land	---	---	---	---		---	---	---	---
WeB:									
Wea	Strongly contrasting textural stratification	40-60	---	---		---	Moderate	Moderate	Moderate.
WpC3:									
Wapahani	Dense material	10-20	---	Strongly cemented	---	0	Moderate	Moderate	Low.
Miamian	Dense material	20-40	---	Strongly cemented	---	0	Moderate	Moderate	Moderate.

Table 32.--Soil Features--Continued

Map symbol and soil name	Restrictive layer				Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness	Initial	Total		Uncoated steel	Concrete
		In	In		In	In			
WpD3:									
Wapahani	Dense material	10-20	---	Strongly cemented	---	0	Moderate	Moderate	Low.
Miamian	Dense material	20-40	---	Strongly cemented	---	0	Moderate	Moderate	Moderate.
Ws:									
Westland	---	> 60	---	---		---	High	High	Moderate.
Wt:									
Westland	---	> 60	---	---		---	High	High	Moderate.
Urban land	---	---	---	---		---	---	---	---
XeA:									
Xenia	---	> 60	---	---		---	High	High	Moderate.
XeB:									
Xenia	---	> 60	---	---		---	High	High	Moderate.

TABLE 33.--CLASSIFICATION OF THE SOILS

(An asterisk in the first column indicates a taxadjunct to the series. See text on page 215 for a description of those characteristics that are outside the range of the series.)

Soil name	Family or higher taxonomic class
Algiers	Fine-loamy, mixed, nonacid, mesic Aquic Udifluvents
Birkbeck	Fine-silty, mixed, mesic Typic Hapludalfs
Birkbeck	Fine-silty, mixed, superactive, mesic Oxyaquic Hapludalfs
*Brookston	Fine-loamy, mixed, mesic Typic Argiaquolls
Casco	Fine-loamy over sandy or sandy-skeletal, mixed, mesic Typic Hapludalfs
Casco	Fine-loamy over sandy or sandy-skeletal, mixed, superactive, mesic Typic Hapludalfs
*Casco	Fine-loamy over sandy or sandy-skeletal, mixed, mesic Typic Hapludalfs
Celina	Fine, mixed, active, mesic Aquic Hapludalfs
Celina	Fine, mixed, mesic Aquic Hapludalfs
Crosby	Fine, mixed, active, mesic Aeric Epiaqualfs
Crosby	Fine, mixed, mesic Aeric Ochraqualfs
Edenton	Fine, mixed, mesic Typic Hapludalfs
Eel	Fine-loamy, mixed, nonacid, mesic Aquic Udifluvents
Eldean	Fine, mixed, mesic Typic Hapludalfs
Fairmount variant	Fine, illitic, mesic Typic Eutrochrepts
Fincastle	Fine-silty, mixed, mesic Aeric Ochraqualfs
*Genesee	Fine-loamy, mixed, nonacid, mesic Typic Udifluvents
Hennepin	Fine-loamy, mixed, mesic Typic Eutrochrepts
Kokomo	Fine, mixed, superactive, mesic Typic Argiaquolls
Lewisburg	Fine, mixed, mesic Typic Hapludalfs
Linwood	Loamy, mixed, euic, mesic Terric Medisaprists
Losantville	Fine, mixed, active, mesic Oxyaquic Hapludalfs
Lumberton	Fine-loamy, mixed, active, mesic Typic Hapludalfs
Miamian	Fine, mixed, active, mesic Oxyaquic Hapludalfs
Miamian	Fine, mixed, mesic Typic Hapludalfs
Millsdale	Fine, mixed, mesic Typic Argiaquolls
Milton	Fine, mixed, mesic Typic Hapludalfs
Milton variant	Loamy-skeletal, mixed, mesic Typic Hapludolls
Ockley	Fine-loamy, mixed, mesic Typic Hapludalfs
Odell	Fine-loamy, mixed, mesic Aquic Argiudolls
Patton	Fine-silty, mixed, mesic Typic Haplaquolls
Ragsdale	Fine-silty, mixed, mesic Typic Argiaquolls
Randolph	Fine, mixed, mesic Aeric Ochraqualfs
Raub	Fine-silty, mixed, mesic Aquic Argiudolls
Reesville	Fine-silty, mixed, mesic Aeric Ochraqualfs
*Ritchey	Loamy, mixed, mesic Lithic Hapludalfs
Rodman	Sandy-skeletal, mixed, mesic Typic Hapludolls
*Rodman	Sandy-skeletal, mixed, mesic Typic Hapludolls
Ross	Fine-loamy, mixed, mesic Cumulic Hapludolls
Ross	Fine-loamy, mixed, superactive, mesic Cumulic Hapludolls
Rush	Fine-silty, mixed, mesic Typic Hapludalfs
Russell	Fine-silty, mixed, mesic Typic Hapludalfs
Russell	Fine-silty, mixed, superactive, mesic Typic Hapludalfs
Sleeth	Fine-loamy, mixed, mesic Aeric Ochraqualfs
Sligo	Fine-loamy, mixed, superactive, nonacid, mesic Oxyaquic Udifluvents
Sloan	Fine-loamy, mixed, mesic Fluvaquentic Haplaquolls
Sloan	Fine-loamy, mixed, superactive, mesic Fluvaquentic Endoaquolls
Strawn	Fine-loamy, mixed, mesic Typic Hapludalfs
Thackery	Fine-loamy, mixed, mesic Aquic Hapludalfs
Thrifton	Fine-loamy, mixed, superactive, mesic Oxyaquic Hapludalfs
Treaty	Fine-silty, mixed, superactive, mesic Typic Argiaquolls
Tremont	Fine-loamy, mixed, calcareous, mesic Cumulic Haplaquolls
Udorthents	Udorthents
Wapahani	Fine-loamy, mixed, active, mesic Oxyaquic Hapludalfs
*Warsaw	Fine-loamy over sandy or sandy-skeletal, mixed, mesic Typic Argiudolls
Wea	Fine-loamy, mixed, mesic Typic Argiudolls
Westland	Fine-loamy, mixed, mesic Typic Argiaquolls
Xenia	Fine-silty, mixed, mesic Aquic Hapludalfs
*Xenia	Fine-silty, mixed, superactive, mesic Aquic Hapludalfs

TABLE 34.--INTERPRETIVE GROUPS

(Unless otherwise indicated, a complex is treated as a single management unit in the 'Land capability' column. See text See text on page 195 for definitions of the groups. Absence of an entry indicates that the map unit is not suited to the intended use or is not rated.)

Map symbol and soil name	Land capability classification	Pasture and hayland suitability group	Prime farmland	Hydric
Ag:	2w		Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season	
Algiers		C-3		No
BbB:	2e		All areas are prime farmland	
Birkbeck		A-6		No
BcB:	2e		All areas are prime farmland	
Birkbeck		A-6		No
Bs:	2w		Prime farmland if drained	
Brookston		C-1		Yes
Bt:	---		Not prime farmland	
Brookston		C-1		Yes
Urban Land		Not rated		Unranked
CaE2:	7e		Not prime farmland	
Casco		E-2		No
CbD2:	6e		Not prime farmland	
Casco		B-1		No
CcD2:	6e		Farmland of local importance	
Casco		B-1		No
Eldean		B-1		No
CdE2:	7e		Not prime farmland	
Casco		B-1		No
Rodman		B-1		No
CeA:	1		All areas are prime farmland	
Celina		A-1		No
CeB:	2e		All areas are prime farmland	
Celina		A-1		No
CfB:	2e		All areas are prime farmland	
Celina		A-6		No
Losantville		B-1		No

TABLE 34.--Interpretive Groups--Continued

Map symbol and soil name	Land capability classification	Pasture and hayland suitability group	Prime farmland	Hydric
ChB:	2e		All areas are prime farmland	
Celina		A-6		No
Strawn		A-1		No
CrA:	2w		Prime farmland if drained	
Crosby		C-1		No
CrB:	2e		Prime farmland if drained	
Crosby		C-1		No
CsA:	2w		Prime farmland if drained	
Crosby		C-1		No
Lewisburg		A-1		No
CsB:	2e		Prime farmland if drained	
Crosby		C-1		No
Lewisburg		A-1		No
CtA:	2w		Prime farmland if drained	
Crosby		C-2		No
Celina		A-6		No
CtB:	2e		Prime farmland if drained	
Crosby		C-2		No
Celina		A-6		No
Du:	---		Not prime farmland	
Dumps		Not rated		Unranked
EdB:	2e		All areas are prime farmland	
Edenton		F-1		No
EdC2:	3e		Farmland of local importance	
Edenton		F-1		No
EdD2:	4e		Farmland of local importance	
Edenton		F-1		No
Ee:	2w		Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season	
Eel		A-5		No

TABLE 34.--Interpretive Groups--Continued

Map symbol and soil name	Land capability classification	Pasture and hayland suitability group	Prime farmland	Hydric
EmA:	2s		All areas are prime farmland	
Eldean		B-1		No
EmB:	2e		All areas are prime farmland	
Eldean		B-1		No
EmB2:	2e		All areas are prime farmland	
Eldean		B-1		No
EmC2:	3e		Farmland of local importance	
Eldean		B-1		No
EnC3:	4e		Not prime farmland	
Eldean		B-1		No
EoC2:	3e		Farmland of local importance	
Eldean		B-1		No
Miamian		A-1		No
EoD2:	4e		Not prime farmland	
Eldean		B-1		No
Miamian		A-1		No
EpC:	---		Not prime farmland	
Eldean		B-1		No
Urban Land		Not rated		No
FaF:	7e		Not prime farmland	
Fairmount Variant		H-1		No
FnA:	2w		Prime farmland if drained	
Fincastle		C-1		No
Gn:	2w		Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season	
Genesee		A-5		No
Ko:	2w		Prime farmland if drained	
Kokomo		C-1		Yes
Lh:	2w		Farmland of local importance	
Linwood		G-1		Yes
Ln:	2w		Not prime farmland	
Linwood		D-1		Yes

TABLE 34.--Interpretive Groups--Continued

Map symbol and soil name	Land capability classification	Pasture and hayland suitability group	Prime farmland	Hydric
LuF2:	7e		Not prime farmland	
Lumberton		F-2		No
MhA:	1		All areas are prime farmland	
Miamian		A-1		No
MhB:	2e		All areas are prime farmland	
Miamian		A-1		No
MhB2:	2e		All areas are prime farmland	
Miamian		A-1		No
MhC2:	3e		Farmland of local importance	
Miamian		A-1		No
MhD2:	4e		Farmland of local importance	
Miamian		A-1		No
MlB3:	3e		Not prime farmland	
Miamian		A-1		No
MlC3:	4e		Not prime farmland	
Miamian		A-1		No
MlD3:	6e		Not prime farmland	
Miamian		A-1		No
MmD2:	4e		Farmland of local importance	
Miamian		A-1		No
Casco		B-1		No
MmE2:	7e		Not prime farmland	
Miamian		A-2		No
Casco		B-1		No
MoB2:	2e		All areas are prime farmland	
Miamian		A-1		No
Eldean		B-1		No
MoC2:	3e		Farmland of local importance	
Miamian		A-1		No
Eldean		B-1		No
MpE:	6e		Not prime farmland	
Miamian		A-2		No
Hennepin		A-2		No

TABLE 34.--Interpretive Groups--Continued

Map symbol and soil name	Land capability classification	Pasture and hayland suitability group	Prime farmland	Hydric
MpF:	7e		Not prime farmland	
Miamian		A-3		No
Hennepin		E-2		No
MqE2:	6e		Not prime farmland	
Miamian		A-2		No
Thrifton		A-2		No
MqF2:	7e		Not prime farmland	
Miamian		A-3		No
Thrifton		A-3		No
MrB:	---		Not prime farmland	
Miamian		A-1		No
Urban Land		Not rated		No
MrC:	---		Not prime farmland	
Miamian		A-1		No
Urban Land		Not rated		No
Ms:	3w		Prime farmland if drained	
Millsdale		C-2		Yes
MtA:	2s		All areas are prime farmland	
Milton		F-1		No
MtB:	2e		All areas are prime farmland	
Milton		F-1		No
MtC2:	3e		Farmland of local importance	
Milton		F-1		No
MUF:	7e		Not prime farmland	
Milton Variant		F-2		No
OcA:	1		All areas are prime farmland	
Ockley		A-1		No
OcB:	2e		All areas are prime farmland	
Ockley		A-1		No
OcB2:	2e		All areas are prime farmland	
Ockley		A-1		No
OdB:	---		Not prime farmland	
Ockley		A-1		No
Urban Land		Not rated		No

TABLE 34.--Interpretive Groups--Continued

Map symbol and soil name	Land capability classification	Pasture and hayland suitability group	Prime farmland	Hydric
OeB:	2e		Prime farmland if drained	
Odell		C-1		No
Pa:	2w		Prime farmland if drained	
Patton		C-1		Yes
Pg:	---		Not prime farmland	
Pits, Gravel		Not rated		No
Pu:	---		Not prime farmland	
Pits, Quarry		Not rated		No
Ra:	2w		Prime farmland if drained	
Ragsdale		C-1		Yes
RbA:	3w		Prime farmland if drained	
Randolph		C-2		No
RdA:	2w		Prime farmland if drained	
Raub		C-1		No
RdB:	2e		Prime farmland if drained	
Raub		C-1		No
ReA:	2w		Prime farmland if drained	
Reesville		C-1		No
RhB:	3e		Not prime farmland	
Ritchey		E-1		No
RhC:	4e		Farmland of local importance	
Ritchey		E-1		No
RhD:	7e		Farmland of local importance	
Ritchey		E-1		No
RhE2:	7e		Not prime farmland	
Ritchey		E-1		No
RkE:	7s		Not prime farmland	
Rodman		B-1		No
RpA:	2w		All areas are prime farmland	
Ross		A-5		No
RqA:	2w		Prime farmland if protected from flooding or not frequently flooded during the growing season	
Ross		A-5		No

TABLE 34.--Interpretive Groups--Continued

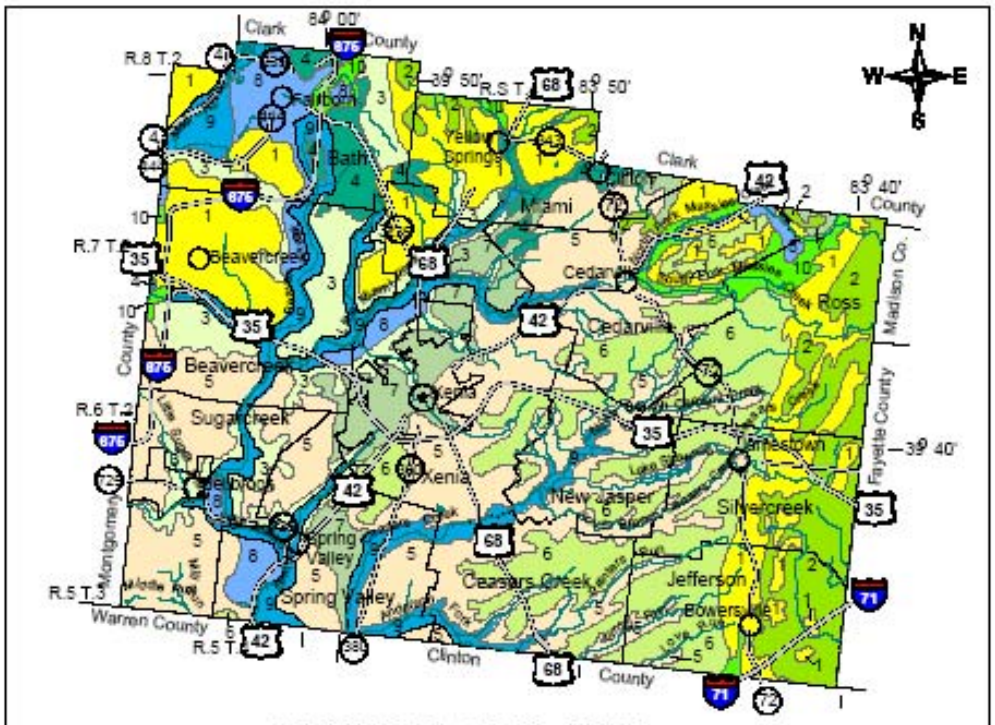
Map symbol and soil name	Land capability classification	Pasture and hayland suitability group	Prime farmland	Hydric
Rs:	2w		Prime farmland if protected from flooding or not frequently flooded during the growing season	
Ross		A-5		No
RtA:	1		All areas are prime farmland	
Rush		A-6		No
RtB:	2e		All areas are prime farmland	
Rush		A-6		No
RuA:	1		All areas are prime farmland	
Russell		A-1		No
RvB:	2e		All areas are prime farmland	
Russell		A-6		No
Miamian		A-1		No
RvB2:	2e		All areas are prime farmland	
Russell		A-6		No
Miamian		A-1		No
RwB2:	2e		All areas are prime farmland	
Russell		A-6		No
Xenia		A-6		No
SkA:	2w		All areas are prime farmland	
Sligo		A-5		No
SlA:	2w		Prime farmland if drained	
Sleeth		C-1		No
SnA:	3w		Prime farmland if drained	
Sloan		C-3		Yes
So:	3w		Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season	
Sloan		C-3		Yes

TABLE 34.--Interpretive Groups--Continued

Map symbol and soil name	Land capability classification	Pasture and hayland suitability group	Prime farmland	Hydric
Sp:	3w		Not prime farmland	
Sloan		C-3		Yes
Fill Land		Not rated		Unranked
Sr:	---		Not prime farmland	
Urban Land		Not rated		Unranked
Sloan		C-3		Yes
ThA:	1		All areas are prime farmland	
Thackery		A-1		No
ThB:	2e		All areas are prime farmland	
Thackery		A-1		No
Ts:	2w		All areas are prime farmland	
Tremont		A-5		No
TtA:	2w		Prime farmland if drained	
Treaty		C-1		Yes
Ud:	---		Not prime farmland	
Udorthents		Not rated		No
Ur:	---		Not prime farmland	
Urban Land		Not rated		Unranked
W:	---		Not prime farmland	
Water		Not rated		No
WaA:	2s		All areas are prime farmland	
Warsaw		A-1		No
WbA:	2s		Not prime farmland	
Warsaw		A-1		No
Fill Land		Not rated		No
WcA:	---		Not prime farmland	
Warsaw		A-1		No
Urban Land		Not rated		No
WeB:	2e		All areas are prime farmland	
Wea		A-1		No
WpC3:	4e		Not prime farmland	
Wapahani		B-1		No
Miamian		A-1		No
WpD3:	6e		Not prime farmland	
Wapahani		B-1		No
Miamian		A-1		No

TABLE 34.--Interpretive Groups--Continued

Map symbol and soil name	Land capability classification	Pasture and hayland suitability group	Prime farmland	Hydric
Ws:----------	2w		Prime farmland if drained	
Westland		C-1		Yes
Wt:----------	---		Not prime farmland	
Westland		C-1		Yes
Urban Land		Not rated		Unranked
XeA:----------	1		All areas are prime farmland	
Xenia		A-6		No
XeB:----------	2e		All areas are prime farmland	
Xenia		A-6		No



GENERAL SOIL MAP
GREENE COUNTY, OHIO

UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
IN COOPERATION WITH
OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF SOIL AND WATER CONSERVATION
OHIO AGRICULTURAL RESEARCH AND DEVELOPMENT CENTER

1:328,739

0 1 2 4 Miles

1 Miamian - Celina Association
2 Brookston - Celina - Crosby Association
3 Miamian - Eldean - Casco Association
4 Milton - Miamian Association
5 Miamian - Russell - Xenia Association
6 Ragsdale - Reesville Association
7 Ockley - Rush Association
8 Eldean - Ockley - Wea Association
9 Sloan - Ross - Algiers Association
10 Westland Association

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