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;
Wood Soil and Water Conservation District;
and the Wood County Commissioners

Soil Survey of Wood County, Ohio

Interim Report
March 2005

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.

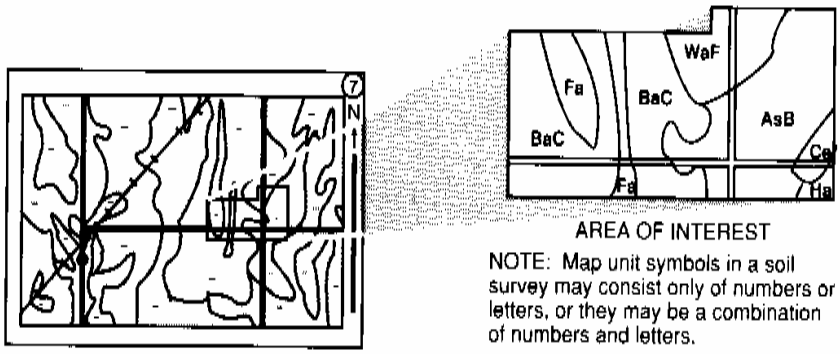
To find information about your area of interest, locate that area on the map, identify the name of the map unit in the area on the color-coded map legend, then refer to the section **General Soil Map Units** of this survey for a general description of the soils in your area.

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/). These maps are useful in planning the use and management of small areas.

Locate your area of interest on the map layer. 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.



MAP SHEET

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

Major fieldwork for this soil survey was completed in 1998. Soil names and descriptions were approved in 2000. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1999. This survey update 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, Ohio State University Extension, Wood Soil and Water Conservation District, and the Wood County Commissioners. It is part of the technical assistance furnished to the Wood 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: (clockwise from upper left) Ponds and protective windbreaks are commonly associated with farmsteads on Hoytville clay loam, 0 to 1 percent slopes; Sloan soils along the Maumee River provide areas of wetland habitat; a profile of Hoytville silty clay, 0 to 1 percent slopes; urban expansion in northern Wood County on Latty silty clay, till substratum, 0 to 1 percent slopes.

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Preface

This soil survey contains information that affects land use planning in Wood 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 or the Ohio State University Extension.

Soil Survey of Wood County, Ohio

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

Wood County is in northwestern Ohio (fig. 1). It is bordered by Lucas County to the north, Henry County to the west, Hancock County to the south, Ottawa, Sandusky, and Seneca Counties to the east. The Maumee River delineates the northwestern boundary between Wood and part of Lucas County. Wood County has a total area of 397,108 acres, or 618 square miles. In 1990, the county's population was 121,065 and Bowling Green, the county seat, had a population of 29,636 (U.S. Department of Commerce, 2000).

Figure 1. Location of Wood County in Ohio.

Industry and farming are the major enterprises in Wood County. Wood County supports strong manufacturing industries. The county has both light and heavy industrial plants. In addition, the county has strong retail and service sectors. Bowling Green State University provides local educational opportunities. The Maumee River provides access to Lake Erie and access to marinas, sport fishing, and other tourist industries with revenue. Most agricultural land is used for cash grain crops. Soybeans, corn, wheat, and hay are the principal crops. Sugar beets and specialty crops, such as cabbage, tomatoes, and melons, are also grown. Dairy and livestock enterprises are also important sources of revenue. A small percentage of land is devoted to woodlands, generally on steep slopes along major streams and in undrained areas.

This survey updates the soil survey of Wood County published in 1966 (Rapparlie and Urban, 1966). It provides additional information and has larger maps. It also provides updated photoimagery.

General Nature of the County

This section provides some general information about the survey area. It describes climate; history; physiography, relief, and drainage; glacial geology; bedrock geology; natural resources; transportation facilities; and recreation.

Climate

Wood County is cold in winter and hot in summer. Winter precipitation, frequently in the form of snow, results in a good accumulation of soil moisture by spring and minimizes drought during the summer. Normal annual precipitation patterns are adequate for all of the crops that are adapted to the temperature and the growing season in the survey area.

Table 1 gives data on temperature and precipitation for the survey area as recorded at Bowling Green 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 27.0 degrees F and the average daily minimum temperature is 19.3 degrees. The lowest temperature on record, which occurred at Bowling Green on January 19, 1994, was -20 degrees. In summer, the average temperature is 71.1 degrees and the average daily maximum temperature is 82.5 degrees. The highest temperature, which occurred at Bowling Green on July 10, 1936, was 110 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 33.20 inches. Of this, about 19.23 inches, or 58 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 4.49 inches at Bowling Green on July 10, 1979. Thunderstorms occur on about 37 days each year, and most occur between May and August.

The average seasonal snowfall is 21.9 inches. The greatest snow depth at any one time during the period of record was 20 inches recorded on February 6, 1978. On an average, 38 days per year have at least 1 inch of snow on the ground. The heaviest 1-day snowfall on record was 10.0 inches recorded on March 5, 1993.

The average relative humidity in mid-afternoon is about 58 percent. Humidity is higher at night, and the average at dawn is about 85 percent. The sun shines 65 percent of the time in summer and 41 percent in winter. The prevailing wind is from the west-southwest. Average wind speed is highest, around 11 miles per hour, from December to April.

History

Prior to settlement by European immigrants, the inhabitants of the survey area were the Native Americans of Wyandot, Ottawa, and Shawnee culture. These semi-nomadic people had permanent villages along the major rivers. They grew maize and wild rice in small clearings to supplement their diet. Their villages were generally high and dry, not in the "Black Swamp" which makes up most of Wood County.

Wood County is named for Col. Eleazer Derby Wood, who was the officer in charge of building Ft. Meigs during the War of 1812. The area was first known as the great swamp and was later known as the Black Swamp.

The diary of David Zeisberger, a Moravian missionary who traveled through the area, provides an early description of the Black Swamp. He writes of " deep swamps and troublesome marshes," the many miles "where no bit of dry land was to be seen, and horses at every step wading in the marsh up to their knees…." He also noted the clayey nature of the soil, "which is one reason why the water remains standing." (Bliss, 1885)

Ground was broken for the Wabash and Erie Canal in 1832 and for its important connecting link, the Miami and Erie Canal, in 1833. (Kaatz, 1955) However, the advent of these trade routes along major watercourses did little to help open up the Black Swamp.

It is an easy oversimplification to state that the railroad was responsible for the eventual settlement of the Black Swamp merely because the peak period of railway construction coincided with the peak period of settlement. The importance of the railroad cannot be denied, but were it not that railroad construction and the development of systematic drainage coincided, the rate of settlement would have been much slower (Kaatz, 1955). Lumbering aided drainage operations, and the railroads helped speed drainage construction by aiding lumbering. Drainage construction would have been a heavy burden on the farmers had not the railroad "afforded a market for the timber which formerly had no value, and rendered the 'winter crop' of timber almost as valuable as their summer crops." (Kaatz, 1955) In the 1860's the railways of Ohio consumed one million cords of wood annually for fuel alone and an unknown quantity for ties.

The first twenty years of drainage construction (1860-1880) dealt mainly with clearing, deepening, and widening natural drainage channels. By 1880 drainage ditches had been constructed along the perimeters of almost every section of land in the counties of the Black Swamp (Wilhelm, 1984).

Ditching alone would not solve the problem of standing water in the fields. Artificial underdrainage became a necessity. In the twenty years before tile mills were built in sufficient numbers (before 1880) local farmers were using native lumber to build plank underdrains. Two boards nailed together like an upside-down eave trough served as early field drains. As farming got more profitable and more local clay tile plants developed, systematic clay tile replaced the old planks.

Agriculture has played a dominant role in the settlement and development of Wood County. The

oil boom in the late 1800's was responsible for providing an influx of inhabitants to the county. Even with the present-day economic dependence on industry and manufacturing, Wood County still relies heavily on the economic base provided by the agricultural industry.

Physiography, Relief, and Drainage

All of the physiographic features in the county are a result of the Wisconsinan glaciation. Wood County lies entirely within MLRA 99, the Erie-Huron Lake Plain (USDA, 1981). As an area of lake plain physiography, Wood County has a relatively uniform, level and nearly level topography (fig. 2). The highest point in the county is about 775 feet above sea level, along the Seneca County line, in Perry Township, near Fostoria. The lowest point in the county is about 575 feet above sea level, where the Maumee River enters Lucas County, near Rossford.

Figure 2. Representative Wood County topography with large, open areas of cultivated fields with small, scattered woodlots of generally less than 40 acres. This is typical landscape of Hoytville clay loam, 0 to 1 percent slopes.

Glacial deposits cover the entire county (Rapparlie, 1966). This drift is the parent material for most of the soils in the county. The glacial deposits range in thickness from less than 1 foot to over 100 feet. Broad uniform flats where till was planed and modified by water currents and wave action characterize this level and nearly level lake plain. Most of the county has a slope of 6 percent or less. The steeper areas are associated with beach ridges, bedrock highs, eolian dunes, or stream and river valleys dissected by modern day streams.

Beach ridges typically mark the shorelines of various stages of Glacial Lake Maumee (Forsyth, 1961). There are beach ridges that mark the levels of 3 lake stages: Whittlesey (738 feet above sea level), remnants of Arkona in the eastern part of the county (685-709 feet above sea level), and Warren (666-680 feet above sea level).

Bedrock highs are located primarily in the eastern two-thirds of the county. These "highs" were reefs and islands during various stages of Glacial Lake Maumee. Most of these bedrock areas occur east of the Bowling Green fault.

Eolian dunes are prominent landforms that have a southwest to northeast orientation. They occur primarily as discontinuous bands in the central portion of the county. These dunes are in close proximity to the Warren beaches, which are the source of the eolian sands.

Modern day streams and drainage patterns account for most of the relief in Wood County. Areas with the most dissection occur along the Maumee and Portage Rivers.

Wood County drains into Lake Erie by two principal watersheds, the Maumee and the Portage. Although the Maumee is the larger river, the Portage drains more of the county. The smaller Cedar, Crane, and Toussaint Creek watersheds drain the northeastern part of the county.

Natural Resources

Dolostone and limestone, sand, gravel, and clay have all been quarried in Wood County at one time or another. Most of these resources are of minor extent, mainly because of relatively thin high-quality deposits.

Dolostone and limestone are the major components of Wood County bedrock. These rocks compose the Salina, Tymochtee, Greenfield, and Lockport groups formed during the Silurian and early Devonian Ages (ODNR-DGS, 1999). Limestone has been mined from these formations in several areas of the county, however, there are only 4 active sites. These are near the villages of Portage, West Millgrove, Weston, and Lime City. Since limestone is at or near the surface in Wood County, there are many small inactive limestone quarries scattered throughout the county. Most of the limestone is used for agricultural or industrial uses or for the transportation industry.

Small sand and gravel pits are scattered throughout the county, mostly along beach ridges, rivers, and streams. No sites in the county are currently being mined. The sand and gravel deposits are of limited size, ranging from 1 to 10 acres. The largest gravel pit is along a beach ridge in the central part of the county. This pit was about 25 acres in size at the time it was abandoned.

Glacial Geology

Richard R. Pavey, Ohio Department of Natural Resources, Division of Geological Survey, assisted in the preparation of this section.

Significantly late in geological time (about 2 million years ago), glaciers began to move across the area in a southern and western direction. Many glacial advances, with ice as much as 1 mile in thickness, followed by subsequent melting and recessions, filled valleys and low bedrock areas with glacial till and lacustrine sand, silt, and clay. The late Wisconsinan glaciers, approximately 15,000 to 24,000 years ago, were the last glaciers to cover Wood County (Forsyth, 1961). The glacial ice gouged out a pre-glacial river valley to form the Lake Erie basin. As sheets of ice advanced uphill out of the basin, high bedrock areas obstructed glacial deposition, leaving the bedrock hills thinly covered with drift or completely exposed. Examples of soils that formed in a thin mantle of glacial material over bedrock include Joliet, Marblehead, Millsdale, Milton, and Randolph, and Ritchey soils.

As the glacial ice was receding for the last time, the Erie Basin was filled by a series of different lakes that formed in front of the ice sheet. For a few thousand years, lake levels varied in these lakes as drainage outlets were blocked or opened by the fluctuating ice front of the last glacier.

There are six distinct lake levels of Glacial Lake Maumee that inundated Wood County. The main body of the lake lies across the entire county. Fluctuating lake levels and wave action smoothed out shallow bottom areas, wave-planed the glacial till, and provided coarse sediments to form beaches. Beach ridges in the county are products of these earlier lake levels. Alvada, Belmore, Cygnet, Digby, Haney, Millgrove, Oshtemo, and Shawtown soils formed in these materials. In the northwestern part of the county are segments of old beach ridges and sand dunes. These provide evidence of the reworking of beach sediments during subsequent higher lake levels, caused by slight readvances of the ice sheet far to the north. Granby, Ottokee, Spinks, Tedrow, and Wauseon soils formed in these sandy deposits. In shallow water areas, wave action washed the finer sized particles out of the glacial material leaving patches of coarser sediments on top of the glacial till. Aurand, Haskins, and Mermill soils formed in this water modified glacial till material. Where a thin mantle of sand was left on top of the till, Rimer and Seward soils formed. Hoytville and Nappanee soils formed where the till was wave-planed by shallow lake water. Lacustrine sediments settled out of the water at the lowest, most recent lake levels in the northern part of Wood County. Some soils in the county formed in these lacustrine deposits, including Fulton, Latty, and Toledo soils.

Bedrock Geology

Richard R. Pavey , Ohio Department of Natural Resources, Division of Geological Survey, assisted in the preparation of this section.

Wood County is in the eastern part of the Central Lowland Province. Proceeding from west to east in Wood County, the underlying bedrock dips and becomes progressively younger. The bedrock within the county is of sedimentary origin, primarily Silurian limestone and dolostone (ODNR-DGS, 1947, 1981).

A narrow slice of the Dundee and Detroit River Groups underlie the westernmost part of Wood County, especially in Grand Rapids and Milton Townships. The Salina Undifferentiated Group underlie the western sections of the county, especially in Plain, Center, Jackson, and the western half of Liberty and Henry Townships (ODNR-DGS,1999). The Tymochtee Group underlies an area in the central to south central part of the county, especially in eastern Center, Liberty, and Henry Townships. The Tymochtee group lies west of the Bowling Green fault that parallels Interstate 75 south of Bowling Green. East of the fault, the Greenfield and Lockport groups are the dominant bedrock members. These groups underlie virtually all of the rest of Wood County (ODNR-DGS, 1999).

The Bowling Green fault is a major structural feature in northwestern Ohio. East of the fault was the primary location of numerous gas and oil wells during the late 1800's (ODNR-DGS, 1992).

During the Silurian to Mississippian times (420 to 350 million years ago) Wood County was covered by a large, tropical inland sea. In deeper areas, sediments consisting of deposits of carbonate precipitates, shells, and corals formed limestone and dolostone. Silt and clay sediments formed shale, while quartz and other silicate minerals were deposited to form sandstone in shallow water areas. As sedimentation and cementation continued, the pressures generated by the tremendous weight of the overlying sediments formed the bedrock of the county.

This depositional stage was followed by a prolonged period of geologic erosion that left a landscape of bedrock hills and stream valleys. Surface water drained northward into a large, eastward-flowing valley that occupied the present Lake Erie basin. Erosion left the oldest bedrock units exposed in the northwestern part of the

county and the youngest exposed towards the southeast.

Transportation Facilities

Wood County is accessible by land, water, and air. Interstate 75 crosses the county from north to south, and provides rapid access to Toledo and Cincinnati. Interstate spurs, I-280 and I-475, also provide access to the Toledo area. The Ohio Turnpike (I-90) crosses the northern part of Wood County, providing access to Cleveland and Chicago. Three Federal highways and thirteen State highways provide additional access. These highways and a system of well paved county and township roads provide easy access to all areas of the county. Six major railroad lines traverse the county, and there are two major switching yards.

A shipping terminal to the Great Lakes is located in Rossford.

Two airports, Metcalf Field near Walbridge and Wood County Airport near Bowling Green, are located in the county.

Recreation

Wood County has more recreational opportunities than many northwestern Ohio counties. The extensive Wood County Park District has a network of 11 sites (including parks, hiking and bicycle trails, and nature preserves) throughout the county. The Ohio Division of Wildlife has 11 wildlife production areas totaling about 680 acres. The Ohio Department of Natural Resources maintains two state parks in the county that are along the Maumee River. They are Ft. Meigs and Mary Jane Thurston. Many educational and other seasonal activities scheduled for the public are available during the calendar year.

Bowling Green has several city parks and recreational facilities available for use by the public. There are also village parks throughout the county, which provide athletic fields, swimming pools, playground equipment, and shelter houses. There are 7 public and private golf courses throughout the county. Recreational areas are on a wide variety of soils. Several of the county and village parks make use of flood plains for seasonal outdoor opportunities.

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 provided documentation for map units based on a work plan that enabled the fieldwork to be completed within a 2 year period. This work plan detailed the different levels of documentation to be collected on individual map units based upon experience acquired from surrounding modernization subsets.

Prior to the start of fieldwork, an evaluation worksheet was developed for all map units in the existing survey to assist in determining which map units could be updated within the project time frame of 2 years. Historical correlation documents for Wood County, the existing survey publication, and experience obtained in adjacent subsets within the MLRA were used to make this evaluation. Those map units determined to require a large expenditure of time were not fully updated during the project and are referred to in this publication as “map units with minimal revision”.

On these map units with minimal revision, a single transect was conducted within the typical pedon delineation from the original soil survey publication. In some cases, multiple transects were conducted on certain map units with minimum revision. The component information acquired from these transects was added to the composition of each individual map unit.

Map units that have a relatively high confidence level for correlation purposes are referred to as “modernized map units.” On modernized map units, the 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. On map units with minimum revision, the soil scientists used acquired knowledge from adjacent modernization subsets to assist in the development of these models within Wood County. A large amount of the data from the original soil survey has been retained for these map units. Examples of this type of data are layer depths, horizon textures, water table depths, depth to bedrock, and slope range.

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.

Original delineation boundaries from the previous survey were maintained for most map units. In some situations, the linework was shifted slightly to accommodate soil patterns on the photobase, changes in land use, or other observable differences on the photobase. Additional delineations were added for the purpose of separating areas of urban expansion and in areas disturbed by man. Photo interpretation and onsite evaluations were conducted to accurately place new linework.

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

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

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

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

Soil Survey Procedures

Wood County is the first survey in the state of Ohio that undertakes a “mixed vintage” approach to the publication of soil survey information. This approach integrates newly acquired soil survey data and information, while utilizing existing soil survey data from the original publication where applicable. The intent of the “mixed vintage” approach is to provide the most current and critical soil information for local users within a reasonable period of time.

The general procedures followed in modernizing map units are described in the “National Soil Survey Handbook” (USDA, National Soil Survey Handbook) of the Natural Resources Conservation Service. The "Soil Survey of Wood County, Ohio," issued December, 1966 (Rapparlie and Urban, 1966), and U.S. Geological Survey topographic quadrangles were among the references used.

Prior to the soil survey modernization, a soil survey review team conducted an evaluation of the 1966 Wood County soil survey at the request of the Wood County Commissioners and Wood Soil and Water Conservation District. A report of the evaluation was prepared and sent to the Soil Inventory Board for review. After reviewing the evaluation report, the Soil Inventory Board recommended a soil survey modernization program and outlined the work to be completed for the soil survey modernization.

Before the fieldwork began, a detailed study of all existing laboratory data, soil survey reports, and research studies were conducted by the Wood County soil survey staff. U.S. Geological Survey topographic maps, at a scale of 1:24,000, were used to help the soil scientists relate land and image features.

A project work plan was developed to provide a schedule for preliminary office work and actual fieldwork to be completed within a 2 year time frame. An evaluation was completed on each individual soil series and map units within Wood County. Each map unit was assigned a rating for reliability, meeting current NCSS standards, lab data availability, adjacent data from surrounding updated counties, and a document that tracked the correlation decisions from the original survey. Additional input on the quality of soil survey information for individual map units was acquired from the Wood Soil and Water Conservation District. After these information sets were developed and analyzed, the soil scientists established priorities for modernizing map units within a time frame of two years. The 2 year scope of fieldwork eliminated the possibility of updating all map units within Wood County. The status of map units in Wood County is provided at the end of this section.

Wood County includes a large number of soil series. The 1966 soil survey is a valuable historical document that was relied on extensively during the modernization process. Patterns of soils on the landscape are typically complex. Modern soil science survey procedures differ from those practiced in the earlier survey. Some soil series names used in the old report no longer apply to the soils that were mapped and correlated during this update. Soil scientists making the 1966 survey did not recognize all of the soil series that current soil scientists using modern taxonomy and classification recognized during this survey. Soil observations and evaluations during the 1966 survey were made to depths of 60 inches or less. This modernization project routinely made observations and evaluations to 80 inches or to bedrock on modernized map units. Map units with minimum revision had at least a one 10 point transect and pedon description to 2 meters recorded within the typical pedon delineation from the original survey.

Recent aerial photographs, photographs from earlier flights, the Quaternary Geology Map of Ohio (ODNR-DGS, 1998), the Geology (bedrock) Map of Ohio (ODNR-DGS, 1981), and the United States Geologic Survey quadrangles were used in making the survey. The maps and soil descriptions in the "Soil Survey of Wood County, Ohio" (Rapparlie and Urban, 1966) were used as references in the correlation of soil series and map units. The old survey was also used to determine the areas of highest variability when planning mapping and transect intervals.

Soil map units were traversed at varying intervals depending on the complexity of the soil types and patterns in the area. Map units that were targeted for transecting as part of the modernization process were randomly assigned in the office for field investigation and documentation. Borings were made at selected intervals during the transect to determine the composition of soil types within the map units. Soil scientists compared existing map units with the soil types in the area to see if earlier unrecognized soils with significant interpretive differences should be identified and separated during the survey modernization. Map unit boundaries were determined on the basis of soil examinations, observations, and photo interpretation. When necessary, map units were redelineated so that new series could be included and soil types recognized earlier could be better differentiated. Some map units were enlarged to include units previously mapped as another soil type when the differences in soil properties were not significant enough to require an additional map unit delineation. A data location map denoting where transects and observations were made is on file at the Northwestern Ohio Soil Survey Project Office in Findlay.

Representative pedon sites from the 1966 survey were located, and the soils at these sites were examined in order to determine if they would meet present-day interpretation needs. The classification of these pedons also was compared with modern soil taxonomy standards. If the pedon was found to differ significantly in characteristics, a new pedon site was located that had soil properties that were representative of observations made during this soil survey.

Most soils were examined using hand augers and soil tubes. Field notes were taken during the evaluation process. Deeper samples were taken to document soil material to a depth of 80 inches or to bedrock if within 80 inches. These samples were obtained by taking soil cores using a probe

truck or using a hand auger with extensions. Pedons described as typical were studied and documented in excavated pits. Samples for laboratory analysis were taken at these pits and at other locations in the county to obtain chemical and physical analyses and to determine engineering properties. This information was used in the classification, correlation, and interpretation of specific soil types.

The project staff located all typical pedon sites of map units with minimum revision on the original publication map sheets. This decision was based upon the premise that if these were the typical pedon sites, they should represent the typical composition of the map unit. Then, a single 10 point transect was conducted within the delineation. The project staff recorded map unit composition, pedon features to 80 inches or bedrock, land use, and other information typically recorded for a modernized map unit.

Data attributes for the map units with minimum revision have been populated to a depth of 60 inches (1.5 meters) or to bedrock. Layer depths for these map units reflect actual field observations from the original survey. In most cases, the layer depths reflect the original typical pedon. In a few cases, the layer depths from Table 3 of the original 1966 publication were accepted. The layer depths in this publication have been extended to depths greater than those observed during the original publication for most of the map units with minimum revision. The interpretive models that were used to generate the tables for this publication need to have data populated to a depth of 60 inches. The data populated in the to a depth of 60 inches is typical for the types of materials in these soils.

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

After completion of the fieldwork, map unit delineations were transferred by hand to another set of planimetrically correct photographs. Surface features were recorded from observation of the maps and the landscape. Delineations from the original survey were maintained on most map units. Modernized map unit delineations were modified based on actual field observation. Aerial photo interpretation was conducted on all map units during the compilation process. In some cases, linework was shifted from the original publication to meet soil patterns on the photos or to capture changes in land use. In other cases, linework was added to differentiate urban areas, disturbed areas, or areas where recently acquired lab data indicated an additional map unit should be separated.

Additional information regarding the procedures used in preparing this report can be obtained from the local offices of the Natural Resources Conservation Service.

Map Unit Status

These lists indicate the overall status of the map units in Wood County. Briefly, Modernized Map Units have soil attribute data extending to 2 meters (80 inches) or bedrock. Map Units with Minimum Revision have soil attribute data extending to 1.5 meters (60 inches) or bedrock.

List of Modernized Map Units

AgA=Alvada loam, 0 to 1 percent slopes
AmA=Aurand fine sandy loam, 0 to 2 percent slopes
AnA=Aurand loam, 0 to 2 percent slopes
AsA=Aurand-Urban land complex, 0 to 2 percent slopes
CaA=Castalia very cobbly loam, 0 to 2 percent slopes
CbB=Castalia-Marblehead complex, very stony, 0 to 6 percent slopes
CvA=Cygnet loam, 0 to 2 percent slopes
CxB=Castalia-Marblehead-Urban land complex, very stony, 0 to 6 percent slopes
FcA=Flatrock silt loam, 0 to 2 percent slopes, occasionally flooded
FuA=Fulton silty clay loam, till substratum, 0 to 2 percent slopes
FuB=Fulton silty clay loam, till substratum, 2 to 6 percent slopes
FzA=Fulton, till substratum-Urban land complex, 0 to 2 percent slopes
GpA=Granby loamy fine sand, till substratum, 0 to 1 percent slopes
HgA=Hoytville clay loam, 0 to 1 percent slopes

HhA=Hoytville silty clay loam, 0 to 1 percent slopes
HvA=Hoytville silty clay, 0 to 1 percent slopes
HyA=Hoytville-Urban land complex, 0 to 1 percent slopes
LbB=Landes loamy fine sand, 0 to 6 percent slopes, frequently flooded
LdA=Latty silty clay, till substratum, 0 to 1 percent slopes
LgA=Latty, till substratum-Urban land complex, 0 to 1 percent slopes
MdA=Mermill loam, 0 to 1 percent slopes
MfA= Mermill-Aurand complex, 0 to 1 percent slopes
MgA=Mermill-Urban land complex, 0 to 1 percent slopes
OsB=Oshtemo sandy loam, till substratum, 2 to 6 percent slopes
RmA=Risingsun-Rollersville complex, 0 to 1 percent slopes
RnA=Rollersville-Risingsun complex, 0 to 1 percent slopes
RsA=Rossburg silt loam, 0 to 2 percent slopes, frequently flooded
SeA=Shawtown loam, 0 to 2 percent slopes
SeB=Shawtown loam, 2 to 6 percent slopes
SoA=Sloan silty clay loam, 0 to 1 percent slopes, occasionally flooded
UcA=Udorthents, loamy, 0 to 2 percent slopes
UcE=Udorthents, loamy, 2 to 25 percent slopes
Ur=Urban land
W=Water
WbA=Wabasha silty clay, 0 to 1 percent slopes, frequently flooded

List of Map Units with Minimum Revision

BeB=Belmore sandy loam, 1 to 4 percent slopes
BfB=Belmore loam, 1 to 4 percent slopes
CcA=Colwood fine sandy loam, 0 to 1 percent slopes
CdA=Colwood loam, 0 to 1 percent slopes
CtA=Colwood-Urban land complex, 0 to 1 percent slopes
DgA=Digby sandy loam, 0 to 2 percent slopes
DhA=Digby loam, 0 to 2 percent slopes
DrA=Dunbridge sandy loam, 0 to 2 percent slopes
DsA=Dunbridge-Spinks, deep to limestone, loamy fine sands, 0 to 2 percent slopes
DsB=Dunbridge-Spinks, deep to limestone, loamy fine sands, 2 to 6 percent slopes
EaA=Eel loam, 0 to 2 percent slopes, frequently flooded
EmA=Eel silt loam, 0 to 2 percent slopes, frequently flooded
EnA=Eel silt loam, moderately deep to limestone, 0 to 2 percent slopes, frequently flooded
GmA=Genesee loam, 0 to 2 percent slopes, frequently flooded
GnA=Genesee silt loam, 0 to 2 percent slopes, frequently flooded
HaA=Haney sandy loam, 0 to 2 percent slopes
HaB=Haney sandy loam, 2 to 6 percent slopes
HdA=Haney loam, 0 to 2 percent slopes
HdB=Haney loam, 2 to 6 percent slopes
HeA=Haskins and Digby, till substratum, fine sandy loams, 0 to 2 percent slopes
HeB=Haskins and Digby, till substratum, fine sandy loams, 2 to 6 percent slopes
HfA=Haskins and Digby, till substratum, loams, 0 to 2 percent slopes
HfB=Haskins and Digby, till substratum, loams, 2 to 6 percent slopes
HwA=Hoytville clay, shallow to carbonates, 0 to 1 percent slopes
JoA=Joliet silty clay loam, 0 to 1 percent slopes
KeA=Kibbie loamy fine sand, 0 to 2 percent slopes
KfA=Kibbie fine sandy loam, 0 to 2 percent slopes
KfB=Kibbie fine sandy loam, 2 to 6 percent slopes
KkA=Kibbie-Urban land complex, 0 to 2 percent slopes
MbA=Millgrove loam, 0 to 1 percent slopes
McA=Mermill fine sandy loam, 0 to 1 percent slopes
MeA=Mermill sandy clay loam, 0 to 1 percent slopes
MhA=Millsdale silty clay loam, 0 to 1 percent slopes
MkA=Millsdale silty clay loam, stony, 0 to 1 percent slopes
MmA=Millsdale-Urban land complex, 0 to 1 percent slopes
MnA=Milton loam, 0 to 2 percent slopes
MnB=Milton loam, 2 to 6 percent slopes
NmA=Nappanee sandy loam, 0 to 2 percent slopes
NmB=Nappanee sandy loam, 2 to 6 percent slopes
NnA=Nappanee loam, 0 to 2 percent slopes
NnB=Nappanee loam, 2 to 6 percent slopes
NnB2=Nappanee loam, 2 to 6 percent slopes, eroded
NpA=Nappanee silty clay loam, 0 to 2 percent slopes
NpB=Nappanee silty clay loam, 2 to 6 percent slopes
NpB2=Nappanee silty clay loam, 2 to 6 percent slopes, eroded
NsA=Nappanee-Urban land complex, 0 to 2 percent slopes
OtA=Ottokee-Spinks loamy fine sands, 0 to 2 percent slopes
OtB=Ottokee-Spinks loamy fine sands, 2 to 6 percent slopes

OzB=Ottokee-Spinks-Urban land complex, 0 to 6 percent slopes
Pt =Pits, quarry
RbA=Randolph loam, 0 to 2 percent slopes
RbB=Randolph loam, 2 to 6 percent slopes
RdA=Randolph loam, stony, 0 to 2 percent slopes
ReA=Randolph-Urban land complex, 0 to 2 percent slopes
RfA=Rimer and Tedrow, till substratum, loamy fine sands, 0 to 2 percent slopes
RfB=Rimer and Tedrow, till substratum, loamy fine sands, 2 to 6 percent slopes
RgA=Rimer and Tedrow-Urban land complex, 0 to 2 percent slopes
RhA=Ritchey loam, 0 to 2 percent slopes
RhB=Ritchey loam, 2 to 6 percent slopes
RkA=Ritchey loam, stony, 0 to 2 percent slopes
SdA=Seward and Ottokee, till substratum, loamy fine sands, 0 to 2 percent slopes
SdB=Seward and Ottokee, till substratum, loamy fine sands, 2 to 6 percent slopes
SgA=Shoals loam, 0 to 2 percent slopes, frequently flooded
ShA=Shoals silt loam, 0 to 2 percent slopes, frequently flooded
SkA=Shoals silty clay loam, 0 to 2 percent slopes, frequently flooded
SmA=Shoals and Sloan complex, moderately deep to limestone, 0 to 2 percent slopes, frequently flooded
SnA=Sloan silt loam, 0 to 1 percent slopes, frequently flooded
SpA=Sloan silty clay loam, 0 to 1 percent slopes, frequently flooded
SrB=Spinks fine sand, 2 to 6 percent slopes
SrC=Spinks fine sand, 6 to 12 percent slopes
SrD=Spinks fine sand, 12 to 18 percent slopes
SsB=Spinks loamy fine sand, 2 to 6 percent slopes
SsC=Spinks loamy fine sand, 6 to 12 percent slopes
StB=St. Clair loam, 2 to 6 percent slopes
StC2=St. Clair loam, 6 to 12 percent slopes, eroded
SuB2=St. Clair silty clay loam, 2 to 6 percent slopes, eroded
SuC2=St. Clair silty clay loam, 6 to 12 percent slopes, eroded
SuD2=St. Clair silty clay loam, 12 to 18 percent slopes, eroded
SuE2=St. Clair silty clay loam, 18 to 25 percent slopes, eroded
TeA=Tedrow loamy fine sand, 0 to 2 percent slopes
TeB=Tedrow loamy fine sand, 2 to 6 percent slopes
TfA=Tedrow-Urban land complex, 0 to 2 percent slopes
TpA=Toledo silty clay loam, 0 to 1 percent slopes
TuA=Toledo-Urban land complex, 0 to 1 percent slopes
WmA=Wauseon loamy fine sand, 0 to 1 percent slopes
WnA=Wauseon fine sandy loam, deep to till, 0 to 1 percent slopes
WyA=Wauseon fine sandy loam, 0 to 1 percent slopes
WzA=Wauseon-Urban land complex, 0 to 1 percent slopes

General Soil Map Units

The general soil map in this 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.

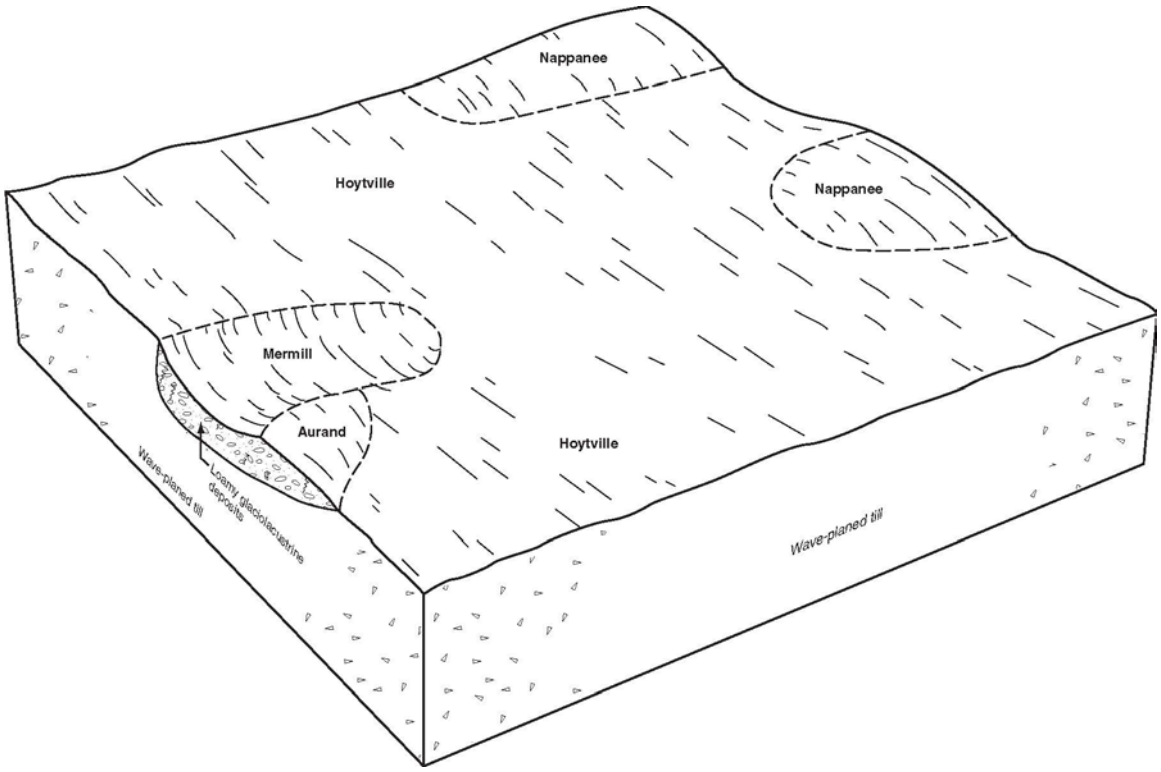

Figure 3. Typical pattern of soils and parent material in the Hoytville association.

1. Hoytville Association (fig. 3)

Very deep, level, very poorly drained soils that formed in wave-planed till

Setting

Landform: Extensive flats, depressions, and drainageways on lake plains
Slope range: 0 to 1 percent

Composition

Extent of the association in the county: 60 percent
Extent of the soils in the association:
Hoytville and similar soils=83 percent
Minor soils=17 percent

Soil Properties and Qualities

Hoytville
Depth class: Very deep
Drainage class: Very poorly drained
Parent material: Wave-planed till
Surface textural class: Silty clay, silty clay loam, clay loam, or clay
Slope: 0 to 1 percent

Minor Soils

Aurand soils
Eel soils
Mermill soils
Millsdale soils
Nappanee soils
Rimer and Tedrow soils
Sloan soils
Udorthents

Use and Management

Major uses: Cropland
Management concerns: Seasonal wetness, ponding, high clay content in the surface layer and subsoil, compaction, frost action

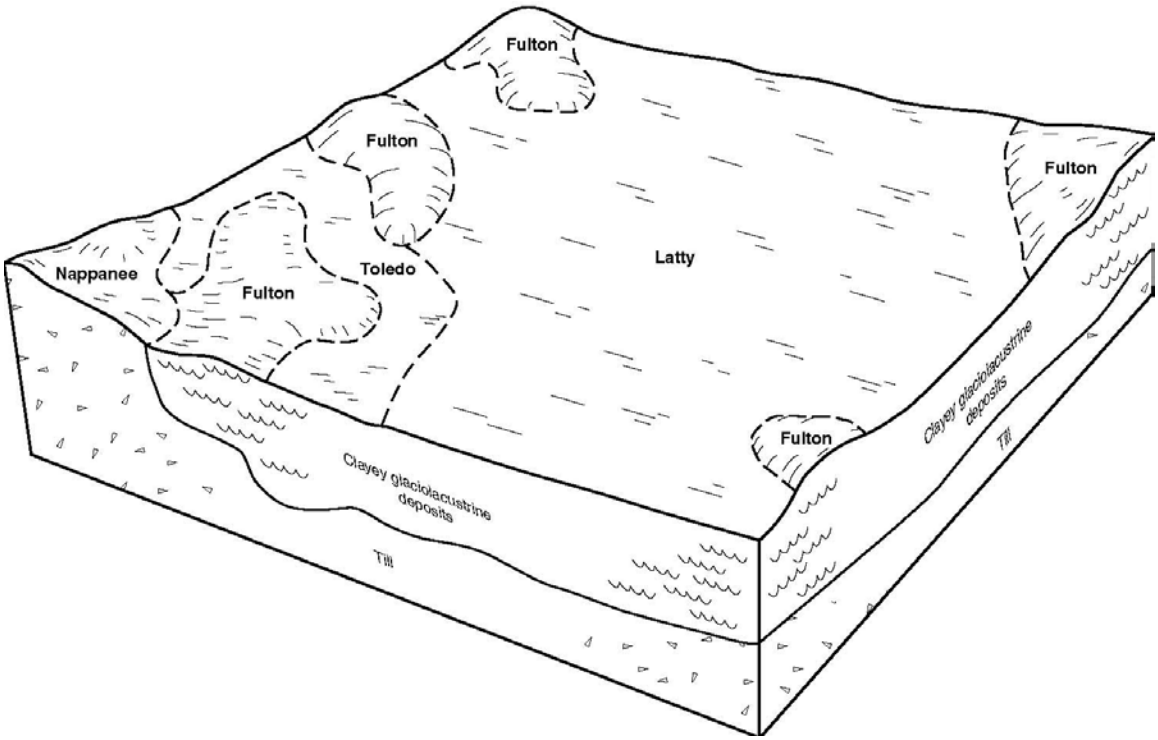

Figure 4. Typical pattern of soils and parent material in the Latty-Fulton association.

2. Latty-Fulton Association (fig. 4)

Very deep, level to gently sloping, very poorly drained and somewhat poorly drained soils that formed in clayey glaciolacustrine deposits over till

Setting

Landform: Extensive flats, depressions, drainageways, rises, and knolls, and in dissected areas along streams on lake plains
Slope range: 0 to 6 percent

Composition

Extent of the association in the county: 3 percent
Extent of the soils in the association:
Latty, till substratum and similar soils=72 percent
Fulton, till substratum and similar soils=15 percent
Minor soils=13 percent

Soil Properties and Qualities

Latty
Depth class: Very deep
Drainage class: Very poorly drained
Parent material: Clayey glaciolacustrine deposits over till
Surface textural class: Silty clay
Slope: 0 to 1 percent

Fulton
Depth class: Very deep
Drainage class: Somewhat poorly drained
Position on the landform: Summits, shoulders, backslopes
Parent material: Clayey glaciolacustrine deposits over till
Surface textural class: Silty clay loam
Slope: 0 to 6 percent

Minor Soils

Nappanee soils
Toledo soils
Udorthents
Wabasha soils

Use and Management

Major uses: Cropland
Management concerns: Seasonal wetness, ponding, high clay content in the surface layer and subsoil, compaction, tilth, erosion, frost action

3. Urban land-Fulton-Latty Association

Urban land or built up land, and very deep, level to gently sloping, somewhat poorly drained and very poorly drained soils that formed in clayey glaciolacustrine deposits over till

Setting

Landform: Extensive flats, depressions, drainageways, rises, and knolls, and in dissected areas along streams on lake plains
Slope range: 0 to 6 percent

Composition

Extent of the association in the county: 2 percent
Extent of the components in the association:
Urban land and similar areas=27 percent
Fulton, till substratum and similar soils=22 percent
Latty, till substratum soils=16 percent
Minor soils=35 percent

General Description of Urban land

Urban land, or built up land, includes land areas that are covered by paved or graveled roads, parting lots, walkways, residential and commercial buildings, and cemetery structures.

Soil Properties and Qualities

Fulton
Depth class: Very deep
Drainage class: Somewhat poorly drained
Position on the landform: Summits, shoulders, backslopes
Parent material: Clayey glaciolacustrine deposits over till
Surface textural class: Silty clay loam
Slope: 0 to 6 percent

Latty
Depth class: Very deep
Drainage class: Very poorly drained
Parent material: Clayey glaciolacustrine deposits over till
Surface textural class: Silty clay
Slope: 0 to 1 percent

Minor Soils
Aurand soils
Genesee soils
Sloan soils
St. Clair soils
Toledo soils

Use and Management
Major uses: Urban development
Management concerns: Seasonal wetness, ponding, high clay content in the surface layer and subsoil, slow or very slow permeability, shrink-swell, frost action, low strength

4. Colwood-Kibbie-Granby Association

Very deep, level to gently sloping, very poorly drained, poorly drained, and somewhat poorly drained soils that formed in stratified loamy or silty glaciolacustrine deposits, or in sandy glaciolacustrine deposits over till

Setting
Landform: Flats, depressions, drainageways, rises, and knolls on lake plains and deltas
Slope range: 0 to 6 percent

Composition
Extent of the association in the county: 3 percent
Extent of the soils in the association:
Colwood and similar soils=37 percent
Kibbie soils=17 percent
Granby, till substratum, and similar soils=10 percent
Minor soils=36 percent

Soil Properties and Qualities
Colwood
Depth class: Very deep
Drainage class: Very poorly drained and poorly drained
Parent material: Stratified silty and loamy glaciolacustrine deposits
Surface textural class: Loam or fine sandy loam
Slope: 0 to 1 percent

Kibbie
Depth class: Very deep
Drainage class: Somewhat poorly drained
Position on the landform: Summits, shoulders, backslopes
Parent material: Stratified loamy and silty glaciolacustrine deposits
Surface textural class: Loamy fine sand or fine sandy loam
Slope: 0 to 6 percent

Granby
Depth class: Very deep
Drainage class: Very poorly drained and poorly drained
Parent material: Sandy glaciolacustrine deposits over till
Surface textural class: Loamy fine sand
Slope: 0 to 1 percent

Minor Soils
Aurand soils
Eel soils
Hoytville soils
Nappanee soils
Mermill soils
Ottokee and Spinks soils
Rimer and Tedrow soils
Seward and Ottokee soils
Sloan soils
Udorthents

Use and Management
Major uses: Cropland
Management concerns: Ponding, seasonal wetness, erosion (wind), droughtiness, groundwater contamination, frost action

5. Mermill-Aurand-Hoytville Association

Very deep, level or nearly level, very poorly drained and somewhat poorly drained soils that formed in loamy glaciolacustrine deposits and the underlying till or in wave-planed till

Setting
Landform: Extensive flats, depressions, drainageways, rises, and knolls on lake plains
Slope range: 0 to 2 percent

Composition
Extent of the association in the county: 14 percent

Extent of the soils in the association:
Mermill and similar soils=35 percent
Aurand and similar soils=19 percent
Hoytville soils=13 percent
Minor soils=33 percent

Soil Properties and Qualities

Mermill
Depth class: Very deep
Drainage class: Very poorly drained
Parent material: Loamy glaciolacustrine deposits and the underlying till
Surface textural class: Loam, fine sandy loam, or sandy clay loam
Slope: 0 to 1 percent

Aurand
Depth class: Very deep
Drainage class: Somewhat poorly drained
Position on the landform: Summits, shoulders, and footslopes
Parent material: Loamy glaciolacustrine deposits and the underlying till
Surface textural class: Loam or fine sandy loam
Slope: 0 to 2 percent

Hoytville
Depth class: Very deep
Drainage class: Very poorly drained
Landform: Extensive flats, depressions, drainageways
Parent material: Wave-planed till
Surface textural class: Silty clay, silty clay loam, clay loam
Slope: 0 to 1 percent

Minor soils

Dunbridge and Spinks soils
Eel soils
Ottokee and Spinks soils
Nappanee soils
Randolph soils
Rimer and Tedrow soils
Wauseon soils

Use and Management

Major uses: Cropland
Management concerns: Ponding, seasonal wetness, restricted permeability, erosion (wind), frost action, compaction, high clay content

6. Wauseon-Ottokee-Spinks Association

Very deep, level to moderately steep, very poorly drained, poorly drained, moderately well drained, and well drained soils that formed in loamy and sandy glaciolacustrine deposits over till, or in sandy glaciolacustrine or eolian deposits

Setting

Landform: Flats, depressions, drainageways on lake plains, and rises and knolls on dunes and beach ridges on lake plains
Slope range: 0 to 18 percent

Composition

Extent of the association in the county: 4 percent
Extent of the soils in the association:
Wauseon and similar soils=32 percent
Ottokee and similar soils=21 percent
Spinks and similar soils=13 percent
Minor soils=34 percent

Soil Properties and Qualities

Wauseon
Depth class: Very deep
Drainage class: Poorly drained and very poorly drained
Parent material: Loamy and sandy glaciolacustrine deposits overlying till
Surface textural class: Fine sandy loam or loamy fine sand
Slope: 0 to 1 percent

Ottokee
Depth class: Very deep
Drainage class: Moderately well drained
Position on the landform: Summits, shoulders, backslopes
Parent material: Sandy glaciolacustrine or eolian deposits
Surface textural class: Loamy fine sand
Slope: 0 to 6 percent

Spinks
Depth class: Very deep
Drainage class: Well drained
Position on the landform: Summits, shoulders, back slopes
Parent material: Sandy glaciolacustrine or eolian deposits
Surface textural class: Fine sand, loamy fine sand

Slope: 2 to 18 percent

Minor Soils

Aurand soils
Digby soils
Hoytville soils
Mermill soils
Nappanee soils
Randolph soils
Rimer and Tedrow soils
Risingsun and Rollersville soils
Shoals soils

Use and Management

Major uses: Cropland
Management concerns: Ponding, seasonal wetness, droughtiness, erosion (wind and water), groundwater contamination

7. Hoytville-Ottokee-Rimer Association

Very deep, level to gently sloping, very poorly drained, moderately well drained, and somewhat poorly drained soils that formed in wave-planed till, sandy glaciolacustrine or eolian deposits, or in sandy glaciolacustrine deposits and the underlying till

Setting

Landform: Extensive flats, depressions, drainageways, rises, and knolls on lake plains
Slope range: 0 to 6 percent

Composition

Extent of the association in the county: 11 percent
Extent of the soils in the association:
Hoytville soils=64 percent
Ottokee and similar soils=10 percent
Rimer and similar soils=10 percent
Minor soils=16 percent

Soil Properties and Qualities

Hoytville
Depth class: Very deep
Drainage class: Very poorly drained
Parent material: Wave-planed till
Surface textural class: Clay loam
Slope: 0 to 1 percent

Ottokee
Depth class: Very deep
Drainage class: Moderately well drained
Position on the landform: Summits, shoulders, backslopes
Parent material: Sandy glaciolacustrine or eolian deposits
Surface textural class: Loamy fine sand
Slope: 0 to 6 percent

Rimer
Depth class: Very deep
Drainage class: Somewhat poorly drained
Position on the landform: Summits, shoulders, backslopes
Parent material: Sandy glaciolacustrine deposits and the underlying till
Surface textural class: Loamy fine sand
Slope: 0 to 6 percent

Minor Soils

Aurand soils
Eel soils
Mermill soils
Nappanee soils
Sloan soils
Spinks soils which commonly occurs in a complex with Ottokee
Tedrow soils which commonly occurs in a complex with Rimer
Wauseon soils

Use and Management

Major uses: Cropland
Management concerns: Ponding, seasonal wetness, frost action, droughtiness, erosion (wind and water), groundwater contamination

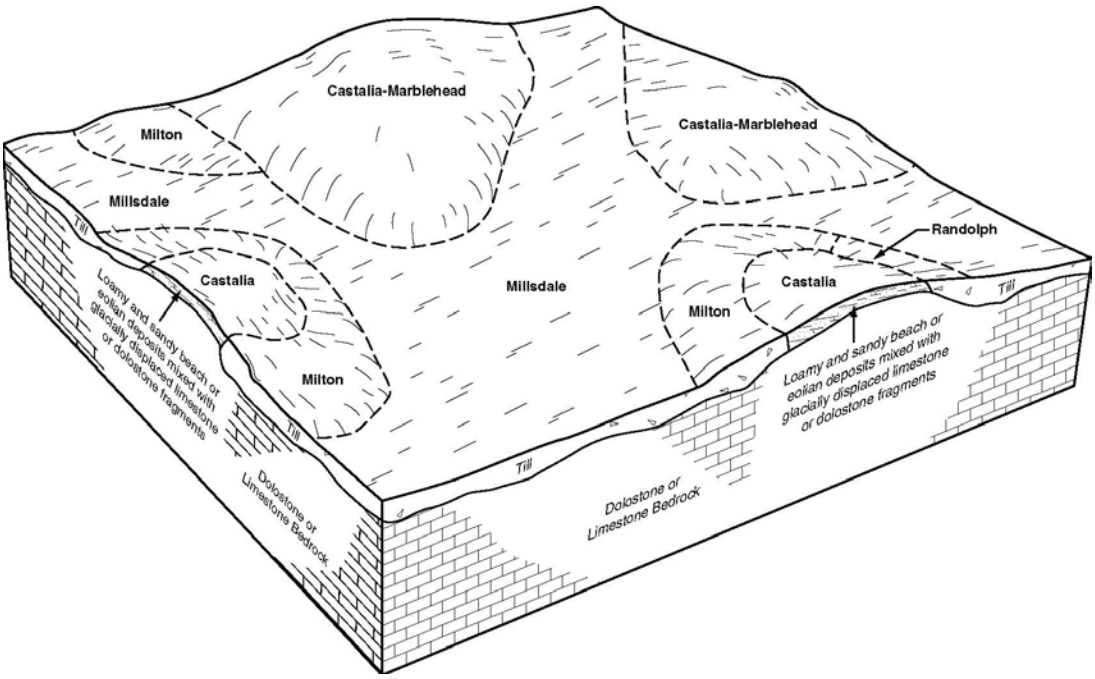

Figure 5. Typical pattern of soils and parent material in the Millsdale-Castalia-Milton association.

8. Millsdale-Castalia-Milton Association (fig. 5)

Moderately deep, very poorly drained and well drained soils that formed in till overlying limestone or dolostone, or in loamy and sandy beach or eolian deposits mixed with glacially displaced limestone or dolostone fragments of local origin

Setting

Landform: Flats, depressions, drainageways on lake plains, and rises and knolls on reefs on lake plains
Slope range: 0 to 6 percent

Composition

Extent of the association in the county: 3 percent
Extent of the soils in the association:
Millsdale and similar soils=35 percent
Castalia and similar soils=23 percent
Milton and similar soils=18 percent
Minor soils=24 percent

Soil Properties and Qualities

Millsdale
Depth class: Moderately deep
Drainage class: Very poorly drained
Parent material: Till overlying limestone or dolostone
Surface textural class: Silty clay loam or stony silty clay loam
Slope: 0 to 1 percent

Castalia
Depth class: Moderately deep
Drainage class: Well drained
Position on the landform: Summits, shoulders, backslopes
Parent material: Loamy and sandy beach or eolian deposits mixed with glacially displaced limestone or dolostone fragments of local origin
Surface textural class: Very stony fine sandy loam or very cobbly loam
Slope: 0 to 6 percent

Milton
Depth class: Moderately deep
Drainage class: Well drained
Position on the landform: Summits, shoulders, backslopes
Parent material: Till overlying limestone or dolostone
Surface textural class: Loam
Slope: 0 to 6 percent

Minor Soils

Dunbridge and Spinks, moderately deep to limestone, soils
Hoytville soils
Marblehead soils which commonly occurs in a complex with Castalia soils
Mermill soils
Nappanee
Pits, quarry
Randolph soils

Use and Management

Major uses: Woodland, pasture, cropland
Management concerns: Ponding, seasonal wetness, droughtiness, high clay content, erosion, depth to bedrock, groundwater contamination, stoniness

Detailed Soil Map Units

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

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

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

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

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, St. Clair loam, 2 to 6 percent slopes is a phase of the St. Clair series.

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 Castalia-Marblehead complex, very stony, 0 to 6 percent slopes *is* an example.

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

Table 4 (p. 313) 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.

AgA=Alvada loam, 0 to 1 percent slopes

Setting
Landform: Flats, depressions, and drainageways on lake plains
Size of areas: 5 to 80 acres

Map Unit Composition
Alvada and similar components: 95 percent

Similar components
Surface layer less than 10 inches thick
Till at 60 to 80 inches
Clay loam surface layer

Contrasting components:
Somewhat poorly drained soils on rises: 5 percent

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

Soil Properties and Qualities

ALVADA
Available water capacity: About 8.1 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 13 to 32 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: Perched
Ponding: Brief
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 8.0 percent
*Parent material:*Loamy, sandy, and gravelly glaciolacustrine deposits overlying till
Permeability: Moderate in the upper part of the solum, moderately rapid in the lower part of the solum, and moderately slow or slow in the substratum
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: 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.

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.
- 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

- 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.
- 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

ALVADA
Pasture amd hayland suitability group: C-1
Hydric soil: Yes

AmA=Aurand fine sandy loam, 0 to 2 percent slopes

Setting
Landform: Flats and rises on lake plains
Position on the landform: Summits, footslopes
Size of areas: 2 to 60 acres

Map Unit Composition
Aurand and similar components: 90 percent

Similar components
Lighter colored surface layer
Till between 40 and 60 inches
Moderately well drained soils
Surface layer less than 10 inches thick
More clay in the subsoil
Sandy loam, loam, or clay loam surface texture
Carbonates between 15 and 25 inches
Stratified substratum between 40 and 60 inches

Contrasting components:
Mermill soils in depressions and drainageways: 7 percent
Alvada soils in depressions and drainageways: 3 percent

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

Soil Properties and Qualities

AURAND
Available water capacity: About 7.0 inches to a depth of 59 inches
Cation-exchange capacity of the surface layer: 8 to 23 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: 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 6.0 percent
Parent material: Loamy glaciolacustrine deposits and the underlying till
Permeability: Moderate in the upper part of the solum, moderately slow or slow in the lower part of the solum, and slow or very slow in the substratum
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Fine sandy loam
Potential for surface runoff: Low
Wind erosion hazard: Moderate

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.
- 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.

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.
- Soil wetness may limit the use of this soil by 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.
- 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 restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- 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.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

AURAND
Pasture amd hayland suitability group: C-1
Hydric soil: No

AnA=Aurand loam, 0 to 2 percent slopes

Setting
Landform: Flats and rises on beach ridges on lake plains
Position on the landform: Footslopes, summits
Size of areas: 2 to 40 acres

Map Unit Composition
Aurand and similar components: 91 percent

Similar components
Lighter colored surface layer
Till at 40 to 60 inches
Moderately well drained soils
Dark colored surface layer less than 10 inches thick
More clay and less sand in the subsoil

Contrasting components:
Mermill soils in depressions and drainageways: 6 percent
Alvada soils in depressions and drainageways: 3 percent

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

Soil Properties and Qualities

AURAND
Available water capacity: About 6.4 inches to a depth of 48 inches
Cation-exchange capacity of the surface layer: 9 to 28 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: 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 6.0 percent
Parent material: Loamy glaciolacustrine deposits and the underlying till
Permeability: Moderate in the upper part of the solum, moderately slow or slow in the lower part of the solum, and slow or very slow in the substratum
Potential frost action: High
Shrink-swell potential: Moderate
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.
- 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.

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.
- 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 restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- 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.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

AURAND
Pasture amd hayland suitability group: C-1
Hydric soil: No

AsA=Aurand-Urban land complex, 0 to 2 percent slopes

Setting
Landform: Flats and rises on lake plains
Position on the landform: Summits, footslopes
Size of areas: 2 to 40 acres

Map Unit Composition
Aurand and similar components: 50 percent

Urban land and similar components: 40 percent

Similar components
Lighter colored surface layer
Moderately well drained soils
More clay in the subsoil
Sandy loam, fine sandy loam, or clay loam surface texture
Stratified substratum between 40 and 60 inches
Surface layer less than 10 inches thick
Till between 40 and 60 inches

Contrasting components:
Mermill soils in depressions and drainageways: 7 percent
Alvada soils in depressions and drainageways : 3 percent

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

Soil Properties and Qualities

AURAND
Available water capacity: About 6.7 inches to a depth of 51 inches
Cation-exchange capacity of the surface layer: 9 to 28 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: 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 6.0 percent
Parent material: Loamy glaciolacustrine deposits and the underlying till
Permeability: Moderate in the upper part of the solum, moderately slow or slow in the lower part of the solum, and slow or very slow in the substratum
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

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 restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- 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.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.

Use and Management Considerations

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

Component Interpretive Groups

AURAND
Pasture amd hayland suitability group: Not rated
Hydric soil: No

URBAN LAND

Use and Management Considerations

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

Component Interpretive Groups

URBAN LAND
Pasture amd hayland suitability group: Not rated
Hydric soil: Unranked

BeB=Belmore sandy loam, 1 to 4 percent slopes

Setting
Landform: Knolls and rises on beach ridges on lake plains
Position on the landform: Summits, backslopes, shoulders
Size of areas: 2 to 20 acres

Map Unit Composition
Belmore and similar components: 90 percent

Similar components
Seasonal high water table at 3.5 to 6 feet
Till at 20 to 60 inches
Darker colored surface layer
Loamy fine sand, loam or fine sandy loam surface layer
Well drained soils
Less clay in the subsoil
Slopes of 0 to 1 percent

Contrasting components:
Bedrock at 20 to 40 inches on similar landform positions: 10 percent

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

Soil Properties and Qualities

BELMORE
Available water capacity: About 7.4 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 5 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: 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: Loamy and gravelly beach deposits
Permeability: Moderately rapid in the solum and rapid in the substratum
Potential frost action: Moderate
Shrink-swell potential: Low
Surface layer texture: Sandy loam
Potential for surface runoff: Very low
Wind erosion hazard: Moderate

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.
- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.

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.

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. Special design of

structures is needed to prevent damage caused by wetness.
- 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

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

Component Interpretive Groups

BELMORE
Pasture amd hayland suitability group: A-1
Hydric soil: No

BfB=Belmore loam, 1 to 4 percent slopes

Setting
Landform: Knolls and rises on beach ridges on lake plains
Position on the landform: Summits, backslopes, shoulders
Size of areas: 3 to 10 acres

Map Unit Composition
Belmore and similar components: 100 percent

Similar components
Redder colored surface layer
Seasonal high water table at 3.5 to 6 feet
Till at 40 to 60 inches
Darker colored surface layer
Slopes of 0 to 1 percent
Sandy loam surface layer

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

Soil Properties and Qualities

BELMORE
Available water capacity: About 7.6 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 6 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: 2.5 to 3.5 feet
Water table kind: Apparent
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loamy and gravelly beach deposits
Permeability: Moderately rapid in the solum and 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

- 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.

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. Special design of structures is needed to prevent damage caused by wetness.
- 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

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

Component Interpretive Groups

BELMORE
Pasture amd hayland suitability group: A-1
Hydric soil: No

CaA=Castalia very cobbly loam, 0 to 2 percent slopes

Setting
Landform: Knolls and rises on reefs on lake plains
Position on the landform: Shoulders, summits
Size of areas: 3 to 70 acres

Map Unit Composition
Castalia and similar components: 90 percent

Similar components
Less than 35 percent rock fragments in the surface and subsoil
Loam, sandy loam, or fine sandy loam surface layer
Bedrock at 10 to 20 inches
More clay in the subsoil

Contrasting components:
Marblehead soils on similar landform positions: 10 percent

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

Soil Properties and Qualities

CASTALIA
Available water capacity: About 1.7 inches to a depth of 21 inches
Cation-exchange capacity of the surface layer: 11 to 28 meq per 100 grams
Depth class: Moderately deep
Depth to root restrictive feature: Bedrock (lithic): 20 to 40 inches
Depth to the top of the seasonal high water table: Greater than 1.7 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 3.0 to 8.0 percent
*Parent material:*Loamy and sandy beach or eolian deposits mixed with glacially displaced limestone or dolostone fragments of local origin
Permeability: Rapid
Potential frost action: Moderate
Shrink-swell potential: Low
Surface layer texture: Very cobbly loam
Rock fragments on surface: 0.1 percent
Potential for surface runoff: Very Low
Wind erosion hazard: Slight

Use and Management Considerations

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.
- Rock fragments on the surface may restrict the operation of farm machinery during pasture renovation.

Woodland

- 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.
- Bedrock may interfere with the construction of haul roads and log landing sites.
- Stones or boulders on the surface obstruct the use of mechanical planting equipment.
- Rock fragments in the soil obstruct the use of mechanical planting equipment.
- Stones restrict the use of equipment during site preparation for planting or seeding.
- 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.
- Because of the high content of rock fragments, excavation is difficult and cutbanks are unstable. Excavations and trench walls should be reinforced.

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.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The high content of large stones affects the ease of excavation and grading.

Component Interpretive Groups

CASTALIA
Pasture amd hayland suitability group: F-1
Hydric soil: No

CbB=Castalia-Marblehead complex, very stony, 0 to 6 percent slopes

Setting
Landform: Knolls and rises on reefs on lake plains
Position on the landform: Backslopes, summits, shoulders
Size of areas: 2 to 250 acres

Map Unit Composition
Castalia and similar components: 60 percent
Marblehead and similar components: 35 percent

Similar components
Areas with less stones on the surface
Less than 35 percent rock fragments in the surface and subsoil
Fine sandy loam or loam surface layer
Bedrock at 10 to 20 inches
Moderately well drained soils

Contrasting components:
Rock outcrops on shoulders and summits: 5 percent

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

Soil Properties and Qualities

CASTALIA
Available water capacity: About 1.6 inches to a depth of 22 inches
Cation-exchange capacity of the surface layer: 11 to 28 meq per 100 grams
Depth class: Moderately deep
Depth to root restrictive feature: Bedrock (lithic): 20 to 40 inches
Depth to the top of the seasonal high water table: Greater than 1.8 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 3.0 to 8.0 percent
Parent material: Loamy and sandy beach or eolian deposits mixed with glacially displaced limestone or dolostone fragments of local origin
Permeability: Rapid
Potential frost action: Moderate
Rock fragments on surface: 3 rcent
Shrink-swell potential: Low
Surface layer texture: Very stony fine sandy loam
Potential for surface runoff: Very low
Wind erosion hazard: Slight

Use and Management Considerations

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.
- Large stones on the surface may restrict the operation of some farm machinery during pasture renovation (fig. 6).

Woodland

- 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.

Figure 6. Stones on the surface of the Castalia-Marblehead complex, very stony, 0 to 6 percent slopes, can interfere with farm machinery during pasture renovation.

- 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.
- Sandy layers in this soil increase the maintenance of haul roads and log landings.
- Bedrock may interfere with the construction of haul roads and log landing sites.
- The volume of rock fragments on the surface may reduce the traction of wheeled harvest equipment.
- The sandiness of the soil may reduce the traction of wheeled harvest equipment and log trucks.
- Stones or boulders on the surface obstruct the use of mechanical planting equipment.
- Sandy layers may slough, thus reducing the efficiency of mechanical planting equipment.
- Rock fragments in the soil obstruct the use of mechanical planting equipment.
- Rock fragments on the surface interfere with the use of site preparation equipment.
- Stones restrict the use of equipment during site preparation for planting or 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.

- Because of the high content of rock fragments, excavation is difficult and cutbanks are unstable. Excavations and trench walls should be reinforced.

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.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The high content of large stones affects the ease of excavation and grading.

Component Interpretive Groups

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

Soil Properties and Qualities

MARBLEHEAD
Available water capacity: About 1.1 inches to a depth of 6 inches
Cation-exchange capacity of the surface layer: 8 to 36 meq per 100 grams
Depth class: Very shallow
Depth to root restrictive feature: Bedrock (lithic): 4 to 10 inches
Depth to the top of the seasonal high water table: Greater than 0.5 feet
Ponding: None
Drainage class: Somewhat excessively drained
Flooding: None
Organic matter content in the surface layer: 3.0 to 12.0 percent
Parent material: Loamy glaciolacustrine deposits overlying limestone or dolostone
Permeability: Moderate
Potential frost action: Moderate
Rock fragments on surface: 3 percent
Shrink-swell potential: Low
Surface layer texture: Gravelly silt loam
Potential for surface runoff: Low
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.
- 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.
- Large stones restrict the use of most farm machinery.

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.
- Large stones on the surface may restrict the operation of some farm machinery during pasture renovation.

Woodland

- 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.
- 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 volume of rock fragments on the surface may reduce the traction of wheeled harvest equipment.
- Stones or boulders on the surface obstruct the use of mechanical planting equipment.
- The depth to hard bedrock restricts the use of equipment during site preparation for planting or seeding and interferes with mechanical planting equipment.
- Rock fragments in the soil obstruct the use of mechanical planting equipment.
- Rock fragments on the surface interfere with the use of site preparation 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.

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

Component Interpretive Groups

MARBLEHEAD
Pasture amd hayland suitability group: E-1
Hydric soil: No

CcA=Colwood fine sandy loam, 0 to 1 percent slopes

Setting
Landform: Flats, depressions, and drainageways on deltas and lake plains
Size of areas: 5 to 450 acres

Map Unit Composition
Colwood and similar components: 90 percent

Similar components
Loamy fine sand or loam surface layer
Mermill
Less clay in the subsoil
Surface layer more than 10 inches thick
Till at 40 to 60 inches
More clay in the subsoil

Contrasting components:
Kibbie soils on rises: 5 percent
Wauseon soils in depressions and drainageways: 5 percent

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

Soil Properties and Qualities

COLWOOD
Available water capacity: About 10.7 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 7 to 27 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 1.0 feet
Drainage class: Very poorly drained
Flooding: None
Organic matter content in the surface layer: 3.0 to 8.0 percent
Parent material: Stratified silty and loamy glaciolacustrine deposits
Permeability: Moderate or moderately slow in the solum, and moderate in the substratum
Potential frost action: High
Shrink-swell potential: Low
Surface layer texture: Fine sandy loam
Potential for surface runoff: Negligible
Wind erosion hazard: Moderate

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.
- 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.

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.
- Soil wetness may limit the use of this soil by log trucks.
- Ponding restricts the safe use of roads by log trucks.

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.
- 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

COLWOOD
Pasture amd hayland suitability group: C-1
Hydric soil: Yes

CdA=Colwood loam, 0 to 1 percent slopes

Setting
Landform: Flats, depressions, and drainageways on deltas and lake plains
Size of areas: 5 to 150 acres

Map Unit Composition
Colwood and similar components: 90 percent

Similar components
Fine sandy loam surface layer
Less clay in the subsoil
Mermill soils
Surface layer more than 10 inches thick

Contrasting components:
Kibbie soils on rises: 5 percent
Wauseon soils in depressions and drainageways: 5 percent

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

Soil Properties and Qualities

COLWOOD
Available water capacity: About 11.0 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 9 to 32 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 1.0 feet
Drainage class: Very poorly drained
Flooding: None
Organic matter content in the surface layer: 3.0 to 8.0 percent
Parent material: Stratified silty and loamy glaciolacustrine deposits
Permeability: Moderate or moderately slow in the solum, and moderate in the substratum
Potential frost action: High
Shrink-swell potential: Low
Surface layer texture: 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.

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

- 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.
- 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

COLWOOD
Pasture amd hayland suitability group: C-1
Hydric soil: Yes

CtA=Colwood-Urban land complex, 0 to 1 percent slopes

Setting
Landform: Flats, depressions, and drainageways on deltas and lake plains
Size of areas: 3 to 30 acres

Map Unit Composition
Colwood and similar components: 55 percent

Urban land and similar components: 35 percent

Similar components
Fine sandy loam surface layer
Mermill soils
Surface layer more than 10 inches thick

Contrasting components:
Kibbie soils on rises: 5 percent
Wauseon soils in depressions and drainageways: 5 percent

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

Soil Properties and Qualities

COLWOOD
Available water capacity: About 11.0 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 9 to 32 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 1.0 feet
Drainage class: Very poorly drained
Flooding: None
Organic matter content in the surface layer: 3.0 to 8.0 percent
Parent material: Stratified silty and loamy glaciolacustrine deposits
Permeability: Moderate or moderately slow in the solum, and moderate in the substratum
Potential frost action: High
Shrink-swell potential: Low
Surface layer texture: Loam
Potential for surface runoff: Negligible
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.
- 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

COLWOOD
Pasture amd hayland suitability group: Not rated
Hydric soil: Yes

URBAN LAND

Use and Management Considerations

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

Component Interpretive Groups

URBAN LAND
Pasture amd hayland suitability group: Not rated
Hydric soil: Unranked

CvA=Cygnet loam, 0 to 2 percent slopes

Setting
Landform: Rises on beach ridges and longshore bars on lake plains
Position on the landform: Summit, shoulder
Size of areas: 2 to 100 acres

Map Unit Composition
Cygnet and similar components: 90 percent

Similar components
Till below 60 inches
Fine sandy loam surface layer
More sand and less clay in the subsoil
More rock fragments in the upper part of the substratum
Somewhat poorly drained soils with till at 20 to 40 inches
Well drained soils

Contrasting components:
Alvada soils in depressions and drainageways: 10 percent

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

Soil Properties and Qualities

CYGNET
Available water capacity: About 8.4 inches to a depth of 53 inches
Cation-exchange capacity of the surface layer: 7 to 18 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: 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 3.0 percent
Parent material: Loamy glaciolacustrine deposits and the underlying till
Permeability: Moderate in the upper part of the solum, moderately rapid in the lower part of the solum, and slow or very slow in the substratum
Potential frost action: High
Shrink-swell potential: Moderate
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.
- Systematic subsurface drainage will extend the period of planting and harvesting crops.

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.
- 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.
- Rock fragments in the soil obstruct the use 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.
- 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 dense nature of the subsurface layer increases the difficulty of digging and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- 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

CYGNET
Pasture amd hayland suitability group: A-6
Hydric soil: No

CxB=Castalia-Marblehead-Urban land complex, very stony, 0 to 6 percent slopes

Setting
Landform: Knolls and rises on reefs on lake plains
Position on the landform: Backslopes, summits, shoulders
Size of areas: 5 to 150 acres

Map Unit Composition
Castalia and similar components: 40 percent
Marblehead and similar components: 30 percent
Urban land and similar components: 25 percent

Similar components
Bedrock at 10 to 20 inches
Fine sandy loam or loam surface layer
Less than 35 percent rock fragments in the surface and subsoil
Moderately well drained soils
Areas with less stones on the surface

Contrasting components:
Rock outcrops on shoulders and summits: 5 percent

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

Soil Properties and Qualities

CASTALIA
Available water capacity: About 1.6 inches to a depth of 22 inches
Cation-exchange capacity of the surface layer: 11 to 28 meq per 100 grams
Depth class: Moderately deep
Depth to root restrictive feature: Bedrock (lithic): 20 to 40 inches
Depth to the top of the seasonal high water table: Greater than 1.8 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 3.0 to 8.0 percent
Parent material: Loamy and sandy beach or eolian deposits mixed with glacially displaced limestone or dolostone fragments of local origin
Permeability: Rapid
Potential frost action: Moderate
Rock fragments on surface: 3 percent
Shrink-swell potential: Low
Surface layer texture: Very stony fine sandy loam
Potential for surface runoff: Very low
Wind erosion hazard: Slight

Use and Management Considerations

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.
- Because of the high content of rock fragments, excavation is difficult and cutbanks are unstable. Excavations and trench walls should be reinforced.

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.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The high content of large stones affects the ease of excavation and grading.

Component Interpretive Groups

CASTALIA
Pasture amd hayland suitability group: Not rated
Hydric soil: No

Soil Properties and Qualities

MARBLEHEAD
Available water capacity: About 1.1 inches to a depth of 6 inches
Cation-exchange capacity of the surface layer: 8 to 36 meq per 100 grams
Depth class: Very shallow
Depth to root restrictive feature: Bedrock (lithic): 4 to 10 inches
Depth to the top of the seasonal high water table: Greater than 0.5 feet
Ponding: None
Drainage class: Somewhat excessively drained
Flooding: None
Organic matter content in the surface layer: 3.0 to 12.0 percent
Parent material: Loamy glaciolacustrine deposits overlying limestone or dolostone
Permeability: Moderate
Potential frost action: Moderate
Rock fragments on surface: 3 percent
Shrink-swell potential: Low
Surface layer texture: Gravelly silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

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.

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

Component Interpretive Groups

MARBLEHEAD
Pasture amd hayland suitability group: Not rated
Hydric soil: No

URBAN LAND

Use and Management Considerations

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

Component Interpretive Groups

URBAN LAND
Pasture amd hayland suitability group: Not rated
Hydric soil: Unranked

DgA=Digby sandy loam, 0 to 2 percent slopes

Setting
Landform: Flats and rises on beach ridges on lake plains
Position on the landform: Shoulder, summit
Size of areas: 2 to 75 acres

Map Unit Composition
Digby and similar components: 95 percent

Similar components
Darker colored surface layer
Less clay in the subsoil
Moderately well drained soils
Loam, fine sandy loam, or loamy fine sand surface layer
Slopes of 2 to 6 percent
Till at 40 to 60 inches
Haskins and Digby, till substratum soils

Contrasting components:
Well drained soils on knolls: 5 percent

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

Soil Properties and Qualities

DIGBY
Available water capacity: About 6.1 inches to a depth of 60 inches

Cation-exchange capacity of the surface layer: 5 to 17 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: 1.0 to 3.0 percent
Parent material: Loamy and gravelly beach or glaciolacustrine deposits
Permeability: Moderate in the solum, and rapid in the substratum
Potential frost action: High
Shrink-swell potential: Low
Surface layer texture: Sandy loam
Potential for surface runoff: Negligible
Wind erosion hazard: Moderate

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.
- 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.

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.
- Soil wetness may limit the use of this soil by 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.
- 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 restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- 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

- 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

DIGBY
Pasture amd hayland suitability group: C-1
Hydric soil: No

DhA=Digby loam, 0 to 2 percent slopes

Setting
Landform: Flats and rises on beach ridges on lake plains
Position on the landform: Shoulder, summit
*Size of areas:*3 to 25 acres

Map Unit Composition
Digby and similar components: 90 percent

Similar components
Sandy loam or fine sandy loam surface layer
Less clay in the subsoil
Moderately well drained soils
Haskins and Digby, till substratum soils
Till at 40 to 60 inches
Slopes of 2 to 6 percent
Darker colored surface layer

Contrasting components:
Well drained soils on knolls: 10 percent

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

Soil Properties and Qualities

DIGBY
Available water capacity: About 6.5 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 7 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: 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: 1.0 to 3.0 percent
Parent material: Loamy and gravelly beach or glaciolacustrine deposits
Permeability: Moderate in the solum, and rapid in the substratum
Potential frost action: High
Shrink-swell potential: Low
Surface layer texture: 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.
- 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.

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.
- 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.
- 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 restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- 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

- 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

DIGBY
Pasture amd hayland suitability group: C-1
Hydric soil: No

DrA=Dunbridge sandy loam, 0 to 2 percent slopes

Setting
Landform: Knolls and rises on reefs on lake plains
Position on the landform: Summit, shoulder
Size of areas: 3 to 40 acres

Map Unit Composition
Dunbridge and similar components: 90 percent

Similar components
Loamy fine sand, fine sandy loam, or loam surface layer
Less clay in the subsoil
Slopes of 2 to 6 percent
Bedrock at 10 to 18 inches
Moderately well drained soils
Bedrock at 42 to 60 inches
Areas with more stones on the surface
Ritchey soils
Milton soils

Contrasting components:
Castalia soils on similar landform positions: 5 percent
Marblehead soils on similar landform positions: 5 percent

Map Unit Interpretive Groups
Land capability classification: 3s
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

DUNBRIDGE
Available water capacity: About 3.5 inches to a depth of 25 inches
Cation-exchange capacity of the surface layer: 6 to 15 meq per 100 grams
Depth class: Shallow to deep
Depth to root restrictive feature: Bedrock (lithic): 18 to 42 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: 2.0 to 4.0 percent
Parent material: Sandy and loamy glaciolacustrine deposits overlying limestone or dolostone
Permeability: Moderately rapid or rapid in the upper part of the solum, and moderately rapid in the lower part of the solum
Potential frost action: Moderate
Shrink-swell potential: Low
Surface layer texture: Sandy loam
Potential for surface runoff: Negligible
Wind erosion hazard: Moderate

Use and Management Considerations

Cropland

- The rooting depth of crops is restricted by bedrock.
- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind 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.

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.
- Bedrock may interfere with the construction of haul roads and log landing sites.

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.

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

Component Interpretive Groups

DUNBRIDGE
Pasture amd hayland suitability group: F-1
Hydric soil: No

DsA=Dunbridge-Spinks, deep to limestone, loamy fine sands, 0 to 2 percent slopes

Setting
Landform: Knolls and rises on reefs on lake plains
Position on the landform: Summit, shoulder
Size of areas: 3 to 65 acres

Map Unit Composition
Dunbridge and similar components: 47 percent
Spinks and similar components: 43 percent

Similar components
Ritchey soils
Less clay in the subsoil
Loamy sand, loam, or fine sandy loam surface layer
Milton soils
Bedrock at 10 to 18 inches
Dark colored surface layer more than 10 inches thick

Contrasting components:
Castalia soils on similar landform positions: 5 percent
Marblehead soils on similar landform positions: 5 percent

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

Soil Properties and Qualities

DUNBRIDGE
Available water capacity: About 3.1 inches to a depth of 30 inches
Cation-exchange capacity of the surface layer: 6 to 13 meq per 100 grams
Depth class: Shallow to deep
Depth to root restrictive feature: Bedrock (lithic): 18 to 42 inches
Depth to the top of the seasonal high water table: Greater than 2.1 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 2.0 to 4.0 percent
Parent material: Sandy and loamy glaciolacustrine deposits overlying limestone or dolostone
Permeability: Moderately rapid or rapid in the upper part of the solum, and moderately rapid in the lower part of the solum

Potential frost action: Moderate
Shrink-swell potential: Low
Surface layer texture: Loamy fine sand
Potential for surface runoff: Negligible
Wind erosion hazard: Severe

Use and Management Considerations

Cropland

- The rooting depth of crops is restricted by bedrock.
- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind 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.

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.
- Bedrock may interfere with the construction of haul roads and log landing sites.
- 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.

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

Component Interpretive Groups

DUNBRIDGE
Pasture amd hayland suitability group: F-1
Hydric soil: No

Soil Properties and Qualities

SPINKS
Available water capacity: About 4.2 inches to a depth of 51 inches
Cation-exchange capacity of the surface layer: 2 to 13 meq per 100 grams
Depth class: Deep
Depth to root restrictive feature: Bedrock (lithic): 42 to 60 inches
Depth to the top of the seasonal high water table: Greater than 4.2 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 0.5 to 2.0 percent
Parent material: Sandy eolian or glaciolacustrine deposits overlying limestone or dolostone
Permeability: Moderately rapid or rapid
Potential frost action: Low
Shrink-swell potential: Low
Surface layer texture: Loamy fine sand
Potential for surface runoff: Negligible
Wind erosion hazard: Severe

Use and Management Considerations

Cropland

- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind 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.
- Plant nutrients are leached at an accelerated rate because of the sandy layer.

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.
- A loss of soil productivity may occur following an episode of fire.

Building sites

- The depth to bedrock and hardness of the bedrock reduce the ease of excavation and increase the difficulty of constructing foundations and installing utilities.
- 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 limited depth to bedrock reduces the filtering capacity of the soil and greatly increases the difficulty of proper installation of the effluent distribution lines.
- 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

- This soil is well suited to use as a site for local roads and streets.

Component Interpretive Groups

SPINKS
Pasture amd hayland suitability group: B-1
Hydric soil: No

DsB=Dunbridge-Spinks, deep to limestone, loamy fine sands, 2 to 6 percent slopes

Setting
Landform: Knolls on reefs on lake plains
Position on the landform: Summits, shoulders, backslopes
Size of areas: 3 to 40 acres

Map Unit Composition
Dunbridge and similar components: 47 percent
Spinks and similar components: 43 percent

Similar components
Ritchey soils
Less clay in the subsoil
Fine sandy loam, sandy loam, loamy sand, or loam surface lay
Milton soils
Bedrock at 10 to 18 inches
Stones or boulders on the surface or in the soil
Slopes of 0 to 2 percent
Dark colored surface layer more than 10 inches thick

Contrasting components:
Castalia soils on similar landform positions: 5 percent
Marblehead soils on similar landform positions: 5 percent

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

Soil Properties and Qualities

DUNBRIDGE
Available water capacity: About 3.1 inches to a depth of 25 inches
Cation-exchange capacity of the surface layer: 6 to 13 meq per 100 grams
Depth class: Shallow to deep
Depth to root restrictive feature: Bedrock (lithic): 18 to 42 inches
Depth to the top of the seasonal high water table: Greater than 2.1 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 2.0 to 4.0 percent
Parent material: Sandy and loamy glaciolacustrine deposits overlying limestone or dolostone
Permeability: Moderately rapid or rapid in the upper part of the solum, and moderately rapid in the lower part of the solum
Potential frost action: Moderate
Shrink-swell potential: Low
Surface layer texture: Loamy fine sand
Potential for surface runoff: Very low
Wind erosion hazard: Severe

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.
- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind 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.

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.
- Bedrock may interfere with the construction of haul roads and log landing sites.
- 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.

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

Component Interpretive Groups

DUNBRIDGE
Pasture amd hayland suitability group: F-1
Hydric soil: No

Soil Properties and Qualities

SPINKS
Available water capacity: About 4.2 inches to a depth of 51 inches
Cation-exchange capacity of the surface layer: 2 to 13 meq per 100 grams
Depth class: Deep
Depth to root restrictive feature: Bedrock (lithic): 42 to 60 inches
Depth to the top of the seasonal high water table: Greater than 4.2 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 0.5 to 2.0 percent
Parent material: Sandy eolian or glaciolacustrine deposits overlying limestone or dolostone
Permeability: Moderately rapid or rapid
Potential frost action: Low
Shrink-swell potential: Low
Surface layer texture: Loamy fine sand
Potential for surface runoff: Negligible
Wind erosion hazard: Severe

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.
- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind 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.
- Plant nutrients are leached at an accelerated rate because of the sandy layer.

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.
- A loss of soil productivity may occur following an episode of fire.

Building sites

- The depth to bedrock and hardness of the bedrock reduce the ease of excavation and increase the difficulty of constructing foundations and installing utilities.
- 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 limited depth to bedrock reduces the filtering capacity of the soil and greatly increases the difficulty of proper installation of the effluent distribution lines.
- 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

- This soil is well suited to use as a site for local roads and streets.

Component Interpretive Groups

SPINKS
Pasture amd hayland suitability group: B-1
Hydric soil: No

EaA=Eel loam, 0 to 2 percent slopes, frequently flooded

Setting
Landform: Flats, rises, and natural levees on flood plains
Size of areas: 2 to 50 acres

Map Unit Composition
Eel and similar components: 100 percent

Similar components
Fine sandy loam surface layer
Less clay in the subsoil
Bedrock between 48 and 60 inches
Well drained soils
Somewhat poorly drained soils
Slopes of 2 to 6 percent
Darker colored surface layer

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

EEL
Available water capacity: About 12.1 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 9 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: 1.5 to 2.0 feet
Water table kind: Apparent
Ponding: None
Drainage class: Moderately well drained
Flooding: Frequent
Organic matter content in the surface layer: 1.0 to 3.0 percent
*Parent material:*Loamy alluvium
Permeability: Moderate in the solum, and moderate or moderately rapid in the substratum
Potential frost action: High
Shrink-swell potential: Low
Surface layer texture: 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.
- 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.
- 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.

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

EEL
Pasture amd hayland suitability group: A-5
Hydric soil: No

EmA=Eel silt loam, 0 to 2 percent slopes, frequently flooded

Setting
Landform: Flats, rises, and natural levees on flood plains
Size of areas: 3 to 100 acres

Map Unit Composition
Eel and similar components: 100 percent

Similar components
Loam or silty clay loam surface layer
Well drained soils
Less sand in the subsoil
Bedrock at 48 to 60 inches
Few scattered wet spots
Somewhat poorly drained soils
Darker colored surface layer

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

EEL
Available water capacity: About 12.1 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 9 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: 1.5 to 2.0 feet
Water table kind: Apparent
Ponding: None
Drainage class: Moderately well drained
Flooding: Frequent
Organic matter content in the surface layer: 1.0 to 3.0 percent
*Parent material:*Loamy alluvium
Permeability: Moderate in the solum, and moderate or moderately rapid in the substratum
Potential frost action: High
Shrink-swell potential: Low
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.
- 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.

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.
- 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.

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

EEL
Pasture amd hayland suitability group: A-5
Hydric soil: No

EnA=Eel silt loam, moderately deep to limestone, 0 to 2 percent slopes, frequently flooded

Setting
Landform: Flats and rises on flood plains
Size of areas: 5 to 40 acres

Map Unit Composition
Eel and similar components: 100 percent

Similar components
Bedrock at 42 to 60 inches
Loam surface layer
Well drained soils with a dark colored surface layer
Less sand in the subsoil
Bedrock at 10 to 20 inches
Less clay in the subsoil
Carbonates on the surface
Darker colored surface layer

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

EEL
Available water capacity: About 6.4 inches to a depth of 34 inches
Cation-exchange capacity of the surface layer: 9 to 22 meq per 100 grams
Depth class: Moderately deep or deep
Depth to root restrictive feature: Bedrock (lithic): 20 to 42 inches

Depth to the top of the seasonal high water table: 1.5 to 2.0 feet
Water table kind: Apparent
Ponding: None
Drainage class: Moderately well drained
Flooding: Frequent
Organic matter content in the surface layer: 1.0 to 3.0 percent
*Parent material:*Loamy alluvium overlying limestone and dolostone
Permeability: Moderate
Potential frost action: High
Shrink-swell potential: Low
Surface layer texture: Silt loam
Potential for surface runoff: Negligible
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The rooting depth of crops is restricted by bedrock.
- 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.

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.
- 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.
- 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 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.
- 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

EEL
Pasture amd hayland suitability group: A-5
Hydric soil: No

FcA=Flatrock silt loam, 0 to 2 percent slopes, occasionally flooded

Setting
Landform: Flats, rises, and natural levees on flood plains
Size of areas: 5 to 75 acres

Map Unit Composition
Flatrock and similar components: 90 percent

Similar components
Darker colored surface layer
Loam surface layer
Somewhat poorly drained soils
Till at 60 to 80 inches
Well drained soils

Contrasting components:
Sloan soils in backswamps: 10 percent

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

Soil Properties and Qualities

FLATROCK
Available water capacity: About 11.8 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 9 to 22 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: 1.0 to 2.0 feet
Water table kind: Apparent
Ponding: None
Drainage class: Moderately well drained
Flooding: Occasional
Organic matter content in the surface layer: 1.0 to 3.0 percent
*Parent material:*Loamy alluvium
Permeability: Moderate in the solum, and moderate or moderately rapid in the substratum
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.
- 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.
- 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.
- 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.
- 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

- 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.
- 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

FLATROCK
Pasture amd hayland suitability group: A-5
Hydric soil: No

FuA=Fulton silty clay loam, till substratum, 0 to 2 percent slopes

Setting
Landform: Flats and rises on lake plains
Position on the landform: Shoulders, summits
Size of areas: 3 to 100 acres

Map Unit Composition
Fulton and similar components: 95 percent

Similar components
Till at 40 to 60 inches
Moderately well drained soils
Silt loam surface layer
Less clay in the subsoil
Till below 80 inches
Slopes of 2 to 6 percent
Soils formed in till

Contrasting components:
Latty, till substratum soils in depressions and drainageways: 5 percent

Map Unit Interpretive Groups
Land capability classification: 3w
Prime farmland: Prime farmland if drained

Soil Properties and Qualities

FULTON
Available water capacity: About 7.4 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 15 to 30 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Dense material: 60 to 80 inches
Depth to the top of the seasonal high water table: 0.5 to 1.0 feet
Water table kind: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Organic matter content in the surface layer: 2.0 to 3.0 percent
Parent material: Clayey glaciolacustrine deposits overlying till
Permeability: Slow in the solum and in the lacustrine substratum, and slow or very slow in the till substratum
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.
- Clods may form if the soil is tilled when wet.
- 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.
- Because of the stickiness of the soil, the use of equipment for site preparation is restricted to the drier periods.
- 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.
- 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 restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- 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

FULTON
Pasture amd hayland suitability group: C-2
Hydric soil: No

FuB=Fulton silty clay loam, till substratum, 2 to 6 percent slopes

Setting
Landform: Rises, knolls, and dissected areas along streams on lake plains
Position on the landform: Summits, shoulders, backslopes
Size of areas: 2 to 25 acres

Map Unit Composition
Fulton and similar components: 95 percent

Similar components
Slopes of 0 to 2 percent
Moderately well drained soils with till at 40 to 60 inches
Silt loam, loam, or clay loam surface layer
Eroded areas with a thinner surface layer
Till at 20 to 40 inches
Slopes of 6 to 12 percent
Carbonates at 10 to 22 inches

Contrasting components:
Severely eroded areas that are very shallow to carbonates on shoulders and backslopes: 5 percent

Map Unit Interpretive Groups
Land capability classification: 3e
Prime farmland: Prime farmland if drained

Soil Properties and Qualities

FULTON
Available water capacity: About 7.2 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 15 to 30 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Dense material: 60 to 80 inches
Depth to the top of the seasonal high water table: 0.5 to 1.0 feet
Water table kind: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Organic matter content in the surface layer: 2.0 to 3.0 percent
Parent material: Clayey glaciolacustrine deposits overlying till
Permeability: Slow in the solum and in the lacustrine substratum, and slow or very slow in the till substratum
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

- 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.
- Clods may form if the soil is tilled when wet.
- 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.
- 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 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 restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- 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

FULTON
Pasture amd hayland suitability group: C-2
Hydric soil: No

FzA=Fulton, till substratum-Urban land complex, 0 to 2 percent slopes

Setting
Landform: Flats and rises on lake plains
Position on the landform: Shoulders, summits
Size of areas: 5 to 225 acres

Map Unit Composition
Fulton and similar components: 60 percent
Urban land and similar components: 35 percent

Similar components
Less clay in the subsoil
Moderately well drained soils
Silt loam surface layer
Slopes of 2 to 6 percent
Soils formed in till
Till at 40 to 60 inches
Till below 80 inches

Contrasting components:
Latty, till substratum soils in depressions and drainageways: 5 percent

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

Soil Properties and Qualities

FULTON
Available water capacity: About 7.3 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 15 to 30 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Dense material: 60 to 80 inches
Depth to the top of the seasonal high water table: 0.5 to 1.0 feet
Water table kind: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Organic matter content in the surface layer: 2.0 to 3.0 percent
Parent material: Clayey glaciolacustrine deposits overlying till
Permeability: Slow in the solum and in the lacustrine substratum, and slow or very slow in the till substratum
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

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 restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- 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

FULTON
Pasture amd hayland suitability group: Not rated
Hydric soil: No

URBAN LAND

Use and Management Considerations

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

Component Interpretive Groups

URBAN LAND
Pasture amd hayland suitability group: Not rated
Hydric soil: Unranked

GmA=Genesee loam, 0 to 2 percent slopes, frequently flooded

Setting
Landform: Flats, rises, and natural levees on flood plains
Size of areas: 2 to 60 acres

Map Unit Composition
Genesee and similar components: 100 percent

Similar components
Areas subject to occasional flooding
Fine sandy loam, sandy loam, or silt loam surface layer
Less clay in the subsoil
Darker colored surface layer more than 10 inches thick
Moderately well drained soils
Bedrock at 48 to 60 inches

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

GENESEE
Available water capacity: About 12.1 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 9 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 2.0 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: 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: Negligible
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 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

GENESEE
Pasture amd hayland suitability group: A-5
Hydric soil: No

GnA=Genesee silt loam, 0 to 2 percent slopes, frequently flooded

Setting
Landform: Flats, rises, and natural levees on flood plains
Size of areas: 5 to 100 acres

Map Unit Composition
Genesee and similar components: 100 percent

Similar components
Gently sloping areas along drainageways
Areas subject to occasional flooding
Bedrock at 48 to 60 inches
Darker colored surface layer more than 10 inches thick
Less sand in the subsoil
Moderately well drained soils

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

GENESEE
Available water capacity: About 12.1 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 9 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 2.0 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: 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: Negligible
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.
- 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 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

GENESEE
Pasture amd hayland suitability group: A-5
Hydric soil: No

GpA=Granby loamy fine sand, till substratum, 0 to 1 percent slopes

Setting
Landform: Flats, depressions, and drainageways on lake plains
Size of areas: 2 to 30 acres

Map Unit Composition
Granby and similar components: 85 percent

Similar components
More clay in the subsoil
Fine sandy loam surface layer
Till at 40 to 60 inches

Contrasting components:
Tedrow soils on rises: 10 percent
Till at 20 to 40 inches on similar landform positions: 5 percent

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

Soil Properties and Qualities

GRANBY
Available water capacity: About 5.1 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 7 to 20 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Dense material: 60 to 80 inches
Depth to the top of the seasonal high water table: 0 to 1 foot below the surface
Water table kind: Apparent
Ponding: Brief
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: Sandy glaciolacustrine deposits overlying till
Permeability: Rapid in the sandy solum and substratum, and slow or very slow in the till substratum
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Loamy fine sand
Potential for surface runoff: Negligible
Wind erosion hazard: Severe

Use and Management Considerations

Cropland

- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- 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.
- A combination of surface and subsurface drainage helps to remove excess water.

- The effectiveness of subsurface drains may be reduced because the drains can become filled with sand.
- Plant nutrients are leached at an accelerated rate because of the sandy layer.

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.

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.
- Soil wetness may limit the use of this soil by log trucks.
- Ponding restricts the safe use of roads by 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.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

Component Interpretive Groups

GRANBY
Pasture amd hayland suitability group: C-1
Hydric soil: Yes

HaA=Haney sandy loam, 0 to 2 percent slopes

Setting
Landform: Flats and rises on beach ridges on lake plains
Position on the landform: Summits, shoulders
Size of areas: 2 to 25 acres

Map Unit Composition
Haney and similar components: 100 percent

Similar components
Till at 40 to 60 inches
Well drained soils
Less clay in the subsoil
Loam, fine sandy loam, or loamy fine sand surface layer
Darker colored surface layer
Somewhat poorly drained soils
Few scattered wet seepy spots

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

Soil Properties and Qualities

HANEY
Available water capacity: About 6.3 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 5 to 17 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: 2.5 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: Loamy and gravelly beach or glaciolacustrine deposits
Permeability: Moderate in the solum, and rapid in the substratum
Potential frost action: High
Shrink-swell potential: Low
Surface layer texture: Sandy loam
Potential for surface runoff: Negligible
Wind erosion hazard: Moderate

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.

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.

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. Special design of structures is needed to prevent damage caused by wetness.
- 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 restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- 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

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

Component Interpretive Groups

HANEY
Pasture amd hayland suitability group: A-6
Hydric soil: No

HaB=Haney sandy loam, 2 to 6 percent slopes

Setting
Landform: Knolls and rises on beach ridges on lake plains
Position on the landform: Summits, shoulders, backslopes
Size of areas: 2 to 10 acres

Map Unit Composition
Haney and similar components: 100 percent

Similar components
Slopes of 0 to 2 percent
Somewhat poorly drained soils
Till at 40 to 60 inches
Well drained soils
Few scattered wet seepy spots
Less clay in the subsoil

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

Soil Properties and Qualities

HANEY
Available water capacity: About 6.3 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 5 to 17 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: 2.5 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: Loamy and gravelly beach or glaciolacustrine deposits
Permeability: Moderate in the solum, and rapid in the substratum
Potential frost action: High
Shrink-swell potential: Low
Surface layer texture: Sandy loam
Potential for surface runoff: Low
Wind erosion hazard: Moderate

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.

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.

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. Special design of structures is needed to prevent damage caused by wetness.
- 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 restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- 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

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

Component Interpretive Groups

HANEY
Pasture amd hayland suitability group: A-6
Hydric soil: No

HdA=Haney loam, 0 to 2 percent slopes

Setting
Landform: Flats and rises on beach ridges on lake plains
Position on the landform: Shoulder, summits
Size of areas: 5 to 15 acres

Map Unit Composition
Haney and similar components: 100 percent

Similar components
Sandy loam or fine sandy loam surface layer
Darker colored surface layer
Somewhat poorly drained soils
Till at 20 to 40 inches
Till at 40 to 60 inches
Less clay in the subsoil
Few scattered wet or seepy spots

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

Soil Properties and Qualities

HANEY
Available water capacity: About 6.7 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 7 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: 2.5 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: Loamy and gravelly beach or glaciolacustrine deposits
Permeability: Moderate in the solum, and rapid in the substratum
Potential frost action: High
Shrink-swell potential: Low
Surface layer texture: 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.

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. Special design of structures is needed to prevent damage caused by wetness.
- 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 restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- 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

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

Component Interpretive Groups

HANEY
Pasture amd hayland suitability group: A-6
Hydric soil: No

HdB=Haney loam, 2 to 6 percent slopes

Setting
Landform: Knolls and rises on beach ridges on lake plains
Position on the landform: Summits, shoulders, backslopes
Size of areas: 5 to 15 acres

Map Unit Composition
Haney and similar components: 100 percent

Similar components
Darker colored surface layer
Sandy loam, clay loam, or fine sandy loam surface layer
Somewhat poorly drained soils
Slopes of 0 to 2 percent
More clay in the subsoil
Till at 20 to 40 inches
Till at 40 to 60 inches
Less clay in the subsoil
Well drained soils
Few scattered wet or seepy spots

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

Soil Properties and Qualities

HANEY
Available water capacity: About 6.7 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 7 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: 2.5 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: Loamy and gravelly beach or glaciolacustrine deposits
Permeability: Moderate in the solum, and rapid in the substratum
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.

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. Special design of structures is needed to prevent damage caused by wetness.

- 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 restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- 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

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

Component Interpretive Groups

HANEY
Pasture amd hayland suitability group: A-6
Hydric soil: No

HeA=Haskins and Digby, till substratum, fine sandy loams, 0 to 2 percent slopes

Setting
Landform: Flats and rises on lake plains
Position on the landform: Summits, shoulder
Size of areas: 2 to 25 acres

Map Unit Composition
Haskins and similar components: 46 percent
Digby, till substratum and similar components: 44 percent

Similar components
Darker colored surface layer
Moderately well drained soils
Less clay in the subsoil
Loam or sandy loam surface layer
Kibbie soils
Nappanee soils
Rimer soils

Contrasting components:
Hoytville soils in depressions and drainageways: 5 percent
Mermill soils in depressions and drainageways: 5 percent

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

Soil Properties and Qualities

HASKINS
Available water capacity: About 6.1 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 6 to 17 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 glaciolacustrine deposits and the underlying till
Permeability: Moderate in the upper part of the solum, moderately slow or slow in the lower part of the solum, and slow or very slow in the substratum
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Fine sandy loam
Potential for surface runoff: Negligible
Wind erosion hazard: Moderate

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.
- 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.

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.
- Soil wetness may limit the use of this soil by 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.

Septic tank absorption fields

- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- 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

HASKINS
Pasture amd hayland suitability group: C-1
Hydric soil: No

Soil Properties and Qualities

DIGBY, till substratum
Available water capacity: About 5.7 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 5 to 17 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 glaciolacustrine deposits over till
Permeability: Moderate in the solum, rapid in the sandy and gravelly substratum, and slow or very slow in the till substratum
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Fine sandy loam
Potential for surface runoff: Low
Wind erosion hazard: Moderate

Use and Management Considerations

Cropland

- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind 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.
- 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.

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.

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.
- Soil wetness may limit the use of this soil by 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.
- 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 restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- 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

- 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

DIGBY, till substratum
Pasture amd hayland suitability group: C-1
Hydric soil: No

HeB=Haskins and Digby, till substratum, fine sandy loams, 2 to 6 percent slopes

Setting
Landform: Knolls and rises on lake plains
Position on the landform: Summit, shoulders, backslopes
Size of areas: 2 to 15 acres

Map Unit Composition
Haskins and similar components: 46 percent
Digby, till substratum and similar components: 44 percent

Similar components
Sandy loam surface layer
Rimer soils
Moderately well drained soils
Nappanee soils
Kibbie soils
Till at 42 to 60 inches
Slopes of 0 to 2 percent

Contrasting components:
Well drained soils on knolls: 10 percent

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

Soil Properties and Qualities

HASKINS
Available water capacity: About 6.1 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 6 to 17 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 glaciolacustrine deposits and the underlying till
Permeability: Moderate in the upper part of the solum, moderately slow or slow in the lower part of the solum, and slow or very slow in the substratum
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Fine sandy loam
Potential for surface runoff: Low
Wind erosion hazard: Moderate

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.
- 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.

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.
- Soil wetness may limit the use of this soil by 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.

Septic tank absorption fields

- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- 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

HASKINS
Pasture amd hayland suitability group: C-1
Hydric soil: No

Soil Properties and Qualities

DIGBY, till substratum
Available water capacity: About 5.7 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 5 to 17 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 glaciolacustrine deposits over till
Permeability: Moderate in the solum, rapid in the sandy and gravelly substratum, and slow or very slow in the till substratum
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Fine sandy loam
Potential for surface runoff: Medium
Wind erosion hazard: Moderate

Use and Management Considerations

Cropland

- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind 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.
- 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.

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.

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.
- Soil wetness may limit the use of this soil by 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.
- 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 restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- 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

- 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

DIGBY, till substratum
Pasture amd hayland suitability group: C-1
Hydric soil: No

HfA=Haskins and Digby, till substratum, loams, 0 to 2 percent slopes

Setting
Landform: Flats and rises on lake plains
Position on the landform: Summits, shoulders
Size of areas: 3 to 35 acres

Map Unit Composition
Haskins and similar components: 46 percent
Digby, till substratum and similar components: 44 percent

Similar components
Darker colored surface layer
Kibbie soils
Moderately well drained soils
Till at 42 to 60 inches
Sandy loam or clay loam surface layer
Nappanee soils

Contrasting components:
Hoytville soils in depressions and drainageways: 5 percent
Mermill soils in depressions and drainageways: 5 percent

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

Soil Properties and Qualities

HASKINS
Available water capacity: About 6.4 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 7 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: 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 glaciolacustrine deposits and the underlying till
Permeability: Moderate in the upper part of the solum, moderately slow or slow in the lower part of the solum, and slow or very slow in the substratum
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: 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.
- 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.

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.

Septic tank absorption fields

- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- 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

Haskins
Pasture amd hayland suitability group: C-1
Hydric soil: No

Soil Properties and Qualities

DIGBY, till substratum
Available water capacity: About 6.1 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 7 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: 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 glaciolacustrine deposits over till
Permeability: Moderate in the solum, rapid in the sandy and gravelly substratum, and slow or very slow in the till substratum
Potential frost action: High
Shrink-swell potential: Moderate
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.
- 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.

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.
- 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.

- 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 restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- 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

- 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

DIGBY, till substratum
Pasture amd hayland suitability group: C-1
Hydric soil: No

HfB=Haskins and Digby, till substratum, loams, 2 to 6 percent slopes

Setting
Landform: Rises and knolls on lake plains
Position on the landform: Summit, shoulders, backslopes
Size of areas: 3 to 25 acres

Map Unit Composition
Haskins and similar components: 46 percent
Digby, till substratum and similar components: 44 percent

Similar components
Slopes of 0 to 2 percent
Moderately well drained soils
Darker colored surface layer
More clay in the subsoil
Kibbie soils
Nappanee soils

Contrasting components
Mermill soils in depressions and drainageways: 5 percent
Well drained soils on knolls: 5 percent

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

Soil Properties and Qualities

HASKINS
Available water capacity: About 6.4 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 7 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: 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 glaciolacustrine deposits and the underlying till
Permeability: Moderate in the upper part of the solum, moderately slow or slow in the lower part of the solum, and slow or very slow in the substratum
Potential frost action: High
Shrink-swell potential: Moderate
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.
- 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.

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.

Septic tank absorption fields

- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- 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

HASKINS
Pasture amd hayland suitability group: C-1
Hydric soil: No

Soil Properties and Qualities

DIGBY, till substratum
Available water capacity: About 6.1 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 7 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: 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 glaciolacustrine deposits over till
Permeability: Moderate in the solum, rapid in the sandy and gravelly substratum, and slow or very slow in the till substratum
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: 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.
- 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.

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.
- 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.
- 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 restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- 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

- 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

DIGBY, till substratum
Pasture amd hayland suitability group: C-1
Hydric soil: No

HgA=Hoytville clay loam, 0 to 1 percent slopes

Setting
Landform: Depression, drainageways, and extensive flats on lake plains
Size of areas: 5 to 10,000 acres

Map Unit Composition
Hoytville and similar components: 95 percent

Similar components
Carbonates between 10 and 30 inches
Less clay in the subsoil
Silty clay loam surface layer
Dark colored surface layer more than 10 inches thick
Lighter colored surface layer
Silty clay or clay surface layer
Bedrock at 48 to 60 inches

Contrasting components:
Nappanee soils on rises: 4 percent
Loamy or sandy, somewhat poorly drained soils on rises: 1 percent

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

Soil Properties and Qualities

HOYTVILLE
Available water capacity: About 7.3 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 17 to 36 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Dense material: 50 to 70 inches
Depth to the top of the seasonal high water table: 0.0 to 1.0 feet
Water table kind: Perched
Ponding: Brief
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:*Wave-planed till
Permeability: Moderately slow in the upper part of the solum, slow in the lower part of the solum, and slow or very slow in the substratum
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: 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.
- Clods may form if the soil is tilled when wet.
- 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.
- A combination of surface and subsurface drainage helps to remove excess water (fig. 7).
- 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.

Figure 7. A recent installation of systematic tile drainage (a combination of subsurface drainage and open ditches) helps to remove excess water from the soil in areas of Hoytville clay loam, 0 to 1 percent slopes.

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.
- 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.
- Because of the stickiness of the soil, the use of equipment for site preparation is restricted to the drier periods.

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.
- 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 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

HOYTVILLE
Pasture amd hayland suitability group: C-1
Hydric soil: Yes

HhA=Hoytville silty clay loam, 0 to 1 percent slopes

Setting
Landform: Drainageways, depressions, and extensive flats on lake plains
Size of areas: 5 to 100 acres

Map Unit Composition
Hoytville and similar components: 95 percent

Similar components
More sand and less clay in the subsoil
Dark colored surface layer more than 10 inches thick
Lighter colored surface layer
Silty clay or clay surface layer

Contrasting components:
Nappanee soils on rises: 5 percent

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

Soil Properties and Qualities

HOYTVILLE
Available water capacity: About 6.9 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 17 to 36 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Dense material: 50 to 70 inches
Depth to the top of the seasonal high water table: 0.0 to 1.0 feet
Water table kind: Perched
Ponding: Brief
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:*Wave-planed till
Permeability: Moderately slow in the upper part of the solum, slow in the lower part of the solum, and slow or very 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.
- Clods may form if the soil is tilled when wet.
- 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.
- A combination of surface and subsurface drainage helps to remove excess water.
- 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.
- 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.
- Because of the stickiness of the soil, the use of equipment for site preparation is restricted to the drier periods.
- 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.
- 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 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

HOYTVILLE
Pasture amd hayland suitability group: C-1
Hydric soil: Yes

HvA=Hoytville silty clay, 0 to 1 percent slopes

Setting
Landform: Extensive flats, depressions, and drainageways on lake plains
Size of areas: 5 to 15,000 acres

Map Unit Composition
Hoytville and similar components: 95 percent

Similar components
Silty clay loam or clay surface layer
Lighter colored surface layer
Thicker subsoil
Dark colored surface layer more than 10

inches thick
Less clay in the subsoil

Contrasting components:
Nappanee soils on rises: 5 percent

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

Soil Properties and Qualities

HOYTVILLE
Available water capacity: About 6.1 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 22 to 41 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Dense material: 50 to 70 inches
Depth to the top of the seasonal high water table: 0.0 to 1.0 feet
Water table kind: Perched
Ponding: Brief
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:*Wave-planed till
Permeability: Moderately slow in the upper part of the solum, slow in the lower part of the solum, and slow or very slow in the substratum
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silty clay
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.
- Clods may form if the soil is tilled when wet.
- 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.
- A combination of surface and subsurface drainage helps to remove excess water (fig. 8).

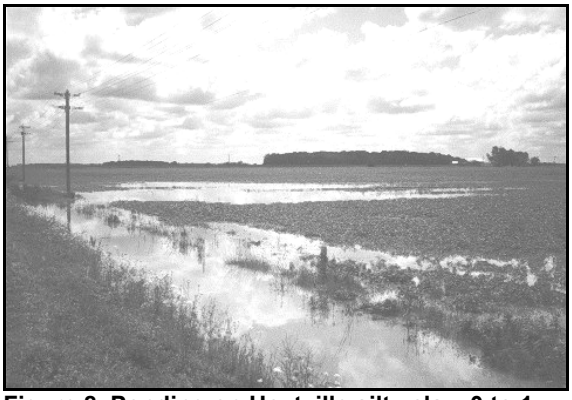

Figure 8. Ponding on Hoytville silty clay, 0 to 1 percent slopes. Water that stands for extended periods can damage crops.

- 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.
- Because of the content of clay, this soil becomes sticky when wet. The stickiness 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 this soil restricts the use of harvesting equipment and roads during wet periods.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- 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

- 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.
- 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 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

HOYTVILLE
Pasture amd hayland suitability group: C-1
Hydric soil: Yes

HwA=Hoytville clay, shallow to carbonates, 0 to 1 percent slopes

Setting
Landform: Flats, depressions, and drainageways on lake plains
Size of areas: 5 to 80 acres

Map Unit Composition
Hoytville, shallow to carbonates and similar components: 95 percent

Similar components
Bedrock at 48 to 60 inches
Poorly drained soils
Clay loam surface layer
Less clay in the subsoil

Contrasting components:
Nappanee soils on rises: 5 percent

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

Soil Properties and Qualities

HOYTVILLE, shallow to carbonates
Available water capacity: About 4.6 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 22 to 39 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: Perched
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: 3.0 to 6.0 percent
*Parent material:*Wave-planed till
Permeability: Moderately slow in the upper part of the solum, slow in the lower part of the solum, and slow or very slow in the substratum
Potential frost action: High

Shrink-swell potential: Moderate
Surface layer texture: Clay
Potential for surface runoff: Negligible
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- 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.
- Clods may form if the soil is tilled when wet.
- 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.
- A combination of surface and subsurface drainage helps to remove excess water.
- 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

- 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.
- 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.
- Because of the content of clay, this soil becomes sticky when wet. The stickiness 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 this soil restricts the use of harvesting equipment and roads during wet periods.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- 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

- 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

HOYTVILLE, shallow to carbonates
Pasture amd hayland suitability group: C-1
Hydric soil: Yes

HyA=Hoytville-Urban land complex, 0 to 1 percent slopes

Setting
Landform: Extensive flats, depressions, and drainageways on lake plains
Size of areas: 5 to 500 acres

Map Unit Composition
Hoytville and similar components: 60 percent
Urban land and similar components: 35 percent

Similar components
Bedrock at 48 to 60 inches
Carbonates between 10 and 30 inches
Dark colored surface layer more than 10 inches thick
Less clay in the subsoil
Lighter colored surface layer
Silty clay loam surface layer
Silty clay or clay surface layer

Contrasting components:
Nappanee soils on rises: 4 percent
Loamy or sandy somewhat poorly drained soils: 1 percent

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

Soil Properties and Qualities

HOYTVILLE
Available water capacity: About 6.9 inches to a depth of 57 inches
Cation-exchange capacity of the surface layer: 17 to 36 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Dense material: 50 to 70 inches
Depth to the top of the seasonal high water table: 0.0 to 1.0 feet
Water table kind: Perched
Ponding: Brief
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:*Wave-planed till
Permeability: Moderately slow in the upper part of the solum, slow in the lower part of the solum, and slow or very slow in the substratum
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Clay loam
Potential for surface runoff: Negligible
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.
- 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 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

HOYTVILLE
Pasture amd hayland suitability group: Not rated
Hydric soil: Yes

URBAN LAND

Use and Management Considerations

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

Component Interpretive Groups

URBAN LAND
Pasture amd hayland suitability group: Not rated
Hydric soil: Unranked

JoA=Joliet silty clay loam, 0 to 1 percent slopes

Setting
Landform: Flats, depressions, and drainageways on reefs on lake plains
Size of areas: 2 to 25 acres

Map Unit Composition
Joliet and similar components: 90 percent

Similar components
Stones or boulders on the surface or in the soil
Millsdale soils
Less than 10 inches to bedrock
More clay in the subsoil
Clay loam or loam surface layer

Contrasting components:
Somewhat poorly drained soils on rises: 4 percent
Castalia soils on knolls: 3 percent
Marblehead soils on knolls: 3 percent

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

Soil Properties and Qualities

JOLIET
Available water capacity: About 2.6 inches to a depth of 16 inches
Cation-exchange capacity of the surface layer: 19 to 31 meq per 100 grams
Depth class: Shallow
Depth to root restrictive feature: Bedrock (lithic): 10 to 20 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: Poorly drained
Flooding: None
Organic matter content in the surface layer: 4.0 to 5.0 percent
Parent material: Loamy glaciolacustrine deposits over limestone or dolostone
Permeability: Moderately slow
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 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.
- 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 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.
- 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.
- Rock fragments in the soil obstruct the use of mechanical planting equipment.
- 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 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

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

JOLIET
Pasture amd hayland suitability group: E-1
Hydric soil: Yes

KeA=Kibbie loamy fine sand, 0 to 2 percent slopes

Setting
Landform: Rises on deltas on lake plains
Position on the landform: Shoulders, summits
Size of areas: 3 to 60 acres

Map Unit Composition
Kibbie and similar components: 90 percent

Similar components
Less clay in the subsoil
Slope of 2 to 6 percent
Darker colored surface layer
Till at 40 to 60 inches
Moderately well drained soils
Fine sandy loam surface layer

Contrasting components:
Till at 20 to 40 inches on similar landform positions: 10 percent

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

Soil Properties and Qualities

KIBBIE
Available water capacity: About 10.6 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 2 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: 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: Stratified loamy and silty glaciolacustrine deposits
Permeability: Moderately rapid in the upper part of the solum, and moderate in the lower part of the solum and in the substratum
Potential frost action: High
Shrink-swell potential: Low
Surface layer texture: Loamy fine sand
Potential for surface runoff: Negligible
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.
- 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.

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.
- Soil wetness may limit the use of this soil by 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.
- 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 restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- 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.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

KIBBIE
Pasture amd hayland suitability group: C-1
Hydric soil: No

KfA=Kibbie fine sandy loam, 0 to 2 percent slopes

Setting
Landform: Rises on deltas on lake plains
Position on the landform: Shoulders, summits
Size of areas: 3 to 50 acres

Map Unit Composition
Kibbie and similar components: 90 percent

Similar components
Till at 40 to 60 inches
Moderately well drained soils
Less clay in the subsoil
More clay in the subsoil
Loam or loamy fine sand surface layer
Darker colored surface layer

Contrasting components:
Till at 20 to 40 inches on similar landform positions: 10 percent

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

Soil Properties and Qualities

KIBBIE
Available water capacity: About 10.4 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 3 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: 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: 1.0 to 3.0 percent
Parent material: Stratified loamy and silty glaciolacustrine deposits
Permeability: Moderately rapid in the upper part of the solum, and moderate in the lower part of the solum and in the substratum
Potential frost action: High
Shrink-swell potential: Low
Surface layer texture: Fine sandy loam
Potential for surface runoff: Negligible
Wind erosion hazard: Moderate

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.
- 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.

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.
- Soil wetness may limit the use of this soil by 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.
- 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 restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- 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.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

KIBBIE
Pasture amd hayland suitability group: C-1
Hydric soil: No

KfB=Kibbie fine sandy loam, 2 to 6 percent slopes

Setting
Landform: Rises and knolls on deltas on lake plains
Position on the landform: Summits, shoulders, backslopes
Size of areas: 2 to 20 acres

Map Unit Composition
Kibbie and similar components: 90 percent

Similar components
Till at 40 to 60 inches
Less clay in the subsoil
Darker colored surface layer
Loam surface layer
Moderately well drained soils

Contrasting components:
Till at 20 to 40 inches on similar landform positions: 10 percent

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

Soil Properties and Qualities

KIBBIE
Available water capacity: About 10.4 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 3 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: 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: 1.0 to 3.0 percent
Parent material: Stratified loamy and silty glaciolacustrine deposits
Permeability: Moderately rapid in the upper part of the solum, and moderate in the lower part of the solum and in the substratum
Potential frost action: High
Shrink-swell potential: Low
Surface layer texture: Fine sandy loam

Potential for surface runoff: Low
Wind erosion hazard: Moderate

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.
- 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.

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.
- Soil wetness may limit the use of this soil by 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.
- 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 restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- 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.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

KIBBIE
Pasture amd hayland suitability group: C-1
Hydric soil: No

KkA=Kibbie-Urban land complex, 0 to 2 percent slopes

Setting
Landform: Rises on deltas on lake plains
Position on the landform: Summits, shoulders
Size of areas: 5 to 50 acres

Map Unit Composition
Kibbie and similar components: 55 percent
Urban land and similar components: 35 percent

Similar components
Darker colored surface layer
Less clay in the subsoil
Loam or loamy fine sand surface layer
Moderately well drained soils
More clay in the subsoil
Till at 40 to 60 inches

Contrasting components:
Till at 20 to 40 inches on similar landform positions: 10 percent

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

Soil Properties and Qualities

KIBBIE
Available water capacity: About 10.4 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 3 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: 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: 1.0 to 3.0 percent
Parent material: Stratified loamy and silty glaciolacustrine deposits
Permeability: Moderately rapid in the upper part of the solum, and moderate in the lower part of the solum and in the substratum
Potential frost action: High
Shrink-swell potential: Low
Surface layer texture: Fine sandy loam
Potential for surface runoff: Negligible
Wind erosion hazard: Moderate

Use and Management Considerations

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.
- 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 restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- 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.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

KIBBIE
Pasture amd hayland suitability group: Not rated
Hydric soil: No

URBAN LAND

Use and Management Considerations

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

Component Interpretive Groups

URBAN LAND
Pasture amd hayland suitability group: Not rated
Hydric soil: Unranked

LbB=Landes loamy fine sand, 0 to 6 percent slopes, frequently flooded

Setting
Landform: Rises and natural levees on flood plains
Size of areas: 2 to 20 acres

Map Unit Composition
Landes and similar components: 95 percent

Similar components
Moderately well drained soils
Seasonal high water table between 4 and 6 feet
Bedrock at 60 to 80 inches

Less clay and more sand in the subsoil
Dark colored surface layer more than 20 inches thick

Contrasting components:
Bedrock at 40 to 60 inches on similar landform positions: 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

LANDES
Available water capacity: About 7.5 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 4 to 10 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: Greater than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: Frequent
Organic matter content in the surface layer: 1.0 to 2.0 percent
Parent material: Loamy and sandy alluvium
Permeability: Moderately rapid in the solum, and rapid in the substratum
Potential frost action: Moderate
Shrink-swell potential: Low
Surface layer texture: Loamy fine sand
Potential for surface runoff: Very low
Wind erosion hazard: Severe

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.
- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- 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

- Erosion control is needed when pastures are renovated.
- 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.
- Flooding may result in damage to haul roads and increased maintenance costs.
- Flooding restricts the safe use of roads by 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.
- 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 bridges is needed to prevent the damage caused by flooding.

Component Interpretive Groups

LANDES
Pasture amd hayland suitability group: A-5
Hydric soil: No

LdA=Latty silty clay, till substratum, 0 to 1 percent slopes

Setting
Landform: Extensive flats, depressions, and drainageways on lake plains
Size of areas: 5 to 2500 acres

Map Unit Composition
Latty, till substratum and similar components: 93 percent

Similar components
Darker colored surface layer
Less clay in the subsoil
Clay or silty clay loam surface layer

Contrasting components:
Fulton soils on rises: 4 percent
Nappanee soils on rises: 3 percent

Map Unit Interpretive Groups
Land capability classification: 3w
Prime farmland: Prime farmland if drained

Soil Properties and Qualities

LATTY, till substratum
Available water capacity: About 6.6 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 22 to 43 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Dense material: 60 to 80 inches
Depth to the top of the seasonal high water table: 0.0 to 1.0 feet
Water table kind: Apparent
Ponding: Brief
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 5.0 percent
Parent material: Clayey glaciolacustrine deposits over till
Permeability: Slow in the solum, very slow in the lacustrine substratum, and slow or very slow in the till substratum
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silty clay
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.
- Clods may form if the soil is tilled when wet.
- 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.
- A combination of surface and subsurface drainage helps to remove excess water.
- 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.
- 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.
- 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.
- Because of the stickiness of the soil, the use of equipment for site preparation is restricted to the drier periods.
- 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.
- 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 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

LATTY, till substratum
Pasture amd hayland suitability group: C-2
Hydric soil: Yes

LgA=Latty, till substratum-Urban land complex, 0 to 1 percent slopes

Setting
Landform: Extensive flats, depressions, and drainageways on lake plains
Size of areas: 5 to 260 acres

Map Unit Composition
Latty, till substratum and similar components: 63 percent
Urban land and similar components: 30 percent

Similar components
Clay or silty clay loam surface layer
Darker colored surface layer
Less clay in the subsoil

Contrasting components:
Fulton soils on rises: 4 percent
Nappanee soils on rises: 3 percent

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

Soil Properties and Qualities

LATTY, till substratum
Available water capacity: About 6.5 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 22 to 43 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Dense material: 60 to 80 inches
Depth to the top of the seasonal high water table: 0.0 to 1.0 feet
Water table kind: Apparent
Ponding: Brief
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 5.0 percent
Parent material: Clayey glaciolacustrine deposits over till
Permeability: Slow in the solum, very slow in the lacustrine substratum, and slow or very slow in the till substratum
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silty clay
Potential for surface runoff: Negligible
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.
- 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 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

LATTY, till substratum
Pasture amd hayland suitability group: Not rated
Hydric soil: Yes

URBAN LAND

Use and Management Considerations

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

Component Interpretive Groups

URBAN LAND
Pasture amd hayland suitability group: Not rated
Hydric soil: Unranked

MbA=Millgrove loam, 0 to 1 percent slopes

Setting
Landform: Flats, depressions, and drainageways on lake plains
Size of areas: 3 to 15 acres

Map Unit Composition
Millgrove and similar components: 90 percent

Similar components
Clay loam surface layer
Thinner subsoil

Contrasting components:
Mermill soils on similar landform positions: 5 percent
Somewhat poorly drained soils with a dark colored surface layer on rises: 5 percent

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

Soil Properties and Qualities

MILLGROVE
Available water capacity: About 8.2 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 13 to 32 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 1.0 feet
Drainage class: Very poorly drained
Flooding: None
Organic matter content in the surface layer: 3.0 to 8.0 percent
Parent material: Loamy and gravelly glaciolacustrine deposits
Permeability: Moderate in the upper part of the solum, and moderately rapid in the lower part of the solum and in the substratum
Potential frost action: High
Shrink-swell potential: Low
Surface layer texture: 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.

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

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

Component Interpretive Groups

MILLGROVE
Pasture amd hayland suitability group: C-1
Hydric soil: Yes

McA=Mermill fine sandy loam, 0 to 1 percent slopes

Setting
Landform: Flats, depressions, and drainageways on lake plains
Size of areas: 2 to 60 acres

Map Unit Composition
Mermill and similar components: 90 percent

Similar components
Carbonates at 20 to 24 inches
More clay in the subsoil
Wauseon soils
Clay loam or loam surface layer
Till at 40 to 60 inches
Till at 10 to 20 inches
Loamy fine sand or sandy loam surface layer
Surface layer more than 10 inches thick

Contrasting components:
Somewhat poorly drained soils on rises: 10 percent

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

Soil Properties and Qualities

MERMILL
Available water capacity: About 7.2 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 11 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 1.0 feet
Water table kind: Perched
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: 3.0 to 6.0 percent
Parent material: Loamy glaciolacustrine deposits and the underlying till
Permeability: Moderate in the upper part of the solum, and slow or very slow in the lower part of the solum and in the substratum
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Fine sandy loam
Potential for surface runoff: Negligible
Wind erosion hazard: Moderate

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.
- 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.

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.
- Soil wetness may limit the use of this soil by log trucks.
- Ponding restricts the safe use of roads by log trucks.

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.
- 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

MERMILL
Pasture amd hayland suitability group: C-1
Hydric soil: Yes

MdA=Mermill loam, 0 to 1 percent slopes

Setting
Landform: Drainageways, depressions, and extensive flats on lake plains
Size of areas: 3 to 1000 acres

Map Unit Composition
Mermill and similar components: 90 percent

Similar components
Till at 40 to 60 inches
More clay and less sand in the subsoil
Surface layer more than 10 inches thick
Clay loam or silty clay loam surface layer

Contrasting components:
Aurand soils on rises: 7 percent
Haskins soils on rises: 3 percent

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

Soil Properties and Qualities

MERMILL
Available water capacity: About 7.1 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 12 to 28 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: Perched
Ponding: Brief
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: Loamy glaciolacustrine deposits and the underlying till
Permeability: Moderate in the upper part of the solum, and slow or very slow in the lower part of the solum and in the substratum
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: 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.
- 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.

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.
- 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

- 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.
- 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

MERMILL
Pasture amd hayland suitability group: C-1
Hydric soil: Yes

MeA=Mermill sandy clay loam, 0 to 1 percent slopes

Setting
Landform: Flats, depressions, and drainageways on lake plains
Size of areas: 3 to 250 acres

Map Unit Composition
Mermill and similar components: 90 percent

Similar components
Millgrove soils
Surface layer more than 10 inches thick
Carbonates on the surface
Fine sandy loam or sandy loam surface layer
Loam or clay loam surface layer
Till at 10 to 20 inches
Till at 40 to 60 inches
Hoytville soils

Contrasting components:
Somewhat poorly drained soils on rises: 10 percent

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

Soil Properties and Qualities

MERMILL
Available water capacity: About 7.4 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 14 to 30 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: Perched
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: 3.0 to 6.0 percent
Parent material: Loamy glaciolacustrine deposits and the underlying till
Permeability: Moderate in the upper part of the solum, and slow or very slow in the lower part of the solum and in the substratum
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Sandy 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.
- 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.

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.
- Soil wetness may limit the use of this soil by log trucks.
- Ponding restricts the safe use of roads by log trucks.
- 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.
- 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

MERMILL
Pasture amd hayland suitability group: C-1
Hydric soil: Yes

MfA=Mermill-Aurand complex, 0 to 1 percent slopes

Setting
Landform: Mermill: Depressions, drainageways, and extensive flats on lake plains
Aurand: Rises and knolls on lake plains
Position on the landform: Aurand: Shoulders, summits
Size of areas: 5 to 1000 acres

Map Unit Composition
Mermill and similar components: 60 percent
Aurand and similar components: 35 percent

Similar components
Less clay in the surface layer and subsoil
More clay in the surface layer and subsoil
Moderately well drained soils
Till between 40 and 60 inches
Lighter colored surface layer
Somewhat poorly drained, fine textured soil

Contrasting components:
Rimer soils on rises and knolls: 5 percent

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

Soil Properties and Qualities

MERMILL
Available water capacity: About 7.5 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 12 to 28 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: Perched
Ponding: Brief
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: Loamy glaciolacustrine deposits and the underlying till
Permeability: Moderate in the upper part of the solum, and slow or very slow in the lower part of the solum and in the substratum
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: 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.
- 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.

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.
- 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

- 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.
- 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

MERMILL
Pasture amd hayland suitability group: C-1
Hydric soil: Yes

Soil Properties and Qualities

AURAND
Available water capacity: About 6.7 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 9 to 28 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: 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 6.0 percent
Parent material: Loamy glaciolacustrine deposits and the underlying till
Permeability: Moderate in the upper part of the solum, moderately slow or slow in the lower

part of the solum, and slow or very slow in the substratum
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: 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.
- 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.

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.
- 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 restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- 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.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

AURAND
Pasture amd hayland suitability group: C-1
Hydric soil: No

MgA=Mermill-Urban land complex, 0 to 1 percent slopes

Setting
Landform: Depressions, depressions, and flats on lake plains
Size of areas: 5 to 100 acres

Map Unit Composition
Mermill and similar components: 60 percent
Urban land and similar components: 30 percent

Similar components
Sandy clay loam or clay loam surface layer
More clay in the subsoil
Surface layer more than 10 inches thick
Till at 40 to 60 inches

Contrasting components:
Aurand soils on rises: 5 percent
Haskins soils on rises: 5 percent

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

Soil Properties and Qualities

MERMILL
Available water capacity: About 7.3 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 12 to 28 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: Perched
Ponding: Brief
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: Loamy glaciolacustrine deposits and the underlying till
Permeability: Moderate in the upper part of the solum, and slow or very slow in the lower part of the solum and in the substratum
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Loam
Potential for surface runoff: Negligible
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.
- 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

MERMILL
Pasture amd hayland suitability group: Not rated
Hydric soil: Yes

URBAN LAND

Use and Management Considerations

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

Component Interpretive Groups

URBAN LAND
Pasture amd hayland suitability group: Not rated
Hydric soil: Unranked

MhA=Millsdale silty clay loam, 0 to 1 percent slopes

Setting
Landform: Flats, depressions, and drainageways on lake plains
Size of areas: 3 to 150 acres

Map Unit Composition
Millsdale and similar components: 90 percent

Similar components
Lighter colored surface layer
Hoytville soils
Clay loam, silt loam or loam surface layer
Surface layer 10 to 14 inches thick
Bedrock at 40 to 60 inches
Millgrove soils
Joliet soils

Contrasting components:
Randolph soils on rises: 10 percent

Map Unit Interpretive Groups
Land capability classification: 3w
Prime farmland: Prime farmland if drained

Soil Properties and Qualities

MILLSDALE
Available water capacity: About 4.9 inches to a depth of 32 inches
Cation-exchange capacity of the surface layer: 19 to 35 meq per 100 grams
Depth class: Moderately deep
Depth to root restrictive feature: Bedrock (lithic): 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 overlying limestone or dolostone
Permeability: Moderately slow
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 rooting depth of crops is restricted by bedrock and a high clay content.
- 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.
- 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 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.
- 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.
- 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

MILLSDALE
Pasture amd hayland suitability group: C-2
Hydric soil: Yes

MkA=Millsdale silty clay loam, stony, 0 to 1 percent slopes

Setting
Landform: Drainageways, depressions, and flats on lake plains
Size of areas: 3 to 30 acres

Map Unit Composition
Millsdale and similar components: 90 percent

Similar components
Surface layer 10 to 14 inches thick
Bedrock at 10 to 20 inches
Boulders on the surface or stones and boulders in the soil
Loam or silt loam surface layer
Less clay in the subsoil
Bedrock at 40 to 60 inches or more

Contrasting components:
Randolph soils on rises: 10 percent

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

Soil Properties and Qualities

MILLSDALE
Available water capacity: About 4.9 inches to a depth of 32 inches
Cation-exchange capacity of the surface layer: 19 to 35 meq per 100 grams
Depth class: Moderately deep
Depth to root restrictive feature: Bedrock (lithic): 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 overlying limestone or dolostone
Permeability: Moderately slow
Potential frost action: High
Rock fragments on surface: 2.0 percent
Shrink-swell potential: Moderate
Surface layer texture: Silty clay loam
Potential for surface runoff: Negligible
Wind erosion hazard: Slight

Use and Management Considerations

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.
- Large stones on the surface may restrict the operation of some farm machinery during pasture renovation.
- 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.
- Stones or boulders on the surface obstruct the use of mechanical planting equipment.
- 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.
- 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.
- 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

MILLSDALE
Pasture amd hayland suitability group: C-2
Hydric soil: Yes

MmA=Millsdale-Urban land complex, 0 to 1 percent slopes

Setting
Landform: Drainageways, depressions, and flats on lake plains
Size of areas: 3 to 15 acres

Map Unit Composition
Millsdale and similar components: 65 percent
Urban land and similar components: 25 percent

Similar components
Joliet soils
Millgrove soils
Clay loam, silt loam or loam surface layer
Hoytville soils
Lighter colored surface layer
Surface layer 10 to 14 inches thick

Contrasting components:
Randolph soils on rises: 10 percent

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

Soil Properties and Qualities

MILLSDALE
Available water capacity: About 4.9 inches to a depth of 32 inches
Cation-exchange capacity of the surface layer: 19 to 35 meq per 100 grams
Depth class: Moderately deep
Depth to root restrictive feature: Bedrock (lithic): 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 overlying limestone or dolostone
Permeability: Moderately slow
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

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.
- 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.
- 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

MILLSDALE
Pasture amd hayland suitability group: Not rated
Hydric soil: Yes

URBAN LAND

Use and Management Considerations

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

Component Interpretive Groups

URBAN LAND
Pasture amd hayland suitability group: Not rated
Hydric soil: Unranked

MnA=Milton loam, 0 to 2 percent slopes

Setting
Landform: Rises on reefs on lake plains
Position on the landform: Summits, shoulders
Size of acres: 5 to 200 acres

Map Unit Composition
Milton and similar components: 90 percent

Similar components
Few scattered wet spots
Darker colored surface layer
Stones or boulders on the surface or in the soil
Ritchey soils
Dunbridge soils
Silt loam, sandy loam, or fine sandy loam surface layer

Contrasting components:

Castalia soils on similar landform positions: 5 percent
Marblehead soils on similar landform positions: 5 percent

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

Soil Properties and Qualities

MILTON
Available water capacity: About 4.2 inches to a depth of 26 inches
Cation-exchange capacity of the surface layer: 7 to 22 meq per 100 grams
Depth class: Moderately deep
Depth to root restrictive feature: Bedrock (lithic): 20 to 40 inches
Depth to the top of the seasonal high water table: Greater than 2.2 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 dolostone or limestone
Permeability: Moderate or moderately slow
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Loam
Potential for surface runoff: Negligible
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The rooting depth of crops is restricted by bedrock and a high clay content.
- 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.

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.
- 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 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.
- 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

- 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

MILTON
Pasture amd hayland suitability group: F-1
Hydric soil: No

MnB=Milton loam, 2 to 6 percent slopes

Setting
Landform: Rises and knolls on reefs on lake plains
Position on the landform: Summits, shoulders, backslopes
Size of areas: 3 to 35 acres

Map Unit Composition
Milton and similar components: 90 percent

Similar components
Few scattered wet spots
Slopes of 0 to 2 percent
Darker colored surface layer
Stones or boulders on the surface or in the soil
Ritchey soils
Dunbridge soils
Sandy loam or fine sandy loam surface layer
Clay loam or silt loam surface layer

Contrasting components:
Castalia soils on similar landform positions: 5 percent
Marblehead soils on similar landform positions: 5 percent

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

Soil Properties and Qualities

MILTON
Available water capacity: About 4.2 inches to a depth of 26 inches
Cation-exchange capacity of the surface layer: 7 to 22 meq per 100 grams
Depth class: Moderately deep
Depth to root restrictive feature: Bedrock (lithic): 20 to 40 inches
Depth to the top of the seasonal high water table: Greater than 2.2 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 dolostone or limestone
Permeability: Moderate or moderately slow
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

- The rooting depth of crops is restricted by bedrock and a high clay content.
- 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.

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.
- 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 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.
- 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

- 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

MILTON
Pasture amd hayland suitability group: F-1
Hydric soil: No

NmA=Nappanee sandy loam, 0 to 2 percent slopes

Setting
Landform: Flats and rises on lake plains
Position on the landform: Summits, shoulders
Size of areas: 2 to 30 acres

Map Unit Composition
Nappanee and similar components: 100 percent

Similar components
Darker colored surface layer
Bedrock at 48 to 60 inches
Rimer soils
Loamy fine sand in the surface layer and upper part of the solum
Moderately well drained soils
Loam, clay loam, or sandy clay loam surface layer

Map Unit Interpretive Groups
Land capability classification: 3w
Prime farmland: Prime farmland if drained

Soil Properties and Qualities

NAPPANEE
Available water capacity: About 5.5 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 6 to 17 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 1.0 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: Wave-planed till
Permeability: Slow in the solum, and slow or very slow in the substratum
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Sandy loam
Potential for surface runoff: Medium
Wind erosion hazard: Moderate

Use and Management Considerations

Cropland

- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind 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.
- The rooting depth of crops may be restricted by the high clay content.
- 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.

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.

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.
- Soil wetness may limit the use of this soil by log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- Because of the stickiness of the soil, the use of equipment for site preparation is restricted to the drier periods.

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 restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- 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

NAPPANEE
Pasture amd hayland suitability group: C-2
Hydric soil: No

NmB=Nappanee sandy loam, 2 to 6 percent slopes

Setting
Landform: Rises, knolls, and dissected areas along streams on lake plains
Position on the landform: Shoulders, summits, and backslopes
Size of areas: 2 to 20 acres

Map Unit Composition
Nappanee and similar components: 100 percent

Similar components
Bedrock at 48 to 60 inches
Slope of 6 to 12 percent
Less clay in the subsoil
Moderately well drained soils
Loam or clay loam surface layer
Fine sandy loam surface layer

Map Unit Interpretive Groups
Land capability classification: 3e
Prime farmland: Prime farmland if drained

Soil Properties and Qualities

NAPPANEE
Available water capacity: About 5.5 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 6 to 17 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 1.0 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: Wave-planed till
Permeability: Slow in the solum, and slow or very slow in the substratum
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Sandy loam
Potential for surface runoff: High
Wind erosion hazard: Moderate

Use and Management Considerations

Cropland

- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind 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.
- The rooting depth of crops may be restricted by the high clay content.
- 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.

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.

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.
- Soil wetness may limit the use of this soil by log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- Because of the stickiness of the soil, the use of equipment for site preparation is restricted to the drier periods.

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 restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- 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

NAPPANEE
Pasture amd hayland suitability group: C-2
Hydric soil: No

NnA=Nappanee loam, 0 to 2 percent slopes

Setting
Landform: Flats and rises on lake plains
Position on the landform: Summits, shoulders
Size of areas: 3 to 100 acres

Map Unit Composition
Nappanee and similar components: 90 percent

Similar components
Carbonates at 10 to 18 inches
Bedrock at 48 to 60 inches
Darker colored surface layer
Clay loam, silt loam, silty clay loam, or sandy loam surface
Moderately well drained soils
Haskins soils

Contrasting components:
Hoytville soils in depressions and drainageways: 10 percent

Map Unit Interpretive Groups
Land capability classification: 3w
Prime farmland: Prime farmland if drained

Soil Properties and Qualities

NAPPANEE
Available water capacity: About 6.2 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 10 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: 0.5 to 1.0 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: Wave-planed till
Permeability: Slow in the solum, and slow or very slow in the substratum
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: 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.
- The rooting depth of crops may be restricted by the high clay content.
- 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.

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.
- 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.
- Because of the stickiness of the soil, the use of equipment for site preparation is restricted to the drier periods.

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 restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- 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

NAPPANEE
Pasture amd hayland suitability group: C-2
Hydric soil: No

NnB=Nappanee loam, 2 to 6 percent slopes

Setting
Landform: Knolls, rises, and dissected areas along streams on lake plains
Position on the landform: Summit, shoulders, backslopes
Size of areas: 2 to 50 acres

Map Unit Composition
Nappanee and similar components: 90 percent

Similar components
Carbonates at 10 to 18 inches
Bedrock at 48 to 60 inches
Silt loam surface layer
Eroded areas with a clay loam or silty clay loam surface
St. Clair soils

Contrasting components:
Hoytville soils in depressions and drainageways: 10 percent

Map Unit Interpretive Groups
Land capability classification: 3e
Prime farmland: Prime farmland if drained

Soil Properties and Qualities

NAPPANEE
Available water capacity: About 6.2 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 10 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: 0.5 to 1.0 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: Wave-planed till
Permeability: Slow in the solum, and slow or very slow in the substratum
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: 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.
- The rooting depth of crops may be restricted by the high clay content.
- 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.

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.
- 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.
- Because of the stickiness of the soil, the use of equipment for site preparation is restricted to the drier periods.

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 restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- 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

NAPPANEE
Pasture amd hayland suitability group: C-2
Hydric soil: No

NnB2=Nappanee loam, 2 to 6 percent slopes, eroded

Setting
Landform: Knolls, rises, and dissected areas along streams on lake plains
Position on the landform: Summits, shoulder, backslopes
Size of areas: 2 to 15 acres

Map Unit Composition
Nappanee and similar components: 90 percent

Similar components
Darker colored surface layer
Carbonates at 10 to 18 inches
Areas that are severely eroded
Bedrock at 48 to 60 inches
Less clay in the subsoil
St. Clair soils
Clay loam surface layer
Sandy loam, silt loam, or fine sandy loam surface layer

Contrasting components:
Well drained on shoulders and summits: 10 percent

Map Unit Interpretive Groups
Land capability classification: 3e
Prime farmland: Prime farmland if drained

Soil Properties and Qualities

NAPPANEE
Available water capacity: About 6.2 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 10 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: 0.5 to 1.0 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: Wave-planed till
Permeability: Slow in the solum, and slow or very slow in the substratum
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- 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.
- 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 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.

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.
- 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.
- Because of the stickiness of the soil, the use of equipment for site preparation is restricted to the drier periods.

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 restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- 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

NAPPANEE
Pasture amd hayland suitability group: C-2
Hydric soil: No

NpA=Nappanee silty clay loam, 0 to 2 percent slopes

Setting
Landform: Flats and rises on lake plains
Position on the landform: Summits, shoulders
Size of areas: 3 to 50 acres

Map Unit Composition
Nappanee and similar components: 90 percent

Similar components
Less clay in the subsoil
Bedrock at 48 to 60 inches
Moderately well drained soils
Loam or clay loam surface layer

Contrasting components:
Hoytville soils in depressions and drainageways: 10 percent

Map Unit Interpretive Groups
Land capability classification: 3w
Prime farmland: Prime farmland if drained

Soil Properties and Qualities

NAPPANEE
Available water capacity: About 6.0 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 13 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: 0.5 to 1.0 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: Wave-planed till
Permeability: Slow in the solum, and slow or very slow 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

- Clods may form if the soil is tilled when wet.
- Controlling traffic can minimize soil compaction.
- The root system of winter grain crops may be damaged by frost action.
- 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 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.

Pastureland

- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- Restricting grazing during wet periods can minimize compaction.
- 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.
- 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.
- 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 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 restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- 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

NAPPANEE
Pasture amd hayland suitability group: C-2
Hydric soil: No

NpB=Nappanee silty clay loam, 2 to 6 percent slopes

Setting
Landform: Knolls, rises, and dissected areas along streams on lake plains
Position on the landform: Summits, shoulders, backslopes
Size of areas: 2 to 10 acres

Map Unit Composition
Nappanee and similar components: 100 percent

Similar components
Bedrock at 48 to 60 inches
Slopes of 0 to 2 percent
Loam, silt loam, or clay loam surface layer
St. Clair soils

Map Unit Interpretive Groups
Land capability classification: 3e
Prime farmland: Prime farmland if drained

Soil Properties and Qualities

NAPPANEE
Available water capacity: About 6.0 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 13 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: 0.5 to 1.0 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: Wave-planed till
Permeability: Slow in the solum, and slow or very slow in the substratum
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

- Clods may form if the soil is tilled when wet.
- Controlling traffic can minimize soil compaction.
- The root system of winter grain crops may be damaged by frost action.
- 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 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.

Pastureland

- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- Restricting grazing during wet periods can minimize compaction.
- 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.

- 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.
- 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 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 restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- 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

NAPPANEE
Pasture amd hayland suitability group: C-2
Hydric soil: No

NpB2=Nappanee silty clay loam, 2 to 6 percent slopes, eroded

Setting
Landform: Knolls, rises, and dissected areas along streams on lake plains
Position on the landform: Summits, shoulder, backslopes
Size of areas: 2 to 10 acres

Map Unit Composition
Nappanee and similar components: 90 percent

Similar components
Less clay in the subsoil
Bedrock at 48 to 60 inches
Uneroded areas with silt loam surface layer
Moderately well drained soils

Contrasting components:
Severely eroded areas with silty clay or clay surface layer on shoulders and backslopes: 5 percent
Well drained soils on shoulders and summits: 5 percent

Map Unit Interpretive Groups
Land capability classification: 3e
Prime farmland: Prime farmland if drained

Soil Properties and Qualities

NAPPANEE
Available water capacity: About 6.0 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 13 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: 0.5 to 1.0 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: Wave-planed till
Permeability: Slow in the solum, and slow or very slow in the substratum
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

- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Clods may form if the soil is tilled when wet.
- Controlling traffic can minimize soil compaction.
- The root system of winter grain crops may be damaged by frost action.
- 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 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.

Pastureland

- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- Restricting grazing during wet periods can minimize compaction.
- 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.
- 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.
- 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 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 restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- 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

NAPPANEE
Pasture amd hayland suitability group: C-2
Hydric soil: No

NsA=Nappanee-Urban land complex, 0 to 2 percent slopes

Setting
Landform: Flats and rises on lake plains
Position on the landform: Summits, shoulders
Size of areas: 3 to 25 acres

Map Unit Composition
Nappanee and similar components: 60 percent
Urban land and similar components: 30 percent

Similar components
Less clay in the subsoil
Loam or clay loam surface layer
Moderately well drained soils
Bedrock at 48 to 60 inches

Contrasting components:
Hoytville soils in depressions and drainageways: 10 percent

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

Soil Properties and Qualities

NAPPANEE
Available water capacity: About 6.0 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 13 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: 0.5 to 1.0 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: Wave-planed till
Permeability: Slow in the solum, and slow or very slow 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

- 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 restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- 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

NAPPANEE
Pasture amd hayland suitability group: Not rated
Hydric soil: No

URBAN LAND

Use and Management Considerations

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

Component Interpretive Groups

URBAN LAND
Pasture amd hayland suitability group: Not rated
Hydric soil: Unranked

OsB=Oshtemo sandy loam, till substratum, 2 to 6 percent slopes

Setting
Landform: Knolls on beach ridges on lake plains
Position on the landform: Summit, shoulders, backslopes
Size of areas: 5 to 45 acres

Map Unit Composition
Oshtemo, till substratum and similar components: 95 percent

Similar components
Darker colored surface layer
Loamy sand or loamy fine sand surface layer
Moderately well drained soils
More clay and less sand in the subsoil
Till at 40 to 60 inches
Slopes of 0 to 2 percent

Contrasting components:
Aurand soils on footslopes: 5 percent

Map Unit Interpretive Groups
Land capability classification: 3e
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

OSHTEMO, till substratum
Available water capacity: About 6.6 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 3 to 15 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Dense material: 60 to 80 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 3.0 percent
Parent material: Stratified loamy and sandy beach deposits overlying till
Permeability: Moderately rapid in the subsoil, very rapid in the gravelly substratum, and slow or very slow in the substratum
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Sandy loam
Potential for surface runoff: Very low

Wind erosion hazard: Moderate

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.
- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion.

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.
- 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. Special design of structures is needed to prevent damage caused by wetness.
- 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

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

Component Interpretive Groups

OSHTEMO, till substratum
Pasture amd hayland suitability group: A-1
Hydric soil: No

OtA=Ottokee-Spinks loamy fine sands, 0 to 2 percent slopes

Setting
Landform: Rises on lake plains, and dunes and beach ridges on lake plains
Position on the landform: Summits, shoulder
Size of areas: 3 to 150 acres

Map Unit Composition
Ottokee and similar components: 46 percent
Spinks and similar components: 44 percent

Similar components
Somewhat poorly drained soils
More clay in the subsoil
Slopes of 2 to 6 percent
Fine sand or fine sandy loam surface layer
Till at 40 to 60 inches
Darker colored surface layer
Well drained soils without lamellae

Contrasting components:
Till at 20 to 40 inches on similar landform positions: 10 percent

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

Soil Properties and Qualities

OTTOKEE
Available water capacity: About 4.7 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 2 to 10 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 3.5 feet
Water table kind: Apparent
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Organic matter content in the surface layer: 0.5 to 2.0 percent
Parent material: Sandy glaciolacustrine or eolian deposits
Permeability: Rapid
Potential frost action: Low
Shrink-swell potential: Low
Surface layer texture: Loamy fine sand
Potential for surface runoff: Negligible
Wind erosion hazard: Severe

Use and Management Considerations

Cropland

- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind 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.
- Plant nutrients are leached at an accelerated rate because of the sandy layer.

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.
- 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.
- 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

- This soil is well suited to use as a site for local roads and streets.

Component Interpretive Groups

OTTOKEE
Pasture amd hayland suitability group: B-1
Hydric soil: No

Soil Properties and Qualities

SPINKS
Available water capacity: About 4.6 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 2 to 13 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 4.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 0.5 to 2.0 percent
Parent material: Sandy eolian or glaciolacustrine deposits
Permeability: Moderately rapid or rapid in the upper part of the solum, and moderately rapid in the lower part of the solum
Potential frost action: Low
Shrink-swell potential: Low
Surface layer texture: Loamy fine sand
Potential for surface runoff: Negligible
Wind erosion hazard: Severe

Use and Management Considerations

Cropland

- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind 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.
- Plant nutrients are leached at an accelerated rate because of the sandy layer.

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.
- Burning may destroy organic matter.

Building sites

- 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

- This soil is well suited to use as a site for local roads and streets.

Component Interpretive Groups

SPINKS
Pasture amd hayland suitability group: B-1
Hydric soil: No

OtB=Ottokee-Spinks loamy fine sands, 2 to 6 percent slopes

Setting
Landform: Knolls on lake plains, and beach ridges and dunes on lake plains
Position on the landform: Summits, shoulders, backslopes
Size of areas: 3 to 75 acres

Map Unit Composition
Ottokee and similar components: 51 percent
Spinks and similar components: 49 percent

Similar components
Darker colored surface layer
Fine sand or fine sandy loam surface layer
More clay in the subsoil
Slopes of 0 to 2 percent
Somewhat poorly drained soils
Well drained soils without lamellae
Till at 40 to 60 inches

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

Soil Properties and Qualities

OTTOKEE
Available water capacity: About 4.7 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 2 to 10 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 3.5 feet
Water table kind: Apparent
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Organic matter content in the surface layer: 0.5 to 2.0 percent
Parent material: Sandy eolian or glaciolacustrine deposits
Permeability: Rapid
Potential frost action: Low
Shrink-swell potential: Low
Surface layer texture: Loamy fine sand
Potential for surface runoff: Negligible
Wind erosion hazard: Severe

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.
- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion (fig. 9).
- 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.

Figure 9. Field windbreaks established perpendicular to prevailing winds help reduce wind velocity and soil loss by wind erosion. This windbreak is in an area of Ottokee-Spinks loamy fine sands, 2 to 6 percent slopes.

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.
- 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.
- 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

- This soil is well suited to use as a site for local roads and streets.

Component Interpretive Groups

OTTOKEE
Pasture amd hayland suitability group: B-1
Hydric soil: No

Soil Properties and Qualities

SPINKS
Available water capacity: About 4.6 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 2 to 13 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 4.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 0.5 to 2.0 percent
Parent material: Sandy eolian or glaciolacustrine deposits
Permeability: Moderately rapid or rapid in the upper part of the solum, and moderately rapid in the lower part of the solum
Potential frost action: Low
Shrink-swell potential: Low
Surface layer texture: Loamy fine sand
Potential for surface runoff: Negligible
Wind erosion hazard: Severe

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.
- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind 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.
- Plant nutrients are leached at an accelerated rate because of the sandy layer.

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.
- Burning may destroy organic matter.

Building sites

- 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

- This soil is well suited to use as a site for local roads and streets.

Component Interpretive Groups

SPINKS
Pasture amd hayland suitability group: B-1
Hydric soil: No

OzB=Ottokee-Spinks-Urban land complex, 0 to 6 percent slopes

Setting
Landform: Rises and knolls on lake plains, and dunes and beach ridges on lake plains
Position on the landform: Summits, shoulders, backslopes
Size of areas: 5 to 100 acres

Map Unit Composition
Ottokee and similar components: 36 percent
Spinks and similar components: 34 percent
Urban land and similar components: 25 percent

Similar components
Darker colored surface layer
Fine sand or fine sandy loam surface layer
More clay in the subsoil
Till at 40 to 60 inches
Well drained soils without lamellae
Somewhat poorly drained soils

Contrasting components:
Till at 20 to 40 inches on similar landform positions: 5 percent

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

Soil Properties and Qualities

OTTOKEE
Available water capacity: About 4.7 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 2 to 10 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 3.5 feet
Water table kind: Apparent
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Organic matter content in the surface layer: 0.5 to 2.0 percent
Parent material: Sandy eolian or glaciolacustrine deposits
Permeability: Rapid
Potential frost action: Low
Shrink-swell potential: Low
Surface layer texture: Loamy fine sand
Potential for surface runoff: Negligible
Wind erosion hazard: Severe

Use and Management Considerations

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.
- 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

- This soil is well suited to use as a site for local roads and streets.

Component Interpretive Groups

OTTOKEE
Pasture amd hayland suitability group: Not rated
Hydric soil: No

Soil Properties and Qualities

SPINKS
Available water capacity: About 4.6 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 2 to 13 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 4.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 0.5 to 2.0 percent
Parent material: Sandy eolian or glaciolacustrine deposits
Permeability: Moderately rapid or rapid in the upper part of the solum, and moderately rapid in the lower part of the solum
Potential frost action: Low
Shrink-swell potential: Low
Surface layer texture: Loamy fine sand
Potential for surface runoff: Negligible
Wind erosion hazard: Severe

Use and Management Considerations

Building sites

- 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

- This soil is well suited to use as a site for local roads and streets.

Component Interpretive Groups

SPINKS
Pasture amd hayland suitability group: Not rated
Hydric soil: No

URBAN LAND

Use and Management Considerations

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

Component Interpretive Groups

URBAN LAND
Pasture amd hayland suitability group: Not rated
Hydric soil: Unranked

Pt=Pits, quarry

Setting
Landform: Lake plains and reefs on lake plains
Size of areas: 50 to 150 acres

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

PITS, QUARRY
Pasture amd hayland suitability group: Not rated
Hydric soil: Unranked

RbA=Randolph loam, 0 to 2 percent slopes

Setting
Landform: Flats and rises on lake plains
Position on the landform: Summits, shoulders
Size of areas: 3 to 100 acres

Map Unit Composition
Randolph and similar components: 90 percent

Similar components
Silt loam surface layer
Bedrock at 10 to 20 inches
Moderately well drained soils
Darker colored surface layer
Less clay in the subsoil

Contrasting components:
Bedrock at 4 to 10 inches on similar landform positions: 2 percent
Digby soils on similar landform positions: 2 percent
Haskins soils on similar landform positions: 2 percent
Millsdale soils in depressions and drainageways: 2 percent
Nappanee soils on similar landform positions: 2 percent

Map Unit Interpretive Groups
Land capability classification: 3w
Prime farmland: Prime farmland if drained

Soil Properties and Qualities

RANDOLPH
Available water capacity: About 5.3 inches to a depth of 32 inches
Cation-exchange capacity of the surface layer: 8 to 22 meq per 100 grams
Depth class: Moderately deep
Depth to root restrictive feature: Bedrock (lithic): 20 to 40 inches
Depth to the top of the seasonal high water table: 0.5 to 1.0 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: Till overlying limestone or dolostone
Permeability: Moderately slow
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Loam
Potential for surface runoff: Negligible
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The rooting depth of crops is restricted by bedrock and a high clay content.
- 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.
- 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 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.

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.
- 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.
- 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

- 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

RANDOLPH
Pasture amd hayland suitability group: C-1
Hydric soil: No

RbB=Randolph loam, 2 to 6 percent slopes

Setting
Landform: Knolls on lake plains
Position on the landform: Summits, shoulders, backslopes
Size of areas: 2 to 15 acres

Map Unit Composition
Randolph and similar components: 90 percent

Similar components
Stones or boulders on the surface or in the soil
Moderately well drained soils
Darker colored surface layer
Clay loam surface layer
Less clay in the subsoil

Contrasting components:
Nappanee soils on similar landform positions: 4 percent
Digby soils on similar landform positions: 3 percent
Haskins soils on similar landform positions: 3 percent

Map Unit Interpretive Groups
Land capability classification: 3e
Prime farmland: Prime farmland if drained

Soil Properties and Qualities

RANDOLPH
Available water capacity: About 5.3 inches to a depth of 32 inches
Cation-exchange capacity of the surface layer: 8 to 22 meq per 100 grams
Depth class: Moderately deep
Depth to root restrictive feature: Bedrock (lithic): 20 to 40 inches
Depth to the top of the seasonal high water table: 0.5 to 1.0 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: Till overlying limestone or dolostone
Permeability: Moderately slow
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Loam
Potential for surface runoff: Very low
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.
- 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.
- 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 depth to bedrock may restrict the gradient needed to provide adequate drainage from subsurface systems.

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.
- The rooting depth of plants may be restricted by bedrock.

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.
- 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.
- 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

- 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

RANDOLPH
Pasture amd hayland suitability group: C-1
Hydric soil: No

RdA=Randolph loam, stony, 0 to 2 percent slopes

Setting
Landform: Flats and rises on lake plains
Position on the landform: Summits, shoulders
Size of areas: 3 to 25 acres

Map Unit Composition
Randolph and similar components: 90 percent

Similar components
Bedrock at 10 to 20 inches
Moderately well drained soils
Boulders on the surface or stones and boulders in the soil
Darker colored surface layer
Sandy loam or fine sandy loam surface layer

Contrasting components:
Castalia soils on shoulders and summits: 2 percent
Digby soils on flats: 2 percent
Haskins soils on flats: 2 percent
Marblehead soils on shoulders and summits: 2 percent
Nappanee soils on flats: 2 percent

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

Soil Properties and Qualities

RANDOLPH
Available water capacity: About 5.3 inches to a depth of 32 inches
Cation-exchange capacity of the surface layer: 8 to 22 meq per 100 grams
Depth class: Moderately deep
Depth to root restrictive feature: Bedrock (lithic): 20 to 40 inches
Depth to the top of the seasonal high water table: 0.5 to 1.0 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: Till overlying limestone or dolostone
Permeability: Moderately slow
Potential frost action: High
Rock fragments on surface: 2.0 percent

Shrink-swell potential: Moderate
Surface layer texture: Loam
Potential for surface runoff: Negligible
Wind erosion hazard: Slight

Use and Management Considerations

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.
- Large stones on the surface may restrict the operation of some farm machinery during pasture renovation.

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.
- Stones or boulders on the surface 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.
- 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

- 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

RANDOLPH
Pasture amd hayland suitability group: C-1
Hydric soil: No

ReA=Randolph-Urban land complex, 0 to 2 percent slopes

Setting
Landform: Flats and rises on lake plains
Position on the landform: Summit, shoulder

Map Unit Composition
Randolph and similar components: 55 percent
Urban land and similar components: 35 percent

Similar components
Bedrock at 10 to 20 inches
Darker colored surface layer
Moderately well drained soils
Silt loam surface layer

Contrasting components:
Bedrock at 4 to 10 inches on similar landform positions: 2 percent
Digby soils on similar landform positions: 2 percent
Haskins soils on similar landform positions: 2 percent
Millsdale soils in depressions and drainageways: 2 percent
Nappanee soils on similar landform positions: 2 percent

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

Soil Properties and Qualities

RANDOLPH
Available water capacity: About 5.3 inches to a depth of 32 inches
Cation-exchange capacity of the surface layer: 8 to 22 meq per 100 grams
Depth class: Moderately deep
Depth to root restrictive feature: Bedrock (lithic): 20 to 40 inches
Depth to the top of the seasonal high water table: 0.5 to 1.0 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: Till overlying limestone or dolostone
Permeability: Moderately slow
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Loam
Potential for surface runoff: Negligible
Wind erosion hazard: Slight

Use and Management Considerations

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.
- 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 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

RANDOLPH
Pasture amd hayland suitability group: Not rated
Hydric soil: No

URBAN LAND

Use and Management Considerations

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

Component Interpretive Groups

URBAN LAND
Pasture amd hayland suitability group: Not rated
Hydric soil: Unranked

RfA=Rimer and Tedrow, till substratum, loamy fine sands, 0 to 2 percent slopes

Setting
Landform: Flats and rises on lake plains
Position on the landform: Summits, shoulders
Size of areas: 2 to 50 acres

Map Unit Composition
Rimer and similar components: 46 percent
Tedrow and similar components: 44 percent

Similar components
More clay in the upper part of the solum
Moderately well drained soils
Till at 48 to 60 inches
Fine sand, sandy loam, or fine sandy loam surface layer
Darker colored surface layer

Contrasting components:
Wauseon soils in depressions and drainageways: 10 percent

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

Soil Properties and Qualities

RIMER
Available water capacity: About 4.8 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 3 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: 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: Sandy glaciolacustrine deposits and the underlying till
Permeability: Rapid in the sandy part of the solum, moderately rapid in the loamy part of the solum, slow in the lower part of the solum, and slow or very slow in the substratum
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Loamy fine sand
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.
- 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.
- 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 effectiveness of subsurface drains may be reduced because the drains can become filled with sand.
- Plant nutrients are leached at an accelerated rate because of the sandy layer.

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.

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.
- Soil wetness may limit the use of this soil by log trucks.
- 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.
- 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 restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- 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

- 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

RIMER
Pasture amd hayland suitability group: C-1
Hydric soil: No

Soil Properties and Qualities

TEDROW
Available water capacity: About 5.3 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 3 to 12 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:*Sandy glaciolacustrine deposits overlying till
Permeability: Rapid in the sandy solum, and slow or very slow in the till substratum
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Loamy fine sand
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.
- 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 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 effectiveness of subsurface drains may be reduced because the drains can become filled with sand.
- Plant nutrients are leached at an accelerated rate because of the sandy layer.

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.

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.
- Soil wetness may limit the use of this soil by 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 restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- 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

- 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

TEDROW
Pasture amd hayland suitability group: C-1
Hydric soil: No

RfB=Rimer and Tedrow, till substratum, loamy fine sands, 2 to 6 percent slopes

Setting
Landform: Knolls on lake plains
Position on the landform: Summits, shoulders, backslopes
Size of areas: 2 to 15 acres

Map Unit Composition
Rimer and similar components: 46 percent
Tedrow and similar components: 44 percent

Similar components
More clay in the subsoil
Moderately well drained soils
Slopes of 0 to 2 percent
Darker colored surface layer
Fine sand, sandy loam, or fine sandy loam surface layer
Till at 48 to 60 inches

Contrasting components:
Wauseon soils in depressions and drainageways: 10 percent

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

Soil Properties and Qualities

RIMER
Available water capacity: About 4.8 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 3 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: 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: Sandy glaciolacustrine deposits and the underlying till
Permeability: Rapid in the sandy part of the solum, moderately rapid in the loamy part of the solum, slow in the lower part of the solum, and slow or very slow in the substratum
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Loamy fine sand
Potential for surface runoff: Low
Wind erosion hazard: Severe

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.
- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind 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.
- 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 effectiveness of subsurface drains may be reduced because the drains can become filled with sand.
- Plant nutrients are leached at an accelerated rate because of the sandy layer.

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.

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.
- Soil wetness may limit the use of this soil by log trucks.
- 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.
- 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 restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- 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

- 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

RIMER
Pasture amd hayland suitability group: C-1
Hydric soil: No

Soil Properties and Qualities

TEDROW
Available water capacity: About 5.3 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 3 to 12 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:*Sandy glaciolacustrine deposits overlying till
Permeability: Rapid in the sandy solum, and slow or very slow in the till substratum
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Loamy fine sand
Potential for surface runoff: Low
Wind erosion hazard: Severe

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.

- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind 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 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 effectiveness of subsurface drains may be reduced because the drains can become filled with sand.
- Plant nutrients are leached at an accelerated rate because of the sandy layer.

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.

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.
- Soil wetness may limit the use of this soil by 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 restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- 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

- 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

TEDROW
Pasture amd hayland suitability group: C-1
Hydric soil: No

RgA=Rimer and Tedrow-Urban land complex, 0 to 2 percent slopes

Setting
Landform: Flats and rises on lake plains
Position on the landform: Summits, shoulders
Size of areas: 5 to 25 acres

Map Unit Composition
Rimer and similar components: 34 percent
Tedrow and similar components: 31 percent
Urban land and similar components: 25 percent

Similar components
Darker colored surface layer
Fine sand, sandy loam, or fine sandy loam surface layer
Moderately well drained soils
More clay in the upper part of the solum
Till at 48 to 60 inches

Contrasting components:
Wauseon soils in depressions and drainageways: 10 percent

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

Soil Properties and Qualities

RIMER
Available water capacity: About 4.8 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 3 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: 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: Sandy glaciolacustrine deposits and the underlying till
Permeability: Rapid in the sandy part of the solum, moderately rapid in the loamy part of the solum, slow in the lower part of the solum, and slow or very slow in the substratum
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Loamy fine sand
Potential for surface runoff: Very low
Wind erosion hazard: Severe

Use and Management Considerations

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 restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- 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

- 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

RIMER
Pasture amd hayland suitability group: Not rated
Hydric soil: No

Soil Properties and Qualities

TEDROW
Available water capacity: About 5.3 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 3 to 12 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:*Sandy glaciolacustrine deposits overlying till
Permeability: Rapid in the sandy solum, and slow or very slow in the till substratum
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Loamy fine sand
Potential for surface runoff: Very low
Wind erosion hazard: Severe

Use and Management Considerations

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 restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- 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

- 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

TEDROW
Pasture amd hayland suitability group: Not rated
Hydric soil: No

URBAN LAND

Use and Management Considerations

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

Component Interpretive Groups

URBAN LAND
Pasture amd hayland suitability group: Not rated
Hydric soil: Unranked

RhA=Ritchey loam, 0 to 2 percent slopes

Setting
Landform: Flats and rises on reefs on lake plains
Position on the landform: Summits, shoulders
Size of areas: 5 to 30 acres

Map Unit Composition
Ritchey and similar components: 90 percent

Similar components
Few scattered wet spots

Calcareous surface layer
Fine sandy loam or silt loam surface layer
Milton soils
Bedrock at 4 to 10 inches
More clay in the subsoil
Dunbridge soils
Darker colored surface layer

Contrasting components:
The very stony Castalia soils on similar landform positions: 6 percent
The very stony Marblehead soils on similar landform positions: 4 percent

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

Soil Properties and Qualities

RITCHEY
Available water capacity: About 3.2 inches to a depth of 16 inches
Cation-exchange capacity of the surface layer: 9 to 22 meq per 100 grams
Depth class: Shallow
Depth to root restrictive feature: Bedrock (lithic): 10 to 20 inches
Depth to the top of the seasonal high water table: Greater than 1.3 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 till overlying limestone or dolostone
Permeability: Moderate
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Loam
Potential for surface runoff: Negligible
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.

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.
- 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.

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.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

RITCHEY
Pasture amd hayland suitability group: E-1
Hydric soil: No

RhB=Ritchey loam, 2 to 6 percent slopes

Setting
Landform: Knolls on reefs on lake plains
Position on the landform: Summit, shoulders, backslopes
Size of areas: 3 to 25 acres

Map Unit Composition
Ritchey and similar components: 90 percent

Similar components
Few scattered wet spots
Darker colored surface layer
Silt loam surface layer
Stones or boulders on the surface or in the soil
Milton soils
Slopes of 0 to 2 percent
More clay in the subsoil
Dunbridge soils

Contrasting components:
The very stony Castalia soils on similar landform positions: 6 percent
The very stony Marblehead soils on similar landform positions: 4 percent

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

Soil Properties and Qualities

RITCHEY
Available water capacity: About 3.2 inches to a depth of 16 inches
Cation-exchange capacity of the surface layer: 9 to 22 meq per 100 grams
Depth class: Shallow
Depth to root restrictive feature: Bedrock (lithic): 10 to 20 inches
Depth to the top of the seasonal high water table: Greater than 1.3 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 till overlying limestone or dolostone
Permeability: Moderate
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

- 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.

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.

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.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

RITCHEY
Pasture amd hayland suitability group: E-1
Hydric soil: No

RkA=Ritchey loam, stony, 0 to 2 percent slopes

Setting
Landform: Flats and rises on reefs on lake plains
Position on the landform: Summits, shoulders
Size of areas: 5 to 25 acres

Map Unit Composition
Ritchey and similar components: 90 percent

Similar components
Darker colored surface layer
Boulders on the surface or stones and boulders in the soil
Milton soils
Fine sandy loam or silt loam surface layer
More clay in the subsoil
Dunbridge soils

Contrasting components:
Rock outcrops on similar landform positions: 4 percent
The very stony Castalia soils on similar landform positions: 3 percent
The very stony Marblehead soils on similar landform positions: 3 percent

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

Soil Properties and Qualities

RITCHEY
Available water capacity: About 3.2 inches to a depth of 16 inches
Cation-exchange capacity of the surface layer: 9 to 22 meq per 100 grams
Depth class: Shallow

Depth to root restrictive feature: Bedrock (lithic): 10 to 20 inches
Depth to the top of the seasonal high water table: Greater than 1.3 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 till overlying limestone or dolostone
Permeability: Moderate
Potential frost action: Moderate
Rock fragments on surface: 2.0 percent
Shrink-swell potential: Moderate
Surface layer texture: Loam
Potential for surface runoff: Negligible
Wind erosion hazard: Slight

Use and Management Considerations

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.
- Large stones on the surface may restrict the operation of some farm machinery during pasture renovation.

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.
- Stones or boulders on the surface obstruct the use of mechanical planting equipment.
- Rock fragments in the soil obstruct the use 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.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

RITCHEY
Pasture amd hayland suitability group: E-1
Hydric soil: No

RmA=Risingsun-Rollersville complex, 0 to 1 percent slopes

Setting
Landform: Flats, depressions, and drainageways on lake plains
Size of areas: 5 to 230 acres

Map Unit Composition
Risingsun and similar components: 60 percent
Rollersville and similar components: 35 percent

Similar components
More clay in the subsoil
Noncalcareous surface layer and subsoil
Loam or loamy fine sand surface layer
Till at 10 to 20 inches
Till below 40 inches
Mucky loamy fine sand surface layer
Dark colored mineral surface layer less than 10 inches thick

Contrasting components:
Hoytville, shallow to carbonates on similar landform positions: 5 percent

Map Unit Interpretive Groups
Land capability classification: 3w
Prime farmland: Prime farmland if drained

Soil Properties and Qualities

RISINGSUN
Available water capacity: About 7.0 inches to a depth of 43 inches
Cation-exchange capacity of the surface layer: 60 to 150 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: 0.0 to 1.0 feet
Water table kind: Apparent
Ponding: Brief
Depth of ponding: 0.0 to 1.0 feet
Drainage class: Very poorly drained
Flooding: None
Organic matter content in the surface layer: 30.0 to 75.0 percent
Parent material: Herbaceous organic material, loamy and sandy glaciolacustrine deposits, and the underlying till
Permeability: Moderately rapid to moderately slow in the organic material, moderately rapid in the loamy and sandy part of the solum, moderately slow or slow in the lower part of the solum, and slow or very slow in the substratum
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Muck
Potential for surface runoff: Negligible
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.
- 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.
- The soil may be deficient in micronutrients because of the high content of organic matter.

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.
- 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.
- 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

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

Component Interpretive Groups

RISINGSUN
Pasture amd hayland suitability group: D-1
Hydric soil: Yes

Soil Properties and Qualities

ROLLERSVILLE
Available water capacity: About 4.8 inches to a depth of 49 inches
Cation-exchange capacity of the surface layer: 7 to 23 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: 0.0 to 1.0 feet
Water table kind: Apparent
Ponding: None
Drainage class: Poorly drained
Flooding: None
Organic matter content in the surface layer: 3.0 to 7.0 percent
Parent material: Sandy glaciolacustrine deposits and the underlying till
Permeability: Moderately rapid in the sandy material, moderately slow or slow in the lower part of the solum formed in till, and slow or very slow in the till substratum
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Fine sandy loam
Potential for surface runoff: Negligible
Wind erosion hazard: Moderate

Use and Management Considerations

Cropland

- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- 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.
- Subsurface drainage helps to lower the seasonal high water table.
- The effectiveness of subsurface drains may be reduced because the drains can become filled with sand.
- Plant nutrients are leached at an accelerated rate because of the sandy layer.

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.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by reducing root respiration.
- 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.
- Soil wetness may limit the use of this soil by 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.
- 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 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.

Component Interpretive Groups

ROLLERSVILLE
Pasture amd hayland suitability group: C-1
Hydric soil: Yes

RnA=Rollersville-Risingsun complex, 0 to 1 percent slopes

Setting
Landform: Flats, depressions, and drainageways on lake plains
Size of areas: 25 to 500 acres

Map Unit Composition
Rollersville and similar components: 65 percent
Risingsun and similar components: 35 percent

Similar components
Loam or loamy fine sand surface layer
Dark colored mineral surface layer less than 10 inches thick
Mucky loamy fine sand surface layer
Till at 10 to 20 inches
Till at 40 to 60 inches
Till between 60 and 80 inches

Map Unit Interpretive Groups
Land capability classification: 3w
Prime farmland: Prime farmland if drained

Soil Properties and Qualities

ROLLERSVILLE
Available water capacity: About 5.4 inches to a depth of 52 inches
Cation-exchange capacity of the surface layer: 7 to 23 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: 0.0 to 1.0 feet
Water table kind: Apparent
Ponding: None
Drainage class: Poorly drained
Flooding: None

Organic matter content in the surface layer: 3.0 to 7.0 percent
Parent material: Sandy glaciolacustrine deposits and the underlying till
Permeability: Moderately rapid in the sandy material, moderately slow or slow in the lower part of the solum formed in till, and slow or very slow in the till substratum
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Fine sandy loam
Potential for surface runoff: Negligible
Wind erosion hazard: Moderate

Use and Management Considerations

Cropland

- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- 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.
- Subsurface drainage helps to lower the seasonal high water table.
- The effectiveness of subsurface drains may be reduced because the drains can become filled with sand.
- Plant nutrients are leached at an accelerated rate because of the sandy layer.

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.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by reducing root respiration.
- 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.
- Soil wetness may limit the use of this soil by 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.
- 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 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 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.

Component Interpretive Groups

ROLLERSVILLE
Pasture amd hayland suitability group: C-1
Hydric soil: Yes

Soil Properties and Qualities

RISINGSUN
Available water capacity: About 7.2 inches to a depth of 41 inches
Cation-exchange capacity of the surface layer: 60 to 150 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: 0.0 to 1.0 feet
Water table kind: Apparent
Ponding: Brief
Depth of ponding: 0.0 to 1.0 feet
Drainage class: Very poorly drained
Flooding: None
Organic matter content in the surface layer: 30.0 to 75.0 percent
Parent material: Herbaceous organic material, loamy and sandy glaciolacustrine deposits, and the underlying till
Permeability: Moderately rapid to moderately slow in the organic material, moderately rapid in the loamy and sandy part of the solum, moderately slow or slow in the lower part of the solum, and slow or very slow in the substratum
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Muck
Potential for surface runoff: Negligible
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.
- 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.
- The soil may be deficient in micronutrients because of the high content of organic matter.

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.
- 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.
- 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

- 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.
- 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 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

RISINGSUN
Pasture amd hayland suitability group: D-1
Hydric soil: Yes

RsA=Rossburg silt loam, 0 to 2 percent slopes, frequently flooded

Setting
Landform: Rises, flats, and natural levees on flood plains
Size of areas: 5 to 45 acres

Map Unit Composition
Rossburg and similar components: 100 percent

Similar components
Less clay in the subsoil
Loam surface layer
Moderately well drained soils
Surface layer less than 10 inches thick
Less sand in the subsoil
Bedrock at 60 to 80 inches

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

ROSSBURG
Available water capacity: About 9.8 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 13 to 32 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: Greater than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: Frequent
Organic matter content in the surface layer: 4.0 to 8.0 percent
*Parent material:*Loamy alluvium
Permeability: Moderate in the solum, and 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.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.

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.
- 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 bridges is needed to prevent the damage caused by flooding.

Component Interpretive Groups

ROSSBURG
Pasture amd hayland suitability group: A-5
Hydric soil: No

SdA=Seward and Ottokee, till substratum, loamy fine sands, 0 to 2 percent slopes

Setting
Landform: Rises on lake plains and on dunes and beach ridges on lake plains
Position on the landform: Shoulders, summits
Size of areas: 2 to 25 acres

Map Unit Composition
Seward and similar components: 46 percent
Ottokee and similar components: 44 percent

Similar components
Till at 48 to 60 inches
Stratified sandy and silty substratum
Few scattered wet or seepy areas
Darker colored surface layer
Fine sand, fine sandy loam, sandy loam, or sand surface
Somewhat poorly drained soils
Sandy layer less than 18 inches thick
More clay in the subsoil

Contrasting components:
Hoytville soils in depressions and drainageways: 4 percent
Mermill soils in depressions and drainageways: 3 percent
Wauseon soils in depressions and drainageways: 3 percent

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

Soil Properties and Qualities

SEWARD
Available water capacity: About 5.7 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 3 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: 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: Sandy glaciolacustrine deposits and the underlying till
Permeability: Rapid in the sandy part of the solum, moderately rapid in the loamy part of the solum, slow in the lower part of the solum formed in till, and slow or very slow in the till substratum
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Loamy fine sand
Potential for surface runoff: Negligible
Wind erosion hazard: Severe

Use and Management Considerations

Cropland

- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind 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.

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.
- 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.
- 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 restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- 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

- 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

SEWARD
Pasture amd hayland suitability group: B-1
Hydric soil: No

Soil Properties and Qualities

OTTOKEE
Available water capacity: About 4.4 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 2 to 10 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 3.5 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: Sandy glaciolacustrine deposits overlying till
Permeability: Rapid in the sandy glaciolacustrine material, and slow or very slow in the till substratum
Potential frost action: Low
Shrink-swell potential: Moderate
Surface layer texture: Loamy fine sand
Potential for surface runoff: Negligible
Wind erosion hazard: Severe

Use and Management Considerations

Cropland

- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind 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.
- Plant nutrients are leached at an accelerated rate because of the sandy layer.

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.
- 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.
- 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 restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- 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

- This soil is well suited to use as a site for local roads and streets.

Component Interpretive Groups

OTTOKEE
Pasture amd hayland suitability group: B-1
Hydric soil: No

SdB=Seward and Ottokee, till substratum, loamy fine sands, 2 to 6 percent slopes

Setting
Landform: Knolls on lake plains and on dunes and beach ridges on lake plains
Position on the landform: Summits, shoulders, backslopes
Size of areas: 2 to 25 acres

Map Unit Composition
Seward and similar components: 46 percent
Ottokee and similar components: 44 percent

Similar components
Slopes of 0 to 2 percent
Stratified loamy and silty substratum
Somewhat poorly drained soils
Sandy layer less than 18 inches thick

Few scattered wet or seepy areas
Well drained soils with 3 to 6 foot water table
Fine sand, fine sandy loam, sandy loam, or sand surface layer
Darker colored surface layer
Till at 48 to 60 inches

Contrasting components:
Hoytville soils in depressions and drainageways: 4 percent
Mermill soils in depressions and drainageways: 3 percent
Wauseon soils in depressions and drainageways: 3 percent

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

Soil Properties and Qualities

SEWARD
Available water capacity: About 5.7 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 3 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: 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: Sandy glaciolacustrine deposits and the underlying till
Permeability: Rapid in the sandy part of the solum, moderately rapid in the loamy part of the solum, slow in the lower part of the solum formed in till, and slow or very slow in the till substratum
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Loamy fine sand
Potential for surface runoff: Negligible
Wind erosion hazard: Severe

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.
- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind 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.

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.
- 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.
- 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 restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- 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

- 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

SEWARD
Pasture amd hayland suitability group: B-1
Hydric soil: No

Soil Properties and Qualities

OTTOKEE
Available water capacity: About 4.4 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 2 to 10 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 3.5 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: Sandy glaciolacustrine deposits overlying till
Permeability: Rapid in the sandy glaciolacustrine material, and slow or very slow in the till substratum
Potential frost action: Low
Shrink-swell potential: Moderate
Surface layer texture: Loamy fine sand
Potential for surface runoff: Negligible
Wind erosion hazard: Severe

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.
- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind 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.
- Plant nutrients are leached at an accelerated rate because of the sandy layer.

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.
- 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.
- 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 restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- 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

- This soil is well suited to use as a site for local roads and streets.

Component Interpretive Groups

OTTOKEE
Pasture amd hayland suitability group: B-1
Hydric soil: No

SeA=Shawtown loam, 0 to 2 percent slopes

Setting
Landform: Rises on beach ridges on lake plains
Position on the landform: Summits, shoulders
Size of areas: 2 to 10 acres

Map Unit Composition
Shawtown and similar components: 98 percent

Similar components
Less clay and more sand in the subsoil
Well drained soils
Sandy loam or fine sandy loam surface layer
Darker colored surface layer

Contrasting components:
Alvada soils in depressions and drainageways: 2 percent

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

Soil Properties and Qualities

SHAWTOWN
Available water capacity: About 7.9 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 7 to 22 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Dense material: 50 to 70 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: Stratified glaciolacustrine deposits overlying till
Permeability: Moderate in the loamy solum, rapid in the sandy and gravelly substratum, and slow or very slow in the till 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

- This soil is well suited to cropland.

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.
- Rock fragments in the soil obstruct the use 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.
- 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 restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- 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

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

Component Interpretive Groups

SHAWTOWN
Pasture amd hayland suitability group: A-1
Hydric soil: No

SeB=Shawtown loam, 2 to 6 percent slopes

Setting
Landform: Knolls on beach ridges on lake plains
Position on the landform: Summit, shoulders, backslopes
Size of areas: 2 to 45 acres

Map Unit Composition
Shawtown and similar components: 98 percent

Similar components
Less clay and more sand in the subsoil
Till at 40 to 50 inches
Well drained soils
Sandy loam or fine sandy loam surface layer
Till below 70 inches
Slopes of 0 to 2 percent
Slopes of 6 to 12 percent

Contrasting components:
Aurand soils on flats: 2 percent

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

Soil Properties and Qualities

SHAWTOWN
Available water capacity: About 7.9 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 7 to 22 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Dense material: 50 to 70 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: Stratified glaciolacustrine deposits overlying till
Permeability: Moderate in the loamy solum, rapid in the sandy and gravelly substratum, and slow or very slow in the till 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

- 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.

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.
- Rock fragments in the soil obstruct the use 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.
- 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 restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- 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

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

Component Interpretive Groups

SHAWTOWN
Pasture amd hayland suitability group: A-1
Hydric soil: No

SgA=Shoals loam, 0 to 2 percent slopes, frequently flooded

Setting
Landform: Flats and rises on flood plains
Size of areas: 3 to 30 acres

Map Unit Composition
Shoals and similar components: 100 percent

Similar components
Fine sandy loam or clay loam surface layer
Darker colored surface layer
Moderately well drained soils
Bedrock between 48 and 60 inches

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

SHOALS
Available water capacity: About 9.9 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 11 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: 0.5 to 2.0 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: Moderate in the solum, and moderate or moderately rapid in the substratum
Potential frost action: High
Shrink-swell potential: Low
Surface layer texture: 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.
- 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.

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.

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

SHOALS
Pasture amd hayland suitability group: C-3
Hydric soil: No

ShA=Shoals silt loam, 0 to 2 percent slopes, frequently flooded

Setting
Landform: Flats and rises on flood plains
Size of areas: 3 to 60 acres

Map Unit Composition
Shoals and similar components: 90 percent

Similar components
Loam surface layer
Bedrock at 48 and 60 inches
Darker colored surface layer
Less sand in the subsoil
Moderately well drained soils

Contrasting components:
Sloan soils in depressions and backswamps: 10 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

SHOALS
Available water capacity: About 9.9 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 11 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: 0.5 to 2.0 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: Moderate in the solum, and moderate or moderately rapid in the substratum
Potential frost action: High
Shrink-swell potential: Low
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.
- 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.

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

SHOALS
Pasture amd hayland suitability group: C-3
Hydric soil: No

SkA=Shoals silty clay loam, 0 to 2 percent slopes, frequently flooded

Setting
Landform: Flats and rises on flood plains
Size of areas: 2 to 25 acres

Map Unit Composition
Shoals and similar components: 90 percent

Similar components
Till at 40 to 60 inches
Darker colored surface layer
Loam or clay loam surface layer
Bedrock at 48 to 60 inches
More clay in the subsoil

Contrasting components:
Sloan soils in depressions and backswamps: 10 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

SHOALS
Available water capacity: About 9.9 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 15 to 27 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 2.0 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: Moderate in the solum, and moderate or moderately rapid 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.
- 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.
- 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 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

SHOALS
Pasture amd hayland suitability group: C-3
Hydric soil: No

SmA=Shoals and Sloan complex, moderately deep to limestone, 0 to 2 percent slopes, frequently flooded

Setting
Landform: Shoals: Flats and rises on flood plains; Sloan: Flats and backswamps on flood plains
Size of areas: 3 to 35 acres

Map Unit Composition
Shoals and similar components: 51 percent
Sloan and similar components: 49 percent

Similar components
Bedrock at 42 to 60 inches
Areas subject to occasional flooding
Bedrock at 10 to 20 inches
Slopes of 2 to 6 percent
More silt in the subsoil
Moderately well drained soils
Dark colored surface layer less than 10 inches thick
More clay in the subsoil

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

SHOALS
Available water capacity: About 6.1 inches to a depth of 31 inches
Cation-exchange capacity of the surface layer: 11 to 24 meq per 100 grams
Depth class: Moderately deep or deep
Depth to root restrictive feature: Bedrock (lithic): 20 to 42 inches
Depth to the top of the seasonal high water table: 0.5 to 2.0 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 over limestone and dolostone
Permeability: Moderate
Potential frost action: High
Shrink-swell potential: Low
Surface layer texture: Loam
Potential for surface runoff: Negligible
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The rooting depth of crops is restricted by bedrock.
- 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.
- 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

- 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.
- The rooting depth of plants may be restricted by bedrock.

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.

- 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 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.
- 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

SHOALS
Pasture amd hayland suitability group: C-3
Hydric soil: No

Soil Properties and Qualities

SLOAN
Available water capacity: About 4.4 inches to a depth of 24 inches
Cation-exchange capacity of the surface layer: 17 to 33 meq per 100 grams
Depth class: Moderately deep or deep
Depth to root restrictive feature: Bedrock (lithic): 20 to 42 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: Frequent
Organic matter content in the surface layer: 3.0 to 6.0 percent
*Parent material:*Loamy alluvium overlying limestone and dolostone
Permeability: Moderately slow or moderate
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 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.
- 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.
- A combination of surface and subsurface drainage helps to remove excess water.

- 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.
- 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.
- 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.
- 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.
- 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

- 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.
- 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 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.
- 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

SLOAN
Pasture amd hayland suitability group: B-3
Hydric soil: Yes

SnA=Sloan silt loam, 0 to 1 percent slopes, frequently flooded

Setting
Landform: Backswamps and flats on flood plains
Size of areas: 5 to 50 acres

Map Unit Composition
Sloan and similar components: 90 percent

Similar components
Silty clay loam surface layer
Thinner surface layer
Loam surface layer
Bedrock at 48 to 60 inches

Contrasting components:
Shoals soils on rises: 10 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

SLOAN
Available water capacity: About 10.3 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 12 to 28 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: Brief
Depth of ponding: 0.0 to 1.0 feet
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: Low
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.
- 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.
- 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.
- 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

- 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.
- 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.
- 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

SLOAN
Pasture amd hayland suitability group: C-3
Hydric soil: Yes

SoA=Sloan silty clay loam, 0 to 1 percent slopes, occasionally flooded

Setting
Landform: Flats and backswamps on flood plains
Size of areas: 20 to 150 acres

Map Unit Composition
Sloan and similar components: 95 percent

Similar components
Silt loam surface layer
Till at 60 to 80 inches
More clay and less sand in the subsoil
Surface layer less than 10 inches thick
Lighter colored surface layer

Contrasting components:
Shoals soils on rises: 5 percent

Map Unit Interpretive Groups
Land capability classification: 3w
Prime farmland: Prime farmland if drained

Soil Properties and Qualities

SLOAN
Available water capacity: About 10.5 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 17 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: 0.0 to 1.0 feet
Water table kind: Apparent
Ponding: Brief
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: Moderately slow or moderate
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.
- 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.
- 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.
- 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

- 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.
- 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

SLOAN
Pasture amd hayland suitability group: C-3
Hydric soil: Yes

SpA=Sloan silty clay loam, 0 to 1 percent slopes, frequently flooded

Setting
Landform: Flats and backswamps on flood plains
Size of areas: 5 to 275 acres

Map Unit Composition
Sloan and similar components: 90 percent

Similar components
Surface layer less than 10 inches thick
More clay in the subsoil
Silt loam or clay loam surface layer
Till at 40 to 60 inches
Bedrock at 48 to 60 inches

Contrasting components:
Eel soils on rises: 5 percent
Shoals soils on rises: 5 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

SLOAN
Available water capacity: About 10.1 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 17 to 33 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: Brief
Depth of ponding: 0.0 to 1.0 feet
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: 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.
- 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.
- 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.
- 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.
- 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

- 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.
- 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.
- 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

SLOAN
Pasture amd hayland suitability group: C-3
Hydric soil: Yes

SrB=Spinks fine sand, 2 to 6 percent slopes

Setting
Landform: Rises and knolls on dunes and beach ridges on lake plains
Position on the landform: Summits, shoulders, backslopes
Size of areas: 3 to 25 acres

Map Unit Composition
Spinks and similar components: 90 percent

Similar components
Lamellae below 40 inches
Soils with less than 6 inches of lamellae
Slopes of 0 to 2 percent
Seasonal high water table at 48 to 60 inches

Moderately well drained soils
Darker colored surface layer
Soils without lamellae
Loamy fine sand or sand surface texture

Contrasting components:
Tedrow soils on flats and seeps: 10 percent

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

Soil Properties and Qualities

SPINKS
Available water capacity: About 4.4 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 2 to 13 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 4.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 0.5 to 2.0 percent
Parent material: Sandy eolian or glaciolacustrine deposits
Permeability: Moderately rapid or rapid in the upper part of the solum, and moderately rapid in the lower part of the solum
Potential frost action: Low
Shrink-swell potential: Low
Surface layer texture: Fine sand
Potential for surface runoff: Negligible
Wind erosion hazard: Severe

Use and Management Considerations

Cropland

- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind 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.
- Plant nutrients are leached at an accelerated rate because of the sandy layer.

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.
- Burning may destroy organic matter.

Building sites

- 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

- This soil is well suited to use as a site for local roads and streets.

Component Interpretive Groups

SPINKS
Pasture amd hayland suitability group: B-1
Hydric soil: No

SrC=Spinks fine sand, 6 to 12 percent slopes

Setting
Landform: Knolls on dunes and beach ridges on lake plains
Position on the landform: Backslope, summits, shoulders
Size of areas: 5 to 40 acres

Map Unit Composition
Spinks and similar components: 90 percent

Similar components
Soils with lamellae below 40 inches
Loamy fine sand or sand surface texture
Soils without lamellae
Darker colored surface layer
Moderately well drained soils
Slopes of 2 to 6 percent
Seasonal high water table at 48 to 60 inches

Contrasting components:
Slopes of 0 to 2 percent: 5 percent
Tedrow soils on flats and seeps: 5 percent

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

Soil Properties and Qualities

SPINKS
Available water capacity: About 4.4 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 2 to 13 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 4.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 0.5 to 2.0 percent
Parent material: Sandy eolian or glaciolacustrine deposits
Permeability: Moderately rapid or rapid in the upper part of the solum, and moderately rapid in the lower part of the solum
Potential frost action: Low
Shrink-swell potential: Low
Surface layer texture: Fine sand
Potential for surface runoff: Very low
Wind erosion hazard: Severe

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.
- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind 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.
- Plant nutrients are leached at an accelerated rate because of the sandy layer.

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 slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- The slope may restrict the use of some 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 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 the slope, designing local roads and streets is difficult.

Component Interpretive Groups

SPINKS
Pasture amd hayland suitability group: B-1
Hydric soil: No

SrD=Spinks fine sand, 12 to 18 percent slopes

Setting
Landform: Knolls on dunes and beach ridges on lake plains
Position on the landform: Summits, shoulders, backslopes
Size of areas: 3 to 15 acres

Map Unit Composition
Spinks and similar components: 90 percent

Similar components
Darker colored surface layer
Soils without lamellae
Sand surface layer
Slopes of 6 to 12 percent
Seasonal high water table at 48 to 60 inches

Contrasting components:
Slopes of 0 to 6 percent: 5 percent
Tedrow soils on flats and seeps: 5 percent

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

Soil Properties and Qualities

SPINKS
Available water capacity: About 4.4 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 2 to 13 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 4.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 0.5 to 2.0 percent
Parent material: Sandy eolian or glaciolacustrine deposits
Permeability: Moderately rapid or rapid in the upper part of the solum, and moderately rapid in the lower part of the solum
Potential frost action: Low
Shrink-swell potential: Low
Surface layer texture: Fine sand
Potential for surface runoff: Very low
Wind erosion hazard: Severe

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.
- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind 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.
- 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.
- 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 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 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.
- 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

SPINKS
Pasture amd hayland suitability group: B-1
Hydric soil: No

SsB=Spinks loamy fine sand, 2 to 6 percent slopes

Setting
Landform: Knolls and rises on dunes and beach ridges on lake plains
Position on the landform: Summits, shoulders, backslopes
Size of areas: 3 to 40 acres

Map Unit Composition
Spinks and similar components: 90 percent

Similar components
Stratified loamy and silty substratum
Till at 40 to 60 inches
Slopes of 6 to 12 percent
Fine sand surface texture
Soils without lamellae
Slopes of 0 to 2 percent
Darker colored surface layer
Moderately well drained soils
Soils with a seasonal high water table between 48 and 60 inches

Contrasting components:
Tedrow soils on flats and seeps: 10 percent

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

Soil Properties and Qualities

SPINKS
Available water capacity: About 4.4 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 2 to 13 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 4.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 0.5 to 2.0 percent
Parent material: Sandy eolian or glaciolacustrine deposits
Permeability: Moderately rapid or rapid in the upper part of the solum, and moderately rapid in the lower part of the solum
Potential frost action: Low
Shrink-swell potential: Low
Surface layer texture: Loamy fine sand
Potential for surface runoff: Negligible
Wind erosion hazard: Severe

Use and Management Considerations

Cropland

- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind 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.
- Plant nutrients are leached at an accelerated rate because of the sandy layer.

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.
- Burning may destroy organic matter.

Building sites

- 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

- This soil is well suited to use as a site for local roads and streets.

Component Interpretive Groups

SPINKS
Pasture amd hayland suitability group: B-1
Hydric soil: No

SsC=Spinks loamy fine sand, 6 to 12 percent slopes

Setting
Landform: Knolls on dunes and beach ridges on lake plains
Position on the landform: Summits, shoulders, backslopes
Size of areas: 3 to 20 acres

Map Unit Composition
Spinks and similar components: 90 percent

Similar components
Sand or fine sand surface layer
Soils with a seasonal high water table between 48 and 60 inches
Darker colored surface layer
Soils without lamellae
Ottokee soils
Slopes of 2 to 6 percent

Contrasting components:
Tedrow soils on flats and seeps: 10 percent

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

Soil Properties and Qualities

SPINKS
Available water capacity: About 4.4 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 2 to 13 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 4.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 0.5 to 2.0 percent
Parent material: Sandy eolian or glaciolacustrine deposits
Permeability: Moderately rapid or rapid in the upper part of the solum, and moderately rapid in the lower part of the solum
Potential frost action: Low
Shrink-swell potential: Low
Surface layer texture: Loamy fine sand
Potential for surface runoff: Very low
Wind erosion hazard: Severe

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.
- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind 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.
- Plant nutrients are leached at an accelerated rate because of the sandy layer.

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 slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- The slope may restrict the use of some 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 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 the slope, designing local roads and streets is difficult.

Component Interpretive Groups

SPINKS
Pasture amd hayland suitability group: B-1
Hydric soil: No

StB=St. Clair loam, 2 to 6 percent slopes

Setting
Landform: Knolls and rises, and dissected areas along streams on lake plains
Position on the landform: Summits, shoulders, backslopes
Size of areas: 2 to 20 acres

Map Unit Composition
St. Clair and similar components: 90 percent

Similar components
Somewhat poorly drained soils
Bedrock at 48 to 60 inches
Less clay in the subsoil
Silt loam surface layer
Slopes of 0 to 2 percent
Eroded areas with a clay loam surface layer

Contrasting components:
Severely eroded area with carbonates between 9 and 18 inches: 10 percent

Map Unit Interpretive Groups
Land capability classification: 3e
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

ST. CLAIR
Available water capacity: About 5.8 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 10 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: 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: Wave-planed till
Permeability: Slow in the solum, and very slow or slow in the substratum
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: 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 rooting depth of crops may be restricted by the 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.
- 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.
- Because of the stickiness of the soil, the use of equipment for site preparation is restricted to the drier periods.

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 restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- 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

ST. CLAIR
Pasture amd hayland suitability group: F-5
Hydric soil: No

StC2=St. Clair loam, 6 to 12 percent slopes, eroded

Setting
Landform: Dissected areas along streams on lake plains
Position on the landform: Backslopes, shoulders
Size of areas: 2 to 15 acres

Map Unit Composition
St. Clair and similar components: 90 percent

Similar components
Slopes of 12 to 18 percent
Silt loam or clay loam surface layer
Less clay in the subsoil
Nappanee soils
Slightly eroded areas
Well drained soils
Bedrock at 48 to 60 inches

Contrasting components:
Severely eroded areas with carbonates on the surface: 5 percent
Slopes of 18 to 25 percent: 5 percent

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

Soil Properties and Qualities

ST. CLAIR
Available water capacity: About 5.8 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 10 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: 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: Wave-planed till
Permeability: Slow in the solum, and very slow or slow in the substratum
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: 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.
- 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.
- 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.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- Because of the stickiness of the soil, the use of equipment for site preparation is restricted to the drier periods.

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.

- 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

- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- 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 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.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

ST. CLAIR
Pasture amd hayland suitability group: F-5
Hydric soil: No

SuB2=St. Clair silty clay loam, 2 to 6 percent slopes, eroded

Setting
Landform: Knolls and rises, and dissected areas along streams on lake plains
Position on the landform: Summits, shoulders, backslopes
Size of areas: 2 to 10 acres

Map Unit Composition
St. Clair and similar components: 100 percent

Similar components
Somewhat poorly drained soils
Severely eroded areas with carbonates at 9 to 18 inches
Less clay in the subsoil
Slightly eroded areas
Clay loam or silt loam surface layer
Slopes of 0 to 2 percent
Slopes of 6 to 12 percent
Bedrock at 48 to 60 inches

Map Unit Interpretive Groups
Land capability classification: 3e
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

ST. CLAIR
Available water capacity: About 5.6 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 12 to 28 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: 0.5 to 2.0 percent
Parent material: Wave-planed till
Permeability: Slow in the solum, and very slow or slow in the substratum
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silty 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.
- 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.
- Clods may form if the soil is tilled when wet.
- 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.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- 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 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 restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- 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

ST. CLAIR
Pasture amd hayland suitability group: F-5
Hydric soil: No

SuC2=St. Clair silty clay loam, 6 to 12 percent slopes, eroded

Setting
Landform: Dissected areas along streams on lake plains
Position on the landform: Backslopes, shoulders
Size of areas: 2 to 15 acres

Map Unit Composition
St. Clair and similar components: 90 percent

Similar components
Fulton soils
Slopes of 12 to 18 percent
Slopes of 2 to 6 percent
Less clay in the subsoil
Clay loam, silt loam, or loam surface layer
Bedrock at 48 to 60 inches
Severely eroded areas with carbonates at 9 to 18 inches
Nappanee soils

Contrasting components:
Severely eroded areas with carbonates on the surface: 5 percent
Slopes of 18 to 40 percent: 5 percent

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

Soil Properties and Qualities

ST. CLAIR
Available water capacity: About 5.6 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 12 to 28 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: 0.5 to 2.0 percent
Parent material: Wave-planed till
Permeability: Slow in the solum, and very slow or slow in the substratum
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

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.
- Clods may form if the soil is tilled when wet.
- 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.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- 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 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.
- 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

- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- 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 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.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

ST. CLAIR
Pasture amd hayland suitability group: F-5
Hydric soil: No

SuD2=St. Clair silty clay loam, 12 to 18 percent slopes, eroded

Setting
Landform: Dissected areas along streams on lake plains
Position on the landform: Backslopes, shoulders
Size of areas: 3 to 20 acres

Map Unit Composition
St. Clair and similar components: 90 percent

Similar components
Fine sandy loam, clay loam, or loam surface layer
Well drained soils
Slopes of 6 to 12 percent
Less clay in the subsoil
Slightly eroded areas
Slopes of 18 to 25 percent
Bedrock at 48 to 60 inches

Contrasting components
Severely eroded areas with carbonates on the surface: 10 percent

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

Soil Properties and Qualities

ST. CLAIR
Available water capacity: About 5.6 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 12 to 28 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: 0.5 to 2.0 percent
Parent material: Wave-planed till
Permeability: Slow in the solum, and very slow or slow in the substratum
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

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.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- 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 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.
- 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 restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- 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

ST. CLAIR
Pasture amd hayland suitability group: F-5
Hydric soil: No

SuE2=St. Clair silty clay loam, 18 to 25 percent slopes, eroded

Setting
Landform: Dissected areas on lake plains
Position on the landform: Backslopes, shoulders
Size of areas: 5 to 60 acres

Map Unit Composition
St. Clair and similar components: 90 percent

Similar components
Slightly eroded areas
Less clay in the subsoil
Slopes of 12 to 18 percent
Slopes of 25 to 35 percent
Clay loam, silt loam, or loam surface layer
Well drained soils
Bedrock at 48 to 60 inches

Contrasting components:
Severely eroded areas with carbonates on the surface: 5 percent
Slopes of 6 to 12 percent: 5 percent

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

Soil Properties and Qualities

ST. CLAIR
Available water capacity: About 5.6 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 12 to 28 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: 0.5 to 2.0 percent
Parent material: Wave-planed till
Permeability: Slow in the solum, and very slow or slow in the substratum
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

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.
- 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 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.
- 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 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.
- 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 restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- 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

ST. CLAIR
Pasture amd hayland suitability group: F-5
Hydric soil: No

TeA=Tedrow loamy fine sand, 0 to 2 percent slopes

Setting
Landform: Rises on dunes and beach ridges on lake plains
Position on the landform: Shoulders, summits
Size of areas: 3 to 35 acres

Map Unit Composition
Tedrow and similar components: 90 percent

Similar components
Stratified loamy and silty substratum
More clay in the subsoil
Moderately well drained soils
Till at 40 to 60 inches
Darker colored surface layer
Fine sand or fine sandy loam surface layer

Rimer soils

Contrasting components:
Granby soils in depressions and drainageways: 10 percent

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

Soil Properties and Qualities

TEDROW
Available water capacity: About 5.1 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 3 to 12 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 2.0 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: Sandy glaciolacustrine or eolian deposits
Permeability: Rapid
Potential frost action: Moderate
Shrink-swell potential: Low
Surface layer texture: Loamy fine sand
Potential for surface runoff: Negligible
Wind erosion hazard: Severe

Use and Management Considerations

Cropland

- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind 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.
- Subsurface drainage helps to lower the seasonal high water table.
- The effectiveness of subsurface drains may be reduced because the drains can become filled with sand.
- Plant nutrients are leached at an accelerated rate because of the sandy layer.

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.

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.
- Soil wetness may limit the use of this soil by log trucks.
- 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.
- 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

- 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

TEDROW
Pasture amd hayland suitability group: C-1
Hydric soil: No

TeB=Tedrow loamy fine sand, 2 to 6 percent slopes

Setting
Landform: Rises and knolls on dunes and beach ridges on lake plains
Position on the landform: Backslopes, summits, shoulders
Size of areas: 2 to 20 acres

Map Unit Composition
Tedrow and similar components: 100 percent

Similar components
Slopes of 0 to 2 percent
Stratified loamy and silty substratum
Rimer soils
Fine sand or fine sandy loam surface layer
Darker colored surface layer
Till at 40 to 60 inches
Moderately well drained soils

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

Soil Properties and Qualities

TEDROW
Available water capacity: About 5.1 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 3 to 12 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 2.0 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: Sandy glaciolacustrine or eolian deposits
Permeability: Rapid
Potential frost action: Moderate
Shrink-swell potential: Low
Surface layer texture: Loamy fine sand
Potential for surface runoff: Negligible
Wind erosion hazard: Severe

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.
- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind 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.
- Subsurface drainage helps to lower the seasonal high water table.
- The effectiveness of subsurface drains may be reduced because the drains can become filled with sand.
- Plant nutrients are leached at an accelerated rate because of the sandy layer.

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.

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.
- Soil wetness may limit the use of this soil by log trucks.
- 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.
- 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

- 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

TEDROW
Pasture amd hayland suitability group: C-1
Hydric soil: No

TfA=Tedrow-Urban land complex, 0 to 2 percent slopes

Setting
Landform: Rises on dunes and beach ridges on lake plains
Position on the landform: Summits, shoulders
Size of areas: 5 to 90 acres

Map Unit Composition
Tedrow and similar components: 60 percent
Urban land and similar components: 30 percent

Similar components
Darker colored surface layer
Fine sand or fine sandy loam surface layer
Moderately well drained soils
More clay in the subsoil
Stratified loamy and silty substratum
Rimer soils
Till at 40 to 60 inches

Contrasting components:
Granby soils in depressions and drainageways: 10 percent

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

Soil Properties and Qualities

TEDROW
Available water capacity: About 5.1 inches to a depth of 60 inches

Cation-exchange capacity of the surface layer: 3 to 12 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 2.0 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: Sandy glaciolacustrine or eolian deposits
Permeability: Rapid
Potential frost action: Moderate
Shrink-swell potential: Low
Surface layer texture: Loamy fine sand
Potential for surface runoff: Negligible
Wind erosion hazard: Severe

Use and Management Considerations

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.
- 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

- 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

TEDROW
Pasture amd hayland suitability group: Not rated
Hydric soil: No

URBAN LAND

Use and Management Considerations

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

Component Interpretive Groups

URBAN LAND
Pasture amd hayland suitability group: Not rated
Hydric soil: Unranked

TpA=Toledo silty clay loam, 0 to 1 percent slopes

Setting
Landform: Extensive flats, depressions, and drainageways on lake plains
Size of areas: 5 to 200 acres

Map Unit Composition
Toledo and similar components: 90 percent

Similar components
Surface layer more than 10 inches thick
Silty clay surface layer
Hoytville soils
Lighter colored surface layer
Till at 40 to 60 inches

Contrasting components:
Fulton soils on rises: 10 percent

Map Unit Interpretive Groups
Land capability classification: 3w
Prime farmland: Prime farmland if drained

Soil Properties and Qualities

TOLEDO
Available water capacity: About 7.4 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 17 to 36 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 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: Clayey glaciolacustrine deposits
Permeability: Slow
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.
- Clods may form if the soil is tilled when wet.
- 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.
- A combination of surface and subsurface drainage helps to remove excess water.
- 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.
- 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.
- Because of the stickiness of the soil, the use of equipment for site preparation is restricted to the drier periods.
- 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.
- 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 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

TOLEDO
Pasture amd hayland suitability group: C-2
Hydric soil: Yes

TuA=Toledo-Urban land complex, 0 to 1 percent slopes

Setting
Landform: Flats, depressions, and drainageways on lake plains
Size of areas: 10 to 300 acres

Map Unit Composition
Toledo and similar components: 55 percent
Urban land and similar components: 35 percent

Similar components
Lighter colored surface layer
Silty clay surface layer
Hoytville soils
Surface layer more than 10 inches thick
Till at 40 to 60 inches

Contrasting components:
Fulton soils on rises: 10 percent

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

Soil Properties and Qualities

TOLEDO
Available water capacity: About 7.4 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 17 to 36 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 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: Clayey glaciolacustrine deposits
Permeability: Slow
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

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.
- 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 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

TOLEDO
Pasture amd hayland suitability group: Not rated
Hydric soil: Yes

URBAN LAND

Use and Management Considerations

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

Component Interpretive Groups

URBAN LAND
Pasture amd hayland suitability group: Not rated
Hydric soil: Unranked

UcA=Udorthents, loamy, 0 to 2 percent slopes

Setting
Landform: Fill and cut (road, railroad, etc.) material on lake plains
Size of areas: 5 to 350 acres

Map Unit Composition
Udorthents and similar components: 85 percent

Similar components
Slope of 2 to 6 percent
Dense till at or near the surface

Contrasting components:
Buildings, roads, and parking lots: 10 percent
Areas of undisturbed soil: 5 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 amd hayland suitability group: Not rated
Hydric soil: Unranked

UcE=Udorthents, loamy, 2 to 25 percent slopes

Setting
Landform: Fill and cut (road, railroad, etc.) material on lake plains
Size of areas: 5 to 100 acres

Map Unit Composition
Udorthents and similar components: 90 percent

Similar components
Dense till at or near the surface
Slope of 0 to 2 percent

Contrasting components:
Areas of undisturbed soil: 5 percent
Roads: 5 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

UDORTHENTS
Pasture amd hayland suitability group: Not rated
Hydric soil: Unranked

Ur=Urban land

Setting
Landform: Flats on lake plains
Size of areas: 10 to 600 acres

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

URBAN LAND
Pasture amd hayland suitability group: Not rated
Hydric soil: Unranked

WbA=Wabasha silty clay, 0 to 1 percent slopes, frequently flooded

Setting
Landform: Flats and backswamps on flood plains
Size of areas: 10 to 200 acres

Map Unit Composition
Wabasha and similar components: 90 percent

Similar components
Silty clay loam surface layer
Thick lighter colored surface layer from overwash
Till at 40 to 60 inches
More sand in the subsoil

Contrasting components:
Somewhat poorly drained soils on rises: 10 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

WABASHA
Available water capacity: About 8.7 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 22 to 39 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: Brief
Depth of ponding: 0 to 1 foot
Drainage class: Very poorly drained
Flooding: Frequent
Organic matter content in the surface layer: 3.0 to 6.0 percent
*Parent material:*Clayey alluvium
Permeability: Slow
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silty clay
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.
- Clods may form if the soil is tilled when wet.
- 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.
- 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.
- A combination of surface and subsurface drainage helps to remove excess water.
- 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

- 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.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- Because of the stickiness of the soil, the use of equipment for site preparation is restricted to the drier periods.
- 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.
- 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.
- 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

- 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

WABASHA
Pasture amd hayland suitability group: C-3
Hydric soil: Yes

WmA=Wauseon loamy fine sand, 0 to 1 percent slopes

Setting
Landform: Flats, depressions, and drainageways on deltas on lake plains

Size of areas: 3 to 60 acres

Map Unit Composition
Wauseon and similar components: 90 percent

Similar components
Fine sandy loam or loam surface layer
More clay in the subsoil
Stratified loamy and silty substratum
Surface layer less than 10 inches thick
Gravelly substratum
More sand in the subsoil
Till at 48 to 60 inches
Till at 18 to 30 inches

Contrasting components:
Hoytville soils on similar landform positions: 4 percent
Nappanee soils on rises: 3 percent
Rimer soils on rises: 3 percent

Map Unit Interpretive Groups
Land capability classification: 3w
Prime farmland: Prime farmland if drained

Soil Properties and Qualities

WAUSEON
Available water capacity: About 4.3 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 7 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: 0.0 to 1.0 feet
Water table kind: Perched
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: 3.0 to 7.0 percent
Parent material: Loamy and sandy glaciolacustrine deposits overlying till
Permeability: Moderately rapid in the solum, and slow or very slow in the substratum
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Loamy fine sand
Potential for surface runoff: Negligible
Wind erosion hazard: Severe

Use and Management Considerations

Cropland

- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- 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.
- 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.

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.

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.
- Soil wetness may limit the use of this soil by log trucks.
- Ponding restricts the safe use of roads by 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.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

Component Interpretive Groups

WAUSEON
Pasture amd hayland suitability group: C-1
Hydric soil: Yes

WnA=Wauseon fine sandy loam, deep to till, 0 to 1 percent slopes

Setting
Landform: Flats, depressions, and drainageways on deltas on lake plains
Size of areas: 3 to 200 acres

Map Unit Composition
Wauseon and similar components: 90 percent

Similar components
Surface layer more than 10 inches thick
Stratified loamy and silty substratum
More clay in the subsoil
Till at 20 to 48 inches

Contrasting components:
Ottokee soils on rises and knolls: 5 percent
Tedrow soils on rises: 5 percent

Map Unit Interpretive Groups
Land capability classification: 3w
Prime farmland: Prime farmland if drained

Soil Properties and Qualities

WAUSEON
Available water capacity: About 5.7 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 11 to 27 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: Perched
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 8.0 percent
Parent material: Loamy and sandy glaciolacustrine deposits overlying till
Permeability: Moderately rapid in the solum, rapid in the sandy substratum, and slow or very slow in the till substratum
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Fine sandy loam
Potential for surface runoff: Negligible
Wind erosion hazard: Moderate

Use and Management Considerations

Cropland

- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- 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.
- A combination of surface and subsurface drainage helps to remove excess water.

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.

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.
- Soil wetness may limit the use of this soil by log trucks.
- Ponding restricts the safe use of roads by 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.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

Component Interpretive Groups

WAUSEON
Pasture amd hayland suitability group: C-1
Hydric soil: Yes

WyA=Wauseon fine sandy loam, 0 to 1 percent slopes

Setting
Landform: Flats, depressions, and drainageways on deltas on lake plains
Size of areas: 3 to 100 acres

Map Unit Composition
Wauseon and similar components: 90 percent

Similar components
Stratified loamy and silty substratum
Till at 18 to 30 inches
Surface layer less than 10 inches thick
More clay in the subsoil
Loamy fine sand or sandy loam surface layer
Till at 48 to 60 inches

Contrasting components:
Rimer soils on rises: 4 percent
Aurand soils on rises: 3 percent
Hoytville soils on similar landform positions: 3 percent

Map Unit Interpretive Groups
Land capability classification: 3w
Prime farmland: Prime farmland if drained

Soil Properties and Qualities

WAUSEON
Available water capacity: About 4.7 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 11 to 27 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: Perched
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 8.0 percent
Parent material: Loamy and sandy glaciolacustrine deposits overlying till
Permeability: Moderately rapid in the solum, and slow or very slow in the substratum
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Fine sandy loam
Potential for surface runoff: Negligible
Wind erosion hazard: Moderate

Use and Management Considerations

Cropland

- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- 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.
- 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.

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.

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.
- Soil wetness may limit the use of this soil by log trucks.
- Ponding restricts the safe use of roads by 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.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

Component Interpretive Groups

WAUSEON
Pasture amd hayland suitability group: C-1
Hydric soil: Yes

WzA=Wauseon-Urban land complex, 0 to 1 percent slopes

Setting
Landform: Flats, depressions, and drainageways on deltas on lake plains
Size of areas: 5 to 75 acres

Map Unit Composition
Wauseon and similar components: 55 percent
Urban land and similar components: 35 percent

Similar components
Loamy fine sand or sandy loam surface layer
More clay in the subsoil
Stratified loamy and silty substratum
Surface layer less than 10 inches thick
Till at 18 to 30 inches
Till at 48 to 60 inches

Contrasting components:
Rimer soils on rises: 4 percent
Aurand soils on rises: 3 percent
Hoytville soils on similar landform positions: 3 percent

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

Soil Properties and Qualities

WAUSEON
Available water capacity: About 4.7 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 11 to 27 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: Perched
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 8.0 percent
Parent material: Loamy and sandy glaciolacustrine deposits overlying till
Permeability: Moderately rapid in the solum, and slow or very slow in the substratum
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Fine sandy loam
Potential for surface runoff: Negligible
Wind erosion hazard: Moderate

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

Component Interpretive Groups

WAUSEON
Pasture amd hayland suitability group: Not rated
Hydric soil: Yes

URBAN LAND

Use and Management Considerations

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

Component Interpretive Groups

URBAN LAND
Pasture amd hayland suitability group: Not rated
Hydric soil: Unranked

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 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. 315). 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. 313). 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."

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.

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. 317).

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.

The map units in table 6 (p. 317) 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. 318), 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.

Figure 15. 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 forestland; 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. 667). The extent of the soils are shown in table 4 (p. 313).

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. Map units that have very similar properties may have different interpretations for some uses because of slight differences in depth to a restrictive layer, thickness of individual layers, or other relatively minor differences.

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, poor and very 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. 322). 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.

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 in 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.

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.

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.

Crops and Pasture

General management needed for crops and pasture is suggested in this section. “Crops” are considered to be row crops and hay. The system of land capability classification used by the Natural Resources Conservation Service is explained, prime farmland is described, and the crop yield index procedures for the county is explained.

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.

Trends in Land Use

Agriculture is the primary land use in Wood County. In 1982, about 319,500 acres, or 80 percent of the land, was used as cropland, 5,100 acres was used for pasture, 26,400 acres was used for forestland, and 27,400 acres was urban or built-up land (USDA, 1987). In 1997, about 309,000 acres or 78 percent of the land was used for cropland , 3,700 acres was used for pasture, 26,100 acres was used for forestland, and 39,900 acres was urban or built-up land (USDA, 1997). In 1978, there were about 1,610 farms in Wood County, with an average size of 192 acres. (ODA, 1979). In 2002, there were about 1,180 farms in Wood County, with an average size of 270 acres. (ODA, 2003). These facts reflect the nationwide trends toward larger farms with fewer operators and the conversion of farmland to urban or nonfarm uses.

Although corn, soybeans, and wheat are the principal crops in the county, the soils and climate are suitable to grain sorghum, sunflower, oats, barley, rye, and buckwheat. Specialty crops, such as tomatoes, sugar beets, cabbage, and cucumbers, could be grown more extensively in the survey area and are still grown in some areas.

Cropland Management

Prime agricultural land is dispersed throughout the county. With good management practices, most soils are highly productive for crops and pasture. Major soil management concerns are based upon similarities and differences in soil properties and qualities associated with the different types of soil. The major soil management concerns are seasonal wetness (including ponded areas), erosion, soil structure damage (compaction, crusting, clod formation), droughtiness, and soil fertility.

Seasonal wetness and ponding are the major management concerns on about 355,232 acres of land in the county. The very poorly drained Alvada, Colwood, Granby, Hoytville, Latty, till substratum, Mermill, Millgrove, Millsdale, Risingsun, Sloan, Toledo, Wabasha, and Wauseon soils are naturally so wet that crop production is generally not profitable unless surface or subsurface drainage is installed. The poorly drained Joliet and Rollersville soils and the somewhat poorly drained Aurand, Digby, Fulton, Haskins, Kibbie, Nappanee, Randolph, Rimer, Shoals, and Tedrow soils are naturally so wet that crops are damaged during most years and planting and harvesting is delayed unless artificial drainage is installed.

Small areas of wet soils in seepy areas, along drainageways, and in swales are common inclusions in some areas of the moderately well drained Cygnet, Flatrock, Ottokee, Seward, and Shawtown soils. Random subsurface drainage systems are installed in these areas for maximum crop yields.

The design of surface and subsurface drainage systems varies with the kind of soil. A combination of surface and subsurface drainage is needed in many areas of very poorly drained Alvada, Colwood, Granby, Hoytville, Latty, till substratum, Mermill, Millgrove, Millsdale, Risingsun, Sloan, Toledo, Wabasha, and Wauseon soils used for intensive crop production. Subsurface drains should be more closely spaced in soils that have slow or very slow permeability than in soils that have moderately slow to rapid permeability. Fulton, Hoytville, Latty, till substratum, Nappanee, and Toledo soils are slowly permeable or very slowly permeable throughout.

Establishing adequate outlets for subsurface drainage systems can be difficult in some areas of Alvada, Colwood, Granby, Hoytville, Latty, till substratum, Mermill, Millgrove, Millsdale, Risingsun, Rollersville, Sloan, Toledo, Wabasha, and Wauseon soils. Bedrock may interfere with obtaining the necessary gradients for outlets on subsurface systems in soils that are shallow or moderately deep to bedrock, such as Joliet, Millsdale, and Randolph. Existing county and private drainage systems should be maintained as adequate outlets for present and future land uses. These systems often become outlets for basement and septic system curtain drains in some areas of Wood County. Urban construction activities can damage and disrupt these existing systems. As a result, renewed wetness and ponding of these previously drained cropland areas now impact homeowners' use of this land. Cooperation between the urban and agricultural communities is needed in order to maintain or improve these drainage systems.

Information about the design of drainage systems for each kind of soil is provided in the Field Office Technical Guide, which is available in the local office of the Natural Resources Conservation Service and the Wood Soil and Water Conservation District.

Erosion by water is a major concern on about 9,551 acres of land in the county. On bare soils, erosion is generally a hazard where the slope is more than 2 percent. The hazard increases as the slope increases.

Erosion reduces natural soil fertility and productivity as the original topsoil is removed and the more acid subsoil is incorporated into the

surface layer through tillage. The need for lime and fertilizer to replace lost plant nutrients and maintain productivity is increased. If the amount of annual soil loss exceeds the rate at which new soil is formed, long-term productivity and natural fertility are affected. Loss of the original topsoil is of particular concern in areas of soils that have a high content of clay in the subsoil, such as Fulton, Nappanee, Randolph, and St. Clair soils.

Erosion increases the cost of crop production, results in poor soil structure in the surface layer, increases the need for tillage to incorporate organic matter into the surface layer, and reduces the available water capacity of the surface layer. Tillage for preparing a good seedbed requires more energy in eroded spots in many sloping fields. Lower plant populations result from inadequate soil-to-seed contact and a lower available water capacity. These more eroded spots are common in areas of Nappanee and St. Clair soils.

Eroding soil particles with attached nutrients, herbicides, and pesticides enter drainageways, streams, rivers, ponds, lakes, and reservoirs. These sediments can fill drainage ditches and block subsurface drainage outlets (fig. 10). Sediment removal is the most costly item in ditch maintenance. Controlling erosion protects the soil resource base, maintains long-term productivity, reduces drainage maintenance costs, and improves water quality.

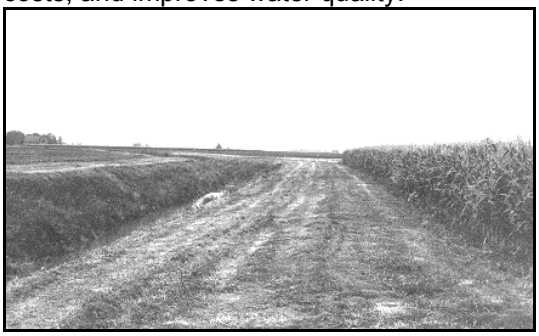

Figure 10. Filter strips create a buffer between cultivated fields and open ditches. These strips reduce the amount of sediment from surface runoff entering surface water. This filter strip is in an area of Hoytville clay loam, 0 to 1 percent slopes.

Wind erosion is a problem on some soils in the survey area. Sandy soils, such as Granby, Ottokee, Spinks, and Tedrow, or soils with a sandy surface layer, such as Dunbridge, Kibbie, Landes, Rimer, Seward, and Wauseon soils, are particularly susceptible to this type of erosion (1. 12). The Risingsun soils with an organic surface layer are also susceptible to wind erosion. The abrasive action of windblown sand particles damages crops. Reducing tillage, avoiding fall plowing, and using cover crops can reduce the hazard of wind erosion. Sod strips and windbreaks can reduce the effects of wind velocity and particle movement.

Figure 11. The loamy fine sand surface layer on Rimer (light colored) and Wauseon (dark colored) soils are susceptible to erosion by strong winds. Blowing sand (background) through loss of topsoil reduces soil productivity, and is a hazard to crops, buildings, and machinery.

Management measures that control erosion include crop rotations, cover crops, crop residue management, and conservation tillage. Also, plowing in the spring rather than in the fall helps to control erosion by not leaving the soil surface unprotected over winter. Management measures that conform to a particular cropping system can be selected to keep soil loss to an amount that will not reduce long-term productivity.

Crop rotations that include cover crops and grasses and legumes reduce the hazard of erosion by providing plant cover for extended periods. These rotations protect bare soil from the erosive forces of raindrop splash and water runoff. Increased water infiltration occurs as soil structure improves in the surface layer. The proportion of hay or pasture in the rotation should increase as the percent of slope increases.

A system of conservation tillage, including no-till planting, that leaves crop residue on the surface can help to control erosion on most of the soils in the county. Such a system is best suited to well drained and moderately well drained soils that dry and warm early in the spring. Installing surface and subsurface drainage on somewhat poorly drained, poorly drained, and very poorly drained soils is necessary if conservation tillage systems are used. A high level of management, including weed and insect control, is also needed.

Soil structure damage in the surface layer is more commonly referred to as compaction, crusting, or clod formation.

Soil compaction is a general management concern on all of the cropland in the county. Pressure applied to the land surface by farm

machinery can cause compaction when the soil is soft and compressible because of wetness. As soil structural units are mashed and smeared, the pore space occupied by air and water within these structural units and between the structural units is reduced. Air and water movement into and out of the soil is also restricted, resulting in ponding of surface water. This ponding is especially noticeable at the ends of fields where increased traffic occurs. Root penetration is restricted to the upper part of the subsoil. Lower crop yields are most noticeable at the ends of fields.

Factors that affect compaction on all soils regardless of use include machinery size, weight and design (pounds of force per square inch of soil surface area), and type of farm implements (wheeled versus tracked).

In addition to compaction, soil texture and soil moisture content also affect crusting and clod formation. Crusting, or hardening of the bare soil surface, follows intense rainfall as soon as the surface layer starts to dry. Many of the soils in Wood County have a surface layer of silt loam or silty clay loam. A crust can form in these soils as the granular soil structure is destroyed by tillage. This crust must be broken before some crop seedlings will be able to emerge, especially in areas that are continuously row cropped and in which conventional tillage systems are used.

Clod formation, or hardening of the entire surface layer, follows tillage when the soil moisture content is too high. It is most noticeable in areas of soils that have a surface layer that is high in content of clay. Additional tillage is needed to break up these clods and to facilitate preparation of a good seedbed. Unless adequate rain is received soon after planting, lower plant populations result from inadequate soil-to-seed contact and inadequate available water.

Compaction, crusting, and clod formation can be minimized by tilling the soil at the proper soil moisture content. Less tillage results in less destruction of soil structure. No-till systems initially result in less pore space for air and water movement. After 2 or 3 years, new soil structural units are formed and pore space increases for air and water movement. More roots in the soil contribute to better soil structure. In addition, decreased tillage results in increased macropore (earthworm burrows) and increases the pore space in the soil. This condition is most noticeable in soils with long term no-tillage management systems, permanent pasture, or where grass is included in the hay part of the crop rotation.

Droughtiness refers to an insufficient amount of water available for good crop growth between rains. Some soils have a higher available water capacity than others. Droughty soils that are used as cropland or pasture in Wood County are Castalia, Dunbridge, Granby, Hoytville, thin solum, Joliet, Marblehead, Millsdale, Milton, Nappanee, Ottokee, Randolph, Rimer, Ritchey, Rollersville, Seward, Spinks, St. Clair, Tedrow, and Wauseon soils. Very shallow, shallow or moderate depth to bedrock, sandy surface and subsoil textures, erosion, or any combination of these soil properties and qualities results in a low available water capacity.

Many of the soils in which moisture shortages occur are well suited to a system of conservation tillage, such as no-till planting, that leaves crop residue on the surface.

The crop residue increases the moisture supply by increasing the rate of water infiltration and by reducing runoff and evaporation rates.

The fertility of a soil depends on the natural fertility level and on past use and management, including previous applications of lime and fertilizer. As a result, fertility can vary widely from field to field, even on the same kind of soil.

About 16 chemical elements are essential to the growth of plants. High crop yields and productive pastures require adequate levels of plant nutrients, lime, and organic matter. Maintaining these levels results in sustained high yields on all of the soils in the county.

Many nutrients are most readily available to plants where the soil is nearly neutral in reaction (pH). They are less readily available where the soil is more acid or more alkaline. Some soils are acid in the upper part of the root zone. In these soils, periodic additions of lime are needed to increase the availability of plant nutrients.

Soil texture, organic matter content, and the type of clay minerals influence the cation-exchange capacity of the soil, which affects the storage and availability of nutrients. The ability to store and release plant nutrients increases as the content of clay and organic matter increases. Hoytville soils have a high content of clay and organic matter and a high capacity to store and release plant nutrients. Soils that have a lower content of clay or organic matter, such as Ottokee and Spinks soils, have a reduced capacity to store and release nutrients and lose more nutrients through leaching. On these soils, frequent applications of a small amount of fertilizer can compensate for the nutrients lost through leaching.

On all soils, additions of lime and fertilizer should be based on the results of soil tests and on

crop needs for the expected level of yields. The Ohio State University Extension can help in determining the kinds and amounts of fertilizer and lime to be applied.

Organic matter influences many soil properties, including color, structure, tilth, the rate of water infiltration, available water capacity, and cation-exchange capacity. In Wood County, soils that have a light colored surface layer generally have a moderate or low content of organic matter in the surface layer. Soils that have a dark surface layer have a high content of organic matter. Cultivation tends to lower the organic matter content by increasing the rates of oxidation and erosion on sloping soils. Returning all crop residue to the soil helps to maintain the organic matter content. Cover crops, sod crops, green manure crops, and additions of manure increase the organic matter content.

Sewage sludge can have economic value as a source of organic matter and some plant nutrients. If the sludge is applied to land, management concerns include the application rate, the hazards associated with heavy metals, possible odor problems, and health hazards. The chemical composition of the sludge should be determined before the sludge is applied. Additions of sludge to cropland should be based on analysis of the sludge, the results of soil tests, and the expected level of crop yields. The Ohio State University Extension can provide information about the application of sewage sludge.

Specialty Crops

The specialty crops grown commercially in Wood County include vegetables, nursery stock, Christmas trees, and fruits. Very few specialty crops in the county are irrigated. Slope, water-holding capacity, infiltration rates, and rooting depths should be considered in irrigated areas. The slope should not exceed 6 percent. Well drained and moderately well drained soils that have a loamy or sandy surface layer, such as Belmore, Oshtemo, Ottokee, and Spinks soils, respond best to irrigation. Most irrigation water in the county is obtained from wells and ponds.

Specialty crops grown in Wood County include cabbage, tomatoes, sugar beets, popcorn, sweet corn, cucumbers, peppers, and gourds. These crops grow best on very deep, dark colored soils that have a high content of organic matter. Good drainage on the surface and in the root zone are important for high productivity. Vegetables grow well on soils that warm up early and are not susceptible to compaction. Artificial drainage can be used in the more poorly drained areas. Alvada, Colwood, Granby, Mermill, Millgrove, Risingsun, Rollersville, and Wauseon soils could be farmed intensively for vegetable production.

Orchard and fruit crops grown in the county include apple, peach, raspberries, and strawberries. Orchard crops grow well on the better drained soils that have a loamy or sandy surface layer, such as Belmore, Haney, Oshtemo, and Shawtown soils. Areas of loamy or sandy soils underlain with bedrock, such as Dunbridge and could be planted to orchards. Most produce is marketed locally through roadside farm markets.

The latest information about growing specialty crops can be obtained from local offices of the Natural Resources Conservation Service and the Ohio State University Extension.

Crop Yield Index

Table 9 is the crop yield index for Wood 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—Colwood loam, 0 to 1 percent slopes, 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 CvA, multiply 82 by the corn yield in the header, which is 190. .82 x 190 = 156 bushels of corn estimated for CvA.

To use this yield index in the future to calculate estimated yields, use current yield data.

Additional information on calculating estimated yields can be obtained from the local office 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. 334). 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 under the "Component interpretative groups" heading and in table 34 (p. 668). Soils assigned the same suitability group symbol 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 defined as follows:

Group A soils have few limitations affecting the management and growth of climatically adapted plants.

Group A-1 consists of deep and very deep, well and moderately well drained soils. 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.

Group A-2 consists of deep and very deep, well and moderately well drained soils. Available water capacity ranges from moderate to very high. 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. Slopes range from 18 to 25 percent. They may interfere with clipping, mowing, and spraying for weed control. The slopes increase the risk of erosion if the pasture is overgrazed or cultivated for reseeding. These soils are suited to no-till reseeding and interseeding.

Group A-3 consists of deep and very deep, well and moderately well drained soils. 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.

Group A-4 consists of deep and very deep, well and moderately well drained soils that have

stones or boulders on the surface that are extensive enough to preclude the use of hay making equipment. Slopes range from 0 to 40 percent.

Group A-5 consists of well and moderately well drained soils that are subject to flooding. Grazing is limited during periods of stream overflow. The floodwater deposits sediments that lower the quality of the forage. The available water capacity ranges from moderate to very high. Slopes range from 0 to 18 percent.

Group A-6 consists of deep and very deep, well and moderately well drained soils that are subject to frost action, which can damage legumes. Mixing fibrous-rooted grasses with the legumes and applying good grazing management minimize the damage caused by frost action. The available water capacity ranges from moderate to very high. Slopes range from 0 to 18 percent.

Group B soils are limited because of droughtiness.

Group B-1 consists of deep and very deep, well and moderately well drained soils. The available water capacity is low or very low and limits forage growth and production. Slopes range from 0 to 25 percent.

Group B-2 consists of deep and very deep, well and moderately well drained soils. The available water capacity is low or very low and limits forage growth and production. Slopes range from 25 to 40 percent.

Group B-3 consists of somewhat poorly drained to well drained soils that are subject to flooding. Slopes range from 0 to 6 percent.

Group B-4 consists of deep and very deep, well and moderately well drained reclaimed mine soils. The available water capacity is low or very low. Slopes range from 0 to 25 percent. The substratum contains a high percentage of rock fragments. The rooting zone is 20 to 30 inches deep.

Group C soils are wet because of a seasonal high water.

Group C-1 consists of deep and very deep somewhat poorly drained, poorly drained, and very poorly drained soils. These soils normally respond well to subsurface drainage. Slopes range from 0 to 12 percent.

Group C-2 consists of deep and very deep somewhat poorly drained, poorly drained, and very poorly drained soils. The seasonal high water table limits the rooting depth of deep-rooted forage plants. Shallow-rooted species grow best on these soils. Subsurface drains are used to lower the seasonal high water table. The effectiveness of subsurface drainage is usually limited by permeability of the subsoil, high amounts of clay in the subsoil, or a fragipan. Because of the limited root zone, these soils are better suited to forage species that do not have a taproot than to other species. Slopes range from 0 to 12 percent.

Group C-3 consists of somewhat poorly drained, poorly drained, and very poorly drained soils that are subject to flooding. Grazing is limited during periods of stream overflow. The available water capacity ranges from moderate to very high. Slopes range from 0 to 6 percent. The seasonal high water table limits the rooting depth of forage plants. Shallow-rooted species grow best on these soils.

Group D soils have a high organic matter content.

Group D-1 consists of soils formed entirely or partially in organic material. Slope is 0 to 2 percent.

Group E consists of shallow soils in which the root zone is less than 20 inches deep.

Group E-1 consists of soils that are shallow or very shallow. The available water capacity is low or very low. It restricts forage production. These soils are well suited to native warm-season grasses. Slopes range from 0 to 25 percent.

Group E-2 consists of soils that have are shallow and 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.

Group E-3 soils 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.

Group F consists of soils that 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.

Group F-1 consists of moderately deep, well and moderately well drained soils. Slopes range from 0 to 25 percent.

Group F-2 consists of moderately deep, well and moderately well drained soils. Slopes range from 25 to 40 percent. This group generally is not suited to hay.Group F-3 consists of well

and moderately well drained soils that are moderately deep to a fragipan. Slopes range from 0 to 25 percent.

Group F-4 consists of well and moderately well drained soils that are moderately deep to a fragipan. Slopes range from 25 to 40 percent.

Group F-5 consists of well and moderately well drained soils with high bulk density, a high clay content, slow permeability or a combination of these factors in the subsoil that restrict rooting depth. Slopes range from 0 to 25 percent.

Group F-6 consists of well and moderately well drained soils with high bulk density, a high clay content, slow permeability or a combination of these factors in the subsoil that restrict rooting depth. Slopes range from 25 to 40 percent.

Group F-7 consists of somewhat poorly drained, poorly drained, and very poorly drained soils with a high clay content and very slow permeability in the subsoil that restrict rooting depth. Slopes range from 0 to 12 percent.

Group G soils have chemical properties that are unfavorable for many climatically adapted plants.

Group G-1 consists of well and moderately well drained soils that are shallow or moderately deep to toxic spoil from surface mine operations. Available water capacity is low or very low in the root zone. Slopes range from 0 to 25 percent.

Group G-2 consists of well and moderately well drained soils that are shallow or moderately deep to toxic spoil from surface mine operations. Slopes range from 25 to 40 percent.

Group H soils are toxic or too steep for forage production.

Group H-1 consists of soils toxic materials from surface mining operation or on slopes greater than or equal to 40 percent. These soils generally are unsuited to pasture and hay.

Interpretive Groups

Interpretive groups are specified land use and specific management groupings that are assigned to soil areas because combinations of soils have similar behavior for specified practices. Most are based on soil properties and other factors that directly influence the specific use of the soil. These groups allow users of soil surveys to plan reasonable alternatives for the use and management of soils.

Table 34 shows the interpretive groups for land capability classification; pasture and hayland suitability groups; prime farmland; and hydric condition of each soil in the survey area.

Land capability classification is a system of grouping soils primarily on the basis of their capability to produce common cultivated crops and pasture plants without deterioration over a long period of time. The table shows the land capability class and subclass for each of the soils in Wood County. Additional information on land capability classification is provided under the heading "Land Capability Classification" in the "Crops and Pasture" section of this survey.

Pasture and hayland suitability groups are composed of soil map units having similar potentials and limitations for forage production. These groups simplify soils information and provide soil and plant science information for planning purposes. The table shows the pasture and hayland suitability group for each of the soils in Wood County. Additional information on pasture and hayland suitability groups is provided under the heading "Pasture and Hayland Management" in the "Crops and Pasture" section of this survey.

Prime farmland classification identifies the location and extent of the most suitable land for producing food, feed, fiber, forage, and oilseed crops. This identification is useful in the management and maintenance of the resource base that supports the productive capacity of Ohio agriculture. The table shows which of the soils in Wood County are prime farmland. Additional information on prime farmland is provided under the heading "Prime Farmland" in the “Important Farmland” section of this survey.

The identification of hydric soils and information about hydrophytic vegetation and wetland hydrology are used to define wetlands. The table shows which of the soils in Wood County are hydric. Additional information on hydric soils is provided under the heading "Hydric Soils" elsewhere in this survey.

Woodland Management and Productivity

Greg Maxfield, district forester, Ohio Department of Natural Resources, Division of Forestry, helped prepare this section.

Nearly all of Wood County was forested at the time of the earliest land surveys. The climax forest community was dominantly elm-ash forest (fig. 12), since the entire county lies within the Great Black Swamp Region of Ohio. Scattered remnants of other forest and native plant communities that

were associated with better drained soils in the county were: Beech Forest, Mixed Oak Forest, Oak Savannah, and Prairie Grassland. (Gordon, 1966)

Figure 12. Most of the soils in Wood County support tree species that are tolerant of wetness. These species were associated with the elm-ash forest community that was the dominant plant community prior to settlement.

In 1997, about 26,100 acres, or 6.6 percent of the county, remained in woodland (USDA, 1997). Most of this acreage is in small scattered woodlots on slopes along stream valleys, on flood plains, on bedrock highs, and in isolated tracts on uplands. Most of the woodland has been cut over, and much of it has been grazed.

The return from the sale of wood products is smaller than that from the sale of other farm products on individual farms. However, if timber is competitively bid out, the maximum profit can be realized because of increased demand and changing markets for a variety of native hardwoods. The demand for high-quality oak and walnut continues, but there is also demand for lower quality trees such as cottonwood, basswood, and soft maple for pallet material and boxing. Potential for increased production of timber is high. If properly managed, woodlots are capable of producing high-quality, rapidly growing native hardwoods. Well managed woodlots can also provide firewood, lumber, edible nuts, wildlife habitat, esthetic value, and protection from winds.

Most of the woodland in the county is in need of some type of conservation treatment. Livestock grazing in the woodland and inadequate timber management are the major concerns.

Timber stand improvement practices, such as culling diseased trees and less desirable trees and cutting and spraying grapevines, improve the growth rate of favored species. Harvesting mature trees benefits desirable trees by reducing competition and the potential for disease. Species selected for planting on open ground should be matched with the slope and soil type. Planting in established woods is seldom needed or advised. Fencing livestock out of the woods and providing fire protection help maintain good stands.

Information on forest management is available from the Ohio Department of Natural Resources, Division of Forestry; the Cooperative Extension Service; the Wood Soil and Water Conservation District, and the Natural Resources Conservation Service.

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. 335), table 12 (p. 345), table 13 (p.370), and table 14 (p. 383) , 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 (p345), 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. 395) shows the height that locally grown trees and shrubs are expected to reach in 20 years on various soils. The estimates in table 15 (p. 395) 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, the Cooperative Extension Service or from a commercial nursery.

Recreational Development

The soils of the survey area are rated in table 16 (p. 406) and table 17 (p. 423) 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. 406) and table 17 (p. 423) 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. 437), 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. 444) and table 20 (p. 457) 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. 444), 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. 478) and table 22 (p. 492) show the degree and kind of soil limitations that affect dwellings with and without basements, small commercial buildings, local roads and streets, shallow excavations, and lawns and landscaping.

The ratings in the tables are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect building site development. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected. *Numerical ratings* in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Dwellings are single-family houses of three stories or less. For dwellings without basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. For dwellings with basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of about 7 feet.

The ratings for dwellings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table,

ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility. Compressibility is inferred from the Unified classification.

The properties that affect the ease and amount of excavation include depth to a water table, ponding, flooding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

*Small commercial 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. 511) and table 24 (p. 530) 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. 550) 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. 570) and table 27 (p. 585) 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. 604) 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 13). "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

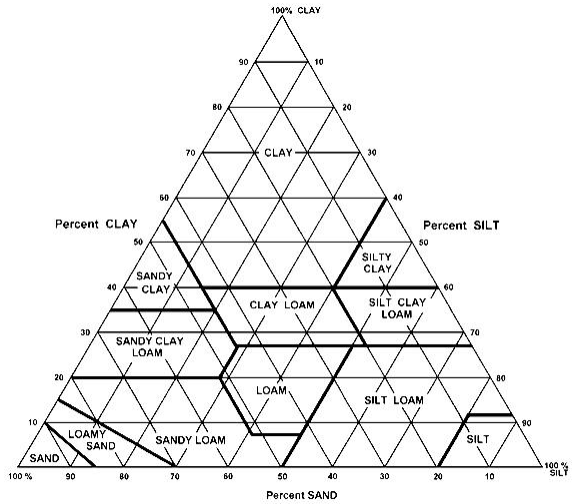

Figure 13. Textural Triangle

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. 604).

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. 626) 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. 626), 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. 626) 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. 639) 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. 639), 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. 652) 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 32 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. 661) 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. 667) 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

n this section, each soil series recognized in the survey area is described. Characteristics of the soil and the material in which it formed are identified for each series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The detailed description of each soil horizon follows standards in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

The selection of the typical pedons is based on the range of characteristics of the series as it occurs throughout a particular Major Land Resource Area (MLRA). The Aurand series, for example, is a common soil series in MLRA 99 (Erie-Huron lake plain region), which covers most of northwestern Ohio. The typical pedon of the Aurand series is located in Hancock County, Ohio. The soil properties of this pedon are representative of the Aurand soils that occur not only in Wood County but also in other counties that are within MLRA 99.

Pedon descriptions published in this survey come from Wood County or from adjacent counties in MLRA 99 (Erie-Huron Lake Plain). Many of the descriptive terms and attributes have been updated to current standards. In some cases, where the descriptive terminology does not have a modern equivalent to make a direct conversion the attribute or feature was left as described in the original pedon from the publication county.

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.

ALVADA SERIES

Characteristics
Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Moderate in the upper part of the solum, moderately rapid in the lower part of the solum, and moderately slow or slow in the substratum
Parent material: Loamy, sandy, and gravelly glaciolacustrine deposits overlying till
Landform: Flats, depressions, and drainageways on lake plains
Slope: 0 to 1 percent

Adjacent soils: Aurand, Cygnet

Taxonomic class: Fine-loamy, mixed, active, mesic Typic Argiaquolls

Typical Pedon
Alvada loam, 0 to 1 percent slopes, in Hancock County, Ohio; Marion Township; about 4.5 miles east of Findlay; about 200 feet north and 760 feet west of the southeast corner of sec. 14, T. 1 N., R. 11 E.

Ap=0 to 10 inches; very dark grayish brown (10YR 3/2) loam, grayish brown (10YR 5/2) dry; moderate fine and medium granular structure; friable; common fine roots; 3 percent rock fragments; neutral; clear smooth boundary.

Btg1=10 to 16 inches; dark gray (10YR 4/1) clay loam; moderate fine and medium subangular blocky structure; friable; few fine roots; common faint dark gray (10YR 4/1) clay films on faces of peds; few distinct very dark grayish brown (10YR 3/2) organic coatings on vertical faces of peds; few fine and medium prominent strong brown (7.5YR 5/6) and common fine and medium distinct dark yellowish brown (10YR 4/4) masses of iron accumulation in the matrix; common fine faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 3 percent rock fragments; neutral; gradual wavy boundary.

Btg2=16 to 21 inches; gray (10YR 5/1) clay loam; moderate medium subangular blocky structure; firm; few fine roots; common faint dark gray (10YR 4/1) clay films on faces of peds; common medium faint grayish brown (10YR 5/2) iron depletions in the matrix; common fine and medium prominent strong brown (7.5YR 5/6) and common fine and medium distinct dark yellowish brown (10YR 4/4) masses of iron accumulation in the matrix; common fine faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 3 percent rock fragments; neutral; clear wavy boundary.

Btg3=21 to 28 inches; grayish brown (10YR 5/2) clay loam; moderate medium subangular blocky structure; friable; few fine roots; common faint grayish brown (10YR 5/2) clay films on faces of peds; common fine and medium prominent strong brown (7.5YR 5/6) and common fine and medium distinct dark yellowish brown (10YR 4/4) masses of iron accumulation in the matrix; common fine faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 4 percent rock fragments; neutral; gradual wavy boundary.

Bt=28 to 39 inches; brown (10YR 5/3) loam with thin strata of sandy loam; weak medium subangular blocky structure; friable; few fine roots; common faint grayish brown (10YR 5/2) clay films on faces of peds; common medium and coarse faint grayish brown (10YR 5/2) iron depletions in the matrix; few fine and medium prominent strong brown (7.5YR 5/6) and common medium and coarse faint dark yellowish brown (10YR 4/4) masses of iron accumulation in the matrix; common fine faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 10 percent rock fragments; slightly effervescent; slightly alkaline; abrupt irregular boundary.

B'tg=39 to 46 inches; grayish brown (10YR 5/2) gravelly loam with thin strata of fine sandy loam and strata of silty clay loam; weak medium and coarse subangular blocky structure; friable; few fine roots; common faint grayish brown (10YR 5/2) clay films on faces of peds and as bridging between sand grains; few medium prominent strong brown (7.5YR 5/6) and common medium distinct dark yellowish brown (10YR 4/4) masses of iron accumulation in the matrix; 20 percent rock fragments; strongly effervescent; slightly alkaline; abrupt wavy boundary.

BCg=46 to 50 inches; gray (10YR 5/1) very gravelly sandy loam; weak medium and coarse

subangular blocky structure; very friable; few medium distinct yellowish brown (10YR 5/4) masses of iron accumulation in the matrix; 35 percent rock fragments; strongly effervescent; moderately alkaline; abrupt wavy boundary.

2C=50 to 80 inches; yellowish brown (10YR 5/4) clay loam; massive, with widely spaced vertical fractures; firm; few medium distinct grayish brown (10YR 5/2) iron depletions oriented along fractures; 5 percent rock fragments; strongly effervescent; moderately alkaline.

Range in Characteristics
Thickness of the mollic epipedon: 10 to 15 inches
Thickness of the solum: 35 to 55 inches
Depth to carbonates: 24 to 55 inches
Depth to till: 40 to 60 inches
Depth to bedrock: More than 80 inches

Ap or A horizon:
Color=hue of 10YR, 2.5Y, or is neutral, value of 2, 2.5, or 3, chroma of 0 to 2
Texture=loam
Content of rock fragments=0 to 10 percent

Btg, Bt, or B'tg horizon:
Color=hue of 10YR or 2.5Y, value of 4 or 5, chroma of 1 or 2, with chroma of 3 allowed in the lower part
Texture= clay loam, loam, sandy clay loam, or silty clay loam or the gravelly analogs of these textures
Content of rock fragments=2 to 25 percent

2C or 2Cg horizon:
Color=hue of 10YR, value of 4 or 5, chroma of 1 to 6
Texture=clay loam or silty clay loam
Content of rock fragments=1 to 7 percent

AURAND SERIES

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderate in the upper part of the solum, moderately slow or slow in the lower part of the solum, and slow or very slow in the substratum
Parent material: Loamy glaciolacustrine deposits and the underlying till
Landform: Flats, knolls and rises on beach ridges and lake plains
Position on the landform: Footslopes, summits, shoulders

Slope: 0 to 2 percent

Adjacent soils: Mermill, Shawtown

Taxonomic class: Fine-loamy, mixed, active, mesic Aquic Argiudolls

Typical Pedon
Aurand loam, 0 to 2 percent slopes, in Hancock County, Ohio; Portage Township; about 1.2 miles east of McComb; about 800 feet north and 540 feet east of the southwest corner of sec. 19, T. 2 N., R. 10 E.

Ap=0 to 11 inches; very dark grayish brown (10YR 3/2) loam, grayish brown (10YR 5/2) dry; moderate fine and medium granular structure; friable; common fine roots; common fine faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 2 percent rock fragments; slightly acid; clear smooth boundary.

Bt1=11 to 17 inches; brown (10YR 4/3) clay loam; moderate fine and very fine subangular blocky structure; friable; common fine roots; common faint dark grayish brown (10YR 4/2) clay films on faces of peds; common distinct very dark grayish brown (10YR 3/2) organic coatings on vertical faces of peds; common medium faint dark grayish brown (10YR 4/2) iron depletions in the matrix; few fine and medium prominent strong brown (7.5YR 5/6) and common fine distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common fine and medium faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 2 percent rock fragments; neutral; gradual wavy boundary.

Bt2=17 to 22 inches; yellowish brown (10YR 5/4) clay loam; moderate fine and medium subangular blocky structure; friable; few fine roots; common faint grayish brown (10YR 5/2) clay films on faces of peds; few distinct very dark grayish brown (10YR 3/2) organic coatings on vertical faces of peds; common fine and medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; common fine and medium distinct strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; common fine and medium distinct very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 1 percent rock fragments; slightly alkaline; clear wavy boundary.

Bt3=22 to 29 inches; yellowish brown (10YR 5/4) loam with thin strata of sandy loam; weak fine and

medium subangular blocky structure; friable; few fine roots; common distinct grayish brown (10YR 5/2) clay films on faces of peds; common medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; common medium distinct strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; common fine and medium distinct very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 1 percent rock fragments; slightly alkaline; clear wavy boundary.

Btg=29 to 33 inches; grayish brown (10YR 5/2) silty clay loam with thin strata of sandy loam and loam; weak fine and medium subangular blocky structure; friable; few fine roots; common faint grayish brown (10YR 5/2) clay films on faces of peds; common medium distinct dark yellowish brown (10YR 4/4) and few medium prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common fine and medium faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 1 percent rock fragments; slightly effervescent discontinuously in the matrix; slightly alkaline; abrupt wavy boundary.

2BC=33 to 48 inches; dark yellowish brown (10YR 4/4) silty clay loam; weak medium and coarse subangular blocky structure; firm; few fine roots; few distinct gray (10YR 5/1) coatings on vertical faces of peds; common distinct light gray (10YR 7/1) calcium carbonate coatings on vertical faces of peds; common medium distinct gray (10YR 5/1) iron depletions in the matrix; few medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; 2 percent rock fragments; strongly effervescent; moderately alkaline; gradual irregular boundary.

2Cd=48 to 62 inches; brown (10YR 4/3) silty clay loam; massive, with widely spaced vertical fractures; very firm; common fine and medium distinct gray (10YR 5/1) iron depletions in the matrix; few fine and medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; 3 percent rock fragments; strongly effervescent; moderately alkaline; clear wavy boundary.

2Cdg=62 to 80 inches; dark gray (10YR 4/1) silty clay loam; massive, with widely spaced vertical fractures; very firm; common fine and medium distinct yellowish brown (10YR 5/4) masses of iron accumulation in the matrix; 3 percent rock fragments; strongly effervescent; moderately alkaline.

Range in Characteristics
Thickness of the mollic epipedon: 10 to 15 inches
Thickness of the solum: 40 to 60 inches
Depth to carbonates: 25 to 50 inches
Depth to till: 20 to 40 inches
Depth to dense material: 40 to 60 inches
Depth to bedrock: More than 80 inches

Ap or A horizon:
Color=hue of 10YR, 2.5Y, or is neutral, value of 2, 2.5, or 3, chroma of 0 to 2
Texture=loam or fine sandy loam
Content of rock fragments=0 to 10 percent

Bt or Btg horizon:
Color=hue of 10YR or 2.5Y, value of 4 or 5, chroma of 2 to 6
Texture=loam, clay loam, sandy clay loam, or silty clay loam or the gravelly analogs of these textures; thin subhorizons of sandy loam, fine sandy loam, loamy sand, or loamy fine sand or the gravelly analogs of these textures are in some pedons
Content of rock fragments=0 to 20 percent

2BC, 2BCg, 2Cd, or 2Cdg horizons:
Color=hue of 10YR, 2.5Y, or is neutral, value of 4 or 5, chroma of 0 to 4
Texture=clay loam, silty clay loam, or clay
Content of rock fragments=1 to 7 percent

BELMORE SERIES

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderately rapid in the solum, and rapid in the substratum
Parent material: Loamy and gravelly beach deposits
Landform: Rises and knolls on beach ridges on lake plains
Position on the landform: Summits, shoulders, backslopes
Slope: 1 to 4 percent

Adjacent soils: Digby, Haney, Millgrove

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

Typical Pedon:
Belmore loam, 2 to 6 percent slopes, in Sandusky County, Ohio; York Township; about 3 miles

northwest of Bellevue; about 248 feet north and 760 feet east of the southwest corner of sec. 16, T. 4 N., R. 17 E.

Ap=0 to 7 inches; brown (10YR 4/3) loam, pale brown (10YR 6/3) dry; weak fine and medium granular structure; friable; common roots; 2 percent rock fragments; slightly acid; abrupt smooth boundary.

Bt1=7 to 12 inches; brown (7.5YR 5/4) clay loam; moderate medium and coarse subangular blocky structure; friable; few roots; few faint brown (7.5YR 5/4) clay bridging between sand grains; 4 percent rock fragments; moderately acid; clear smooth boundary.

Bt2=12 to 17 inches; brown (7.5YR 4/4) gravelly clay loam; moderate coarse and medium subangular blocky structure; friable; few roots; common distinct dark reddish brown (5YR 3/4) clay bridging between sand grains; 20 percent rock fragments; slightly acid; clear smooth boundary.

Bt3=17 to 23 inches; brown (7.5YR 4/4) gravelly clay loam; weak fine subangular blocky structure; friable; few roots; common distinct dark reddish brown (5YR 3/4) clay bridging between sand grains; 15 percent rock fragments; slightly acid; clear smooth boundary.

Bt4=23 to 30 inches; brown (7.5YR 4/4) gravelly sandy clay loam; weak fine subangular blocky structure; friable; common distinct dark reddish brown (5YR 3/4) clay bridging between sand grains; 30 percent rock fragments; neutral; abrupt smooth boundary.

C1=30 to 47 inches; mixed grayish brown (10YR 5/2) and pale brown (10YR 6/3) gravelly loamy sand; single grain; loose; few fine distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; 30 percent rock fragments; slightly effervescent; slightly alkaline; clear smooth boundary.

C2=47 to 56 inches; mixed grayish brown (10YR 5/2) and pale brown (10YR 6/3) sand; single grain; loose; few fine distinct yellowish brown (10YR 5/4) masses of iron accumulation in the matrix; 5 percent rock fragments; strongly effervescent; moderately alkaline; abrupt smooth boundary.

C3=56 to 60 inches; brown (10YR 4/3) sandy loam; massive; friable; 3 percent rock fragments; strongly effervescent; moderately alkaline.

Range in Characteristics
Thickness of the solum: 22 to more than 60 inches
Depth to carbonates: 22 to more than 60 inches
Depth to till: More than 60 inches
Depth to bedrock: More than 60 inches

Ap or A horizon:
Color=hue of 5YR to 10YR, value of 3 to 5, chroma of 2 or 3
Texture=sandy loam or loam
Content of rock fragments=2 to 10 percent

Bt horizon:
Color=5YR to 10YR, value of 3 to 5, chroma of 2 to 6
Texture=clay loam, sandy clay loam, loam, fine sandy loam, or sandy loam or the gravelly analogs of these textures
Content of rock fragments=5 to 34 percent

C horizon:
Color=7.5YR to 2.5Y, value of 4 to 6, chroma of 2 to 4
Texture=loamy sand, sand, coarse sandy loam, sandy loam, or loam or the gravelly or very gravelly analogs of these textures
Content of rock fragments=3 to 40 percent

The Belmore soils in Wood County have 2 chroma redoximorphic features within 40 inches. These features are usually indicators of a seasonal high water table. They classify as fine-loamy, mixed, active, mesic Oxyaquic Hapludalfs using the 8th edition of the Keys to Soil Taxonomy and are taxadjuncts to the Belmore series. This difference, however, does not significantly affect the use or management of the soils.

CASTALIA SERIES

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Rapid
Parent material: Loamy and sandy beach or eolian deposits mixed with glacially displaced limestone or dolostone fragments of local origin
Landform: Rises and knolls on reefs on lake plains
Position on the landform: Summits, shoulders, backslopes
Slope: 0 to 6 percent

Adjacent soils: Dunbridge, Marblehead, Ritchey

Taxonomic class: Loamy-skeletal, carbonatic, mesic Inceptic Haprendolls

Typical Pedon
Castalia extremely channery loam, 0 to 2 percent slopes, in Erie County, Ohio; Groton Township; about 8 miles southwest of Sandusky; about 300 feet south and 500 feet east of the intersection of Portland Road and State Route 99; Quadrangle 2; T. 5 N., R. 24 W.

Ap=0 to 8 inches; very dark grayish brown (10YR 3/2) extremely channery loam, dark grayish brown (10YR 4/2) dry; strong fine granular structure; friable; many fine roots; 60 percent limestone channers 1 to 5 inches in diameter and 1/2 to 1 inch thick; slightly effervescent; slightly alkaline; abrupt smooth boundary.

Bw=8 to 16 inches; brown (7.5YR 4/4) extremely channery loam; weak fine granular structure; friable; many fine roots; 80 percent limestone channers 1 to 5 inches in diameter and 1/2 to 1 inch thick; strongly effervescent; moderately alkaline; gradual wavy boundary.

C=16 to 24 inches; 90 percent limestone channers and flagstones and 10 percent brown (10YR 4/3) loam; massive; friable; common fine and medium roots; 90 percent limestone channers and flagstones 3 to 10 inches in length and 1/2 to 2 inches thick; fragments are displaced slightly from original bedding; strongly effervescent; moderately alkaline; gradual irregular boundary.

R=24 inches; gray (10YR 5/1) limestone with vertical fractures 1 to 2 feet apart.

Range in Characteristics
Thickness of the mollic epipedon: 7 to 9 inches
Thickness of the solum: 10 to 25 inches
Depth to bedrock: 20 to 40 inches

Ap or A horizon:
Color=hue of 7.5YR or 10YR, value of 2, 2.5 or 3, chroma of 1 or 2
Texture=very cobbly loam or very stony fine sandy loam
Content of rock fragments=35 to 59 percent

Bw horizon:
Color=hue of 5YR to 10YR, value of 4 to 6, chroma of 3 to 6
Texture=very channery, extremely channery, very cobbly, extremely cobbly, very stony, extremely stony, very flaggy, or extremely flaggy analogs of loam, fine sandy loam, sandy loam, or silt loam
Content of rock fragments=35 to 80 percent

C horizon:
Color=hue of 5YR to 10YR, value of 4 to 6, chroma of 3 to 6
Texture=very channery, extremely channery, very cobbly, extremely cobbly, fvery stony, extremely stony, very flaggy, or extremely flaggy analogs of loam, fine sandy loam, sandy loam, or silt loam
Content of rock fragments=50 to 90 percent

COLWOOD SERIES

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Moderate or moderately slow in the solum, and moderate in the substratum
Parent material: Stratified silty and loamy glaciolacustrine deposits
Landform: Flats, depressions, and drainageways on deltas and lake plains
Slope: 0 to 1 percent

Adjacent soils: Kibbie

Taxonomic class: Fine-loamy, mixed, active, mesic Typic Endoaquolls

Typical Pedon
Colwood loam, 0 to 2 percent slopes, in Defiance County, Ohio; Mark Township; about 4.5 miles east-northeast of Hicksville; about 1,452 feet south and 370 feet east of the northwest corner of sec. 7, T. 4 N., R. 2 E.

Ap=0 to 8 inches; very dark brown (10YR 2/2) loam, grayish brown (10YR 5/2) dry; weak coarse subangular blocky structure parting to moderate medium granular; friable; many fine roots; neutral; abrupt smooth boundary.

A=8 to 12 inches; very dark brown (10YR 2/2) loam, grayish brown (10YR 5/2) dry; moderate medium granular structure; friable; many fine roots; very few fine rounded gravel; neutral; abrupt smooth boundary.

Bg1=12 to 17 inches; gray (5Y 5/1) loam; weak fine and very fine subangular blocky structure; friable; common fine roots; common fine and medium pores; dark gray (10YR 4/1) coatings on faces of peds; common fine and medium prominent brown (7.5YR 4/4) masses of iron

accumulation in the matrix; very few fine gravel; neutral; clear wavy boundary.

Bg2=17 to 24 inches; gray (5Y 6/1) loam; moderate medium and fine angular blocky structure; friable; common fine roots; common very fine and fine pores; olive gray (5Y 5/2) coatings on faces of peds; common fine and medium prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; few fine prominent black (5YR 2/1) iron and manganese oxide concretions; very few fine rounded gravel; neutral; gradual wavy boundary.

Bg3=24 to 34 inches; gray (5Y 6/1) loam; moderate coarse and medium angular blocky structure; friable; few fine roots; common fine and very fine pores; gray (5Y 5/1) coatings on faces of peds; many medium and coarse prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; few fine prominent black (5YR 2/1) iron and manganese oxide concretions; very few fine rounded gravel; neutral; clear wavy boundary.

Cg1=34 to 50 inches; gray (5Y 6/1) stratified silty clay loam, silt loam and fine sandy loam; weak medium angular blocky structure; friable; few fine roots; common very fine pores; gray (5Y 5/1) coatings on faces of peds; many medium prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; slightly alkaline; gradual wavy boundary.

Cg2=50 to 60 inches; gray (5Y 5/1) and olive gray (5Y 5/2) stratified sandy loam and silt loam; massive with distinct bedding planes; friable; common medium prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; strongly effervescent; moderately alkaline.

Range in Characteristics
Thickness of the mollic epipedon: 7 to 9 inches
Thickness of the solum: 24 to 55 inches
Depth to carbonates: 30 to 45 inches
Depth to bedrock: More than 60 inches

Ap or A horizon:
Color=hue of 10YR, value of 2 or 3, chroma of 1 or 2
Texture=loam or fine sandy loam

Bg horizon:
Color=hue of 7.5YR to 5Y, 5GY, or is neutral, value of 4 to 6, chroma of 0 to 2
Texture=loam, silt loam, sandy clay loam, clay loam, silty clay loam, sandy loam, sandy loam, fine sandy loam, or very fine sandy loam

Cg horizon:
Color= hue of 10YR to 5Y, value of 4 to 6, chroma of 1 or 2
Texture=stratified silt loam, very fine sand, fine sand, sandy loam, silty clay loam, or fine sandy loam with thin strata of clay, silty clay, clay loam, loam, very fine sandy loam, or loamy sand

The Colwood soils in Wood County have an epipedon that meets all of the requirements for a mollic epipedon except for thickness. They classify as fine-loamy, mixed, active, mesic Mollic Endoaquepts using the 8th edition of the Keys to Soil Taxonomy and are taxadjuncts to the Colwood series. This difference, however, does not significantly affect the use and management of the soils.

CYGNET SERIES

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderate in the upper part of the solum, moderately rapid in the lower part of the solum, and slow or very slow in the substratum
Parent material: Loamy glaciolacustrine deposits and the underlying till
Landform: Rises on beach ridges and longshore bars on lake plains
Position on the landform: Summits, shoulders
Slope: 0 to 2 percent

Adjacent soils: Aurand, Haskins, Shawtown

Taxonomic class: Fine-loamy, mixed, active, mesic Aquic Hapludalfs

Typical Pedon
Cygnet loam, 0 to 2 percent slopes, in Allen County, Ohio; Sugar Creek Township; about 1.5 miles west-northwest of Gomer; about 2,620 feet east and 1,020 feet north of the southwest corner of sec. 19, T. 2 S., R. 6 E.

Ap1=0 to 4 inches; dark grayish brown (10YR 4/2) loam, light brownish gray (10YR 6/2) dry; weak fine and medium subangular blocky structure; friable; common fine and very fine roots; 5 percent rock fragments; slightly acid; clear smooth boundary.

Ap2=4 to 12 inches; dark grayish brown (10YR 4/2) loam, very pale brown (10YR 7/3) dry; weak medium subangular blocky structure; friable; common fine and very fine roots; 5 percent intermixing of yellowish brown (10YR 5/4) Bt1 material; common faint dark brown (10YR 3/3) organic coatings on faces of peds; few fine and medium prominent strong brown (7.5YR 5/8) spherical masses of iron accumulation in the matrix; 4 percent rock fragments; strongly acid; abrupt wavy boundary.

Bt1=12 to 19 inches; yellowish brown (10YR 5/4) loam; moderate fine and medium subangular blocky structure; friable; common fine and very fine roots; few faint dark yellowish brown (10YR 4/4) clay films on faces of peds; common faint brown (10YR 5/3) clay depletions on faces of peds; common medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; many medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; few medium distinct black (10YR 2/1) spherical masses of manganese accumulation in the matrix; 4 percent rock fragments; strongly acid; clear wavy boundary.

Bt2=19 to 27 inches; yellowish brown (10YR 5/4) clay loam; moderate fine and medium subangular blocky structure; friable; common fine and very fine roots; common distinct grayish brown (10YR 5/2) and few faint dark yellowish brown (10YR 4/4) clay films on vertical faces of peds; common medium distinct gray (10YR 5/1) iron depletions in the matrix; common medium prominent strong brown (7.5YR 5/8) masses of iron accumulation in the matrix; few distinct black (10YR 2/1) masses of manganese accumulation on faces of peds; 3 percent rock fragments; strongly acid; clear smooth boundary.

Bt3=27 to 36 inches; dark yellowish brown (10YR 4/4) clay loam; moderate medium and coarse subangular blocky structure; friable; common fine and very fine roots; few faint brown (10YR 5/3) and many distinct grayish brown (10YR 5/2) clay films on vertical faces of peds; common medium distinct gray (10YR 5/1) iron depletions in the matrix; common medium prominent strong brown (7.5YR 5/8) and distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; few distinct black (10YR 2/1) masses of manganese accumulation on faces of peds; common medium distinct black (10YR 2/1) spherical masses of manganese accumulation in the matrix; 3 percent rock fragments; moderately acid; gradual wavy boundary.

Bt4=36 to 41 inches; dark yellowish brown (10YR 4/4) clay loam; moderate fine and medium subangular blocky structure; friable; common fine and very fine roots; common distinct grayish brown (10YR 5/2) and dark grayish brown (10YR 4/2) clay films on faces of peds; common fine distinct yellowish brown (10YR 5/6) and prominent strong brown (7.5YR 5/8) masses of iron accumulation in the matrix; 3 percent rock fragments; slightly acid; clear wavy boundary.

Bt5=41 to 45 inches; brown (10YR 4/3) sandy clay loam; moderate fine and medium subangular blocky structure; very friable; common fine and very fine roots; common distinct grayish brown (10YR 5/2) and dark grayish brown (10YR 4/2) clay films on faces of peds; few distinct dark brown (10YR 3/3) clay bridging between sand grains; common fine distinct yellowish brown (10YR 5/6) and prominent strong brown (7.5YR 5/8) masses of iron accumulation in the matrix; 4 percent rock fragments; neutral; clear wavy boundary.

Bt6=45 to 50 inches; yellowish brown (10YR 5/4) sandy clay loam with pockets of dark brown (10YR 3/3) loam; moderate medium and coarse subangular blocky structure; friable; few fine and very fine roots; common distinct grayish brown (10YR 5/2) clay films on faces of peds and dark grayish brown (10YR 4/2) clay films in root channels and pores; many distinct very dark grayish brown (10YR 3/2) clay bridging in the pockets of loam; common fine prominent strong brown (7.5YR 5/8) masses of iron accumulation in the matrix; few fine distinct black (10YR 2/1) masses of manganese accumulation in the matrix; 1 percent rock fragments; neutral; abrupt smooth boundary.

2BC=50 to 56 inches; dark yellowish brown (10YR 4/4) silty clay; moderate medium and coarse subangular blocky structure; firm; common distinct grayish brown (10YR 5/2) coatings on vertical faces of peds; common distinct light brownish gray (10YR 6/2) carbonate coatings on vertical faces of peds; common distinct yellowish brown (10YR 5/6) hypocoats along vertical faces of peds; 2 percent rock fragments; strongly effervescent; moderately alkaline; abrupt wavy boundary.

2Cd1=56 to 68 inches; brown (10YR 5/3) silty clay; massive, with widely spaced vertical fractures; very firm; few distinct gray (10YR 5/1)

carbonate coatings on fractures; 2 percent rock fragments; strongly effervescent; moderately alkaline; gradual wavy boundary.

2Cd2=68 to 80 inches; brown (10YR 5/3) silty clay loam; massive; very firm; 2 percent rock fragments; strongly effervescent; moderately alkaline.

Range in Characteristics
Thickness of the solum: 33 to 60 inches
Depth to carbonates: 33 to 60 inches
Depth to till: 40 to 60 inches
Depth to dense material: 40 to 60 inches
Depth to bedrock: More than 80 inches

Ap horizon:
Color=hue of 10YR, value of 3 or 4, chroma of 2 or 3
Texture=loam
Content of rock fragments=0 to 14 percent

Bt horizon:
Color=hue of 7.5YR to 2.5Y, value of 3 to 5, chroma of 3 to 6, with chroma of 2 allowed in the lower part
Texture=clay loam, loam, or sandy clay loam or the gravelly analogs of these textures; sandy loam is allowed in the lower part
Content of rock fragments=0 to 30 percent

2BC horizon:
Color=hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 3 or 4
Texture=silty clay, silty clay loam, or clay loam
Content of rock fragments=1 to 7 percent

2Cd or 2Cdg horizon:
Color=hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 1 to 4
Texture=silty clay, silty clay loam, or clay loam
Content of rock fragments=1 to 7 percent

DIGBY SERIES

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderate in the solum and rapid in the substratum; in the till substratum phase, the permeability is moderate in the solum, rapid in the sandy and gravelly substratum, and slow or very slow in the till substratum
Parent material: Loamy and gravelly beach or glaciolacustrine deposits; in the till substratum phase, loamy glaciolacustrine deposits overlying till
Landform: Flats, rises, and knolls on beach ridges and lake plains
Position on the landform: Summits, shoulders, backslopes
Slope: 0 to 6 percent

Adjacent soils: Belmore, Haney, Haskins, Millgrove

Taxonomic class: Fine-loamy, mixed, active, mesic Aeric Endoaqualfs

Typical Pedon
Digby loam, 0 to 3 percent slopes, in Defiance County, Ohio; Hicksville Township; about 1 mile west-northwest of Hicksville; about 840 feet south and 220 feet west of the center of sec. 17, T. 4 N., R. 1 E.

Ap=0 to 9 inches; dark grayish brown (10YR 4/2) loam, pale brown (10YR 6/3) dry; moderate medium granular structure; friable; many fine roots; common fine and very fine pores; neutral; abrupt smooth boundary.

Bt1=9 to 15 inches; yellowish brown (10YR 5/4) clay loam; moderate medium and fine subangular blocky structure; firm; common fine roots; common fine pores; thin patchy grayish brown (10YR 5/2) clay films on faces of peds; grayish brown (10YR 5/2) coatings on faces of peds; common medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; 12 percent rock fragments; moderately acid; clear wavy boundary.

Bt2=15 to 20 inches; dark yellowish brown (10YR 4/4) clay loam; moderate medium and fine subangular blocky structure; firm; common fine roots; few fine pores; medium continuous dark grayish brown (10YR 4/2) clay films on faces of peds; dark grayish brown (10YR 4/2) coatings on faces of peds; many fine distinct grayish brown (2.5Y 5/2) iron depletions in the matrix; many fine distinct yellowish brown (10YR 5/4) masses of iron accumulation in the matrix; common fine distinct black (10YR 2/1) masses of iron and manganese oxide accumulation in the matrix; 13 percent rock fragments; slightly acid; clear wavy boundary.

Btg1=20 to 26 inches; grayish brown (10YR 5/2) gravelly clay loam; moderate medium and fine subangular blocky structure; firm; common fine roots; common fine pores; medium continuous dark grayish brown (10YR 4/2) clay films on faces of peds; dark grayish brown (10YR 4/2) coatings on faces of peds; many medium prominent

brownish yellow (10YR 6/6) masses of iron accumulation in the matrix; 15 percent rock fragments; neutral; gradual wavy boundary.

Btg2=26 to 35 inches; light brownish gray (2.5Y 6/2) gravelly loam; weak medium and fine subangular blocky structure; firm; few fine roots; few fine pores; thin patchy dark grayish brown (10YR 4/2) clay films on vertical faces of peds; grayish brown (10YR 5/2) coatings on faces of peds; many fine distinct yellowish brown (10YR 5/4) and prominent (10YR 5/6) masses of iron accumulation in the matrix; 23 percent rock fragments; strongly effervescent in places; slightly alkaline; gradual wavy boundary.

C1=35 to 44 inches; brown (10YR 5/3) very gravelly sandy loam; single grain; very friable; 35 percent rock fragments; strongly effervescent; moderately alkaline; gradual wavy boundary.

C2=44 to 60 inches; grayish brown (10YR 5/2) and yellowish brown (10YR 5/4) stratified very gravelly sandy loam and very gravelly loamy sand; single grain; very friable; 40 percent rock fragments; strongly effervescent; moderately alkaline; gradual wavy boundary.

Range in Characteristics
Thickness of the solum: 28 to 48 inches
Depth to carbonates: 30 to more than 48 inches
Depth to till: More than 48 inches, and commonly more than 60 inches; 18 to 42 inches in the till substratum phase
Depth to bedrock: More than 60 inches

Ap or A horizon:
Color=hue of 10YR, value of 3 to 5, chroma of 1 to 3
Texture=sandy loam, fine sandy loam, or loam
Content of rock fragments=0 to 14 percent

Bt or Btg horizon:
Color=hue of 10YR or 2.5Y, value of 4 to 6, chroma of 2 to 4
Texture=sandy clay loam, sandy loam, clay loam, or loam in the upper part and clay loam, sandy clay loam, fine sandy loam, or loam or the gravelly analogs of these textures in the lower part
Content of rock fragments=2 to 14 percent in the upper part and 10 to 34 percent in the lower part

C or Cg horizon:
Color=hue of 10YR or 2.5Y, value of 4 to 6, chroma of 1 to 4
Texture=loamy sand, sandy loam, loamy coarse sand, coarse sandy loam, or sand or the gravelly or very gravelly analogs of these textures, with thin layers of silt loam or loam in some pedons
Content of rock fragments=5 to 40 percent

2C or 2Cg horizon:
Color=hue of 10YR, 2.5Y, or 5Y, or is neutral, value of 4 or 5, chroma of 0 to 4
Texture=clay, silty clay, clay loam, or silty clay loam
Content of rock fragments=1 to 10 percent

The Digby soils in the till substratum phase in Wood County have a perched water table and episaturation. They classify as fine-loamy, mixed, active, mesic Aeric Epiaqualfs using the 8th edition to the Keys to Soil Taxonomy and are taxadjuncts to the Digby series. This difference, however, does not significantly affect the use or management of the soils.

DUNBRIDGE SERIES

Depth class: Shallow to deep
Drainage class: Well drained
Permeability: Moderately rapid or rapid in the upper part of the solum, and moderately rapid in the lower part of the solum
Parent material: Sandy and loamy glaciolacustrine deposits overlying limestone or dolostone
Landform: Rises and knolls on reefs on lake plains
Position on the landform: Summits, shoulders, backslopes
Slope: 0 to 6 percent

Adjacent soils: Castalia, Marblehead, Randolph, Ritchey

Taxonomic class: Fine-loamy, mixed, active, mesic Mollic Hapludalfs

Typical Pedon
Dunbridge sandy loam, 1 to 4 percent slopes, in Sandusky County, Ohio; Madison Township; about 1.25 miles south of Gibsonburg; about 1,240 feet east and 1,240 feet south of the northwest corner of sec. 25, T. 5 N., R. 13 E.

Ap1=0 to 5 inches; dark brown (10YR 3/3) sandy loam, grayish brown (10YR 5/2) dry; weak medium and fine granular structure; friable; many roots; 5 percent gravel; neutral; abrupt smooth boundary.

Ap2=5 to 9 inches; very dark grayish brown (10YR 3/2) sandy loam, grayish brown (10YR 5/2) dry; weak medium and coarse granular structure; friable; many roots; 5 percent gravel; neutral; abrupt smooth boundary.

Bt1=9 to 13 inches; dark yellowish brown (10YR 4/4) sandy clay loam; weak coarse and medium subangular blocky structure; friable; few fine roots; few very dark grayish brown (10YR 3/2) worm casts in the matrix; common distinct brown (10YR 4/3) clay films on faces of peds; 3 percent gravel; neutral; clear wavy boundary.

Bt2=13 to 20 inches; dark yellowish brown (10YR 4/4) clay loam; weak medium and coarse subangular blocky structure; friable; few fine roots; common distinct brown (10YR 4/3) clay bridging between sand grains; 1 percent gravel; neutral; clear smooth boundary.

Bt3=20 to 25 inches; dark yellowish brown (10YR 4/4) sandy clay loam; weak coarse and medium subangular blocky structure; friable; few roots; common distinct dark yellowish brown (10YR 4/4) clay bridging between sand grains; 4 percent gravel; slightly effervescent; slightly alkaline; abrupt smooth boundary.

Bt4=25 to 30 inches; dark yellowish brown (10YR 4/4) clay loam; moderate medium and coarse subangular blocky structure; friable; fine roots; common distinct brown (10YR 4/3) clay films on faces of peds; 2 percent gray (10YR 6/1) and yellowish brown (10YR 5/4) weathered limestone gravel; slightly effervescent; slightly alkaline; abrupt smooth boundary.

2R=30 inches; fractured limestone.

Range in Characteristics
Thickness of the solum: 18 to 42 inches
Depth to bedrock: 18 to 42 inches

Ap or A horizon:
Color=hue of 7.5YR or 10YR, value of 2 to 4, chroma of l to 3
Texture=sandy loam or loamy fine sand
Content of rock fragments=l to 14 percent

Bt horizon:
Color=hue of 5YR to 10YR, 7.5YR, or 5YR, value of 4 to 6, chroma of 3 to 6
Texture=fine sandy loam, sandy loam, sandy clay loam, loam, or clay loam or their gravelly analogues
Content of rock fragments=1 to 34 percent

EEL SERIES

Depth class: Very deep; moderately deep or deep in the bedrock substratum phase
Drainage class: Moderately well drained
Permeability: Moderate in the solum, and moderate or moderately rapid in the substratum
Parent material: Loamy alluvium; and in the moderately deep to bedrock substratum phase, loamy alluvium overlying limestone or dolostone
Landform: Flats, rises, and natural levees on flood plains
Slope: 0 to 2 percent

Adjacent soils: Genesee, Shoals, Sloan

Taxonomic class: Fine-loamy, mixed, superactive, mesic Fluvaquentic Eutrudepts

Typical Pedon
Eel silt loam, occasionally flooded, in Lucas County, Ohio; Monclova Township; about 1 mile southeast of Albon Lake; about 600 feet north and 900 feet east of the center of sec. 33, T. 2.

Ap=0 to 9 inches; dark grayish brown (10YR 4/2) loam; weak medium granular structure; friable; common fine roots; neutral; abrupt smooth boundary.

Bw1=9 to 16 inches; brown (10YR 4/3) loam; weak medium subangular blocky structure; friable; few fine roots; neutral; abrupt wavy boundary.

Bw2=16 to 22 inches; yellowish brown (10YR 5/4) loam; weak medium subangular blocky structure; friable; few fine roots; few fine distinct brown grayish brown (10YR 5/2) iron depletions in the matrix; few fine faint brown (10YR 4/3) masses of iron accumulation in the matrix; neutral; gradual wavy boundary.

BC=22 to 33 inches; dark yellowish brown (10YR 4/4) loam; weak medium subangular blocky structure; friable; few fine roots; common medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; common medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; neutral; abrupt smooth boundary.

C=33 to 60 inches; brown (10YR 4/3) sandy loam with strata of loamy sand; massive; friable; common medium faint dark grayish brown (10YR 4/2) iron depletions in the matrix; strongly effervescent; moderately alkaline.

Range in Characteristics
Thickness of the solum: 20 to 40 inches

Depth to carbonates: 20 to 40 inches
Depth to bedrock: More than 48 inches, but typically more than 60 inches; 20 to 42 inches in the bedrock substratum phase

Ap or A horizon:
Color=hue of 10YR, value of 3 to 5, chroma of 2 or 3
Texture=silt loam or loam
Content of rock fragments=0 to 5 percent

Bw or Bg horizon:
Color=hue of 10YR, value of 4 or 5, chroma of 1 to 6
Texture=loam, silt loam, or clay loam
Content of rock fragments=0 to 5 percent

C or Cg horizon:
Color=hue of 10YR, value of 4 to 6, chroma of 1 to 4
Texture=sandy loam, fine sandy loam, or loam, with strata of loamy sand, sandy loam, silt loam, silty clay loam, clay loam, loamy fine sand, fine sand, or sand
Content of rock fragments=0 to 14 percent

FLATROCK SERIES

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderate in the solum, and moderate or moderately rapid in the substratum
Parent material: Loamy alluvium
Landform: Flats, rises, and natural levees on flood plains
Slope: 0 to 2 percent

Adjacent soils: Shoals, Sloan

Taxonomic class: Fine-loamy, mixed, active, mesic Fluvaquentic Eutrudepts

Typical Pedon
Flatrock silt loam, frequently flooded, in Paulding County, Ohio; Paulding Township; about 1.7 miles southwest of the village of Paulding; about 1,450 feet east and 1,450 feet north of the southwest corner of sec. 14, T. 2 N., R. 2 E.

Ap=0 to 13 inches; brown (10YR 4/3) silt loam, light brownish gray (10YR 6/2) dry; weak medium subangular blocky structure parting to moderate fine and medium granular; friable; few fine roots; common faint dark grayish brown (10YR 4/2) organic coatings on faces of peds and in worm channels; neutral; clear smooth boundary.

Bw1=13 to 18 inches; yellowish brown (10YR 5/4) silt loam; weak medium subangular blocky structure; friable; few fine roots; many brown (10YR 4/3) worm casts; few faint brown (10YR 5/3) coatings on vertical faces of peds; few fine faint dark yellowish brown (10YR 4/4) masses of iron accumulation in the matrix; few fine distinct very dark gray (10YR 3/1) masses of iron and manganese accumulation in the matrix; slightly acid; gradual wavy boundary.

Bw2=18 to 30 inches; dark yellowish brown (10YR 4/4) loam; moderate medium subangular blocky structure; firm; few fine roots; common distinct brown (10YR 5/3) and light brownish gray (10YR 6/2) coatings on vertical faces of peds; few fine distinct grayish brown (10YR 5/2) and common fine faint brown (10YR 5/3) iron depletions in the matrix; few fine distinct black (10YR 2/1) masses of manganese accumulation in the matrix; neutral; gradual wavy boundary.

Bw3=30 to 44 inches; dark yellowish brown (10YR 4/4) loam; weak and moderate medium subangular blocky structure; firm; few fine roots; few distinct dark grayish brown (10YR 4/2) coatings on vertical faces of peds; few medium distinct light brownish gray (10YR 6/2) iron depletions in the matrix; common medium faint yellowish brown (10YR 5/4) masses of iron accumulation in the matrix; many medium distinct black (10YR 2/1) masses of manganese accumulation on faces of peds; neutral; gradual wavy boundary.

C=44 to 80 inches; yellowish brown (10YR 5/4) loam with thin strata of silt loam and fine sandy loam; massive; friable; common medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; common medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common medium distinct black (10YR 2/1) masses of manganese accumulation in the matrix; neutral.

Range in Characteristics
Thickness of the solum: 24 to 55 inches
Depth to carbonates: 40 to over 80 inches
Depth to bedrock: More than 80 inches

Ap horizon:
Color=hue of 10YR, value of 3 to 5, chroma of 2 or 3
Texture=silt loam
Content of rock fragments=0 to 5 percent

Bw or Bg horizon:
Color=hue of 10YR, value of 4 or 5, chroma of 2 to 4
Texture=silt loam, silty clay loam, or loam; thin subhorizons of clay loam or fine sandy loam are in some pedons
Content of rock fragments=0 to 5 percent

C or Cg horizon:
Color=hue of 10YR or 2.5Y, value of 4 to 6, chroma of 1 to 4
Texture=loam, silt loam, silty clay loam, clay loam, sandy loam, coarse sandy loam, or fine sandy loam and is commonly stratified
Content of rock fragments=0 to 14 percent

FULTON SERIES

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Slow in the solum and in the lacustrine substratum, and slow or very slow in the till substratum
Parent material: Clayey glaciolacustrine deposits overlying till
Landform: Flats, rises, knolls, and dissected areas along streams on lake plains
Position on the landform: Summits, shoulders, backslopes
Slope: 0 to 6 percent

Adjacent soils: Latty, till substratum, Toledo

Taxonomic class: Fine, illitic, mesic Aeric Epiaqualfs

Typical pedon:
Fulton silty clay loam, till substratum, 0 to 2 percent slopes, in Wood County, Ohio; Northwood Corporation Congress Lands; about 7 miles east of Rossford; about 580 feet west and 1,795 feet north of the southeast corner of sec. 36, T. 8 N., R. 12 E.

Ap=0 to 9 inches; brown (10YR 4/3) silty clay loam, very pale brown (10YR 7/3) dry; weak coarse subangular blocky structure parting to moderate fine and medium granular; firm; common fine and very fine roots; moderately acid; clear smooth boundary.

Bt1=9 to 15 inches; brown (10YR 5/3) silty clay; weak medium subangular blocky structure; firm; common fine and medium roots along faces of peds; many faint dark grayish brown (10YR 4/2) clay films on faces of peds; many medium and coarse faint grayish brown (10YR 5/2) and common fine and medium distinct gray (10YR 5/1) iron depletions in the matrix; common fine and medium prominent strong brown (7.5YR 5/8) masses of iron accumulation in the matrix; few distinct black (10YR 2/1) manganese coatings on faces of peds; strongly acid; gradual wavy boundary.

Bt2=15 to 22 inches; yellowish brown (10YR 5/4) silty clay; weak medium prismatic structure parting to moderate medium subangular blocky; firm; common fine and very fine roots along prisms; many distinct grayish brown (10YR 5/2) clay films on faces of peds; many medium and coarse distinct gray (10YR 5/1) iron depletions in the matrix; common medium faint dark yellowish brown (10YR 4/4) and few medium distinct strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; few distinct black (10YR 2/1) manganese coatings on faces of peds; moderately acid; gradual wavy boundary.

Bt3=22 to 32 inches; dark yellowish brown (10YR 4/4) silty clay; weak medium and coarse prismatic structure parting to moderate medium subangular blocky; firm; few fine and very fine roots along prisms; many distinct dark gray (10YR 4/1) clay films on faces of peds; many medium and coarse distinct gray (10YR 5/1) iron depletions in the matrix; common fine and medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; few distinct black (10YR 2/1) manganese coatings on faces of peds; neutral; gradual wavy boundary.

Bt4=32 to 35 inches; yellowish brown (10YR 5/4) silty clay loam; moderate medium subangular blocky structure; firm; few fine and very fine roots throughout; common distinct gray (10YR 5/1) clay films on faces of peds; common medium distinct gray (10YR 5/1) iron depletions in the matrix; common fine and medium distinct strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; neutral; gradual wavy boundary.

BC=35 to 47 inches; yellowish brown (10YR 5/4) silty clay loam with strata of silt loam; weak medium and coarse subangular blocky structure; firm; common distinct grayish brown (10YR 5/2) coatings on vertical faces of peds; common medium distinct gray (10YR 5/1) iron depletions in the matrix; common fine and medium distinct strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; common medium distinct light gray (10YR 7/2) calcium carbonate

concretions in the matrix; strongly effervescent; slightly alkaline; gradual wavy boundary.

C=47 to 68 inches; brown (10YR 5/3) silty clay loam with strata of silt loam; massive, parting to weak medium platy; firm in the silty clay loam and friable in the silt loam; many medium and coarse distinct gray (10YR 5/1) iron depletions in the matrix; common fine and medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common fine and medium faint light gray (10YR 7/2) calcium carbonate concretions in the matrix; strongly effervescent; moderately alkaline; abrupt wavy boundary.

2Cd=68 to 80 inches; dark yellowish brown (10YR 4/4) clay loam; massive, with widely spaced vertical partings; very firm; common fine and medium distinct gray (10YR 5/1) iron depletions in the matrix; common fine and medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; 4 percent rock fragments; strongly effervescent; moderately alkaline.

Range in Characteristics
Thickness of the solum: 40 to 60 inches
Depth to carbonates: 22 to 40 inches
Depth to till: 60 to 80 inches
Depth to dense material: 60 to 80 inches
Depth to bedrock: More than 80 inches

Ap horizon:
Color=hue of 10YR or 2.5Y, value of 4 or 5, chroma of 1 to 3
Texture=silty clay loam

Bt or Btg horizon:
Color=hue of 10YR to 5Y, value of 4 or 5, chroma of 1 to 4
Texture=silty clay or clay, with silty clay loam in the lower part

BC or BCg horizon:
Color=hue of 10YR to 5Y, value of 4 or 5, chroma of 1 to 4
Texture=silty clay loam with strata of silt loam

C or Cg horizon:
Color=hue of 10YR or 2.5Y, value of 4 to 6, chroma of 1 to 6
Texture=silty clay loam with strata of silt loam

2Cd or Cdg horizon:
Color=hue of 10YR or 2.5Y, value of 4 to 6, chroma of 1 to 6
Texture=clay loam, silty clay loam, or clay

Content of rock fragments=1 to 7 percent

GENESEE SERIES

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate in the solum, and moderate or moderately rapid in the substratum
Parent material: Loamy alluvium
Landform: Flats, rises, and natural levees on flood plains
Slope: 0 to 2 percent

Adjacent soils: Eel, Shoals, Sloan

Taxonomic class: Fine-loamy, mixed, superactive, mesic Fluventic Eutrudepts

Typical Pedon
Genesee silt loam, frequently flooded, in Ottawa County, Ohio; Harris Township; about 3 miles south-southeast of Rocky Ridge; about 90 feet east and 1,480 feet north of the southwest corner of sec. 10, T. 6 N., R. 14 E.

Ap=0 to 7 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; moderate medium and fine granular structure; friable; many roots; dark brown (10YR 3/3) coatings on faces of peds; slightly acid; abrupt smooth boundary.

Bw1=7 to 13 inches; brown (10YR 4/3) silt loam; weak medium and fine subangular blocky structure; friable; many roots; organic stains on faces of peds; very dark grayish brown (10YR 3/2) fillings in worm channels; neutral; clear smooth boundary.

Bw2=13 to 19 inches; brown (10YR 4/3) silt loam; weak medium and fine subangular blocky structure; friable; many roots; very dark grayish brown (10YR 3/2) coatings on faces of peds; dark brown (10YR 3/3) fillings in worm channels; neutral; clear smooth boundary.

Bw3=19 to 32 inches; brown (10YR 4/3) loam; weak medium and fine subangular blocky structure; friable; many roots; dark brown (10YR 3/3) fillings in worm channels; neutral; clear smooth boundary.

C1=32 to 47 inches; brown (10YR 4/3) loam; weak medium and fine subangular blocky structure; friable; common roots; common prominent white (10YR 8/2) snail shells; slightly

effervescent; slightly alkaline; clear smooth boundary.

C2=47 to 60 inches; dark yellowish brown (10YR 4/4) loam; massive; firm; few roots; few fine faint brown (10YR 4/3) and few medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; many prominent white (10YR 8/2) snail shells; 4 percent rock fragments; strongly effervescent; moderately alkaline.

Range in Characteristics
Thickness of the solum: 20 to 42 inches
Depth to carbonates: 20 to 42 inches
Depth to bedrock: More than 48 inches, but typically more than 60 inches

Ap or A horizon:
Color=hue of 10YR, value of 3 to 5, chroma of 2 to 4
Texture=silt loam or loam
Content of rock fragments=0 to 5 percent

Bw horizon:
Color=hue of 10YR, value of 3 to 5, chroma of 2 to 4
Texture=silt loam or loam
Content of rock fragments=0 to 5 percent

C horizon:
Color= hue of 10YR, value of 3 to 6, chroma of 2 to 4
Texture=silt loam, loam, or sandy loam
Content of rock fragments=0 to 14 percent

GRANBY SERIES

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Rapid in the sandy solum and substratum, and slow or very slow in the till substratum
Parent material: Sandy glaciolacustrine deposits overlying till
Landform: Flats, depressions, and drainageways on lake plains
Slope: 0 to 1 percent

Adjacent soils: Ottokee, Spinks, Tedrow

Taxonomic class: Sandy, mixed, mesic Typic Endoaquolls

Typical Pedon

Granby loamy fine sand, till substratum, 0 to 1 percent slopes, in Wood County, Ohio; Center Township; about 2.5 miles east of Bowling Green; about 2,100 feet south and 475 feet west of the northeast corner of sec. 27, T. 5 N., R. 11 E.

Ap=0 to 11 inches; very dark gray (10YR 3/1) loamy fine sand, gray (10YR 5/1) dry; weak fine granular structure; very friable; many fine roots throughout; 2 percent fine gravel; neutral; abrupt smooth boundary.

Bg1=11 to 19 inches; gray (10YR 5/1) loamy fine sand; weak medium subangular blocky structure; very friable; common fine roots throughout; common distinct very dark grayish brown (10YR 3/2) organic coatings on faces of peds and in pores; many medium and coarse faint grayish brown (10YR 5/2) iron depletions in the matrix; common medium distinct yellowish brown (10YR 5/4) masses of iron accumulation in the matrix; 2 percent fine gravel; neutral; gradual wavy boundary.

Bg2=19 to 33 inches; grayish brown (10YR 5/2) loamy fine sand; weak medium subangular blocky structure; very friable; few fine roots throughout; common medium and coarse faint gray (10YR 5/1) iron depletions in the matrix; common coarse distinct yellowish brown (10YR 5/4) and common fine and medium prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; 2 percent fine gravel; neutral; gradual wavy boundary.

Cg=33 to 45 inches; grayish brown (10YR 5/2) loamy fine sand; single grain; loose; common medium faint gray (10YR 6/1) iron depletions in the matrix; common medium distinct brown (7.5YR 5/4) masses of iron accumulation in the matrix; 2 percent fine gravel; strongly effervescent; slightly alkaline; gradual wavy boundary.

C=45 to 58 inches; brown (10YR 5/3) fine sand; single grain; loose; many medium and coarse distinct gray (10YR 6/1) iron depletions in the matrix; common medium prominent strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; 2 percent fine gravel; strongly effervescent; slightly alkaline; gradual wavy boundary.

C'g1=58 to 65 inches; grayish brown (10YR 5/2) fine sand with strata of loamy fine sand; single grain; loose; many coarse faint gray (10YR 6/1) iron depletions in the matrix; common coarse distinct yellowish brown (10YR 5/4) masses of

iron accumulation in the matrix; strongly effervescent; slightly alkaline; clear wavy boundary.

C'g2=65 to 74 inches; gray (10YR 5/1) stratified loamy sand and sand; single grain; loose; 5 percent fine gravel; strongly effervescent; moderately alkaline; abrupt wavy boundary.

2Cdg=74 to 80 inches; gray (10YR 5/1) clay loam; massive; very firm; common fine faint gray (10YR 6/1) calcium carbonate accumulations along vertical fractures; about 5 percent rock fragments; strongly effervescent; moderately alkaline.

Range in Characteristics
Thickness of the mollic epipedon: 10 to 15 inches
Thickness of the solum: 20 to 52 inches
Depth to carbonates: 20 to more than 60 inches
Depth to till: 60 to 80 inches
Depth to dense material: 60 to 80 inches
Depth to bedrock: More than 80 inches

Ap or A horizon:
Color=hue of 10YR to 5Y, or is neutral, value of 2, 2.5, or 3, chroma of 0 to 2
Texture=loamy fine sand
Content of rock fragments=0 to 5 percent

Bg or Bw horizon:
Color=hue of 10YR to 5Y, value of 4 to 6, chroma of 1 to 3
Texture=loamy fine sand, sand, loamy sand, or fine sand
Content of rock fragments=0 to 5 percent

C or Cg horizon:
Color=hue of 10YR to 5Y, value of 4 to 7, chroma of 1 to 4
Texture=sand, coarse sand, fine sand, loamy fine sand, or loamy sand
Content of rock fragments=0 to 5 percent

2Cd or 2Cdg horizon:
Color=hue of 10YR or 2.5Y, value of 4 to 6, chroma of 1 to 4
Texture=clay loam, silty clay loam, silty clay, or clay
Content of rock fragments=1 to 7 percent

HANEY SERIES

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderate in the solum, and rapid in the substratum
Parent material: Loamy and gravelly beach or glaciolacustrine deposits
Landform: Flats, rises, and knolls on beach ridges on lake plains
Position on the landform: Summits, shoulders, backslopes
Slope: 0 to 6 percent

Adjacent soils: Belmore, Digby, Millgrove

Taxonomic class: Fine-loamy, mixed, active, mesic Aquic Hapludalfs

Typical Pedon
Haney loam, 2 to 6 percent slopes, in Putnam County, Ohio; Sugar Creek Township; about 2 miles northeast of Vaughnsville; SE 1/4, SE 1/4, sec. 1, T. 2 S., R. 6 E.

Ap=0 to 9 inches; brown (10YR 4/3) loam; moderate medium granular structure; very friable; 5 percent gravel; slightly acid; abrupt smooth boundary.

Bt1=9 to 17 inches; yellowish brown (10YR 5/4) clay loam; weak and moderate, fine and medium, subangular blocky structure; friable; thin patchy brown (10YR 4/3) clay films on vertical faces of peds; few medium faint brown (10YR 5/3) and dark yellowish brown (10YR 4/4) masses of iron accumulation in the matrix; 5 percent gravel; moderately acid; clear wavy boundary.

Bt2=17 to 26 inches; yellowish brown (10YR 5/4) clay loam; moderate, fine and medium subangular structure; firm; thin patchy brown (10YR 5/3) clay films on faces of peds; few fine distinct dark grayish brown (10YR 4/2) iron depletions in the matrix; few fine faint brown (10YR 4/3) masses of iron accumulation in the matrix; 10 percent gravel; moderately acid; diffuse wavy boundary.

Bt3=26 to 34 inches; dark yellowish brown (10YR 4/4) sandy clay loam; weak and moderate, fine and medium, subangular blocky structure; firm; thin patchy grayish brown (10YR 5/2) clay films on faces of peds; common medium distinct gray (10YR 5/1) iron depletions in the matrix; 10 percent gravel; slightly acid; clear wavy boundary.

BCt=34 to 42 inches; brown (7.5YR 4/4) sandy clay loam; weak medium subangular blocky structure; firm; thin patchy gray (10YR 5/1) clay films on vertical faces of peds; common medium prominent dark gray (N 4/0) iron depletions in the

matrix; 10 percent gravel; slightly effervescent; slightly alkaline; diffuse wavy boundary.

Cg=42 to 60 inches; gray (10YR 5/1) gravelly loam; massive; loose; many medium distinct dark yellowish brown (10YR 4/4) and prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; 20 percent gravel; slightly effervescent; slightly alkaline.

Range in Characteristics
Thickness of the solum: 27 to 36 inches
Depth to carbonates: 27 to 36 inches
Depth to till: More than 48 inches, and commonly more than 60 inches
Depth to bedrock: More than 60 inches

Ap or A horizon:
Color=hue of 10YR, value of 2 to 5, chroma of 2 or 3
Texture=loam or sandy loam
Content of rock fragments=2 to 14 percent

Bt horizon:
Color=hue of 7.5YR or 10YR, value of 3 to 5, chroma of 3 to 6, with a chroma of 2 permitted in the lower part.
Texture=clay loam, sandy clay loam, silty clay loam, or loam or the gravelly analogs of these textures
Content of rock fragments=2 to 34 percent

C or Cg horizon:
Color=hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 1 to 4
Texture=sandy loam or loamy sand or the gravelly or very gravelly analogs of these textures; sand, gravelly sand, or very gravelly sand occur as strata
Content of rock fragments=10 to 40 percent

HASKINS SERIES

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderate in the upper part of the solum, moderately slow or slow in the lower part of the solum, and slow or very slow in the substratum
Parent material: Loamy glaciolacustrine deposits and the underlying till
Landform: Flats, rises, and knolls on lake plains
Position on the landform: Summits, shoulders, backslopes
Slope: 0 to 6 percent

Adjacent soils: Aurand, Digby, Mermill

Taxonomic class: Fine-loamy, mixed, active, mesic Aeric Epiaqualfs

Typical Pedon
Haskins loam, 0 to 2 percent slopes, in Hancock County, Ohio; Pleasant Township; about 1 mile west-northwest of McComb; about 1,040 feet north and 1,840 feet west of the southeast corner of sec. 22, T. 2 N., R. 9 E.

Ap=0 to 9 inches; dark brown (10YR 3/3) loam, light brownish gray (10YR 6/2) dry; weak fine and medium granular structure; friable; common fine roots; 5 percent intermixing of grayish brown (10YR 5/2) BEg material; 2 percent rock fragments; moderately acid; abrupt smooth boundary.

BEg=9 to 13 inches; grayish brown (10YR 5/2) loam; moderate fine and medium subangular blocky structure; friable; few fine roots; few faint light brownish gray (10YR 6/2) clay films on faces of peds; few faint dark grayish brown (10YR 4/2) worm casts and as organic coatings in pores; few medium prominent strong brown (7.5YR 5/6) and many medium faint brown (10YR 5/3) masses of iron accumulation in the matrix; common distinct brown (7.5YR 4/4) masses of iron and manganese oxide accumulation on faces of peds; 2 percent rock fragments; moderately acid; clear wavy boundary.

Btg=13 to 18 inches; grayish brown (10YR 5/2) clay loam; moderate fine and medium subangular blocky structure; friable; few fine roots; many faint grayish brown (10YR 5/2) and dark grayish brown (10YR 4/2) clay films on faces of peds; few faint dark grayish brown (10YR 4/2) worm casts and as organic coatings in pores; many medium prominent yellowish brown (10YR 5/6) and few medium prominent strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; few distinct dark brown (7.5YR 3/2) masses of iron and manganese oxide accumulation on faces of peds; 3 percent rock fragments; slightly acid; clear wavy boundary.

Bt1=18 to 24 inches; brown (10YR 5/3) clay loam; moderate fine and medium subangular blocky structure; friable; few fine roots; many distinct dark grayish brown (10YR 4/2) clay films on faces of peds and lining old root channels; common medium faint grayish brown (10YR 5/2) iron depletions in the matrix; common medium faint yellowish brown (10YR 5/4) and common coarse prominent strong brown (7.5YR 5/6) masses of

iron accumulation in the matrix; few distinct dark brown (7.5YR 3/2) masses of iron and manganese oxide accumulation on faces of peds; 3 percent rock fragments; slightly acid; gradual wavy boundary.

Bt2=24 to 30 inches; yellowish brown (10YR 5/6) clay loam; moderate fine and medium subangular blocky structure; friable; few fine roots; common prominent dark grayish brown (10YR 4/2) clay films on faces of peds and lining old root channels; common medium prominent dark grayish brown (10YR 4/2) iron depletions in the matrix; common medium distinct yellowish brown (10YR 5/4) and few medium faint strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; few prominent dark brown (7.5YR 3/2) masses of iron and manganese oxide accumulation on faces of peds; 3 percent rock fragments; neutral; clear smooth boundary.

B'tg=30 to 36 inches; dark grayish brown (10YR 4/2) loam with strata of yellowish brown (10YR 5/6) fine sandy loam; weak medium subangular blocky structure; very friable; few fine roots; few faint dark grayish brown (10YR 4/2) clay films on faces of peds and bridging between sand grains in the loam material; common medium prominent yellowish brown (10YR 5/6) and distinct dark yellowish brown (10YR 4/4) masses of iron accumulation in the matrix; few faint dark brown (7.5YR 3/2) masses of iron and manganese oxide accumulation on faces of peds; 5 percent rock fragments in the loam material and 1 percent rock fragments in the fine sandy loam strata; neutral; abrupt smooth boundary.

2BC=36 to 52 inches; yellowish brown (10YR 5/4) clay; weak medium and coarse subangular blocky structure; very firm; common distinct gray (10YR 6/1) coatings on vertical faces of peds; common medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; few medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; few medium distinct light gray (10YR 7/2) calcium carbonate concretions in the matrix; 5 percent rock fragments; strongly effervescent; slightly alkaline; gradual irregular boundary.

2Cd=52 to 80 inches; dark yellowish brown (10YR 4/4) clay; massive, with widely spaced vertical fractures; very firm; few distinct gray (10YR 6/1) coatings on faces of fractures; few fine distinct grayish brown (10YR 5/2) iron depletions and few medium distinct yellowish brown (10YR 5/6) masses of iron accumulation oriented along fractures; 5 percent rock fragments; strongly effervescent; moderately alkaline.

Range in Characteristics
Thickness of the solum: 25 to 55 inches
Depth to carbonates: 18 to 42 inches
Depth to till: 18 to 42 inches
Depth to bedrock: More than 60 inches

Ap or A horizon:
Color=hue of 10YR or 2.5Y, value of 3 to 5, chroma of 1 to 3
Texture=loam or fine sandy loam
Content of rock fragments=0 to 10 percent

Bt or Btg horizon:
Color=hue of 10YR or 2.5Y, value of 4 to 6, chroma of 1 to 6
Texture=clay loam or sandy clay loam, but the range includes loam and sandy loam or the gravelly analogs of these textures
Content of rock fragments=0 to 20 percent

2Bt,2Btg, 2BCtg, 2BC, or 2BCg horizon:
Color=hue of 10YR to 5Y, or is neutral, value of 4 or 5, chroma of 0 to 4
Texture=clay, silty clay, clay loam, or silty clay loam
Content of rock fragments=1 to 10 percent

2C or 2Cg horizon:
Color=hue of 10YR to 5Y, or is neutral, value of 4 or 5, chroma of 0 to 4
Texture=clay, silty clay, clay loam, or silty clay loam
Content of rock fragments=1 to 10 percent

HOYTVILLE SERIES

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Moderately slow in the upper part of the solum, slow in the lower part of the solum, and slow or very slow in the substratum
Parent material: Wave-planed till
Landform: Extensive flats, depressions, and drainageways on lake plains
Slope: 0 to 1 percent

Adjacent soils: Nappanee, St. Clair

Figure 14. Profile of Hoytville silty clay, 0 to 1 percent slopes. Organic matter darkens the surface color and the reduction of iron is responsible for the gray colors in the upper part of the subsoil.

Taxonomic class: Fine, illitic, mesic Mollic Epiaqualfs

Typical Pedon

Hoytville clay loam, 0 to 1 percent slopes, in Wood County, Ohio; Henry Township; about 1.5 miles east-northeast of Hoytville; on the Ohio Agricultural Research and Development Center, Northwestern Branch; about 2000 feet east and 1,000 feet north of the southwest corner of sec. 18, T. 3 N., R 10 E. (fig. 14)

Ap=0 to 9 inches; very dark grayish brown (10YR 3/2) clay loam, grayish brown (10YR 5/2) dry; weak fine and medium granular structure; firm; common fine roots throughout; common fine distinct brown (7.5YR 4/4) masses of iron accumulation in the matrix; 2 percent rock fragments (subangular limestone and shale); slightly acid; clear smooth boundary.

Btg1=9 to 18 inches; dark gray (2.5Y 4/1) clay; moderate fine and medium subangular blocky structure; very firm; few fine roots between peds; few distinct gray (10YR 5/1) clay films on faces of peds; few distinct very dark grayish brown (10YR 3/2) organic stains on faces of peds; common medium prominent strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; common fine distinct black (10YR 2/1) manganese threads in the matrix; 2 percent rock fragments (subrounded igneous, and subangular limestone and shale); neutral; clear wavy boundary.

Btg2=18 to 27 inches; grayish brown (10YR 5/2) clay; weak medium prismatic structure parting to moderate medium and coarse subangular blocky; firm; few fine roots between peds; common faint gray (10YR 5/1) clay films on faces of peds; many medium prominent strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; common fine distinct black (10YR 2/1) manganese threads in the matrix; 2 percent rock fragments (subangular limestone and shale); neutral; clear wavy boundary.

Btg3=27 to 42 inches; grayish brown (10YR 5/2) clay; weak medium prismatic structure parting to moderate medium and coarse subangular blocky; firm; few fine roots between peds; common faint gray (10YR 5/1) clay films on faces of peds; common medium prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common medium distinct black (10YR 2/1) manganese threads in the matrix; 2 percent rock fragments (subrounded igneous, and subangular limestone and shale); slightly effervescent discontinuously at 37 inches; strongly effervescent at 40 inches; slightly alkaline; gradual wavy boundary.

Bt=42 to 52 inches; yellowish brown (10YR 5/4) clay; weak coarse angular blocky structure; firm; few fine roots between peds; common distinct gray (10YR 5/1) clay films on vertical faces of peds; common medium distinct gray (10YR 5/1) iron depletions in the matrix; common fine and medium distinct strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; common fine distinct black (10YR 2/1) manganese threads in the matrix; 3 percent rock fragments (subrounded igneous, and subangular limestone and shale); strongly effervescent; slightly alkaline; clear wavy boundary.

BC=52 to 60 inches; dark yellowish brown (10YR 4/4) clay loam; weak coarse prismatic structure parting to weak coarse angular blocky; firm; few fine roots between peds; common distinct gray (10YR 5/1) coatings on vertical faces of prisms; few distinct light gray (10YR 7/1) carbonate coatings on vertical faces of prisms; few continuous prominent yellowish brown (10YR 5/6) hypocoats beneath the carbonate coatings; common fine and medium distinct gray (10YR 5/1) iron depletions in the matrix; many medium distinct yellowish brown (10YR 5/6) masses of

iron accumulation in the matrix; common fine distinct black (10YR 2/1) manganese threads in the matrix; common medium distinct light gray (10YR 7/1) carbonate masses of vertical faces of prisms; 5 percent rock fragments (subrounded igneous, and subangular limestone and shale); strongly effervescent; moderately alkaline; clear wavy boundary.

Cd1=60 to 72 inches; dark yellowish brown (10YR 4/4) clay loam; massive, with widely spaced vertical fractures; very firm; few distinct light gray (10YR 7/1) carbonate coatings on faces of fractures; few discontinuous prominent yellowish brown (10YR 5/4) hypocoats beneath the carbonate coatings; common fine distinct grayish brown (10YR 5/2) iron depletions in the matrix; common fine distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common fine distinct black (10YR 2/1) manganese threads on faces of fractures; common fine distinct light gray (10YR 7/1) carbonate masses on faces of fractures; 5 percent rock fragments (subrounded igneous, and subangular limestone and shale); strongly effervescent; moderately alkaline; clear wavy boundary.

Cd2=72 to 84 inches; brown (10YR 4/3) clay loam; massive; very firm; common fine faint grayish brown (10YR 5/2) iron depletions in the matrix; common fine distinct black (10YR 2/1) manganese threads in the matrix; 5 percent rock fragments (subrounded igneous, and subangular limestone and shale); strongly effervescent; moderately alkaline.

Range in Characteristics
Thickness of the solum: 40 to 65 inches; in the shallow to carbonates phase, 30 to 55 inches
Depth to carbonates: 30 to 55 inches; in the shallow to carbonates phase, it is typically 10 to 20 inches but ranges from on the surface to 24 inches
Depth to dense material: 50 to 70 inches; in the shallow to carbonates phase, it is more than 48 inches but typically more than 60 inches
Depth to bedrock: More than 80 inches; in the shallow to carbonates phase, it is more than 48 inches but typically more than 60 inches

Ap horizon:
Color=hue of 10YR or 2.5Y, value of 2, 2.5 or 3, chroma of 1 or 2
Texture= silty clay, clay, silty clay loam, or clay loam
Content of rock fragments=0 to 5 percent

Btg horizon:
Color=hue of 10YR to 5Y, value of 4 to 6, chroma of 1 or 2
Texture=clay or silty clay
Content of rock fragments=1 to 10 percent

Bt horizon:
Color=hue of 10YR or 2.5Y, value of 4 or 5, chroma of 3 or 4
Texture=clay loam, clay, silty clay loam, or silty clay
Content of rock fragments=1 to 10 percent

Cd or Cdg horizon:
Color=hue of 10YR to 5Y, value of 4 to 6, chroma of 1 to 6
Texture=clay, silty clay, silty clay loam, or clay loam
Content of rock fragments=2 to 10 percent

The Hoytville soils in the shallow to carbonates phase in Wood County do not have the translocated clay required for an argillic horizon. They classify as fine, illitic, mesic Mollic Epiaquepts using the 8th edition of the Keys to Soil Taxonomy and are taxadjuncts to the Hoytville series. This difference, however, does not significantly affect the use and management of the soils.

JOLIET SERIES

Depth class: Shallow
Drainage class: Poorly drained
Permeability: Moderately slow
Parent material: Loamy glaciolacustrine deposits overlying limestone or dolostone
Landform: Flats, depressions, and drainageways on reefs on lake plains
Slope: 0 to 1 percent

Adjacent soils: Castalia, Dunbridge, Marblehead, Millsdale, Randolph

Taxonomic class: Loamy, mixed, superactive, mesic Lithic Endoaquolls

Typical Pedon
Joliet silty clay loam, 0 to 1 percent slopes, in Wood County, Ohio; Bloom Township; about 1 mile east of Cygnet; NE 1/4 NW 1/4, sec. 8., T. 3 N., R. 11 E.

Ap=0 to 6 inches; very dark gray (10YR 3/1) silty clay loam; moderate medium granular structure; very firm; neutral; abrupt wavy boundary.

Bg=6 to 16 inches; grayish brown (2.5Y 5/2) and very dark grayish brown (10YR 3/2) silty clay loam; strong fine angular blocky structure; firm; common prominent yellowish brown (10YR 5/6 and 10YR 5/8) masses of iron accumulation in the matrix; neutral; abrupt wavy boundary.

2R=16 to 18 inches; limestone.

Range in Characteristics
Thickness of the solum: 10 to 20 inches
Depth to bedrock: 10 to 20 inches

Ap or A horizon:
Color=hue of 10YR, value of 2 or 3, chroma of 1 or 2
Texture=silty clay loam
Content of rock fragments=0 to 14 percent

Bg horizon:
Color= hue of 10YR to 5Y, or is neutral, value of 3 to 5, chroma of 0 to 2
Texture=clay loam, silty clay, clay, or silty clay loam
Content of rock fragments=0 to 14 percent

The Joliet series in Wood County has a surface layer that does not meet the thickness requirement for a mollic epipedon. These pedons classify as Loamy, mixed, superactive, mesic Lithic Endoaquepts using the 8th edition of the Keys to Soil Taxonomy and are taxadjuncts to the Joliet series. This difference, however, does not significantly affect the use and management of the soils.

KIBBIE SERIES

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderately rapid in the upper part of the solum, and moderate in the lower part of the solum and in the substratum
Parent material: Stratified loamy and silty glaciolacustrine deposits
Landform: Rises and knolls on deltas on lake plains
Position on the landform: Summits, shoulders, backslopes
Slope: 0 to 6 percent

Adjacent soils: Colwood

Taxonomic class: Fine-loamy, mixed, active, mesic Aquollic Hapludalfs

Typical Pedon
Kibbie fine sandy loam, 0 to 2 percent slopes, in Ottawa County, Ohio; Harris Township; about 0.75 mile north of Elmore; about 300 feet east and 1,550 feet south of the northwest corner of sec. 18, T. 6 N., R. 14 E.

Ap=0 to 9 inches; very dark gray (10YR 3/1) fine sandy loam, grayish brown (10YR 5/2) dry; weak medium and fine granular structure; very friable; many roots; neutral; clear wavy boundary.

BA =9 to 17 inches; dark grayish brown (2.5Y 4/2) loam; weak medium and fine subangular blocky structure; friable; many roots; very dark gray (10YR 3/1) organic coatings on faces of peds; common medium prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; neutral; abrupt wavy boundary.

Bt1=17 to 25 inches; yellowish brown (10YR 5/4) stratified loam and silty clay loam; weak medium and fine subangular blocky structure; friable; many roots; thin patchy dark grayish brown (10YR 4/2) clay films on vertical faces of peds; dark grayish brown (10YR 4/2) coatings on faces of peds; common medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; very dark grayish brown (10YR 3/2) organic coatings on faces of peds; many medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; neutral; clear smooth boundary.

Bt2=25 to 37 inches; yellowish brown (10YR 5/4) stratified loam and silty clay loam; weak coarse prismatic structure parting to weak medium and fine subangular blocky; very friable; many roots; thin patchy dark grayish brown (10YR 4/2) clay films on vertical faces of peds; dark grayish brown (10YR 4/2) coatings on faces of peds; common medium distinct gray (10YR 5/1) iron depletions in the matrix; very dark grayish brown (10YR 3/2) organic coatings on faces of peds; common coarse distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common distinct very dark gray (10YR 3/1) accumulation of iron and manganese oxide on faces of peds; neutral; diffuse smooth boundary.

C=37 to 46 inches; brown (10YR 5/3) silt loam with thin strata of loamy fine sand; weak thick platy structure; friable; few coarse distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; slightly effervescent; slightly alkaline; clear smooth boundary.

Cg=46 to 60 inches; grayish brown (10YR 5/2) stratified silt loam and silty clay loam; weak thick platy structure; friable; few coarse prominent strong brown (7.5YR 5/8) masses of iron accumulation in the matrix; strongly effervescent; slightly alkaline.

Range in Characteristics
Thickness of the solum: 40 to 60 inches
Depth to carbonates: 40 to 60 inches
Depth to till: More than 60 inches
Depth to bedrock: More than 60 inches

Ap or A horizon:
Color=hue of 10YR, value of 4, chroma of 1 to 3
Texture=fine sandy loam or loamy fine sand
Content of rock fragments=less than 1 percent

Bt horizon:
Color=hue of 10YR or 2.5Y, value of 4 to 6, chroma of 3 to 6
Texture=loam, clay loam, sandy clay loam, fine sandy loam, silty clay loam, or silt loam
Content of rock fragments=less than 1 percent

C or Cg horizon:
Color=hue of 10YR or 2.5Y, value of 5 or 6, chroma of 2 to 4
Texture=dominantly silt loam to fine sand with strata ranging from clay to loamy sand or fine sand
Content of rock fragments=less than 1 percent

The Kibbie soils in Wood County have a surface layer with moist color value of 4 and does not meet the color requirement for a mollic subgroup. They classify as Fine-loamy, mixed, active, mesic Aeric Endoaqualfs using the 8th edition of the Keys to Soil Taxonomy and are taxadjuncts to the Kibbie series. This difference, however, does not significantly affect the use and management of the soils.

LANDES SERIES

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately rapid in the solum, and rapid in the substratum
Parent material: Loamy and sandy alluvium
Landform: Rises and natural levees on flood plains
Slope: 0 to 6 percent

Adjacent soils: Rossburg, Shoals, Sloan

Taxonomic class: Coarse-loamy, mixed, superactive, mesic Fluventic Hapludolls

Typical Pedon
Landes loam, occasionally flooded, in Paulding County, Ohio; Crane Township; about 3.4 miles west of Cecil; about 600 feet east and 160 feet south of the northwest corner of sec. 17, T. 3 N., R. 2 E.

Ap=0 to 10 inches; very dark grayish brown (10YR 3/2) loam, grayish brown (10YR 5/2) dry; weak fine and medium granular structure; friable; common fine and medium roots; few medium prominent white (10YR 8/1) aquatic shells in the matrix; very slightly effervescent; moderately alkaline; clear smooth boundary.

A=10 to 18 inches; very dark grayish brown (10YR 3/2) loam, grayish brown (10YR 5/2) dry; weak medium and coarse subangular blocky structure parting to weak fine and medium granular; friable; few fine roots; common faint very dark gray (10YR 3/1) organic coatings on faces of peds; few medium prominent white (10YR 8/1) aquatic shells in the matrix; very slightly effervescent; moderately alkaline; clear wavy boundary.

Bw=18 to 26 inches; brown (10YR 4/3) loam; weak fine and medium subangular blocky structure; friable; few fine roots; many faint very dark grayish brown (10YR 3/2) organic coatings on faces of peds; few very dark grayish brown (10YR 3/2) worm casts; common medium prominent white (10YR 8/1) aquatic shells in the matrix; strongly effervescent; moderately alkaline; gradual smooth boundary.

C1=26 to 46 inches; dark yellowish brown (10YR 4/4) loam; weak medium and coarse subangular blocky structure; very friable; few fine roots; few dark grayish brown (10YR 4/2) worm casts; common medium prominent white (10YR 8/1) aquatic shells in the matrix; strongly effervescent; moderately alkaline; gradual smooth boundary.

C2=46 to 80 inches; dark yellowish brown (10YR 4/4) loam; massive; friable; few medium prominent white (10YR 8/1) aquatic shells in the matrix; strongly effervescent; moderately alkaline.

Range in Characteristics
Thickness of the mollic epipedon: 10 to 20 inches
Thickness of the solum: 22 to 40 inches
Depth to carbonates: From the surface to more than 80 inches
Depth to bedrock: More than 80 inches

Ap or A horizon:
Color=hue of 10YR, value of 2 or 3, chroma of 1 to 3
Texture=loamy fine sand
Content of rock fragments=0 to 10 percent

Bw horizon:
Color=hue of 10YR, value of 3 to 6, chroma of 3 or 4
Texture=loam, very fine sandy loam, fine sandy loam, loamy fine sand, sandy loam, or loamy very fine sand
Content of rock fragments=0 to 10 percent

C horizon:
Color=hue of 2.5YR to 10YR, value of 4 to 6, chroma of 1 to 4
Texture=sand, fine sand, very fine sand, loamy sand, loamy fine sand, loamy very fine sand, sandy loam, fine sandy loam, very fine sandy loam, loam, or silt loam
Content of rock fragments=0 to 10 percent

LATTY SERIES

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Slow in the solum, very slow in the lacustrine substratum, and slow or very slow in the till substratum
Parent material: Clayey glaciolacustrine deposits overlying till
Landform: Extensive flats, depressions, and drainageways on lake plains
Slope: 0 to 1 percent

Adjacent soils: Fulton, Toledo

Taxonomic class: Fine, illitic, nonacid, mesic Typic Endoaquepts

Typical Pedon
Latty silty clay, in Lucas County, Ohio; Jerusalem Township; about 0.25 mile west of Bono; about 2,250 feet south and 200 feet west of the northeast corner of sec. 7, T. 10 S., R. 10 E.

Ap=0 to 10 inches; dark grayish brown (10YR 4/2) silty clay, light brownish gray (10YR 6/2) dry; moderate medium subangular blocky structure; firm; many fine roots; slightly acid; abrupt smooth boundary.

Bg1=10 to 18 inches; gray (5Y 5/1) silty clay; moderate fine angular blocky structure; firm; few fine roots; few distinct very dark grayish brown (10YR 3/2) organic stains on faces of peds; common medium prominent yellowish brown (10YR 5/4) and brown (7.5YR 4/4) masses of iron accumulation in the matrix; few fine prominent very dark gray (10YR 3/1) iron and manganese oxide concretions in the matrix; neutral; clear wavy boundary.

Bg2=18 to 27 inches; gray (5Y 5/1) silty clay; moderate medium prismatic structure parting to moderate medium angular blocky; firm; few fine roots; common medium prominent yellowish brown (10YR 5/4) and strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; neutral; clear wavy boundary.

Bg3=27 to 33 inches; gray (5Y 5/1) silty clay; weak medium prismatic structure parting to moderate medium angular blocky; firm; few fine roots; common medium prominent yellowish brown (10YR 5/4) and strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; common fine prominent very dark brown (10YR 2/2) iron and manganese oxide concretions in the matrix; neutral; gradual wavy boundary.

BCg=33 to 46 inches; gray (5Y 5/1) silty clay; weak medium prismatic structure parting to moderate medium subangular blocky; firm; few fine roots; dark yellowish brown (10YR 4/4) on ped interiors; common medium prominent yellowish brown (10YR 5/4) masses of iron accumulation in the matrix; few fine prominent very dark brown (10YR 2/2) iron and manganese oxide concretions in the matrix; neutral; abrupt wavy boundary.

Cg=46 to 65 inches; gray (5Y 5/1) silty clay; massive; firm; many medium prominent yellowish brown (10YR 5/4) and common medium prominent light olive brown (2.5Y 5/4) masses of iron accumulation in the matrix; common prominent light gray (10YR 7/1) calcium carbonate concretions in the matrix; strongly effervescent; moderately alkaline.

Range in Characteristics
Thickness of the solum: 32 to 60 inches
Depth to carbonates: 32 to 48 inches
Depth to till: 60 to 80 inches
Depth to dense material: 60 to 80 inches
Depth to bedrock: More than 80 inches

Ap horizon:
Color=hue of 10YR or 2.5Y, value of 4, chroma of 1 or 2
Texture=silty clay

Bg horizon:
Color=hue of 10YR to 5Y, value of 4 to 6, chroma of 1 or 2
Texture=clay or silty clay

Cg horizon:
Color=hue of 10YR to 5Y, value of 4 to 6, chroma of 1 or 2
Texture=clay, silty clay loam, or silty clay

2Cdg or 2Cd horizon
Color=hue of 10YR to 5Y, value of 4 to 6, chroma of 1 to 8
Texture=clay, silty clay, silty clay loam, or clay loam
Content of rock fragments=1 to 7 percent

MARBLEHEAD SERIES

Depth class: Very shallow
Drainage class: Somewhat excessively drained
Permeability: Moderate
Parent material: Loamy glaciolacustrine deposits overlying limestone or dolostone
Landform: Rises and knolls on reefs on lake plains
Position on the landform: Summits, shoulders, backslopes
Slope: 0 to 6 percent

Adjacent soils: Castalia, Dunbridge, Millsdale, Milton, Randolph

Taxonomic class: Loamy, mixed, superactive, mesic Lithic Hapludolls

Typical Pedon
Marblehead loam, 0 to 6 percent slopes, in Erie County, Ohio; Margaretta Township; about 2 miles east of Castalia; from the intersection of State Routes 101 and 412 with Bradshar Road, about 1,500 feet southwest along State Routes 101 and 412, then 300 feet north; T. 6 N., R. 24 W.

A1=0 to 6 inches; black (10YR 2/1) loam, dark gray (10YR 4/1) dry; moderate medium and fine granular structure; friable; common fine and very fine roots; 2 percent rock fragments; slightly acid; clear wavy boundary.

A2=6 to 8 inches; very dark grayish brown (10YR 3/2) gravelly loam; weak medium and fine granular structure; friable; few very fine roots; 20 percent rock fragments; slightly acid; abrupt smooth boundary.

2R=8 inches; limestone with widely spaced vertical fractures typically at 30 to 40 feet intervals.

Range in Characteristics
Thickness of the mollic epipedon: 4 to 10 inches
Thickness of the solum: 4 to 10 inches
Depth to bedrock: 4 to 10 inches

Ap or A horizon:
Color=hue of 7.5YR or 10YR, value of 2, 2.5 or 3, chroma of 1 or 2
Texture=gravelly silt loam
Content of rock fragments=15 to 20 percent

MERMILL SERIES

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Moderate in the upper part of the solum, and slow or very slow in the lower part of the solum and in the substratum
Parent material: Loamy glaciolacustrine deposits and the underlying till
Landform: Extensive flats, depressions, and drainageways on lake plains
Slope: 0 to 1 percent

Adjacent soils: Aurand, Haskins

Taxonomic class: Fine-loamy, mixed, active, mesic Mollic Epiaqualfs

Typical Pedon
Mermill loam, 0 to 1 percent slopes, in Hancock County, Ohio; Portage Township; about 1.75 miles northeast of McComb; about 1,520 feet north and 2,180 feet east of the southwest corner of sec. 18, T. 2 N., R. 10 E.

Ap=0 to 9 inches; very dark grayish brown (10YR 3/2) loam, grayish brown (10YR 5/2) dry; weak medium and coarse subangular blocky structure parting to moderate fine and medium granular; friable; common fine roots; 1 percent rock fragments; moderately acid; clear wavy boundary.

Btg1=9 to 14 inches; gray (10YR 5/1) clay loam; weak fine and medium subangular blocky structure; friable; few fine roots; common faint gray (10YR 5/1) clay films on faces of peds; few distinct very dark grayish brown (10YR 3/2) organic coatings on vertical faces of peds;

common medium prominent yellowish brown (10YR 5/6) and few fine and medium prominent strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; common fine and medium faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 1 percent rock fragments; neutral; gradual wavy boundary.

Btg2=14 to 21 inches; grayish brown (2.5Y 5/2) clay loam; weak medium subangular blocky structure; friable; few fine roots; common distinct gray (10YR 5/1) clay films on faces of peds; common medium faint gray (10YR 5/1) iron depletions in the matrix; common medium prominent yellowish brown (10YR 5/6) and few fine and medium prominent strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; common fine and medium distinct very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 1 percent rock fragments; neutral; gradual wavy boundary.

Btg3=21 to 28 inches; grayish brown (2.5Y 5/2) sandy clay loam with thin strata of fine sandy loam; weak medium subangular blocky structure; friable; few fine roots; common distinct gray (10YR 5/1) clay films on faces of peds; common medium faint gray (10YR 5/1) iron depletions in the matrix; common fine and medium prominent yellowish brown (10YR 5/6) and common medium and coarse faint brown (10YR 5/3) masses of iron accumulation in the matrix; common fine and medium distinct very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 1 percent rock fragments; neutral; clear smooth boundary.

2Btg4=28 to 36 inches; grayish brown (10YR 5/2) clay loam; moderate medium subangular blocky structure; firm; few fine roots; common faint gray (10YR 5/1) clay films on faces of peds; many medium and coarse distinct dark yellowish brown (10YR 4/4) and common fine and medium prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common fine and medium faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; few medium faint light gray (10YR 7/2) calcium carbonate concretions in the matrix; 5 percent rock fragments; strongly effervescent; slightly alkaline; gradual wavy boundary.

2BC=36 to 57 inches; dark yellowish brown (10YR 4/4) clay loam; weak medium and coarse subangular blocky structure; firm; few fine roots in the upper part; common distinct gray (10YR 5/1) coatings on faces of peds; common fine and medium distinct gray (10YR 5/1) iron depletions in the matrix; common medium and coarse distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; few medium distinct light gray (10YR 7/2) calcium carbonate concretions in the matrix; 5 percent rock fragments; strongly effervescent; moderately alkaline; gradual irregular boundary.

2C=57 to 80 inches; brown (10YR 4/3) clay loam; massive, with widely spaced vertical fractures; firm; few distinct gray (10YR 5/1) coatings on faces of fractures; common fine and medium distinct gray (10YR 5/1) iron depletions and few medium distinct yellowish brown (10YR 5/6) masses of iron accumulation oriented along fractures; 5 percent rock fragments; strongly effervescent; moderately alkaline.

Range in Characteristics
Thickness of the solum: 24 to 60 inches
Depth to carbonates: 24 to 50 inches
Depth to till: 20 to 40 inches
Depth to bedrock: More than 80 inches

Ap or A horizon:
Color=hue of 10YR, value of 2 or 3, chroma of 1 or 2
Texture=loam, fine sandy loam, or sandy clay loam
Content of rock fragments=0 to 10 percent

Btg horizon:
Color=hue of 10YR to 5Y, or is neutral, value of 4 to 6, chroma of 0 to 2
Texture=loam, sandy clay loam, or clay loam
Content of rock fragments=0 to 10 percent

2Bt, 2Btg, 2BC, or 2BCg horizon:
Color=hue of 10YR to 5Y, or is neutral, value of 4 to 6, chroma of 0 to 4
Texture=clay, silty clay, clay loam, or silty clay loam
Content of rock fragments=1 to 10 percent

2C or 2Cg horizon:
Color=hue of 10YR to 5Y, value of 4 to 6, chroma of 1 to 6
Texture=clay, silty clay, clay loam, or silty clay loam
Content of rock fragments=1 to 10 percent

MILLGROVE SERIES

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Moderate in the upper part of the solum, and moderately rapid in the lower part of the solum and in the substratum
Parent material: Loamy and gravelly glaciolacustrine deposits
Landform: Flats, depressions, and drainageways on lake plains
Slope: 0 to 1 percent

Adjacent soils: Belmore, Digby, Haney

Taxonomic class: Fine-loamy, mixed, superactive, mesic Typic Argiaquolls

Typical Pedon
Millgrove loam, in Henry County, Ohio; Napoleon Township; about 1 mile south of Napoleon; SW 1/4, SE 1/4, SE 1/4, SE 1/4 of sec. 24, T. 5 N., R. 6 E.

Ap=0 to 9 inches; very dark brown (10YR 2/2) loam; moderate medium granular structure; very friable; many roots; slightly acid; clear smooth boundary.

A=9 to 12 inches; very dark grayish brown (10YR 3/2) loam; weak medium subangular blocky structure parting to moderate medium granular; very friable; many roots; slightly acid; gradual smooth boundary.

Btg1=12 to 17 inches; gray (5Y 5/1) sandy clay loam; weak medium subangular blocky structure; friable; common roots; thin, very patchy very dark brown (10YR 2/2) clay films on faces of peds; many fine distinct gray (10YR 6/1) iron depletions in the matrix; many fine prominent yellowish brown (10YR 5/6) and light olive brown (2.5Y 5/4) masses of iron accumulation in the matrix; slightly acid; clear smooth boundary.

Btg2=17 to 27 inches; gray (5Y 5/1) clay loam; moderate medium angular blocky structure; friable; common roots; medium patchy very dark gray (10YR 3/1) and black (10YR 2/1) clay films on faces of peds; many fine prominent very dark gray (10YR 3/1) iron depletions in the matrix; many fine prominent yellowish brown (10YR 5/6) and light olive brown (2.5Y 5/4) masses of iron accumulation in the matrix; slightly acid; clear smooth boundary.

Btg3=27 to 38 inches; gray (5Y 5/1) clay loam; moderate medium prismatic structure parting to moderate coarse subangular blocky; very firm; few roots; medium continuous dark gray (10YR 4/1) clay films on faces of peds; many medium prominent yellowish brown (10YR 5/6 and 10YR 5/8) and strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; neutral; clear wavy boundary.

Btg4=38 to 42 inches; gray (5Y 6/1) sandy clay loam; weak coarse subangular blocky structure; firm; few roots; thin patchy light olive brown (2.5Y 5/4) clay films on vertical faces of peds; many medium prominent yellowish brown (10YR 5/6 and 10YR 5/8) and strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; slightly alkaline; clear wavy boundary.

2Cg1=42 to 48 inches; light brownish gray (2.5Y 6/2) sand; single grain; loose; few coarse prominent brownish yellow (10YR 6/6) and yellowish brown (10YR 6/8) masses of iron accumulation in the matrix; slightly effervescent; slightly alkaline; gradual smooth boundary.

2Cg2=48 to 72 inches; gray (10YR 6/1) sand with thin strata (.25 to .5 of an inch thick) of clay at 48, 55, and 72 inches; single grain; loose; strongly effervescent; moderately alkaline.

Range in Characteristics
Thickness of the dark-colored epipedon: 7 to 9 inches, but commonly is 8 or 9 inches
Thickness of the solum: 20 to 48 inches
Depth to carbonates: 20 to 48 inches
Depth to till: More than 60 inches
Depth to bedrock: More than 60 inches

Ap or A horizon:
Color=hue of 10YR, value of 2 or 3, chroma of 1 or 2
Texture=loam
Content of rock fragments=0 to 14 percent

Btg horizon:
Color=hue of 10YR to 5Y, value of 4 to 6, chroma of 1 or 2
Texture=loam, sandy clay loam, or clay loam or the gravelly analogs of these textures; sandy loam or its gravelly or very gravelly analogs are in the lower part of some pedons
Content of rock fragments=0 to 15 percent in the upper part and 5 to 40 percent in the lower part percent

2C or 2Cg horizon:

Color=hue of 10YR or 2.5Y, value of 4 to 6, chroma of 1 to 4
Texture= sandy loam, coarse sandy loam, loamy sand, or loam or the gravelly or very gravelly analogs of these textures and is commonly stratified
Content of rock fragments=0 to 40 percent

The typical pedon of Millgrove from the original publication has an epipedon that meets all of the requirements for a mollic epipedon except for thickness. Most pedons are commonly 8 or 9 inches thick. They classify as fine-loamy, mixed, superactive, mesic Mollic Endoaqualfs using the 8th edition of the Keys of Soil Taxonomy and are taxadjuncts to the Millgrove series. This difference, however, does not significantly affect the use and management of the soils.

MILLSDALE SERIES

Depth class: Moderately deep
Drainage class: Very poorly drained
Permeability: Moderately slow
Parent material: Till overlying limestone or dolostone
Landform: Flats, depressions, and drainageways on lake plains
Slope: 0 to 1 percent

Adjacent soils: Milton, Randolph

Taxonomic class: Fine, mixed, active, mesic Typic Argiaquolls

Typical Pedon
Millsdale silty clay loam, in Sandusky County, Ohio; Washington Township; about 2 miles southeast of Hessville; about 500 feet west and 500 feet south of the northeast of sec. 22, T. 5 N., R. 14 E.

Ap=0 to 10 inches; very dark gray (10YR 3/1) silty clay loam, dark gray (10YR 4/1) dry; weak medium and fine granular structure; firm; many fine roots; 1 percent rock fragments; slightly acid; clear smooth boundary.

AB=10 to 13 inches; very dark grayish brown (10YR 3/2) silty clay loam, grayish brown (10YR 5/2) dry; moderate fine subangular blocky structure; firm; many fine roots; few coarse faint brown (10YR 5/3) and few fine prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common faint black (10YR 2/1) krotovinas; 1 percent rock fragments; neutral; abrupt smooth boundary.

Btg1=13 to 18 inches; dark gray (10YR 4/1) silty clay; strong coarse subangular blocky structure; firm; common fine roots; many faint dark gray (10YR 4/1) clay films on vertical faces of peds; common coarse prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; 1 percent rock fragments; neutral; clear smooth boundary.

Btg2=18 to 24 inches; grayish brown (10YR 5/2) silty clay; strong coarse and medium subangular blocky structure; firm; common fine roots; many faint grayish brown (10YR 5/2) clay films on faces of peds; many medium prominent yellowish brown (10YR 5/6) and many medium faint brown (10YR 5/3) and few medium prominent brown (7.5YR 4/4) masses of iron accumulation in the matrix; 3 percent rock fragments; slightly effervescent; slightly alkaline; abrupt smooth boundary.

2R=24 to 26 inches; fractured dolostone.

Range in Characteristics
Thickness of the solum: 20 to 40 inches
Depth to bedrock: 20 to 40 inches

Ap or A horizon:
Color=hue of 10YR or 2.5Y, or is neutral, value of 2, 2.5, or 3, chroma of 0 to 2
Texture=silty clay loam
Content of rock fragments=1 to 14 percent

Btg or Bt horizon:
Color=hue of 10YR to 5Y, or is neutral, value of 3 to 6, and chroma of 0 to 2, with chroma of 3 or 4 allowed in the lower part
Texture=clay loam, silty clay loam, silty clay or clay
Content of rock fragments=1 to 14 percent

The Millsdale soils in Wood County have an epipedon that meets all of the requirements for a mollic epipedon except for thickness. They classify as fine, mixed, active, mesic Mollic Endoaqualfs using the 8th edition of the Keys to Soil Taxonomy and are taxadjuncts to the Millsdale series. This difference, however, does not significantly affect the use and management of the soils.

MILTON SERIES

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderate or moderately slow
Parent material: Till overlying dolostone or limestone
Landform: Rises and knolls on reefs on lake plains
Position on the landform: Summits, shoulders, backslopes
Slope: 0 to 6 percent

Adjacent soils: Dunbridge, Millsdale, Randolph, Ritchey

Taxonomic class: Fine, mixed, active, mesic Typic Hapludalfs

Typical Pedon
Milton silt loam, 2 to 6 percent slopes, in Ottawa County, Ohio; Danbury Township; about 2 miles southwest of Marblehead; about 550 feet east along Bay Shore Drive from the intersection of Bay Shore and Hartshorn Roads, then 120 feet north.

Ap=0 to 6 inches; dark grayish brown (10YR 4/2) silt loam, pale brown (10YR 6/3) dry; weak medium subangular blocky structure parting to moderate medium and fine granular; friable; many roots; 10 percent rock fragments; neutral; abrupt smooth boundary.

Bt1=6 to 13 inches; brown (7.5YR 4/4) silty clay; strong medium subangular blocky structure; very firm; common roots; brown (7.5YR 5/4) coatings and medium continuous clay films on faces of peds; 3 percent rock fragments; slightly acid; clear smooth boundary.

Bt2=13 to 22 inches; brown (7.5YR 4/4) silty clay; weak medium subangular blocky structure; very firm; common roots; yellowish brown (10YR 5/6) coatings and thin patchy clay films on faces of peds; 5 percent rock fragments; slightly acid; clear smooth boundary.

Bt3=22 to 28 inches; brown (7.5YR 4/4) silty clay; weak medium subangular blocky structure; firm; common roots; thin patchy yellowish brown (10YR 5/4) clay films on faces of peds; 5 percent rock fragments; slightly alkaline; abrupt smooth boundary.

Bt4=28 to 36 inches; brown (7.5YR 4/4) clay loam; weak medium subangular blocky structure; firm; few roots; thin patchy yellowish brown (10YR 5/4) clay films on faces of peds; common distinct pinkish gray (7.5YR 7/2) calcium carbonate coatings on faces of peds; 10 percent rock fragments; strongly effervescent; slightly alkaline; abrupt smooth boundary.

2R=36 to 38 inches; hard limestone bedrock.

Range in Characteristics
Thickness of the solum: 20 to 40 inches
Depth to carbonates: 20 to 40 inches
Depth to bedrock: 20 to 40 inches

Ap or A horizon:
Color=hue of 7.5YR or 10YR, value of 3 to 5, chroma of 2 or 3
Texture=loam
Content of rock fragments=0 to 5 percent

Bt horizon:
Color=hue of 5YR to 10YR, value of 3 to 6, chroma of 3 to 6
Texture=clay, silty clay, silty clay loam, or clay loam
Content of rock fragments=1 to 12 percent

NAPPANEE SERIES

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Slow in the solum, and slow or very slow in the substratum
Parent material: Wave-planed till
Landform: Flats, rises, knolls, and in dissected areas along streams on lake plains
Position on the landform: Summits, shoulders, backslopes
Slope: 0 to 6 percent

Adjacent soils: Haskins, Hoytville, Mortimer, St. Clair

Taxonomic class: Fine, illitic, mesic Aeric Epiaqualfs

Typical pedon
Nappanee silty clay loam, 0 to 2 percent slopes, in Hancock County, Ohio; Pleasant Township; about 2 miles northwest of Deweyville; about 240 feet north and 1,460 feet west of the southeast corner of sec. 6, T. 2 N., R. 9 E.

Ap=0 to 8 inches; dark grayish brown (10YR 4/2) silty clay loam, pale brown (10YR 6/3) dry; weak medium and coarse subangular blocky structure parting to moderate medium granular; firm; few medium and common fine roots; few medium prominent strong brown (7.5YR 5/6) masses of iron accumulation lining the interior of pores; 10 percent intermixing of brown (10YR 5/3) Bt material; 1 percent rock fragments; strongly acid; clear smooth boundary.

Bt=8 to 15 inches; brown (10YR 5/3) silty clay; moderate medium subangular blocky structure; firm; few fine roots; many faint dark grayish brown (10YR 4/2) clay films on faces of peds; many medium faint grayish brown (10YR 5/2) iron depletions in the matrix; common medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; few faint very dark grayish brown (10YR 3/2) masses of iron and manganese oxide accumulation on faces of peds; 1 percent rock fragments; strongly acid; gradual wavy boundary.

Btg1=15 to 24 inches; grayish brown (10YR 5/2) silty clay; strong fine and medium subangular blocky structure; firm; few fine roots; many faint dark grayish brown (10YR 4/2) clay films on faces of peds; common medium prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common faint very dark grayish brown (10YR 3/2) masses of iron and manganese oxide accumulation on faces of peds; 1 percent rock fragments; neutral; gradual wavy boundary.

Btg2=24 to 32 inches; grayish brown (10YR 5/2) silty clay; weak medium prismatic structure parting to moderate fine and medium subangular blocky; firm; few fine roots; many faint dark grayish brown (10YR 4/2) clay films on faces of peds; common medium prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common medium distinct white (10YR 8/1) calcium carbonate concretions in the matrix; 2 percent rock fragments; slightly effervescent discontinuously in the matrix; slightly alkaline; gradual wavy boundary.

B't=32 to 40 inches; yellowish brown (10YR 5/4) clay; weak medium prismatic structure parting to moderate medium subangular blocky; very firm; few fine and very fine roots in the upper part; many distinct grayish brown (10YR 5/2) clay films on faces of peds; common fine and medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; common medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common medium distinct white (10YR 8/1) calcium carbonate concretions in the matrix; 2 percent rock fragments; strongly effervescent; slightly alkaline; gradual wavy boundary.

BC=40 to 56 inches; yellowish brown (10YR 5/4) clay loam; weak medium and coarse subangular blocky structure; very firm; common distinct grayish brown (10YR 5/2) coatings on vertical faces of peds; common fine and medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; common medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common medium distinct white (10YR 8/1) calcium carbonate concretions in the matrix; 3 percent rock fragments; strongly effervescent; moderately alkaline; gradual wavy boundary.

Cd=56 to 80 inches; yellowish brown (10YR 5/4) clay loam; massive, with widely spaced vertical fractures; very firm; few fine and medium distinct grayish brown (10YR 5/2) iron depletions oriented along fractures; few medium distinct yellowish brown (10YR 5/6) masses of iron accumulation oriented along fractures; few distinct very dark grayish brown (10YR 3/2) masses of iron and manganese oxide accumulation oriented along faces of fractures; few medium distinct white (10YR 8/1) calcium carbonate concretions in the matrix; 3 percent rock fragments; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the solum: 24 to more than 60 inches
Depth to carbonates: 18 to 40 inches
Depth to bedrock: More than 48 inches, but typically more than 60 inches

Ap or A horizon:
Color=hue of 10YR or 2.5Y, value of 3 to 5, chroma of 1 to 3
Texture=silty clay loam, sandy loam, or loam
Content of rock fragments=0 to 5 percent

Bt or Btg horizon:
Color=hue of 10YR or 2.5Y, value of 4 to 6, chroma of 1 to 4
Texture=silty clay or clay; some pedons have thin subhorizons of silty clay loam
Content of rock fragments=1 to 10 percent

C, Cg, Cd or Cdg horizon:
Color=hue of 10YR or 2.5Y, value of 4 to 6, chroma of 2 to 4
Texture=clay loam, silty clay loam, clay, or silty clay

Content of rock fragments=2 to 10 percent

OSHTEMO SERIES

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately rapid in the solum, very rapid in the gravelly substratum, and slow or very slow in the till substratum
Parent material: Stratified loamy and sandy beach deposits overlyinglying till
Landform: Knolls on beach ridges on lake plains
Position on the landform: Summits, shoulders, backslopes
Slope: 2 to 6 percent

Adjacent soils: Aurand, Shawtown

Taxonomic class: Coarse-loamy, mixed, active, mesic Typic Hapludalfs

Typical Pedon
Oshtemo sandy loam, till substratum, 2 to 6 percent slopes, in Hancock County, Ohio; Liberty Township; about 4 miles west of Findlay; about 666 feet north and 1,720 feet west of the southeast corner of sec. 20, T. 1 N., R. 10 E.

Ap=0 to 11 inches; dark brown (10YR 3/3) sandy loam, pale brown (10YR 6/3) dry; moderate medium granular structure; friable; few coarse and common medium and fine roots; 2 percent rounded gravel; moderately acid; clear smooth boundary.

Bt1=11 to 19 inches; dark yellowish brown (10YR 4/4) sandy loam; weak fine and medium subangular blocky structure; friable; few fine and medium roots between peds; few faint dark yellowish brown (10YR 4/4) clay bridging between sand grains; 2 percent rounded gravel; moderately acid; gradual wavy boundary.

Bt2=19 to 26 inches; brown (10YR 4/3) sandy loam; moderate fine and medium subangular blocky structure; friable; few fine and medium roots between peds; few faint brown (10YR 4/3) clay films on faces of peds; common faint brown (10YR 4/3) clay bridging between sand grains; 2 percent rounded gravel; slightly acid; gradual wavy boundary.

Bt3=26 to 34 inches; dark yellowish brown (10YR 3/4) sandy clay loam; moderate fine and medium subangular blocky structure; friable; few fine roots between peds; common faint dark yellowish brown (10YR 3/4) clay films on faces of peds; 5 percent rounded gravel; neutral; gradual wavy boundary.

Bt4=34 to 44 inches; dark brown (10YR 3/3) gravelly sandy loam; weak medium and coarse subangular blocky structure; friable; few fine roots between peds; common faint dark brown (10YR 3/3) clay bridging between sand grains; 16 percent rounded gravel; neutral; clear irregular boundary.

C1=44 to 50 inches; brown (10YR 4/3) loamy sand; single grain; loose; common medium and coarse faint brown (7.5YR 4/4) masses of iron accumulation in the matrix; 8 percent rounded gravel; strongly effervescent; slightly alkaline; gradual wavy boundary.

C2=50 to 75 inches; brown (10YR 5/3) stratified loamy coarse sand and gravelly loamy coarse sand; single grain; loose; common medium and coarse faint brown (7.5YR 4/4) masses of iron accumulation in the matrix; 7 percent rounded gravel in the loamy coarse sand and 17 percent rounded gravel in the gravelly loamy coarse sand; strongly effervescent; slightly alkaline; abrupt smooth boundary.

2Cd=75 to 80 inches; yellowish brown (10YR 5/4) clay loam; massive; firm; common medium and coarse distinct grayish brown (2.5Y 5/2) iron depletions in the matrix; common fine and medium distinct strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; 3 percent subrounded gravel; strongly effervescent; moderately alkaline.

Range in Characteristics
Thickness of the solum: 40 to 75 inches
Depth to carbonates: 40 to 70 inches
Depth to till: 60 to 80 inches
Depth to dense material: 60 to 80 inches
Depth to bedrock: More than 80 inches

Ap horizon:
Color=hue of 7.5YR or 10YR, value of 3 to 5, chroma of 2 or 3
Texture=sandy loam
Content of rock fragments=1 to 14 percent

Bt horizon:
Color=hue of 5YR to 10YR, value of 3 to 5, chroma of 3 to 6
Texture=fine sandy loam, sandy loam, sandy clay loam, gravelly coarse sandy loam, gravelly sandy loam, or gravelly sandy clay loam
Content of rock fragments=1 to 30 percent

C horizon:
Color=hue of 10YR, value of 4 to 6, chroma of 2 to 6
Texture=coarse sand, loamy coarse sand, sand, or loamy sand or the gravelly analogs of these textures and is commonly stratified
Content of rock fragments=5 to 30 percent

2Cd or 2Cdg horizon:
Color=hue of 10YR, value of 4 or 5, chroma of 1 to 4
Texture=silty clay loam, clay loam, clay, or silty clay
Content of rock fragments=1 to 7 percent

OTTOKEE SERIES

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Rapid; in the till substratum phase, rapid in the sandy glaciolacustrine material, and slow or very slow in the till substratum
Parent material: Sandy glaciolacustrine or eolian deposits; in the till substratum phase, sandy glaciolacustrine deposits overlying till
Landform: Rises and knolls on beach ridges and dunes on lake plains
Position on the landform: Summits, shoulders, backslopes
Slope: 0 to 6 percent

Adjacent soils: Granby, Spinks, Tedrow

Taxonomic class: Mixed, mesic Aquic Udipsamments

Typical Pedon

Ottokee fine sand, 0 to 6 percent slopes, in Fulton County, Ohio; York Township; about 5 miles south of Delta; about 2,500 feet south and 1,720 feet east of the northwest corner of sec. 12, T. 6 N., R. 7 E.

Ap--0 to 8 inches; very dark grayish brown (10YR 3/2) fine sand, dark grayish brown (10YR 4/2) rubbed, light brownish gray (10YR 6/2) dry; weak fine granular structure; very friable; slightly acid; abrupt smooth boundary.

E1--8 to 22 inches; yellowish brown (10YR 5/4) fine sand; single grain; loose; slightly acid; clear wavy boundary.

E2--22 to 27 inches; light yellowish brown (10YR 6/4) fine sand; single grain; loose; many fine prominent yellowish red (5YR 5/8 and 4/6) and common fine faint pale brown (10YR 6/3) masses of iron accumulation in the matrix; many dark iron and manganese oxide concretions in the matrix; slightly acid; gradual wavy boundary.

E3--27 to 33 inches; pale brown (10YR 6/3) fine sand; single grain; loose; few fine distinct gray (10YR 6/1) iron depletions in the matrix; few to many, fine and medium prominent strong brown (7.5YR 5/8) masses of iron accumulation in the matrix; slightly acid; clear wavy boundary.

E4--33 to 39 inches; light brownish gray (10YR 6/2) fine sand; single grain; loose; few to many, fine and medium prominent yellowish brown (10YR 5/8) and brownish yellow (10YR 6/8) masses of iron accumulation in the matrix; neutral; abrupt irregular boundary with tongues extending into the horizon below.

E and Bt--39 to 60 inches; (E) light brownish gray (10YR 6/2) loamy fine sand in the upper part and pale brown (10YR 6/3) loamy fine sand in the lower part; single grain; loose; (Bt) discontinuous strong brown (7.5YR 5/8) loamy fine sand lamellae 1/8 to 3/4 inch thick that increases in thickness with depth; weak fine subangular blocky structure; massive in places; very friable; neutral; clear wavy boundary.

Cg--60 to 78 inches; gray (10YR 5/1) fine sand; single grain; loose; many medium prominent light olive brown (2.5Y 5/6) masses of iron accumulation in the matrix; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the solum: 40 to 90 inches
Depth to lamellae: 28 to 50 inches
Depth to carbonates: 40 to 90 inches
Depth to till: More than 60 inches; 36 to 48 inches in the till substratum phase
Depth to bedrock: More than 60 inches

Ap or A horizon:
Color=hue of 10YR, value of 3 to 5, chroma of 2 to 4
Texture=loamy fine sand
Content of rock fragments=0 to 6 percent

E horizon:
Color=hue of 7.5YR or 10YR, value of 5 or 6, chroma of 4 to 8; with depth the hue ranges to 2.5Y, and the chroma ranges to 2 or 3
Texture=loamy fine sand or fine sand
Content of rock fragments=0 to 6 percent

E and Bt horizon:
Color=E part has hue of 10YR or 2.5Y, value of 4 to 8, chroma of 1 to 3
Bt part has hue of 5YR to 10YR, value of 3 to 6, chroma of 4 to 8
Texture=loamy fine sand, fine sand, loamy sand, or sand
Content of rock fragments=0 to 6 percent

C or Cg horizon:
Color=hue of 10YR to 5Y, or is neutral, value of 5 or 6, chroma of 0 to 3
Texture=loamy fine sand, fine sand, or sand
Content of rock fragments=0 to 2 percent

2C or 2Cg horizon:
Color=hue of 10YR or 2.5Y, value of 4 to 6, chroma of 2 to 4
Texture=clay loam, silty clay loam, clay, or silty clay
Content of rock fragments=1 to 8 percent

RANDOLPH SERIES

Depth class: Moderately deep
Drainage class: Somewhat poorly drained
Permeability: Moderately slow
Parent material: Till overlying limestone or dolostone
Landform: Flats, rises, and knolls on lake plains
Position on the landform: Summits, shoulders, backslopes
Slope: 0 to 6 percent

Adjacent soils: Millsdale, Milton

Taxonomic class: Fine, mixed, active, mesic Aeric Endoaqualfs

Typical Pedon
Randolph silt loam, 0 to 2 percent slopes, in Hancock County, Ohio; Liberty Township; about 1 mile south of Findlay; about 140 feet west and 1,300 feet north of the southeast corner of sec. 26, T. 1 N., R. 10 E.

Ap=0 to 11 inches; dark grayish brown (10YR 4/2) silt loam, very pale brown (10YR 7/3) dry; moderate fine and medium granular structure; friable; common fine and few medium roots; 10 percent intermixing of dark yellowish brown (10YR 4/4) Bt1 material; 1 percent rock fragments; strongly acid; abrupt smooth boundary.

Bt1=11 to 15 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate medium and fine subangular blocky structure; firm; common fine roots; many distinct grayish brown (10YR 5/2) clay films on faces of peds; few distinct dark grayish brown (10YR 4/2) organic coatings lining old root channels; many medium distinct gray (10YR 5/1) iron depletions in the matrix; common medium and coarse distinct strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; 2 percent rock fragments; strongly acid; clear wavy boundary.

Bt2=15 to 18 inches; dark yellowish brown (10YR 4/4) silty clay; moderate medium and fine subangular blocky structure; firm; few fine roots; many distinct grayish brown (10YR 5/2) clay films on faces of peds; common medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; common fine and medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; few fine distinct very dark gray (10YR 3/1) moderately cemented iron and manganese oxide concretions in the matrix; 2 percent rock fragments; strongly acid; gradual wavy boundary.

Btg=18 to 25 inches; dark grayish brown (10YR 4/2) clay loam; moderate medium subangular blocky structure; firm; few fine roots; common faint dark grayish brown (10YR 4/2) clay films on faces of peds; common fine and medium distinct dark yellowish brown (10YR 4/4) and yellowish brown (10YR 5/4) masses of iron accumulation in the matrix; common fine faint very dark gray (10YR 3/1) moderately cemented iron and manganese oxide concretions in the matrix; 3 percent rock fragments; neutral; abrupt wavy boundary.

2R=25 to 27 inches; light gray (10YR 7/2) limestone.

Range in Characteristics
Thickness of the solum: 20 to 40 inches
Depth to bedrock: 20 to 40 inches

Ap or A horizon:
Color=hue of 10YR or 2.5Y, value of 3 to 5, chroma of 1 to 3
Texture=loam
Content of rock fragments=0 to 3 percent

Bt or Btg horizon:
Color=hue of 10YR or 2.5Y, value of 4 or 5, chroma of 1 to 4
Texture=silty clay loam, silty clay, clay loam, clay, or sandy clay loam

Content of rock fragments=0 to 3 percent in the upper part and 2 to 14 percent in the lower part

RIMER SERIES

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Rapid in the sandy part of the solum, moderately rapid in the loamy part of the solum, slow in the lower part of the solum, and slow or very slow in the substratum
Parent material: Sandy glaciolacustrine deposits and the underlying till (fig. 15)
Landform: Flats, rises, and knolls on lake plains
Position on the landform: Summits, shoulders, backslopes
Slope: 0 to 6 percent

Adjacent soils: Seward, Tedrow, Wauseon

Figure 15. Profile of Rimer loamy fine sand, 0 to 2 percent slopes. This somewhat poorly drained soil formed in 18 to 36 inches of sandy glaciolacustrine material and in the underlying till. Depth marked in feet.

Taxonomic class: Loamy, mixed, active, mesic Aquic Arenic Hapludalfs

Typical Pedon

Rimer loamy sand, 0 to 2 percent slopes, in Hancock County, Ohio; Portage Township; about 4.5 miles west of Van Buren; about 1,780 feet north and 1,380 feet west of the southeast corner of sec. 5, T. 2 N., R. 10 E.

Ap=0 to 10 inches; dark brown (10YR 3/3) loamy sand, light brownish gray (10YR 6/2) dry; weak fine and medium granular structure; very friable; common fine roots; 5 percent intermixing of yellowish brown (10YR 5/4) E1 material; moderately acid; abrupt smooth boundary.

E1=10 to 17 inches; yellowish brown (10YR 5/4) loamy sand; weak fine and medium subangular blocky structure; very friable; common fine roots; common medium and coarse faint brown (10YR 5/3) iron depletions in the matrix; common medium and coarse faint dark yellowish brown (10YR 4/4) and few medium distinct strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; moderately acid; clear wavy boundary.

E2=17 to 23 inches; brown (10YR 5/3) loamy sand; weak fine and medium subangular blocky structure; very friable; few fine roots; common fine and medium prominent strong brown (7.5YR 5/6) and few medium faint dark yellowish brown (10YR 4/4) masses of iron accumulation in the matrix; common fine and medium distinct very dark gray (10YR 3/1) moderately cemented iron and manganese oxide concretions in the matrix; moderately acid; clear wavy boundary.

Bt=23 to 28 inches; dark yellowish brown (10YR 4/4) sandy loam with thin strata of loamy sand and sandy clay loam; weak fine and medium subangular blocky structure; friable; few fine roots; common distinct dark grayish brown (10YR 4/2) clay films on faces of peds; common medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; common fine and medium distinct strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; common fine and medium distinct very dark gray (10YR 3/1) moderately cemented iron and manganese oxide concretions in the matrix; neutral; abrupt wavy boundary.

2Btg=28 to 35 inches; grayish brown (10YR 5/2) silty clay; weak medium prismatic structure parting to moderate medium and coarse subangular blocky; firm; few fine roots; common faint dark grayish brown (10YR 4/2) clay films on faces of peds; common fine and medium faint gray (10YR 5/1) iron depletions in the matrix; common fine and medium prominent strong brown (7.5YR 5/6) and few medium distinct dark yellowish brown (10YR 4/4) masses of iron accumulation in the matrix; few faint very dark grayish brown (10YR 3/2) masses of iron and manganese oxide accumulation on faces of peds; common fine and medium faint very dark gray (10YR 3/1) moderately cemented iron and manganese oxide

concretions in the matrix; 2 percent rock fragments; neutral; clear wavy boundary.

2Bt=35 to 40 inches; dark yellowish brown (10YR 4/4) clay; weak coarse prismatic structure parting to weak medium and coarse subangular blocky; firm; common distinct gray (10YR 6/1) clay films on faces of peds; common fine and medium distinct gray (10YR 5/1) iron depletions in the matrix; common fine and medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; few faint pale brown (10YR 6/3) masses of calcium carbonate accumulation on vertical faces of peds; few medium faint pale brown (10YR 6/3) moderately cemented calcium carbonate concretions in the matrix; 5 percent rock fragments; strongly effervescent; slightly alkaline; gradual wavy boundary.

2BC=40 to 54 inches; dark yellowish brown (10YR 4/4) clay; weak medium and coarse subangular blocky structure; very firm; common distinct gray (10YR 6/1) coatings on vertical faces of peds; common fine and medium distinct gray (10YR 5/1) iron depletions in the matrix; few medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; few faint pale brown (10YR 6/3) masses of calcium carbonate accumulation on vertical faces of peds; few fine and medium faint pale brown (10YR 6/3) moderately cemented calcium carbonate concretions in the matrix; 5 percent rock fragments; strongly effervescent; slightly alkaline; gradual wavy boundary.

2Cd=54 to 80 inches; dark yellowish brown (10YR 4/4) clay; massive, with widely spaced vertical fractures; very firm; few distinct gray (10YR 6/1) coatings on faces of fractures; common fine and medium distinct gray (10YR 5/1) iron depletions oriented along fractures; few medium distinct yellowish brown (10YR 5/6) masses of iron accumulations oriented along fractures; few fine and medium faint pale brown (10YR 6/3) moderately cemented calcium carbonate concretions in the matrix; 5 percent rock fragments; strongly effervescent; slightly alkaline.

Range in Characteristics
Thickness of the A and E horizon: 18 to 36 inches
Thickness of the solum: 25 to 55 inches
Depth to carbonates: 25 to 45 inches
Depth to till: 18 to 36 inches
Depth to bedrock: More than 60 inches

Ap or A horizon:
Color=hue of 10YR, value of 3 to 5, chroma of 1 to 3
Texture=loamy fine sand
Content of rock fragments=0 to 3 percent

E horizon:
Color=hue of 7.5YR or 10YR, value of 4 to 6, chroma of 2 to 4
Texture=loamy fine sand, fine sand, or loamy sand
Content of rock fragments=0 to 3 percent

Bt or Btg horizon:
Color=hue of 7.5YR or 10YR, value of 4 to 6, chroma of 2 to 6
Texture=fine sandy loam, sandy loam, or sandy clay loam
Content of rock fragments=0 to 3 percent

2Bt, 2Btg, 2BC, or 2BCg horizon:
Color=hue of 10YR or 2.5Y, value of 3 to 6, chroma of 1 to 4
Texture=clay, silty clay, silty clay loam, or clay loam
Content of rock fragments=1 to 8 percent

2C, 2Cg, 2Cd or 2Cdg horizon:
Color=hue of 10YR or 2.5Y, value of 3 to 6, chroma of 1 to 4
Texture=clay, silty clay, silty clay loam, or clay loam
Content of rock fragments=1 to 8 percent

RISINGSUN SERIES

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Moderately rapid to moderately slow in the organic material, moderately rapid in the loamy and sandy part of the solum, moderately slow or slow in the lower part of the solum, and slow or very slow in the substratum
Parent material: Herbaceous organic material, loamy and sandy glaciolacustrine deposits, and the underlying till
Landform: Flats, depressions, and drainageways on lake plains
Slope: 0 to 1 percent

Adjacent soils: Rollersville, Wauseon

Taxonomic class: Fine-loamy, mixed, superactive, calcareous, mesic Histic Humaquepts

Typical Pedon
Risingsun muck, in an area of Rollersville-Risingsun complex, 0 to 1 percent slopes, in Wood County, Ohio; Montgomery Township; about 1.25 miles south of Bradner; about 1,820 feet south and 1,160 feet west of the northeast corner of sec. 14, T. 4 N., R. 12 E.

Oap=0 to 9 inches; black (10YR 2/1) muck (sapric material), very dark brown (10YR 2/2) dry; weak coarse subangular blocky structure parting to moderate fine and medium granular; friable; common very fine and fine roots; slightly acid; clear wavy boundary.

Bg1=9 to 11 inches; dark grayish brown (2.5Y 4/2) silty clay loam (coprogenous earth); weak coarse subangular blocky structure parting to moderate medium platy; firm; common very fine and fine roots; few distinct black (10YR 2/1) organic coatings on faces of peds and in pores; few fine prominent brown (7.5YR 5/4) iron oxide concretions in the matrix; neutral; clear wavy boundary.

Bg2=11 to 14 inches; grayish brown (2.5Y 5/2) silt loam; moderate medium subangular blocky structure; firm; common very fine and fine roots; common fine and medium faint gray (10YR 6/1) iron depletions in the matrix; few fine prominent strong brown (7.5YR 5/6) and yellowish red (5YR 5/8) masses of iron accumulation in the matrix; common fine and medium prominent white (10YR 8/1) aquatic shells in the matrix; strongly effervescent; moderately alkaline; clear wavy boundary.

2Bg3=14 to 18 inches; grayish brown (10YR 5/2) sand; weak medium subangular blocky structure; very friable; common very fine roots; common medium and coarse distinct yellowish brown (10YR 5/4), and common fine and medium prominent yellowish brown (10YR 5/8) and strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; common fine and medium distinct dark brown (7.5YR 3/2) iron and manganese oxide concretions in the matrix; 1 percent rock fragments; strongly effervescent; moderately alkaline; clear wavy boundary.

2Bg4=18 to 23 inches; gray (10YR 5/1) fine sandy loam with thin strata of silt loam; weak medium subangular blocky structure; friable; few very fine roots; common medium distinct yellowish brown (10YR 5/4) and common fine and medium prominent olive brown (2.5Y 4/4) masses of iron accumulation along relict root channels; common fine prominent strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; common fine distinct dark brown (7.5YR 3/2) iron and manganese oxide concretions in the matrix; 1 percent rock fragments; strongly effervescent; moderately alkaline; clear wavy boundary.

2Bw=23 to 27 inches; light olive brown (2.5Y 5/4) loamy fine sand with thin strata of silt loam and fine sand; weak medium subangular blocky structure; very friable; common very fine roots; many medium and coarse distinct grayish brown (2.5Y 5/2) iron depletions in the matrix; common fine and medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; few fine prominent dark brown (7.5YR 3/2) iron and manganese oxide concretions in the matrix; 1 percent rock fragments; strongly effervescent; moderately alkaline; abrupt wavy boundary.

3BC=27 to 41 inches; light olive brown (2.5Y 5/3) clay loam; weak coarse prismatic structure parting to weak medium subangular blocky; firm; few very fine roots; common faint grayish brown (2.5Y 5/2) coatings of fine sand on vertical faces of prisms; many medium and coarse faint grayish brown (2.5Y 5/2) iron depletions in the matrix; common fine and medium faint yellowish brown (10YR 5/4) masses of iron accumulation in the matrix; common fine distinct very dark grayish brown (10YR 3/2) iron and manganese oxide concretions in the matrix; 3 percent rock fragments; strongly effervescent; slightly alkaline; gradual wavy boundary.

3Cd=41 to 48 inches; light olive brown (2.5Y 5/3) clay loam; massive, parting to weak medium platy; very firm; few very fine roots; common medium and coarse faint grayish brown (2.5Y 5/2) iron depletions in the matrix; common fine and medium faint yellowish brown (10YR 5/4) and distinct brown (7.5YR 5/4) masses of iron accumulation in the matrix; few fine distinct very dark grayish brown (10YR 3/2) iron and manganese oxide concretions in the matrix; few fine distinct gray (10YR 6/1) calcium carbonate concretions in the matrix; 3 percent rock fragments; strongly effervescent; moderately alkaline; gradual wavy boundary.

3Cdg=48 to 80 inches; grayish brown (10YR 5/2) clay loam; massive; very firm; common fine and medium distinct yellowish brown (10YR 5/4) masses of iron accumulation in the matrix; few fine faint very dark grayish brown (10YR 3/2) iron and manganese oxide concretions in the matrix; 4 percent rock fragments; strongly effervescent; slightly alkaline.

Range in Characteristics
Thickness of the histic epipedon: 7 to 15 inches
Thickness of the solum: 30 to 50 inches
Depth to carbonates: 0 to 15 inches
Depth to till: 20 to 40 inches
Depth to dense material: 40 to 60 inches
Depth to bedrock: More than 80 inches

Oap horizon:
Color=hue of 10YR or 2.5Y, or is neutral, value of 2, 2.5, or 3, chroma of 0 to 2
Texture=muck (sapric material)

Bg horizon:
Color=hue of 10YR to 5Y, value of 4 or 5, chroma of 1 to 3
Texture=silt loam or coprogenous silty clay loam

2Bg or 2Bw horizon:
Color=hue of 10YR or 2.5Y, or is neutral, value of 4 to 6, chroma of 0 to 4
Texture=loamy fine sand, fine sand, sand, loamy sand, sandy loam, or fine sandy loam
Content of rock fragments=0 to 10 percent

3BC or 3BCg horizon:
Color=hue of 10YR or 2.5Y, or is neutral, value of 4 or 5, chroma of 0 to 4
Texture=clay loam or silty clay loam
Content of rock fragments=1 to 7 percent

3Cd or 3Cdg horizon:
Color=hue of 10YR or 2.5Y, value of 4 or 5, chroma of 1 to 4
Texture=clay loam or silty clay loam
Content of rock fragments=1 to 7 percent

RITCHEY SERIES

Depth class: Shallow
Drainage class: Well drained
Permeability: Moderate
Parent material: Loamy till overlying limestone or dolostone
Landform: Flats, rises, and knolls on reefs on lake plains
Position on the landform: Summits, shoulders, backslopes
Slope: 0 to 6 percent

Adjacent soils: Castalia, Dunbridge, Marblehead, Millsdale, Milton, Randolph

Taxonomic class: Loamy, mixed, superactive, mesic Lithic Hapludalfs

Typical Pedon
Ritchey loam, 2 to 6 percent slopes, in Erie County, Ohio; Groton Township; about 3 miles southwest of Parkertown; about 4,725 feet south of the intersection of Southwest Road (County Road 1) and Stecker Road (County Road 15) along Southwest Road (County Road 1), then 700 feet east; Quadrangle 4; T. 5 N., R. 24 W.

Ap=0 to 8 inches; brown (10YR 4/3) loam, pale brown (10YR 6/3) dry; weak medium and fine granular structure; friable; common fine and very fine roots; 1 percent rock fragments; slightly acid; abrupt smooth boundary.

Bt=8 to 14 inches; reddish brown (5YR 4/4) clay loam; moderate medium and fine subangular blocky structure; firm; few very fine roots; common faint reddish brown (5YR 4/4) clay films on faces of peds; common distinct brown (10YR 4/3) organic coatings on faces of peds; 5 percent rock fragments; neutral; abrupt smooth boundary.

2R=14 to 16 inches; unweathered limestone.

Range in Characteristics
Thickness of the solum=10 to 20 inches
Depth to bedrock=10 to 20 inches

Ap or A horizon:
Color=hue of 10YR, value of 3 or 4, chroma of 2 or 3
Texture=loam
Content of rock fragments=1 to 10 percent

Bt horizon:
Color=hue of 5YR to 10YR, value of 4 to 6, chroma of 3 to 6
Texture=clay loam, loam, silty clay loam, or silt loam
Content of rock fragments=1 to 10 percent

ROLLERSVILLE SERIES

Depth class: Very deep
Drainage class: Poorly drained
Permeability: Moderately rapid in the sandy material, moderately slow or slow in the lower part of the solum formed in till, and slow or very slow in the till substratum
Parent material: Sandy glaciolacustrine deposits and the underlying till
Landform: Flats on lake plains
Slope: 0 to 1 percent

Adjacent soils: Risingsun, Wauseon

Taxonomic class: Sandy over loamy, mixed, active, calcareous, mesic Typic Endoaquolls

Typical Pedon
Rollersville fine sandy loam, in an area of Rollersville-Risingsun complex, 0 to 1 percent slopes, in Wood County, Ohio; Montgomery Township; about 1.25 miles south of Bradner; about 880 feet south and 165 feet west of the northeast corner of sec. 14, T. 4 N., R. 12 E.

Ap1=0 to 5 inches; black (10YR 2/1) fine sandy loam, very dark grayish brown (10YR 3/2) dry; weak fine and medium granular structure; very friable; common very fine and fine roots; few fine prominent yellowish red (5YR 5/6) rounded iron and manganese oxide concretions with sharp boundaries in the matrix; 1 percent rock fragments; strongly effervescent; moderately alkaline; clear smooth boundary.

Ap2=5 to 11 inches; black (10YR 2/1) fine sandy loam, very dark grayish brown (10YR 3/2) dry; weak medium subangular blocky structure parting to weak fine and medium granular; very friable; common very fine roots; few fine prominent yellowish red (5YR 5/6) iron and manganese oxide concretions with sharp boundaries in the matrix; 1 percent rock fragments; strongly effervescent; moderately alkaline; abrupt smooth boundary.

Bg1=11 to 16 inches; light brownish gray (10YR 6/2) fine sand; weak fine and medium subangular blocky structure; very friable; common very fine roots; few distinct very dark grayish brown (10YR 3/2) organic coatings in pores and root channels; many medium and coarse distinct yellowish brown (10YR 5/4) and common fine and medium distinct brown (7.5YR 4/4) masses of iron accumulation in the matrix; few fine prominent strong brown (7.5YR 5/6) and dark brown (7.5YR 3/4) iron and manganese oxide concretions in the matrix; strongly effervescent; moderately alkaline; clear smooth boundary.

Bg2=16 to 27 inches; grayish brown (10YR 5/2) fine sand with thin strata of silt loam and fine sandy loam; weak medium and coarse subangular blocky structure; very friable; few very fine roots; common fine and medium faint gray (10YR 5/1) iron depletions in the matrix; common medium distinct yellowish brown (10YR 5/4) and common fine and medium prominent strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; few fine distinct dark brown (7.5YR 3/2) iron and manganese oxide concretions in the matrix; strongly effervescent; moderately alkaline; clear smooth boundary.

Bg3=27 to 33 inches; grayish brown (2.5Y 5/2) sand; weak medium and coarse subangular blocky structure; very friable; few very fine roots; common fine and medium faint gray (10YR 5/1) iron depletions in the matrix; many medium and coarse faint light olive brown (2.5Y 5/3) and common fine and medium prominent strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; few fine prominent dark brown (7.5YR 3/2) iron and manganese oxide concretions in the matrix; 3 percent rock fragments; strongly effervescent; moderately alkaline; gradual wavy boundary.

Bg4=33 to 38 inches; grayish brown (2.5Y 5/2) fine sand; weak medium and coarse subangular blocky structure; very friable; few very fine roots; common fine and medium distinct gray (10YR 5/1) iron depletions in the matrix; many medium and coarse faint light olive brown (2.5Y 5/3) and common fine and medium prominent brown (7.5YR 5/4) masses of iron accumulation in the matrix; few fine prominent dark brown (7.5YR 3/2) iron and manganese oxide concretions in the matrix; strongly effervescent; moderately alkaline; abrupt wavy boundary.

2BC=38 to 52 inches; olive brown (2.5Y 4/3) clay loam; weak medium and coarse subangular blocky structure; firm; few very fine roots; few faint grayish brown (2.5Y 5/2) coatings of fine sand on vertical faces of peds; common fine and medium faint grayish brown (2.5Y 5/2) iron depletions in the matrix; common fine and medium faint yellowish brown (10YR 5/4) masses of iron accumulation along relict root channels; common fine distinct brown (7.5YR 5/4) masses of iron accumulation in the matrix; 3 percent rock fragments; strongly effervescent; slightly alkaline; gradual wavy boundary.

2Cd=52 to 62 inches; olive brown (2.5Y 4/3) clay loam; massive with weak medium platy partings; very firm; common fine and medium faint grayish brown (2.5Y 5/2) iron depletions along relict root channels; common fine and medium faint yellowish brown (10YR 5/4) masses of iron accumulation along relict root channels; common fine distinct brown (7.5YR 5/4) masses of iron accumulation in the matrix; 4 percent rock fragments; strongly effervescent; slightly alkaline; gradual wavy boundary.

2Cdg=62 to 80 inches; gray (10YR 5/1) clay loam; massive; very firm; common fine and medium prominent brown (7.5YR 5/4) masses of iron accumulation in the matrix; few fine and medium faint light gray (10YR 7/1) masses of calcium carbonate accumulation in the matrix; 5 percent rock fragments; strongly effervescent; slightly alkaline.

Range in Characteristics
Thickness of the mollic epipedon: 10 to 14 inches
Thickness of the solum: 30 to 55 inches
Depth to carbonates: Present in all horizons
Depth to till: 20 to 40 inches
Depth to dense material: 40 to 60 inches
Depth to bedrock: More than 80 inches

Ap or A horizon:
Color=hue of 10YR, value of 2 or 3, chroma of 1 or 2
Texture=fine sandy loam
Content of rock fragments=0 to 5 percent

Bg horizon:
Color=hue of 10YR or 2.5Y, or is neutral, value of 4 to 6, chroma of 0 to 2
Texture=loamy fine sand, fine sand, sand, or loamy sand, and is commonly stratified; strata of sandy loam or fine sandy loam are in some pedons
Content of rock fragments=0 to 10 percent

2BC or 2BCg horizon:
Color= hue of 10YR or 2.5Y, or is neutral, value of 4 or 5, chroma of 0 to 4
Texture=clay loam or silty clay loam
Content of rock fragments=1 to 7 percent

2Cd and 2Cdg horizons:
Color=hue of 10YR or 2.5Y, value of 4 or 5, chroma of 1 to 4
Texture=clay loam or silty clay loam
Content of rock fragments=1 to 7 percent

ROSSBURG SERIES

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate in the solum, and moderately rapid in the substratum
Parent material: Loamy alluvium
Landform: Flats, rises, and natural levees on flood plains
Slope: 0 to 2 percent

Adjacent soils: Landes, Shoals, Sloan

Taxonomic class: Fine-loamy, mixed, superactive, mesic Fluventic Hapludolls

Typical Pedon
Rossburg silt loam, occasionally flooded, in Sandusky County, Ohio; Ballville Township; about 3.5 miles south-southwest of Ballville; about 580 feet east and 1,815 feet south of the northwest corner of sec. 29, T. 4 N., R. 15 E.

Ap=0 to 9 inches; very dark grayish brown (10YR 3/2) silt loam, dark grayish brown (10YR 4/2) dry; weak medium and fine granular structure; friable; many roots; neutral; clear smooth boundary.

A=9 to 21 inches; dark brown (10YR 3/3) silt loam, brown (10YR 4/3) dry; weak medium and fine subangular blocky structure parting to moderate medium granular; friable; many roots; many faint very dark grayish brown (10YR 3/2) organic coatings on faces of peds; neutral; clear smooth boundary.

Bw1=21 to 33 inches; brown (10YR 4/3) loam; weak coarse and medium subangular blocky structure; friable; common roots; few very dark grayish brown (10YR 3/2) worm casts; neutral; clear smooth boundary.

Bw2=33 to 41 inches; dark yellowish brown (10YR 4/4) loam; weak medium and fine subangular blocky structure; friable; few roots; few thin strata of very dark grayish brown (10YR 3/2) material; few coarse faint brown (10YR 5/3) iron depletions in the matrix; common medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; few dark grayish brown (10YR 4/2) worm casts; neutral; abrupt smooth boundary.

Bw3=41 to 49 inches; yellowish brown (10YR 5/4) fine sandy loam with thin lenses of silt loam and loam; weak fine subangular blocky structure; friable; few roots; neutral; clear smooth boundary.

C=49 to 60 inches; dark yellowish brown (10YR 4/4) fine sandy loam with thin lenses of silt loam and loam; massive; friable; slightly effervescent; slightly alkaline.

Range in Characteristics
Thickness of the mollic epipedon: 10 to 24 inches
Thickness of the solum: 24 to 60 inches
Depth to bedrock: More than 80 inches

Ap or A horizon:

Color=hue of 10YR, value of 2 or 3, chroma of 1 to 3
Texture=silt loam
Content of rock fragments=0 to 5 percent

Bw horizon:
Color=hue of 10YR, value of 3 to 5, chroma of 2 to 6
Texture=silt loam or loam; fine sandy loam and sandy loam are allowed in the lower part
Content of rock fragments=0 to 10 percent

C horizon:
Color=hue of 10YR, value of 4 to 6, chroma of 3 to 6
Texture=loam, silt loam, fine sandy loam, or sandy loam or the gravelly analogs of these textures
Content of rock fragments=0 to 20 percent to a depth of 48 inches and from 0 to 34 percent below 48 inches with up to 50 percent in individual strata

SEWARD SERIES

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Rapid in the sandy part of the solum, moderately rapid in the loamy part of the solum, slow in the lower part of the solum formed in till, and slow or very slow in the till substratum
Parent material: Sandy glaciolacustrine deposits and the underlying till
Landform: Rises and knolls on beach ridges and dunes on lake plains
Position on the landform: Summits, shoulders, backslopes
Slope: 0 to 6 percent

Adjacent soils: Rimer, Tedrow, Wauseon

Taxonomic class: Coarse-loamy over clayey, mixed over illitic, active, mesic Oxyaquic Hapludalfs

Typical Pedon
Seward loamy fine sand, 2 to 6 percent slopes, in Henry County, Ohio; Ridgeville Township; about 1 mile southwest of Ridgeville Corners; about 1,200 feet west and 300 feet north of the southeast corner of sec. 34, T. 6 N., R. 5 E.

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

E1=10 to 21 inches; yellowish brown (10YR 5/4) loamy fine sand; single grain; loose; common fine roots; few fine faint dark yellowish brown (10YR 4/4) masses of iron accumulation in the matrix in lower part of the horizon; slightly acid; clear wavy boundary.

E2=21 to 26 inches; brown (7.5YR 4/4) loamy fine sand; weak medium subangular blocky structure; very friable; few fine roots; many fine distinct pale brown (10YR 6/3) iron depletions in the matrix; many fine faint yellowish brown (10YR 5/4) and dark yellowish brown (10YR 4/4) masses of iron accumulation in the matrix; few prominent black (5YR 2.5/1) iron and manganese oxide stains on faces of peds; slightly acid; gradual wavy boundary.

Bt1=26 to 34 inches; yellowish brown (10YR 5/4) fine sandy loam; weak medium subangular blocky structure; friable; common distinct brown (10YR 4/3) clay films on faces of peds and in pores; many medium faint pale brown (10YR 6/3) iron depletions in the matrix; many medium faint brown (7.5YR 4/4) masses of iron accumulation in the matrix; neutral; abrupt smooth boundary.

2Bt2=34 to 40 inches; dark yellowish brown (10YR 4/4) clay; moderate medium subangular blocky structure; very firm; common distinct dark brown (10YR 3/3) clay films on faces of peds; many fine prominent gray (5Y 6/1) iron depletions in the matrix; many fine distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; 4 percent rock fragments; slightly alkaline; gradual wavy boundary.

2Cd=40 to 80 inches; brown (10YR 4/3) clay; massive with widely spaced vertical fractures; very firm; many prominent gray (5Y 5/1) and greenish gray (5GY 6/1) coatings; few distinct light gray (10YR 7/1) calcium carbonate coatings on faces of vertical fractures; common fine distinct gray (10YR 6/1) iron depletions in the matrix; 4 percent rock fragments slightly effervescent; moderately alkaline.

Range in Characteristics
Thickness of the A and E horizons: 18 to 36 inches
Thickness of the solum: 35 to 50 inches
Depth to carbonates: 34 to 48 inches
Depth to till: 18 to 36 inches
Depth to bedrock: More than 60 inches

Ap or A horizon:
Color=hue of 10YR, value of 3 to 5, chroma of 1 to 4
Texture=loamy fine sand
Content of rock fragments=0 to 3 percent

E horizon:
Color=hue of 7.5YR or 10YR, value of 4 to 6, chroma of 2 to 6
Texture=loamy fine sand, fine sand, or loamy sand
Content of rock fragments=0 to 3 percent

Bt horizon:
Color=hue of 7.5YR or 10YR, value of 4 to 6, chroma of 3 or 4
Texture=fine sandy loam or sandy loam with strata of sandy clay loam
Content of rock fragments=0 to 3 percent

2Bt or 2Btg horizon:
Color=hue of 10YR or 2.5Y, value of 3 to 5, chroma of 1 to 4
Texture=clay, silty clay, silty clay loam, or clay loam
Content of rock fragments=1 to 8 percent

2C, 2Cg, 2Cd or 2Cdg horizon:
Color=hue of 10YR or 2.5Y, value of 4 or 5, chroma of 2 to 4
Texture=clay, silty clay, silty clay loam, or clay loam
Content of rock fragments=1 to 8 percent

SHAWTOWN SERIES

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderate in the loamy solum, rapid in the sandy and gravelly substratum, and slow or very slow in the till substratum
Parent material: Stratified glaciolacustrine deposits overlying till
Landform: Rises and knolls on beach ridges on lake plains
Position on the landform: Summits, shoulders, backslopes
Slope: 0 to 6 percent

Adjacent soils: Alvada, Aurand, Cygnet, Oshtemo

Taxonomic class: Fine-loamy, mixed, active, mesic Oxyaquic Hapludalfs

Typical Pedon

Shawtown loam, 2 to 6 percent slopes, in Hancock County, Ohio; Pleasant Township; about 1 mile west of McComb; about 2,280 feet east and 280 feet south of the northwest corner of sec. 27, T. 2 N., R. 9 E.

Ap=0 to 9 inches; brown (10YR 4/3) loam, pale brown (10YR 6/3) dry; weak fine and medium granular structure; friable; few fine roots; 5 percent rock fragments; strongly acid; abrupt smooth boundary.

Bt1=9 to 21 inches; dark yellowish brown (10YR 4/4) loam; moderate fine and medium subangular blocky structure; friable; few fine roots; common faint dark yellowish brown (10YR 4/4) clay films on faces of peds; 10 percent rock fragments; strongly acid; gradual wavy boundary.

Bt2=21 to 33 inches; dark yellowish brown (10YR 4/4) gravelly clay loam with strata of clay loam; moderate medium subangular blocky structure; friable; few fine roots; many faint brown (10YR 4/3) clay films on faces of peds; 15 percent rock fragments; neutral; clear wavy boundary.

Bt3=33 to 48 inches; yellowish brown (10YR 5/4) gravelly loam; moderate medium subangular blocky structure; friable; few fine roots; common faint dark yellowish brown (10YR 4/4) clay films on faces of peds; few medium distinct grayish brown (10YR 5/2) and common medium faint brown (10YR 5/3) iron depletions in the matrix; 20 percent rock fragments; neutral; clear wavy boundary.

Bt4=48 to 55 inches; brown (10YR 5/3) gravelly loam with strata of gravelly sandy loam; weak medium and coarse subangular blocky structure; very friable; common faint brown (10YR 5/3) clay films on faces of peds and as bridging between sand grains; common medium faint grayish brown (10YR 5/2) iron depletions in the matrix; common medium faint yellowish brown (10YR 5/4) masses of iron accumulation in the matrix; 20 percent rock fragments; slightly effervescent discontinuously in the lower part; neutral; clear wavy boundary.

Cg=55 to 63 inches; grayish brown (10YR 5/2) gravelly loamy coarse sand with strata of loamy sand; single grain; loose; few medium prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; 20 percent rock fragments; strongly effervescent; moderately alkaline; abrupt smooth boundary.

2Cd=63 to 80 inches; yellowish brown (10YR 5/4) clay loam; massive, with widely spaced vertical

fractures; very firm; common fine distinct gray (10YR 5/1) iron depletions oriented along fractures; 5 percent rock fragments; strongly effervescent; moderately alkaline.

Range in Characteristics
Thickness of the solum: 35 to 60 inches
Depth to carbonates: 35 to 60 inches
Depth to till: 50 to 70 inches
Depth to dense material: 50 to 70 inches
Depth to bedrock: More than 80 inches

Ap horizon:
Color=hue of 10YR, value of 3 or 4, chroma of 2 or 3
Texture=loam
Content of rock fragments=1 to 14 percent

Bt horizon:
Color=hue of 7.5YR or 10YR, value of 3 to 5, chroma of 3 to 6
Texture= loam, clay loam, sandy clay loam, coarse sandy loam, or sandy loam or the gravelly analogs of these textures
Content of rock fragments=5 to 25 percent

C or Cg horizon:
Color=hue of 10YR, value of 4 or 5, chroma of 1 to 4
Texture=loamy sand, loamy coarse sand, coarse sandy loam, or sandy loam or the gravelly or very gravelly analogs of these textures, with thin strata of fine sandy loam, sand, or silt loam in some pedons
Content of rock fragments=5 to 45 percent

2Cd or Cdg horizon:
Color=hue of 10YR, value of 4 or 5, chroma of 2 to 4
Texture=silt loam, silty clay loam, or clay loam
Content of rock fragments=1 to 7 percent

SHOALS SERIES

Depth class: Very deep; moderately deep or deep in the bedrock phase
Drainage class: Somewhat poorly drained
Permeability: Moderate in the solum, and moderate or moderately rapid in the substratum
Parent material: Loamy alluvium; in the bedrock substratum phase, loamy alluvium overlying limestone or dolostone
Landform: Flats and rises on flood plains
Slope: 0 to 2 percent

Adjacent soils: Eel, Flatrock, Genesee, Sloan

Taxonomic class: Fine-loamy, mixed, superactive, nonacid, mesic Fluvaquentic Endoaquepts

Typical Pedon
Shoals silt loam, 0 to 2 percent slopes, occasionally flooded, in Hancock County, Ohio; Allen Township; about 1.2 miles northwest of Van Buren; about 1,380 feet east and 280 feet south of the northwest corner of sec. 12, T. 2 N., R. 10 E.

Ap=0 to 11 inches; dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; weak medium and coarse subangular blocky structure parting to moderate fine and medium granular; friable; few coarse, and common fine and medium roots; neutral; clear smooth boundary.

Bg=11 to 16 inches; grayish brown (10YR 5/2) silt loam; weak fine and medium subangular blocky structure; friable; common fine roots; common faint grayish brown (10YR 5/2) coatings on faces of peds; common fine and medium distinct dark yellowish brown (10YR 4/4) and few fine prominent (7.5YR 5/6) masses of iron accumulation in the matrix; common fine faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; neutral; clear wavy boundary.

Bw1=16 to 21 inches; brown (10YR 5/3) silt loam; moderate fine and medium subangular blocky structure; friable; few fine roots; common faint grayish brown (10YR 5/2) coatings on faces of peds; common medium and coarse faint grayish brown (10YR 5/2) iron depletions in the matrix; common medium faint dark yellowish brown (10YR 4/4) and few fine and medium prominent strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; common fine faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; neutral; gradual wavy boundary.

Bw2=21 to 32 inches; dark yellowish brown (10YR 4/4) silt loam with thin strata of loam; moderate medium subangular blocky structure; firm; few fine roots; few distinct dark grayish brown (10YR 4/2) coatings in pores and old root channels; many distinct grayish brown (10YR 5/2) coatings on faces of peds; common medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; common medium distinct strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; common fine distinct very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; neutral; gradual wavy boundary.

Bw3=32 to 41 inches; brown (10YR 5/3) loam; moderate medium subangular blocky structure; friable; few fine roots; few distinct dark grayish brown (10YR 4/2) coatings in pores and old root channels; common faint grayish brown (10YR 5/2) coatings on faces of peds; common medium and coarse faint (10YR 5/2) iron depletions in the matrix; common medium faint dark yellowish brown (10YR 4/4) and common medium prominent strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; common fine faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; neutral; clear smooth boundary.

B'g=41 to 59 inches; grayish brown (2.5Y 5/2) silt loam; weak medium subangular blocky structure; friable; few fine roots; few distinct (10YR 4/2) coatings in pores, old root channels, and on vertical faces of peds; common distinct grayish brown (10YR 5/2) coatings on vertical faces of peds; common medium prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common fine distinct very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; neutral; gradual smooth boundary.

Cg=59 to 80 inches; grayish brown (2.5Y 5/2) loam with strata of silt loam and sandy loam; massive; friable; few medium and coarse prominent strong brown (7.5YR 5/6) and common medium and coarse distinct yellowish brown (10YR 5/4) masses of iron accumulation in the matrix; 10 percent rock fragments in the sandy loam strata; slightly alkaline.

Range in Characteristics
Thickness of the solum: 20 to 60 inches
Depth to carbonates: 20 to more than 60 inches
Depth to bedrock: More than 48 inches, but typically more than 60 inches; 20 to 42 inches in the moderately deep to bedrock phase

Ap or A horizon:
Color=hue of 10YR, value of 3 to 5, chroma of 1 to 3
Texture=silt loam, loam, or silty clay loam
Content of rock fragments=0 to 3 percent

Bg or Bw horizon:
Color=hue of 10YR or 2.5Y, value of 3 to 6, chroma of 1 to 4
Texture=silt loam or loam, and less commonly fine sandy loam, sandy loam, clay loam, sandy clay loam, or silty clay loam
Content of rock fragments=0 to 3 percent

C or Cg horizon:
Color=hue of 10YR or 2.5Y, value of 3 to 6, chroma of 1 to 6
Texture=loam, sandy loam, fine sandy loam, clay loam, silty clay loam, or silt loam, and is commonly stratified
Content of rock fragments=0 to 14 percent

SLOAN SERIES

Depth class: Very deep; moderately deep or deep in the bedrock phase
Drainage class: Very poorly drained
Permeability: Moderately slow or moderate
Parent material: Loamy alluvium; in the bedrock phase, loamy alluvium overlying limestone or dolostone
Landform: Flats and backswamps on flood plains
Slope: 0 to 1 percent

Adjacent soils: Eel, Flatrock, Genesee, Rossburg, Shoals

Taxonomic class: Fine-loamy, mixed, superactive, mesic Fluvaquentic Endoaquolls

Typical Pedon
Sloan silty clay loam, 0 to 1 percent slopes, occasionally flooded, in Hancock County, Ohio; Blanchard Township; about 3.5 miles northwest of Benton Ridge; about 2,240 feet north and 740 feet east of the southwest corner of sec. 16, T. 1 N., R. 9 E.

Ap=0 to 11 inches; very dark grayish brown (10YR 3/2) silty clay loam, grayish brown (10YR 5/2) dry; moderate fine and medium granular structure; firm; common fine roots; 2 percent rock fragments; neutral; clear smooth boundary.

Bg1=11 to 21 inches; dark gray (10YR 4/1) clay loam; weak fine and medium subangular blocky structure; firm; common fine roots; many faint dark gray (10YR 4/1) coatings on faces of peds; common medium distinct dark yellowish brown (10YR 4/4) and few fine and medium prominent strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; few very dark gray (10YR 3/1) krotovinas; 2 percent rock fragments; neutral; gradual wavy boundary.

Bg2=21 to 27 inches; dark gray (10YR 4/1) silty clay loam; moderate fine and medium subangular blocky structure; firm; few fine roots; many faint

dark gray (10YR 4/1) coatings on faces of peds; common medium distinct dark yellowish brown (10YR 4/4) and few fine and medium prominent (7.5YR 5/6) masses of iron accumulation in the matrix; few very dark gray (10YR 3/1) krotovinas; 2 percent rock fragments; neutral; clear wavy boundary.

Bg3=27 to 32 inches; gray (10YR 5/1) clay loam; moderate fine and medium subangular blocky structure; firm; few fine roots; common faint dark gray (10YR 4/1) coatings on faces of peds; common medium distinct dark yellowish brown (10YR 4/4) and common medium and coarse prominent strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; few dark gray (10YR 4/1) krotovinas; 2 percent rock fragments; neutral; gradual wavy boundary.

Bg4=32 to 47 inches; gray (10YR 5/1) clay loam; weak medium and coarse subangular blocky structure; firm; few fine roots; common faint dark gray (10YR 4/1) coatings on faces of peds; common medium and coarse distinct dark yellowish brown (10YR 4/4) and few fine and medium prominent strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; few dark gray (10YR 4/1) krotovinas; 3 percent rock fragments; neutral; gradual wavy boundary.

Bg5=47 to 58 inches; gray (10YR 5/1) clay loam with strata of clay; weak medium and coarse subangular blocky structure; firm; few faint gray (10YR 5/1) coatings on faces of peds; common medium and coarse prominent strong brown (7.5YR 5/6) and common medium distinct dark yellowish brown (10YR 4/4) masses of iron accumulation in the matrix; 4 percent rock fragments; neutral; gradual wavy boundary.

Cg1=58 to 75 inches; gray (10YR 5/1) loam with strata of clay loam; massive; firm; common medium and coarse prominent strong brown (7.5YR 5/6) and common medium distinct dark yellowish brown (10YR 4/4) masses of iron accumulation in the matrix; 4 percent rock fragments; neutral; abrupt wavy boundary.

Cg2=75 to 80 inches; gray (10YR 5/1) silty clay loam with thin strata of silt loam and silty clay; massive; firm; common medium distinct dark yellowish brown (10YR 4/4) and common fine and medium prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; 1 percent rock fragments; neutral.

Range in Characteristics
Thickness of the mollic epipedon: 10 to 23 inches in the SoA map unit; 8 to 23 inches in SmA, SnA, and SpA map units
Thickness of the solum: 20 to 60 inches
Depth to carbonates: 22 to more than 80 inches
Depth to bedrock: More than 60 inches; 20 to 42 inches in the moderately deep to bedrock phase

Ap or A horizon:
Color=hue of 10YR or 2.5Y, or is neutral, value of 2, 2.5, or 3, chroma of 0 to 2
Texture=silty clay loam or silt loam
Content of rock fragments=0 to 5 percent

Bg horizon:
Color=hue of 10YR to 5Y, or is neutral, value of 3 to 5, chroma of 0 to 2
Texture=clay loam, silty clay loam, loam, or silt loam
Content of rock fragments=0 to 5 percent

C or Cg horizon:
Color=hue of 10YR to 5Y, value of 3 to 6, chroma of 1 to 4
Texture=clay loam, silty clay loam, loam, silt loam, or sandy loam or the gravelly analogs of these textures, and is commonly stratified
Content of rock fragments=0 to 34 percent

SPINKS SERIES

Depth class: Very deep; deep in the limestone substratum phase
Drainage class: Well drained
Permeability: Moderately rapid or rapid in the upper part of the solum, and moderately rapid in the lower part of the solum
Parent material: Sandy eolian or glaciolacustrine deposits, and overlies limestone or dolostone in the limestone substratum phase
Landform: Rises and knolls on dunes and beach ridges on lake plains; the deep to limestone phase, is on reefs on lake plains
Position on the landform: Summits, shoulders, backslopes
Slope: 0 to 18 percent

Adjacent soils: Dunbridge, Ottokee, Tedrow

Taxonomic class: Sandy, mixed, mesic Lamellic Hapludalfs

Figure 16. Profile of Spinks fine sand, 12 to 18 percent slopes, with alternating E and Bt horizons. The thin lamellae (Bt) become thicker and more pronounced with depth. Spade is 36 inches long.

Typical Pedon
Spinks fine sand, 6 to 12 percent slopes, in Fulton County, Ohio; Pike Township; about 2.5 miles east of Winameg; about 1,250 feet north and 775 feet west of the southeast corner of sec. 1, T. 10 S., R. 3 E. (fig. 16)

Ap=0 to 8 inches; brown (10YR 4/3) fine sand, brown (10YR 5/3) dry; single grain; loose; few fine roots; moderately acid; abrupt smooth boundary.

E=8 to 18 inches; yellowish brown (10YR 5/4) fine sand; single grain; loose; common medium roots; moderately acid; abrupt smooth boundary.

E and Bt=18 to 64 inches; yellowish brown (10YR 5/4) fine sand (E); single grain; loose; brown (7.5YR 4/4) loamy fine sand (Bt) as lamellae; weak fine subangular blocky structure; friable; few medium roots; moderately acid; abrupt wavy boundary.

C=64 to 80 inches; yellowish brown (10YR 5/4) fine sand; single grain; loose; few coarse distinct white (10YR 8/1) calcium carbonate accumulation in the matrix; strongly effervescent; moderately alkaline.

Range in Characteristics
Depth to the first lamellae: 15 to 40 inches:
Thickness of the solum: 36 to more than 60 inches
Depth to carbonates: 36 to more than 60 inches
Depth to bedrock: More than 60 inches; 42 to 60 inches in the deep to limestone phase

Ap or A horizon:
Color=hue of 7.5YR or 10YR, value of 3 to 5, chroma of 2 to 4
Texture=loamy fine sand or fine sand
Content of rock fragments=0 to 5 percent

E horizon:
Color=hue of 7.5YR or 10YR, value of 4 to 7, chroma of 2 to 8
Texture=fine sand, sand, loamy sand, or loamy fine sand
Content of rock fragments=0 to 5 percent

E and Bt horizon:
Color=E part has hue of 10YR, value of 4 to 7, chroma of 2 to 8; Bt part has hue of 5YR to 10YR, value of 3 to 5, chroma of 2 to 6
Texture=sand, loamy sand, fine sand, or loamy fine sand
Content of rock fragments=0 to 5 percent

C horizon:
Color=hue of 7.5YR or 10YR, value of 5 to 7, chroma of 2 to 6
Texture=sand or fine sand
Content of rock fragments=0 to 5 percent

ST. CLAIR SERIES

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Slow in the solum, and slow or very slow in the substratum
Parent material: Wave-planed till
Landform: Rises, knolls and in dissected areas along streams on lake plains
Position on the landform: Summits, shoulders, backslopes
Slope: 2 to 25 percent

Adjacent soils: Nappanee, Hoytville

Taxonomic class: Fine, illitic, mesic Oxyaquic Hapludalfs

Typical Pedon
St. Clair silty clay loam, 6 to 12 percent slopes, eroded, in Paulding County, Ohio; Jackson Township; about 1 mile east northeast of Paulding; about 900 feet south and 360 feet east of the northwest corner of sec. 8, T. 2 N., R. 3 E.

Ap=0 to 6 inches; brown (10YR 4/3) silty clay loam, pale brown (10YR 6/3) dry; moderate fine and medium granular structure; firm; common fine and few medium roots; 15 percent intermixing of yellowish brown (10YR 5/4) subsoil material; 2 percent rock fragments; slightly acid; abrupt smooth boundary.

Bt1=6 to 17 inches; yellowish brown (10YR 5/4) silty clay; moderate fine and medium subangular blocky structure; firm; common fine roots; common faint yellowish brown (10YR 5/4) and brown (10YR 5/3) clay films on faces of peds; common fine and medium faint brown (10YR 5/3) iron depletions in the lower part of the horizon; common medium distinct black (10YR 2/1) masses of iron and manganese accumulation in the matrix; 2 percent rock fragments; slightly acid; clear wavy boundary.

Bt2=17 to 22 inches; yellowish brown (10YR 5/4) silty clay; moderate medium subangular blocky structure; firm; common fine roots; common distinct grayish brown (10YR 5/2) and many faint brown (10YR 5/3) clay films on faces of peds; common fine and medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; many fine distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; many medium distinct black (10YR 2/1) masses of iron and manganese accumulation in the matrix; 3 percent rock fragments; neutral; clear wavy boundary.

BC=22 to 32 inches; yellowish brown (10YR 5/4) silty clay; moderate coarse prismatic structure parting to moderate fine and medium subangular blocky; firm; few fine roots on faces of prisms; common faint brown (10YR 5/3) and many distinct grayish brown (10YR 5/2) clay films on faces of peds; common medium and coarse distinct grayish brown (10YR 5/2) iron depletions in the matrix; common fine distinct very dark grayish brown (10YR 3/2) masses of iron and manganese accumulation on faces of prisms; 5 percent rock fragments; slightly effervescent; slightly alkaline; clear wavy boundary.

C1=32 to 40 inches; yellowish brown (10YR 5/4) clay loam; massive; very firm; grayish brown (10YR 5/2) coatings on vertical partings; common medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; common fine distinct very dark grayish brown (10YR 3/2) masses of iron and manganese accumulation in the matrix; 5 percent rock fragments; strongly effervescent; slightly alkaline; gradual wavy boundary.

C2=40 to 80 inches; dark yellowish brown (10YR 4/4) clay loam; massive; very firm; distinct grayish brown (10YR 5/2) coatings on vertical partings; common medium and coarse distinct grayish brown (10YR 5/2) iron depletions in the matrix; common medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; 5 percent rock fragments; strongly effervescent; slightly alkaline.

Range in Characteristics
Thickness of the solum: 20 to 48 inches
Depth to carbonates: 18 to 30 inches
Depth to bedrock: More than 48 inches, but typically more than 60 inches

Ap or A horizon:
Color=hue of 7.5YR or 10YR, value of 3 to 5, chroma of 1 to 3
Texture=silty clay loam or loam
Content of rock fragments=0 to 14 percent

Bt horizon:
Color=hue of 7.5YR or 10YR, value of 4 or 5, chroma of 3 or 4
Texture=silty clay or clay
Content of rock fragments=0 to 14 percent

C or Cg horizon:
Color=hue of 7.5YR or 10YR, value of 4 to 6, chroma of 1 to 4
Texture=silty clay, clay, clay loam, or silty clay loam
Content of rock fragments=1 to 14 percent

TEDROW SERIES

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Rapid; in the till substratum phase, rapid in the sandy solum, and slow or very slow in the till substratum
Parent material: Sandy glaciolacustrine or eolian deposits; in the till substratum phase, sandy glaciolacustrine deposits overlying till
Landform: Flats, rises, and knolls on beach ridges and dunes on lake plains

Position on the landform: Summits, shoulders, backslopes
Slope: 0 to 6 percent

Adjacent soils: Granby, Ottokee, Spinks

Taxonomic class: Mixed, mesic Aquic Udipsamments

Typical Pedon
Tedrow loamy fine sand, 0 to 2 percent slopes, in Henry County, Ohio; Washington Township; about 4.5 miles east of Liberty Center; about 1,550 feet north and 520 feet west of the southeast corner of sec. 27, T. 6 N., R. 8 E.

Ap=0 to 8 inches; very dark grayish brown (10YR 3/2) loamy fine sand, light brownish gray (10YR 6/2) dry; weak medium granular structure; very friable; many roots; neutral; abrupt smooth boundary.

Bw1=8 to 16 inches; yellowish brown (10YR 5/4) loamy fine sand; single grain; loose; common roots; few fine faint pale brown (10YR 6/3) iron depletions in the matrix; few fine faint brown (10YR 4/3) and few medium prominent yellowish brown (10YR 5/8) masses of iron accumulation in the matrix; slightly acid; clear wavy boundary.

Bw2=16 to 31 inches; brown (10YR 5/3) loamy fine sand; single grain; loose; few roots; common medium faint light brownish gray (10YR 6/2) iron depletions in the matrix; many medium distinct yellowish brown (10YR 5/6) and many medium prominent strong brown (7.5YR 5/8) masses of iron accumulation in the matrix; slightly acid; clear wavy boundary.

BC=31 to 33 inches; pale brown (10YR 6/3) fine sand; single grain; loose; many coarse faint grayish brown (10YR 5/2) iron depletions in the matrix; many coarse faint light olive brown (2.5Y 5/4) and yellowish brown (10YR 5/4) masses of iron accumulation in the matrix; neutral; clear wavy boundary.

C=33 to 60 inches; pale olive (5Y 6/3) fine sand; single grain; loose; common medium distinct gray (5Y 6/1) and many medium faint olive (5Y 5/3) iron depletions in the matrix; common medium faint light olive brown (2.5Y 5/4) masses of iron accumulation in the matrix; slightly effervescent; slightly alkaline.

Range in Characteristics
Thickness of the solum: 24 to 54 inches
Depth to carbonates: 24 to more than 60 inches
Depth to till: More than 60 inches; in the till substratum phase, it is 30 to 48 inches
Depth to bedrock: More than 60 inches

Ap or A horizon:
Color=hue of 10YR or 2.5Y, value of 3 or 4, chroma of 1 to 3
Texture=loamy fine sand
Content of rock fragments=0 to 2 percent

Bw or Bg horizon:
Color=hue of 7.5YR to 2.5Y, value of 4 to 6, chroma of 3 to 6 to a depth of 20 inches, and chroma of 1 to 6 below 20 inches
Texture=loamy sand, loamy fine sand, sand, or fine sand
Content of rock fragments=0 to 2 percent

C or Cg horizon:
Color=hue of 10YR to 5Y, value of 4 to 6, chroma of 1 to 4
Texture=fine sand or sand
Content of rock fragments=0 to 2 percent

2C or 2C horizon:
Color=hue of 10YR or 2.5Y, value of 3 to 6, chroma of 1 to 4
Texture=clay, silty clay, silty clay loam, or clay loam
Content of rock fragments=1 to 8 percent

TOLEDO SERIES

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Slow
Parent material: Clayey glaciolacustrine deposits
Landform: Extensive flats, depressions, and drainageways on lake plains
Slope: 0 to 1 percent

Adjacent soils: Fulton, Latty, till substratum

Taxonomic class: Fine, illitic, nonacid, mesic Mollic Endoaquepts

Typical Pedon
Toledo silty clay, in Erie County, Ohio; Margaretta Township; about 0.5 mile east of Springbrook; about 200 feet west and 350 feet north of the southeast corner of sec. 34, T. 6 N., R. 17 E.

Ap=0 to 9 inches; very dark gray (10YR 3/1) silty clay, gray (10YR 5/1) dry; moderate very fine subangular blocky structure; firm; moderately acid; abrupt smooth boundary.

Bg1=9 to 18 inches; dark gray (10YR 4/1) silty clay; strong fine and medium angular blocky structure; firm; few fine pores on faces of peds; common medium distinct dark yellowish brown (10YR 4/4) masses of iron accumulation in the matrix; neutral; clear smooth boundary.

Bg2=18 to 25 inches; dark gray (5Y 4/1) clay; strong medium and coarse angular blocky structure; very firm; common fine pores on faces of peds; common medium prominent dark yellowish brown (10YR 4/4) and olive brown (2.5Y 4/4) masses of iron accumulation in the matrix; neutral; gradual smooth boundary.

Bg3=25 to 45 inches; gray (5Y 5/1) silty clay; weak coarse prismatic structure parting to strong medium and coarse angular blocky; very firm; many medium prominent light olive brown (2.5Y 5/4) and yellowish brown (10YR 5/4) masses of iron accumulation in the matrix; neutral; clear wavy boundary.

Cg=45 to 80 inches; light brownish gray (2.5Y 6/2) silty clay with thin strata of silty clay loam and silt loam; massive; firm; many coarse faint gray (10YR 5/1) iron depletions in the matrix; many coarse prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; strongly effervescent; moderately alkaline.

Range in Characteristics
Thickness of the solum: 30 to 60 inches
Depth to carbonates: 30 to 57 inches
Depth to bedrock: More than 60 inches

Ap or A horizon:
Color=hue of 10YR or 2.5Y, or is neutral, value of 2, 2.5, or 3, chroma of 0 to 2
Texture=silty clay loam

Bg horizon:
Color=hue of 10YR to 5Y, or is neutral, value of 4 to 6, chroma of 0 to 2
Texture=silty clay or clay; in a few areas the upper part of the Bg is silty clay loam

C or Cg horizon:
Color=hue of 10YR to 5Y, or is neutral, value of 4 to 6, chroma of 0 to 6
Texture= commonly silty clay or clay, but the range includes silty clay loam

WABASHA SERIES

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Slow
Parent material: Clayey alluvium
Landform: Flats and backswamps on flood plains
Slope: 0 to 1 percent

Adjacent soils: Eel, Shoals

Taxonomic class: Fine, illitic, nonacid, mesic Fluvaquentic Endoaquepts

Typical Pedon
Wabasha silty clay, in Henry County, Ohio; Liberty Township; about 2.75 miles northwest of Liberty Center; about 2,540 feet west and 250 feet south of the northeast corner of sec. 22, T. 6 N., R. 7 E.

Ap=0 to 7 inches; very dark gray (10YR 3/1) silty clay, gray (10YR 5/1) dry; moderate medium granular structure; friable; common fine roots; slightly alkaline; abrupt smooth boundary.

Bg1=7 to 16 inches; dark gray (2.5Y 4/1) silty clay; weak coarse prismatic structure parting to moderate medium angular blocky; firm; common fine roots; few fine prominent brown (7.5YR 4/4) masses of iron accumulation in the matrix; slightly alkaline; clear smooth boundary.

Bg2=16 to 22 inches; gray (N 5/0) silty clay; moderate coarse prismatic structure parting to moderate medium and coarse angular blocky; firm; common fine roots; distinct dark gray (10YR 4/1) coatings on faces of peds with few fine prominent brown (7.5YR 4/4) hypocoats; common fine distinct olive gray (5Y 5/2) iron depletions in the matrix; common fine prominent brown (7.5YR 4/4) masses of iron accumulation in the matrix; slightly alkaline; clear smooth boundary.

Bg3=22 to 29 inches; gray (5Y 5/1) silty clay; moderate coarse prismatic structure parting to moderate medium angular blocky; firm; common fine roots; many prominent dark gray (10YR 4/1) coatings on faces of peds with few fine prominent reddish brown (5YR 4/4) hypocoats; common fine faint grayish brown (2.5Y 5/2) iron depletions in the matrix; common fine prominent olive brown (2.5Y 4/4) and brown (7.5YR 4/4) masses of iron accumulation in the matrix; slightly alkaline; gradual smooth boundary.

Bg4=29 to 48 inches; gray (5Y 5/1) silty clay; moderate coarse prismatic structure parting to moderate coarse angular blocky; firm; few fine roots; many faint dark gray (5Y 4/1) coatings on faces of peds; common medium distinct olive (5Y 5/3) and prominent dark yellowish brown (10YR

4/4) and yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; slightly effervescent in the lower part; slightly alkaline; gradual wavy boundary.

C=48 to 60 inches; yellowish brown (10YR 5/4) clay; massive, with some vertical partings; firm; few very thin layers of sand; many prominent gray (5Y 5/1) coatings on vertical partings; strongly effervescent; moderately alkaline.

Range in Characteristics
Thickness of the dark colored epipedon: 7 to 9 inches
Thickness of the solum: 40 to 60 inches
Depth to carbonates: 40 to more than 80 inches
Depth to bedrock: More than 80 inches

Ap horizon:
Color=hue of 10YR or 2.5Y, value of 2, 2.5, or 3, chroma of 1 or 2
Texture=silty clay
Rock fragment content=0 to 1 percent

Bg horizon:
Color=hue of 10YR to 5Y, or is neutral, value of 4 to 6, chroma of 0 to 2
Texture= silty clay or clay
Rock fragment content=0 to 1 percent but ranges to 7 percent in the lower part

C or Cg horizon:
Color=hue of 10YR to 5Y, or is neutral, value of 4 to 6, chroma of 0 to 4
Texture=silty clay or clay, or less commonly silty clay loam or clay loam; thin layers of sand, loamy fine sand, fine sandy loam, or silt loam are in some pedons
Rock fragment content=0 to 7 percent

WAUSEON SERIES

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Moderately rapid in the solum, and slow or very slow in the substratum; in the deep to till phase, moderately rapid in the solum, rapid in the sandy substratum, and slow or very slow in the till substratum
Parent material: Loamy and sandy glaciolacustrine deposits and in the underlying till
Landform: Flats, depressions, and drainageways on lake plains and deltas
Slope: 0 to 1 percent

Adjacent soils: Rimer, Seward

Taxonomic class: Coarse-loamy over clayey, mixed over illitic, superactive, mesic Typic Epiaquolls

Typical Pedon
Wauseon fine sandy loam, in Fulton County, Ohio; Pike Township; about 1.5 miles northeast of Winameg, about 195 feet north and 1,495 feet west of the southeast corner of sec. 34, T. 9. S., R. 3 E.

Ap=0 to 9 inches; black (10YR 2/1) fine sandy loam, dark gray (10YR 4/1) dry; weak coarse subangular blocky structure parting to moderate fine granular; friable; few fine roots; slightly acid; gradual smooth boundary.

A=9 to 13 inches; black (10YR 2/1) fine sandy loam, dark gray (10YR 4/1) dry; weak medium subangular blocky structure parting to moderate fine and medium granular; friable; few fine roots; slightly acid; abrupt wavy boundary.

Bg1=13 to 21 inches; dark gray (10YR 4/1) fine sandy loam; moderate medium subangular blocky structure; friable; few fine roots; common distinct very dark grayish brown (10YR 3/2) organic coatings on faces of peds; common fine prominent yellowish brown (10YR 5/6) and olive brown (2.5Y 4/4) masses of iron accumulation in the matrix; slightly acid; gradual wavy boundary.

Bg2=21 to 28 inches; dark gray (10YR 4/1) fine sandy loam; weak medium subangular blocky structure; friable; few fine roots; common distinct very dark grayish brown (10YR 3/2) organic coatings on faces of peds; common medium distinct yellowish brown (10YR 5/4) and prominent olive brown (2.5Y 4/4) masses of iron accumulation in the matrix; 1 percent rock fragments; slightly alkaline; clear wavy boundary.

Bg3=28 to 32 inches; dark gray (10YR 4/1) sandy clay loam; moderate medium subangular blocky structure; friable; common distinct very dark grayish brown (10YR 3/2) organic coatings on faces of peds; common medium prominent yellowish brown (10YR 5/6) and light olive brown (2.5Y 5/4) masses of iron accumulation in the matrix; slightly effervescent; slightly alkaline; abrupt wavy boundary.

2BC=32 to 36 inches; dark yellowish brown (10YR 4/4) clay loam; weak coarse prismatic structure parting to weak medium and coarse subangular blocky; very firm; common fine and medium

distinct gray (10YR 5/1) iron depletions in the matrix; common medium and coarse distinct yellowish brown (10YR 5/6) and few fine and medium distinct strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; few fine and medium distinct light gray (10YR 7/1) masses of calcium carbonate accumulation on vertical faces of prisms; 5 percent rock fragments; strongly effervescent; slightly alkaline; clear wavy boundary.

2C=36 to 58 inches; brown (10YR 4/3) clay loam; massive, with widely spaced vertical partings; very firm; common medium distinct gray (10YR 5/1) iron depletions in the matrix; common medium and coarse distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; very few fine and medium distinct light gray (10YR 7/2) masses of calcium carbonate accumulation on faces of partings; 5 percent rock fragments; strongly effervescent; moderately alkaline; gradual wavy boundary.

2Cd=58 to 80 inches; brown (10YR 4/3) clay loam; massive; very firm; many medium and coarse distinct gray (10YR 5/1) iron depletions in the matrix; common fine and medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; 5 percent rock fragments; strongly effervescent; moderately alkaline.

Range in Characteristics
Thickness of the mollic epipedon: 8 to 18 inches
Thickness of the solum: 24 to 40 inches
Depth to carbonates: 24 to 40 inches; 24 to 60 inches in the deep to till phase
Depth to till: 18 to 48 inches; 48 to 60 inches in the deep to till phase
Depth to bedrock: More than 60 inches

Ap or A horizon:
Color=hue of 10YR or is neutral, value of 2, 2.5 or 3, chroma of 0 to 2
Texture=fine sandy loam or loamy fine sand
Content of rock fragments=0 to 3 percent

Bg horizon:
Color=hue of 10YR to 5Y, value of 3 to 6, chroma of 1 or 2
Texture=fine sandy loam, sandy loam, loamy fine sand, or very fine sand with subhorizons of sandy clay loam less than 5 inches thick
Content of rock fragments=0 to 3 percent

Cg horizon:
Color=hue of 10YR or 2.5Y, value of 4 to 6, chroma of 1 or 2
Texture=sandy loam, fine sandy loam, loamy fine sand, or fine sand
Content of rock fragments=0 to 3 percent

2C, 2Cg, 2Cd, or 2Cdg horizon:
Color=hue of 5YR to 5Y, value of 4 to 6, chroma of 1 to 4
Texture=clay, silty clay, clay loam, or silty clay loam
Content of rock fragments=1 to 10 percent

The Wauseon soils in the WnA map unit has a surface layer that does not meet the thickness requirement for a mollic epipedon. These pedons classify as Coarse-loamy over clayey, mixed over illitic, superactive, nonacid, mesic Mollic Epiaquepts using the 8th edition of the Keys to Soil Taxonomy and are taxadjuncts to the Wauseon series. This difference, however, does not significantly affect the use and management of the soils.

Formation of the Soils

This section describes the major factors of soil formation and relates them to the soils in Wood County. Also, it describes some of the processes of soil formation.

Factors of Soil Formation

Soil is a three-dimensional natural body capable of supporting plant growth. The nature of the soil at a specific site is the result of the interaction of many factors and processes. There are five major factors of soil formation. These are parent material, climate, living organisms, relief, and time (Jenny, 1941).

Parent Material

The material in which a soil formed is called parent material. Most of the parent material in Wood County was deposited by the last glacier that covered the area, thousands of years ago, or by meltwater from this glacier. Other parent material includes older dolostone or limestone bedrock, more recent alluvium deposited by modern-day streams, and organic deposits from decaying plants.

The till contains particles ranging in size from clay to large stones. Most pebbles are angular, indicating little water action. Although most of the material in the till is of local origin, some igneous stones were carried from parts of Canada. The till at the surface was deposited during the Wisconsinan glaciation.

Most of the till in the county was subject to modification by water action during various stages of lake formation during and after the Wisconsinan glaciation. Wave-planed till primarily occupies the surficial deposits in most of the county. Wave-planed till is the parent material of Hoytville, Nappanee, and St. Clair soils.

Loamy and sandy sediments were deposited by water or wave action along old lake shorelines or as longshore bars and deltas. The loamy Belmore, Cygnet, Digby, Haney, Oshtemo, and Shawtown soils formed in sandy and/or gravelly beach deposits and terraces along old shorelines. The sandy Granby, Ottokee, Seward, Spinks, Tedrow, and Wauseon soils formed on beach ridges and dunes.

As the streams lost gradient or stream velocity, the finer sand and silt particles were deposited as deltas and bars and in local lake basins. Colwood, Kibbie, and Wauseon soils formed in sandy, loamy, and silty sediments. Where the streams flowed into local lakes, the finer particles settled out of the still water.

Clayey glaciolacustrine deposits are limited in Wood County. They are found in the extreme northern part of the county. Fulton, Latty, and Toledo soils formed in the clayey sediment.

Dolostone or limestone are one of the parent materials in Wood County. The Castalia, Dunbridge, Joliet, Marblehead, Millsdale, Milton, Randolph, and Ritchey soils are underlain with dolostone or limestone. This limestone has a very high calcium carbonate equivalent, but it is not violently effervescent because of the dolomitic nature of the limestone.

Alluvium is the parent material of the soils on flood plains. It consists of material that accumulates when fresh sediments are added by stream overflow. The deposits vary widely, depending on the stream gradient and the source of the sediment. Alluvial sediment is stratified because deposition occurs in three basic stages. Gravel and stones are deposited on the streambed, sand is deposited as bars along the inner banks of meanders, and sand, silt, and clay are deposited during flooding. Eel, Flatrock, Genesee, Landes, Rossburg, Shoals, Sloan, and Wabasha soils formed in alluvium.

The upper part of Risingsun soils formed in decayed plant material that accumulated in marshes. The permanent wetness slowed decomposition and thus allowed the organic material to accumulate.

Climate

The climate in Wood County is uniform enough that it has not greatly contributed to differences among the soils. It has favored physical change and chemical weathering of the parent material and the activity of living organisms.

The amount of precipitation varies as a result of microclimate. Runoff on steep slopes reduces the amount of effective precipitation, and drainage in depressions increases it. Rainfall has been adequate to leach from the upper part of the subsoil any carbonates that were in the parent material of some of the soils on uplands and terraces. Wetting and drying cycles have resulted in the translocation of clay minerals and the formation of soil structure.

The range in temperature has favored both physical change and chemical weathering of the

parent material. Freezing and thawing aided the formation of soil structure. Warm temperatures in summer favored chemical reactions in the weathering of the primary minerals. Rainfall and temperatures have been conducive to plant growth and the accumulation of organic matter in all of the soils.

Living Organisms

The vegetation under which a soil forms influences soil properties, such as soil color, structure, reaction, and content and distribution of organic matter. The surface layer of soils that formed under trees is generally lighter in color than that of soils that formed under grass because grasses generally return more organic matter to the soil. Grasses also provide shelter for many burrowing animals, which alter the structure and thickness of soil horizons. Earthworms, burrowing insects, and small animals are constantly mixing the soil, making it more porous and adding organic residue. Bacteria, fungi, and other microorganisms contribute to the breakdown of organic residue. Generally, fungi are more active in acid soils and bacteria are more active in alkaline soils.

About five native plant communities made up the original vegetation of Wood County. The dominant type is the elm-ash swamp forest community. The forest consists of American elm, black ash, red maple, pin oak, swamp white oak, and hickory. This community is associated with very poorly drained soils such as Hoytville, Latty, till substratum, Mermill, and Toledo.

The beech forest consists of Beech, sugar maple, red oak, white ash, white oak, and basswood as the common species (Gordon, 1966). This community is associated with better drained soils such as Belmore, Dunbridge, Haney, Milton. Oshtemo, Ottokee, and Spinks.

The mixed oak forest consisted of many primary forest types but was mainly white oak, black oak, and northern red oak. This community is associated with the better drained and more permeable soils such as Ottokee and Tedrow soils, and with highly productive soils such as Colwood and Kibbie.

The prairie plant communities are associated with the somewhat poorly drained Aurand and Kibbie soils, and the very poorly drained Colwood and Mermill soils.

A rather small area of Oak Savannah consisted of oak species associated with moderately well drained or well drained , permeable soils like Ottokee and Spinks. (Gordon, 1966).

Human activities also affect soil formation. Examples of these activities are cultivation, seeding, artificial drainage, irrigation, and cutting and filling. Accelerated erosion caused by clearing and cultivating the more sloping soils, such as Nappanee and St. Clair soils, illustrates the impact of humans on soil formation. Loss of surface soil and compaction of the subsoil affect runoff and plant growth. Large areas of the Hoytville, Latty, till substratum, and Mermill soils have been systematically drained by ditches and subsurface drains (fig. 17).

Figure 17. Extensive areas of Hoytville clay loam, 0 to 1 percent slopes have undergone systematic drainage in Wood County.

Draining reduces the content of organic matter and affects the processes of soil formation. Adding lime or fertilizer also affects the long-term development of the soil.

Relief

Relief, along with parent material, affects the natural drainage of soils. It influences the amount of runoff and the depth to the water table. Generally, the steeper soils have better drainage than the nearly level soils. If the extent of drainage differs, different soils can form in the same parent material. For example, both Hoytville and St. Clair soils formed in till deposits. St. Clair soils are on higher or more sloping positions, and the water table generally is not as close to the surface. They are moderately well drained. Hoytville soils, however, are in low-lying, level areas, and the water table is near or above the surface. Hoytville soils are very poorly drained.

A drainage sequence, or catena, is a group of soils that formed in the same parent material but differ in the extent of natural drainage. For example, the moderately well drained St. Clair soils, the somewhat poorly drained Nappanee soils, and the very poorly drained Hoytville soils

make up a drainage sequence. All of these soils formed in till.

Time

The length of time the parent material has been exposed to the soil-forming processes influences the nature of the soil that forms. The youngest soils in Wood County, such as Eel, Flatrock, Genesee, Landes, Rossburg, Shoals, Sloan, and Wabasha soils, formed in recent stream deposits. Younger soils have horizons that are less well defined than those of the older soils.

The glacial deposits of Wisconsinan age in Wood County are geologically young, but enough time has elapsed for the active forces of climate and plants and animals to produce the formation of distinct soil horizons. In most of the soils, carbonates have been leached, structure has developed in the subsoil, and organic matter has accumulated in the surface layer.

Processes of Soil Formation

Soil forms through complex, continuing processes. These processes are grouped into four general categories: additions, removals, transfers, and alterations.

The accumulation of organic matter in the formation of mineral soils is an example of an addition. The addition of organic residue has produced a dark surface layer. The upper part of the parent material originally was not darker than the lower part.

The loss of lime from the upper 2 to 4 feet of many of the soils in Wood County is an example of the removal process. Although the parent material was limy (calcareous), water percolating through the soil has leached the lime from the upper part of the soil.

Water is the carrier for most of the transfers that have occurred in the soils of Wood County. Clay has been transferred from the A and E horizons to the B horizon in many of the soils. The A and E horizons (especially the E horizon) have become a zone of eluviation, and the B horizon has become a zone of illuviation. Thin clay films are in pores and on ped surfaces in the B horizon of some soils. The clay has been transferred from the A horizon. The presence or absence of clay films is an important criterion in soil classification.

The reduction and solution of ferrous iron is an example of an alteration process. This process has taken place in the very poorly drained soils and, to a lesser extent, in the somewhat poorly drained and moderately well drained soils. Reduction of iron, or gleying, is prominent in the very poorly drained Alvada, Colwood, Hoytville, Latty, till substratum, Mermill, Millgrove, Millsdale, Sloan, Toledo, Wabasha, and Wauseon soils. This process is the result of a recurring water table. Gray soil indicates gleying. Reduced iron is soluble. The iron in the soils of Wood County, however, commonly has remained in the horizon where it originated or has settled in an underlying horizon. Iron can be reoxidized and segregated in places to form yellowish brown mottles that are brighter than the surrounding soil. The alteration of iron causes mottling in soils that are not well drained.

To a varying degree, all of the soils in Wood County have been affected by each of the four soil-forming processes. The accumulation of organic matter has been prominent in the formation of Risingsun soils. The removal of carbonates and the transfer of clay have been important in the formation of Nappanee and St. Clair soils.

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Glossary

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

Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

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.

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 moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low	0 to 3
Low	3 to 6
Moderate	6 to 9
High	9 to 12
Very high	more than 12

Backslope. The position that forms the steepest and generally linear, middle portion of a hillslope. In profile, backslopes are commonly bounded by a convex shoulder above and a concave footslope below.

Backswamp. A flood-plain landform. Extensive, marshy or swampy, depressed areas of flood plains between natural levees and valley sides or terraces. (NSSH)

Basal till. Compact glacial 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. (NSSH-modified)

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

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.

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

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

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.

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.

Clayey. Containing more than 35 percent clay. (SSM)

Clay depletions. Low-chroma zones having a low content of iron, manganese, and clay because of the chemical reduction of iron and manganese and the removal of iron, manganese, and clay. A type of redoximorphic depletion.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Claypan. A slowly permeable soil horizon that contains much more clay than the horizons above it. A claypan is commonly hard when dry and plastic or stiff when wet.

Climax plant community. The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.

Coarse textured soil. Sand or loamy sand.

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

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

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

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. (RCG-modified def.)

Complex, soil. A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

Concretions. Cemented bodies with crude internal symmetry organized around a point, a line, or a plane. They typically take the form of concentric layers visible to the naked eye. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up concretions. If formed in place, concretions of iron oxide or manganese oxide are generally considered a type of redoximorphic concentration.

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. (RCG)

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.

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. (RCG)

Cropping system. Growing crops according to a planned system of rotation and management practices.

Crop residue management. Returning crop residue to the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.

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

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

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 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. (adapted from 3SD PWM)

Depression. Any relatively sunken part of the Earth's surface; especially a low-lying area surrounded by higher ground.

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, typically 20 to 40 inches; shallow, 10 to 20 inches; and very shallow, less than 10 inches.

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 of mostly (more than 50 percent by weight) of the mineral dolomite [CaMg(CO3)2]. (NSSH-modified)

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 a small, defined channel. (NSSH)

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

Dune. A low mound, ridge, bank, or hill of loose, windblown, granular material (generally sand), either bare or covered by vegetation, that is capable of movement from place to place but always maintaining its characteristic shape. (USDA-NRCS National Soil Survey Handbook-Glossary of Geologic Terms, 1996.)

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. (Source unknown, probably from scientific website)

End moraine. A moraine produced at the front of an actively flowing glacier at any given time. (SOURCE: adapted from NSSH)

Ecological site. An area where climate, soil, and relief are sufficiently uniform to produce a distinct natural plant community. An ecological site is the product of all the environmental factors responsible for its development. It is typified by an association of species that differ from those on other ecological sites in kind and/or proportion of species or in total production.

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

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 linear slope produced by erosion or a stream cutting into a nearby hillslope and breaking the general continuity of less sloping land surfaces.

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.

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

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Fluvial. Of or pertaining to rivers; produced by river action, as a fluvial plain.

Footslope. The position that forms the inner, gently inclined surface at the base of a hillslope. In profile, footslopes are commonly concave. A footslope is a transition zone between upslope sites of erosion and transport (shoulders and backslopes) and downslope sites of deposition (toeslopes).

Forb. Any herbaceous plant not a grass or a sedge.

Forest 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.

Frost action (in tables). Freezing and thawing of soil moisture. Frost action can damage roads, buildings and other structures, and plant roots.

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

Glacial drift. Pulverized and other rock material transported by glacial ice and then deposited. Also, the sorted and unsorted material deposited by streams flowing from glaciers.

Glacial outwash. Gravel, sand, and silt, commonly stratified, deposited by glacial meltwater.

Glacial till. Unsorted, nonstratified glacial drift consisting of clay, silt, sand, and boulders transported and deposited by glacial ice.

Glaciofluvial deposits. Material moved by glaciers and subsequently sorted and deposited by streams flowing from the melting ice. The deposits are stratified and occur as kames, eskers, deltas, and outwash plains.

Glaciolacustrine deposits. Material ranging from fine clay to sand derived from glaciers and deposited in glacial lakes mainly by glacial meltwater. Many deposits are interbedded or laminated.

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

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material that has 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.

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). An area difficult to reclaim after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult. (slightly different than PWM)

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.

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.

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

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

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

considered but are separate factors in predicting runoff.

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

Impervious soil. A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Interfluve. An elevated area between two drainageways that sheds water to those drainageways.

Intermittent stream. A stream, or reach of a stream, that flows for prolonged periods only when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Iron depletions. Low-chroma zones having a low content of iron and manganese oxide because of chemical reduction and removal, but having a clay content similar to that of the adjacent matrix. A type of redoximorphic depletion.

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.

Lamella. An illuvial horizon less than 7.5 centimeters thick. Lamella contain an accumulation of oriented silicate clay on or bridging sand and silt grains (and rock fragments if present). A lamalla has more silicate clay than the overlying eluvial horizon. (NSSH-modified)

Lake plain. A nearly level surface marking the floor of an extinct lake filled in either by well sorted stratified sediments or by the reworking of existing sediments as a result of water action. (slightly modified from NSSH 629-22 to address wave-planed till in MLRA 99)

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. (modified from NSSH 629-23)

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-bar 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 (usually bedrock). The underlying material must be sufficiently coherent to make hand digging with a spade impractical. (SSSA)

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. (NSSH)

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. (NSSH, EX. 627-5)

Masses. Concentrations of substances in the soil matrix that do not have a clearly defined boundary with the surrounding soil material and cannot be removed as a discrete unit. Common compounds making up masses are calcium carbonate, gypsum or other soluble salts, iron oxide, and manganese oxide. Masses consisting of iron oxide or manganese oxide generally are considered a type of redoximorphic concentration.

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

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

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

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

Miscellaneous water. Small manmade area used for industrial, sanitary, or mining applications that contains water most of the year.

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.)

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. (SSSA)

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.)

Nose slope. A geomorphic component of hills consisting of the projecting end (laterally convex area) of a hillside. The overland waterflow is predominantly divergent.

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. (RCG-def. of no-tillage/modified)

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	< 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	> 8.0 percent

Outwash plain. A landform of mainly sandy or coarse textured material of glaciofluvial origin. An outwash plain is commonly smooth; where pitted, it generally is low in relief.

Paralithic contact. Similar to a lithic contact, except that the underlying material is softer and can be dug with difficulty with a spade. (SSSA-modified)

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 mm in diameter. (SSM)

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. Small natural or manmade lake, pond, or pit that contains water most of the year.

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

Impermeable	less than 0.0015 inch
Very slow	0.0015 to 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Phase, soil. A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

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

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

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Proper grazing use. Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This practice increases the vigor and reproduction capacity of the key plants and promotes the accumulation of litter and mulch necessary to conserve soil and water.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Ultra acid	less than 3.5
Extremely acid	3.5 to 4.4
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Moderately acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Slightly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Redoximorphic concentrations. Nodules, concretions, soft masses, pore linings, and other features resulting from the accumulation of iron or manganese oxide. An indication of chemical reduction and oxidation resulting from saturation.

Redoximorphic depletions. Low-chroma zones from which iron and manganese oxide or a combination of iron and manganese oxide and clay has been removed. These zones are indications of the chemical reduction of iron resulting from saturation.

Redoximorphic features. Redoximorphic concentrations, redoximorphic depletions, reduced matrices, a positive reaction to alpha,alpha-dipyridyl, and other features indicating the chemical reduction and oxidation of iron and manganese compounds resulting from saturation.

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

Reef. A ridge-like or mound-like structure, layered or massive, built by sedentary calcareous organisms; it is wave-resistant and stands above the surrounding contemporaneously deposited sediment. (USDA-NRCS National Soil Survey Handbook-Glossary of Geologic Terms, 1996.)

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 low 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. (NSSH)

Riser. The sloping surface of a series of natural steplike landforms, as those of successive stream terraces. (NSSH-modified)

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, usually hard rock, at the surface of the earth. (SSSA-modified)

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

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

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandy spot. An area of soil where the surface layer is sandy (loamy sand or sand) in an area where the surrounding soil or soils have a loamy or clayey surface layer. (NSSH, EX. 647-4)

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.

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.

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.

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. Typically, a narrow slope at least two slope classes steeper than the slope of the surrounding map units above or below it. (NSSH, EX. 647-4)

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.

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.

Similar components. Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75.

Slickensides. Polished and grooved surfaces produced by one mass sliding past another. In soils, slickensides may occur at the bases of slip surfaces on the steeper slopes; on faces of blocks, prisms, and columns; and in swelling clayey soils, where there is marked change in moisture content.

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.

Slow refill (in tables). The slow filling of ponds, resulting from restricted permeability in the soil.

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	< 0.002

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

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.

Stony. Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Stony spot. An area with 0.01 to 0.1 percent of the surface covered with rock fragments that are greater than 10 inches in diameter in an area of surrounding soil with less than 0.01 percent of the surface covered by such fragments. (NSSH, EX. 647-4)

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 of volume that occurs in muck when it oxidizes or dries. (Source unknown)

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.

S**ubstratum**. 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."

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 are dominantly vegetated by trees and shrubs. (SSSA)

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.

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

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

Thin layer (in tables). Otherwise suitable soil material that is too thin for the specified use.

Till plain. An extensive area of nearly level to undulating soils underlain by glacial till.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toeslope. The position that forms the gently inclined surface at the base of a hillslope. Toeslopes in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hillslope continuum that grades to valley or closed-depression floors.

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

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

Tread. The flat or gently sloping surface of natural steplike landforms, commonly one of a series, such as successive stream terraces. (NSSH, 629)

Typical pedon site. Site of the pedon described as typical for the series within the county. (Wood 37A definition)

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

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.

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 2 drainage classes wetter than the named soils in the surrounding map unit. (NSSH, EX. 627-5)

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.

Acronyms used in Glossary

(SSSA) Glossary of Soil Science Terms

(GSST) Definition taken from Glossary of Soil Science Terms by the Soil Science Society of America.

(RCG) Definition taken from Resource Conservation Glossary by the Soil Conservation Society of America

(NSSH) Definition taken from Glossary of Landform and Geologic Terms (Part 629 of NSSH 1996)

(NSSH, EX. 647-4) Definition of Special Features for Soil Surveys

(SSM) Soil Survey Manual/FBDSS

TABLES

TABLE 1.--TEMPERATURE AND PRECIPITATION

(Recorded in the period 1971-2000 at BOWLING GREEN, OH0862)

Month	Temperature: Average daily maximum	Average daily minimum	Average	2 years in 10 will have-- Maximum temperature higher than--	Minimum temperature lower than--	Average number of growing degree days*	Precipitation: Average	2 years in 10 will have-- Less than--	More than--	Average number of days with 0.10 inch or more	Average snowfall
	0F	0F	0F	0F	0F	Units	In	In	In		In
January-----	31.5	16.4	24.0	59	-12	1	1.75	1.02	2.41	4	7.2
February----	35.5	19.4	27.5	63	-6	0	1.63	0.67	2.44	4	5.3
March-------	46.9	27.7	37.3	77	4	24	2.37	1.43	3.21	5	3.0
April-------	59.4	37.1	48.3	83	18	94	3.21	1.90	4.37	7	0.7
May---------	71.5	48.3	59.9	90	30	319	3.58	2.28	4.76	7	0.0
June--------	81.0	58.2	69.6	96	40	587	3.56	2.02	4.93	6	0.0
July--------	84.5	61.8	73.1	98	48	718	3.57	1.89	5.04	6	0.0
August------	82.0	59.4	70.7	94	44	638	3.36	1.58	4.89	6	0.0
September---	75.8	52.0	63.9	92	34	421	2.63	1.36	3.75	5	0.0
October-----	63.5	41.2	52.4	84	23	148	2.53	1.27	3.62	5	0.0
November----	49.2	32.0	40.6	73	14	29	2.64	1.33	3.78	6	0.7
December----	36.8	22.1	29.5	63	-4	5	2.37	1.42	3.23	6	5.0
Yearly:											
Average---	59.8	39.6	49.7	---	---	---	---	---	---	---	---
Extreme---	104	-20	---	99	-14	---	---	---	---	---	---
Total-----	---	---	---	---	---	2983	33.20	29.03	36.90	67	21.9

* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (50 degrees. F)

TABLE 2.--FREEZE DATES IN SPRING AND FALL

(Recorded in the period 1971-2000 at BOWLING GREEN, OH0862)

Probability	24° F or lower	28° F or lower	32° F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	April 16	April 27	May 10
2 year in 10 later than--	April 11	April 23	May 5
5 year in 10 later than--	April 2	April 15	April 27
First freezing temperature in fall:			
1 yr in 10 earlier than--	October 20	October 7	September 29
2 yr in 10 earlier than--	October 27	October 13	October 4
5 yr in 10 earlier than--	November 9	October 24	October 14

TABLE 3.--GROWING SEASON

(Recorded for the period 1971-2000 at BOWLING GREEN, OH0862)

Probability	Daily Minimum Temperature During growing season		
	Higher than 24° F	Higher than 28° F	Higher than 32° F
	Days	Days	Days
9 years in 10	194	167	149
8 years in 10	203	176	156
5 years in 10	219	192	169
2 years in 10	236	208	182
1 year in 10	244	216	189

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE MAP UNITS

Map symbol	Soil name	Acres	Percent
AgA	Alvada loam, 0 to 1 percent slopes	512	0.1
AmA	Aurand fine sandy loam, 0 to 2 percent slopes	1,113	0.3
AnA	Aurand loam, 0 to 2 percent slopes	1,944	0.5
AsA	Aurand-Urban land complex, 0 to 2 percent slopes	205	*
BeB	Belmore sandy loam, 1 to 4 percent slopes	58	*
BfB	Belmore loam, 1 to 4 percent slopes	18	*
CaA	Castalia very cobbly loam, 0 to 2 percent slopes	205	*
CbB	Castalia-Marblehead complex, very stony, 0 to 6 percent slopes	3,047	0.8
CcA	Colwood fine sandy loam, 0 to 1 percent slopes	2,807	0.7
CdA	Colwood loam, 0 to 1 percent slopes	1,262	0.3
CtA	Colwood-Urban land complex, 0 to 1 percent slopes	107	*
CvA	Cygnet loam, 0 to 2 percent slopes	669	0.2
CxB	Castalia-Marblehead-Urban land complex, very stony, 0 to 6 percent slopes	144	*
DgA	Digby sandy loam, 0 to 2 percent slopes	446	0.1
DhA	Digby loam, 0 to 2 percent slopes	166	*
DrA	Dunbridge sandy loam, 0 to 2 percent slopes	174	*
DsA	Dunbridge-Spinks, deep to limestone, loamy fine sands, 0 to 2 percent slopes	928	0.2
DsB	Dunbridge-Spinks, deep to limestone, loamy fine sands, 2 to 6 percent slopes	520	0.1
EaA	Eel loam, 0 to 2 percent slopes, frequently flooded	251	*
EmA	Eel silt loam, 0 to 2 percent slopes, frequently flooded	2,409	0.6
EnA	Eel silt loam, moderately deep to limestone, 0 to 2 percent slopes, frequently flooded	100	*
FcA	Flatrock silt loam, 0 to 2 percent slopes, occasionally flooded	129	*
FuA	Fulton silty clay loam, till substratum, 0 to 2 percent slopes	2,008	0.5
FuB	Fulton silty clay loam, till substratum, 2 to 6 percent slopes	303	*
FzA	Fulton, till substratum-Urban land complex, 0 to 2 percent slopes	1,630	0.4
GmA	Genesee loam, 0 to 2 percent slopes, frequently flooded	380	*
GnA	Genesee silt loam, 0 to 2 percent slopes, frequently flooded	824	0.2
GpA	Granby loamy fine sand, till substratum, 0 to 1 percent slopes	1,831	0.5
HaA	Haney sandy loam, 0 to 2 percent slopes	109	*
HaB	Haney sandy loam, 2 to 6 percent slopes	58	*
HdA	Haney loam, 0 to 2 percent slopes	26	*
HdB	Haney loam, 2 to 6 percent slopes	43	*
HeA	Haskins and Digby, till substratum, fine sandy loams, 0 to 2 percent slopes	574	0.1
HeB	Haskins and Digby, till substratum, fine sandy loams, 2 to 6 percent slopes	129	*
HfA	Haskins and Digby, till substratum, loams, 0 to 2 percent slopes	1,455	0.4
HfB	Haskins and Digby, till substratum, loams, 2 to 6 percent slopes	116	*
HgA	Hoytville clay loam, 0 to 1 percent slopes	178,784	45.0
HhA	Hoytville silty clay loam, 0 to 1 percent slopes	5	*
HvA	Hoytville silty clay, 0 to 1 percent slopes	54,295	13.7
HwA	Hoytville clay, shallow to carbonates, 0 to 1 percent slopes	524	0.1
HyA	Hoytville-Urban land complex, 0 to 1 percent slopes	1,734	0.4
JoA	Joliet silty clay loam, 0 to 1 percent slopes	404	0.1
KeA	Kibbie loamy fine sand, 0 to 2 percent slopes	392	*
KfA	Kibbie fine sandy loam, 0 to 2 percent slopes	1,608	0.4
KfB	Kibbie fine sandy loam, 2 to 6 percent slopes	116	*
KkA	Kibbie-Urban land complex, 0 to 2 percent slopes	102	*
LbB	Landes loamy fine sand, 0 to 6 percent slopes, frequently flooded	157	*
LdA	Latty silty clay, till substratum, 0 to 1 percent slopes	10,140	2.6
LgA	Latty, till substratum-Urban land complex, 0 to 1 percent slopes	657	0.2
MbA	Millgrove loam, 0 to 1 percent slopes	103	*
McA	Mermill fine sandy loam, 0 to 1 percent slopes	388	*
MdA	Mermill loam, 0 to 1 percent slopes	1,637	0.4
MeA	Mermill sandy clay loam, 0 to 1 percent slopes	6,464	1.6
MfA	Mermill-Aurand complex, 0 to 1 percent slopes	26,435	6.7
MgA	Mermill-Urban land complex, 0 to 1 percent slopes	377	*
MhA	Millsdale silty clay loam, 0 to 1 percent slopes	3,690	0.9
MkA	Millsdale silty clay loam, stony, 0 to 1 percent slopes	172	*
MmA	Millsdale-Urban land complex, 0 to 1 percent slopes	122	*
MnA	Milton loam, 0 to 2 percent slopes	1,201	0.3
MnB	Milton loam, 2 to 6 percent slopes	164	*
NmA	Nappanee sandy loam, 0 to 2 percent slopes	1,213	0.3
NmB	Nappanee sandy loam, 2 to 6 percent slopes	138	*
NnA	Nappanee loam, 0 to 2 percent slopes	12,863	3.2
NnB	Nappanee loam, 2 to 6 percent slopes	998	0.3
NnB2	Nappanee loam, 2 to 6 percent slopes, eroded	395	*
NpA	Nappanee silty clay loam, 0 to 2 percent slopes	3,413	0.9
NpB	Nappanee silty clay loam, 2 to 6 percent slopes	173	*
NpB2	Nappanee silty clay loam, 2 to 6 percent slopes, eroded	138	*
NsA	Nappanee-Urban land complex, 0 to 2 percent slopes	148	*

See footnote at end of table.

Table 4.--Acreage and Proportionate Extent of the Map Units--Continued

Map symbol	Soil name	Acres	Percent
OsB	Oshtemo sandy loam, till substratum, 2 to 6 percent slopes	276	*
OtA	Ottokee-Spinks loamy fine sands, 0 to 2 percent slopes	1,775	0.4
OtB	Ottokee-Spinks loamy fine sands, 2 to 6 percent slopes	7,265	1.8
OzB	Ottokee-Spinks-Urban land complex, 0 to 6 percent slopes	517	0.1
Pt	Pits, quarry	445	0.1
RbA	Randolph loam, 0 to 2 percent slopes	2,275	0.6
RbB	Randolph loam, 2 to 6 percent slopes	71	*
RdA	Randolph loam, stony, 0 to 2 percent slopes	138	*
ReA	Randolph-Urban land complex, 0 to 2 percent slopes	103	*
RfA	Rimer and Tedrow, till substratum, loamy fine sands, 0 to 2 percent slopes	8,892	2.2
RfB	Rimer and Tedrow, till substratum, loamy fine sands, 2 to 6 percent slopes	709	0.2
RgA	Rimer and Tedrow-Urban land complex, 0 to 2 percent slopes	278	*
RhA	Ritchey loam, 0 to 2 percent slopes	539	0.1
RhB	Ritchey loam, 2 to 6 percent slopes	199	*
RkA	Ritchey loam, stony, 0 to 2 percent slopes	104	*
RmA	Risingsun-Rollersville complex, 0 to 1 percent slopes	221	*
RnA	Rollersville-Risingsun complex, 0 to 1 percent slopes	507	0.1
RsA	Rossburg silt loam, 0 to 2 percent slopes, frequently flooded	39	*
SdA	Seward and Ottokee, till substratum, loamy fine sands, 0 to 2 percent slopes	3,173	0.8
SdB	Seward and Ottokee, till substratum, loamy fine sands, 2 to 6 percent slopes	2,955	0.7
SeA	Shawtown loam, 0 to 2 percent slopes	4	*
SeB	Shawtown loam, 2 to 6 percent slopes	335	*
SgA	Shoals loam, 0 to 2 percent slopes, frequently flooded	293	*
ShA	Shoals silt loam, 0 to 2 percent slopes, frequently flooded	1,173	0.3
SkA	Shoals silty clay loam, 0 to 2 percent slopes, frequently flooded	89	*
SmA	Shoals and Sloan complex, moderately deep to limestone, 0 to 2 percent slopes, frequently flooded	69	*
SnA	Sloan silt loam, 0 to 1 percent slopes, frequently flooded	597	0.2
SoA	Sloan silty clay loam, 0 to 1 percent slopes, occasionally flooded	248	*
SpA	Sloan silty clay loam, 0 to 1 percent slopes, frequently flooded	3,768	0.9
SrB	Spinks fine sand, 2 to 6 percent slopes	439	0.1
SrC	Spinks fine sand, 6 to 12 percent slopes	193	*
SrD	Spinks fine sand, 12 to 18 percent slopes	52	*
SsB	Spinks loamy fine sand, 2 to 6 percent slopes	354	*
SsC	Spinks loamy fine sand, 6 to 12 percent slopes	135	*
StB	St. Clair loam, 2 to 6 percent slopes	209	*
StC2	St. Clair loam, 6 to 12 percent slopes, eroded	439	0.1
SuB2	St. Clair silty clay loam, 2 to 6 percent slopes, eroded	71	*
SuC2	St. Clair silty clay loam, 6 to 12 percent slopes, eroded	275	*
SuD2	St. Clair silty clay loam, 12 to 18 percent slopes, eroded	188	*
SuE2	St. Clair silty clay loam, 18 to 25 percent slopes, eroded	597	0.2
TeA	Tedrow loamy fine sand, 0 to 2 percent slopes	1,346	0.3
TeB	Tedrow loamy fine sand, 2 to 6 percent slopes	253	*
TfA	Tedrow-Urban land complex, 0 to 2 percent slopes	102	*
TpA	Toledo silty clay loam, 0 to 1 percent slopes	635	0.2
TuA	Toledo-Urban land complex, 0 to 1 percent slopes	946	0.2
UcA	Udorthents, loamy, 0 to 2 percent slopes	1,893	0.5
UcE	Udorthents, loamy, 2 to 25 percent slopes	1,119	0.3
Ur	Urban land	1,634	0.4
W	Water	2,827	0.7
WbA	Wabasha silty clay, 0 to 1 percent slopes, frequently flooded	536	0.1
WmA	Wauseon loamy fine sand, 0 to 1 percent slopes	216	*
WnA	Wauseon fine sandy loam, deep to till, 0 to 1 percent slopes	3,111	0.8
WyA	Wauseon fine sandy loam, 0 to 1 percent slopes	6,469	1.6
WzA	Wauseon-Urban land complex, 0 to 1 percent slopes	162	*
	Total	397,108	100.0

* Less than 0.1 percent.

TABLE 5.--PRIME FARMLAND

(Only the soils considered prime farmland are listed. Urban or built-up areas of the soils listed are not considered prime farmland. If a soil is prime farmland only under certain conditions, the conditions are specified in parentheses after the soil name.)
(See text on page 210 for additional information)

Map symbol	Soil name
AgA	Alvada loam, 0 to 1 percent slopes (Prime farmland if drained)
AmA	Aurand fine sandy loam, 0 to 2 percent slopes (Prime farmland if drained)
AnA	Aurand loam, 0 to 2 percent slopes (Prime farmland if drained)
BeB	Belmore sandy loam, 1 to 4 percent slopes
BfB	Belmore loam, 1 to 4 percent slopes
CcA	Colwood fine sandy loam, 0 to 1 percent slopes (Prime farmland if drained)
CdA	Colwood loam, 0 to 1 percent slopes (Prime farmland if drained)
CvA	Cygnet loam, 0 to 2 percent slopes
DgA	Digby sandy loam, 0 to 2 percent slopes (Prime farmland if drained)
DhA	Digby loam, 0 to 2 percent slopes (Prime farmland if drained)
DrA	Dunbridge sandy loam, 0 to 2 percent slopes
EaA	Eel loam, 0 to 2 percent slopes, frequently flooded (Prime farmland if protected from flooding or not frequently flooded during the growing season)
EmA	Eel silt loam, 0 to 2 percent slopes, frequently flooded (Prime farmland if protected from flooding or not frequently flooded during the growing season)
EnA	Eel silt loam, moderately deep to limestone, 0 to 2 percent slopes, frequently flooded (Prime farmland if protected from flooding or not frequently flooded during the growing season)
FcA	Flatrock silt loam, 0 to 2 percent slopes, occasionally flooded
FuA	Fulton silty clay loam, till substratum, 0 to 2 percent slopes (Prime farmland if drained)
FuB	Fulton silty clay loam, till substratum, 2 to 6 percent slopes (Prime farmland if drained)
GmA	Genesee loam, 0 to 2 percent slopes, frequently flooded (Prime farmland if protected from flooding or not frequently flooded during the growing season)
GnA	Genesee silt loam, 0 to 2 percent slopes, frequently flooded (Prime farmland if protected from flooding or not frequently flooded during the growing season)
HaA	Haney sandy loam, 0 to 2 percent slopes
HaB	Haney sandy loam, 2 to 6 percent slopes
HdA	Haney loam, 0 to 2 percent slopes
HdB	Haney loam, 2 to 6 percent slopes
HeA	Haskins and Digby, till substratum, fine sandy loams, 0 to 2 percent slopes (Prime farmland if drained)
HeB	Haskins and Digby, till substratum, fine sandy loams, 2 to 6 percent slopes (Prime farmland if drained)
HfA	Haskins and Digby, till substratum, loams, 0 to 2 percent slopes (Prime farmland if drained)
HfB	Haskins and Digby, till substratum, loams, 2 to 6 percent slopes (Prime farmland if drained)
HgA	Hoytville clay loam, 0 to 1 percent slopes (Prime farmland if drained)
HhA	Hoytville silty clay loam, 0 to 1 percent slopes (Prime farmland if drained)
HvA	Hoytville silty clay, 0 to 1 percent slopes (Prime farmland if drained)
HwA	Hoytville clay, shallow to carbonates, 0 to 1 percent slopes (Prime farmland if drained)
KeA	Kibbie loamy fine sand, 0 to 2 percent slopes (Prime farmland if drained)
KfA	Kibbie fine sandy loam, 0 to 2 percent slopes (Prime farmland if drained)
KfB	Kibbie fine sandy loam, 2 to 6 percent slopes (Prime farmland if drained)
LbB	Landes loamy fine sand, 0 to 6 percent slopes, frequently flooded (Prime farmland if protected from flooding or not frequently flooded during the growing season)
LdA	Latty silty clay, till substratum, 0 to 1 percent slopes (Prime farmland if drained)
MbA	Millgrove loam, 0 to 1 percent slopes (Prime farmland if drained)
McA	Mermill fine sandy loam, 0 to 1 percent slopes (Prime farmland if drained)
MdA	Mermill loam, 0 to 1 percent slopes (Prime farmland if drained)
MeA	Mermill sandy clay loam, 0 to 1 percent slopes (Prime farmland if drained)
MfA	Mermill-Aurand complex, 0 to 1 percent slopes (Prime farmland if drained)
MhA	Millsdale silty clay loam, 0 to 1 percent slopes (Prime farmland if drained)
MnA	Milton loam, 0 to 2 percent slopes
MnB	Milton loam, 2 to 6 percent slopes
NmA	Nappanee sandy loam, 0 to 2 percent slopes (Prime farmland if drained)
NmB	Nappanee sandy loam, 2 to 6 percent slopes (Prime farmland if drained)
NnA	Nappanee loam, 0 to 2 percent slopes (Prime farmland if drained)
NnB	Nappanee loam, 2 to 6 percent slopes (Prime farmland if drained)
NnB2	Nappanee loam, 2 to 6 percent slopes, eroded (Prime farmland if drained)
NpA	Nappanee silty clay loam, 0 to 2 percent slopes (Prime farmland if drained)
NpB	Nappanee silty clay loam, 2 to 6 percent slopes (Prime farmland if drained)
NpB2	Nappanee silty clay loam, 2 to 6 percent slopes, eroded (Prime farmland if drained)

Table 5.--Prime Farmland--Continued

Map symbol	Soil name
OsB	Oshtemo sandy loam, till substratum, 2 to 6 percent slopes
RbA	Randolph loam, 0 to 2 percent slopes (Prime farmland if drained)
RbB	Randolph loam, 2 to 6 percent slopes (Prime farmland if drained)
RfA	Rimer and Tedrow, till substratum, loamy fine sands, 0 to 2 percent slopes (Prime farmland if drained)
RfB	Rimer and Tedrow, till substratum, loamy fine sands, 2 to 6 percent slopes (Prime farmland if drained)
RmA	Risingsun-Rollersville complex, 0 to 1 percent slopes (Prime farmland if drained)
RnA	Rollersville-Risingsun complex, 0 to 1 percent slopes (Prime farmland if drained)
RsA	Rossburg silt loam, 0 to 2 percent slopes, frequently flooded (Prime farmland if protected from flooding or not frequently flooded during the growing season)
SeA	Shawtown loam, 0 to 2 percent slopes
SeB	Shawtown loam, 2 to 6 percent slopes
SgA	Shoals loam, 0 to 2 percent slopes, frequently flooded (Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season)
ShA	Shoals silt loam, 0 to 2 percent slopes, frequently flooded (Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season)
SkA	Shoals silty clay loam, 0 to 2 percent slopes, frequently flooded (Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season)
SmA	Shoals and Sloan complex, moderately deep to limestone, 0 to 2 percent slopes, frequently flooded (Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season)
SnA	Sloan silt loam, 0 to 1 percent slopes, frequently flooded (Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season)
SoA	Sloan silty clay loam, 0 to 1 percent slopes, occasionally flooded (Prime farmland if drained)
SpA	Sloan silty clay loam, 0 to 1 percent slopes, frequently flooded (Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season)
StB	St. Clair loam, 2 to 6 percent slopes
SuB2	St. Clair silty clay loam, 2 to 6 percent slopes, eroded
TpA	Toledo silty clay loam, 0 to 1 percent slopes (Prime farmland if drained)
WbA	Wabasha silty clay, 0 to 1 percent slopes, frequently flooded (Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season)
WmA	Wauseon loamy fine sand, 0 to 1 percent slopes (Prime farmland if drained)
WnA	Wauseon fine sandy loam, deep to till, 0 to 1 percent slopes (Prime farmland if drained)
WyA	Wauseon fine sandy loam, 0 to 1 percent slopes (Prime farmland if drained)

TABLE 6.--HYDRIC SOILS LIST

(See text on page 212 for additional information)

Map symbol	Soil name
AgA	Alvada loam, 0 to 1 percent slopes
CcA	Colwood fine sandy loam, 0 to 1 percent slopes
CdA	Colwood loam, 0 to 1 percent slopes
CtA	Colwood-Urban land complex, 0 to 1 percent slopes
GpA	Granby loamy fine sand, till substratum, 0 to 1 percent slopes
HgA	Hoytville clay loam, 0 to 1 percent slopes
HhA	Hoytville silty clay loam, 0 to 1 percent slopes
HvA	Hoytville silty clay, 0 to 1 percent slopes
HwA	Hoytville clay, shallow to carbonates, 0 to 1 percent slopes
HyA	Hoytville-Urban land complex, 0 to 1 percent slopes
JoA	Joliet silty clay loam, 0 to 1 percent slopes
LdA	Latty silty clay, till substratum, 0 to 1 percent slopes
LgA	Latty, till substratum-Urban land complex, 0 to 1 percent slopes
MbA	Millgrove loam, 0 to 1 percent slopes
McA	Mermill fine sandy loam, 0 to 1 percent slopes
MdA	Mermill loam, 0 to 1 percent slopes
MeA	Mermill sandy clay loam, 0 to 1 percent slopes
MfA	Mermill-Aurand complex, 0 to 1 percent slopes
MgA	Mermill-Urban land complex, 0 to 1 percent slopes
MhA	Millsdale silty clay loam, 0 to 1 percent slopes
MkA	Millsdale silty clay loam, stony, 0 to 1 percent slopes
MmA	Millsdale-Urban land complex, 0 to 1 percent slopes
RmA	Risingsun-Rollersville complex, 0 to 1 percent slopes
RnA	Rollersville-Risingsun complex, 0 to 1 percent slopes
SmA	Shoals and Sloan complex, moderately deep to limestone, 0 to 2 percent slopes, frequently flooded
SnA	Sloan silt loam, 0 to 1 percent slopes, frequently flooded
SoA	Sloan silty clay loam, 0 to 1 percent slopes, occasionally flooded
SpA	Sloan silty clay loam, 0 to 1 percent slopes, frequently flooded
TpA	Toledo silty clay loam, 0 to 1 percent slopes
TuA	Toledo-Urban land complex, 0 to 1 percent slopes
WbA	Wabasha silty clay, 0 to 1 percent slopes, frequently flooded
WmA	Wauseon loamy fine sand, 0 to 1 percent slopes
WnA	Wauseon fine sandy loam, deep to till, 0 to 1 percent slopes
WyA	Wauseon fine sandy loam, 0 to 1 percent slopes
WzA	Wauseon-Urban land complex, 0 to 1 percent slopes

TABLE 7.--NON-HYDRIC MAPUNITS WITH HYDRIC COMPONENTS

(See text on page 212 for additional information)

Map symbol and map unit name	Hydric Component	Landform
AmA: Aurand fine sandy loam, 0 to 2 percent slopes	Mermill	depression, drainageway, lake plain
	Alvada	depression, drainageway, lake plain
AnA: Aurand loam, 0 to 2 percent slopes	Alvada	depression, drainageway, lake plain
	Mermill	depression, drainageway, lake plain
AsA: Aurand-Urban land complex, 0 to 2 percent slopes	Alvada	depression, drainageway, lake plain
	Mermill	depression, drainageway, lake plain
CvA: Cygnet loam, 0 to 2 percent slopes	Alvada	depression, drainageway, lake plain
FcA: Flatrock silt loam, 0 to 2 percent slopes, occasionally flooded	Sloan	backswamp, flood plain
FuA: Fulton silty clay loam, till substratum, 0 to 2 percent slopes	Latty	depression, drainageway, lake plain
FzA: Fulton, till substratum-Urban land complex, 0 to 2 percent slopes	Latty	depression, drainageway, lake plain

Table 7.--Non-hydric Mapunits With Hydric Components—Continued

Map symbol and map unit name	Hydric Component	Landform
HeA: Haskins and Digby, till substratum, fine sandy loams, 0 to 2 percent slopes	Hoytville	depression, drainageway, lake plain
	Mermill	depression, drainageway, lake plain
HfA: Haskins and Digby, till substratum, loams, 0 to 2 percent slopes	Mermill	depression, drainageway, lake plain
	Hoytville	depression, drainageway, lake plain
HfB: Haskins and Digby, till substratum, loams, 2 to 6 percent slopes	Mermill	depression, drainageway, lake plain
NnA: Nappanee loam, 0 to 2 percent slopes	Hoytville	depression, drainageway, lake plain
NnB: Nappanee loam, 2 to 6 percent slopes	Hoytville	depression, drainageway, lake plain
NpA: Nappanee silty clay loam, 0 to 2 percent slopes	Hoytville	depression, drainageway, lake plain
NsA: Nappanee-Urban land complex, 0 to 2 percent slopes	Hoytville	depression, drainageway, lake plain
RbA: Randolph loam, 0 to 2 percent slopes	Millsdale	depression, drainageway, lake plain

Table 7.--Non-hydric Mapunits With Hydric Components—Continued

Map symbol and map unit name	Hydric Component	Landform
ReA:		
Randolph-Urban land complex, 0 to 2 percent slopes		
	Millsdale	depression, drainageway, lake plain
RfA:		
Rimer and Tedrow, till substratum, loamy fine sands, 0 to 2 percent slopes		
	Wauseon	depression, drainageway, lake plain
RfB:		
Rimer and Tedrow, till substratum, loamy fine sands, 2 to 6 percent slopes		
	Wauseon	depression, drainageway, lake plain
RgA:		
Rimer and Tedrow-Urban land complex, 0 to 2 percent slopes		
	Wauseon	depression, drainageway, lake plain
SdA:		
Seward and Ottokee, till substratum, loamy fine sands, 0 to 2 percent slopes		
	Mermill	depression, drainageway, lake plain
	Wauseon	depression, drainageway, lake plain
	Hoytville	depression, drainageway, lake plain
SdB:		
Seward and Ottokee, till substratum, loamy fine sands, 2 to 6 percent slopes		
	Hoytville	depression, drainageway, lake plain
	Mermill	depression, drainageway, lake plain
	Wauseon	depression, drainageway, lake plain

Table 7.--Non-hydric Mapunits With Hydric Components—Continued

Map symbol and map unit name	Hydric Component	Landform
SeA: Shawtown loam, 0 to 2 percent slopes	Alvada	depression, drainageway, lake plain
ShA: Shoals silt loam, 0 to 2 percent slopes, frequently flooded	Sloan	backswamp, depression, flood plain
SkA: Shoals silty clay loam, 0 to 2 percent slopes, frequently flooded	Sloan	backswamp, depression, flood plain
TeA: Tedrow loamy fine sand, 0 to 2 percent slopes	Granby	depression, drainageway, lake plain
TfA: Tedrow-Urban land complex, 0 to 2 percent slopes	Granby	depression, drainageway, lake plain

TABLE 8.--CROPLAND LIMITATIONS AND HAZARDS

(See text on page 217 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
AgA:	
Alvada	Ponding, moderate potential for ground-water pollution, frost action,
AmA:	
Aurand	Seasonal high water table, frost action, wind erosion,
AnA:	
Aurand	Seasonal high water table, frost action,
BeB:	
Belmore	High potential for ground-water pollution, erosion hazard, wind erosion
BfB:	
Belmore	High potential for ground-water pollution, erosion hazard
CcA:	
Colwood	Ponding, moderate potential for ground-water pollution, frost action, wind erosion
CdA:	
Colwood	Ponding, moderate potential for ground-water pollution, frost action
CvA:	
Cygnet	Seasonal high water table, frost action
DgA:	
Digby	Seasonal high water table, high potential for ground-water pollution, frost action, wind erosion
DhA:	
Digby	Seasonal high water table, high potential for ground-water pollution, frost action
DrA:	
Dunbridge	Depth to bedrock, high potential for ground-water pollution, wind erosion, limited available water capacity
DsA:	
Dunbridge	Depth to bedrock, high potential for ground-water pollution, wind erosion, limited available water capacity
Spinks	High potential for ground-water pollution, wind erosion, limited available water capacity, sandy layers
DsB:	
Dunbridge	Depth to bedrock, high potential for ground-water pollution, erosion hazard, wind erosion, limited available water capacity
Spinks	High potential for ground-water pollution, erosion hazard, wind erosion, limited available water capacity, sandy layers
EaA:	
Eel	Frequent flooding, moderate potential for ground-water pollution, frost action
EmA:	
Eel	Frequent flooding, surface compaction, moderate potential for ground-water pollution, frost action, surface crusting
EnA:	
Eel	Frequent flooding, surface compaction, depth to bedrock, high potential for ground-water pollution, frost action, surface crusting
FcA:	
Flatrock	Occasional flooding, seasonal high water table, surface compaction, moderate potential for ground-water pollution, frost action, surface crusting
FuA:	
Fulton	Seasonal high water table, surface compaction, frost action, fair tilth, surface crusting, clodding, high clay content
FuB:	
Fulton	Seasonal high water table, surface compaction, frost action, fair tilth, surface crusting, erosion hazard, clodding, high clay content
GmA:	
Genesee	Frequent flooding

TABLE 8.--Cropland Limitations and Hazards--Continued

Soil name and map symbol	Cropland limitations and hazards
GnA:	
Genesee	Frequent flooding, surface compaction, surface crusting
GpA:	
Granby	Ponding, moderate potential for ground-water pollution, wind erosion, limited available water capacity, sandy layers
HaA:	
Haney	High potential for ground-water pollution, frost action, wind erosion
HaB:	
Haney	High potential for ground-water pollution, frost action, wind erosion
HdA:	
Haney	High potential for ground-water pollution, frost action
HdB:	
Haney	High potential for ground-water pollution, frost action
HeA:	
Haskins	Seasonal high water table, frost action, wind erosion
Digby	Seasonal high water table, frost action, wind erosion, limited available water capacity, restricted permeability
HeB:	
Haskins	Seasonal high water table, frost action, wind erosion
Digby	Seasonal high water table, frost action, wind erosion, limited available water capacity, restricted permeability
HfA:	
Haskins	Seasonal high water table, frost action
Digby	Seasonal high water table, frost action, restricted permeability
HfB:	
Haskins	Seasonal high water table, frost action
Digby	Seasonal high water table, frost action, restricted permeability,
HgA:	
Hoytville	Ponding, surface compaction, frost action, fair tilth, clodding, high clay content
HhA:	
Hoytville	Ponding, surface compaction, frost action, fair tilth, clodding, high clay content
HvA:	
Hoytville	Ponding, surface compaction, poor tilth, frost action, clodding, high clay content
HwA:	
Hoytville	Ponding, surface compaction, poor tilth, frost action, limited available water capacity, clodding, high clay content
JoA:	
Joliet	Seasonal high water table, surface compaction, depth to bedrock, high potential for ground-water pollution, frost action, fair tilth, limited available water capacity
KeA:	
Kibbie	Seasonal high water table, moderate potential for ground-water pollution, frost action, wind erosion
KfA:	
Kibbie	Seasonal high water table, moderate potential for ground-water pollution, frost action, wind erosion
KfB:	
Kibbie	Seasonal high water table, moderate potential for ground-water pollution, frost action, wind erosion
LbB:	
Landes	Frequent flooding, high potential for ground-water pollution, erosion hazard, wind erosion
LdA:	
Latty	Ponding, surface compaction, moderate potential for ground-water pollution, poor tilth, frost action, clodding, high clay content

TABLE 8.--Cropland Limitations and Hazards--Continued

Soil name and map symbol	Cropland limitations and hazards
MbA:	
Millgrove	Ponding, moderate potential for ground-water pollution, frost action
McA:	
Mermill	Ponding, frost action, wind erosion, restricted permeability
MdA:	
Mermill	Ponding, frost action, restricted permeability
MeA:	
Mermill	Ponding, frost action, restricted permeability
MfA:	
Mermill	Ponding, frost action, restricted permeability
Aurand	Seasonal high water table, frost action
MhA:	
Millsdale	Ponding, surface compaction, depth to bedrock, high potential for ground-water pollution, frost action, fair tilth, limited available water capacity, high clay content
MnA:	
Milton	Depth to bedrock, high potential for ground-water pollution, limited available water capacity, high clay content
MnB:	
Milton	Depth to bedrock, high potential for ground-water pollution, limited available water capacity, high clay content
NmA:	
Nappanee	Seasonal high water table, frost action, wind erosion, limited available water capacity, restricted permeability, high clay content
NmB:	
Nappanee	Seasonal high water table, frost action, wind erosion, limited available water capacity, restricted permeability, high clay content
NnA:	
Nappanee	Seasonal high water table, frost action, restricted permeability, high clay content
NnB:	
Nappanee	Seasonal high water table, frost action, restricted permeability, high clay content
NnB2:	
Nappanee	Part of the surface layer removed by erosion, seasonal high water table, frost action, fair tilth, restricted permeability, high clay content
NpA:	
Nappanee	Seasonal high water table, surface compaction, poor tilth, frost action, surface crusting, restricted permeability, clodding, high clay content
NpB:	
Nappanee	Seasonal high water table, surface compaction, poor tilth, frost action, surface crusting, restricted permeability, clodding, high clay content
NpB2:	
Nappanee	Part of the surface layer removed by erosion, seasonal high water table, surface compaction, poor tilth, frost action, surface crusting, restricted permeability, clodding, high clay content
OsB:	
Oshtemo	Erosion hazard, wind erosion
OtA:	
Ottokee	High potential for ground-water pollution, wind erosion, limited available water capacity, sandy layers
Spinks	High potential for ground-water pollution, wind erosion, limited available water capacity, sandy layers
OtB:	
Ottokee	High potential for ground-water pollution, erosion hazard, wind erosion, limited available water capacity, sandy layers
Spinks	High potential for ground-water pollution, erosion hazard, wind erosion, limited available water capacity, sandy layers

TABLE 8.--Cropland Limitations and Hazards--Continued

Soil name and map symbol	Cropland limitations and hazards
RbA:	
Randolph	Seasonal high water table, depth to bedrock, high potential for ground-water pollution, frost action, limited available water capacity
RbB:	
Randolph	Seasonal high water table, depth to bedrock, high potential for ground-water pollution, frost action, erosion hazard, limited available water capacity
RfA:	
Rimer	Seasonal high water table, frost action, wind erosion, limited available water capacity, restricted permeability, sandy layers
Tedrow	Seasonal high water table, wind erosion, limited available water capacity, restricted permeability, sandy layers
RfB:	
Rimer	Seasonal high water table, frost action, erosion hazard, wind erosion, limited available water capacity, restricted permeability, sandy layers
Tedrow	Seasonal high water table, erosion hazard, wind erosion, limited available water capacity, restricted permeability, sandy layers
RhA:	
Ritchey	Depth to bedrock, high potential for ground-water pollution, limited available water capacity
RhB:	
Ritchey	Depth to bedrock, high potential for ground-water pollution, erosion hazard, limited available water capacity
RmA:	
Risingsun	Ponding, moderate potential for ground-water pollution, frost action, subsidence of the muck, very high organic matter content, wind erosion
Rollersville	Seasonal high water table, moderate potential for ground-water pollution, frost action, wind erosion, limited available water capacity, sandy layers
RnA:	
Rollersville	Seasonal high water table, moderate potential for ground-water pollution, frost action, wind erosion, limited available water capacity, sandy layers
Risingsun	Ponding, moderate potential for ground-water pollution, frost action, subsidence of the muck, very high organic matter content, wind erosion
RsA:	
Rossburg	Frequent flooding, surface compaction, moderate potential for ground-water pollution
SdA:	
Seward	Wind erosion, limited available water capacity
Ottokee	Wind erosion, limited available water capacity, sandy layers
SdB:	
Seward	Erosion hazard, wind erosion, limited available water capacity
Ottokee	Erosion hazard, wind erosion, limited available water capacity, sandy layers
SeA:	
Shawtown	No limitations or hazards
SeB:	
Shawtown	Erosion hazard

TABLE 8.--Cropland Limitations and Hazards--Continued

Soil name and map symbol	Cropland limitations and hazards
SgA:	
Shoals	Frequent flooding, seasonal high water table, moderate potential for ground-water pollution, frost action
ShA:	
Shoals	Frequent flooding, seasonal high water table, surface compaction, moderate potential for ground-water pollution, frost action, surface crusting
SkA:	
Shoals	Frequent flooding, seasonal high water table, surface compaction, moderate potential for ground-water pollution, frost action, fair tilth, surface crusting
SmA:	
Shoals	Frequent flooding, seasonal high water table, depth to bedrock, high potential for ground-water pollution, frost action
Sloan	Frequent flooding, ponding, surface compaction, depth to bedrock, high potential for ground-water pollution, frost action, fair tilth, limited available water capacity
SnA:	
Sloan	Frequent flooding, ponding, surface compaction, moderate potential for ground-water pollution, frost action
SoA:	
Sloan	Occasional flooding, ponding, surface compaction, moderate potential for ground-water pollution, frost action, fair tilth
SpA:	
Sloan	Frequent flooding, ponding, surface compaction, moderate potential for ground-water pollution, frost action, fair tilth
SrB:	
Spinks	High potential for ground-water pollution, wind erosion, limited available water capacity, sandy layers
SrC:	
Spinks	High potential for ground-water pollution, erosion hazard, wind erosion, limited available water capacity, sandy layers
SsB:	
Spinks	High potential for ground-water pollution, wind erosion, limited available water capacity, sandy layers
SsC:	
Spinks	High potential for ground-water pollution, erosion hazard, wind erosion, limited available water capacity, sandy layers
StB:	
St. Clair	Erosion hazard, limited available water capacity, high clay content
StC2:	
St. Clair	Part of the surface layer removed by erosion, fair tilth, easily eroded, erosion hazard, limited available water capacity, high clay content
SuB2:	
St. Clair	Part of the surface layer removed by erosion, surface compaction, fair tilth, surface crusting, erosion hazard, limited available water capacity, clodding, high clay content
SuC2:	
St. Clair	Part of the surface layer removed by erosion, surface compaction, fair tilth, surface crusting, easily eroded, erosion hazard, limited available water capacity, clodding, high clay content
TeA:	
Tedrow	Seasonal high water table, high potential for ground-water pollution, wind erosion, limited available water capacity, sandy layers
TeB:	
Tedrow	Seasonal high water table, high potential for ground-water pollution, erosion hazard, wind erosion, limited available water capacity, sandy layers
TpA:	
Toledo	Ponding, surface compaction, moderate potential for ground-water pollution, frost action, fair tilth, clodding, high clay content,

TABLE 8.--Cropland Limitations and Hazards--Continued

Soil name and map symbol	Cropland limitations and hazards
WbA:	
Wabasha	Frequent flooding, ponding, surface compaction, moderate potential for ground-water pollution, poor tilth, frost action, clodding, high clay content
WmA:	
Wauseon	Ponding, frost action, wind erosion, limited available water capacity, restricted permeability
WnA:	
Wauseon	Ponding, frost action, wind erosion, limited available water capacity
WyA:	
Wauseon	Ponding, frost action, wind erosion, limited available water capacity, restricted permeability

TABLE 9.--CROP YIELD INDEX

(This table is based on yields from the years 1992-2000. Estimated yields for soils with a yield index of 100 are: corn - 190 bushels; soybeans - 60 bushels; and wheat - 85 bushels. Refer to crop Yield Index section on page 222 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
AgA:			
Alvada	89	93	88
AmA:			
Aurand	84	80	82
AnA:			
Aurand	87	83	91
BeB:			
Belmore	74	70	71
BfB:			
Belmore	76	73	76
CaA:			
Castalia	---	---	---
CbB:			
Castalia	---	---	---
Marblehead			
CcA:			
Colwood	97	97	94
CdA:			
Colwood	100	100	100
CvA:			
Cygnet	82	82	81
DgA:			
Digby	74	77	71
DhA:			
Digby	76	80	76
DrA:			
Dunbridge	58	53	59
DsA:			
Dunbridge	61	58	53
Spinks			
DsB:			
Dunbridge	53	43	47
Spinks			
EaA:			
Eel	68	70	---
EmA:			
Eel	68	70	---

TABLE 9.--Crop Yield Index--Continued

Map symbol and soil name	Corn	Soybeans	Winter Wheat
EnA: Eel	63	67	---
FcA: Flatrock	75	77	73
FuA: Fulton	71	68	76
FuB: Fulton	68	63	65
GmA: Genesee	74	73	---
GnA: Genesee	74	73	---
GpA: Granby	63	67	76
HaA: Haney	79	80	80
HaB: Haney	76	75	76
HdA: Haney	82	83	82
HdB: Haney	79	78	78
HeA: Haskins Digby	71	77	71
HeB: Haskins Digby	68	73	68
HfA: Haskins Digby	75	80	75
HfB: Haskins Digby	72	75	71
HgA: Hoytville	88	87	85
HhA: Hoytville	88	87	85
HvA: Hoytville	85	87	85

TABLE 9.--Crop Yield Index--Continued

Map symbol and soil name	Corn	Soybeans	Winter Wheat
HwA: Hoytville	79	80	78
JoA: Joliet	53	53	59
KeA: Kibbie	74	67	73
KfA: Kibbie	79	77	82
KfB: Kibbie	76	72	81
LbB: Landes	66	63	---
LdA: Latty	71	67	68
MbA: Millgrove	92	97	89
McA: Mermill	87	80	85
MdA: Mermill	91	85	91
MeA: Mermill	89	83	88
MfA: Mermill Aurand	89	83	91
MhA: Millsdale	75	77	73
MkA: Millsdale	---	---	---
MnA: Milton	63	63	65
MnB: Milton	58	58	61
NmA: Nappanee	71	73	81
NmB: Nappanee	63	67	73
NnA: Nappanee	75	75	79
NnB: Nappanee	65	67	73
NnB2: Nappanee	63	63	68

TABLE 9.--Crop Yield Index--Continued

Map symbol and soil name	Corn	Soybeans	Winter Wheat
NpA:			
Nappanee	74	73	79
NpB:			
Nappanee	65	67	73
NpB2:			
Nappanee	62	60	65
OsB:			
Oshtemo	62	53	73
OtA:			
Ottokee	61	60	65
Spinks			
OtB:			
Ottokee	58	55	59
Spinks			
RbA:			
Randolph	71	63	68
RbB:			
Randolph	68	57	65
RdA:			
Randolph	---	---	---
RfA:			
Rimer	68	68	73
Tedrow			
RfB:			
Rimer	66	63	68
Tedrow			
RhA:			
Ritchey	55	57	61
RhB:			
Ritchey	53	50	59
RkA:			
Ritchey	---	---	---
RmA:			
Risingsun	76	77	---
Rollersville			
RnA:			
Rollersville	78	80	---
Risingsun			
RsA:			
Rossburg	78	77	---
SdA:			
Seward	65	67	68
Ottokee			

TABLE 9.--Crop Yield Index--Continued

Map symbol and soil name	Corn	Soybeans	Winter Wheat
SdB:	63	60	65
Seward			
Ottokee			
SeA:	82	77	78
Shawtown			
SeB:	75	68	73
Shawtown			
SgA:	68	70	---
Shoals			
ShA:	68	70	---
Shoals			
SkA:	66	67	---
Shoals			
SmA:	58	57	---
Shoals			
Sloan			
SnA:	68	73	---
Sloan			
SoA:	75	73	68
Sloan			
SpA:	68	73	---
Sloan			
SrB:	45	50	47
Spinks			
SrC:	39	40	35
Spinks			
SrD:	---	---	---
Spinks			
SsB:	45	50	47
Spinks			
SsC:	39	40	35
Spinks			
StB:	61	57	65
St. Clair			
StC2:	55	47	56
St. Clair			
SuB2:	58	50	59
St. Clair			
SuC2:	53	43	53
St. Clair			
SuD2:	---	---	---
St. Clair			

TABLE 9.--Crop Yield Index--Continued

Map symbol and soil name	Corn	Soybeans	Winter Wheat
SuE2: St. Clair	---	---	---
TeA: Tedrow	63	57	67
TeB: Tedrow	61	50	62
TpA: Toledo	78	77	78
WbA: Wabasha	66	67	---
WmA: Wauseon	78	73	78
WnA: Wauseon	82	75	80
WyA: Wauseon	83	80	82

TABLE 10.--ACREAGE BY CAPABILITY CLASSES AND SUBCLASSES

(See text on page 222 for additional information.)

Capability class	Capability subclass	Acreage
Unclassified	---	15,252
1	---	808
2	e	4,701
	w	295,650
	s	4,374
3	e	3,299
	w	51,979
	s	13,593
4	e	766
	w	2,235
6	e	188
	s	3,666
7	e	597

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 226 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
AgA:						
Alvada	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
AmA:						
Aurand	Slight		High		Moderate	
	Water erosion	0.01	Wetness	1.00	Low strength	0.50
AnA:						
Aurand	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
AsA:						
Aurand	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
BeB:						
Belmore	Slight		Low		Moderate	
	Water erosion	0.03			Low strength	0.50
BfB:						
Belmore	Slight		Low		Severe	
	Water erosion	0.03			Low strength	1.00
CaA:						
Castalia	Slight		High		Slight	
	Water erosion	0.01	Carbonate content	1.00	Low strength	0.10
			Soil reaction	0.50		
CbB:						
Castalia	Slight		High		Slight	
	Water erosion	0.03	Carbonate content	1.00	Low strength	0.10
			Soil reaction	0.50		
Marblehead	Slight		Low		Severe	
	Water erosion	0.03			Low strength	1.00
CcA:						
Colwood	Slight		High		Moderate	
	Water erosion	0.01	Wetness	1.00	Low strength	0.50
CdA:						
Colwood	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
CtA:						
Colwood	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
CvA:						
Cygnet	Slight		Low		Severe	

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
	Water erosion	0.01			Low strength	1.00
CxB:						
Castalia	Not rated		Not rated		Not rated	
Marblehead	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
DgA:						
Digby	Slight		High		Moderate	
	Water erosion	0.01	Wetness	1.00	Low strength	0.50
DhA:						
Digby	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
DrA:						
Dunbridge	Slight		Low		Moderate	
	Water erosion	0.01			Low strength	0.50
DsA:						
Dunbridge	Slight		Low		Moderate	
	Water erosion	0.01			Low strength	0.50
Spinks	Slight		Low		Moderate	
	Water erosion	0.01			Low strength	0.50
DsB:						
Dunbridge	Slight		Low		Moderate	
	Water erosion	0.03			Low strength	0.50
Spinks	Slight		Low		Moderate	
	Water erosion	0.03			Low strength	0.50
EaA:						
Eel	Slight		Low		Severe	
	Water erosion	0.01			Low strength	1.00
EmA:						
Eel	Slight		Low		Severe	
	Water erosion	0.01			Low strength	1.00
EnA:						
Eel	Slight		Low		Severe	
	Water erosion	0.01			Low strength	1.00
FcA:						
Flatrock	Slight		Low		Severe	
	Water erosion	0.02			Low strength	1.00
FuA:						
Fulton	Slight		High		Severe	
	Water erosion	0.02	Wetness	1.00	Low strength	1.00
FuB:						
Fulton	Slight		High		Severe	
	Water erosion	0.10	Wetness	1.00	Low strength	1.00

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
FzA:						
Fulton	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
GmA:						
Genesee	Slight		Low		Severe	
	Water erosion	0.01			Low strength	1.00
GnA:						
Genesee	Slight		Low		Severe	
	Water erosion	0.01			Low strength	1.00
GpA:						
Granby	Slight		High		Moderate	
	Water erosion	0.01	Wetness	1.00	Low strength	0.50
HaA:						
Haney	Slight		Low		Moderate	
	Water erosion	0.01			Low strength	0.50
HaB:						
Haney	Slight		Low		Moderate	
	Water erosion	0.01			Low strength	0.50
HdA:						
Haney	Slight		Low		Severe	
	Water erosion	0.01			Low strength	1.00
HdB:						
Haney	Slight		Low		Severe	
	Water erosion	0.01			Low strength	1.00
HeA:						
Haskins	Slight		High		Moderate	
	Water erosion	0.01	Wetness	1.00	Low strength	0.50
Digby	Slight		High		Moderate	
	Water erosion	0.01	Wetness	1.00	Low strength	0.50
HeB:						
Haskins	Slight		High		Moderate	
	Water erosion	0.01	Wetness	1.00	Low strength	0.50
Digby	Slight		High		Moderate	
	Water erosion	0.01	Wetness	1.00	Low strength	0.50
HfA:						
Haskins	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
Digby	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
HfB:						
Haskins	Slight		High		Severe	
	Water erosion	0.05	Wetness	1.00	Low strength	1.00
Digby	Slight		High		Severe	
	Water erosion	0.05	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
HgA:						
Hoytville	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
HhA:						
Hoytville	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
HvA:						
Hoytville	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
HwA:						
Hoytville	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
HyA:						
Hoytville	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
JoA:						
Joliet	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
KeA:						
Kibbie	Slight		High		Moderate	
	Water erosion	0.01	Wetness	1.00	Low strength	0.50
KfA:						
Kibbie	Slight		High		Moderate	
	Water erosion	0.01	Wetness	1.00	Low strength	0.50
KfB:						
Kibbie	Slight		High		Moderate	
	Water erosion	0.01	Wetness	1.00	Low strength	0.50
KkA:						
Kibbie	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
LbB:						
Landes	Slight		Low		Moderate	
	Water erosion	0.03			Low strength	0.50
LdA:						
Latty	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
LgA:						
Latty	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
MbA:						
Millgrove	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
McA:						
Mermill	Slight		High		Moderate	

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
	Water erosion	0.01	Wetness	1.00	Low strength	0.50
MdA:						
Mermill	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
MeA:						
Mermill	Slight		High		Moderate	
	Water erosion	0.01	Wetness	1.00	Low strength	0.50
MfA:						
Mermill	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
Aurand	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
MgA:						
Mermill	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
MhA:						
Millsdale	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
MkA:						
Millsdale	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
MmA:						
Millsdale	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
MnA:						
Milton	Slight		Low		Severe	
	Water erosion	0.01			Low strength	1.00
MnB:						
Milton	Slight		Low		Severe	
	Water erosion	0.05			Low strength	1.00
NmA:						
Nappanee	Slight		High		Moderate	
	Water erosion	0.01	Wetness	1.00	Low strength	0.50
NmB:						
Nappanee	Slight		High		Moderate	
	Water erosion	0.01	Wetness	1.00	Low strength	0.50
NnA:						
Nappanee	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
NnB:						
Nappanee	Slight		High		Severe	
	Water erosion	0.05	Wetness	1.00	Low strength	1.00
NnB2:						
Nappanee	Slight		High		Severe	

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
	Water erosion	0.05	Wetness	1.00	Low strength	1.00
NpA:						
Nappanee	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
NpB:						
Nappanee	Slight		High		Severe	
	Water erosion	0.05	Wetness	1.00	Low strength	1.00
NpB2:						
Nappanee	Slight		High		Severe	
	Water erosion	0.05	Wetness	1.00	Low strength	1.00
NsA:						
Nappanee	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
OsB:						
Oshtemo	Slight		Low		Moderate	
	Water erosion	0.05			Low strength	0.50
OtA:						
Ottokee	Slight		Low		Moderate	
	Water erosion	0.01			Low strength	0.50
Spinks	Slight		Low		Moderate	
	Water erosion	0.01			Low strength	0.50
OtB:						
Ottokee	Slight		Low		Moderate	
	Water erosion	0.03			Low strength	0.50
Spinks	Slight		Low		Moderate	
	Water erosion	0.03			Low strength	0.50
OzB:						
Ottokee	Not rated		Not rated		Not rated	
Spinks	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
Pt:						
Pits, Quarry	Not rated		Not rated		Not rated	
RbA:						
Randolph	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
RbB:						
Randolph	Slight		High		Severe	
	Water erosion	0.07	Wetness	1.00	Low strength	1.00
RdA:						
Randolph	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	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
ReA:						
Randolph	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
RfA:						
Rimer	Slight		High		Moderate	
	Water erosion	0.01	Wetness	1.00	Low strength	0.50
Tedrow	Slight		High		Moderate	
	Water erosion	0.01	Wetness	1.00	Low strength	0.50
RfB:						
Rimer	Slight		High		Moderate	
	Water erosion	0.03	Wetness	1.00	Low strength	0.50
Tedrow	Slight		High		Moderate	
	Water erosion	0.03	Wetness	1.00	Low strength	0.50
RgA:						
Rimer	Not rated		Not rated		Not rated	
Tedrow	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
RhA:						
Ritchey	Slight		Low		Severe	
	Water erosion	0.01			Low strength	1.00
RhB:						
Ritchey	Slight		Low		Severe	
	Water erosion	0.07			Low strength	1.00
RkA:						
Ritchey	Slight		Low		Severe	
	Water erosion	0.01			Low strength	1.00
RmA:						
Risingsun	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
			Carbonate content	0.50		
			Soil reaction	0.50		
Rollersville	Slight		High		Moderate	
	Water erosion	0.01	Wetness	1.00	Low strength	0.50
			Soil reaction	0.50		
RnA:						
Rollersville	Slight		High		Moderate	
	Water erosion	0.01	Wetness	1.00	Low strength	0.50
			Carbonate content	0.50		
			Soil reaction	0.50		
Risingsun	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
			Carbonate content	0.50		
RsA:						
Rossburg	Slight		Low		Severe	

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
	Water erosion	0.01			Low strength	1.00
SdA:						
Seward	Slight		Low		Moderate	
	Water erosion	0.01			Low strength	0.50
Ottokee	Slight		Low		Moderate	
	Water erosion	0.01			Low strength	0.50
SdB:						
Seward	Slight		Low		Moderate	
	Water erosion	0.03			Low strength	0.50
Ottokee	Slight		Low		Moderate	
	Water erosion	0.03			Low strength	0.50
SeA:						
Shawtown	Slight		Low		Severe	
	Water erosion	0.01			Low strength	1.00
SeB:						
Shawtown	Slight		Low		Severe	
	Water erosion	0.05			Low strength	1.00
SgA:						
Shoals	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
ShA:						
Shoals	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
SkA:						
Shoals	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
SmA:						
Shoals	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
Sloan	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
SoA:						
Sloan	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
SpA:						
Sloan	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
SrB:						
Spinks	Slight		Low		Moderate	
	Water erosion	0.01			Low strength	0.50
SrC:						
Spinks	Slight		Low		Moderate	

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
	Water erosion	0.12			Low strength	0.50
SrD:						
Spinks	Moderate		Low		Moderate	
	Water erosion	0.25			Low strength	0.50
SsB:						
Spinks	Slight		Low		Moderate	
	Water erosion	0.01			Low strength	0.50
SsC:						
Spinks	Slight		Low		Moderate	
	Water erosion	0.12			Low strength	0.50
StB:						
St. Clair	Slight		Low		Severe	
	Water erosion	0.07			Low strength	1.00
StC2:						
St. Clair	Slight		Low		Severe	
	Water erosion	0.20			Low strength	1.00
SuB2:						
St. Clair	Slight		Low		Severe	
	Water erosion	0.07			Low strength	1.00
SuC2:						
St. Clair	Slight		Low		Severe	
	Water erosion	0.20			Low strength	1.00
SuD2:						
St. Clair	Moderate		Low		Severe	
	Water erosion	0.34			Low strength	1.00
SuE2:						
St. Clair	Moderate		Low		Severe	
	Water erosion	0.49			Low strength	1.00
TeA:						
Tedrow	Slight		High		Moderate	
	Water erosion	0.01	Wetness	1.00	Low strength	0.50
TeB:						
Tedrow	Slight		High		Moderate	
	Water erosion	0.03	Wetness	1.00	Low strength	0.50
TfA:						
Tedrow	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
TpA:						
Toledo	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
TuA:						
Toledo	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	

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
UcA:						
Udorthents	Not rated		Not rated		Not rated	
UcE:						
Udorthents	Not rated		Not rated		Not rated	
Ur:						
Urban Land	Not rated		Not rated		Not rated	
W:						
Water	Not rated		Not rated		Not rated	
WbA:						
Wabasha	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
WmA:						
Wauseon	Slight		High		Moderate	
	Water erosion	0.01	Wetness	1.00	Low strength	0.50
WnA:						
Wauseon	Slight		High		Moderate	
	Water erosion	0.01	Wetness	1.00	Low strength	0.50
WyA:						
Wauseon	Slight		High		Moderate	
	Water erosion	0.01	Wetness	1.00	Low strength	0.50
WzA:						
Wauseon	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	

TABLE 12.--WOODLAND PRODUCTIVITY

(See text on page 227 for additional information.)

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber (cu ft/ac)	Trees to manage
AgA:				
Alvada	eastern cottonwood	---	---	American sycamore, Austrian pine, Norway spruce, baldcypress, eastern cottonwood, green ash, pin oak, red maple, shumard oak, swamp white oak
	green ash	---	---	
	pin oak	86	72	
	red maple	---	---	
	swamp white oak	85	72	
AmA:				
Aurand	northern red oak	80	57	American sycamore, black locust, bur oak, green ash, northern red oak, sugar maple, tuliptree, white ash, white oak
	pin oak	---	---	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	75	57	
AnA:				
Aurand	northern red oak	80	57	American sycamore, black locust, bur oak, green ash, northern red oak, sugar maple, tuliptree, white ash, white oak
	pin oak	---	---	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	75	57	
AsA:				
Aurand	northern red oak	80	57	American sycamore, black locust, bur oak, green ash, northern red oak, sugar maple, tuliptree, white ash, white oak
	pin oak	---	---	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	75	57	
Urban Land	---	---	---	---
BeB:				
Belmore	black cherry	---	---	black locust, black walnut, eastern white pine, northern red oak, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	80	57	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	---	---	
BfB:				
Belmore	black cherry	---	---	black locust, black walnut, eastern white pine, northern red oak, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	80	57	
	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
CaA:				
Castalia	black cherry	---	---	Norway spruce, black cherry, black walnut, bur oak, eastern white pine, northern red oak, white ash, white oak
	black oak	50	29	
	red maple	---	---	
	scarlet oak	---	---	
	tuliptree	---	---	
CbB:				
Castalia	black cherry	---	---	Norway spruce, black cherry, black walnut, bur oak, eastern white pine, northern red oak, white ash, white oak
	black oak	50	29	
	red maple	---	---	
	scarlet oak	---	---	
	tuliptree	---	---	
Marblehead	black cherry	---	---	Blue Ash, black oak, chinkapin oak, eastern redcedar, eastern white pine, hawthorn, white oak
	black oak	45	29	
	red maple	---	---	
	scarlet oak	---	---	
	tuliptree	---	---	
CcA:				
Colwood	pin oak	90	72	American sycamore, Norway spruce, Shumard's oak, bur oak, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum, white ash
	red maple	---	---	
	swamp white oak	90	72	
	white ash	---	---	
CdA:				
Colwood	pin oak	90	72	American sycamore, Norway spruce, Shumard's oak, bur oak, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum, white ash
	red maple	---	---	
	swamp white oak	90	72	
	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
CtA:				
Colwood	pin oak	90	72	American sycamore, Norway spruce, Shumard's oak, bur oak, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum, white ash
	red maple	---	---	
	swamp white oak	90	72	
	white ash	---	---	
Urban Land	---	---	---	---
CvA:				
Cygnet	black cherry	---	---	American sycamore, Norway spruce, black cherry, black locust, bur oak, chinkapin oak, eastern white pine, green ash, northern red oak, sugar maple, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	90	72	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	90	72	
CxB:				
Castalia	black cherry	---	---	Norway spruce, black cherry, black walnut, bur oak, eastern white pine, northern red oak, white ash, white oak
	black oak	50	29	
	red maple	---	---	
	scarlet oak	---	---	
	tuliptree	---	---	
Marblehead	black cherry	---	---	Blue Ash, black oak, chinkapin oak, eastern redcedar, eastern white pine, hawthorn, white oak
	black oak	45	29	
	red maple	---	---	
	scarlet oak	---	---	
	tuliptree	---	---	
Urban Land	---	---	---	---
DgA:				
Digby	black cherry	---	---	American sycamore, black locust, bur oak, green ash, northern red oak, sugar maple, tuliptree, white ash, white oak
	northern red oak	80	57	
	pin oak	---	---	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	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
DhA:				
Digby	black cherry	---	---	American sycamore, black locust, bur oak, green ash, northern red oak, sugar maple, tuliptree, white ash, white oak
	northern red oak	80	57	
	pin oak	---	---	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	75	57	
DrA:				
Dunbridge	black cherry	---	---	Norway spruce, black cherry, black walnut, bur oak, eastern white pine, northern red oak, white ash, white oak
	black walnut	---	---	
	northern red oak	75	57	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	70	57	
DsA:				
Dunbridge	black cherry	---	---	Norway spruce, black cherry, black walnut, bur oak, eastern white pine, northern red oak, white ash, white oak
	black walnut	---	---	
	northern red oak	75	57	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	70	57	
Spinks	black cherry	---	---	black cherry, black oak, bur oak, chinkapin oak, eastern white pine, white ash, white oak
	black oak	---	---	
	northern red oak	70	57	
	sugar maple	---	---	
	white ash	---	---	
	white oak	66	43	
DsB:				
Dunbridge	black cherry	---	---	Norway spruce, black cherry, black walnut, bur oak, eastern white pine, northern red oak, white ash, white oak
	black walnut	---	---	
	northern red oak	75	57	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	70	57	
Spinks	black cherry	---	---	black cherry, black oak, bur oak, chinkapin oak, eastern white pine, white ash, white oak
	black oak	---	---	
	northern red oak	70	57	
	sugar maple	---	---	
	white ash	---	---	
	white oak	66	43	
EaA:				
Eel	black cherry	---	---	black cherry, black locust, bur oak, green ash, northern red oak, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	---	---	
	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:				
Eel	black cherry	---	---	black cherry, black locust, bur oak, green ash, northern red oak, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	---	---	
	tuliptree	100	114	
	white ash	---	---	
EnA:				
Eel	black cherry	---	---	black cherry, black locust, bur oak, green ash, northern red oak, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	---	---	
	tuliptree	100	114	
	white ash	---	---	
FcA:				
Flatrock	black cherry	---	---	black cherry, black walnut, bur oak, green ash, northern red oak, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	80	57	
	tuliptree	---	---	
	white oak	---	---	
FuA:				
Fulton	American beech	---	---	American sycamore, Austrian pine, Shumard's oak, baldcypress, bur oak, eastern cottonwood, eastern redcedar, green ash, pin oak, red maple, swamp white oak
	black cherry	---	---	
	pin oak	80	57	
	red maple	---	---	
	slippery elm	---	---	
	white ash	---	---	
	white oak	---	---	
FuB:				
Fulton	American beech	---	---	American sycamore, Austrian pine, Shumard's oak, baldcypress, bur oak, eastern cottonwood, eastern redcedar, green ash, pin oak, red maple, swamp white oak
	black cherry	---	---	
	pin oak	80	57	
	red maple	---	---	
	slippery elm	---	---	
	white ash	---	---	
	white oak	---	---	
FzA:				
Fulton	American beech	---	---	American sycamore, Austrian pine, Shumard's oak, baldcypress, bur oak, eastern cottonwood, eastern redcedar, green ash, pin oak, red maple, swamp white oak
	black cherry	---	---	
	pin oak	80	57	
	red maple	---	---	
	slippery elm	---	---	
	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	
Urban Land	---	---	---	---
GmA:				
Genesee	black cherry	---	---	black cherry, black locust, black walnut, eastern white pine, green ash, northern red oak, tuliptree, white ash, white oak
	black walnut	---	---	
	tuliptree	100	114	
	white ash	---	---	
	white oak	---	---	
GnA:				
Genesee	black cherry	---	---	black cherry, black locust, black walnut, eastern white pine, green ash, northern red oak, tuliptree, white ash, white oak
	black walnut	---	---	
	tuliptree	100	114	
	white ash	---	---	
	white oak	---	---	
GpA:				
Granby	eastern cottonwood	---	---	Austrian pine, Norway spruce, Shumard's oak, baldcypress, bur oak, eastern cottonwood, eastern redcedar, green ash, pin oak, red maple, swamp white oak
	green ash	---	---	
	pin oak	70	57	
	red maple	68	43	
	swamp white oak	---	---	
HaA:				
Haney	black cherry	---	---	American sycamore, Norway spruce, black cherry, black locust, bur oak, chinkapin oak, eastern white pine, green ash, northern red oak, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	80	57	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	75	57	
HaB:				
Haney	black cherry	---	---	American sycamore, Norway spruce, black cherry, black locust, bur oak, chinkapin oak, eastern white pine, green ash, northern red oak, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	80	57	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	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
HdA:				
Haney	black cherry	---	---	American sycamore, Norway spruce, black cherry, black locust, bur oak, chinkapin oak, eastern white pine, green ash, northern red oak, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	80	57	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	75	57	
HdB:				
Haney	black cherry	---	---	American sycamore, Norway spruce, black cherry, black locust, bur oak, chinkapin oak, eastern white pine, green ash, northern red oak, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	80	57	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	75	57	
HeA:				
Haskins	black cherry	---	---	American sycamore, black locust, bur oak, green ash, northern red oak, sugar maple, tuliptree, white ash, white oak
	northern red oak	80	57	
	pin oak	90	72	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	75	57	
Digby	black cherry	---	---	American sycamore, black locust, bur oak, green ash, northern red oak, sugar maple, tuliptree, white ash, white oak
	northern red oak	80	57	
	pin oak	---	---	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	75	57	
HeB:				
Haskins	black cherry	---	---	American sycamore, black locust, bur oak, green ash, northern red oak, sugar maple, tuliptree, white ash, white oak
	northern red oak	80	57	
	pin oak	90	72	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	75	57	
Digby	black cherry	---	---	American sycamore, black locust, bur oak, green ash, northern red oak, sugar maple, tuliptree, white ash, white oak
	northern red oak	80	57	
	pin oak	---	---	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	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
HfA:				
Haskins	black cherry	---	---	American sycamore, black locust, bur oak, green ash, northern red oak, sugar maple, tuliptree, white ash, white oak
	northern red oak	80	57	
	pin oak	90	72	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	75	57	
Digby	black cherry	---	---	American sycamore, black locust, bur oak, green ash, northern red oak, sugar maple, tuliptree, white ash, white oak
	northern red oak	80	57	
	pin oak	---	---	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	75	57	
HfB:				
Haskins	black cherry	---	---	American sycamore, black locust, bur oak, green ash, northern red oak, sugar maple, tuliptree, white ash, white oak
	northern red oak	80	57	
	pin oak	90	72	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	75	57	
Digby	black cherry	---	---	American sycamore, black locust, bur oak, green ash, northern red oak, sugar maple, tuliptree, white ash, white oak
	northern red oak	80	57	
	pin oak	---	---	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	75	57	
HgA:				
Hoytville	American sycamore	---	---	American sycamore, Norway spruce, baldcypress, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum
	eastern cottonwood	---	---	
	green ash	---	---	
	pin oak	76	57	
	red maple	---	---	
	swamp white oak	---	---	
	white ash	77	43	
HhA:				
Hoytville	American sycamore	---	---	American sycamore, Norway spruce, baldcypress, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum
	eastern cottonwood	---	---	
	green ash	---	---	
	pin oak	76	57	
	red maple	---	---	
	swamp white oak	---	---	
	white ash	77	43	

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
HvA:				
Hoytville	American sycamore	---	---	American sycamore, Norway spruce, baldcypress, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum
	eastern cottonwood	---	---	
	green ash	---	---	
	pin oak	76	57	
	red maple	---	---	
	swamp white oak	---	---	
	white ash	77	43	
HwA:				
Hoytville	American sycamore	---	---	American sycamore, Norway spruce, baldcypress, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum
	black willow	---	---	
	eastern cottonwood	---	---	
	green ash	---	---	
	pin oak	60	43	
	red maple	---	---	
	swamp white oak	---	---	
	white ash	---	---	
HyA:				
Hoytville	American sycamore	---	---	American sycamore, Norway spruce, baldcypress, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum
	eastern cottonwood	---	---	
	green ash	---	---	
	pin oak	76	57	
	red maple	---	---	
	swamp white oak	---	---	
	white ash	77	43	
Urban Land	---	---	---	---
JoA:				
Joliet	American basswood	---	---	American sycamore, Norway spruce, baldcypress, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum
	northern red oak	55	43	
	pin oak	---	---	
	quaking aspen	---	---	
	swamp white oak	---	---	
KeA:				
Kibbie	American basswood	---	---	American sycamore, black locust, bur oak, green ash, northern red oak, sugar maple, white ash, white oak
	northern red oak	---	---	
	pin oak	90	72	
	red maple	---	---	
	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
KfA:				
Kibbie	American basswood	---	---	American sycamore, black locust, bur oak, green ash, northern red oak, sugar maple, white ash, white oak
	northern red oak	---	---	
	pin oak	90	72	
	red maple	---	---	
	white ash	---	---	
KfB:				
Kibbie	American basswood	---	---	American sycamore, black locust, bur oak, green ash, northern red oak, sugar maple, white ash, white oak
	northern red oak	---	---	
	pin oak	90	72	
	red maple	---	---	
	white ash	---	---	
KkA:				
Kibbie	American basswood	---	---	American sycamore, black locust, bur oak, green ash, northern red oak, sugar maple, white ash, white oak
	northern red oak	---	---	
	pin oak	90	72	
	red maple	---	---	
	white ash	---	---	
Urban Land	---	---	---	---
LbB:				
Landes	black cherry	---	---	black cherry, black locust, black walnut, eastern white pine, green ash, northern red oak, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	---	---	
	tuliptree	95	100	
	white ash	---	---	
	white oak	---	---	
LdA:				
Latty	eastern cottonwood	---	---	American sycamore, Norway spruce, baldcypress, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum
	green ash	---	---	
	pin oak	70	57	
	red maple	---	---	
	swamp white oak	70	57	
LgA:				
Latty	eastern cottonwood	---	---	American sycamore, Norway spruce, baldcypress, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum
	green ash	---	---	
	pin oak	70	57	
	red maple	---	---	
	swamp white oak	70	57	

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	
Urban Land	---	---	---	---
MbA:				
Millgrove	eastern cottonwood	---	---	Austrian pine, Norway spruce, Shumard's oak, baldcypress, bur oak, eastern cottonwood, eastern redcedar, green ash, pin oak, red maple, swamp white oak
	green ash	---	---	
	pin oak	86	72	
	red maple	---	---	
	swamp white oak	85	72	
McA:				
Mermill	eastern cottonwood	---	---	American sycamore, Norway spruce, baldcypress, bur oak, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum, white ash
	green ash	---	---	
	pin oak	90	72	
	red maple	---	---	
	swamp white oak	90	72	
MdA:				
Mermill	eastern cottonwood	---	---	American sycamore, Norway spruce, baldcypress, bur oak, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum, white ash
	green ash	---	---	
	pin oak	90	72	
	red maple	---	---	
	swamp white oak	90	72	
MeA:				
Mermill	eastern cottonwood	---	---	American sycamore, Norway spruce, baldcypress, bur oak, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum, white ash
	green ash	---	---	
	pin oak	90	72	
	red maple	---	---	
	swamp 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
MfA:				
Mermill	eastern cottonwood	---	---	American sycamore, Norway spruce, baldcypress, bur oak, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum, white ash
	green ash	---	---	
	pin oak	90	72	
	red maple	---	---	
	swamp white oak	90	72	
Aurand	northern red oak	80	57	American sycamore, black oak, bur oak, green ash, northern red oak, pin oak, sugar maple, tuliptree, white ash, white oak
	pin oak	---	---	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	75	57	
MgA:				
Mermill	eastern cottonwood	---	---	American sycamore, Norway spruce, baldcypress, bur oak, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum, white ash
	green ash	---	---	
	pin oak	90	72	
	red maple	---	---	
	swamp white oak	90	72	
Urban Land	---	---	---	---
MhA:				
Millsdale	eastern cottonwood	---	---	American sycamore, Norway spruce, baldcypress, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum
	green ash	---	---	
	pin oak	90	72	
	red maple	---	---	
	swamp white oak	90	72	
MkA:				
Millsdale	eastern cottonwood	---	---	American sycamore, Norway spruce, baldcypress, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum
	green ash	---	---	
	pin oak	90	72	
	red maple	---	---	
	swamp 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
MmA:				
Millsdale	eastern cottonwood	---	---	American sycamore, Norway spruce, baldcypress, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum
	green ash	---	---	
	pin oak	90	72	
	red maple	---	---	
	swamp white oak	90	72	
Urban Land	---	---	---	---
MnA:				
Milton	black cherry	---	---	Norway spruce, black cherry, black walnut, bur oak, eastern white pine, northern red oak, white ash, white oak
	black walnut	---	---	
	northern red oak	80	57	
	sugar maple	---	---	
	tuliptree	95	100	
	white ash	---	---	
	white oak	---	---	
MnB:				
Milton	black cherry	---	---	Norway spruce, black cherry, black walnut, bur oak, eastern white pine, northern red oak, white ash, white oak
	black walnut	---	---	
	northern red oak	80	57	
	sugar maple	---	---	
	tuliptree	95	100	
	white ash	---	---	
	white oak	---	---	
NmA:				
Nappanee	American sycamore	---	---	American sycamore, Austrian pine, Shumard's oak, baldcypress, bur oak, eastern cottonwood, eastern redcedar, green ash, pin oak, red maple, swamp white oak
	pin oak	85	72	
	sweetgum	80	86	
	white oak	75	72	
NmB:				
Nappanee	American sycamore	---	---	American sycamore, Austrian pine, Shumard's oak, baldcypress, bur oak, eastern cottonwood, eastern redcedar, green ash, pin oak, red maple, swamp white oak
	pin oak	85	72	
	sweetgum	80	86	
	white oak	75	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
NnA:				
Nappanee	American sycamore	---	---	American sycamore, Austrian pine, Shumard's oak, baldcypress, bur oak, eastern cottonwood, eastern redcedar, green ash, pin oak, red maple, swamp white oak
	pin oak	85	72	
	sweetgum	80	86	
	white oak	75	72	
NnB:				
Nappanee	American sycamore	---	---	American sycamore, Austrian pine, Shumard's oak, baldcypress, bur oak, eastern cottonwood, eastern redcedar, green ash, pin oak, red maple, swamp white oak
	pin oak	85	72	
	sweetgum	80	86	
	white oak	75	72	
NnB2:				
Nappanee	American sycamore	---	---	American sycamore, Austrian pine, Shumard's oak, baldcypress, bur oak, eastern cottonwood, eastern redcedar, green ash, pin oak, red maple, swamp white oak
	pin oak	85	72	
	sweetgum	80	86	
	white oak	75	72	
NpA:				
Nappanee	American sycamore	---	---	American sycamore, Austrian pine, Shumard's oak, baldcypress, bur oak, eastern cottonwood, eastern redcedar, green ash, pin oak, red maple, swamp white oak
	pin oak	85	72	
	sweetgum	80	86	
	white oak	75	72	
NpB:				
Nappanee	American sycamore	---	---	American sycamore, Austrian pine, Shumard's oak, baldcypress, bur oak, eastern cottonwood, eastern redcedar, green ash, pin oak, red maple, swamp white oak
	pin oak	85	72	
	sweetgum	80	86	
	white oak	75	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
NpB2:				
Nappanee	American sycamore	---	---	American sycamore, Austrian pine, Shumard's oak, baldcypress, bur oak, eastern cottonwood, eastern redcedar, green ash, pin oak, red maple, swamp white oak
	pin oak	85	72	
	sweetgum	80	86	
	white oak	75	72	
NsA:				
Nappanee	American sycamore	---	---	American sycamore, Austrian pine, Shumard's oak, baldcypress, bur oak, eastern cottonwood, eastern redcedar, green ash, pin oak, red maple, swamp white oak
	pin oak	85	72	
	sweetgum	80	86	
	white oak	75	72	
Urban Land	---	---	---	---
OsB:				
Oshtemo	black cherry	---	---	black locust, black walnut, eastern white pine, northern red oak, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	70	57	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	---	---	
OtA:				
Ottokee	bur oak	---	---	black cherry, black oak, bur oak, chinkapin oak, eastern white pine, white ash, white oak
	green ash	---	---	
	northern red oak	70	57	
	red maple	---	---	
	white ash	---	---	
	white oak	65	43	
Spinks	black cherry	---	---	black cherry, black oak, bur oak, chinkapin oak, eastern white pine, white ash, white oak
	black oak	---	---	
	northern red oak	70	57	
	sugar maple	---	---	
	white ash	---	---	
	white oak	66	43	
OtB:				
Ottokee	bur oak	---	---	black cherry, black oak, bur oak, chinkapin oak, eastern white pine, white ash, white oak
	green ash	---	---	
	northern red oak	70	57	
	red maple	---	---	
	white ash	---	---	
	white oak	65	43	

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
Spinks	black cherry	---	---	black cherry, black oak, bur oak, chinkapin oak, eastern white pine, white ash, white oak
	black oak	---	---	
	northern red oak	70	57	
	sugar maple	---	---	
	white ash	---	---	
	white oak	66	43	
OzB:				
Ottokee	bur oak	---	---	black cherry, black oak, bur oak, chinkapin oak, eastern white pine, white ash, white oak
	green ash	---	---	
	northern red oak	70	57	
	red maple	---	---	
	white ash	---	---	
	white oak	65	43	
Spinks	black cherry	---	---	black cherry, black oak, bur oak, chinkapin oak, eastern white pine, white ash, white oak
	black oak	---	---	
	northern red oak	70	57	
	sugar maple	---	---	
	white ash	---	---	
	white oak	66	43	
Urban Land	---	---	---	---
Pt:				
Pits, Quarry	---	---	---	---
RbA:				
Randolph	American beech	---	---	Norway spruce, baldcypress, bur oak, northern red oak, pin oak, swamp white oak, tuliptree
	northern red oak	75	57	
	pin oak	---	---	
	red maple	---	---	
	sugar maple	90	57	
	tuliptree	85	86	
RbB:				
Randolph	American beech	---	---	Norway spruce, baldcypress, bur oak, northern red oak, pin oak, swamp white oak, tuliptree
	northern red oak	75	57	
	pin oak	---	---	
	red maple	---	---	
	sugar maple	90	57	
	tuliptree	85	86	
RdA:				
Randolph	American beech	---	---	Norway spruce, baldcypress, bur oak, northern red oak, pin oak, swamp white oak, tuliptree
	northern red oak	75	57	
	pin oak	---	---	
	red maple	---	---	
	sugar maple	90	57	
	tuliptree	85	86	
ReA:				
Randolph	American beech	---	---	Norway spruce, baldcypress, bur oak, northern red oak, pin oak, swamp white oak, tuliptree
	northern red oak	75	57	
	pin oak	---	---	
	red maple	---	---	
	sugar maple	90	57	
	tuliptree	85	86	
Urban Land	---	---	---	---

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
RfA:				
Rimer	black oak	---	---	black oak, bur oak, green ash, northern red oak, tuliptree, white ash, white oak
	bur oak	---	---	
	green ash	---	---	
	northern red oak	80	57	
	red maple	---	---	
	white oak	75	57	
Tedrow	black oak	---	---	black oak, bur oak, green ash, northern red oak, tuliptree, white ash, white oak
	bur oak	75	57	
	green ash	---	---	
	northern red oak	---	---	
	red maple	---	---	
RfB:				
Rimer	black oak	---	---	black oak, bur oak, green ash, northern red oak, tuliptree, white ash, white oak
	bur oak	---	---	
	green ash	---	---	
	northern red oak	80	57	
	red maple	---	---	
	white oak	75	57	
Tedrow	black oak	---	---	black oak, bur oak, green ash, northern red oak, tuliptree, white ash, white oak
	bur oak	75	57	
	green ash	---	---	
	northern red oak	---	---	
	red maple	---	---	
RgA:				
Rimer	black oak	---	---	black oak, bur oak, green ash, northern red oak, tuliptree, white ash, white oak
	bur oak	---	---	
	green ash	---	---	
	northern red oak	80	57	
	red maple	---	---	
	white oak	75	57	
Tedrow	black oak	---	---	black oak, bur oak, green ash, northern red oak, tuliptree, white ash, white oak
	bur oak	75	57	
	green ash	---	---	
	northern red oak	---	---	
	red maple	---	---	
Urban Land	---	---	---	---
RhA:				
Ritchey	bur oak	---	---	Blue Ash, black oak, chinkapin oak, eastern redcedar, eastern white pine, hawthorn, white oak
	northern red oak	50	29	
	sugar maple	---	---	
	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
RhB:				
Ritchey	bur oak	---	---	Blue Ash, black oak, chinkapin oak, eastern redcedar, eastern white pine, hawthorn, white oak
	northern red oak	50	29	
	sugar maple	---	---	
	white oak	50	29	
RkA:				
Ritchey	bur oak	---	---	Blue Ash, black oak, chinkapin oak, eastern redcedar, eastern white pine, hawthorn, white oak
	northern red oak	50	29	
	sugar maple	---	---	
	white oak	50	29	
RmA:				
Risingsun	eastern cottonwood	---	---	American sycamore, baldcypress, bur oak, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum, white ash
	pin oak	70	57	
	quaking aspen	70	86	
	red maple	68	43	
	silver maple	82	29	
Rollersville	eastern cottonwood	90	100	American sycamore, baldcypress, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum
	green ash	---	---	
	pin oak	---	---	
	red maple	---	---	
	silver maple	70	29	
	swamp white oak	90	72	
RnA:				
Rollersville	eastern cottonwood	90	100	American sycamore, baldcypress, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum
	green ash	---	---	
	pin oak	---	---	
	red maple	---	---	
	silver maple	70	29	
	swamp 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
Risingsun	eastern cottonwood	---	---	American sycamore, baldcypress, bur oak, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum, white ash
	pin oak	70	57	
	quaking aspen	70	86	
	red maple	68	43	
	silver maple	82	29	
RsA:				
Rossburg	black cherry	---	---	black cherry, black locust, black walnut, eastern white pine, green ash, northern red oak, sugar maple, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	---	---	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	90	72	
SdA:				
Seward	black oak	---	---	black cherry, black oak, black walnut, bur oak, chinkapin oak, eastern white pine, white ash, white oak
	bur oak	---	---	
	green ash	---	---	
	northern red oak	80	57	
	red maple	---	---	
	tuliptree	95	100	
Ottokee	bur oak	---	---	black cherry, black oak, bur oak, chinkapin oak, eastern white pine, white ash, white oak
	green ash	---	---	
	northern red oak	70	57	
	red maple	---	---	
	white ash	---	---	
	white oak	65	43	
SdB:				
Seward	black oak	---	---	black cherry, black oak, black walnut, bur oak, chinkapin oak, eastern white pine, white ash, white oak
	bur oak	---	---	
	green ash	---	---	
	northern red oak	80	57	
	red maple	---	---	
	tuliptree	95	100	
Ottokee	bur oak	---	---	black cherry, black oak, bur oak, chinkapin oak, eastern white pine, white ash, white oak
	green ash	---	---	
	northern red oak	70	57	
	red maple	---	---	
	white ash	---	---	
	white oak	65	43	
SeA:				
Shawtown	American basswood	66	57	black locust, black walnut, eastern white pine, northern red oak, sugar maple, tuliptree, white ash, white oak
	northern red oak	---	---	
	sugar maple	---	---	
	white ash	---	---	
	white oak	70	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
SeB:				
Shawtown	American basswood	66	57	black locust, black walnut, eastern white pine, northern red oak, sugar maple, tuliptree, white ash, white oak
	northern red oak	---	---	
	sugar maple	---	---	
	white ash	---	---	
	white oak	70	57	
SgA:				
Shoals	eastern cottonwood	---	---	bur oak, green ash, pin oak, red maple, swamp white oak, sweetgum
	pin oak	90	72	
	sweetgum	86	100	
	tuliptree	90	86	
	white ash	---	---	
ShA:				
Shoals	eastern cottonwood	---	---	bur oak, green ash, pin oak, red maple, swamp white oak, sweetgum
	pin oak	90	72	
	sweetgum	86	100	
	tuliptree	90	86	
	white ash	---	---	
SkA:				
Shoals	eastern cottonwood	---	---	bur oak, green ash, pin oak, red maple, swamp white oak, sweetgum
	pin oak	90	72	
	sweetgum	86	100	
	tuliptree	90	86	
	white ash	---	---	
SmA:				
Shoals	eastern cottonwood	---	---	bur oak, green ash, pin oak, red maple, swamp white oak, sweetgum
	pin oak	90	72	
	sweetgum	86	100	
	tuliptree	90	86	
	white ash	---	---	
Sloan	eastern cottonwood	---	---	American sycamore, baldcypress, bur oak, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum, white ash
	green ash	---	---	
	pin oak	85	72	
	red maple	---	---	
	swamp white oak	---	---	
SnA:				
Sloan	eastern cottonwood	---	---	American sycamore, baldcypress, bur oak, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum, white ash
	green ash	---	---	
	pin oak	85	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
SoA:				
Sloan	eastern cottonwood	---	---	American sycamore, baldcypress, bur oak, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum, white ash
	green ash	---	---	
	pin oak	86	72	
	red maple	---	---	
	swamp white oak	---	---	
SpA:				
Sloan	eastern cottonwood	---	---	American sycamore, baldcypress, bur oak, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum, white ash
	green ash	---	---	
	pin oak	85	72	
	red maple	---	---	
	swamp white oak	---	---	
SrB:				
Spinks	black cherry	---	---	black cherry, black oak, bur oak, chinkapin oak, eastern white pine, white ash, white oak
	black oak	---	---	
	northern red oak	70	57	
	sugar maple	---	---	
	white ash	---	---	
	white oak	66	43	
SrC:				
Spinks	black cherry	---	---	black cherry, black oak, bur oak, chinkapin oak, eastern white pine, white ash, white oak
	black oak	---	---	
	northern red oak	70	57	
	sugar maple	---	---	
	white ash	---	---	
	white oak	66	43	
SrD:				
Spinks	black cherry	---	---	black cherry, black oak, bur oak, chinkapin oak, eastern white pine, white ash, white oak
	black oak	---	---	
	northern red oak	70	57	
	sugar maple	---	---	
	white ash	---	---	
	white oak	66	43	
SsB:				
Spinks	black cherry	---	---	black cherry, black oak, bur oak, chinkapin oak, eastern white pine, white ash, white oak
	black oak	---	---	
	northern red oak	70	57	
	sugar maple	---	---	
	white ash	---	---	
	white oak	66	43	

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
SsC:				
Spinks	black cherry	---	---	black cherry, black oak, bur oak, chinkapin oak, eastern white pine, white ash, white oak
	black oak	---	---	
	northern red oak	70	57	
	sugar maple	---	---	
	white ash	---	---	
	white oak	66	43	
StB:				
St. Clair	northern red oak	66	43	American sycamore, Austrian pine, bur oak, eastern cottonwood, eastern white pine, green ash, pin oak, red maple, swamp white oak, tuliptree, white ash
	sugar maple	---	---	
	white ash	---	---	
	white oak	62	43	
StC2:				
St. Clair	northern red oak	66	43	American sycamore, Austrian pine, bur oak, eastern cottonwood, eastern white pine, green ash, pin oak, red maple, swamp white oak, tuliptree, white ash
	sugar maple	---	---	
	white ash	---	---	
	white oak	62	43	
SuB2:				
St. Clair	northern red oak	66	43	American sycamore, Austrian pine, bur oak, eastern cottonwood, eastern white pine, green ash, pin oak, red maple, swamp white oak, tuliptree, white ash
	sugar maple	---	---	
	white ash	---	---	
	white oak	62	43	
SuC2:				
St. Clair	northern red oak	66	43	American sycamore, Austrian pine, bur oak, eastern cottonwood, eastern white pine, green ash, pin oak, red maple, swamp white oak, tuliptree, white ash
	sugar maple	---	---	
	white ash	---	---	
	white oak	62	43	

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
SuD2:				
St. Clair	northern red oak	66	43	American sycamore, Austrian pine, bur oak, eastern cottonwood, eastern white pine, green ash, pin oak, red maple, swamp white oak, tuliptree, white ash
	sugar maple	---	---	
	white ash	---	---	
	white oak	62	43	
SuE2:				
St. Clair	northern red oak	66	43	American sycamore, Austrian pine, bur oak, eastern cottonwood, eastern white pine, green ash, pin oak, red maple, swamp white oak, tuliptree, white ash
	sugar maple	---	---	
	white ash	---	---	
	white oak	62	43	
TeA:				
Tedrow	black oak	---	---	black oak, bur oak, green ash, northern red oak, tuliptree, white ash, white oak
	bur oak	75	57	
	green ash	---	---	
	northern red oak	---	---	
	red maple	---	---	
TeB:				
Tedrow	black oak	---	---	black oak, bur oak, green ash, northern red oak, tuliptree, white ash, white oak
	bur oak	75	57	
	green ash	---	---	
	northern red oak	---	---	
	red maple	---	---	
TfA:				
Tedrow	black oak	---	---	black oak, bur oak, green ash, northern red oak, tuliptree, white ash, white oak
	bur oak	75	57	
	green ash	---	---	
	northern red oak	---	---	
	red maple	---	---	
Urban Land	---	---	---	---
TpA:				
Toledo	eastern cottonwood	---	---	American sycamore, Norway spruce, baldcypress, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum
	green ash	---	---	
	pin oak	80	57	
	red maple	---	---	
	swamp 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
TuA:				
Toledo	eastern cottonwood	---	---	American sycamore, Norway spruce, baldcypress, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum
	green ash	---	---	
	pin oak	80	57	
	red maple	---	---	
	swamp white oak	80	57	
Urban Land	---	---	---	---
UcA:				
Udorthents	---	---	---	---
UcE:				
Udorthents	---	---	---	---
Ur:				
Urban Land	---	---	---	---
W:				
Water	---	---	---	---
WbA:				
Wabasha	eastern cottonwood	---	---	American sycamore, Norway spruce, baldcypress, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum
	green ash	---	---	
	pin oak	80	57	
	red maple	---	---	
	swamp white oak	---	---	
WmA:				
Wauseon	eastern cottonwood	90	100	American sycamore, baldcypress, bur oak, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum, white ash
	green ash	---	---	
	pin oak	---	---	
	red maple	---	---	
	silver maple	70	29	
	swamp 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
WnA:				
Wauseon	eastern cottonwood	90	100	American sycamore, baldcypress, bur oak, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum, white ash
	green ash	---	---	
	pin oak	---	---	
	red maple	---	---	
	silver maple	70	29	
	swamp white oak	90	72	
WyA:				
Wauseon	eastern cottonwood	90	100	American sycamore, baldcypress, bur oak, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum, white ash
	green ash	---	---	
	pin oak	---	---	
	red maple	---	---	
	silver maple	70	29	
	swamp white oak	90	72	
WzA:				
Wauseon	eastern cottonwood	90	100	American sycamore, baldcypress, bur oak, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum, white ash
	green ash	---	---	
	pin oak	---	---	
	red maple	---	---	
	silver maple	70	29	
	swamp white oak	90	72	
Urban Land	---	---	---	---

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 226 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
AgA:						
Alvada	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		
AmA:						
Aurand	Slight		Moderately suited		Well suited	
			Depth to saturated zone	0.50		
AnA:						
Aurand	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Depth to saturated zone	0.50	Low strength	0.50
			Low strength	0.50		
AsA:						
Aurand	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
BeB:						
Belmore	Slight		Well suited		Well suited	
BfB:						
Belmore	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
CaA:						
Castalia	Moderate		Well suited		Well suited	
	Depth to bedrock	0.50				
CbB:						
Castalia	Severe		Moderately suited		Moderately suited	
	Stone content	1.00	Too sandy	0.50	Too sandy	0.50
	Too sandy	0.50	Large stones on the surface	0.50	Large stones on the surface	0.50
	Depth to bedrock	0.50				
Marblehead	Severe		Moderately suited		Moderately suited	
	Depth to bedrock	1.00	Low strength	0.50	Low strength	0.50
	Low strength	0.50	Large stones on the surface	0.50	Large stones on the surface	0.50
	Stone content	0.50				
CcA:						
Colwood	Slight		Poorly suited		Well suited	
			Ponding	1.00		

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
			Depth to saturated zone	1.00		
CdA:						
Colwood	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		
CtA:						
Colwood	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
CvA:						
Cygnet	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
			Depth to saturated zone	0.50		
CxB:						
Castalia	Not rated		Not rated		Not rated	
Marblehead	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
DgA:						
Digby	Slight		Moderately suited		Well suited	
			Depth to saturated zone	0.50		
DhA:						
Digby	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Depth to saturated zone	0.50	Low strength	0.50
			Low strength	0.50		
DrA:						
Dunbridge	Moderate		Well suited		Well suited	
	Depth to bedrock	0.50				
DsA:						
Dunbridge	Moderate		Well suited		Well suited	
	Depth to bedrock	0.50				
Spinks	Slight		Well suited		Well suited	
DsB:						
Dunbridge	Moderate		Well suited		Well suited	
	Depth to bedrock	0.50				
Spinks	Slight		Well suited		Well suited	
EaA:						
Eel	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: 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
			Depth to saturated zone	0.50		
EmA:						
Eel	Severe		Poorly suited		Moderately suited	
	Flooding	1.00	Flooding	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
			Depth to saturated zone	0.50		
EnA:						
Eel	Severe		Poorly suited		Moderately suited	
	Flooding	1.00	Flooding	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
	Depth to bedrock	0.50	Depth to saturated zone	0.50		
FcA:						
Flatrock	Moderate		Moderately suited		Moderately suited	
	Flooding	0.50	Flooding	0.50	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
			Depth to saturated zone	0.50		
FuA:						
Fulton	Moderate		Poorly suited		Moderately suited	
	Low strength	0.50	Depth to saturated zone	1.00	Low strength	0.50
			Low strength	0.50		
FuB:						
Fulton	Moderate		Poorly suited		Moderately suited	
	Low strength	0.50	Depth to saturated zone	1.00	Low strength	0.50
			Low strength	0.50		
FzA:						
Fulton	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
GmA:						
Genesee	Severe		Poorly suited		Moderately suited	
	Flooding	1.00	Flooding	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
GnA:						
Genesee	Severe		Poorly suited		Moderately suited	
	Flooding	1.00	Flooding	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
GpA:						
Granby	Slight		Poorly suited		Well suited	
			Ponding	1.00		
			Depth to saturated zone	1.00		

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
HaA:						
Haney	Slight		Well suited		Well suited	
HaB:						
Haney	Slight		Well suited		Well suited	
HdA:						
Haney	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
HdB:						
Haney	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
HeA:						
Haskins	Slight		Moderately suited		Well suited	
			Depth to saturated zone	0.50		
Digby	Slight		Moderately suited		Well suited	
			Depth to saturated zone	0.50		
HeB:						
Haskins	Slight		Moderately suited		Well suited	
			Depth to saturated zone	0.50		
Digby	Slight		Moderately suited		Well suited	
			Depth to saturated zone	0.50		
HfA:						
Haskins	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Depth to saturated zone	0.50	Low strength	0.50
			Low strength	0.50		
Digby	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Depth to saturated zone	0.50	Low strength	0.50
			Low strength	0.50		
HfB:						
Haskins	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Depth to saturated zone	0.50	Low strength	0.50
			Low strength	0.50		
Digby	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Depth to saturated zone	0.50	Low strength	0.50
			Low strength	0.50		
HgA:						
Hoytville	Moderate		Poorly suited		Moderately suited	
	Low strength	0.50	Ponding	1.00	Low strength	0.50
			Depth to saturated zone	1.00		

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
			Low strength	0.50		
HhA:						
Hoytville	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		
HvA:						
Hoytville	Moderate		Poorly suited		Moderately suited	
	Low strength	0.50	Ponding	1.00	Low strength	0.50
	Stickiness	0.50	Depth to saturated zone	1.00	Stickiness	0.50
			Low strength	0.50		
			Stickiness	0.50		
HwA:						
Hoytville	Moderate		Poorly suited		Moderately suited	
	Low strength	0.50	Ponding	1.00	Low strength	0.50
	Stickiness	0.50	Depth to saturated zone	1.00	Stickiness	0.50
			Low strength	0.50		
			Stickiness	0.50		
HyA:						
Hoytville	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
JoA:						
Joliet	Severe		Poorly suited		Moderately suited	
	Depth to bedrock	1.00	Depth to saturated zone	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
KeA:						
Kibbie	Slight		Moderately suited		Well suited	
			Depth to saturated zone	0.50		
KfA:						
Kibbie	Slight		Moderately suited		Well suited	
			Depth to saturated zone	0.50		
KfB:						
Kibbie	Slight		Moderately suited		Well suited	
			Depth to saturated zone	0.50		
KkA:						
Kibbie	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
LbB:						
Landes	Severe		Poorly suited		Well suited	

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
	Flooding	1.00	Flooding	1.00		
LdA:						
Latty	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		
LgA:						
Latty	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
MbA:						
Millgrove	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		
McA:						
Mermill	Slight		Poorly suited		Well suited	
			Ponding	1.00		
			Depth to saturated zone	1.00		
MdA:						
Mermill	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		
MeA:						
Mermill	Slight		Poorly suited		Well suited	
			Ponding	1.00		
			Depth to saturated zone	1.00		
MfA:						
Mermill	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		
Aurand	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Depth to saturated zone	0.50	Low strength	0.50
			Low strength	0.50		
MgA:						
Mermill	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
MhA:						
Millsdale	Moderate		Poorly suited		Moderately suited	

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
	Low strength	0.50	Ponding	1.00	Low strength	0.50
	Depth to bedrock	0.50	Depth to saturated zone	1.00		
			Low strength	0.50		
MkA:						
Millsdale	Moderate		Poorly suited		Moderately suited	
	Low strength	0.50	Ponding	1.00	Low strength	0.50
	Depth to bedrock	0.50	Depth to saturated zone	1.00		
			Low strength	0.50		
MmA:						
Millsdale	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
MnA:						
Milton	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
	Depth to bedrock	0.50				
MnB:						
Milton	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
	Depth to bedrock	0.50				
NmA:						
Nappanee	Slight		Poorly suited		Well suited	
			Depth to saturated zone	1.00		
NmB:						
Nappanee	Slight		Poorly suited		Well suited	
			Depth to saturated zone	1.00		
NnA:						
Nappanee	Moderate		Poorly suited		Moderately suited	
	Low strength	0.50	Depth to saturated zone	1.00	Low strength	0.50
			Low strength	0.50		
NnB:						
Nappanee	Moderate		Poorly suited		Moderately suited	
	Low strength	0.50	Depth to saturated zone	1.00	Low strength	0.50
			Low strength	0.50		
NnB2:						
Nappanee	Moderate		Poorly suited		Moderately suited	
	Low strength	0.50	Depth to saturated zone	1.00	Low strength	0.50
			Low strength	0.50		
NpA:						
Nappanee	Moderate		Poorly suited		Moderately suited	
	Low strength	0.50	Depth to saturated zone	1.00	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
			Low strength	0.50		
NpB:						
Nappanee	Moderate		Poorly suited		Moderately suited	
	Low strength	0.50	Depth to saturated zone	1.00	Low strength	0.50
			Low strength	0.50		
NpB2:						
Nappanee	Moderate		Poorly suited		Moderately suited	
	Low strength	0.50	Depth to saturated zone	1.00	Low strength	0.50
			Low strength	0.50		
NsA:						
Nappanee	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
OsB:						
Oshtemo	Slight		Well suited		Well suited	
OtA:						
Ottokee	Slight		Well suited		Well suited	
Spinks	Slight		Well suited		Well suited	
OtB:						
Ottokee	Slight		Well suited		Well suited	
Spinks	Slight		Well suited		Well suited	
OzB:						
Ottokee	Not rated		Not rated		Not rated	
Spinks	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
Pt:						
Pits, Quarry	Not rated		Not rated		Not rated	
RbA:						
Randolph	Moderate		Poorly suited		Moderately suited	
	Low strength	0.50	Depth to saturated zone	1.00	Low strength	0.50
	Depth to bedrock	0.50	Low strength	0.50		
RbB:						
Randolph	Moderate		Poorly suited		Moderately suited	
	Low strength	0.50	Depth to saturated zone	1.00	Low strength	0.50
	Depth to bedrock	0.50	Low strength	0.50		
RdA:						
Randolph	Moderate		Poorly suited		Moderately suited	
	Low strength	0.50	Depth to saturated zone	1.00	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
	Depth to bedrock	0.50	Low strength	0.50		
ReA:						
Randolph	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
RfA:						
Rimer	Slight		Moderately suited		Well suited	
			Depth to saturated zone	0.50		
Tedrow	Slight		Moderately suited		Well suited	
			Depth to saturated zone	0.50		
RfB:						
Rimer	Slight		Moderately suited		Well suited	
			Depth to saturated zone	0.50		
Tedrow	Slight		Moderately suited		Well suited	
			Depth to saturated zone	0.50		
RgA:						
Rimer	Not rated		Not rated		Not rated	
Tedrow	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
RhA:						
Ritchey	Severe		Moderately suited		Moderately suited	
	Depth to bedrock	1.00	Low strength	0.50	Low strength	0.50
	Low strength	0.50				
RhB:						
Ritchey	Severe		Moderately suited		Moderately suited	
	Depth to bedrock	1.00	Low strength	0.50	Low strength	0.50
	Low strength	0.50				
RkA:						
Ritchey	Severe		Moderately suited		Moderately suited	
	Depth to bedrock	1.00	Low strength	0.50	Low strength	0.50
	Low strength	0.50				
RmA:						
Risingsun	Severe		Poorly suited		Poorly suited	
	Low strength	1.00	Ponding	1.00	Low strength	1.00
			Low strength	1.00		
			Depth to saturated zone	1.00		
Rollersville	Slight		Poorly suited		Well suited	
			Depth to saturated zone	1.00		

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
RnA:						
Rollersville	Slight		Poorly suited		Well suited	
			Depth to saturated zone	1.00		
Risingsun	Severe		Poorly suited		Poorly suited	
	Low strength	1.00	Ponding	1.00	Low strength	1.00
			Low strength	1.00		
			Depth to saturated zone	1.00		
RsA:						
Rossburg	Severe		Poorly suited		Moderately suited	
	Flooding	1.00	Flooding	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
SdA:						
Seward	Slight		Well suited		Well suited	
Ottokee	Slight		Well suited		Well suited	
SdB:						
Seward	Slight		Well suited		Well suited	
Ottokee	Slight		Well suited		Well suited	
SeA:						
Shawtown	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
SeB:						
Shawtown	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
SgA:						
Shoals	Severe		Poorly suited		Moderately suited	
	Flooding	1.00	Flooding	1.00	Low strength	0.50
	Low strength	0.50	Depth to saturated zone	0.50		
			Low strength	0.50		
ShA:						
Shoals	Severe		Poorly suited		Moderately suited	
	Flooding	1.00	Flooding	1.00	Low strength	0.50
	Low strength	0.50	Depth to saturated zone	0.50		
			Low strength	0.50		
SkA:						
Shoals	Severe		Poorly suited		Moderately suited	
	Flooding	1.00	Flooding	1.00	Low strength	0.50
	Low strength	0.50	Depth to saturated zone	0.50		
			Low strength	0.50		
SmA:						
Shoals	Severe		Poorly suited		Moderately suited	
	Flooding	1.00	Flooding	1.00	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
	Low strength	0.50	Depth to saturated zone	0.50		
	Depth to bedrock	0.50	Low strength	0.50		
Sloan	Severe		Poorly suited		Moderately suited	
	Flooding	1.00	Ponding	1.00	Low strength	0.50
	Low strength	0.50	Flooding	1.00		
	Depth to bedrock	0.50	Depth to saturated zone	1.00		
			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		
			Depth to saturated zone	1.00		
			Low strength	0.50		
SoA:						
Sloan	Severe		Poorly suited		Moderately suited	
	Flooding	1.00	Ponding	1.00	Low strength	0.50
	Low strength	0.50	Flooding	1.00		
			Depth to saturated zone	1.00		
			Low strength	0.50		
SpA:						
Sloan	Severe		Poorly suited		Moderately suited	
	Flooding	1.00	Ponding	1.00	Low strength	0.50
	Low strength	0.50	Flooding	1.00		
			Depth to saturated zone	1.00		
			Low strength	0.50		
SrB:						
Spinks	Slight		Well suited		Well suited	
SrC:						
Spinks	Slight		Moderately suited		Well suited	
			Slope	0.50		
SrD:						
Spinks	Moderate		Poorly suited		Well suited	
	Slope	0.50	Slope	1.00		
SsB:						
Spinks	Slight		Well suited		Well suited	
SsC:						
Spinks	Slight		Moderately suited		Well suited	
			Slope	0.50		
StB:						
St. Clair	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
StC2:						
St. Clair	Moderate		Moderately suited		Moderately suited	

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
	Low strength	0.50	Slope	0.50	Low strength	0.50
			Low strength	0.50		
SuB2:						
St. Clair	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
SuC2:						
St. Clair	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Slope	0.50	Low strength	0.50
			Low strength	0.50		
SuD2:						
St. Clair	Moderate		Poorly suited		Moderately suited	
	Low strength	0.50	Slope	1.00	Low strength	0.50
			Low strength	0.50		
SuE2:						
St. Clair	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
	Stickiness	0.50				
TeA:						
Tedrow	Slight		Moderately suited		Well suited	
			Depth to saturated zone	0.50		
TeB:						
Tedrow	Slight		Moderately suited		Well suited	
			Depth to saturated zone	0.50		
TfA:						
Tedrow	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
TpA:						
Toledo	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		
TuA:						
Toledo	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
UcA:						
Udorthents	Not rated		Not rated		Not rated	
UcE:						
Udorthents	Not rated		Not rated		Not rated	
Ur:						
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		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
W:						
Water	Not rated		Not rated		Not rated	
WbA:						
Wabasha	Severe		Poorly suited		Moderately suited	
	Flooding	1.00	Ponding	1.00	Low strength	0.50
	Low strength	0.50	Flooding	1.00		
			Depth to saturated zone	1.00		
			Low strength	0.50		
WmA:						
Wauseon	Slight		Poorly suited		Well suited	
			Ponding	1.00		
			Depth to saturated zone	1.00		
WnA:						
Wauseon	Slight		Poorly suited		Well suited	
			Ponding	1.00		
			Depth to saturated zone	1.00		
WyA:						
Wauseon	Slight		Poorly suited		Well suited	
			Ponding	1.00		
			Depth to saturated zone	1.00		
WzA:						
Wauseon	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	

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 226 for further explanation of ratings in this table.)

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
AgA:						
Alvada	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
AmA:						
Aurand	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
AnA:						
Aurand	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
AsA:						
Aurand	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
BeB:						
Belmore	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
BfB:						
Belmore	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
CaA:						
Castalia	Unsuited		Poorly suited		Low	
	Rock fragment content	0.92	Rock fragment content	0.50	Texture/rock fragments	0.30
CbB:						
Castalia	Unsuited		Poorly suited		Low	
	Rock fragment content	0.92	Rock fragment content	0.50	Texture/rock fragments	0.30
	Too sandy	0.50				
Marblehead	Moderately suited		Unsuited		Low	
	Rock fragment content	0.50	Depth to bedrock	1.00	Texture/rock fragments	0.01
			Rock fragment content	0.50		
CcA:						
Colwood	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
CdA:						
Colwood	Well suited		Well suited		Low	

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
					Texture/rock fragments	0.01
CtA:						
Colwood	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
CvA:						
Cygnet	Moderately suited Rock fragment content	0.18	Well suited		Low Texture/rock fragments	0.01
CxB:						
Castalia	Not rated		Not rated		Not rated	
Marblehead	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
DgA:						
Digby	Well suited		Well suited		Low Texture/rock fragments	0.01
DhA:						
Digby	Well suited		Well suited		Moderate Texture/rock fragments	0.50
DrA:						
Dunbridge	Well suited		Well suited		Low Texture/rock fragments	0.01
DsA:						
Dunbridge	Well suited		Well suited		Moderate Texture/rock fragments	0.50
Spinks	Well suited		Well suited		High Texture/rock fragments	1.00
DsB:						
Dunbridge	Well suited		Well suited		Moderate Texture/rock fragments	0.50
Spinks	Well suited		Well suited		High Texture/rock fragments	1.00
EaA:						
Eel	Well suited		Well suited		Low Texture/rock fragments	0.01
EmA:						
Eel	Well suited		Well suited		Low	

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
					Texture/rock fragments	0.01
EnA:						
Eel	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
FcA:						
Flatrock	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
FuA:						
Fulton	Poorly suited		Poorly suited		Low	
	Stickiness	0.75	Stickiness	0.50	Texture/rock fragments	0.30
FuB:						
Fulton	Poorly suited		Poorly suited		Low	
	Stickiness	0.75	Stickiness	0.50	Texture/rock fragments	0.30
FzA:						
Fulton	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
GmA:						
Genesee	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
GnA:						
Genesee	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
GpA:						
Granby	Well suited		Well suited		Moderate	
					Texture/rock fragments	0.50
HaA:						
Haney	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
HaB:						
Haney	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
HdA:						
Haney	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
HdB:						
Haney	Well suited		Well suited		Low	

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
					Texture/rock fragments	0.01
HeA:						
Haskins	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
Digby	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
HeB:						
Haskins	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
Digby	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
HfA:						
Haskins	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
Digby	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
HfB:						
Haskins	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
Digby	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
HgA:						
Hoytville	Moderately suited		Poorly suited		Low	
	Stickiness	0.50	Stickiness	0.50	Texture/rock fragments	0.01
HhA:						
Hoytville	Moderately suited		Poorly suited		Low	
	Stickiness	0.50	Stickiness	0.50	Texture/rock fragments	0.30
HvA:						
Hoytville	Moderately suited		Poorly suited		Low	
	Stickiness	0.50	Stickiness	0.50	Texture/rock fragments	0.30
HwA:						
Hoytville	Moderately suited		Poorly suited		Low	
	Stickiness	0.50	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
HyA:						
Hoytville	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
JoA:						
Joliet	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.30
	Rock fragment content	0.10				
KeA:						
Kibbie	Well suited		Well suited		High	
					Texture/rock fragments	1.00
KfA:						
Kibbie	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
KfB:						
Kibbie	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
KkA:						
Kibbie	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
LbB:						
Landes	Well suited		Well suited		High	
					Texture/rock fragments	1.00
LdA:						
Latty	Poorly suited		Poorly suited		Low	
	Stickiness	0.75	Stickiness	0.50	Texture/rock fragments	0.30
LgA:						
Latty	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
MbA:						
Millgrove	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
McA:						
Mermill	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
MdA:						
Mermill	Well suited		Well suited		Low	

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
					Texture/rock fragments	0.01
MeA:						
Mermill	Well suited		Well suited		Low	
					Texture/rock fragments	0.30
MfA:						
Mermill	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
Aurand	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
MgA:						
Mermill	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
MhA:						
Millsdale	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.30
MkA:						
Millsdale	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.30
	Rock fragment content	0.50				
MmA:						
Millsdale	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
MnA:						
Milton	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
MnB:						
Milton	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
NmA:						
Nappanee	Poorly suited		Poorly suited		Low	
	Stickiness	0.75	Stickiness	0.50	Texture/rock fragments	0.01
NmB:						
Nappanee	Poorly suited		Poorly suited		Low	
	Stickiness	0.75	Stickiness	0.50	Texture/rock fragments	0.01
NnA:						
Nappanee	Poorly suited		Poorly suited		Low	

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
	Stickiness	0.75	Stickiness	0.50	Texture/rock fragments	0.01
NnB:						
Nappanee	Poorly suited		Poorly suited		Low	
	Stickiness	0.75	Stickiness	0.50	Texture/rock fragments	0.01
NnB2:						
Nappanee	Poorly suited		Poorly suited		Low	
	Stickiness	0.75	Stickiness	0.50	Texture/rock fragments	0.01
NpA:						
Nappanee	Poorly suited		Poorly suited		Low	
	Stickiness	0.75	Stickiness	0.50	Texture/rock fragments	0.30
NpB:						
Nappanee	Poorly suited		Poorly suited		Low	
	Stickiness	0.75	Stickiness	0.50	Texture/rock fragments	0.30
NpB2:						
Nappanee	Poorly suited		Poorly suited		Low	
	Stickiness	0.75	Stickiness	0.50	Texture/rock fragments	0.30
NsA:						
Nappanee	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
OsB:						
Oshtemo	Well suited		Well suited		Moderate	
					Texture/rock fragments	0.50
OtA:						
Ottokee	Well suited		Well suited		High	
					Texture/rock fragments	1.00
Spinks	Well suited		Well suited		High	
					Texture/rock fragments	1.00
OtB:						
Ottokee	Well suited		Well suited		High	
					Texture/rock fragments	1.00
Spinks	Well suited		Well suited		High	
					Texture/rock fragments	1.00
OzB:						
Ottokee	Not rated		Not rated		Not rated	
Spinks	Not rated		Not rated		Not rated	

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
Urban Land	Not rated		Not rated		Not rated	
Pt:						
Pits, Quarry	Not rated		Not rated		Not rated	
RbA:						
Randolph	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
RbB:						
Randolph	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
RdA:						
Randolph	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
	Rock fragment content	0.50				
ReA:						
Randolph	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
RfA:						
Rimer	Well suited		Well suited		Moderate	
					Texture/rock fragments	0.50
Tedrow	Well suited		Well suited		Moderate	
					Texture/rock fragments	0.50
RfB:						
Rimer	Well suited		Well suited		Moderate	
					Texture/rock fragments	0.50
Tedrow	Well suited		Well suited		Moderate	
					Texture/rock fragments	0.50
RgA:						
Rimer	Not rated		Not rated		Not rated	
Tedrow	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
RhA:						
Ritchey	Moderately suited		Well suited		Low	
	Rock fragment content	0.14			Texture/rock fragments	0.01
RhB:						
Ritchey	Moderately suited		Well suited		Low	

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
	Rock fragment content	0.14			Texture/rock fragments	0.01
RkA:						
Ritchey	Moderately suited		Well suited		Low	
	Rock fragment content	0.50			Texture/rock fragments	0.01
RmA:						
Risingsun	Well suited		Well suited		Low	
Rollersville	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
RnA:						
Rollersville	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
Risingsun	Well suited		Well suited		Low	
RsA:						
Rossburg	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
SdA:						
Seward	Well suited		Well suited		Moderate	
					Texture/rock fragments	0.50
Ottokee	Well suited		Well suited		High	
					Texture/rock fragments	1.00
SdB:						
Seward	Well suited		Well suited		Moderate	
					Texture/rock fragments	0.50
Ottokee	Well suited		Well suited		High	
					Texture/rock fragments	1.00
SeA:						
Shawtown	Moderately suited		Well suited		Low	
	Rock fragment content	0.18			Texture/rock fragments	0.01
SeB:						
Shawtown	Moderately suited		Well suited		Low	
	Rock fragment content	0.18			Texture/rock fragments	0.01
SgA:						
Shoals	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
ShA:						
Shoals	Well suited		Well suited		Low Texture/rock fragments	0.01
SkA:						
Shoals	Well suited		Well suited		Low Texture/rock fragments	0.30
SmA:						
Shoals	Well suited		Well suited		Low Texture/rock fragments	0.01
Sloan	Moderately suited Stickiness	0.50	Well suited		Low Texture/rock fragments	0.30
SnA:						
Sloan	Well suited		Well suited		Low Texture/rock fragments	0.01
SoA:						
Sloan	Moderately suited Stickiness	0.50	Well suited		Low Texture/rock fragments	0.30
SpA:						
Sloan	Moderately suited Stickiness	0.50	Well suited		Low Texture/rock fragments	0.30
SrB:						
Spinks	Well suited		Well suited		High Texture/rock fragments	1.00
SrC:						
Spinks	Moderately suited Slope	0.50	Well suited		High Texture/rock fragments	1.00
SrD:						
Spinks	Poorly suited Slope	0.75	Poorly suited Slope	0.75	High Texture/rock fragments	1.00
SsB:						
Spinks	Well suited		Well suited		High Texture/rock fragments	1.00
SsC:						
Spinks	Moderately suited Slope	0.50	Well suited		High Texture/rock fragments	1.00
StB:						
St. Clair	Moderately suited		Poorly suited		Low	

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
	Stickiness	0.50	Stickiness	0.50	Texture/rock fragments	0.01
StC2:						
St. Clair	Moderately suited		Poorly suited		Low	
	Stickiness	0.50	Stickiness	0.50	Texture/rock fragments	0.01
	Slope	0.50				
SuB2:						
St. Clair	Moderately suited		Poorly suited		Moderate	
	Stickiness	0.50	Stickiness	0.50	Texture/rock fragments	0.70
SuC2:						
St. Clair	Moderately suited		Poorly suited		Moderate	
	Stickiness	0.50	Stickiness	0.50	Texture/rock fragments	0.70
	Slope	0.50				
SuD2:						
St. Clair	Moderately suited		Poorly suited		Moderate	
	Slope	0.50	Stickiness	0.50	Texture/rock fragments	0.70
	Stickiness	0.50				
SuE2:						
St. Clair	Poorly suited		Poorly suited		Moderate	
	Slope	0.75	Slope	0.75	Texture/rock fragments	0.70
	Stickiness	0.50	Stickiness	0.50		
TeA:						
Tedrow	Well suited		Well suited		Moderate	
					Texture/rock fragments	0.50
TeB:						
Tedrow	Well suited		Well suited		Moderate	
					Texture/rock fragments	0.50
TfA:						
Tedrow	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
TpA:						
Toledo	Moderately suited		Poorly suited		Low	
	Stickiness	0.50	Stickiness	0.50	Texture/rock fragments	0.30
TuA:						
Toledo	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
UcA:						
Udorthents	Not rated		Not rated		Not rated	

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
UcE:						
Udorthents	Not rated		Not rated		Not rated	
Ur:						
Urban Land	Not rated		Not rated		Not rated	
W:						
Water	Not rated		Not rated		Not rated	
WbA:						
Wabasha	Moderately suited		Poorly suited		Low	
	Stickiness	0.50	Stickiness	0.50	Texture/rock fragments	0.30
WmA:						
Wauseon	Well suited		Well suited		Moderate	
					Texture/rock fragments	0.50
WnA:						
Wauseon	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
WyA:						
Wauseon	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
WzA:						
Wauseon	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	

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 228 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
AgA:					
Alvada	silky dogwood	American cranberrybush; baldcypress; European alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	pin oak
AmA:					
Aurand	silky dogwood	American cranberrybush; European alder; Washington hawthorn	Austrian pine; baldcypress; eastern redcedar; northern white-cedar	Norway spruce; pin oak	green ash
AnA:					
Aurand	silky dogwood	American cranberrybush; European alder; Washington hawthorn	Austrian pine; baldcypress; eastern redcedar; northern white-cedar	Norway spruce; pin oak	green ash
AsA:					
Aurand	silky dogwood	American cranberrybush; European alder; Washington hawthorn	Austrian pine; baldcypress; eastern redcedar; northern white-cedar	Norway spruce; pin oak	green ash
Urban land	---	---	---	---	---
BeB:					
Belmore	Japanese tree lilac; redbud; Siberian peashrub	eastern redcedar; european alder; radiant crabapple; Siberian crabapple; Washington hawthorn	Austrian pine; blue spruce; northern white-cedar; norway spruce; osageorange	white oak; white spruce	eastern white pine; northern red oak; white ash
BfB:					
Belmore	Japanese tree lilac; redbud; Siberian peashrub	eastern redcedar; european alder; radiant crabapple; Siberian crabapple; Washington hawthorn	Austrian pine; blue spruce; northern white-cedar; norway spruce; osageorange	white oak; white spruce	eastern white pine; northern red oak; white ash
CaA:					
Castalia	Japanese tree lilac; redbud; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; osageorange	---	---
CbB:					
Castalia	Japanese tree lilac; redbud; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; osageorange	---	---
Marblehead	redbud	eastern redcedar; northern white-cedar; Washington hawthorn	chinkapin oak	---	---
CcA:					
Colwood	silky dogwood	American cranberrybush; baldcypress; european alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	pin oak
CdA:					
Colwood	silky dogwood	American cranberrybush; baldcypress; european alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	pin oak
CtA:					
Colwood	silky dogwood	American cranberrybush; baldcypress; european alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	pin oak
Urban land	---	---	---	---	---

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
CvA:					
Cygnet	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
CxB:					
Castalia	Japanese tree lilac; redbud; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; osageorange	---	---
Marblehead	redbud	eastern redcedar; northern white-cedar; Washington hawthorn	chinkapin oak	---	---
Urban land	---	---	---	---	---
DgA:					
Digby	silky dogwood	American cranberrybush; european alder; Washington hawthorn	Austrian pine; baldcypress; eastern redcedar; northern white-cedar	Norway spruce; pin oak	green ash
DhA:					
Digby	silky dogwood	American cranberrybush; european alder; Washington hawthorn	Austrian pine; baldcypress; eastern redcedar; northern white-cedar	Norway spruce; pin oak	green ash
DrA:					
Dunbridge	Japanese tree lilac; redbud; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; osageorange	---	---
DsA:					
Dunbridge	Japanese tree lilac; redbud; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; osageorange	---	---
Spinks	redbud	american cranberrybush; washington hawthorn	blue spruce; northern white-cedar	Austrian pine; norway spruce	eastern white pine
DsB:					
Dunbridge	Japanese tree lilac; redbud; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; osageorange	---	---
Spinks	redbud	american cranberrybush; washington hawthorn	blue spruce; northern white-cedar	Austrian pine; norway spruce	eastern white pine
EaA:					
Eel	silky dogwood	American cranberrybush; blackhaw; eastern redcedar; european alder; southern arrowwood; Washington hawthorn	blue spruce; northern white-cedar; osageorange	Austrian pine; Norway spruce	eastern white pine; pin oak
EmA:					
Eel	silky dogwood	American cranberrybush; blackhaw; eastern redcedar; european alder; southern arrowwood; Washington hawthorn	blue spruce; northern white-cedar; osageorange	Austrian pine; Norway spruce	eastern white pine; pin oak
EnA:					
Eel	silky dogwood	American cranberrybush; blackhaw; eastern redcedar; european alder; southern arrowwood; Washington hawthorn	blue spruce; northern white-cedar; osageorange	Austrian pine; Norway spruce	eastern white pine; pin oak
FcA:					
Flatrock	silky dogwood	American cranberrybush; blackhaw; eastern redcedar; european alder; southern arrowwood; Washington hawthorn	blue spruce; northern white-cedar; osageorange	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
FuA:					
Fulton	silky dogwood; southern arrowwood	American cranberrybush; baldcypress; blackhaw; eastern redcedar; European alder; Washington hawthorn	Austrian pine; green ash; northern white-cedar; Norway spruce; osageorange	pin oak; Shumard's oak	swamp white oak
FuB:					
Fulton	silky dogwood; southern arrowwood	American cranberrybush; baldcypress; blackhaw; eastern redcedar; European alder; Washington hawthorn	Austrian pine; green ash; northern white-cedar; Norway spruce; osageorange	pin oak; Shumard's oak	swamp white oak
FzA:					
Fulton	silky dogwood; southern arrowwood	American cranberrybush; baldcypress; blackhaw; eastern redcedar; European alder; Washington hawthorn	Austrian pine; green ash; northern white-cedar; Norway spruce; osageorange	pin oak; Shumard's oak	swamp white oak
Urban land	---	---	---	---	---
GmA:					
Genesee	Japanese tree lilac; redbud; siberian peashrub	eastern redcedar; european alder; radiant crabapple; siberian crabapple; Washington hawthorn	Austrian pine; blue spruce; eastern white pine; northern white-cedar; Norway spruce; osageorange; white fir	white oak; white spruce	eastern white pine; northern red oak; white ash
GnA:					
Genesee	Japanese tree lilac; redbud; siberian peashrub	eastern redcedar; european alder; radiant crabapple; siberian crabapple; Washington hawthorn	Austrian pine; blue spruce; eastern white pine; northern white-cedar; Norway spruce; osageorange; white fir	white oak; white spruce	eastern white pine; northern red oak; white ash
GpA:					
Granby	silky dogwood	American cranberrybush; baldcypress; european alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	pin oak
HaA:					
Haney	silky dogwood	American cranberrybush; European alder; Washington hawthorn	baldcypress; blue spruce; eastern redcedar; northern white-cedar; osageorange; white fir	Austrian pine; green ash; Norway spruce; pin oak	eastern white pine
HaB:					
Haney	silky dogwood	American cranberrybush; European alder; Washington hawthorn	baldcypress; blue spruce; eastern redcedar; northern white-cedar; osageorange; white fir	Austrian pine; green ash; Norway spruce; pin oak	eastern white pine
HdA:					
Haney	silky dogwood	American cranberrybush; European alder; Washington hawthorn	baldcypress; blue spruce; eastern redcedar; northern white-cedar; osageorange; white fir	Austrian pine; green ash; Norway spruce; pin oak	eastern white pine
HdB:					
Haney	silky dogwood; silky dogwood	American cranberrybush; European alder; Washington hawthorn	baldcypress; blue spruce; eastern redcedar; northern white-cedar; osageorange; white fir	Austrian pine; green ash; Norway spruce; pin oak	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
HeA:					
Haskins	silky dogwood	American cranberrybush; european alder; Washington hawthorn	Austrian pine; baldcypress; eastern redcedar; northern white-cedar	Norway spruce; pin oak	green ash
Digby	silky dogwood	American cranberrybush; european alder; Washington hawthorn	Austrian pine; baldcypress; eastern redcedar; northern white-cedar	Norway spruce; pin oak	green ash
HeB:					
Haskins	silky dogwood	American cranberrybush; european alder; Washington hawthorn	Austrian pine; baldcypress; eastern redcedar; northern white-cedar	Norway spruce; pin oak	green ash
Digby	silky dogwood	American cranberrybush; european alder; Washington hawthorn	Austrian pine; baldcypress; eastern redcedar; northern white-cedar	Norway spruce; pin oak	green ash
HfA:					
Haskins	silky dogwood	American cranberrybush; european alder; Washington hawthorn	Austrian pine; baldcypress; eastern redcedar; northern white-cedar	Norway spruce; pin oak	green ash
Digby	silky dogwood	American cranberrybush; european alder; Washington hawthorn	Austrian pine; baldcypress; eastern redcedar; northern white-cedar	Norway spruce; pin oak	green ash
HfB:					
Haskins	silky dogwood	American cranberrybush; european alder; Washington hawthorn	Austrian pine; baldcypress; eastern redcedar; northern white-cedar	Norway spruce; pin oak	green ash
Digby	silky dogwood	American cranberrybush; european alder; Washington hawthorn	Austrian pine; baldcypress; eastern redcedar; northern white-cedar	Norway spruce; pin oak	green ash
HgA:					
Hoytville	silky dogwood	American cranberrybush; baldcypress; European alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	pin oak
HhA:					
Hoytville	silky dogwood	American cranberrybush; baldcypress; European alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	pin oak
HvA:					
Hoytville	silky dogwood	American cranberrybush; baldcypress; European alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	pin oak
HwA:					
Hoytville	silky dogwood	American cranberrybush; baldcypress; European alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	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
HyA:					
Hoytville	silky dogwood	American cranberrybush; baldcypress; European alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	pin oak
Urban land	---	---	---	---	---
JoA:					
Joliet	European alder; silky dogwood	baldcypress; northern white-cedar	green ash	---	---
KeA:					
Kibbie	silky dogwood	American cranberrybush; european alder; Washington hawthorn	Austrian pine; baldcypress; eastern redcedar; northern white-cedar	Norway spruce; pin oak	green ash
KfA:					
Kibbie	silky dogwood	American cranberrybush; european alder; Washington hawthorn	Austrian pine; baldcypress; eastern redcedar; northern white-cedar	Norway spruce; pin oak	green ash
KfB:					
Kibbie	silky dogwood	American cranberrybush; european alder; Washington hawthorn	Austrian pine; baldcypress; eastern redcedar; northern white-cedar	Norway spruce; pin oak	green ash
KkA:					
Kibbie	silky dogwood	American cranberrybush; european alder; Washington hawthorn	Austrian pine; baldcypress; eastern redcedar; northern white-cedar	Norway spruce; pin oak	green ash
Urban land	---	---	---	---	---
LbB:					
Landes	Japanese tree lilac; redbud; Siberian peashrub	eastern redcedar; European alder; radiant crabapple; Siberian crabapple; Washington hawthorn	Austrian pine; blue spruce; eastern white pine; northern white-cedar; Norway spruce; osageorange	Norway spruce; white oak; white spruce	eastern white pine; northern red oak; white ash
LdA:					
Latty	silky dogwood	American cranberrybush; baldcypress; European alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	pin oak
LgA:					
Latty	silky dogwood	American cranberrybush; baldcypress; European alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	pin oak
Urban land	---	---	---	---	---
MbA:					
Millgrove	silky dogwood	American cranberrybush; baldcypress; European alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	pin oak
McA:					
Mermill	silky dogwood	American cranberrybush; baldcypress; European alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	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
MdA:					
Mermill	silky dogwood	American cranberrybush; baldcypress; European alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	pin oak
MeA:					
Mermill	silky dogwood	American cranberrybush; baldcypress; European alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	pin oak
MfA:					
Mermill	silky dogwood	American cranberrybush; baldcypress; European alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	pin oak
Aurand	silky dogwood	American cranberrybush; European alder; Washington hawthorn	Austrian pine; baldcypress; eastern redcedar; northern white-cedar	Norway spruce; pin oak	green ash
MgA:					
Mermill	silky dogwood	American cranberrybush; baldcypress; European alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	pin oak
Urban land	---	---	---	---	---
MhA:					
Millsdale	silky dogwood	American cranberrybush; baldcypress; European alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	pin oak
MkA:					
Millsdale	silky dogwood	American cranberrybush; baldcypress; European alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	pin oak
MmA:					
Millsdale	silky dogwood	American cranberrybush; baldcypress; European alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	pin oak
Urban land	---	---	---	---	---
MnA:					
Milton	Japanese tree lilac; redbud; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; osageorange	---	---
MnB:					
Milton	Japanese tree lilac; redbud; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; osageorange	---	---
NmA:					
Nappanee	silky dogwood; southern arrowwood	American cranberrybush; baldcypress; blackhaw; eastern redcedar; European alder; Washington hawthorn	Austrian pine; green ash; northern white-cedar; Norway spruce; osageorange	pin oak; Shumard's oak	swamp white oak
NmB:					
Nappanee	silky dogwood; southern arrowwood	American cranberrybush; baldcypress; blackhaw; eastern redcedar; European alder; Washington hawthorn	Austrian pine; green ash; northern white-cedar; Norway spruce; osageorange	pin oak; Shumard's oak	swamp white 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
NnA:					
Nappanee	silky dogwood; southern arrowwood	American cranberrybush; baldcypress; blackhaw; eastern redcedar; European alder; Washington hawthorn	Austrian pine; green ash; northern white-cedar; Norway spruce; osageorange	pin oak; Shumard's oak	swamp white oak
NnB:					
Nappanee	silky dogwood; southern arrowwood	American cranberrybush; baldcypress; blackhaw; eastern redcedar; European alder; Washington hawthorn	Austrian pine; green ash; northern white-cedar; Norway spruce; osageorange	pin oak; Shumard's oak	swamp white oak
NnB2:					
Nappanee	silky dogwood; southern arrowwood	American cranberrybush; baldcypress; blackhaw; eastern redcedar; European alder; Washington hawthorn	Austrian pine; green ash; northern white-cedar; Norway spruce; osageorange	pin oak; Shumard's oak	swamp white oak
NpA:					
Nappanee	silky dogwood; southern arrowwood	American cranberrybush; baldcypress; blackhaw; eastern redcedar; European alder; Washington hawthorn	Austrian pine; green ash; northern white-cedar; Norway spruce; osageorange	pin oak; Shumard's oak	swamp white oak
NpB:					
Nappanee	silky dogwood; southern arrowwood; southern arrowwood	American cranberrybush; baldcypress; blackhaw; eastern redcedar; European alder; Washington hawthorn	Austrian pine; green ash; northern white-cedar; Norway spruce; osageorange	pin oak; Shumard's oak	swamp white oak
NpB2:					
Nappanee	silky dogwood; southern arrowwood	American cranberrybush; baldcypress; blackhaw; eastern redcedar; European alder; Washington hawthorn	Austrian pine; green ash; northern white-cedar; Norway spruce; osageorange	pin oak; Shumard's oak	swamp white oak
NsA:					
Nappanee	silky dogwood; southern arrowwood	American cranberrybush; baldcypress; blackhaw; eastern redcedar; European alder; Washington hawthorn	Austrian pine; green ash; northern white-cedar; Norway spruce; osageorange	pin oak; Shumard's oak	swamp white oak
Urban land	---	---	---	---	---
OsB:					
Oshtemo	Japanese tree lilac; redbud; Siberian peashrub	eastern redcedar; European alder; radiant crabapple; Siberian crabapple; Washington hawthorn	Austrian pine; blue spruce; northern white-cedar; Norway spruce; osageorange	white oak; white spruce	eastern white pine; northern red oak; white ash
OtA:					
Ottokee	redbud	American cranberrybush; Washington hawthorn	blue spruce; northern white-cedar	Austrian pine; Norway spruce	eastern white pine
Spinks	redbud	American cranberrybush; Washington hawthorn	blue spruce; northern white-cedar	Austrian pine; Norway spruce	eastern white pine
OtB:					
Ottokee	redbud	American cranberrybush; Washington hawthorn	blue spruce; northern white-cedar	Austrian pine; Norway spruce	eastern white pine
Spinks	redbud	American cranberrybush; Washington hawthorn	blue spruce; northern white-cedar	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
OzB:					
Ottokee	redbud	American cranberrybush; Washington hawthorn	blue spruce; northern white-cedar	Austrian pine; Norway spruce	eastern white pine
Spinks	redbud	American cranberrybush; Washington hawthorn	blue spruce; northern white-cedar	Austrian pine; Norway spruce	eastern white pine
Urban land	---	---	---	---	---
Pt:					
Pits, Quarry	---	---	---	---	---
RbA:					
Randolph	silky dogwood	American cranberrybush; European alder; Washington hawthorn	Austrian pine; baldcypress; eastern redcedar; northern white-cedar	Norway spruce; pin oak	green ash
RbB:					
Randolph	silky dogwood	American cranberrybush; European alder; Washington hawthorn	Austrian pine; baldcypress; eastern redcedar; northern white-cedar	Norway spruce; pin oak	green ash
RdA:					
Randolph	silky dogwood	American cranberrybush; European alder; Washington hawthorn	Austrian pine; baldcypress; eastern redcedar; northern white-cedar	Norway spruce; pin oak	green ash
ReA:					
Randolph	silky dogwood	American cranberrybush; European alder; Washington hawthorn	Austrian pine; baldcypress; eastern redcedar; northern white-cedar	Norway spruce; pin oak	green ash
Urban land	---	---	---	---	---
RfA:					
Rimer	silky dogwood	American cranberrybush; European alder; Washington hawthorn	Austrian pine; baldcypress; eastern redcedar; northern white-cedar	Norway spruce; pin oak	green ash
Tedrow	silky dogwood	American cranberrybush; European alder; Washington hawthorn	Austrian pine; baldcypress; eastern redcedar; northern white-cedar	Norway spruce; pin oak	green ash
RfB:					
Rimer	silky dogwood	American cranberrybush; European alder; Washington hawthorn	Austrian pine; baldcypress; eastern redcedar; northern white-cedar	Norway spruce; pin oak	green ash
Tedrow	silky dogwood	American cranberrybush; European alder; Washington hawthorn	Austrian pine; baldcypress; eastern redcedar; northern white-cedar	Norway spruce; pin oak	green ash
RgA:					
Rimer	silky dogwood	American cranberrybush; European alder; Washington hawthorn	Austrian pine; baldcypress; eastern redcedar; northern white-cedar	Norway spruce; pin oak	green ash
Tedrow	silky dogwood	American cranberrybush; European alder; Washington hawthorn	Austrian pine; baldcypress; eastern redcedar; northern white-cedar	Norway spruce; pin oak	green ash
Urban land	---	---	---	---	---
RhA:					
Ritchey	redbud	eastern redcedar; northern white-cedar; Washington hawthorn	chinkapin 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
RhB:					
Ritchey	redbud	eastern redcedar; northern white-cedar; Washington hawthorn	chinkapin oak	---	---
RkA:					
Ritchey	redbud	eastern redcedar; northern white-cedar; Washington hawthorn	chinkapin oak	---	---
RmA:					
Risingsun	common ninebark; silky dogwood	nannyberry	black willow	---	---
Rollersville	silky dogwood	American cranberrybush; baldcypress; European alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	pin oak
RnA:					
Rollersville	silky dogwood	American cranberrybush; baldcypress; European alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	pin oak
Risingsun	common ninebark; silky dogwood	nannyberry	black willow	---	---
RsA:					
Rossburg	redbud; Siberian peashrub	eastern redcedar; European alder; radiant crabapple; Siberian crabapple; Washington hawthorn	Austrian pine; blue spruce; eastern white pine; northern white-cedar; Norway spruce; osageorange	Norway spruce; white oak; white spruce	eastern white pine; northern red oak; white ash
SdA:					
Seward	redbud	American cranberrybush; Washington hawthorn	blue spruce; northern white-cedar	Austrian pine; Norway spruce	eastern white pine
Ottokee	redbud	American cranberrybush; Washington hawthorn	blue spruce; northern white-cedar	Austrian pine; Norway spruce	eastern white pine
SdB:					
Seward	redbud	American cranberrybush; Washington hawthorn	blue spruce; northern white-cedar	Austrian pine; Norway spruce	eastern white pine
Ottokee	redbud	American cranberrybush; Washington hawthorn	blue spruce; northern white-cedar	Austrian pine; Norway spruce	eastern white pine
SeA:					
Shawtown	Japanese tree lilac; redbud; Siberian peashrub	eastern redcedar; European alder; radiant crabapple; Siberian crabapple; Washington hawthorn	Austrian pine; blue spruce; northern white-cedar; Norway spruce; osageorange	white oak; white spruce	eastern white pine; northern red oak; white ash
SeB:					
Shawtown	Japanese tree lilac; redbud; Siberian peashrub	eastern redcedar; European alder; radiant crabapple; Siberian crabapple; Washington hawthorn	Austrian pine; blue spruce; northern white-cedar; Norway spruce; osageorange	white oak; white spruce	eastern white pine; northern red oak; white ash
SgA:					
Shoals	silky dogwood	American cranberrybush; baldcypress; European alder	eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	pin oak
ShA:					
Shoals	silky dogwood	American cranberrybush; baldcypress; European alder	eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	pin oak
SkA:					
Shoals	silky dogwood	American cranberrybush; baldcypress; European alder	eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	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
SmA:					
Shoals	silky dogwood	American cranberrybush; baldcypress; European alder	eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	pin oak
Sloan	silky dogwood	American cranberrybush; baldcypress; European alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	pin oak
SnA:					
Sloan	silky dogwood	American cranberrybush; baldcypress; European alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	pin oak
SoA:					
Sloan	silky dogwood	American cranberrybush; baldcypress; European alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	pin oak
SpA:					
Sloan	silky dogwood	American cranberrybush; baldcypress; European alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	pin oak
SrB:					
Spinks	redbud	American cranberrybush; Washington hawthorn	blue spruce; northern white-cedar	Austrian pine; Norway spruce	eastern white pine
SrC:					
Spinks	redbud	American cranberrybush; Washington hawthorn	blue spruce; northern white-cedar	Austrian pine; Norway spruce	eastern white pine
SrD:					
Spinks	redbud	American cranberrybush; Washington hawthorn	blue spruce; northern white-cedar	Austrian pine; Norway spruce	eastern white pine
SsB:					
Spinks	redbud	American cranberrybush; Washington hawthorn	blue spruce; northern white-cedar	Austrian pine; Norway spruce	eastern white pine
SsC:					
Spinks	redbud	American cranberrybush; Washington hawthorn	blue spruce; northern white-cedar	Austrian pine; Norway spruce	eastern white pine
StB:					
St. Clair	American cranberrybush; blackhaw	baldcypress; eastern redcedar; southern arrowwood; Washington hawthorn	Austrian pine; northern white-cedar; osageorange	black oak; green ash; Norway spruce; pin oak	northern red oak
StC2:					
St. Clair	American cranberrybush; blackhaw	baldcypress; eastern redcedar; southern arrowwood; Washington hawthorn	Austrian pine; northern white-cedar; osageorange	black oak; green ash; Norway spruce; pin oak	northern red oak
SuB2:					
St. Clair	American cranberrybush; blackhaw	baldcypress; eastern redcedar; southern arrowwood; Washington hawthorn	Austrian pine; northern white-cedar; osageorange	black oak; green ash; Norway spruce; pin oak	northern red oak
SuC2:					
St. Clair	American cranberrybush; blackhaw	baldcypress; eastern redcedar; southern arrowwood; Washington hawthorn	Austrian pine; northern white-cedar; osageorange	black oak; green ash; Norway spruce; pin oak	northern red oak
SuD2:					
St. Clair	American cranberrybush; blackhaw	baldcypress; eastern redcedar; southern arrowwood; Washington hawthorn	Austrian pine; northern white-cedar; osageorange	black oak; green ash; Norway spruce; pin oak	northern red 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
SuE2:					
St. Clair	American cranberrybush; blackhaw	baldcypress; eastern redcedar; southern arrowwood; Washington hawthorn	Austrian pine; northern white-cedar; osageorange	black oak; green ash; Norway spruce; pin oak	northern red oak
TeA:					
Tedrow	redbud	American cranberrybush; Washington hawthorn	blue spruce; northern white-cedar	Austrian pine; Norway spruce; pin oak	eastern white pine
TeB:					
Tedrow	redbud	American cranberrybush; Washington hawthorn	blue spruce; northern white-cedar	Austrian pine; Norway spruce; pin oak	eastern white pine
TfA:					
Tedrow	redbud	American cranberrybush; Washington hawthorn	blue spruce; northern white-cedar	Austrian pine; Norway spruce; pin oak	eastern white pine
Urban land	---	---	---	---	---
TpA:					
Toledo	silky dogwood	American cranberrybush; baldcypress; European alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	pin oak
TuA:					
Toledo	silky dogwood	American cranberrybush; baldcypress; European alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	pin oak
Urban land	---	---	---	---	---
UcA:					
Udorthents	---	---	---	---	---
UcE:					
Udorthents	---	---	---	---	---
Ur:					
Urban land	---	---	---	---	---
W:					
Water	---	---	---	---	---
WbA:					
Wabasha	silky dogwood	American cranberrybush; baldcypress; European alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn; white fir	Norway spruce; swamp white oak	pin oak
WmA:					
Wauseon	silky dogwood	American cranberrybush; baldcypress; European alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	pin oak
WnA:					
Wauseon	silky dogwood	American cranberrybush; baldcypress; European alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	pin oak
WyA:					
Wauseon	silky dogwood	American cranberrybush; baldcypress; European alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	pin oak
WzA:					
Wauseon	silky dogwood	American cranberrybush; baldcypress; European alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	pin oak
Urban land	---	---	---	---	---

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 228 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
AgA:						
Alvada	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
AmA:						
Aurand	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	0.43	Restricted permeability	0.43	Restricted permeability	0.43
AnA:						
Aurand	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	0.43	Restricted permeability	0.43	Restricted permeability	0.43
AsA:						
Aurand	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	0.43	Restricted permeability	0.43	Restricted permeability	0.43
Urban Land	Not Rated		Not Rated		Not Rated	
BeB:						
Belmore	Not limited		Not limited		Somewhat limited	
					Slope	0.13
BfB:						
Belmore	Not limited		Not limited		Somewhat limited	
					Slope	0.13
CaA:						
Castalia	Somewhat limited		Somewhat limited		Very limited	
	Gravel content	0.59	Gravel content	0.59	Gravel content	1.00
	Content of large stones	0.14	Content of large stones	0.14	Content of large stones	1.00
	Too Stony	0.01	Too Stony	0.01	Too Stony	0.01
CbB:						
Castalia	Very limited		Very limited		Very limited	
	Too Stony	1.00	Too Stony	1.00	Content of large stones	1.00
	Gravel content	0.36	Gravel content	0.36	Gravel content	1.00
	Content of large stones	0.14	Content of large stones	0.14	Too Stony	0.97
					Depth to bedrock	0.97

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
					Slope	0.13
Marblehead----------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Too Stony	1.00	Too Stony	1.00	Too Stony	1.00
					Gravel content	0.61
					Slope	0.13
					Content of large stones	0.03
CcA:						
Colwood----------	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
CdA:						
Colwood----------	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
CtA:						
Colwood----------	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	
CvA:						
Cygnet----------	Very limited		Somewhat limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.76	Depth to saturated zone	1.00
					Gravel content	0.06
CxB:						
Castalia----------	Very limited		Very limited		Very limited	
	Too Stony	1.00	Too Stony	1.00	Content of large stones	1.00
	Gravel content	0.36	Gravel content	0.36	Gravel content	1.00
	Content of large stones	0.14	Content of large stones	0.14	Too Stony	1.00
					Depth to bedrock	0.97
					Slope	0.13
Marblehead----------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Too Stony	1.00	Too Stony	1.00	Too Stony	1.00
					Gravel content	0.61
					Slope	0.13
					Content of large stones	0.03
Urban Land----------	Not Rated		Not Rated		Not Rated	
DgA:						
Digby----------	Very limited		Very limited		Very limited	

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
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
					Gravel content	0.06
DhA:						
Digby	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
					Gravel content	0.06
DrA:						
Dunbridge	Not limited		Not limited		Somewhat limited	
					Gravel content	
DsA:						
Dunbridge	Somewhat limited		Somewhat limited		Somewhat limited	
	Too sandy	0.31	Too sandy	0.31	Too sandy	0.31
					Gravel content	0.04
Spinks	Somewhat limited		Somewhat limited		Somewhat limited	
	Too sandy	0.86	Too sandy	0.86	Too sandy	0.86
DsB:						
Dunbridge	Somewhat limited		Somewhat limited		Somewhat limited	
	Too sandy	0.31	Too sandy	0.31	Depth to bedrock	0.86
					Too sandy	0.31
					Slope	0.13
					Gravel content	0.04
Spinks	Somewhat limited		Somewhat limited		Somewhat limited	
	Too sandy	0.86	Too sandy	0.86	Too sandy	0.86
					Slope	0.13
EaA:						
Eel	Very limited		Somewhat limited		Very limited	
	Flooding	1.00	Depth to saturated zone	0.46	Flooding	1.00
	Depth to saturated zone	0.80	Flooding	0.40	Depth to saturated zone	0.80
EmA:						
Eel	Very limited		Somewhat limited		Very limited	
	Flooding	1.00	Depth to saturated zone	0.46	Flooding	1.00
	Depth to saturated zone	0.80	Flooding	0.40	Depth to saturated zone	0.80
EnA:						
Eel	Very limited		Somewhat limited		Very limited	
	Flooding	1.00	Depth to saturated zone	0.46	Flooding	1.00
	Depth to saturated zone	0.83	Flooding	0.40	Depth to saturated zone	0.83

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
FcA:						
Flatrock	Very limited		Somewhat limited		Somewhat limited	
	Flooding	1.00	Depth to saturated zone	0.76	Depth to saturated zone	0.99
	Depth to saturated zone	1.00			Flooding	0.60
FuA:						
Fulton	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
FuB:						
Fulton	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	0.50
FzA:						
Fulton	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
Urban Land	Not Rated		Not Rated		Not Rated	
GmA:						
Genesee	Very limited		Somewhat limited		Very limited	
	Flooding	1.00	Flooding	0.40	Flooding	1.00
GnA:						
Genesee	Very limited		Somewhat limited		Very limited	
	Flooding	1.00	Flooding	0.40	Flooding	1.00
GpA:						
Granby	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
	Too sandy	0.72	Too sandy	0.72	Too sandy	0.72
HaA:						
Haney	Not limited		Not limited		Somewhat limited	
					Gravel content	0.06
HaB:						
Haney	Not limited		Not limited		Somewhat limited	
					Gravel content	0.06
HdA:						
Haney	Not limited		Not limited		Somewhat limited	
					Gravel content	0.06
HdB:						
Haney	Not limited		Not limited		Somewhat limited	

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
					Gravel content	0.06
HeA:						
Haskins	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	0.43	Restricted permeability	0.43	Restricted permeability	0.43
Digby	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	0.98	Restricted permeability	0.98	Restricted permeability	0.98
	Too sandy	0.01	Too sandy	0.01	Gravel content	0.06
					Too sandy	0.01
HeB:						
Haskins	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	0.43	Restricted permeability	0.43	Restricted permeability	0.43
Digby	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	0.98	Restricted permeability	0.98	Restricted permeability	0.98
	Too sandy	0.01	Too sandy	0.01	Gravel content	0.06
					Too sandy	0.01
HfA:						
Haskins	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	0.43	Restricted permeability	0.43	Restricted permeability	0.43
Digby	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	0.98	Restricted permeability	0.98	Restricted permeability	0.98
					Gravel content	0.06
HfB:						
Haskins	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	0.43	Restricted permeability	0.43	Restricted permeability	0.43
Digby	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	0.98	Restricted permeability	0.98	Restricted permeability	0.98
					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
HgA:						
Hoytville	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
HhA:						
Hoytville	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
HvA:						
Hoytville	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
	Too clayey	1.00	Too clayey	1.00	Too clayey	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
HwA:						
Hoytville	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
	Too clayey	1.00	Too clayey	1.00	Too clayey	1.00
	Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96
HyA:						
Hoytville	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
Urban Land	Not Rated		Not Rated		Not Rated	
JoA:						
Joliet	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
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
					Gravel content	0.04
KeA:						
Kibbie	Very limited		Very limited		Very limited	

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
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too sandy	0.76	Too sandy	0.76	Too sandy	0.76
KfA:						
Kibbie	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
KfB:						
Kibbie	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
KkA:						
Kibbie	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Urban Land	Not Rated		Not Rated		Not Rated	
LbB:						
Landes	Very limited		Somewhat limited		Very limited	
	Flooding	1.00	Too sandy	0.76	Flooding	1.00
	Too sandy	0.76	Flooding	0.40	Too sandy	0.76
					Slope	0.13
LdA:						
Latty	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
	Too clayey	1.00	Too clayey	1.00	Too clayey	1.00
	Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96
LgA:						
Latty	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	0.98	Restricted permeability	0.98	Restricted permeability	0.98
	Too clayey	1.00	Too clayey	1.00	Too clayey	1.00
Urban Land	Not Rated		Not Rated		Not Rated	
MbA:						
Millgrove	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
					Gravel content	0.06
McA:						
Mermill	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	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
	Ponding	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Restricted permeability	0.98	Restricted permeability	0.98	Restricted permeability	0.98
MdA:						
Mermill	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	0.98	Restricted permeability	0.98	Restricted permeability	0.98
MeA:						
Mermill	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	0.98	Restricted permeability	0.98	Restricted permeability	0.98
MfA:						
Mermill	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	0.98	Restricted permeability	0.98	Restricted permeability	0.98
Aurand	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	0.43	Restricted permeability	0.43	Restricted permeability	0.43
MgA:						
Mermill	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	0.98	Restricted permeability	0.98	Restricted permeability	0.98
Urban Land	Not Rated		Not Rated		Not Rated	
MhA:						
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
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
					Gravel content	0.06
MkA:						
Millsdale	Very limited		Very limited		Very limited	

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
	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
	Too Stony	0.74	Too Stony	0.74	Gravel content	0.06
					Too Stony	0.74
MmA:						
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
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
					Gravel content	0.06
Urban Land	Not Rated		Not Rated		Not Rated	
MnA:						
Milton	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
MnB:						
Milton	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
NmA:						
Nappanee	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	0.98	Restricted permeability	0.98	Restricted permeability	0.98
NmB:						
Nappanee	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	0.98	Restricted permeability	0.98	Restricted permeability	0.98
NnA:						
Nappanee	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	0.98	Restricted permeability	0.98	Restricted permeability	0.98
NnB:						
Nappanee	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	0.98	Restricted permeability	0.98	Restricted permeability	0.98
NnB2:						
Nappanee	Very limited		Very limited		Very limited	

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
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.98	Restricted permeability	0.98	Restricted permeability	0.98
NpA:						
Nappanee	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	0.98	Restricted permeability	0.98	Restricted permeability	0.98
NpB:						
Nappanee	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	0.98	Restricted permeability	0.98	Restricted permeability	0.98
NpB2:						
Nappanee	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	0.98	Restricted permeability	0.98	Restricted permeability	0.98
NsA:						
Nappanee	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	0.98	Restricted permeability	0.98	Restricted permeability	0.98
Urban Land	Not Rated		Not Rated		Not Rated	
OsB:						
Oshtemo	Not limited		Not limited		Somewhat limited	
					Slope	0.50
					Gravel content	0.06
OtA:						
Ottokee	Somewhat limited		Somewhat limited		Somewhat limited	
	Too sandy	0.31	Too sandy	0.31	Too sandy	0.31
Spinks	Somewhat limited		Somewhat limited		Somewhat limited	
	Too sandy	0.86	Too sandy	0.86	Too sandy	0.86
OtB:						
Ottokee	Somewhat limited		Somewhat limited		Somewhat limited	
	Too sandy	0.31	Too sandy	0.31	Too sandy	0.31
					Slope	0.13
Spinks	Somewhat limited		Somewhat limited		Somewhat limited	
	Too sandy	0.86	Too sandy	0.86	Too sandy	0.86
					Slope	0.13
OzB:						
Ottokee	Somewhat limited		Somewhat limited		Somewhat limited	
	Too sandy	0.31	Too sandy	0.31	Too sandy	0.31
					Slope	0.13

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
Spinks	Somewhat limited		Somewhat limited		Somewhat limited	
	Too sandy	0.86	Too sandy	0.86	Too sandy	0.86
					Slope	0.13
Urban Land	Not Rated		Not Rated		Not Rated	
Pt:						
Pits, Quarry	Not Rated		Not Rated		Not Rated	
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
RbB:						
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	Depth to bedrock	0.29
					Restricted permeability	0.21
					Slope	0.13
RdA:						
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
	Too Stony	0.74	Too Stony	0.74	Too Stony	0.74
ReA:						
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
Urban Land	Not Rated		Not Rated		Not Rated	
RfA:						
Rimer	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	0.98	Restricted permeability	0.98	Restricted permeability	0.98
	Too sandy	0.66	Too sandy	0.66	Too sandy	0.66
Tedrow	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	0.98	Restricted permeability	0.98	Restricted permeability	0.98
	Too sandy	0.31	Too sandy	0.31	Too sandy	0.31
RfB:						
Rimer	Very limited		Very limited		Very limited	

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
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.98	Restricted permeability	0.98	Restricted permeability	0.98
	Too sandy	0.66	Too sandy	0.66	Too sandy	0.66
					Slope	0.13
Tedrow	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	0.98	Restricted permeability	0.98	Restricted permeability	0.98
	Too sandy	0.31	Too sandy	0.31	Too sandy	0.31
					Slope	0.13
RgA:						
Rimer	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	0.98	Restricted permeability	0.98	Restricted permeability	0.98
	Too sandy	0.66	Too sandy	0.66	Too sandy	0.66
Tedrow	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	0.98	Restricted permeability	0.98	Restricted permeability	0.98
	Too sandy	0.31	Too sandy	0.31	Too sandy	0.31
Urban Land	Not Rated		Not Rated		Not Rated	
RhA:						
Ritchey	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	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
RkA:						
Ritchey	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Too Stony	0.74	Too Stony	0.74	Too Stony	0.74
RmA:						
Risingsun	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Gravel content	1.00
	Ponding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Gravel content	1.00	Gravel content	1.00	Ponding	1.00
	Restricted permeability	0.43	Restricted permeability	0.43	Restricted permeability	0.43
Rollersville	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	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
	Restricted permeability	0.43	Restricted permeability	0.43	Restricted permeability	0.43
RnA:						
Rollersville	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	0.43	Restricted permeability	0.43	Restricted permeability	0.43
Risingsun	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Gravel content	1.00
	Ponding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Gravel content	1.00	Gravel content	1.00	Ponding	1.00
	Restricted permeability	0.43	Restricted permeability	0.43	Restricted permeability	0.43
RsA:						
Rossburg	Very limited		Somewhat limited		Very limited	
	Flooding	1.00	Flooding	0.40	Flooding	1.00
SdA:						
Seward	Somewhat limited		Somewhat limited		Somewhat limited	
	Too sandy	0.66	Too sandy	0.66	Too sandy	0.66
	Depth to saturated zone	0.10	Depth to saturated zone	0.05	Depth to saturated zone	0.10
Ottokee	Somewhat limited		Somewhat limited		Somewhat limited	
	Too sandy	0.31	Too sandy	0.31	Too sandy	0.31
SdB:						
Seward	Somewhat limited		Somewhat limited		Somewhat limited	
	Too sandy	0.66	Too sandy	0.66	Too sandy	0.66
	Depth to saturated zone	0.10	Depth to saturated zone	0.05	Slope	0.13
					Depth to saturated zone	0.10
Ottokee	Somewhat limited		Somewhat limited		Somewhat limited	
	Too sandy	0.31	Too sandy	0.31	Too sandy	0.31
					Slope	0.13
SeA:						
Shawtown	Not limited		Not limited		Somewhat limited	
					Gravel content	0.06
SeB:						
Shawtown	Not limited		Not limited		Somewhat limited	
					Slope	0.50
					Gravel content	0.06
SgA:						
Shoals	Very limited		Somewhat limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.94	Depth to saturated zone	1.00
	Flooding	1.00	Flooding	0.40	Flooding	1.00
ShA:						
Shoals	Very limited		Somewhat limited		Very limited	

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
	Depth to saturated zone	1.00	Depth to saturated zone	0.94	Depth to saturated zone	1.00
	Flooding	1.00	Flooding	0.40	Flooding	1.00
SkA:						
Shoals	Very limited		Somewhat limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.94	Depth to saturated zone	1.00
	Flooding	1.00	Flooding	0.40	Flooding	1.00
SmA:						
Shoals	Very limited		Somewhat limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.94	Depth to saturated zone	1.00
	Flooding	1.00	Flooding	0.40	Flooding	1.00
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	Ponding	1.00	Flooding	1.00
	Ponding	1.00	Flooding	0.40	Ponding	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	Flooding	1.00
	Ponding	1.00	Flooding	0.40	Ponding	1.00
SoA:						
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
SpA:						
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	Flooding	1.00
	Ponding	1.00	Flooding	0.40	Ponding	1.00
SrB:						
Spinks	Very limited		Very limited		Very limited	
	Too sandy	1.00	Too sandy	1.00	Too sandy	1.00
SrC:						
Spinks	Very limited		Very limited		Very limited	
	Too sandy	1.00	Too sandy	1.00	Slope	1.00
	Slope	0.01	Slope	0.01	Too sandy	1.00
SrD:						
Spinks	Very limited		Very limited		Very limited	

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
	Too sandy	1.00	Too sandy	1.00	Slope	1.00
	Slope	0.99	Slope	0.99	Too sandy	1.00
SsB:						
Spinks	Somewhat limited		Somewhat limited		Somewhat limited	
	Too sandy	0.86	Too sandy	0.86	Too sandy	0.86
SsC:						
Spinks	Somewhat limited		Somewhat limited		Very limited	
	Too sandy	0.86	Too sandy	0.86	Slope	1.00
	Slope	0.01	Slope	0.01	Too sandy	0.01
StB:						
St. Clair	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96
	Depth to saturated zone	0.10	Depth to saturated zone	0.05	Slope	0.13
					Depth to saturated zone	0.10
					Gravel content	0.04
StC2:						
St. Clair	Somewhat limited		Somewhat limited		Very limited	
	Restricted permeability	0.96	Restricted permeability	0.96	Slope	1.00
	Depth to saturated zone	0.10	Depth to saturated zone	0.05	Restricted permeability	0.96
	Slope	0.01	Slope	0.01	Depth to saturated zone	0.10
					Gravel content	0.04
SuB2:						
St. Clair	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96
	Depth to saturated zone	0.10	Depth to saturated zone	0.05	Slope	0.13
					Depth to saturated zone	0.10
SuC2:						
St. Clair	Somewhat limited		Somewhat limited		Very limited	
	Restricted permeability	0.96	Restricted permeability	0.96	Slope	1.00
	Depth to saturated zone	0.10	Depth to saturated zone	0.05	Restricted permeability	0.96
	Slope	0.01	Slope	0.01	Depth to saturated zone	0.10
SuD2:						
St. Clair	Somewhat limited		Somewhat limited		Very limited	
	Restricted permeability	0.96	Restricted permeability	0.96	Slope	1.00
	Slope	0.88	Slope	0.88	Restricted permeability	0.96
	Depth to saturated zone	0.10	Depth to saturated zone	0.05	Depth to saturated zone	0.10
SuE2:						
St. Clair	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	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
	Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96
	Depth to saturated zone	0.10	Depth to saturated zone	0.05	Depth to saturated zone	0.10
TeA:						
Tedrow	Very limited		Somewhat limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.94	Depth to saturated zone	1.00
	Too sandy	0.31	Too sandy	0.31	Too sandy	0.31
TeB:						
Tedrow	Very limited		Somewhat limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.94	Depth to saturated zone	1.00
	Too sandy	0.31	Too sandy	0.31	Too sandy	0.31
					Slope	0.13
TfA:						
Tedrow	Very limited		Somewhat limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.94	Depth to saturated zone	1.00
	Too sandy	0.31	Too sandy	0.31	Too sandy	0.31
Urban Land	Not Rated		Not Rated		Not Rated	
TpA:						
Toledo	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	0.96	Restricted permeability	0.96	Restricted permeability	0.96
TuA:						
Toledo	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	0.96	Restricted permeability	0.96	Restricted permeability	0.96
Urban Land	Not Rated		Not Rated		Not Rated	
UcA:						
Udorthents	Not Rated		Not Rated		Not Rated	
UcE:						
Udorthents	Not Rated		Not Rated		Not Rated	
Ur:						
Urban Land	Not Rated		Not Rated		Not Rated	
W:						
Water	Not Rated		Not Rated		Not Rated	
WbA:						
Wabasha	Very limited		Very limited		Very limited	

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
	Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Depth to saturated zone	1.00	Flooding	1.00
	Ponding	1.00	Too clayey	1.00	Ponding	1.00
	Too clayey	1.00	Restricted permeability	0.96	Too clayey	1.00
	Restricted permeability	0.96	Flooding	0.40	Restricted permeability	0.96
WmA:						
Wauseon	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	0.98	Restricted permeability	0.98	Restricted permeability	0.98
	Too sandy	0.70	Too sandy	0.70	Too sandy	0.70
WnA:						
Wauseon	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
	Too sandy	0.01	Too sandy	0.01	Too sandy	0.01
WyA:						
Wauseon	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	0.98	Restricted permeability	0.98	Restricted permeability	0.98
	Too sandy	0.01	Too sandy	0.01	Too sandy	0.01
WzA:						
Wauseon	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	0.98	Restricted permeability	0.98	Restricted permeability	0.98
	Too sandy	0.01	Too sandy	0.01	Too sandy	0.01
Urban Land	Not Rated		Not Rated		Not Rated	

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 228 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
AgA:						
Alvada	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
AmA:						
Aurand	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
AnA:						
Aurand	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
AsA:						
Aurand	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Urban Land	Not Rated		Not Rated		Not Rated	
BeB:						
Belmore	Not limited		Not limited		Not limited	
BfB:						
Belmore	Not limited		Not limited		Not limited	
CaA:						
Castalia	Somewhat limited		Somewhat limited		Very limited	
	Content of large stones	0.14	Content of large stones	0.14	Droughty	1.00
	Too Stony	0.01	Too Stony	0.01	Content of large stones	1.00
					Carbonate content	1.00
					Depth to bedrock	0.99
					Gravel content	0.59
CbB:						
Castalia	Very limited		Very limited		Very limited	
	Too Stony	1.00	Too Stony	1.00	Droughty	1.00
	Content of large stones	0.14	Content of large stones	0.14	Content of large stones	1.00
					Carbonate content	1.00
					Depth to bedrock	0.97
					Gravel content	0.36
Marblehead	Very limited		Very limited		Very limited	
	Too Stony	1.00	Too Stony	1.00	Depth to bedrock	1.00
					Droughty	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
					Content of large stones	0.03
CcA:						
Colwood	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
CdA:						
Colwood	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
CtA:						
Colwood	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	
CvA:						
Cygnet	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.44	Depth to saturated zone	0.44	Depth to saturated zone	0.75
CxB:						
Castalia	Very limited		Very limited		Very limited	
	Too Stony	1.00	Too Stony	1.00	Droughty	1.00
	Content of large stones	0.14	Content of large stones	0.14	Content of large stones	1.00
					Carbonate content	1.00
					Depth to bedrock	0.97
					Gravel content	0.36
Marblehead	Very limited		Very limited		Very limited	
	Too Stony	1.00	Too Stony	1.00	Depth to bedrock	1.00
					Droughty	1.00
					Content of large stones	0.03
Urban Land	Not Rated		Not Rated		Not Rated	
DgA:						
Digby	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
DhA:						
Digby	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
DrA:						
Dunbridge	Not limited		Not limited		Somewhat limited	
					Depth to bedrock	0.42

TABLE 17.—RECREATION PART 2--Continued

Map symbol and soil name	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
					Droughty	0.15
DsA:						
Dunbridge	Somewhat limited		Not limited		Somewhat limited	
	Too sandy	0.31			Depth to bedrock	0.86
					Droughty	0.44
Spinks	Somewhat limited		Not limited		Somewhat limited	
	Too sandy	0.86			Droughty	0.29
DsB:						
Dunbridge	Somewhat limited		Not limited		Somewhat limited	
	Too sandy	0.31			Depth to bedrock	0.86
					Droughty	0.44
Spinks	Somewhat limited		Not limited		Somewhat limited	
	Too sandy	0.86			Droughty	0.29
EaA:						
Eel	Somewhat limited		Somewhat limited		Very limited	
	Flooding	0.40	Flooding	0.40	Flooding	1.00
	Depth to saturated zone	0.08	Depth to saturated zone	0.08	Depth to saturated zone	0.43
EmA:						
Eel	Somewhat limited		Somewhat limited		Very limited	
	Flooding	0.40	Flooding	0.40	Flooding	1.00
	Depth to saturated zone	0.08	Depth to saturated zone	0.08	Depth to saturated zone	0.43
EnA:						
Eel	Somewhat limited		Somewhat limited		Very limited	
	Flooding	0.40	Flooding	0.40	Flooding	1.00
	Depth to saturated zone	0.08	Depth to saturated zone	0.08	Depth to saturated zone	0.43
					Depth to bedrock	0.16
FcA:						
Flatrock	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.44	Depth to saturated zone	0.44	Depth to saturated zone	0.75
					Flooding	0.60
FuA:						
Fulton	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
FuB:						
Fulton	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
FzA:						
Fulton	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Urban Land	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
GmA:						
Genesee	Somewhat limited Flooding	 0.40	Somewhat limited Flooding	 0.40	Very limited Flooding	 1.00
GnA:						
Genesee	Somewhat limited Flooding	 0.40	Somewhat limited Flooding	 0.40	Very limited Flooding	 1.00
GpA:						
Granby	Very limited Depth to saturated zone Ponding Too sandy	 1.00 1.00 0.72	Very limited Depth to saturated zone Ponding	 1.00 1.00	Very limited Ponding Depth to saturated zone Droughty	 1.00 1.00 0.07
HaA:						
Haney	Not limited		Not limited		Not limited	
HaB:						
Haney	Not limited		Not limited		Not limited	
HdA:						
Haney	Not limited		Not limited		Not limited	
HdB:						
Haney	Not limited		Not limited		Not limited	
HeA:						
Haskins	Very limited Depth to saturated zone	 1.00	Very limited Depth to saturated zone	 1.00	Very limited Depth to saturated zone	 1.00
Digby	Very limited Depth to saturated zone Too sandy	 1.00 0.01	Very limited Depth to saturated zone	 1.00	Very limited Depth to saturated zone	 1.00
HeB:						
Haskins	Very limited Depth to saturated zone	 1.00	Very limited Depth to saturated zone	 1.00	Very limited Depth to saturated zone	 1.00
Digby	Very limited Depth to saturated zone Too sandy	 1.00 0.01	Very limited Depth to saturated zone	 1.00	Very limited Depth to saturated zone	 1.00
HfA:						
Haskins	Very limited Depth to saturated zone	 1.00	Very limited Depth to saturated zone	 1.00	Very limited Depth to saturated zone	 1.00
Digby	Very limited Depth to saturated zone	 1.00	Very limited Depth to saturated zone	 1.00	Very limited Depth to saturated zone	 1.00
HfB:						
Haskins	Very limited		Very limited		Very limited	

TABLE 17.—RECREATION PART 2--Continued

Map symbol and soil name	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Digby	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
HgA:						
Hoytville	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
HhA:						
Hoytville	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
HvA:						
Hoytville	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
	Too clayey	1.00	Too clayey	1.00	Too clayey	1.00
HwA:						
Hoytville	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
	Too clayey	1.00	Too clayey	1.00	Too clayey	1.00
					Droughty	0.03
HyA:						
Hoytville	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	
JoA:						
Joliet	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to bedrock	1.00
					Depth to saturated zone	1.00
					Droughty	0.85
KeA:						
Kibbie	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 sandy	0.76				

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
KfA:						
Kibbie	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
KfB:						
Kibbie	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
KkA:						
Kibbie	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Urban Land	Not Rated		Not Rated		Not Rated	
LbB:						
Landes	Somewhat limited		Somewhat limited		Very limited	
	Too sandy	0.76	Too sandy	0.76	Flooding	1.00
	Flooding	0.40	Flooding	0.40		
LdA:						
Latty	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
	Too clayey	1.00	Too clayey	1.00	Too clayey	1.00
LgA:						
Latty	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
	Too clayey	1.00	Too clayey	1.00	Too clayey	1.00
Urban Land	Not Rated		Not Rated		Not Rated	
MbA:						
Millgrove	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
McA:						
Mermill	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
MdA:						
Mermill	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
MeA:						
Mermill	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
MfA:						
Mermill	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
Aurand	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
MgA:						
Mermill	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	
MhA:						
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	0.29
MkA:						
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
	Too Stony	0.74	Too Stony	0.01	Depth to bedrock	0.29
MmA:						
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	0.29
Urban Land	Not Rated		Not Rated		Not Rated	
MnA:						
Milton	Not limited		Not limited		Somewhat limited	
					Depth to bedrock	0.80
MnB:						
Milton	Not limited		Not limited		Somewhat limited	
					Depth to bedrock	0.80

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
NmA:						
Nappanee	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
NmB:						
Nappanee	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
NnA:						
Nappanee	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
NnB:						
Nappanee	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
NnB2:						
Nappanee	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
NpA:						
Nappanee	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
NpB:						
Nappanee	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
NpB2:						
Nappanee	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
NsA:						
Nappanee	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
Urban Land	Not Rated		Not Rated		Not Rated	
OsB:						
Oshtemo	Not limited		Not limited		Not limited	
OtA:						
Ottokee	Somewhat limited Too sandy	0.31	Not limited		Somewhat limited Droughty	0.14
Spinks	Somewhat limited Too sandy	0.86	Not limited		Somewhat limited Droughty	0.30
OtB:						
Ottokee	Somewhat limited Too sandy	0.31	Not limited		Somewhat limited Droughty	0.14

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
Spinks	Somewhat limited Too sandy	0.86	Not limited		Somewhat limited Droughty	0.30
OzB:						
Ottokee	Somewhat limited Too sandy	0.31	Not limited		Somewhat limited Droughty	0.14
Spinks	Somewhat limited Too sandy	0.86	Not limited		Somewhat limited Droughty	0.30
Urban Land	Not Rated		Not Rated		Not Rated	
Pt:						
Pits, Quarry	Not Rated		Not Rated		Not Rated	
RbA:						
Randolph	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Depth to bedrock	1.00 0.29
RbB:						
Randolph	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Depth to bedrock	1.00 0.29
RdA:						
Randolph	Very limited Depth to saturated zone Too Stony	1.00 0.74	Very limited Depth to saturated zone Too Stony	1.00 0.74	Very limited Depth to saturated zone Depth to bedrock	1.00 0.29
ReA:						
Randolph	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Depth to bedrock	1.00 0.29
Urban Land	Not Rated		Not Rated		Not Rated	
RfA:						
Rimer	Very limited Depth to saturated zone Too sandy	1.00 0.66	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Droughty	1.00 0.08
Tedrow	Very limited Depth to saturated zone Too sandy	1.00 0.31	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Droughty	1.00 0.07
RfB:						
Rimer	Very limited Depth to saturated zone Too sandy	1.00 0.66	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Droughty	1.00 0.08
Tedrow	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited 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
	Too sandy	0.31			Droughty	0.07
RgA:						
Rimer	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 sandy	0.66			Droughty	0.08
Tedrow	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 sandy	0.31			Droughty	0.07
Urban Land	Not Rated		Not Rated		Not Rated	
RhA:						
Ritchey	Not limited		Not limited		Very limited	
					Depth to bedrock	1.00
					Droughty	0.31
RhB:						
Ritchey	Not limited		Not limited		Very limited	
					Depth to bedrock	1.00
					Droughty	0.31
RkA:						
Ritchey	Somewhat limited		Somewhat limited		Very limited	
	Too Stony	0.74	Too Stony	0.74	Depth to bedrock	1.00
					Droughty	0.31
RmA:						
Risingsun	Very limited		Very limited		Very limited	
	Gravel content	1.00	Gravel content	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Gravel content	1.00
	Ponding	1.00	Ponding	1.00	Depth to saturated zone	1.00
Rollersville	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
RnA:						
Rollersville	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Risingsun	Very limited		Very limited		Very limited	
	Gravel content	1.00	Gravel content	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Gravel content	1.00
	Ponding	1.00	Ponding	1.00	Depth to saturated zone	1.00
RsA:						
Rossburg	Somewhat limited		Somewhat limited		Very limited	
	Flooding	0.40	Flooding	0.40	Flooding	1.00
SdA:						
Seward	Somewhat limited		Not limited		Somewhat limited	

TABLE 17.—RECREATION PART 2--Continued

Map symbol and soil name	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
	Too sandy	0.66			Depth to saturated zone	0.03
Ottokee	Somewhat limited		Not limited		Somewhat limited	
	Too sandy	0.31			Droughty	0.17
SdB:						
Seward	Somewhat limited		Not limited		Somewhat limited	
	Too sandy	0.66			Depth to saturated zone	0.03
Ottokee	Somewhat limited		Not limited		Somewhat limited	
	Too sandy	0.31			Droughty	0.17
SeA:						
Shawtown	Not limited		Not limited		Not limited	
SeB:						
Shawtown	Not limited		Not limited		Not limited	
SgA:						
Shoals	Somewhat limited		Somewhat limited		Very limited	
	Depth to saturated zone	0.86	Depth to saturated zone	0.86	Flooding	1.00
	Flooding	0.40	Flooding	0.40	Depth to saturated zone	0.94
ShA:						
Shoals	Somewhat limited		Somewhat limited		Very limited	
	Depth to saturated zone	0.86	Depth to saturated zone	0.86	Flooding	1.00
	Flooding	0.40	Flooding	0.40	Depth to saturated zone	0.94
SkA:						
Shoals	Somewhat limited		Somewhat limited		Very limited	
	Depth to saturated zone	0.86	Depth to saturated zone	0.86	Flooding	1.00
	Flooding	0.40	Flooding	0.40	Depth to saturated zone	0.94
SmA:						
Shoals	Somewhat limited		Somewhat limited		Very limited	
	Depth to saturated zone	0.86	Depth to saturated zone	0.86	Flooding	1.00
	Flooding	0.40	Flooding	0.40	Depth to saturated zone	0.94
					Depth to bedrock	0.35
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	Flooding	1.00
	Flooding	0.40	Flooding	0.40	Depth to saturated zone	1.00
					Depth to bedrock	0.90
SnA:						
Sloan	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	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
	Ponding	1.00	Ponding	1.00	Flooding	1.00
	Flooding	0.40	Flooding	0.40	Depth to saturated zone	1.00
SoA:						
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
SpA:						
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	Flooding	1.00
	Flooding	0.40	Flooding	0.40	Depth to saturated zone	1.00
SrB:						
Spinks	Very limited		Very limited		Somewhat limited	
	Too sandy	1.00	Too sandy	1.00	Droughty	0.32
SrC:						
Spinks	Very limited		Very limited		Somewhat limited	
	Too sandy	1.00	Too sandy	1.00	Droughty	0.32
					Slope	0.01
SrD:						
Spinks	Very limited		Very limited		Very limited	
	Too sandy	1.00	Too sandy	1.00	Slope	1.00
	Slope	0.11			Droughty	0.32
SsB:						
Spinks	Somewhat limited		Not limited		Somewhat limited	
	Too sandy	0.86			Droughty	0.32
SsC:						
Spinks	Somewhat limited		Not limited		Somewhat limited	
	Too sandy	0.86			Droughty	0.32
					Slope	0.01
StB:						
St. Clair	Not limited		Not limited		Somewhat limited	
					Depth to saturated zone	0.03
StC2:						
St. Clair	Not limited		Not limited		Somewhat limited	
					Depth to saturated zone	0.03
					Slope	0.01
SuB2:						
St. Clair	Not limited		Not limited		Somewhat limited	
					Depth to saturated zone	0.03
SuC2:						
St. Clair	Not limited		Not limited		Somewhat limited	

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
					Depth to saturated zone	0.03
					Slope	0.01
SuD2:						
St. Clair	Very limited		Very limited		Somewhat limited	
	Water erosion	1.00	Water erosion	1.00	Slope	0.96
	Slope	0.05			Depth to saturated zone	0.03
SuE2:						
St. Clair	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	1.00
	Slope	0.70			Depth to saturated zone	0.03
TeA:						
Tedrow	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.86	Depth to saturated zone	0.86	Depth to saturated zone	0.94
	Too sandy	0.31			Droughty	0.07
TeB:						
Tedrow	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.86	Depth to saturated zone	0.86	Depth to saturated zone	0.94
	Too sandy	0.31			Droughty	0.07
TfA:						
Tedrow	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.86	Depth to saturated zone	0.86	Depth to saturated zone	0.94
	Too sandy	0.31			Droughty	0.07
Urban Land	Not Rated		Not Rated		Not Rated	
TpA:						
Toledo	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
TuA:						
Toledo	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	
UcA:						
Udorthents	Not Rated		Not Rated		Not Rated	
UcE:						
Udorthents	Not Rated		Not Rated		Not Rated	
Ur:						
Urban Land	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
W:						
Water	Not Rated		Not Rated		Not Rated	
WbA:						
Wabasha	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Ponding	1.00	Flooding	1.00
	Too clayey	1.00	Too clayey	1.00	Depth to saturated zone	1.00
	Flooding	0.40	Flooding	0.40	Too clayey	1.00
WmA:						
Wauseon	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
	Too sandy	0.70			Droughty	0.05
WnA:						
Wauseon	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
	Too sandy	0.01				
WyA:						
Wauseon	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
	Too sandy	0.01				
WzA:						
Wauseon	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
	Too sandy	0.01				
Urban Land	Not Rated		Not Rated		Not Rated	

TABLE 18.--WILDLIFE HABITAT

(See text on page 229 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
AgA:										
Alvada	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
AmA:										
Aurand	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
AnA:										
Aurand	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
AsA:										
Aurand	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
Urban land	---	---	---	---	---	---	---	---	---	---
BeB:										
Belmore	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
BfB:										
Belmore	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
CaA:										
Castalia	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Very poor.
CbB:										
Castalia	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Very poor.
Marblehead	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
CcA:										
Colwood	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
CdA:										
Colwood	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
CtA:										
Colwood	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Urban land	---	---	---	---	---	---	---	---	---	---
CvA:										
Cygnet	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
CxB:										
Castalia	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Very poor.
Marblehead	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
Urban land	---	---	---	---	---	---	---	---	---	---
DgA:										
Digby	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
DhA:										
Digby	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
DrA:										
Dunbridge	Fair	Good	Good	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.
DsA:										
Dunbridge	Poor	Fair	Good	Fair	Fair	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
Spinks	Poor	Fair	Good	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.
DsB:										
Dunbridge	Poor	Fair	Good	Fair	Fair	Very poor.	Poor	Fair	Fair	Very poor.
Spinks	Poor	Fair	Good	Fair	Fair	Very poor.	Poor	Fair	Fair	Very poor.
EaA:										
Eel	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
EmA:										
Eel	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
EnA:										
Eel	Fair	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
FcA:										
Flatrock	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
FuA:										
Fulton	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
FuB:										
Fulton	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
FzA:										
Fulton	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
Urban land	---	---	---	---	---	---	---	---	---	---
GmA:										
Genesee	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
GnA:										
Genesee	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
GpA:										
Granby	Poor	Poor	Poor	Poor	Poor	Fair	Good	Poor	Poor	Fair.
HaA:										
Haney	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
HaB:										
Haney	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
HdA:										
Haney	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
HdB:										
Haney	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
HeA:										
Haskins	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
Digby	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
HeB:										
Haskins	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Digby	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
HfA:										
Haskins	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
Digby	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	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
HfB:										
Haskins	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Digby	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
HgA:										
Hoytville	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
HhA:										
Hoytville	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
HvA:										
Hoytville	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
HwA:										
Hoytville	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
HyA:										
Hoytville	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Urban land	---	---	---	---	---	---	---	---	---	---
JoA:										
Joliet	Poor	Poor	Fair	Fair	Fair	Good	Poor	Poor	Fair	Fair.
KeA:										
Kibbie	Poor	Fair	Good	Good	Good	Fair	Fair	Fair	Good	Fair.
KfA:										
Kibbie	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
KfB:										
Kibbie	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
KkA:										
Kibbie	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
Urban land	---	---	---	---	---	---	---	---	---	---
LbB:										
Landes	Poor	Fair	Fair	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
LdA:										
Latty	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
LgA:										
Latty	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Urban land	---	---	---	---	---	---	---	---	---	---
MbA:										
Millgrove	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
McA:										
Mermill	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
MdA:										
Mermill	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
MeA:										
Mermill	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
MfA:										
Mermill	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Aurand	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	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
MgA:										
Mermill	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Urban land	---	---	---	---	---	---	---	---	---	---
MhA:										
Millsdale	Poor	Poor	Poor	Poor	Poor	Good	Fair	Poor	Poor	Fair.
MkA:										
Millsdale	Poor	Poor	Very poor.	Poor	Poor	Good	Poor	Poor	Poor	Fair.
MmA:										
Millsdale	Poor	Poor	Poor	Poor	Poor	Good	Fair	Poor	Poor	Fair.
Urban land	---	---	---	---	---	---	---	---	---	---
MnA:										
Milton	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
MnB:										
Milton	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
NmA:										
Nappanee	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
NmB:										
Nappanee	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
NnA:										
Nappanee	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
NnB:										
Nappanee	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
NnB2:										
Nappanee	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
NpA:										
Nappanee	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
NpB:										
Nappanee	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
NpB2:										
Nappanee	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
NsA:										
Nappanee	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
Urban land	---	---	---	---	---	---	---	---	---	---
OsB:										
Oshtemo	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
OtA:										
Ottokee	Poor	Fair	Good	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.
Spinks	Poor	Fair	Fair	Fair	Fair	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
OtB:										
Ottokee	Poor	Fair	Good	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.
Spinks	Poor	Fair	Fair	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.
OzB:										
Ottokee	Poor	Fair	Good	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.
Spinks	Poor	Fair	Fair	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.
Urban land	---	---	---	---	---	---	---	---	---	---
Pt:										
Pits, Quarry	---	---	---	---	---	---	---	---	---	---
RbA:										
Randolph	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
RbB:										
Randolph	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
RdA:										
Randolph	Poor	Fair	Very poor.	Good	Good	Fair	Fair	Fair	Fair	Fair.
ReA:										
Randolph	Fair	Good	Good	Good	Good	Fair	Poor	Good	Good	Fair.
Urban land	---	---	---	---	---	---	---	---	---	---
RfA:										
Rimer	Poor	Fair	Good	Fair	Fair	Fair	Fair	Fair	Fair	Fair.
Tedrow	Poor	Fair	Good	Fair	Fair	Fair	Fair	Fair	Fair	Fair.
RfB:										
Rimer	Poor	Fair	Good	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.
Tedrow	Poor	Fair	Good	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.
RgA:										
Rimer	Poor	Fair	Good	Fair	Fair	Fair	Fair	Fair	Fair	Fair.
Tedrow	Poor	Fair	Good	Fair	Fair	Fair	Fair	Fair	Fair	Fair.
Urban land	---	---	---	---	---	---	---	---	---	---
RhA:										
Ritchey	Poor	Poor	Fair	Fair	Fair	Poor	Very poor.	Poor	Fair	Very poor.
RhB:										
Ritchey	Poor	Poor	Fair	Fair	Fair	Poor	Very poor.	Poor	Fair	Very poor.
RkA:										
Ritchey	Poor	Poor	Very poor.	Fair	Fair	Poor	Very poor.	Poor	Fair	Very poor.
RmA:										
Risingsun	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Rollersville	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	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
RnA:										
Rollersville	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
Risingsun	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
RsA:										
Rossburg	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
SdA:										
Seward	Poor	Fair	Good	Fair	Fair	Poor	Poor	Fair	Fair	Poor.
Ottokee	Poor	Fair	Good	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.
SdB:										
Seward	Poor	Fair	Good	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.
Ottokee	Poor	Fair	Good	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.
SeA:										
Shawtown	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
SeB:										
Shawtown	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
SgA:										
Shoals	Poor	Fair	Fair	Good	Good	Fair	Fair	Fair	Good	Fair.
ShA:										
Shoals	Poor	Fair	Fair	Good	Good	Fair	Fair	Fair	Good	Fair.
SkA:										
Shoals	Poor	Fair	Fair	Good	Good	Fair	Fair	Fair	Good	Fair.
SmA:										
Shoals	Poor	Fair	Fair	Good	Good	Fair	Fair	Fair	Good	Fair.
Sloan	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
SnA:										
Sloan	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
SoA:										
Sloan	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
SpA:										
Sloan	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
SrB:										
Spinks	Poor	Fair	Fair	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.
SrC:										
Spinks	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
SrD:										
Spinks	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
SsB:										
Spinks	Poor	Poor	Fair	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.
SsC:										
Spinks	Poor	Poor	Fair	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
StB:										
St. Clair	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
StC2:										
St. Clair	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
SuB2:										
St. Clair	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
SuC2:										
St. Clair	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
SuD2:										
St. Clair	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
SuE2:										
St. Clair	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
TeA:										
Tedrow	Poor	Fair	Good	Fair	Fair	Fair	Fair	Fair	Fair	Fair.
TeB:										
Tedrow	Poor	Fair	Good	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.
TfA:										
Tedrow	Poor	Fair	Good	Fair	Fair	Fair	Fair	Fair	Fair	Fair.
Urban land	---	---	---	---	---	---	---	---	---	---
TpA:										
Toledo	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
TuA:										
Toledo	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Urban land	---	---	---	---	---	---	---	---	---	---
UcA:										
Udorthents	---	---	---	---	---	---	---	---	---	---
UcE:										
Udorthents	---	---	---	---	---	---	---	---	---	---
Ur:										
Urban land	---	---	---	---	---	---	---	---	---	---
W:										
Water	---	---	---	---	---	---	---	---	---	---
WbA:										
Wabasha	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
WmA:										
Wauseon	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
WnA:										
Wauseon	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
WyA:										
Wauseon	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
WzA:										
Wauseon	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Urban land	---	---	---	---	---	---	---	---	---	---

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 231 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
AgA:				
Alvada	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
AmA:				
Aurand	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
AnA:				
Aurand	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
AsA:				
Aurand	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Urban Land	Not rated		Not rated	
BeB:				
Belmore	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
BfB:				
Belmore	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
CaA:				
Castalia	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
CbB:				
Castalia	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Marblehead	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
CcA:				
Colwood	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
CdA:				
Colwood	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
CtA:				
Colwood	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Urban Land	Not rated		Not rated	
CvA:				
Cygnet	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
CxB:				
Castalia	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Marblehead	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Urban Land	Not rated		Not rated	
DgA:				
Digby	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
DhA:				
Digby	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
DrA:				
Dunbridge	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
DsA:				
Dunbridge	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Spinks	Poor		Fair	
	Thickest layer	0.00	Thickest layer	0.50
	Bottom layer	0.00	Bottom layer	0.50
DsB:				
Dunbridge	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
Spinks	Poor		Fair	
	Thickest layer	0.00	Thickest layer	0.50
	Bottom layer	0.00	Bottom layer	0.50
EaA:				
Eel	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
EmA:				
Eel	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
EnA:				
Eel	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
FcA:				
Flatrock	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
FuA:				
Fulton	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
FuB:				
Fulton	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
FzA:				
Fulton	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Urban Land	Not rated		Not rated	
GmA:				
Genesee	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
GnA:				
Genesee	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
GpA:				
Granby	Poor		Fair	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.50
HaA:				
Haney	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
HaB:				
Haney	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
HdA:				
Haney	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
HdB:				
Haney	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
HeA:				
Haskins	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Digby	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
HeB:				
Haskins	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Digby	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
HfA:				
Haskins	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Digby	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
HfB:				
Haskins	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Digby	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
HgA:				
Hoytville	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
HhA:				
Hoytville	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
HvA:				
Hoytville	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
HwA:				
Hoytville	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
HyA:				
Hoytville	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Urban Land	Not rated		Not rated	
JoA:				
Joliet	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
KeA:				
Kibbie	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
KfA:				
Kibbie	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
KfB:				
Kibbie	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
KkA:				
Kibbie	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Urban Land	Not rated		Not rated	
LbB:				
Landes	Poor		Fair	
	Thickest layer	0.00	Thickest layer	0.50
	Bottom layer	0.00	Bottom layer	0.50
LdA:				
Latty	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
LgA:				
Latty	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
Urban Land	Not rated		Not rated	
MbA:				
Millgrove	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
McA:				
Mermill	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MdA:				
Mermill	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MeA:				
Mermill	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MfA:				
Mermill	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Aurand	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MgA:				
Mermill	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Urban Land	Not rated		Not rated	
MhA:				
Millsdale	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MkA:				
Millsdale	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MmA:				
Millsdale	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
MnA:				
Milton	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MnB:				
Milton	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
NmA:				
Nappanee	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
NmB:				
Nappanee	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
NnA:				
Nappanee	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
NnB:				
Nappanee	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
NnB2:				
Nappanee	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
NpA:				
Nappanee	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
NpB:				
Nappanee	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
NpB2:				
Nappanee	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
NsA:				
Nappanee	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
OsB:				
Oshtemo	Poor		Fair	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.50
OtA:				
Ottokee	Poor		Fair	
	Thickest layer	0.00	Thickest layer	0.50
	Bottom layer	0.00	Bottom layer	0.50
Spinks	Poor		Fair	
	Thickest layer	0.00	Thickest layer	0.50
	Bottom layer	0.00	Bottom layer	0.50
OtB:				
Ottokee	Poor		Fair	
	Thickest layer	0.00	Thickest layer	0.50
	Bottom layer	0.00	Bottom layer	0.50
Spinks	Poor		Fair	
	Thickest layer	0.00	Thickest layer	0.50
	Bottom layer	0.00	Bottom layer	0.50
OzB:				
Ottokee	Poor		Fair	
	Thickest layer	0.00	Thickest layer	0.50
	Bottom layer	0.00	Bottom layer	0.50
Spinks	Poor		Fair	
	Thickest layer	0.00	Thickest layer	0.50
	Bottom layer	0.00	Bottom layer	0.50
Urban Land	Not rated		Not rated	
Pt:				
Pits, Quarry	Not rated		Not rated	
RbA:				
Randolph	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
RbB:				
Randolph	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
RdA:				
Randolph	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
ReA:				
Randolph	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
RfA:				
Rimer	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Tedrow	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
RfB:				
Rimer	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Tedrow	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
RgA:				
Rimer	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Tedrow	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Urban Land	Not rated		Not rated	
RhA:				
Ritchey	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
RkA:				
Ritchey	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
RmA:				
Risingsun	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Rollersville	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
RnA:				
Rollersville	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
Risingsun	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
RsA:				
Rossburg	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
SdA:				
Seward	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Ottokee	Poor		Fair	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.50
SdB:				
Seward	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Ottokee	Poor		Fair	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.50
SeA:				
Shawtown	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
SeB:				
Shawtown	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
SgA:				
Shoals	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
ShA:				
Shoals	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
SkA:				
Shoals	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
SmA:				
Shoals	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
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
SnA:				
Sloan	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
SoA:				
Sloan	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
SpA:				
Sloan	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
SrB:				
Spinks	Poor		Fair	
	Thickest layer	0.00	Thickest layer	0.50
	Bottom layer	0.00	Bottom layer	0.50
SrC:				
Spinks	Poor		Fair	
	Thickest layer	0.00	Thickest layer	0.50
	Bottom layer	0.00	Bottom layer	0.50
SrD:				
Spinks	Poor		Fair	
	Thickest layer	0.00	Thickest layer	0.50
	Bottom layer	0.00	Bottom layer	0.50
SsB:				
Spinks	Poor		Fair	
	Thickest layer	0.00	Thickest layer	0.50
	Bottom layer	0.00	Bottom layer	0.50
SsC:				
Spinks	Poor		Fair	
	Thickest layer	0.00	Thickest layer	0.50
	Bottom layer	0.00	Bottom layer	0.50
StB:				
St. Clair	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
StC2:				
St. Clair	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
SuB2:				
St. Clair	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
SuC2:				
St. Clair	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
SuD2:				
St. Clair	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
SuE2:				
St. Clair	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
TeA:				
Tedrow	Poor		Fair	
	Thickest layer	0.00	Thickest layer	0.50
	Bottom layer	0.00	Bottom layer	0.50
TeB:				
Tedrow	Poor		Fair	
	Thickest layer	0.00	Thickest layer	0.50
	Bottom layer	0.00	Bottom layer	0.50
TfA:				
Tedrow	Poor		Fair	
	Thickest layer	0.00	Thickest layer	0.50
	Bottom layer	0.00	Bottom layer	0.50
Urban Land	Not rated		Not rated	
TpA:				
Toledo	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
TuA:				
Toledo	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Urban Land	Not rated		Not rated	
UcA:				
Udorthents	Not rated		Not rated	
UcE:				
Udorthents	Not rated		Not rated	
Ur:				
Urban Land	Not rated		Not rated	
W:				
Water	Not rated		Not rated	
WbA:				
Wabasha	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
WmA:				
Wauseon	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
WnA:				
Wauseon	Poor		Fair	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.48
WyA:				
Wauseon	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
WzA:				
Wauseon	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 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 231 for further explanation of ratings in this table.)

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
AgA:						
Alvada	Fair		Poor		Poor	
	Carbonate content	0.80	Depth to saturated zone	0.00	Depth to saturated zone	0.00
			Low strength	0.00		
AmA:						
Aurand	Fair		Poor		Poor	
	Low content of organic matter	0.12	Low strength	0.00	Depth to saturated zone	0.00
	Carbonate content	0.84	Depth to saturated zone	0.00	Rock fragments	0.88
					Hard to reclaim (dense layer)	0.99
AnA:						
Aurand	Fair		Poor		Poor	
	Carbonate content	0.84	Depth to saturated zone	0.00	Depth to saturated zone	0.00
			Low strength	0.22	Hard to reclaim (dense layer)	0.80
					Rock fragments	0.88
AsA:						
Aurand	Fair		Poor		Poor	
	Low content of organic matter	0.12	Low strength	0.00	Depth to saturated zone	0.00
	Carbonate content	0.84	Depth to saturated zone	0.00	Hard to reclaim (dense layer)	0.84
					Rock fragments	0.88
Urban Land	Not rated		Not rated		Not rated	
BeB:						
Belmore	Fair		Good		Fair	
	Low content of organic matter	0.12			Rock fragments	0.50
	Carbonate content	0.92			Hard to reclaim (rock fragments)	0.92
BfB:						
Belmore	Fair		Good		Fair	
	Low content of organic matter	0.12			Rock fragments	0.50
	Carbonate content	0.92			Hard to reclaim (rock fragments)	0.92

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
CaA:						
Castalia	Poor		Poor		Poor	
	Droughty	0.00	Depth to bedrock	0.00	Carbonate content	0.00
	Carbonate content	0.00	Stone content	0.01	Rock fragments	0.00
	Stone content	0.00	Cobble content	0.13	Depth to bedrock	0.01
	Depth to bedrock	0.01				
	Cobble content	0.78				
CbB:						
Castalia	Poor		Poor		Poor	
	Droughty	0.00	Depth to bedrock	0.00	Rock fragments	0.00
	Carbonate content	0.00	Cobble content	0.00	Depth to bedrock	0.03
	Stone content	0.00	Stone content	0.00		
	Depth to bedrock	0.03				
	Cobble content	0.44				
Marblehead	Poor		Poor		Poor	
	Droughty	0.00	Depth to bedrock	0.00	Depth to bedrock	0.00
	Depth to bedrock	0.00			Rock fragments	0.50
CcA:						
Colwood	Fair		Poor		Poor	
	Low content of organic matter	0.88	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Water erosion	0.90	Low strength	0.78		
CdA:						
Colwood	Fair		Poor		Poor	
	Low content of organic matter	0.88	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Water erosion	0.90	Low strength	0.78		
CtA:						
Colwood	Fair		Poor		Poor	
	Low content of organic matter	0.88	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Water erosion	0.90	Low strength	0.78		
Urban Land	Not rated		Not rated		Not rated	
CvA:						
Cygnet	Fair		Fair		Fair	
	Carbonate content	0.46	Depth to saturated zone	0.14	Rock fragments	0.12
	Low content of organic matter	0.88			Depth to saturated zone	0.14
					Hard to reclaim (dense layer)	0.54
CxB:						
Castalia	Poor		Poor		Poor	
	Droughty	0.00	Depth to bedrock	0.00	Rock fragments	0.00
	Carbonate content	0.00	Cobble content	0.00	Depth to bedrock	0.03
	Stone content	0.00	Stone content	0.00		
	Depth to bedrock	0.03				
	Cobble content	0.44				

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
Marblehead----------	Poor		Poor		Poor	
	Droughty	0.00	Depth to bedrock	0.00	Depth to bedrock	0.00
	Depth to bedrock	0.00			Rock fragments	0.50
Urban Land----------	Not rated		Not rated		Not rated	
DgA:						
Digby----------	Fair		Poor		Poor	
	Low content of organic matter	0.12	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Carbonate content	0.92			Hard to reclaim (rock fragments)	0.92
					Rock fragments	0.97
DhA:						
Digby----------	Fair		Poor		Poor	
	Low content of organic matter	0.12	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Carbonate content	0.92			Hard to reclaim (rock fragments)	0.92
					Rock fragments	0.97
DrA:						
Dunbridge----------	Fair		Poor		Fair	
	Droughty	0.06	Depth to bedrock	0.00	Depth to bedrock	0.14
	Low content of organic matter	0.12			Rock fragments	0.72
	Depth to bedrock	0.14				
DsA:						
Dunbridge----------	Poor		Poor		Fair	
	Wind erosion	0.00	Depth to bedrock	0.00	Depth to bedrock	0.14
	Droughty	0.00			Rock fragments	0.72
	Low content of organic matter	0.12				
	Depth to bedrock	0.14				
Spinks----------	Poor		Fair		Fair	
	Wind erosion	0.00	Depth to bedrock	0.68	Too sandy	0.03
	Too sandy	0.03				
	Low content of organic matter	0.12				
	Droughty	0.35				
DsB:						
Dunbridge----------	Poor		Poor		Fair	
	Wind erosion	0.00	Depth to bedrock	0.00	Depth to bedrock	0.14
	Droughty	0.00			Rock fragments	0.72
	Low content of organic matter	0.12				
	Depth to bedrock	0.14				
Spinks----------	Poor		Fair		Fair	
	Wind erosion	0.00	Depth to bedrock	0.68	Too sandy	0.03
	Too sandy	0.03				
	Low content of organic matter	0.12				
	Droughty	0.35				

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
EaA:						
Eel	Fair		Fair		Fair	
	Low content of organic matter	0.88	Depth to saturated zone	0.32	Depth to saturated zone	0.32
			Low strength	0.78		
EmA:						
Eel	Fair		Fair		Fair	
	Low content of organic matter	0.88	Depth to saturated zone	0.32	Depth to saturated zone	0.32
			Low strength	0.78		
EnA:						
Eel	Fair		Poor		Fair	
	Depth to bedrock	0.84	Depth to bedrock	0.00	Depth to saturated zone	0.32
	Low content of organic matter	0.88	Depth to saturated zone	0.32	Depth to bedrock	0.84
			Low strength	0.78		
FcA:						
Flatrock	Fair		Poor		Fair	
	Low content of organic matter	0.88	Low strength	0.00	Depth to saturated zone	0.14
	Water erosion	0.99	Depth to saturated zone	0.14		
FuA:						
Fulton	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Too clayey	0.00
	Carbonate content	0.68	Low strength	0.00	Depth to saturated zone	0.00
	Low content of organic matter	0.88	Shrink-swell	0.87		
	Water erosion	0.90				
FuB:						
Fulton	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Too clayey	0.00
	Carbonate content	0.68	Low strength	0.00	Depth to saturated zone	0.00
	Low content of organic matter	0.88	Shrink-swell	0.87		
	Water erosion	0.90				
FzA:						
Fulton	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Too clayey	0.00
	Low content of organic matter	0.12	Low strength	0.00	Depth to saturated zone	0.00
	Carbonate content	0.68	Shrink-swell	0.87		
	Water erosion	0.90				
Urban Land	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
GmA:						
Genesee	Fair		Fair		Good	
	Low content of organic matter	0.88	Low strength	0.78		
	Water erosion	0.99				
GnA:						
Genesee	Fair		Fair		Good	
	Low content of organic matter	0.88	Low strength	0.78		
	Water erosion	0.99				
GpA:						
Granby	Poor		Poor		Poor	
	Wind erosion	0.00	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Too sandy	0.02			Too sandy	0.02
	Carbonate content	0.80			Hard to reclaim (dense layer)	0.80
	Low content of organic matter	0.88				
HaA:						
Haney	Fair		Fair		Fair	
	Low content of organic matter	0.88	Depth to saturated zone	0.98	Rock fragments	0.28
	Carbonate content	0.92			Hard to reclaim (rock fragments)	0.92
					Depth to saturated zone	0.98
HaB:						
Haney	Fair		Fair		Fair	
	Low content of organic matter	0.88	Depth to saturated zone	0.98	Rock fragments	0.28
	Carbonate content	0.92			Hard to reclaim (rock fragments)	0.92
					Depth to saturated zone	0.98
HdA:						
Haney	Fair		Fair		Fair	
	Low content of organic matter	0.88	Depth to saturated zone	0.98	Rock fragments	0.28
	Carbonate content	0.92			Hard to reclaim (rock fragments)	0.92
					Depth to saturated zone	0.98
HdB:						
Haney	Fair		Fair		Fair	
	Low content of organic matter	0.88	Depth to saturated zone	0.98	Rock fragments	0.28
	Carbonate content	0.92			Hard to reclaim (rock fragments)	0.92
					Depth to saturated zone	0.98

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
HeA:						
Haskins	Fair		Poor		Poor	
	Carbonate content	0.74	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Low content of organic matter	0.88			Rock fragments	0.88
Digby	Fair		Poor		Poor	
	Carbonate content	0.74	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Low content of organic matter	0.88			Rock fragments	0.97
	Droughty	0.99			Hard to reclaim (dense layer)	0.97
HeB:						
Haskins	Fair		Poor		Poor	
	Carbonate content	0.74	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Low content of organic matter	0.88			Rock fragments	0.88
Digby	Fair		Poor		Poor	
	Carbonate content	0.74	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Low content of organic matter	0.88			Rock fragments	0.97
	Droughty	0.99			Hard to reclaim (dense layer)	0.97
HfA:						
Haskins	Fair		Poor		Poor	
	Low content of organic matter	0.12	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Carbonate content	0.74			Rock fragments	0.88
	Water erosion	0.99				
Digby	Fair		Poor		Poor	
	Carbonate content	0.74	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Low content of organic matter	0.88			Rock fragments	0.97
					Hard to reclaim (dense layer)	0.97
HfB:						
Haskins	Fair		Poor		Poor	
	Low content of organic matter	0.12	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Carbonate content	0.74			Rock fragments	0.88
	Water erosion	0.99				
Digby	Fair		Poor		Poor	
	Carbonate content	0.74	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Low content of organic matter	0.88			Rock fragments	0.97
					Hard to reclaim (dense layer)	0.97

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
HgA:						
Hoytville	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Too clayey	0.00
	Carbonate content	0.80	Low strength	0.00	Depth to saturated zone	0.00
	Low content of organic matter	0.88	Shrink-swell	0.87		
HhA:						
Hoytville	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Too clayey	0.00
	Carbonate content	0.80	Low strength	0.00	Depth to saturated zone	0.00
	Low content of organic matter	0.88	Shrink-swell	0.87		
HvA:						
Hoytville	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Too clayey	0.00
	Carbonate content	0.80	Low strength	0.00	Depth to saturated zone	0.00
	Low content of organic matter	0.88	Shrink-swell	0.87		
HwA:						
Hoytville	Fair		Poor		Poor	
	Too clayey	0.12	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Droughty	0.32	Low strength	0.00	Too clayey	0.09
	Carbonate content	0.80	Shrink-swell	0.87	Carbonate content	0.80
	Low content of organic matter	0.88				
HyA:						
Hoytville	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Too clayey	0.00
	Carbonate content	0.80	Low strength	0.00	Depth to saturated zone	0.00
	Low content of organic matter	0.88	Shrink-swell	0.87		
Urban Land	Not rated		Not rated		Not rated	
JoA:						
Joliet	Poor		Poor		Poor	
	Depth to bedrock	0.00	Depth to bedrock	0.00	Depth to saturated zone	0.00
	Droughty	0.00	Depth to saturated zone	0.00	Depth to bedrock	0.00
	Too clayey	0.68	Low strength	0.00	Too clayey	0.64
	Water erosion	0.99	Shrink-swell	0.87	Rock fragments	0.97

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
KeA:						
Kibbie	Poor		Poor		Poor	
	Wind erosion	0.00	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Low content of organic matter	0.12				
	Carbonate content	0.80				
KfA:						
Kibbie	Fair		Poor		Poor	
	Low content of organic matter	0.12	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Carbonate content	0.80				
KfB:						
Kibbie	Fair		Poor		Poor	
	Low content of organic matter	0.12	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Carbonate content	0.80				
KkA:						
Kibbie	Fair		Poor		Poor	
	Low content of organic matter	0.12	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Carbonate content	0.80				
Urban Land	Not rated		Not rated		Not rated	
LbB:						
Landes	Poor		Good		Fair	
	Wind erosion	0.00			Too sandy	0.03
	Too sandy	0.03				
LdA:						
Latty	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Too clayey	0.00
	Carbonate content	0.80	Low strength	0.00	Depth to saturated zone	0.00
	Low content of organic matter	0.88	Shrink-swell	0.87		
LgA:						
Latty	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Too clayey	0.00
	Low content of organic matter	0.50	Low strength	0.00	Depth to saturated zone	0.00
	Carbonate content	0.80	Shrink-swell	0.87		
Urban Land	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
MbA:						
Millgrove	Fair		Poor		Poor	
	Low content of organic matter	0.12	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Carbonate content	0.92			Rock fragments	0.50
					Hard to reclaim (rock fragments)	0.98
McA:						
Mermill	Fair		Poor		Poor	
	Low content of organic matter	0.92	Depth to saturated zone	0.00	Depth to saturated zone	0.00
			Low strength	0.78		
MdA:						
Mermill	Fair		Poor		Poor	
	Low content of organic matter	0.12	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Carbonate content	0.84	Low strength	0.00		
			Shrink-swell	0.99		
MeA:						
Mermill	Fair		Poor		Poor	
	Low content of organic matter	0.92	Depth to saturated zone	0.00	Depth to saturated zone	0.00
			Low strength	0.78		
MfA:						
Mermill	Fair		Poor		Poor	
	Carbonate content	0.84	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Low content of organic matter	0.88	Low strength	0.00		
Aurand	Fair		Poor		Poor	
	Low content of organic matter	0.12	Low strength	0.00	Depth to saturated zone	0.00
	Carbonate content	0.84	Depth to saturated zone	0.00	Hard to reclaim (dense layer)	0.46
					Rock fragments	0.97
MgA:						
Mermill	Fair		Poor		Poor	
	Low content of organic matter	0.12	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Carbonate content	0.84	Low strength	0.00		
Urban Land	Not rated		Not rated		Not rated	
MhA:						
Millsdale	Poor		Poor		Poor	
	Too clayey	0.00	Depth to bedrock	0.00	Depth to saturated zone	0.00
	Depth to bedrock	0.71	Depth to saturated zone	0.00	Too clayey	0.00
	Droughty	0.76	Low strength	0.00	Depth to bedrock	0.71
			Shrink-swell	0.87	Rock fragments	0.97

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
MkA:						
Millsdale	Poor		Poor		Poor	
	Too clayey	0.00	Depth to bedrock	0.00	Depth to saturated zone	0.00
	Depth to bedrock	0.71	Depth to saturated zone	0.00	Too clayey	0.00
	Droughty	0.76	Low strength	0.00	Depth to bedrock	0.71
			Shrink-swell	0.87	Rock fragments	0.97
MmA:						
Millsdale	Poor		Poor		Poor	
	Too clayey	0.00	Depth to bedrock	0.00	Depth to saturated zone	0.00
	Depth to bedrock	0.71	Depth to saturated zone	0.00	Too clayey	0.00
	Droughty	0.76	Low strength	0.00	Depth to bedrock	0.71
			Shrink-swell	0.87	Rock fragments	0.97
Urban Land	Not rated		Not rated		Not rated	
MnA:						
Milton	Poor		Poor		Poor	
	Too clayey	0.00	Depth to bedrock	0.00	Too clayey	0.00
	Low content of organic matter	0.12	Low strength	0.00	Depth to bedrock	0.21
	Depth to bedrock	0.21	Shrink-swell	0.91		
	Droughty	0.36				
	Water erosion	0.99				
MnB:						
Milton	Poor		Poor		Poor	
	Too clayey	0.00	Depth to bedrock	0.00	Too clayey	0.00
	Low content of organic matter	0.12	Low strength	0.00	Depth to bedrock	0.21
	Depth to bedrock	0.21	Shrink-swell	0.91		
	Droughty	0.36				
	Water erosion	0.99				
NmA:						
Nappanee	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Too clayey	0.00
	Low content of organic matter	0.12	Low strength	0.00	Depth to saturated zone	0.00
	Carbonate content	0.92	Shrink-swell	0.87	Hard to reclaim (dense layer)	0.35
	Droughty	0.97				
	Water erosion	0.99				
NmB:						
Nappanee	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Too clayey	0.00
	Low content of organic matter	0.12	Low strength	0.00	Depth to saturated zone	0.00
	Carbonate content	0.92	Shrink-swell	0.87	Hard to reclaim (dense layer)	0.35
	Droughty	0.97				
	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
NnA:						
Nappanee	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Too clayey	0.00
	Low content of organic matter	0.12	Low strength	0.00	Depth to saturated zone	0.00
	Carbonate content	0.92	Shrink-swell	0.87	Hard to reclaim (dense layer)	0.35
	Water erosion	0.99				
NnB:						
Nappanee	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Too clayey	0.00
	Low content of organic matter	0.12	Low strength	0.00	Depth to saturated zone	0.00
	Carbonate content	0.92	Shrink-swell	0.87	Hard to reclaim (dense layer)	0.35
	Water erosion	0.99				
NnB2:						
Nappanee	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Too clayey	0.00
	Low content of organic matter	0.12	Low strength	0.00	Depth to saturated zone	0.00
	Carbonate content	0.92	Shrink-swell	0.87	Hard to reclaim (dense layer)	0.35
	Water erosion	0.99				
NpA:						
Nappanee	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Too clayey	0.00
	Low content of organic matter	0.12	Low strength	0.00	Depth to saturated zone	0.00
	Water erosion	0.90	Shrink-swell	0.87	Hard to reclaim (dense layer)	0.35
	Carbonate content	0.92				
NpB:						
Nappanee	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Too clayey	0.00
	Low content of organic matter	0.12	Low strength	0.00	Depth to saturated zone	0.00
	Water erosion	0.90	Shrink-swell	0.87	Hard to reclaim (dense layer)	0.35
	Carbonate content	0.92				
NpB2:						
Nappanee	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Too clayey	0.00
	Low content of organic matter	0.12	Low strength	0.00	Depth to saturated zone	0.00
	Water erosion	0.90	Shrink-swell	0.87	Hard to reclaim (dense layer)	0.35
	Carbonate content	0.92				

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
NsA:						
Nappanee	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Too clayey	0.00
	Low content of organic matter	0.12	Low strength	0.00	Depth to saturated zone	0.00
	Water erosion	0.90	Shrink-swell	0.87	Hard to reclaim (dense layer)	0.35
	Carbonate content	0.92				
Urban Land	Not rated		Not rated		Not rated	
OsB:						
Oshtemo	Fair		Good		Fair	
	Low content of organic matter	0.12			Rock fragments	0.28
	Carbonate content	0.74			Hard to reclaim (dense layer)	0.84
OtA:						
Ottokee	Poor		Fair		Fair	
	Wind erosion	0.00	Depth to saturated zone	0.91	Too sandy	0.51
	Low content of organic matter	0.50			Depth to saturated zone	0.91
	Too sandy	0.51				
	Droughty	0.68				
Spinks	Poor		Good		Fair	
	Wind erosion	0.00			Too sandy	0.03
	Too sandy	0.03				
	Low content of organic matter	0.12				
	Droughty	0.62				
OtB:						
Ottokee	Poor		Fair		Fair	
	Wind erosion	0.00	Depth to saturated zone	0.91	Too sandy	0.51
	Low content of organic matter	0.50			Depth to saturated zone	0.91
	Too sandy	0.51				
	Droughty	0.68				
Spinks	Poor		Good		Fair	
	Wind erosion	0.00			Too sandy	0.03
	Too sandy	0.03				
	Low content of organic matter	0.12				
	Droughty	0.62				
OzB:						
Ottokee	Poor		Fair		Fair	
	Wind erosion	0.00	Depth to saturated zone	0.91	Too sandy	0.51
	Low content of organic matter	0.50			Depth to saturated zone	0.91
	Too sandy	0.51				
	Droughty	0.68				

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
Spinks	Poor		Good		Fair	
	Wind erosion	0.00			Too sandy	0.03
	Too sandy	0.03				
	Low content of organic matter	0.12				
	Droughty	0.62				
Urban Land	Not rated		Not rated		Not rated	
Pt:						
Pits, Quarry	Not rated		Not rated		Not rated	
RbA:						
Randolph	Fair		Poor		Poor	
	Too clayey	0.01	Depth to bedrock	0.00	Depth to saturated zone	0.00
	Low content of organic matter	0.12	Depth to saturated zone	0.00	Too clayey	0.00
	Depth to bedrock	0.71	Low strength	0.00	Depth to bedrock	0.71
	Droughty	0.91	Shrink-swell	0.87	Rock fragments	0.97
	Water erosion	0.99				
RbB:						
Randolph	Fair		Poor		Poor	
	Too clayey	0.01	Depth to bedrock	0.00	Depth to saturated zone	0.00
	Low content of organic matter	0.12	Depth to saturated zone	0.00	Too clayey	0.00
	Depth to bedrock	0.71	Low strength	0.00	Depth to bedrock	0.71
	Droughty	0.91	Shrink-swell	0.87	Rock fragments	0.97
	Water erosion	0.99				
RdA:						
Randolph	Fair		Poor		Poor	
	Too clayey	0.01	Depth to bedrock	0.00	Depth to saturated zone	0.00
	Low content of organic matter	0.12	Depth to saturated zone	0.00	Too clayey	0.00
	Depth to bedrock	0.71	Low strength	0.00	Depth to bedrock	0.71
	Droughty	0.91	Shrink-swell	0.87	Rock fragments	0.97
	Water erosion	0.99				
ReA:						
Randolph	Fair		Poor		Poor	
	Too clayey	0.01	Depth to bedrock	0.00	Depth to saturated zone	0.00
	Low content of organic matter	0.12	Depth to saturated zone	0.00	Too clayey	0.00
	Depth to bedrock	0.71	Low strength	0.00	Depth to bedrock	0.71
	Droughty	0.91	Shrink-swell	0.87	Rock fragments	0.97
	Water erosion	0.99				
Urban Land	Not rated		Not rated		Not rated	

TABLE 20.--CONSTRUCTION MATERIALS PART 2--Continued

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
RfA:						
Rimer	Poor		Poor		Poor	
	Wind erosion	0.00	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Low content of organic matter	0.12	Low strength	0.00	Too sandy	0.16
	Too sandy	0.16	Shrink-swell	0.99	Hard to reclaim (dense layer)	0.29
	Droughty	0.73				
	Carbonate content	0.92				
Tedrow	Poor		Poor		Poor	
	Too sandy	0.00	Depth to saturated zone	0.00	Too sandy	0.00
	Wind erosion	0.00	Low strength	0.00	Depth to saturated zone	0.00
	Low content of organic matter	0.12			Hard to reclaim (dense layer)	0.84
	Droughty	0.91				
	Carbonate content	0.92				
RfB:						
Rimer	Poor		Poor		Poor	
	Wind erosion	0.00	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Low content of organic matter	0.12	Low strength	0.00	Too sandy	0.16
	Too sandy	0.16	Shrink-swell	0.99	Hard to reclaim (dense layer)	0.29
	Droughty	0.73				
	Carbonate content	0.92				
Tedrow	Poor		Poor		Poor	
	Too sandy	0.00	Depth to saturated zone	0.00	Too sandy	0.00
	Wind erosion	0.00	Low strength	0.00	Depth to saturated zone	0.00
	Low content of organic matter	0.12			Hard to reclaim (dense layer)	0.84
	Droughty	0.91				
	Carbonate content	0.92				
RgA:						
Rimer	Poor		Poor		Poor	
	Wind erosion	0.00	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Low content of organic matter	0.12	Low strength	0.00	Too sandy	0.16
	Too sandy	0.16	Shrink-swell	0.99	Hard to reclaim (dense layer)	0.29
	Droughty	0.73				
	Carbonate content	0.92				

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
Tedrow	Poor		Poor		Poor	
	Too sandy	0.00	Depth to saturated zone	0.00	Too sandy	0.00
	Wind erosion	0.00	Low strength	0.00	Depth to saturated zone	0.00
	Low content of organic matter	0.12			Hard to reclaim (dense layer)	0.84
	Droughty	0.91				
	Carbonate content	0.92				
Urban Land	Not rated		Not rated		Not rated	
RhA:						
Ritchey	Poor		Poor		Poor	
	Depth to bedrock	0.00	Depth to bedrock	0.00	Depth to bedrock	0.00
	Droughty	0.02	Low strength	0.00		
	Low content of organic matter	0.88	Shrink-swell	0.87		
	Water erosion	0.99				
RhB:						
Ritchey	Poor		Poor		Poor	
	Depth to bedrock	0.00	Depth to bedrock	0.00	Depth to bedrock	0.00
	Droughty	0.02	Low strength	0.00		
	Low content of organic matter	0.88	Shrink-swell	0.87		
	Water erosion	0.99				
RkA:						
Ritchey	Poor		Poor		Poor	
	Depth to bedrock	0.00	Depth to bedrock	0.00	Depth to bedrock	0.00
	Droughty	0.02	Low strength	0.00		
	Low content of organic matter	0.88	Shrink-swell	0.87		
	Water erosion	0.99				
RmA:						
Risingsun	Poor		Poor		Poor	
	Wind erosion	0.00	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Too sandy	0.04	Low strength	0.00	Too sandy	0.04
	Low content of organic matter	0.50			Hard to reclaim (dense layer)	0.20
	Carbonate content	0.80			Carbonate content	0.92
Rollersville	Poor		Poor		Poor	
	Too sandy	0.00	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Low content of organic matter	0.50	Low strength	0.00	Too sandy	0.00
	Droughty	0.72			Hard to reclaim (dense layer)	0.20
	Carbonate content	0.84			Carbonate content	0.92

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
RnA:						
Rollersville	Poor		Poor		Poor	
	Too sandy	0.00	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Carbonate content	0.84			Too sandy	0.00
	Droughty	0.94			Carbonate content	0.92
					Hard to reclaim (dense layer)	0.99
Risingsun	Poor		Poor		Poor	
	Wind erosion	0.00	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Too sandy	0.04	Low strength	0.00	Too sandy	0.04
	Low content of organic matter	0.50			Hard to reclaim (dense layer)	0.29
	Carbonate content	0.80			Carbonate content	0.92
RsA:						
Rossburg	Fair		Good		Good	
	Low content of organic matter	0.12				
	Water erosion	0.99				
SdA:						
Seward	Poor		Fair		Fair	
	Wind erosion	0.00	Depth to saturated zone	0.76	Too sandy	0.07
	Too sandy	0.07			Depth to saturated zone	0.76
	Low content of organic matter	0.88				
	Carbonate content	0.92				
	Droughty	0.99				
Ottokee	Poor		Fair		Fair	
	Wind erosion	0.00	Depth to saturated zone	0.91	Too sandy	0.51
	Droughty	0.46			Depth to saturated zone	0.91
	Low content of organic matter	0.50				
	Too sandy	0.51				
	Carbonate content	0.92				
SdB:						
Seward	Poor		Fair		Fair	
	Wind erosion	0.00	Depth to saturated zone	0.76	Too sandy	0.07
	Too sandy	0.07			Depth to saturated zone	0.76
	Low content of organic matter	0.88				
	Carbonate content	0.92				
	Droughty	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
Ottokee	Poor		Fair		Fair	
	Wind erosion	0.00	Depth to saturated zone	0.91	Too sandy	0.51
	Droughty	0.46			Depth to saturated zone	0.91
	Low content of organic matter	0.50				
	Too sandy	0.51				
	Carbonate content	0.92				
SeA:						
Shawtown	Fair		Fair		Fair	
	Low content of organic matter	0.12	Depth to saturated zone	0.98	Rock fragments	0.28
	Carbonate content	0.80			Depth to saturated zone	0.98
SeB:						
Shawtown	Fair		Fair		Fair	
	Low content of organic matter	0.12	Depth to saturated zone	0.98	Rock fragments	0.28
	Carbonate content	0.80			Depth to saturated zone	0.98
SgA:						
Shoals	Fair		Fair		Fair	
	Low content of organic matter	0.88	Depth to saturated zone	0.04	Depth to saturated zone	0.04
	Water erosion	0.99				
ShA:						
Shoals	Fair		Fair		Fair	
	Low content of organic matter	0.88	Depth to saturated zone	0.04	Depth to saturated zone	0.04
	Water erosion	0.99				
SkA:						
Shoals	Fair		Fair		Fair	
	Low content of organic matter	0.88	Depth to saturated zone	0.04	Depth to saturated zone	0.04
	Water erosion	0.99				
SmA:						
Shoals	Fair		Poor		Fair	
	Depth to bedrock	0.65	Depth to bedrock	0.00	Depth to saturated zone	0.04
			Low strength	0.00	Depth to bedrock	0.65
			Depth to saturated zone	0.04		
Sloan	Fair		Poor		Poor	
	Depth to bedrock	0.10	Depth to bedrock	0.00	Depth to saturated zone	0.00
	Droughty	0.47	Depth to saturated zone	0.00	Depth to bedrock	0.10
	Low content of organic matter	0.88	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
SnA:						
Sloan	Fair		Poor		Poor	
	Low content of organic matter	0.12	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Carbonate content	0.92				
SoA:						
Sloan	Fair		Poor		Poor	
	Low content of organic matter	0.88	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Carbonate content	0.92	Low strength	0.00		
SpA:						
Sloan	Fair		Poor		Poor	
	Low content of organic matter	0.12	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Carbonate content	0.92				
SrB:						
Spinks	Poor		Good		Fair	
	Wind erosion	0.00			Too sandy	0.03
	Too sandy	0.03				
	Low content of organic matter	0.12				
	Droughty	0.50				
SrC:						
Spinks	Poor		Good		Fair	
	Wind erosion	0.00			Too sandy	0.03
	Too sandy	0.03				
	Low content of organic matter	0.12				
	Droughty	0.50				
SrD:						
Spinks	Poor		Good		Poor	
	Wind erosion	0.00			Slope	0.00
	Too sandy	0.03			Too sandy	0.03
	Low content of organic matter	0.12				
	Droughty	0.50				
SsB:						
Spinks	Poor		Good		Fair	
	Wind erosion	0.00			Too sandy	0.03
	Too sandy	0.03				
	Low content of organic matter	0.12				
	Droughty	0.50				
SsC:						
Spinks	Poor		Good		Fair	
	Wind erosion	0.00			Too sandy	0.03
	Too sandy	0.03				
	Low content of organic matter	0.12				
	Droughty	0.50				

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
StB:						
St. Clair	Poor		Poor		Poor	
	Too clayey	0.00	Low strength	0.00	Too clayey	0.00
	Low content of organic matter	0.12	Depth to saturated zone	0.76	Depth to saturated zone	0.76
	Carbonate content	0.80	Shrink-swell	0.87	Carbonate content	0.80
	Water erosion	0.99			Rock fragments	0.97
	Droughty	0.99				
StC2:						
St. Clair	Poor		Poor		Poor	
	Too clayey	0.00	Low strength	0.00	Too clayey	0.00
	Low content of organic matter	0.12	Depth to saturated zone	0.76	Depth to saturated zone	0.76
	Carbonate content	0.80	Shrink-swell	0.87	Carbonate content	0.80
	Water erosion	0.99			Rock fragments	0.97
	Droughty	0.99				
SuB2:						
St. Clair	Poor		Poor		Poor	
	Too clayey	0.00	Low strength	0.00	Too clayey	0.00
	Low content of organic matter	0.12	Depth to saturated zone	0.76	Depth to saturated zone	0.76
	Carbonate content	0.80	Shrink-swell	0.87	Carbonate content	0.80
	Water erosion	0.90			Rock fragments	0.97
	Droughty	0.98				
SuC2:						
St. Clair	Poor		Poor		Poor	
	Too clayey	0.00	Low strength	0.00	Too clayey	0.00
	Low content of organic matter	0.12	Depth to saturated zone	0.76	Depth to saturated zone	0.76
	Carbonate content	0.80	Shrink-swell	0.87	Carbonate content	0.80
	Water erosion	0.90			Rock fragments	0.97
	Droughty	0.98				
SuD2:						
St. Clair	Poor		Poor		Poor	
	Too clayey	0.00	Low strength	0.00	Too clayey	0.00
	Low content of organic matter	0.12	Depth to saturated zone	0.76	Slope	0.04
	Carbonate content	0.80	Shrink-swell	0.87	Depth to saturated zone	0.76
	Water erosion	0.90			Carbonate content	0.80
	Droughty	0.98			Rock fragments	0.97
SuE2:						
St. Clair	Poor		Poor		Poor	
	Too clayey	0.00	Low strength	0.00	Slope	0.00
	Low content of organic matter	0.12	Slope	0.50	Too clayey	0.00
	Carbonate content	0.80	Depth to saturated zone	0.76	Depth to saturated zone	0.76
	Water erosion	0.90	Shrink-swell	0.87	Carbonate content	0.80
	Droughty	0.98			Rock fragments	0.97

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
TeA:						
Tedrow	Poor		Fair		Fair	
	Wind erosion	0.00	Depth to saturated zone	0.04	Depth to saturated zone	0.04
	Low content of organic matter	0.12			Too sandy	0.36
	Too sandy	0.36				
	Droughty	0.84				
TeB:						
Tedrow	Poor		Fair		Fair	
	Wind erosion	0.00	Depth to saturated zone	0.04	Depth to saturated zone	0.04
	Low content of organic matter	0.12			Too sandy	0.36
	Too sandy	0.36				
	Droughty	0.84				
TfA:						
Tedrow	Poor		Fair		Fair	
	Wind erosion	0.00	Depth to saturated zone	0.04	Depth to saturated zone	0.04
	Low content of organic matter	0.12			Too sandy	0.36
	Too sandy	0.36				
	Droughty	0.84				
Urban Land	Not rated		Not rated		Not rated	
TpA:						
Toledo	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Too clayey	0.00
	Low content of organic matter	0.88	Low strength	0.00	Depth to saturated zone	0.00
			Shrink-swell	0.87		
TuA:						
Toledo	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Too clayey	0.00
	Low content of organic matter	0.88	Low strength	0.00	Depth to saturated zone	0.00
			Shrink-swell	0.87		
Urban Land	Not rated		Not rated		Not rated	
UcA:						
Udorthents	Not rated		Not rated		Not rated	
UcE:						
Udorthents	Not rated		Not rated		Not rated	
Ur:						
Urban Land	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
W:						
Water	Not rated		Not rated		Not rated	
WbA:						
Wabasha	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Too clayey	0.00
	Low content of organic matter	0.88	Low strength	0.00	Depth to saturated zone	0.00
			Shrink-swell	0.87		
WmA:						
Wauseon	Poor		Poor		Poor	
	Wind erosion	0.00	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Low content of organic matter	0.12	Low strength	0.00	Too sandy	0.18
	Too sandy	0.18			Hard to reclaim (dense layer)	0.54
	Droughty	0.42				
	Carbonate content	0.80				
WnA:						
Wauseon	Fair		Poor		Poor	
	Too sandy	0.18	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Low content of organic matter	0.50			Too sandy	0.18
	Carbonate content	0.80				
	Droughty	0.99				
WyA:						
Wauseon	Fair		Poor		Poor	
	Low content of organic matter	0.12	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Too sandy	0.18	Low strength	0.00	Too sandy	0.18
	Droughty	0.69			Hard to reclaim (dense layer)	0.54
	Carbonate content	0.80				
WzA:						
Wauseon	Fair		Poor		Poor	
	Low content of organic matter	0.12	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Too sandy	0.18	Low strength	0.00	Too sandy	0.18
	Droughty	0.69			Hard to reclaim (dense layer)	0.54
	Carbonate content	0.80				
Urban Land	Not rated		Not rated		Not rated	

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 232 for further explanation of ratings in this table.)

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
AgA:						
Alvada	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
AmA:						
Aurand	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		
AnA:						
Aurand	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
AsA:						
Aurand	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		
Urban Land	Not Rated		Not Rated		Not Rated	
BeB:						
Belmore	Not limited		Somewhat limited		Not limited	
			Depth to saturated zone	0.95		
BfB:						
Belmore	Not limited		Somewhat limited		Not limited	
			Depth to saturated zone	0.95		
CaA:						
Castalia	Somewhat limited		Very limited		Somewhat limited	
	Content of large stones	1.00	Depth to bedrock	1.00	Content of large stones	1.00
	Depth to bedrock	0.99	Content of large stones	1.00	Depth to bedrock	0.99
CbB:						
Castalia	Very limited		Very limited		Very limited	
	Content of large stones	1.00	Depth to bedrock	1.00	Content of large stones	1.00
	Depth to bedrock	0.97	Content of large stones	1.00	Depth to bedrock	0.97
Marblehead	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
CcA:						
Colwood	Very limited		Very limited		Very limited	

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
	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
CdA:						
Colwood	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
CtA:						
Colwood	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
Urban Land	Not Rated		Not Rated		Not Rated	
CvA:						
Cygnet	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.99	Depth to saturated zone	1.00	Depth to saturated zone	0.99
CxB:						
Castalia	Very limited		Very limited		Very limited	
	Content of large stones	1.00	Depth to bedrock	1.00	Content of large stones	1.00
	Depth to bedrock	0.97	Content of large stones	1.00	Depth to bedrock	0.97
Marblehead	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
Urban Land	Not Rated		Not Rated		Not Rated	
DgA:						
Digby	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
DhA:						
Digby	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
DrA:						
Dunbridge	Somewhat limited		Very limited		Somewhat limited	
	Depth to bedrock	0.86	Depth to bedrock	1.00	Depth to bedrock	0.86
DsA:						
Dunbridge	Somewhat limited		Very limited		Somewhat limited	
	Depth to bedrock	0.86	Depth to bedrock	1.00	Depth to bedrock	0.86
Spinks	Not limited		Somewhat limited		Not limited	
			Depth to bedrock	0.32		
DsB:						
Dunbridge	Somewhat limited		Very limited		Somewhat limited	
	Depth to bedrock	0.86	Depth to bedrock	1.00	Depth to bedrock	0.86
Spinks	Not limited		Somewhat limited		Not limited	

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
			Depth to bedrock	0.32		
EaA:						
Eel	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	0.80	Depth to saturated zone	1.00	Depth to saturated zone	0.80
EmA:						
Eel	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	0.80	Depth to saturated zone	1.00	Depth to saturated zone	0.80
EnA:						
Eel	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	0.80	Depth to saturated zone	1.00	Depth to saturated zone	0.80
	Depth to bedrock	0.15	Depth to bedrock	1.00	Depth to bedrock	0.135
FcA:						
Flatrock	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	0.99	Depth to saturated zone	1.00	Depth to saturated zone	0.99
FuA:						
Fulton	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
FuB:						
Fulton	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
					Slope	0.10
FzA:						
Fulton	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
Urban Land	Not Rated		Not Rated		Not Rated	
GmA:						
Genesee	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
GnA:						
Genesee	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
GpA:						
Granby	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00

TABLE 21.--BUILDING SITE DEVELOPMENT PART 1--Continued

Map symbol and soil name	Dwellings without basements		Dwellings with basements		Small commercial buildings	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
HaA:						
Haney	Not limited		Somewhat limited Depth to saturated zone	0.99	Not limited	
HaB:						
Haney	Not limited		Somewhat limited Depth to saturated zone	0.99	Not limited	
HdA:						
Haney	Not limited		Somewhat limited Depth to saturated zone	0.99	Not limited	
HdB:						
Haney	Not limited		Somewhat limited Depth to saturated zone	0.99	Not limited	
HeA:						
Haskins	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
Digby	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
HeB:						
Haskins	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
Digby	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
HfA:						
Haskins	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
Digby	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
HfB:						
Haskins	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
Digby	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
HgA:						
Hoytville	Very limited		Very limited		Very limited	

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
	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
HhA:						
Hoytville	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
HvA:						
Hoytville	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
HwA:						
Hoytville	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
HyA:						
Hoytville	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	
JoA:						
Joliet	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
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
KeA:						
Kibbie	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
KfA:						
Kibbie	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
KfB:						
Kibbie	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
KkA:						
Kibbie	Very limited		Very limited		Very limited	

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
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Urban Land	Not Rated		Not Rated		Not Rated	
LbB:						
Landes	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
LdA:						
Latty	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
LgA:						
Latty	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	
MbA:						
Millgrove	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
McA:						
Mermill	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
MdA:						
Mermill	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		
MeA:						
Mermill	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
MfA:						
Mermill	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
Aurand	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		

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
MgA:						
Mermill	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		
Urban Land	Not Rated		Not Rated		Not Rated	
MhA:						
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	0.50	Depth to bedrock	1.00	Shrink-swell	0.50
	Depth to bedrock	0.29	Shrink-swell	0.50	Depth to bedrock	0.29
MkA:						
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	0.50	Depth to bedrock	1.00	Shrink-swell	0.50
	Depth to bedrock	0.29	Shrink-swell	0.50	Depth to bedrock	0.29
MmA:						
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	0.50	Depth to bedrock	1.00	Shrink-swell	0.50
	Depth to bedrock	0.29	Shrink-swell	0.50	Depth to bedrock	0.29
Urban Land	Not Rated		Not Rated		Not Rated	
MnA:						
Milton	Somewhat limited		Very limited		Somewhat limited	
	Depth to bedrock	0.79	Depth to bedrock	1.00	Depth to bedrock	0.79
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
MnB:						
Milton	Somewhat limited		Very limited		Somewhat limited	
	Depth to bedrock	0.79	Depth to bedrock	1.00	Depth to bedrock	0.79
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
NmA:						
Nappanee	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
NmB:						
Nappanee	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
NnA:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	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
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
NnB:						
Nappanee	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
NnB2:						
Nappanee	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
NpA:						
Nappanee	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
NpB:						
Nappanee	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
NpB2:						
Nappanee	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
NsA:						
Nappanee	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
Urban Land	Not Rated		Not Rated		Not Rated	
OsB:						
Oshtemo	Not limited		Somewhat limited		Somewhat limited	
			Depth to saturated zone	0.24	Slope	0.10
OtA:						
Ottokee	Not limited		Very limited		Not limited	
			Depth to saturated zone	1.00		
Spinks	Not limited		Not limited		Not limited	
OtB:						
Ottokee	Not limited		Very limited		Not limited	
			Depth to saturated zone	1.00		
Spinks	Not limited		Not limited		Not limited	
OzB:						
Ottokee	Not limited		Very limited		Not limited	

TABLE 21.--BUILDING SITE DEVELOPMENT PART 1--Continued

Map symbol and soil name	Dwellings without basements		Dwellings with basements		Small commercial buildings	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
			Depth to saturated zone	1.00		
Spinks	Not limited		Not limited		Not limited	
Urban Land	Not Rated		Not Rated		Not Rated	
Pt:						
Pits, Quarry	Not Rated		Not Rated		Not Rated	
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	0.50	Depth to bedrock	1.00	Shrink-swell	0.50
	Depth to bedrock	0.29	Shrink-swell	0.50	Depth to bedrock	0.29
RbB:						
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	0.50	Depth to bedrock	1.00	Shrink-swell	0.50
	Depth to bedrock	0.29	Shrink-swell	0.50	Depth to bedrock	0.29
RdA:						
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	0.50	Depth to bedrock	1.00	Shrink-swell	0.50
	Depth to bedrock	0.29	Shrink-swell	0.50	Depth to bedrock	0.29
ReA:						
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	0.50	Depth to bedrock	1.00	Shrink-swell	0.50
	Depth to bedrock	0.29	Shrink-swell	0.50	Depth to bedrock	0.29
Urban Land	Not Rated		Not Rated		Not Rated	
RfA:						
Rimer	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		
Tedrow	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		
RfB:						
Rimer	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		
Tedrow	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	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
			Shrink-swell	0.50		
RgA:						
Rimer	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		
Tedrow	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		
Urban Land	Not Rated		Not Rated		Not Rated	
RhA:						
Ritchey	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	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
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
RkA:						
Ritchey	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
RmA:						
Risingsun	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	0.44		
Rollersville	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	0.44		
RnA:						
Rollersville	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Risingsun	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	0.44		
RsA:						
Rossburg	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
SdA:						
Seward	Somewhat limited		Very limited		Somewhat limited	

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
	Depth to saturated zone	0.10	Depth to saturated zone	1.00	Depth to saturated zone	0.10
Ottokee	Not limited		Very limited		Not limited	
			Depth to saturated zone	1.00		
SdB:						
Seward	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.10	Depth to saturated zone	1.00	Depth to saturated zone	0.10
Ottokee	Not limited		Very limited		Not limited	
			Depth to saturated zone	1.00		
SeA:						
Shawtown	Not limited		Somewhat limited		Not limited	
			Depth to saturated zone	0.99		
SeB:						
Shawtown	Not limited		Somewhat limited		Somewhat limited	
			Depth to saturated zone	0.99	Slope	0.10
SgA:						
Shoals	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
ShA:						
Shoals	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
SkA:						
Shoals	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
SmA:						
Shoals	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
	Depth to bedrock	0.35	Depth to bedrock	1.00	Depth to bedrock	0.35
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
	Depth to bedrock	0.90	Depth to bedrock	1.00	Depth to bedrock	0.90
SnA:						
Sloan	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	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
	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
SoA:						
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
SpA:						
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
SrB:						
Spinks	Not limited		Not limited		Not limited	
SrC:						
Spinks	Somewhat limited		Somewhat limited		Somewhat limited	
	Slope	0.01	Slope	0.01	Slope	0.99
SrD:						
Spinks	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
SsB:						
Spinks	Not limited		Not limited		Not limited	
SsC:						
Spinks	Somewhat limited		Somewhat limited		Somewhat limited	
	Slope	0.01	Slope	0.01	Slope	0.99
StB:						
St. Clair	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
StC2:						
St. Clair	Somewhat limited		Very limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	1.00	Slope	0.99
	Depth to saturated zone	0.10	Shrink-swell	0.50	Shrink-swell	0.50
	Slope	0.01	Slope	0.01	Depth to saturated zone	0.10
SuB2:						
St. Clair	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
SuC2:						
St. Clair	Somewhat limited		Very limited		Somewhat limited	

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
	Shrink-swell	0.50	Depth to saturated zone	1.00	Slope	0.99
	Depth to saturated zone	0.10	Shrink-swell	0.50	Shrink-swell	0.50
	Slope	0.01	Slope	0.01	Depth to saturated zone	0.10
SuD2:						
St. Clair	Somewhat limited		Very limited		Very limited	
	Slope	0.96	Depth to saturated zone	1.00	Slope	1.00
	Shrink-swell	0.50	Slope	0.96	Shrink-swell	0.50
	Depth to saturated zone	0.10	Shrink-swell	0.50	Depth to saturated zone	0.10
SuE2:						
St. Clair	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	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
TeA:						
Tedrow	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
TeB:						
Tedrow	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
TfA:						
Tedrow	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Urban Land	Not Rated		Not Rated		Not Rated	
TpA:						
Toledo	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
TuA:						
Toledo	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	
UcA:						
Udorthents	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
UcE:						
Udorthents	Not Rated		Not Rated		Not Rated	
Ur:						
Urban Land	Not Rated		Not Rated		Not Rated	
W:						
Water	Not Rated		Not Rated		Not Rated	
WbA:						
Wabasha	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
WmA:						
Wauseon	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		
WnA:						
Wauseon	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
WyA:						
Wauseon	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		
WzA:						
Wauseon	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		
Urban Land	Not Rated		Not Rated		Not Rated	

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 232 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
AgA:						
Alvada	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	0.05				
AmA:						
Aurand	Very limited		Very limited		Very limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to dense layer	0.50		
	Low strength	0.50				
AnA:						
Aurand	Very limited		Very limited		Very limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to dense layer	0.50		
	Low strength	0.50				
AsA:						
Aurand	Very limited		Very limited		Very limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to dense layer	0.50		
	Low strength	0.50				
Urban Land	Not Rated		Not Rated		Not Rated	
BeB:						
Belmore	Somewhat limited		Very limited		Not limited	
	Frost action	0.50	Cutbanks cave	1.00		
			Depth to saturated zone	0.95		
BfB:						
Belmore	Somewhat limited		Very limited		Not limited	
	Frost action	0.50	Cutbanks cave	1.00		
			Depth to saturated zone	0.95		
CaA:						
Castalia	Very limited		Very limited		Very limited	
	Content of large stones	1.00	Depth to bedrock	1.00	Droughty	1.00
	Depth to bedrock	0.99	Content of large stones	1.00	Content of large stones	1.00
	Frost action	0.50			Carbonate content	1.00
					Depth to bedrock	0.99

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
					Gravel content	0.59
CbB:						
Castalia	Very limited		Very limited		Very limited	
	Content of large stones	1.00	Depth to bedrock	1.00	Droughty	1.00
	Depth to bedrock	0.97	Content of large stones	1.00	Content of large stones	1.00
	Frost action	0.50			Carbonate content	1.00
					Depth to bedrock	0.97
					Gravel content	0.36
Marblehead	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Frost action	0.50			Droughty	1.00
					Content of large stones	0.03
CcA:						
Colwood	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	0.28				
CdA:						
Colwood	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	0.28				
CtA:						
Colwood	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	0.28				
Urban Land	Not Rated		Not Rated		Not Rated	
CvA:						
Cygnet	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Cutbanks cave	1.00	Depth to saturated zone	0.75
	Depth to saturated zone	0.75	Depth to saturated zone	1.00		
			Depth to dense layer	0.50		
CxB:						
Castalia	Very limited		Very limited		Very limited	
	Content of large stones	1.00	Depth to bedrock	1.00	Droughty	1.00

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
	Depth to bedrock	0.97	Content of large stones	1.00	Content of large stones	1.00
	Frost action	0.50			Carbonate content	1.00
					Depth to bedrock	0.97
					Gravel content	0.36
Marblehead----------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Frost action	0.50			Droughty	1.00
					Content of large stones	0.03
Urban Land----------	Not Rated		Not Rated		Not Rated	
DgA:						
Digby----------	Very limited		Very limited		Very limited	
	Frost action	1.00	Cutbanks cave	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00		
DhA:						
Digby----------	Very limited		Very limited		Very limited	
	Frost action	1.00	Cutbanks cave	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00		
DrA:						
Dunbridge----------	Somewhat limited		Very limited		Somewhat limited	
	Frost action	0.86	Depth to bedrock	1.00	Depth to bedrock	0.86
	Depth to bedrock	0.50			Droughty	0.15
DsA:						
Dunbridge----------	Somewhat limited		Very limited		Somewhat limited	
	Frost action	0.86	Depth to bedrock	1.00	Depth to bedrock	0.86
	Depth to bedrock	0.50			Droughty	0.44
Spinks----------	Not limited		Very limited		Somewhat limited	
			Cutbanks cave	1.00	Droughty	0.29
			Depth to bedrock	0.32		
DsB:						
Dunbridge----------	Somewhat limited		Very limited		Somewhat limited	
	Frost action	0.86	Depth to bedrock	1.00	Depth to bedrock	0.86
	Depth to bedrock	0.50			Droughty	0.44
Spinks----------	Not limited		Very limited		Somewhat limited	
			Cutbanks cave	1.00	Droughty	0.29
			Depth to bedrock	0.32		
EaA:						
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	0.43
	Depth to saturated zone	0.43				
	Low strength	0.28				

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
EmA:						
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	0.43
	Depth to saturated zone	0.43				
	Low strength	0.28				
EnA:						
Eel	Very limited		Very limited		Very limited	
	Flooding	1.00	Depth to bedrock	1.00	Flooding	1.00
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.43
	Depth to saturated zone	0.43	Flooding	0.80	Depth to bedrock	0.16
	Depth to bedrock	0.15				
	Low strength	0.28				
FcA:						
Flatrock	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.75
	Frost action	1.00	Flooding	0.60	Flooding	0.60
	Low strength	1.00				
	Depth to saturated zone	0.75				
FuA:						
Fulton	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Low strength	1.00	Too clayey	0.50		
	Frost action	1.00				
	Shrink-swell	0.50				
FuB:						
Fulton	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Low strength	1.00	Too clayey	0.50		
	Frost action	1.00				
	Shrink-swell	0.50				
FzA:						
Fulton	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Low strength	1.00	Too clayey	0.50		
	Frost action	1.00				
	Shrink-swell	0.50				
Urban Land	Not Rated		Not Rated		Not Rated	
GmA:						
Genesee	Very limited		Somewhat limited		Very limited	
	Flooding	1.00	Flooding	0.80	Flooding	1.00
	Frost action	0.50				
	Low strength	0.28				

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
GnA:						
Genesee	Very limited		Somewhat limited		Very limited	
	Flooding	1.00	Flooding	0.80	Flooding	1.00
	Frost action	0.50				
	Low strength	0.28				
GpA:						
Granby	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	0.50	Depth to saturated zone	1.00	Droughty	0.07
HaA:						
Haney	Very limited		Very limited		Not limited	
	Frost action	1.00	Cutbanks cave	1.00		
			Depth to saturated zone	0.99		
HaB:						
Haney	Very limited		Very limited		Not limited	
	Frost action	1.00	Cutbanks cave	1.00		
			Depth to saturated zone	0.99		
HdA:						
Haney	Very limited		Very limited		Not limited	
	Frost action	1.00	Cutbanks cave	1.00		
			Depth to saturated zone	0.99		
HdB:						
Haney	Very limited		Very limited		Not limited	
	Frost action	1.00	Cutbanks cave	1.00		
			Depth to saturated zone	0.99		
HeA:						
Haskins	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				
Digby	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		
HeB:						
Haskins	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				
Digby	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Cutbanks cave	1.00	Depth to saturated zone	1.00

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
	Frost action	1.00	Depth to saturated zone	1.00		
HfA:						
Haskins	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				
Digby	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		
HfB:						
Haskins	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				
Digby	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		
HgA:						
Hoytville	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	Too clayey	0.50		
	Frost action	1.00				
	Shrink-swell	0.50				
HhA:						
Hoytville	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	Too clayey	0.50		
	Frost action	1.00				
	Shrink-swell	0.50				
HvA:						
Hoytville	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	Too clayey	0.50	Too clayey	1.00
	Frost action	1.00				
	Shrink-swell	0.50				
HwA:						
Hoytville	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			Too clayey	1.00
	Frost action	1.00			Droughty	0.02

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
	Shrink-swell	0.50				
HyA:						
Hoytville	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	Too clayey	0.50		
	Frost action	1.00				
	Shrink-swell	0.50				
Urban Land	Not Rated		Not Rated		Not Rated	
JoA:						
Joliet	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00			Droughty	0.85
	Low strength	1.00				
	Shrink-swell	0.50				
KeA:						
Kibbie	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	0.50				
KfA:						
Kibbie	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	0.50				
KfB:						
Kibbie	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	0.50				
KkA:						
Kibbie	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	0.50				
Urban Land	Not Rated		Not Rated		Not Rated	
LbB:						
Landes	Very limited		Very limited		Very limited	
	Flooding	1.00	Cutbanks cave	1.00	Flooding	1.00
	Frost action	0.50	Flooding	0.80		

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
LdA:						
Latty	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	Too clayey	0.50	Too clayey	1.00
	Frost action	1.00				
	Shrink-swell	0.50				
LgA:						
Latty	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	Too clayey	0.50	Too clayey	1.00
	Frost action	1.00				
	Shrink-swell	0.50				
Urban Land	Not Rated		Not Rated		Not Rated	
MbA:						
Millgrove	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		
McA:						
Mermill	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	0.28				
MdA:						
Mermill	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	0.28				
MeA:						
Mermill	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	0.28				
MfA:						
Mermill	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	0.28				
Aurand	Very limited		Very limited		Very limited	

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
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to dense layer	0.50		
	Low strength	0.50				
MgA:						
Mermill	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	0.28				
Urban Land	Not Rated		Not Rated		Not Rated	
MhA:						
Millsdale	Very limited		Very limited		Very limited	
	Ponding	1.00	Depth to bedrock	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	Depth to bedrock	0.29
	Low strength	1.00	Too clayey	0.50		
	Shrink-swell	0.50				
MkA:						
Millsdale	Very limited		Very limited		Very limited	
	Ponding	1.00	Depth to bedrock	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	Depth to bedrock	0.29
	Low strength	1.00	Too clayey	0.50		
	Shrink-swell	0.50				
MmA:						
Millsdale	Very limited		Very limited		Very limited	
	Ponding	1.00	Depth to bedrock	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	Depth to bedrock	0.29
	Low strength	1.00	Too clayey	0.50		
	Shrink-swell	0.50				
Urban Land	Not Rated		Not Rated		Not Rated	
MnA:						
Milton	Very limited		Very limited		Somewhat limited	
	Low strength	1.00	Depth to bedrock	1.00	Depth to bedrock	0.80
	Depth to bedrock	0.79	Too clayey	0.50		
	Shrink-swell	0.50				
	Frost action	0.50				
MnB:						
Milton	Very limited		Very limited		Somewhat limited	
	Low strength	1.00	Depth to bedrock	1.00	Depth to bedrock	0.80
	Depth to bedrock	0.79	Too clayey	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
	Frost action	0.50				
NmA:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Low strength	1.00	Too clayey	0.50		
	Frost action	1.00				
	Shrink-swell	0.50				
NmB:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Low strength	1.00	Too clayey	0.50		
	Frost action	1.00				
	Shrink-swell	0.50				
NnA:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Low strength	1.00	Too clayey	0.50		
	Frost action	1.00				
	Shrink-swell	0.50				
NnB:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Low strength	1.00	Too clayey	0.50		
	Frost action	1.00				
	Shrink-swell	0.50				
NnB2:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Low strength	1.00	Too clayey	0.50		
	Frost action	1.00				
	Shrink-swell	0.50				
NpA:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Low strength	1.00	Too clayey	0.50		
	Frost action	1.00				
	Shrink-swell	0.50				
NpB:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Low strength	1.00	Too clayey	0.50		
	Frost action	1.00				
	Shrink-swell	0.50				
NpB2:						
Nappanee	Very limited		Very limited		Very limited	

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
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Low strength	1.00	Too clayey	0.50		
	Frost action	1.00				
	Shrink-swell	0.50				
NsA:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Low strength	1.00	Too clayey	0.50		
	Frost action	1.00				
	Shrink-swell	0.50				
Urban Land	Not Rated		Not Rated		Not Rated	
OsB:						
Oshtemo	Somewhat limited		Very limited		Not limited	
	Frost action	0.50	Cutbanks cave	1.00		
			Depth to saturated zone	0.24		
OtA:						
Ottokee	Not limited		Very limited		Somewhat limited	
			Cutbanks cave	1.00	Droughty	0.14
			Depth to saturated zone	1.00		
Spinks	Not limited		Very limited		Somewhat limited	
			Cutbanks cave	1.00	Droughty	0.30
OtB:						
Ottokee	Not limited		Very limited		Somewhat limited	
			Cutbanks cave	1.00	Droughty	0.14
			Depth to saturated zone	1.00		
Spinks	Not limited		Very limited		Somewhat limited	
			Cutbanks cave	1.00	Droughty	0.30
OzB:						
Ottokee	Not limited		Very limited		Somewhat limited	
			Cutbanks cave	1.00	Droughty	0.14
			Depth to saturated zone	1.00		
Spinks	Not limited		Very limited		Somewhat limited	
			Cutbanks cave	1.00	Droughty	0.30
Urban Land	Not Rated		Not Rated		Not Rated	
Pt:						
Pits, Quarry	Not Rated		Not Rated		Not Rated	
RbA:						
Randolph	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to bedrock	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Depth to saturated zone	1.00	Depth to bedrock	0.29
	Low strength	1.00				

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
	Shrink-swell	0.50				
	Depth to bedrock	0.29				
RbB:						
Randolph	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to bedrock	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Depth to saturated zone	1.00	Depth to bedrock	0.29
	Low strength	1.00				
	Shrink-swell	0.50				
	Depth to bedrock	0.29				
RdA:						
Randolph	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to bedrock	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Depth to saturated zone	1.00	Depth to bedrock	0.29
	Low strength	1.00				
	Shrink-swell	0.50				
	Depth to bedrock	0.29				
ReA:						
Randolph	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to bedrock	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Depth to saturated zone	1.00	Depth to bedrock	0.29
	Low strength	1.00				
	Shrink-swell	0.50				
	Depth to bedrock	0.29				
Urban Land	Not Rated		Not Rated		Not Rated	
RfA:						
Rimer	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	Droughty	0.08
Tedrow	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Cutbanks cave	1.00	Depth to saturated zone	1.00
	Frost action	0.50	Depth to saturated zone	1.00	Droughty	0.07
RfB:						
Rimer	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	Droughty	0.08
Tedrow	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Cutbanks cave	1.00	Depth to saturated zone	1.00
	Frost action	0.50	Depth to saturated zone	1.00	Droughty	0.07

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
RgA:						
Rimer	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	Droughty	0.08
Tedrow	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Cutbanks cave	1.00	Depth to saturated zone	1.00
	Frost action	0.50	Depth to saturated zone	1.00	Droughty	0.07
Urban Land	Not Rated		Not Rated		Not Rated	
RhA:						
Ritchey	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Low strength	0.90			Droughty	0.31
	Shrink-swell	0.50				
	Frost action	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
	Low strength	0.90			Droughty	0.31
	Shrink-swell	0.50				
	Frost action	0.50				
RkA:						
Ritchey	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Low strength	0.90			Droughty	0.31
	Shrink-swell	0.50				
	Frost action	0.50				
RmA:						
Risingsun	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	Gravel content	1.00
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
			Depth to dense layer	0.50		
Rollersville	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	Depth to dense layer	0.50		
	Shrink-swell	0.44				
RnA:						
Rollersville	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		

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
			Depth to dense layer	0.50		
Risingsun	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	Gravel content	1.00
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Low strength	1.00	Depth to dense layer	0.50		
	Shrink-swell	0.44				
RsA:						
Rossburg	Very limited		Very limited		Very limited	
	Flooding	1.00	Cutbanks cave	1.00	Flooding	1.00
	Frost action	0.50	Flooding	0.80		
SdA:						
Seward	Somewhat limited		Very limited		Somewhat limited	
	Frost action	0.50	Cutbanks cave	1.00	Depth to saturated zone	0.03
	Depth to saturated zone	0.03	Depth to saturated zone	1.00		
Ottokee	Not limited		Very limited		Somewhat limited	
			Cutbanks cave	1.00	Droughty	0.17
			Depth to saturated zone	1.00		
SdB:						
Seward	Somewhat limited		Very limited		Somewhat limited	
	Frost action	0.50	Cutbanks cave	1.00	Depth to saturated zone	0.03
	Depth to saturated zone	0.03	Depth to saturated zone	1.00		
Ottokee	Not limited		Very limited		Somewhat limited	
			Cutbanks cave	1.00	Droughty	0.17
			Depth to saturated zone	1.00		
SeA:						
Shawtown	Somewhat limited		Very limited		Not limited	
	Frost action	0.50	Cutbanks cave	1.00		
			Depth to saturated zone	0.99		
SeB:						
Shawtown	Somewhat limited		Very limited		Not limited	
	Frost action	0.50	Cutbanks cave	1.00		
			Depth to saturated zone	0.99		
SgA:						
Shoals	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	0.94

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
	Depth to saturated zone	0.94				
	Low strength	0.90				
ShA:						
Shoals	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	0.94
	Depth to saturated zone	0.94				
	Low strength	0.90				
SkA:						
Shoals	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	0.94
	Depth to saturated zone	0.94				
	Low strength	0.90				
SmA:						
Shoals	Very limited		Very limited		Very limited	
	Flooding	1.00	Depth to bedrock	1.00	Flooding	1.00
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.94
	Depth to saturated zone	0.94	Flooding	0.80	Depth to bedrock	0.35
	Low strength	0.90				
	Depth to bedrock	0.35				
Sloan	Very limited		Very limited		Very limited	
	Flooding	1.00	Depth to bedrock	1.00	Ponding	1.00
	Ponding	1.00	Ponding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Flooding	0.80	Depth to bedrock	0.90
	Low strength	1.00				
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	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				
SoA:						
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				

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
	Low strength	1.00				
SpA:						
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	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				
SrB:						
Spinks	Not limited		Very limited		Somewhat limited	
			Cutbanks cave	1.00	Droughty	0.32
SrC:						
Spinks	Somewhat limited		Very limited		Somewhat limited	
	Slope	0.01	Cutbanks cave	1.00	Droughty	0.32
			Slope	0.01	Slope	0.01
SrD:						
Spinks	Very limited		Very limited		Very limited	
	Slope	1.00	Cutbanks cave	1.00	Slope	1.00
			Slope	1.00	Droughty	0.32
SsB:						
Spinks	Not limited		Very limited		Somewhat limited	
			Cutbanks cave	1.00	Droughty	0.32
SsC:						
Spinks	Somewhat limited		Very limited		Somewhat limited	
	Slope	0.01	Cutbanks cave	1.00	Droughty	0.32
			Slope	0.01	Slope	0.01
StB:						
St. Clair	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				
	Frost action	0.50				
	Depth to saturated zone	0.03				
StC2:						
St. Clair	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	Slope	0.01	Slope	0.01
	Frost action	0.50				
	Depth to saturated zone	0.03				
	Slope	0.01				
SuB2:						
St. Clair	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				
	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
	Depth to saturated zone	0.03				
SuC2:						
St. Clair	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	Slope	0.01	Slope	0.01
	Frost action	0.50				
	Depth to saturated zone	0.03				
	Slope	0.01				
SuD2:						
St. Clair	Very limited		Very limited		Somewhat limited	
	Low strength	1.00	Depth to saturated zone	1.00	Slope	0.96
	Slope	0.96	Slope	0.96	Depth to saturated zone	0.03
	Shrink-swell	0.50				
	Frost action	0.50				
	Depth to saturated zone	0.03				
SuE2:						
St. Clair	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Low strength	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.03
	Shrink-swell	0.50				
	Frost action	0.50				
	Depth to saturated zone	0.03				
TeA:						
Tedrow	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.94	Cutbanks cave	1.00	Depth to saturated zone	0.94
	Frost action	0.50	Depth to saturated zone	1.00	Droughty	0.07
TeB:						
Tedrow	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.94	Cutbanks cave	1.00	Depth to saturated zone	0.94
	Frost action	0.50	Depth to saturated zone	1.00	Droughty	0.07
TfA:						
Tedrow	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.94	Cutbanks cave	1.00	Depth to saturated zone	0.94
	Frost action	0.50	Depth to saturated zone	1.00	Droughty	0.07
Urban Land	Not Rated		Not Rated		Not Rated	
TpA:						
Toledo	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00

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
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Low strength	1.00	Too clayey	0.50		
	Frost action	1.00				
	Shrink-swell	0.50				
TuA:						
Toledo	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	Too clayey	0.50		
	Frost action	1.00				
	Shrink-swell	0.50				
Urban Land	Not Rated		Not Rated		Not Rated	
UcA:						
Udorthents	Not Rated		Not Rated		Not Rated	
UcE:						
Udorthents	Not Rated		Not Rated		Not Rated	
Ur:						
Urban Land	Not Rated		Not Rated		Not Rated	
W:						
Water	Not Rated		Not Rated		Not Rated	
WbA:						
Wabasha	Very limited		Very limited		Very limited	
	Flooding	1.00	Ponding	1.00	Ponding	1.00
	Ponding	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
	Low strength	1.00	Too clayey	0.50	Too clayey	1.00
	Frost action	1.00				
WmA:						
Wauseon	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	Droughty	0.05
WnA:						
Wauseon	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		
WyA:						
Wauseon	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

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
	Frost action	1.00	Depth to saturated zone	1.00		
WzA:						
Wauseon	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		
Urban Land	Not Rated		Not Rated		Not Rated	

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 233 for further explanation of ratings in this table.)

Map symbol and soil name	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
AgA:				
Alvada	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	1.00
AmA:				
Aurand	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	0.53
AnA:				
Aurand	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	0.53
AsA:				
Aurand	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	0.53
Urban Land	Not Rated		Not Rated	
BeB:				
Belmore	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Filtering capacity	1.00	Seepage	1.00
			Slope	0.08
BfB:				
Belmore	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Filtering capacity	1.00	Seepage	1.00
			Slope	0.08
CaA:				
Castalia	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
	Content of large stones	1.00	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
			Content of large stones	1.00
CbB:				
Castalia	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
	Content of large stones	1.00	Seepage	1.00
			Content of large stones	1.00
			Slope	0.08
Marblehead	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
			Slope	0.08
CcA:				
Colwood	Very limited		Very limited	
	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.72	Seepage	0.53
CdA:				
Colwood	Very limited		Very limited	
	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.72	Seepage	0.53
CtA:				
Colwood	Very limited		Very limited	
	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.72	Seepage	0.53
Urban Land	Not Rated		Not Rated	
CvA:				
Cygnet	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	1.00
CxB:				
Castalia	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
	Content of large stones	1.00	Seepage	1.00
			Content of large stones	1.00
			Slope	0.08
Marblehead	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	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
			Slope	0.08
Urban Land	Not Rated		Not Rated	
DgA:				
Digby	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		
DhA:				
Digby	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		
DsA:				
Dunbridge	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
			Seepage	1.00
Spinks	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
	Depth to bedrock	0.73	Depth to bedrock	0.32
DsB:				
Dunbridge	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
			Seepage	1.00
			Slope	0.08
Spinks	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
	Depth to bedrock	0.73	Depth to bedrock	0.32
			Slope	0.08
EaA:				
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	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
EmA:				
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	1.00
EnA:				
Eel	Very limited		Very limited	
	Flooding	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Flooding	1.00
	Restricted permeability	0.46	Seepage	0.53
FcA:				
Flatrock	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
FuA:				
Fulton	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00		
FuB:				
Fulton	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	0.32
FzA:				
Fulton	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00		
Urban Land	Not Rated		Not Rated	
GmA:				
Genesee	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Restricted permeability	0.46	Seepage	1.00
GnA:				
Genesee	Very limited		Very limited	
	Flooding	1.00	Flooding	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
	Restricted permeability	0.46	Seepage	1.00
GpA:				
Granby	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
HaA:				
Haney	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		
HaB:				
Haney	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
HdA:				
Haney	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		
HdB:				
Haney	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
HeA:				
Haskins	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	0.53
Digby	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	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
	Filtering capacity	1.00		
HeB:				
Haskins	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	0.53
			Slope	0.01
Digby	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	1.00
	Filtering capacity	1.00	Slope	0.01
HfA:				
Haskins	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	0.53
Digby	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	1.00
	Filtering capacity	1.00		
HfB:				
Haskins	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	0.53
			Slope	0.01
Digby	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	1.00
	Filtering capacity	1.00	Slope	0.01
HgA:				
Hoytville	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		
HhA:				
Hoytville	Very limited		Very limited	

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
	Restricted permeability	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00		
HvA:				
Hoytville	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		
HwA:				
Hoytville	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		
HyA:				
Hoytville	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		
Urban Land	Not Rated		Not Rated	
JoA:				
Joliet	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
KeA:				
Kibbie	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.46	Seepage	0.53
KfA:				
Kibbie	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.46	Seepage	1.00
KfB:				
Kibbie	Very limited		Very limited	
	Depth to saturated zone	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
	Restricted permeability	0.46	Seepage	1.00
			Slope	0.01
KkA:				
Kibbie	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.46	Seepage	1.00
Urban Land	Not Rated		Not Rated	
LbB:				
Landes	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Filtering capacity	1.00	Seepage	1.00
			Slope	0.08
LdA:				
Latty	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		
LgA:				
Latty	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		
Urban Land	Not Rated		Not Rated	
MbA:				
Millgrove	Very limited		Very limited	
	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
			Seepage	1.00
McA:				
Mermill	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
MdA:				
Mermill	Very limited		Very limited	
	Restricted permeability	1.00	Ponding	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
	Ponding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	0.53
MeA:				
Mermill	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
MfA:				
Mermill	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
Aurand	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	0.53
MgA:				
Mermill	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
Urban Land	Not Rated		Not Rated	
MhA:				
Millsdale	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00		
MkA:				
Millsdale	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00		
MmA:				
Millsdale	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	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
	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00		
Urban Land	Not Rated		Not Rated	
MnA:				
Milton	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
	Restricted permeability	1.00		
MnB:				
Milton	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
	Restricted permeability	1.00	Slope	0.01
NmA:				
Nappanee	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00		
NmB:				
Nappanee	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	0.01
NnA:				
Nappanee	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00		
NnB:				
Nappanee	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	0.01
NnB2:				
Nappanee	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	0.01
NpA:				
Nappanee	Very limited		Very limited	
	Restricted permeability	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
	Depth to saturated zone	1.00		
NpB:				
Nappanee	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	0.01
NpB2:				
Nappanee	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	0.01
NsA:				
Nappanee	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00		
Urban Land	Not Rated		Not Rated	
OsB:				
Oshtemo	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
	Depth to saturated zone	0.65	Slope	0.32
			Depth to saturated zone	0.02
OtA:				
Ottokee	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Filtering capacity	1.00	Seepage	1.00
Spinks	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
OtB:				
Ottokee	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Filtering capacity	1.00	Seepage	1.00
			Slope	0.08
Spinks	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
			Slope	0.08
OzB:				
Ottokee	Very limited		Very limited	

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
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Filtering capacity	1.00	Seepage	1.00
			Slope	0.08
Spinks	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
			Slope	0.08
Urban Land	Not Rated		Not Rated	
Pt:				
Pits, Quarry	Not Rated		Not Rated	
RbA:				
Randolph	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00		
RbB:				
Randolph	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Slope	0.08
RdA:				
Randolph	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00		
ReA:				
Randolph	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00		
Urban Land	Not Rated		Not Rated	
RfA:				
Rimer	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	1.00
	Filtering capacity	1.00		
Tedrow	Very limited		Very limited	

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
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	1.00
	Filtering capacity	1.00		
RfB:				
Rimer	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	1.00
	Filtering capacity	1.00	Slope	0.08
Tedrow	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	1.00
	Filtering capacity	1.00	Slope	0.08
RgA:				
Rimer	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	1.00
	Filtering capacity	1.00		
Tedrow	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	1.00
	Filtering capacity	1.00		
Urban Land	Not Rated		Not Rated	
RhA:				
Ritchey	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
			Seepage	0.53
RhB:				
Ritchey	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
			Seepage	0.53
			Slope	0.08
RkA:				
Ritchey	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
			Seepage	0.53
RmA:				
Risingsun	Very limited		Very limited	

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
	Restricted permeability	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	1.00
			Content of organic matter	1.00
Rollersville	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	1.00
RnA:				
Rollersville	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	1.00
Risingsun	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	1.00
			Content of organic matter	1.00
RsA:				
Rossburg	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Restricted permeability	0.46	Seepage	1.00
SdA:				
Seward	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	1.00
	Filtering capacity	1.00		
Ottokee	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	1.00
	Filtering capacity	1.00		
SdB:				
Seward	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	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
	Filtering capacity	1.00	Slope	0.08
Ottokee	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	1.00
	Filtering capacity	1.00	Slope	0.08
SeA:				
Shawtown	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		
SeB:				
Shawtown	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	0.32
SgA:				
Shoals	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
ShA:				
Shoals	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
SkA:				
Shoals	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
SmA:				
Shoals	Very limited		Very limited	
	Flooding	1.00	Depth to bedrock	1.00
	Depth to bedrock	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
	Depth to saturated zone	1.00	Flooding	1.00
	Restricted permeability	0.46	Seepage	0.53
Sloan	Very limited		Very limited	
	Flooding	1.00	Depth to bedrock	1.00
	Depth to bedrock	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	0.72	Seepage	0.28
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	0.72	Seepage	0.28
SoA:				
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	0.72	Seepage	0.28
SpA:				
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	0.72	Seepage	0.28
SrB:				
Spinks	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
			Slope	0.01
SrC:				
Spinks	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
	Slope	0.01	Slope	1.00
SrD:				
Spinks	Very limited		Very limited	
	Filtering capacity	1.00	Slope	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
	Slope	1.00	Seepage	1.00
SsB:				
Spinks	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
			Slope	0.01
SsC:				
Spinks	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
	Slope	0.01	Slope	1.00
StB:				
St. Clair	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	0.08
StC2:				
St. Clair	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	1.00
	Slope	0.01		
SuB2:				
St. Clair	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	0.08
SuC2:				
St. Clair	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	1.00
	Slope	0.01		
SuD2:				
St. Clair	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	1.00
	Slope	0.96		
SuE2:				
St. Clair	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		

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
TeA:				
Tedrow	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Filtering capacity	1.00	Seepage	1.00
TeB:				
Tedrow	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Filtering capacity	1.00	Seepage	1.00
			Slope	0.08
TfA:				
Tedrow	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Filtering capacity	1.00	Seepage	1.00
Urban Land	Not Rated		Not Rated	
TpA:				
Toledo	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		
TuA:				
Toledo	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		
Urban Land	Not Rated		Not Rated	
UcA:				
Udorthents	Not Rated		Not Rated	
UcE:				
Udorthents	Not Rated		Not Rated	
Ur:				
Urban Land	Not Rated		Not Rated	
W:				
Water	Not Rated		Not Rated	
WbA:				
Wabasha	Very limited		Very limited	
	Flooding	1.00	Ponding	1.00
	Restricted permeability	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
	Ponding	1.00	Flooding	1.00
	Depth to saturated zone	1.00		
WmA:				
Wauseon	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	1.00
WnA:				
Wauseon	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	1.00
	Filtering capacity	1.00		
WyA:				
Wauseon	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	1.00
WzA:				
Wauseon	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	1.00
Urban Land	Not Rated		Not Rated	

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 233 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
AgA:						
Alvada	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 saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Ponding	1.00	Too clayey	0.50
	Too clayey	0.50				
AmA:						
Aurand	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 saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
	Too clayey	0.50				
AnA:						
Aurand	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 saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
	Too clayey	0.50				
AsA:						
Aurand	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 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	
BeB:						
Belmore	Very limited		Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Seepage	0.52
	Seepage	1.00	Seepage	1.00	Depth to saturated zone	0.09
BfB:						
Belmore	Very limited		Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Seepage	0.52
	Seepage	1.00	Seepage	1.00	Depth to saturated zone	0.09

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
CaA:						
Castalia	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Seepage	1.00	Depth to bedrock	1.00
	Seepage	1.00	Depth to bedrock	1.00	Seepage	1.00
	Content of large stones	1.00			Carbonate content	1.00
					Content of large stones	1.00
					Gravel content	0.26
CbB:						
Castalia	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Seepage	1.00	Depth to bedrock	1.00
	Seepage	1.00	Depth to bedrock	1.00	Seepage	1.00
	Content of large stones	1.00			Carbonate content	1.00
					Content of large stones	1.00
					Gravel content	0.02
Marblehead	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
CcA:						
Colwood	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
CdA:						
Colwood	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
CtA:						
Colwood	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
Urban Land	Not rated		Not rated		Not rated	
CvA:						
Cygnet	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 saturated zone	1.00	Seepage	1.00	Seepage	0.52
	Too Sandy	0.50	Depth to saturated zone	1.00	Too Sandy	0.50
CxB:						
Castalia	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Seepage	1.00	Depth to bedrock	1.00
	Seepage	1.00	Depth to bedrock	1.00	Seepage	1.00

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
	Content of large stones	1.00			Carbonate content	1.00
					Content of large stones	1.00
					Gravel content	0.02
Marblehead	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
Urban Land	Not rated		Not rated		Not rated	
DgA:						
Digby	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Too Sandy	0.50			Too Sandy	0.50
DhA:						
Digby	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Too Sandy	0.50			Too Sandy	0.50
DrA:						
Dunbridge	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Seepage	1.00	Depth to bedrock	1.00
	Seepage	1.00	Depth to bedrock	1.00	Seepage	0.52
DsA:						
Dunbridge	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Seepage	1.00	Depth to bedrock	1.00
	Seepage	1.00	Depth to bedrock	1.00	Seepage	0.52
Spinks, deep to limestone	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Seepage	1.00	Seepage	1.00
	Seepage	1.00	Depth to bedrock	0.32	Too Sandy	0.50
	Too Sandy	0.50			Depth to bedrock	0.32
DsB:						
Dunbridge	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Seepage	1.00	Depth to bedrock	1.00
	Seepage	1.00	Depth to bedrock	1.00	Seepage	0.52
Spinks, deep to limestone	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Seepage	1.00	Seepage	1.00
	Seepage	1.00	Depth to bedrock	0.32	Too Sandy	0.50
	Too Sandy	0.50			Depth to bedrock	0.32
EaA:						
Eel	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Flooding	1.00	Depth to saturated zone	0.95

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
	Depth to saturated zone	1.00	Depth to saturated zone	1.00		
	Seepage	1.00	Seepage	1.00		
EmA:						
Eel	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Flooding	1.00	Depth to saturated zone	0.95
	Depth to saturated zone	1.00	Depth to saturated zone	1.00		
	Seepage	1.00	Seepage	1.00		
EnA:						
Eel, moderately deep to limestone	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Depth to bedrock	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.95
	Depth to bedrock	1.00	Depth to bedrock	1.00		
FcA:						
Flatrock	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00		
	Seepage	1.00				
FuA:						
Fulton, till substratum	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 saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	1.00
	Too clayey	1.00			Hard to compact	1.00
FuB:						
Fulton, till substratum	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 saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	1.00
	Too clayey	1.00			Hard to compact	1.00
FzA:						
Fulton, till substratum	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 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	

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
GmA:						
Genesee	Very limited		Very limited		Not limited	
	Flooding	1.00	Flooding	1.00		
	Seepage	1.00				
GnA:						
Genesee	Very limited		Very limited		Not limited	
	Flooding	1.00	Flooding	1.00		
	Seepage	1.00				
GpA:						
Granby, till substratum	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 Sandy	1.00	Seepage	1.00	Too Sandy	1.00
	Ponding	1.00	Ponding	1.00	Seepage	1.00
					Ponding	1.00
HaA:						
Haney	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Seepage	1.00
	Seepage	1.00	Seepage	1.00	Too Sandy	0.50
	Too Sandy	0.50			Depth to saturated zone	0.24
HaB:						
Haney	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Seepage	1.00
	Seepage	1.00	Seepage	1.00	Too Sandy	0.50
	Too Sandy	0.50			Depth to saturated zone	0.24
HdA:						
Haney	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Seepage	1.00
	Seepage	1.00	Seepage	1.00	Too Sandy	0.50
	Too Sandy	0.50			Depth to saturated zone	0.24
HdB:						
Haney	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Seepage	1.00
	Seepage	1.00	Seepage	1.00	Too Sandy	0.50
	Too Sandy	0.50			Depth to saturated zone	0.24
HeA:						
Haskins	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 saturated zone	1.00	Depth to saturated zone	1.00		

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
Digby, till substratum---------	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 saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
	Too clayey	0.50	Seepage	1.00		
HeB:						
Haskins----------	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 saturated zone	1.00	Depth to saturated zone	1.00		
Digby, till substratum---------	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 saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
	Too clayey	0.50	Seepage	1.00		
HfA:						
Haskins----------	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 saturated zone	1.00	Depth to saturated zone	1.00		
Digby, till substratum---------	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 saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
	Too clayey	0.50	Seepage	1.00		
HfB:						
Haskins----------	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 saturated zone	1.00	Depth to saturated zone	1.00		
Digby, till substratum---------	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 saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
	Too clayey	0.50	Seepage	1.00		
HgA:						
Hoytville----------	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 saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	1.00
	Too clayey	1.00	Ponding	1.00	Hard to compact	1.00

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
	Ponding	1.00			Ponding	1.00
HhA:						
Hoytville	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 saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	1.00
	Too clayey	1.00	Ponding	1.00	Hard to compact	1.00
	Ponding	1.00			Ponding	1.00
HvA:						
Hoytville	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 saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	1.00
	Too clayey	1.00	Ponding	1.00	Hard to compact	1.00
	Ponding	1.00			Ponding	1.00
HwA:						
Hoytville, shallow to carbonates	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 saturated zone	1.00	Depth to saturated zone	1.00	Hard to compact	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Too clayey	0.50			Too clayey	0.50
HyA:						
Hoytville	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 saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	1.00
	Too clayey	1.00	Ponding	1.00	Hard to compact	1.00
	Ponding	1.00			Ponding	1.00
Urban Land	Not rated		Not rated		Not rated	
JoA:						
Joliet	Very limited		Very limited		Very limited	
	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	Depth to saturated zone	1.00
	Too clayey	0.50			Too clayey	0.50
KeA:						
Kibbie	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 Sandy	1.00			Too Sandy	1.00

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
KfA:						
Kibbie	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
KfB:						
Kibbie	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 Sandy	1.00			Too Sandy	1.00
KkA:						
Kibbie	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 Sandy	1.00			Too Sandy	1.00
Urban Land	Not rated		Not rated		Not rated	
LbB:						
Landes	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Seepage	1.00
	Seepage	1.00	Seepage	1.00		
LdA:						
Latty, till substratum	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	1.00	Ponding	1.00	Too clayey	1.00
	Ponding	1.00			Hard to compact	1.00
					Ponding	1.00
LgA:						
Latty, till substratum	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Too clayey	1.00
	Too clayey	0.50			Hard to compact	1.00
					Ponding	1.00
Urban Land	Not rated		Not rated		Not rated	
MbA:						
Millgrove	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Seepage	1.00	Seepage	1.00	Ponding	1.00
	Ponding	1.00	Ponding	1.00	Seepage	0.52

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
McA:						
Mermill	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 saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Ponding	1.00		
MdA:						
Mermill	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 saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Ponding	1.00	Too clayey	0.50
	Too clayey	0.50				
MeA:						
Mermill	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 saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Ponding	1.00		
MfA:						
Mermill	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 saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Ponding	1.00	Too clayey	0.50
	Too clayey	0.50				
Aurand	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 saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
	Too clayey	0.50				
MgA:						
Mermill	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 saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Ponding	1.00	Too clayey	0.50
	Too clayey	0.50				
Urban Land	Not rated		Not rated		Not rated	
MhA:						
Millsdale	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to bedrock	1.00

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
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to saturated zone	1.00
	Too clayey	1.00	Ponding	1.00	Too clayey	1.00
	Ponding	1.00			Ponding	1.00
MkA:						
Millsdale	Very limited		Very limited		Very limited	
	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	Depth to saturated zone	1.00
	Too clayey	1.00	Ponding	1.00	Too clayey	1.00
	Ponding	1.00			Ponding	1.00
MmA:						
Millsdale	Very limited		Very limited		Very limited	
	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	Depth to saturated zone	1.00
	Too clayey	1.00	Ponding	1.00	Too clayey	1.00
	Ponding	1.00			Ponding	1.00
Urban Land	Not rated		Not rated		Not rated	
Milton	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
MnB:						
Milton	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
NmA:						
Nappanee	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 saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
	Too clayey	0.50				
NmB:						
Nappanee	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 saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
	Too clayey	0.50				
NnA:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00

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
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
	Too clayey	0.50				
NnB:						
Nappanee	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 saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
	Too clayey	0.50				
NnB2:						
Nappanee	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 saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
	Too clayey	0.50				
NpA:						
Nappanee	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 saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
	Too clayey	0.50				
NpB:						
Nappanee	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 saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
	Too clayey	0.50				
NpB2:						
Nappanee	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 saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
	Too clayey	0.50				
NsA:						
Nappanee	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 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	

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
OsB:						
Oshtemo, till substratum	Somewhat limited		Very limited		Very limited	
	Too Sandy	0.50	Seepage	1.00	Seepage	1.00
					Too Sandy	0.50
OtA:						
Ottokee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Seepage	1.00
	Seepage	1.00	Seepage	1.00	Too Sandy	0.50
	Too Sandy	0.50			Depth to saturated zone	0.44
Spinks	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Too Sandy	0.50			Too Sandy	0.50
OtB:						
Ottokee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Seepage	1.00
	Seepage	1.00	Seepage	1.00	Too Sandy	0.50
	Too Sandy	0.50			Depth to saturated zone	0.44
Spinks	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Too Sandy	0.50			Too Sandy	0.50
OzB:						
Ottokee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Seepage	1.00
	Seepage	1.00	Seepage	1.00	Too Sandy	0.50
	Too Sandy	0.50			Depth to saturated zone	0.44
Spinks	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Too Sandy	0.50			Too Sandy	0.50
Urban Land	Not rated		Not rated		Not rated	
Pt:						
Pits, Quarry	Not rated		Not rated		Not rated	
RbA:						
Randolph	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to bedrock	1.00

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
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to saturated zone	1.00
	Too clayey	0.50			Too clayey	0.50
RbB:						
Randolph	Very limited		Very limited		Very limited	
	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	Depth to saturated zone	1.00
	Too clayey	0.50			Too clayey	0.50
RdA:						
Randolph	Very limited		Very limited		Very limited	
	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	Depth to saturated zone	1.00
	Too clayey	0.50			Too clayey	0.50
ReA:						
Randolph	Very limited		Very limited		Very limited	
	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	Depth to saturated zone	1.00
	Too clayey	0.50			Too clayey	0.50
Urban Land	Not rated		Not rated		Not rated	
RfA:						
Rimer	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 saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
	Too clayey	0.50	Seepage	1.00		
Tedrow, till substratum	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 saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
	Too clayey	0.50	Seepage	1.00		
RfB:						
Rimer	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 saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
	Too clayey	0.50	Seepage	1.00		
Tedrow, till substratum	Very limited		Very limited		Very limited	

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
	Depth to saturated zone	1.00	Depth to saturated zone	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	Seepage	1.00		
RgA:						
Rimer	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 saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
	Too clayey	0.50	Seepage	1.00		
Tedrow, till substratum	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 saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
	Too clayey	0.50	Seepage	1.00		
Urban Land	Not rated		Not rated		Not rated	
RhA:						
Ritchey	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
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	0.50			Too clayey	0.50
RkA:						
Ritchey	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
RmA:						
Risingsun	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Seepage	1.00	Ponding	1.00
	Too clayey	0.50	Ponding	1.00	Too clayey	0.50
					Gravel content	0.01
Rollersville	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	Seepage	1.00	Too clayey	0.50
RnA:						
Rollersville	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00

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
	Too Sandy	1.00	Seepage	1.00	Too Sandy	1.00
					Seepage	0.52
Risingsun	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Seepage	1.00	Ponding	1.00
	Too clayey	0.50	Ponding	1.00	Too clayey	0.50
					Gravel content	0.01
RsA:						
Rossburg	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Flooding	1.00	Seepage	0.52
	Seepage	1.00	Seepage	1.00		
SdA:						
Seward	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.95	Seepage	1.00	Depth to saturated zone	0.68
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Seepage	0.52
			Depth to saturated zone	0.44		
Ottokee, till substratum	Somewhat limited		Very limited		Very limited	
	Depth to saturated zone	0.84	Seepage	1.00	Seepage	1.00
	Depth to saturated zone	0.84	Depth to saturated zone	0.84	Too Sandy	0.50
	Too Sandy	0.50	Depth to saturated zone	0.17	Depth to saturated zone	0.44
SdB:						
Seward	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.95	Seepage	1.00	Depth to saturated zone	0.68
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Seepage	0.52
			Depth to saturated zone	0.44		
Ottokee, till substratum	Somewhat limited		Very limited		Very limited	
	Depth to saturated zone	0.84	Seepage	1.00	Seepage	1.00
	Depth to saturated zone	0.84	Depth to saturated zone	0.84	Too Sandy	0.50
	Too Sandy	0.50	Depth to saturated zone	0.17	Depth to saturated zone	0.44
SeA:						
Shawtown	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.68	Depth to saturated zone	0.68	Depth to saturated zone	0.24
	Depth to saturated zone	0.68	Depth to saturated zone	0.04		
SeB:						
Shawtown	Somewhat limited		Somewhat limited		Somewhat limited	

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
	Depth to saturated zone	0.68	Depth to saturated zone	0.68	Depth to saturated zone	0.24
	Depth to saturated zone	0.68	Depth to saturated zone	0.04		
SgA:						
Shoals	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Seepage	0.22
	Seepage	1.00	Seepage	1.00		
ShA:						
Shoals	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Seepage	0.22
	Seepage	1.00	Seepage	1.00		
SkA:						
Shoals	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Seepage	0.22
	Seepage	1.00	Seepage	1.00		
SmA:						
Shoals, moderately deep to limestone	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Depth to bedrock	1.00
	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	Too clayey	0.50
	Too clayey	0.50				
Sloan, moderately deep to limestone	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Depth to bedrock	1.00
	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	Ponding	1.00
	Ponding	1.00	Ponding	1.00	Too clayey	0.50
	Too clayey	0.50				
SnA:						
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	Ponding	1.00
	Ponding	1.00	Ponding	1.00		
SoA:						
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	Ponding	1.00

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
	Ponding	1.00	Ponding	1.00	Too clayey	0.50
	Too clayey	0.50				
SpA:						
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	Ponding	1.00
	Ponding	1.00	Ponding	1.00		
SrB:						
Spinks	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Too Sandy	0.50			Too Sandy	0.50
SrC:						
Spinks	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Too Sandy	0.50			Too Sandy	0.50
SrD:						
Spinks	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Slope	1.00
	Slope	1.00	Slope	1.00	Seepage	1.00
	Too Sandy	0.50			Too Sandy	0.50
SsB:						
Spinks	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Too Sandy	0.50			Too Sandy	0.50
SsC:						
Spinks	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Too Sandy	0.50			Too Sandy	0.50
StB:						
St. Clair	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Depth to saturated zone	0.68
	Depth to saturated zone	0.95	Depth to saturated zone	0.44	Too clayey	0.50
	Too clayey	0.50				
StC2:						
St. Clair	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Depth to saturated zone	0.68
	Depth to saturated zone	0.95	Depth to saturated zone	0.44	Too clayey	0.50
	Too clayey	0.50				
SuB2:						
St. Clair	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Depth to saturated zone	0.68
	Depth to saturated zone	0.95	Depth to saturated zone	0.44	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
SuC2:						
St. Clair	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Depth to saturated zone	0.68
	Depth to saturated zone	0.95	Depth to saturated zone	0.44	Too clayey	0.50
	Too clayey	0.50				
SuD2:						
St. Clair	Somewhat limited		Somewhat limited		Somewhat limited	
	Slope	0.96	Slope	0.96	Slope	0.96
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Depth to saturated zone	0.68
	Depth to saturated zone	0.95	Depth to saturated zone	0.44	Too clayey	0.50
	Too clayey	0.50				
SuE2:						
St. Clair	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Depth to saturated zone	0.68
	Depth to saturated zone	0.95	Depth to saturated zone	0.44	Too clayey	0.50
	Too clayey	0.50				
TeA:						
Tedrow	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Too Sandy	0.50			Too Sandy	0.50
TeB:						
Tedrow	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Too Sandy	0.50			Too Sandy	0.50
TfA:						
Tedrow	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Too Sandy	0.50			Too Sandy	0.50
Urban Land	Not rated		Not rated		Not rated	
TpA:						
Toledo	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	1.00	Ponding	1.00	Too clayey	1.00
	Ponding	1.00			Hard to compact	1.00

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
					Ponding	1.00
TuA:						
Toledo	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	1.00	Ponding	1.00	Too clayey	1.00
	Ponding	1.00			Hard to compact	1.00
					Ponding	1.00
Urban Land	Not rated		Not rated		Not rated	
UcA:						
Udorthents	Not rated		Not rated		Not rated	
	Not rated; pH				Not rated: Unified or minerology class	
	Not rated; Fragments > 75mm				Not rated; Fragments > 75mm	
UcE:						
Udorthents	Not rated		Not rated		Not rated	
	Not rated; pH				Not rated: Unified or minerology class	
	Not rated; Fragments > 75mm				Not rated; Fragments > 75mm	
Ur:						
Urban Land	Not rated		Not rated		Not rated	
W:						
Water	Not rated		Not rated		Not rated	
WbA:						
Wabasha	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	1.00
	Too clayey	1.00	Ponding	1.00	Hard to compact	1.00
	Ponding	1.00			Ponding	1.00
WmA:						
Wauseon	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 saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Seepage	1.00	Too clayey	0.50
	Too clayey	0.50	Ponding	1.00		

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
WnA:						
Wauseon, deep to till	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 saturated zone	1.00	Depth to saturated zone	1.00	Seepage	1.00
	Ponding	1.00	Seepage	1.00	Ponding	1.00
	Too Sandy	0.50	Ponding	1.00	Too Sandy	0.50
WyA:						
Wauseon	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 saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Seepage	1.00	Too clayey	0.50
	Too clayey	0.50	Ponding	1.00		
WzA:						
Wauseon	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 saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Seepage	1.00	Too clayey	0.50
	Too clayey	0.50	Ponding	1.00		
Urban Land	Not rated		Not rated		Not rated	

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 235 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
AgA:						
Alvada	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
	Restricted permeability	0.74	Restricted permeability	0.60	Restricted permeability	0.60
	Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01
AmA:						
Aurand	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	0.74	Restricted permeability	0.60	Restricted permeability	0.60
	Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01
AnA:						
Aurand	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	0.74	Restricted permeability	0.60	Restricted permeability	0.60
AsA:						
Aurand	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
BeB:						
Belmore	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Depth to saturated zone	0.43	Depth to saturated zone	0.43	Depth to saturated zone	0.43
BfB:						
Belmore	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Depth to saturated zone	0.43	Depth to saturated zone	0.43	Depth to saturated zone	0.43
CaA:						
Castalia	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
	Depth to bedrock	0.99	Depth to bedrock	0.99	Depth to bedrock	0.99
	Cobble content	0.87	Cobble content	0.87	Cobble content	0.87

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
	Large stones on the surface	0.18	Large stones on the surface	0.18	Large stones on the surface	0.18
CbB:						
Castalia	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
	Depth to bedrock	0.97	Depth to bedrock	0.97	Depth to bedrock	0.97
	Cobble content	0.87	Cobble content	0.87	Cobble content	0.87
	Large stones on the surface	0.18	Large stones on the surface	0.18	Large stones on the surface	0.18
Marblehead	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Droughty	1.00	Droughty	1.00
	Droughty	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
CcA:						
Colwood	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
	Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01
CdA:						
Colwood	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
CtA:						
Colwood	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
CvA:						
Cygnet	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01
CxB:						
Castalia	Not rated		Not rated		Not rated	
Marblehead	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
DgA:						
Digby	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
DhA:						
Digby	Very limited		Very limited		Very limited	

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
	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
DrA:						
Dunbridge	Somewhat limited		Somewhat limited		Somewhat limited	
	Droughty	0.94	Droughty	0.94	Droughty	0.94
	Restricted permeability	0.85	Restricted permeability	0.72	Restricted permeability	0.72
	Depth to bedrock	0.42	Depth to bedrock	0.42	Depth to bedrock	0.42
	Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01
DsA:						
Dunbridge	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Droughty	1.00	Droughty	1.00	Droughty	1.00
	Restricted permeability	0.85	Restricted permeability	0.72	Restricted permeability	0.72
	Depth to bedrock	0.42	Depth to bedrock	0.42	Depth to bedrock	0.42
Spinks	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Droughty	0.65	Droughty	0.65	Droughty	0.65
	Leaching limitation	0.45	Too acid	0.07	Too acid	0.07
	Too acid	0.02				
DsB:						
Dunbridge	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Droughty	1.00	Droughty	1.00	Droughty	1.00
	Restricted permeability	0.85	Restricted permeability	0.72	Restricted permeability	0.72
	Depth to bedrock	0.42	Depth to bedrock	0.42	Depth to bedrock	0.42
Spinks	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Droughty	0.65	Droughty	0.65	Droughty	0.65
	Leaching limitation	0.45	Too acid	0.07	Too acid	0.07
	Too acid	0.02				
EaA:						
Eel	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
EmA:						
Eel	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

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
EnA:						
Eel	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
	Depth to bedrock	0.35	Depth to bedrock	0.35	Depth to bedrock	0.35
FcA:						
Flatrock	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	0.60
FuA:						
Fulton	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	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Runoff limitation	0.40				
FuB:						
Fulton	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	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Runoff limitation	0.40			Too steep for surface application	0.08
FzA:						
Fulton	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
GmA:						
Genesee	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
GnA:						
Genesee	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
GpA:						
Granby	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 limitation	0.45	Droughty	0.16	Droughty	0.16
	Droughty	0.16				
HaA:						
Haney	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	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
	Depth to saturated zone	0.68	Depth to saturated zone	0.68	Depth to saturated zone	0.68
HaB:						
Haney	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Depth to saturated zone	0.68	Depth to saturated zone	0.68	Depth to saturated zone	0.68
HdA:						
Haney	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Depth to saturated zone	0.68	Depth to saturated zone	0.68	Depth to saturated zone	0.68
HdB:						
Haney	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Depth to saturated zone	0.68	Depth to saturated zone	0.68	Depth to saturated zone	0.68
HeA:						
Haskins	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	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Too acid	0.02	Too acid	0.07	Too acid	0.07
	Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01
Digby	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
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Droughty	0.01	Droughty	0.01	Droughty	0.01
HeB:						
Haskins	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	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Too acid	0.02	Too acid	0.07	Too acid	0.07
	Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01
Digby	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
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	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
	Droughty	0.01	Droughty	0.01	Droughty	0.01
HfA:						
Haskins	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	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Too acid	0.02	Too acid	0.07	Too acid	0.07
Digby	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
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
HfB:						
Haskins	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	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Too acid	0.02	Too acid	0.07	Too acid	0.07
Digby	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
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
HgA:						
Hoytville	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
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
HhA:						
Hoytville	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
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
HvA:						
Hoytville	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
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
HwA:						
Hoytville	Very limited		Very limited		Very limited	

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
	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
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Droughty	0.38	Droughty	0.38	Droughty	0.38
HyA:						
Hoytville	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
JoA:						
Joliet	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
	Droughty	1.00	Droughty	1.00	Droughty	1.00
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
	Runoff limitation	0.40				
KeA:						
Kibbie	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01
KfA:						
Kibbie	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01
KfB:						
Kibbie	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01
KkA:						
Kibbie	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
LbB:						
Landes	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	1.00
LdA:						
Latty	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Ponding	1.00	Ponding	1.00	Ponding	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
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Runoff limitation	0.40				
LgA:						
Latty	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
MbA:						
Millgrove	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
	Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01
McA:						
Mermill	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
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01
MdA:						
Mermill	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
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
MeA:						
Mermill	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
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
MfA:						
Mermill	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
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
Aurand	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
MgA:						
Mermill	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	

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
MhA:						
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
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
	Depth to bedrock	0.29	Depth to bedrock	0.29	Depth to bedrock	0.29
	Droughty	0.24	Droughty	0.24	Droughty	0.24
MkA:						
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
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
	Depth to bedrock	0.29	Depth to bedrock	0.29	Depth to bedrock	0.29
	Droughty	0.24	Droughty	0.24	Droughty	0.24
MmA:						
Millsdale	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
MnA:						
Milton	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to bedrock	0.80	Depth to bedrock	0.80	Depth to bedrock	0.80
	Droughty	0.64	Droughty	0.64	Droughty	0.64
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
	Too acid	0.02	Too acid	0.07	Too acid	0.07
MnB:						
Milton	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to bedrock	0.80	Depth to bedrock	0.80	Depth to bedrock	0.80
	Droughty	0.64	Droughty	0.64	Droughty	0.64
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
	Too acid	0.02	Too acid	0.07	Too acid	0.07
NmA:						
Nappanee	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	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Runoff limitation	0.40	Too acid	0.07	Too acid	0.07
	Droughty	0.03	Droughty	0.03	Droughty	0.03
	Too acid	0.02	Filtering capacity	0.01	Filtering capacity	0.01
NmB:						
Nappanee	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	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Runoff limitation	0.40	Too acid	0.07	Too acid	0.07
	Droughty	0.03	Droughty	0.03	Droughty	0.03

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
	Too acid	0.02	Filtering capacity	0.01	Filtering capacity	0.01
NnA:						
Nappanee	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	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Runoff limitation	0.40	Too acid	0.07	Too acid	0.07
	Too acid	0.02				
NnB:						
Nappanee	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	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Runoff limitation	0.40	Too acid	0.07	Too acid	0.07
	Too acid	0.02				
NnB2:						
Nappanee	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	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Runoff limitation	0.40	Too acid	0.07	Too acid	0.07
	Too acid	0.02				
NpA:						
Nappanee	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	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Runoff limitation	0.40	Too acid	0.07	Too acid	0.07
	Too acid	0.02				
NpB:						
Nappanee	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	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Runoff limitation	0.40	Too acid	0.07	Too acid	0.07
	Too acid	0.02				
NpB2:						
Nappanee	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	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Runoff limitation	0.40	Too acid	0.07	Too acid	0.07
	Too acid	0.02				
NsA:						
Nappanee	Not rated		Not rated		Not rated	

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
Urban Land	Not rated		Not rated		Not rated	
OsB:						
Oshtemo	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Too acid	0.02	Too acid	0.07	Too steep for surface application	0.08
					Too acid	0.07
OtA:						
Ottokee	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Depth to saturated zone	0.84	Depth to saturated zone	0.84	Depth to saturated zone	0.84
	Leaching limitation	0.45	Droughty	0.32	Droughty	0.32
	Droughty	0.32				
Spinks	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Leaching limitation	0.45	Droughty	0.38	Droughty	0.38
	Droughty	0.38	Too acid	0.07	Too acid	0.07
	Too acid	0.02				
OtB:						
Ottokee	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Depth to saturated zone	0.84	Depth to saturated zone	0.84	Depth to saturated zone	0.84
	Leaching limitation	0.45	Droughty	0.32	Droughty	0.32
	Droughty	0.32				
Spinks	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Leaching limitation	0.45	Droughty	0.38	Droughty	0.38
	Droughty	0.38	Too acid	0.07	Too acid	0.07
	Too acid	0.02				
OzB:						
Ottokee	Not rated		Not rated		Not rated	
Spinks	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
Pt:						
Pits, Quarry	Not rated		Not rated		Not rated	
RbA:						
Randolph	Very limited		Very limited		Very limited	

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
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
	Depth to bedrock	0.29	Depth to bedrock	0.29	Depth to bedrock	0.29
	Droughty	0.09	Droughty	0.09	Droughty	0.09
	Too acid	0.02	Too acid	0.07	Too acid	0.07
RbB:						
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	0.41	Restricted permeability	0.31	Restricted permeability	0.31
	Depth to bedrock	0.29	Depth to bedrock	0.29	Depth to bedrock	0.29
	Droughty	0.09	Droughty	0.09	Droughty	0.09
	Too acid	0.02	Too acid	0.07	Too acid	0.07
RdA:						
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	0.41	Restricted permeability	0.31	Restricted permeability	0.31
	Depth to bedrock	0.29	Depth to bedrock	0.29	Depth to bedrock	0.29
	Droughty	0.09	Droughty	0.09	Droughty	0.09
	Too acid	0.02	Too acid	0.07	Too acid	0.07
ReA:						
Randolph	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
RfA:						
Rimer	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
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Droughty	0.27	Droughty	0.27	Droughty	0.27
	Too acid	0.02	Too acid	0.07	Too acid	0.07
Tedrow	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
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Droughty	0.09	Droughty	0.09	Droughty	0.09
RfB:						
Rimer	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

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
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Droughty	0.27	Droughty	0.27	Droughty	0.27
	Too acid	0.02	Too acid	0.07	Too acid	0.07
Tedrow	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
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Droughty	0.09	Droughty	0.09	Droughty	0.09
RgA:						
Rimer	Not rated		Not rated		Not rated	
Tedrow	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
RhA:						
Ritchey	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Droughty	0.98	Droughty	0.98	Droughty	0.98
	Runoff limitation	0.40				
RhB:						
Ritchey	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Droughty	0.98	Droughty	0.98	Droughty	0.98
	Runoff limitation	0.40				
RkA:						
Ritchey	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Droughty	0.98	Droughty	0.98	Droughty	0.98
	Runoff limitation	0.40				
RmA:						
Risingsun	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
	Restricted permeability	0.75	Restricted permeability	0.61	Restricted permeability	0.61
	Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01
Rollersville	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	0.75	Restricted permeability	0.61	Restricted permeability	0.61
	Droughty	0.28	Droughty	0.28	Droughty	0.28
	Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01
RnA:						
Rollersville	Very limited		Very limited		Very limited	

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
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.75	Restricted permeability	0.61	Restricted permeability	0.61
	Droughty	0.06	Droughty	0.06	Droughty	0.06
	Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01
Risingsun	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
	Restricted permeability	0.75	Restricted permeability	0.61	Restricted permeability	0.61
	Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01
RsA:						
Rossburg	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01
SdA:						
Seward	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Depth to saturated zone	0.95
	Too acid	0.02	Too acid	0.07	Too acid	0.07
	Droughty	0.01	Droughty	0.01	Droughty	0.01
Ottokee	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Depth to saturated zone	0.84	Depth to saturated zone	0.84	Depth to saturated zone	0.84
	Droughty	0.54	Droughty	0.54	Droughty	0.54
SdB:						
Seward	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Depth to saturated zone	0.95
	Too acid	0.02	Too acid	0.07	Too acid	0.07
	Droughty	0.01	Droughty	0.01	Droughty	0.01
Ottokee	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	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
	Depth to saturated zone	0.84	Depth to saturated zone	0.84	Depth to saturated zone	0.84
	Droughty	0.54	Droughty	0.54	Droughty	0.54
SeA:						
Shawtown	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Depth to saturated zone	0.68	Depth to saturated zone	0.68	Depth to saturated zone	0.68
SeB:						
Shawtown	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Depth to saturated zone	0.68	Depth to saturated zone	0.68	Depth to saturated zone	0.68
					Too steep for surface application	0.08
SgA:						
Shoals	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
ShA:						
Shoals	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
SkA:						
Shoals	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
SmA:						
Shoals	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
	Depth to bedrock	0.35	Depth to bedrock	0.35	Depth to bedrock	0.35
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	1.00
	Restricted permeability	0.85	Restricted permeability	0.72	Restricted permeability	0.72
	Droughty	0.53	Droughty	0.53	Droughty	0.53
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

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
	Flooding	1.00	Flooding	1.00	Flooding	1.00
SoA:						
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
SpA:						
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	1.00
SrB:						
Spinks	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Droughty	0.50	Droughty	0.50	Droughty	0.50
	Leaching limitation	0.45	Too acid	0.07	Too acid	0.07
	Too acid	0.02				
SrC:						
Spinks	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Droughty	0.50	Droughty	0.50	Too steep for surface application	1.00
	Leaching limitation	0.45	Too acid	0.07	Droughty	0.50
	Too acid	0.02	Slope	0.01	Too steep for sprinkler application	0.10
	Slope	0.01			Too acid	0.07
SrD:						
Spinks	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	0.50	Droughty	0.50	Too steep for sprinkler application	1.00
	Leaching limitation	0.45	Too acid	0.07	Droughty	0.50
	Too acid	0.02			Too acid	0.07
SsB:						
Spinks	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Droughty	0.50	Droughty	0.50	Droughty	0.50
	Leaching limitation	0.45	Too acid	0.07	Too acid	0.07

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
	Too acid	0.02				
SsC:						
Spinks	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Droughty	0.50	Droughty	0.50	Too steep for surface application	1.00
	Leaching limitation	0.45	Too acid	0.07	Droughty	0.50
	Too acid	0.02	Slope	0.01	Too steep for sprinkler application	0.10
	Slope	0.01			Too acid	0.07
StB:						
St. Clair	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Depth to saturated zone	0.95
	Runoff limitation	0.40	Droughty	0.01	Droughty	0.01
	Droughty	0.01				
StC2:						
St. Clair	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Too steep for surface application	1.00
	Runoff limitation	0.40	Droughty	0.01	Depth to saturated zone	0.95
	Droughty	0.01	Slope	0.01	Too steep for sprinkler application	0.10
	Slope	0.01			Droughty	0.01
SuB2:						
St. Clair	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Depth to saturated zone	0.95
	Runoff limitation	0.40	Droughty	0.02	Droughty	0.02
	Droughty	0.02				
SuC2:						
St. Clair	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Too steep for surface application	1.00
	Runoff limitation	0.40	Droughty	0.02	Depth to saturated zone	0.95
	Droughty	0.02	Slope	0.01	Too steep for sprinkler application	0.10

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
	Slope	0.01			Droughty	0.02
SuD2:						
St. Clair	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Restricted permeability	1.00	Too steep for surface application	1.00
	Slope	0.96	Slope	0.96	Restricted permeability	1.00
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Too steep for sprinkler application	0.98
	Runoff limitation	0.40	Droughty	0.02	Depth to saturated zone	0.95
	Droughty	0.02			Droughty	0.02
SuE2:						
St. Clair	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Too steep for surface application	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Too steep for sprinkler application	1.00
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Restricted permeability	1.00
	Runoff limitation	0.40	Droughty	0.02	Depth to saturated zone	0.95
	Droughty	0.02			Droughty	0.02
TeA:						
Tedrow	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
	Droughty	0.16	Droughty	0.16	Droughty	0.16
TeB:						
Tedrow	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
	Droughty	0.16	Droughty	0.16	Droughty	0.16
TfA:						
Tedrow	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
TpA:						
Toledo	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
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Runoff limitation	0.40				

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
TuA:						
Toledo	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
UcA:						
Udorthents	Not rated		Not rated		Not rated	
UcE:						
Udorthents	Not rated		Not rated		Not rated	
Ur:						
Urban Land	Not rated		Not rated		Not rated	
W:						
Water	Not rated		Not rated		Not rated	
WbA:						
Wabasha	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	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Runoff limitation	0.40				
WmA:						
Wauseon	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
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Droughty	0.58	Droughty	0.58	Droughty	0.58
	Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01
WnA:						
Wauseon	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
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Droughty	0.01	Droughty	0.01	Droughty	0.01
WyA:						
Wauseon	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
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Droughty	0.31	Droughty	0.31	Droughty	0.31
	Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01

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
WzA:						
Wauseon	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	

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 236 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
AgA:						
Alvada	Very limited		Very limited		Very limited	
	Seepage	1.00	Ponding	1.00	Depth to water	1.00
			Depth to saturated zone	1.00		
			Piping	0.50		
AmA:						
Aurand	Somewhat limited		Very limited		Very limited	
	Seepage	0.50	Depth to saturated zone	1.00	Depth to water	1.00
			Piping	0.50		
			Thin layer	0.23		
AnA:						
Aurand	Somewhat limited		Very limited		Very limited	
	Seepage	0.50	Depth to saturated zone	1.00	Depth to water	1.00
			Piping	0.50		
AsA:						
Aurand	Somewhat limited		Very limited		Very limited	
	Seepage	0.50	Depth to saturated zone	1.00	Depth to water	1.00
			Piping	0.50		
Urban Land	Not Rated		Not Rated		Not Rated	
BeB:						
Belmore	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Depth to saturated zone	0.43	Cutbanks cave	1.00
					Depth to water	0.25
BfB:						
Belmore	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Depth to saturated zone	0.43	Cutbanks cave	1.00
					Depth to water	0.25
CaA:						
Castalia	Very limited		Very limited		Very limited	
	Seepage	1.00	Thin layer	1.00	Depth to water	1.00
	Depth to bedrock	1.00	Content of large stones	1.00		
CbB:						
Castalia	Very limited		Very limited		Very limited	
	Seepage	1.00	Thin layer	1.00	Depth to water	1.00
	Depth to bedrock	0.99	Content of large stones	1.00		
Marblehead	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Thin layer	1.00	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
			Piping	0.50		
CcA:						
Colwood	Somewhat limited		Very limited		Very limited	
	Seepage	0.50	Ponding	1.00	Cutbanks cave	1.00
			Depth to saturated zone	1.00		
			Piping	0.50		
CdA:						
Colwood	Somewhat limited		Very limited		Very limited	
	Seepage	0.50	Ponding	1.00	Cutbanks cave	1.00
			Depth to saturated zone	1.00		
			Piping	0.50		
CtA:						
Colwood	Somewhat limited		Very limited		Very limited	
	Seepage	0.50	Ponding	1.00	Cutbanks cave	1.00
			Depth to saturated zone	1.00		
			Piping	0.50		
Urban Land	Not Rated		Not Rated		Not Rated	
CvA:						
Cygnet	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00	Depth to water	1.00
			Piping	0.50		
CxB:						
Castalia	Very limited		Very limited		Very limited	
	Seepage	1.00	Thin layer	1.00	Depth to water	1.00
	Depth to bedrock	0.99	Content of large stones	1.00		
Marblehead	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
			Piping	0.50		
Urban Land	Not Rated		Not Rated		Not Rated	
DgA:						
Digby	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	1.00
DhA:						
Digby	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	1.00
DrA:						
Dunbridge	Very limited		Very limited		Very limited	
	Seepage	1.00	Thin layer	1.00	Depth to water	1.00
	Depth to bedrock	0.85				
DsA:						
Dunbridge	Very limited		Very limited		Very limited	
	Seepage	1.00	Thin layer	1.00	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
	Depth to bedrock	0.85				
Spinks	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
	Depth to bedrock	0.08	Piping	1.00		
DsB:						
Dunbridge	Very limited		Very limited		Very limited	
	Seepage	1.00	Thin layer	1.00	Depth to water	1.00
	Depth to bedrock	0.85				
Spinks	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
	Depth to bedrock	0.08	Piping	1.00		
EaA:						
Eel	Very limited		Very limited		Somewhat limited	
	Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	0.10
			Piping	0.50		
EmA:						
Eel	Very limited		Very limited		Somewhat limited	
	Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	0.10
			Piping	0.50		
EnA:						
Eel	Somewhat limited		Very limited		Very limited	
	Depth to bedrock	0.83	Depth to saturated zone	1.00	Depth to bedrock	1.00
	Seepage	0.50	Piping	0.50	Slow refill	0.28
			Thin layer	0.20	Cutbanks cave	0.10
FcA:						
Flatrock	Very limited		Very limited		Somewhat limited	
	Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	0.10
			Piping	0.50		
FuA:						
Fulton	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	Depth to water	1.00
			Hard to compact	1.00		
			Thin layer	0.13		
FuB:						
Fulton	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	Depth to water	1.00
			Hard to compact	1.00		
			Piping	0.50		
			Thin layer	0.13		
FzA:						
Fulton	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	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
Urban Land	Not Rated		Not Rated		Not Rated	
GmA:						
Genesee	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Piping	0.50	Depth to water	1.00
GnA:						
Genesee	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Piping	0.50	Depth to water	1.00
GpA:						
Granby	Very limited		Very limited		Very limited	
	Seepage	1.00	Ponding	1.00	Cutbanks cave	1.00
			Depth to saturated zone	1.00		
			Seepage	1.00		
			Piping	1.00		
HaA:						
Haney	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Depth to saturated zone	0.68	Cutbanks cave	1.00
					Depth to water	0.14
HaB:						
Haney	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Depth to saturated zone	0.68	Cutbanks cave	1.00
					Depth to water	0.14
HdA:						
Haney	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Depth to saturated zone	0.68	Cutbanks cave	1.00
					Depth to water	0.14
HdB:						
Haney	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Depth to saturated zone	0.68	Cutbanks cave	1.00
					Depth to water	0.14
HeA:						
Haskins	Somewhat limited		Very limited		Very limited	
	Seepage	0.50	Depth to saturated zone	1.00	Depth to water	1.00
Digby	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00	Depth to water	1.00
HeB:						
Haskins	Somewhat limited		Very limited		Very limited	
	Seepage	0.50	Depth to saturated zone	1.00	Depth to water	1.00
Digby	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00	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
HfA:						
Haskins	Somewhat limited		Very limited		Very limited	
	Seepage	0.50	Depth to saturated zone	1.00	Depth to water	1.00
Digby	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00	Depth to water	1.00
HfB:						
Haskins	Somewhat limited		Very limited		Very limited	
	Seepage	0.50	Depth to saturated zone	1.00	Depth to water	1.00
Digby	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00	Depth to water	1.00
			Piping	0.50		
HgA:						
Hoytville	Not limited		Very limited		Very limited	
			Ponding	1.00	Depth to water	1.00
			Depth to saturated zone	1.00		
			Hard to compact	1.00		
HhA:						
Hoytville	Not limited		Very limited		Very limited	
			Ponding	1.00	Depth to water	1.00
			Depth to saturated zone	1.00		
			Hard to compact	1.00		
HvA:						
Hoytville	Not limited		Very limited		Very limited	
			Ponding	1.00	Depth to water	1.00
			Depth to saturated zone	1.00		
			Hard to compact	1.00		
HwA:						
Hoytville	Not limited		Very limited		Very limited	
			Ponding	1.00	Depth to water	1.00
			Depth to saturated zone	1.00		
			Hard to compact	1.00		
HyA:						
Hoytville	Not limited		Very limited		Very limited	
			Ponding	1.00	Depth to water	1.00
			Depth to saturated zone	1.00		
			Hard to compact	1.00		
Urban Land	Not Rated		Not Rated		Not Rated	
JoA:						
Joliet	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Thin layer	1.00	Depth to bedrock	1.00
			Depth to saturated zone	1.00	Slow refill	0.96

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
			Piping	0.50	Cutbanks cave	0.10
KeA:						
Kibbie	Somewhat limited		Very limited		Very limited	
	Seepage	0.50	Depth to saturated zone	1.00	Cutbanks cave	1.00
			Piping	1.00		
KfA:						
Kibbie	Somewhat limited		Very limited		Very limited	
	Seepage	0.50	Depth to saturated zone	1.00	Cutbanks cave	1.00
			Piping	1.00		
KfB:						
Kibbie	Somewhat limited		Very limited		Very limited	
	Seepage	0.50	Depth to saturated zone	1.00	Cutbanks cave	1.00
			Piping	1.00		
KkA:						
Kibbie	Somewhat limited		Very limited		Very limited	
	Seepage	0.50	Depth to saturated zone	1.00	Cutbanks cave	1.00
			Piping	1.00		
Urban Land	Not Rated		Not Rated		Not Rated	
LbB:						
Landes	Very limited		Not limited		Very limited	
	Seepage	1.00			Depth to water	1.00
LdA:						
Latty	Not limited		Very limited		Very limited	
			Ponding	1.00	Slow refill	1.00
			Depth to saturated zone	1.00	Cutbanks cave	0.10
			Hard to compact	1.00		
LgA:						
Latty	Not limited		Very limited		Very limited	
			Ponding	1.00	Slow refill	1.00
			Depth to saturated zone	1.00	Cutbanks cave	0.10
			Hard to compact	1.00		
Urban Land	Not Rated		Not Rated		Not Rated	
MbA:						
Millgrove	Very limited		Very limited		Very limited	
	Seepage	1.00	Ponding	1.00	Cutbanks cave	1.00
			Depth to saturated zone	1.00		
			Thin layer	0.13		
McA:						
Mermill	Somewhat limited		Very limited		Very limited	
	Seepage	0.50	Ponding	1.00	Depth to water	1.00
			Depth to saturated zone	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
			Piping	0.50		
MdA:						
Mermill	Somewhat limited		Very limited		Very limited	
	Seepage	0.50	Ponding	1.00	Depth to water	1.00
			Depth to saturated zone	1.00		
			Piping	0.50		
MeA:						
Mermill	Somewhat limited		Very limited		Very limited	
	Seepage	0.50	Ponding	1.00	Depth to water	1.00
			Depth to saturated zone	1.00		
			Piping	0.50		
MfA:						
Mermill	Somewhat limited		Very limited		Very limited	
	Seepage	0.50	Ponding	1.00	Depth to water	1.00
			Depth to saturated zone	1.00		
			Piping	0.50		
Aurand	Somewhat limited		Very limited		Very limited	
	Seepage	0.50	Depth to saturated zone	1.00	Depth to water	1.00
			Piping	0.50		
MgA:						
Mermill	Somewhat limited		Very limited		Very limited	
	Seepage	0.50	Ponding	1.00	Depth to water	1.00
			Depth to saturated zone	1.00		
			Piping	0.50		
Urban Land	Not Rated		Not Rated		Not Rated	
MhA:						
Millsdale	Somewhat limited		Very limited		Very limited	
	Depth to bedrock	0.81	Ponding	1.00	Depth to bedrock	1.00
			Depth to saturated zone	1.00	Slow refill	0.28
			Piping	0.50	Cutbanks cave	0.10
			Thin layer	0.13		
MkA:						
Millsdale	Somewhat limited		Very limited		Very limited	
	Depth to bedrock	0.81	Ponding	1.00	Depth to bedrock	1.00
			Depth to saturated zone	1.00	Slow refill	0.28
			Piping	0.50	Cutbanks cave	0.10
			Thin layer	0.13		
MmA:						
Millsdale	Somewhat limited		Very limited		Very limited	
	Depth to bedrock	0.81	Ponding	1.00	Depth to bedrock	1.00
			Depth to saturated zone	1.00	Slow refill	0.28
			Piping	0.50	Cutbanks cave	0.10
			Thin layer	0.13		

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
Urban Land	Not Rated		Not Rated		Not Rated	
MnA:						
Milton	Somewhat limited Depth to bedrock	0.95	Somewhat limited Thin layer Piping	0.73 0.50	Very limited Depth to water	1.00
MnB:						
Milton	Somewhat limited Depth to bedrock	0.95	Somewhat limited Thin layer Piping	0.73 0.50	Very limited Depth to water	1.00
NmA:						
Nappanee	Not limited		Very limited Depth to saturated zone Piping	1.00 0.50	Very limited Depth to water	1.00
NmB:						
Nappanee	Not limited		Very limited Depth to saturated zone Piping	1.00 0.50	Very limited Depth to water	1.00
NnA:						
Nappanee	Not limited		Very limited Depth to saturated zone Piping	1.00 0.50	Very limited Depth to water	1.00
NnB:						
Nappanee	Not limited		Very limited Depth to saturated zone Piping	1.00 0.50	Very limited Depth to water	1.00
NnB2:						
Nappanee	Not limited		Very limited Depth to saturated zone Piping	1.00 0.50	Very limited Depth to water	1.00
NpA:						
Nappanee	Not limited		Very limited Depth to saturated zone Piping	1.00 0.50	Very limited Depth to water	1.00
NpB:						
Nappanee	Not limited		Very limited Depth to saturated zone Piping	1.00 0.50	Very limited Depth to water	1.00
NpB2:						
Nappanee	Not limited		Very limited Depth to saturated zone Piping	1.00 0.50	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
NsA:						
Nappanee	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	Depth to water	1.00
			Piping	0.50		
Urban Land	Not Rated		Not Rated		Not Rated	
OsB:						
Oshtemo	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
OtA:						
Ottokee	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Cutbanks cave	1.00
			Piping	1.00	Depth to water	0.07
			Depth to saturated zone	0.84		
Spinks	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
			Piping	1.00		
OtB:						
Ottokee	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Cutbanks cave	1.00
			Piping	1.00	Depth to water	0.07
			Depth to saturated zone	0.84		
Spinks	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
			Piping	1.00		
OzB:						
Ottokee	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Cutbanks cave	1.00
			Piping	1.00	Depth to water	0.07
			Depth to saturated zone	0.84		
Spinks	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
			Piping	1.00		
Urban Land	Not Rated		Not Rated		Not Rated	
Pt:						
Pits, Quarry	Not Rated		Not Rated		Not Rated	
RbA:						
Randolph	Somewhat limited		Very limited		Very limited	
	Depth to bedrock	0.81	Depth to saturated zone	1.00	Depth to bedrock	1.00
			Piping	0.50	Slow refill	0.28
			Thin layer	0.13	Cutbanks cave	0.10
RbB:						
Randolph	Somewhat limited		Very limited		Very limited	
	Depth to bedrock	0.81	Depth to saturated zone	1.00	Depth to bedrock	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
			Piping	0.50	Slow refill	0.28
			Thin layer	0.13	Cutbanks cave	0.10
RdA:						
Randolph	Somewhat limited		Very limited		Very limited	
	Depth to bedrock	0.81	Depth to saturated zone	1.00	Depth to bedrock	1.00
			Piping	0.50	Slow refill	0.28
			Thin layer	0.13	Cutbanks cave	0.10
ReA:						
Randolph	Somewhat limited		Very limited		Very limited	
	Depth to bedrock	0.81	Depth to saturated zone	1.00	Depth to bedrock	1.00
			Piping	0.50	Slow refill	0.28
			Thin layer	0.13	Cutbanks cave	0.10
Urban Land	Not Rated		Not Rated		Not Rated	
RfA:						
Rimer	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00	Depth to water	1.00
			Piping	0.50		
Tedrow	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00	Depth to water	1.00
			Piping	0.50		
RfB:						
Rimer	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00	Depth to water	1.00
			Piping	0.50		
Tedrow	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00	Depth to water	1.00
			Piping	0.50		
RgA:						
Rimer	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00	Depth to water	1.00
			Piping	0.50		
Tedrow	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00	Depth to water	1.00
			Piping	0.50		
Urban Land	Not Rated		Not Rated		Not Rated	
RhA:						
Ritchey	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
			Piping	0.50		
RhB:						
Ritchey	Very limited		Very limited		Very limited	

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
	Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
			Piping	0.50		
RkA:						
Ritchey	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
			Piping	0.50		
RmA:						
Risingsun	Very limited		Very limited		Very limited	
	Seepage	1.00	Ponding	1.00	Cutbanks cave	1.00
			Depth to saturated zone	1.00		
			Piping	0.50		
Rollersville	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	1.00
			Piping	0.50		
RnA:						
Rollersville	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	1.00
			Piping	0.50		
Risingsun	Very limited		Very limited		Very limited	
	Seepage	1.00	Ponding	1.00	Cutbanks cave	1.00
			Depth to saturated zone	1.00		
			Piping	0.50		
RsA:						
Rossburg	Very limited		Not limited		Very limited	
	Seepage	1.00			Depth to water	1.00
SdA:						
Seward	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Depth to saturated zone	0.95	Depth to water	1.00
			Thin layer	0.63		
Ottokee	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
			Piping	1.00		
			Depth to saturated zone	0.84		
SdB:						
Seward	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Depth to saturated zone	0.95	Depth to water	1.00
			Thin layer	0.63		
Ottokee	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
			Piping	1.00		
			Depth to saturated zone	0.84		

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
SeA:						
Shawtown	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Depth to saturated zone	0.68	Depth to water	1.00
SeB:						
Shawtown	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Depth to saturated zone	0.68	Depth to water	1.00
SgA:						
Shoals	Very limited		Very limited		Somewhat limited	
	Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	0.10
			Piping	0.50		
ShA:						
Shoals	Very limited		Very limited		Somewhat limited	
	Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	0.10
			Piping	0.50		
SkA:						
Shoals	Very limited		Very limited		Somewhat limited	
	Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	0.10
			Piping	0.50		
SmA:						
Shoals	Somewhat limited		Very limited		Very limited	
	Depth to bedrock	0.83	Depth to saturated zone	1.00	Depth to bedrock	1.00
	Seepage	0.50	Piping	0.50	Slow refill	0.28
			Thin layer	0.20	Cutbanks cave	0.10
Sloan	Somewhat limited		Very limited		Very limited	
	Depth to bedrock	0.83	Ponding	1.00	Depth to bedrock	1.00
	Seepage	0.25	Depth to saturated zone	1.00	Slow refill	0.28
			Thin layer	0.80	Cutbanks cave	0.10
			Piping	0.50		
SnA:						
Sloan	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.25	Ponding	1.00	Slow refill	0.28
			Depth to saturated zone	1.00	Cutbanks cave	0.10
			Piping	0.50		
SoA:						
Sloan	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.25	Ponding	1.00	Slow refill	0.28
			Depth to saturated zone	1.00	Cutbanks cave	0.10
			Piping	0.50		
SpA:						
Sloan	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.25	Ponding	1.00	Slow refill	0.28
			Depth to saturated zone	1.00	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
			Piping	0.50		
SrB:						
Spinks	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
			Piping	1.00		
SrC:						
Spinks	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
			Piping	1.00		
SrD:						
Spinks	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
	Slope	0.03	Piping	1.00		
SsB:						
Spinks	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
			Piping	1.00		
SsC:						
Spinks	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
			Piping	1.00		
StB:						
St. Clair	Not limited		Somewhat limited		Very limited	
			Depth to saturated zone	0.95	Depth to water	1.00
			Piping	0.50		
StC2:						
St. Clair	Not limited		Somewhat limited		Very limited	
			Depth to saturated zone	0.95	Depth to water	1.00
			Piping	0.50		
SuB2:						
St. Clair	Not limited		Somewhat limited		Very limited	
			Depth to saturated zone	0.95	Depth to water	1.00
			Piping	0.50		
SuC2:						
St. Clair	Not limited		Somewhat limited		Very limited	
			Depth to saturated zone	0.95	Depth to water	1.00
			Piping	0.50		
SuD2:						
St. Clair	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.02	Depth to saturated zone	0.95	Depth to water	1.00
			Piping	0.50		
SuE2:						
St. Clair	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.12	Depth to saturated zone	0.95	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
			Piping	0.50		
TeA:						
Tedrow	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	1.00
			Seepage	1.00		
			Piping	1.00		
TeB:						
Tedrow	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	1.00
			Seepage	1.00		
			Piping	1.00		
TfA:						
Tedrow	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	1.00
			Seepage	1.00		
			Piping	1.00		
Urban Land	Not Rated		Not Rated		Not Rated	
TpA:						
Toledo	Not limited		Very limited		Somewhat limited	
			Ponding	1.00	Slow refill	0.96
			Depth to saturated zone	1.00	Cutbanks cave	0.10
			Hard to compact	1.00		
TuA:						
Toledo	Not limited		Very limited		Somewhat limited	
			Ponding	1.00	Slow refill	0.96
			Depth to saturated zone	1.00	Cutbanks cave	0.10
			Hard to compact	1.00		
Urban Land	Not Rated		Not Rated		Not Rated	
UcA:						
Udorthents	Not Rated		Not Rated		Not Rated	
UcE:						
Udorthents	Not Rated		Not Rated		Not Rated	
Ur:						
Urban Land	Not Rated		Not Rated		Not Rated	
W:						
Water	Not Rated		Not Rated		Not Rated	
WbA:						
Wabasha	Not limited		Very limited		Somewhat limited	
			Ponding	1.00	Slow refill	0.96
			Depth to saturated zone	1.00	Cutbanks cave	0.10
			Hard to compact	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
WmA:						
Wauseon	Very limited		Very limited		Very limited	
	Seepage	1.00	Ponding	1.00	Depth to water	1.00
			Depth to saturated zone	1.00		
			Piping	0.50		
WnA:						
Wauseon	Very limited		Very limited		Very limited	
	Seepage	1.00	Ponding	1.00	Depth to water	1.00
			Depth to saturated zone	1.00		
			Seepage	1.00		
			Piping	1.00		
WyA:						
Wauseon	Very limited		Very limited		Very limited	
	Seepage	1.00	Ponding	1.00	Depth to water	1.00
			Depth to saturated zone	1.00		
			Piping	0.50		
WzA:						
Wauseon	Very limited		Very limited		Very limited	
	Seepage	1.00	Ponding	1.00	Depth to water	1.00
			Depth to saturated zone	1.00		
			Piping	0.50		
Urban Land	Not Rated		Not Rated		Not Rated	

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 236 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
AgA:						
Alvada	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
AmA:						
Aurand	Very Limited		Very Limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
	Restricted permeability	0.40	Restricted permeability	0.40	Restricted permeability	0.40
AnA:						
Aurand	Very Limited		Very Limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
	Restricted permeability	0.40	Restricted permeability	0.40	Restricted permeability	0.40
AsA:						
Aurand	Very Limited		Very Limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
	Restricted permeability	0.40	Restricted permeability	0.40	Restricted permeability	0.40
Urban Land	Not Rated		Not Rated		Not Rated	
BeB:						
Belmore	Somewhat Limited		Not Limited		Very limited	
	Depth to saturated zone	0.09			Depth to saturated zone	1.00
BfB:						
Belmore	Somewhat Limited		Not Limited		Very limited	
	Depth to saturated zone	0.09			Depth to saturated zone	1.00
CaA:						
Castalia	Very Limited		Very Limited		Very limited	
	Content of large stones	1.00	Content of large stones	1.00	Depth to saturated zone	1.00
	Depth to bedrock	1.00	Depth to bedrock	0.99	Content of large stones	1.00
	Droughty	1.00			Depth to bedrock	0.44
CbB:						
Castalia	Very Limited		Very Limited		Very limited	
	Content of large stones	1.00	Content of large stones	1.00	Depth to saturated zone	1.00
	Depth to bedrock	1.00	Depth to bedrock	0.97	Content of large stones	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
	Droughty	1.00			Depth to bedrock	0.39
Marblehead	Very Limited		Very Limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to saturated zone	1.00
	Droughty	1.00	Content of large stones	0.18	Depth to bedrock	0.95
	Content of large stones	0.18				
CcA:						
Colwood	Very Limited		Very Limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
			Ponding	1.00	Ponding	1.00
CdA:						
Colwood	Very Limited		Very Limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
			Ponding	1.00	Ponding	1.00
CtA:						
Colwood	Very Limited		Very Limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
			Ponding	1.00	Ponding	1.00
Urban Land	Not Rated		Not Rated		Not Rated	
CvA:						
Cygnet	Very Limited		Very Limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
			Too sandy	1.00	Cutbanks cave	1.00
CxB:						
Castalia	Very Limited		Very Limited		Very limited	
	Content of large stones	1.00	Content of large stones	1.00	Depth to saturated zone	1.00
	Depth to bedrock	1.00	Depth to bedrock	0.97	Content of large stones	1.00
	Droughty	1.00			Depth to bedrock	0.39
Marblehead	Very Limited		Very Limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to saturated zone	1.00
	Droughty	1.00	Content of large stones	0.18	Depth to bedrock	0.95
	Content of large stones	0.18				
Urban Land	Not Rated		Not Rated		Not Rated	
DgA:						
Digby	Very Limited		Very Limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	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
			Too sandy	1.00	Cutbanks cave	1.00
DhA:						
Digby	Very Limited		Very Limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
			Too sandy	1.00	Cutbanks cave	1.00
DrA:						
Dunbridge	Very Limited		Somewhat Limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	0.86	Depth to saturated zone	1.00
	Droughty	1.00			Depth to bedrock	0.27
DsA:						
Dunbridge	Very Limited		Somewhat Limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	0.86	Depth to saturated zone	1.00
	Droughty	1.00			Depth to bedrock	0.27
Spinks	Very Limited		Very Limited		Very limited	
	Droughty	1.00	Too sandy	1.00	Cutbanks cave	1.00
	Depth to bedrock	0.32			Depth to saturated zone	1.00
DsB:						
Dunbridge	Very Limited		Somewhat Limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	0.86	Depth to saturated zone	1.00
	Droughty	1.00			Depth to bedrock	0.27
Spinks	Very Limited		Very Limited		Very limited	
	Droughty	1.00	Too sandy	1.00	Cutbanks cave	1.00
	Depth to bedrock	0.32			Depth to saturated zone	1.00
EaA:						
Eel	Somewhat Limited		Very Limited		Very limited	
	Depth to saturated zone	0.95	Depth to saturated zone	1.00	Frost action	1.00
					Flooding	1.00
EmA:						
Eel	Somewhat Limited		Very Limited		Very limited	
	Depth to saturated zone	0.95	Depth to saturated zone	1.00	Frost action	1.00
					Flooding	1.00
EnA:						
Eel	Very Limited		Very Limited		Very limited	
	Depth to bedrock	1.00	Depth to saturated zone	1.00	Frost action	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
	Depth to saturated zone	0.95	Depth to bedrock	0.35	Flooding	1.00
					Depth to bedrock	0.09
FcA:						
Flatrock	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	0.50
FuA:						
Fulton	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		
FuB:						
Fulton	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	Slope	0.04
FzA:						
Fulton	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		
Urban Land	Not Rated		Not Rated		Not Rated	
GmA:						
Genesee	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Flooding	1.00
					Depth to saturated zone	1.00
GnA:						
Genesee	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Flooding	1.00
					Depth to saturated zone	1.00
GpA:						
Granby	Very Limited		Very Limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Droughty	1.00	Ponding	1.00	Cutbanks cave	1.00
			Too sandy	1.00		
HaA:						
Haney	Somewhat Limited		Very Limited		Very limited	
	Depth to saturated zone	0.24	Too sandy	1.00	Frost action	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
			Depth to saturated zone	1.00	Cutbanks cave	1.00
HaB:						
Haney	Somewhat Limited		Very Limited		Very limited	
	Depth to saturated zone	0.24	Too sandy	1.00	Frost action	1.00
			Depth to saturated zone	1.00	Cutbanks cave	1.00
HdA:						
Haney	Somewhat Limited		Very Limited		Very limited	
	Depth to saturated zone	0.24	Too sandy	1.00	Frost action	1.00
			Depth to saturated zone	1.00	Cutbanks cave	1.00
HdB:						
Haney	Somewhat Limited		Very Limited		Very limited	
	Depth to saturated zone	0.24	Too sandy	1.00	Frost action	1.00
			Depth to saturated zone	1.00	Cutbanks cave	1.00
HeA:						
Haskins	Very Limited		Very Limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
	Restricted permeability	0.40	Restricted permeability	0.40	Restricted permeability	0.40
Digby	Very Limited		Very Limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
	Restricted permeability	0.94	Restricted permeability	0.94	Restricted permeability	0.94
HeB:						
Haskins	Very Limited		Very Limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
	Restricted permeability	0.40	Restricted permeability	0.40	Restricted permeability	0.40
Digby	Very Limited		Very Limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
	Restricted permeability	0.94	Restricted permeability	0.94	Restricted permeability	0.94
HfA:						
Haskins	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	0.40
	Restricted permeability	0.40	Restricted permeability	0.40		
Digby	Very Limited		Very Limited		Very limited	

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
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
	Restricted permeability	0.94	Restricted permeability	0.94	Restricted permeability	0.94
HfB:						
Haskins	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	0.40
	Restricted permeability	0.40	Restricted permeability	0.40		
Digby	Very Limited		Very Limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
	Restricted permeability	0.94	Restricted permeability	0.94	Restricted permeability	0.94
HgA:						
Hoytville	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
HhA:						
Hoytville	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
HvA:						
Hoytville	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
HwA:						
Hoytville	Very Limited		Very Limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Droughty	1.00	Ponding	1.00	Frost action	1.00
	Restricted permeability	0.91	Restricted permeability	0.91	Restricted permeability	0.91
HyA:						
Hoytville	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

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
			Restricted permeability	0.22	Restricted permeability	0.22
Urban Land	Not Rated		Not Rated		Not Rated	
JoA:						
Joliet	Very Limited		Very Limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Frost action	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to bedrock	0.66
	Droughty	1.00	Restricted permeability	0.22	Restricted permeability	0.22
	Restricted permeability	0.22				
KeA:						
Kibbie	Very Limited		Very Limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
			Too sandy	1.00	Cutbank caves	1.00
KfA:						
Kibbie	Very Limited		Very Limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
KfB:						
Kibbie	Very Limited		Very Limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
			Too sandy	1.00	Cutbank caves	1.00
KkA:						
Kibbie	Very Limited		Very Limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
			Too sandy	1.00	Cutbank caves	1.00
Urban Land	Not Rated		Not Rated		Not Rated	
LbB:						
Landes	Not Limited		Not Limited		Very limited	
					Flooding	1.00
					Depth to saturated zone	1.00
LdA:						
Latty	Very Limited		Very Limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Restricted permeability	0.91	Ponding	1.00	Frost action	1.00
			Restricted permeability	0.91	Restricted permeability	0.91
LgA:						
Latty	Very Limited		Very Limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Restricted permeability	0.94	Ponding	1.00	Frost action	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
			Restricted permeability	0.94	Restricted permeability	0.94
Urban Land	Not Rated		Not Rated		Not Rated	
MbA:						
Millgrove	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
McA:						
Mermill	Very Limited		Very Limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Restricted permeability	0.94	Ponding	1.00	Frost action	1.00
			Restricted permeability	0.94	Restricted permeability	0.94
MdA:						
Mermill	Very Limited		Very Limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Restricted permeability	0.94	Ponding	1.00	Frost action	1.00
			Restricted permeability	0.94	Restricted permeability	0.94
MeA:						
Mermill	Very Limited		Very Limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Restricted permeability	0.94	Ponding	1.00	Frost action	1.00
			Restricted permeability	0.94	Restricted permeability	0.94
MfA:						
Mermill	Very Limited		Very Limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Restricted permeability	0.94	Ponding	1.00	Frost action	1.00
			Restricted permeability	0.94	Restricted permeability	0.94
Aurand	Very Limited		Very Limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
	Restricted permeability	0.40	Restricted permeability	0.40	Restricted permeability	0.40
MgA:						
Mermill	Very Limited		Very Limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Restricted permeability	0.94	Ponding	1.00	Frost action	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
			Restricted permeability	0.94	Restricted permeability	0.94
Urban Land	Not Rated		Not Rated		Not Rated	
MhA:						
Millsdale	Very Limited		Very Limited		Very limited	
	Depth to 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
	Restricted permeability	0.22	Depth to bedrock	0.29	Restricted permeability	0.22
			Restricted permeability	0.22	Depth to bedrock	0.07
MkA:						
Millsdale	Very Limited		Very Limited		Very limited	
	Depth to 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
	Restricted permeability	0.22	Depth to bedrock	0.29	Restricted permeability	0.22
			Restricted permeability	0.22	Depth to bedrock	0.07
MmA:						
Millsdale	Very Limited		Very Limited		Very limited	
	Depth to 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
	Restricted permeability	0.22	Depth to bedrock	0.29	Restricted permeability	0.22
			Restricted permeability	0.22	Depth to bedrock	0.07
Urban Land	Not Rated		Not Rated		Not Rated	
MnA:						
Milton	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Depth to bedrock	1.00	Depth to bedrock	0.79	Depth to bedrock	0.23
	Restricted permeability	0.22	Restricted permeability	0.22	Restricted permeability	0.22
MnB:						
Milton	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Depth to bedrock	1.00	Depth to bedrock	0.79	Depth to bedrock	0.23
	Restricted permeability	0.22	Restricted permeability	0.22	Restricted permeability	0.22
NmA:						
Nappanee	Very Limited		Very Limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	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
	Restricted permeability	0.94	Restricted permeability	0.94	Restricted permeability	1.00
NmB:						
Nappanee	Very Limited		Very Limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
	Restricted permeability	0.94	Restricted permeability	0.94	Restricted permeability	0.94
NnA:						
Nappanee	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	0.94
	Restricted permeability	0.94	Restricted permeability	0.94		
NnB:						
Nappanee	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	0.94
	Restricted permeability	0.94	Restricted permeability	0.94		
NnB2:						
Nappanee	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	0.94
	Restricted permeability	0.94	Restricted permeability	0.94		
NpA:						
Nappanee	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	0.94
	Restricted permeability	0.94	Restricted permeability	0.94		
NpB:						
Nappanee	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	0.94
	Restricted permeability	0.94	Restricted permeability	0.94		
NpB2:						
Nappanee	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	0.94
	Restricted permeability	0.94	Restricted permeability	0.94		
NsA:						
Nappanee	Very Limited		Very Limited		Very limited	

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
	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	0.94
	Restricted permeability	0.94	Restricted permeability	0.94		
Urban Land	Not Rated		Not Rated		Not Rated	
OsB:						
Oshtemo	Not Limited		Very Limited		Very limited	
			Too sandy	1.00	Depth to saturated zone	1.00
					Slope	0.04
OtA:						
Ottokee	Very Limited		Very Limited		Very limited	
	Droughty	1.00	Too sandy	1.00	Cutbanks cave	1.00
	Depth to saturated zone	0.44	Depth to saturated zone	1.00		
Spinks	Very Limited		Very Limited		Very limited	
	Droughty	1.00	Too sandy	1.00	Cutbanks cave	1.00
					Depth to saturated zone	1.00
OtB:						
Ottokee	Very Limited		Very Limited		Very limited	
	Droughty	1.00	Too sandy	1.00	Cutbanks cave	1.00
	Depth to saturated zone	0.44	Depth to saturated zone	1.00		
Spinks	Very Limited		Very Limited		Very limited	
	Droughty	1.00	Too sandy	1.00	Cutbanks cave	1.00
					Depth to saturated zone	1.00
OzB:						
Ottokee	Very Limited		Very Limited		Very limited	
	Droughty	1.00	Too sandy	1.00	Cutbanks cave	1.00
	Depth to saturated zone	0.44	Depth to saturated zone	1.00		
Spinks	Very Limited		Very Limited		Very limited	
	Droughty	1.00	Too sandy	1.00	Cutbanks cave	1.00
					Depth to saturated zone	1.00
Urban Land	Not Rated		Not Rated		Not Rated	
Pt:						
Pits, Quarry	Not Rated		Not Rated		Not Rated	
RbA:						
Randolph	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to bedrock	1.00	Depth to saturated zone	1.00	Restricted permeability	0.22
	Depth to saturated zone	1.00	Depth to bedrock	0.29	Depth to bedrock	0.07

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
	Restricted permeability	0.22	Restricted permeability	0.22		
RbB:						
Randolph	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to bedrock	1.00	Depth to saturated zone	1.00	Restricted permeability	0.22
	Depth to saturated zone	1.00	Depth to bedrock	0.29	Depth to bedrock	0.07
	Restricted permeability	0.22	Restricted permeability	0.22		
RdA:						
Randolph	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to bedrock	1.00	Depth to saturated zone	1.00	Restricted permeability	0.22
	Depth to saturated zone	1.00	Depth to bedrock	0.29	Depth to bedrock	0.07
	Restricted permeability	0.22	Restricted permeability	0.22		
ReA:						
Randolph	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to bedrock	1.00	Depth to saturated zone	1.00	Restricted permeability	0.22
	Depth to saturated zone	1.00	Depth to bedrock	0.29	Depth to bedrock	0.07
	Restricted permeability	0.22	Restricted permeability	0.22		
Urban Land	Not Rated		Not Rated		Not Rated	
RfA:						
Rimer	Very Limited		Very Limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
	Droughty	1.00	Restricted permeability	0.94	Restricted permeability	0.94
	Restricted permeability	0.94				
Tedrow	Very Limited		Very Limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Restricted permeability	0.94
	Droughty	1.00	Restricted permeability	0.94		
	Restricted permeability	0.94				
RfB:						
Rimer	Very Limited		Very Limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
	Droughty	1.00	Restricted permeability	0.94	Restricted permeability	0.94
	Restricted permeability	0.94				

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
Tedrow	Very Limited		Very Limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Restricted permeability	0.94
	Droughty	1.00	Restricted permeability	0.94		
	Restricted permeability	0.94				
RgA:						
Rimer	Very Limited		Very Limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
	Droughty	1.00	Restricted permeability	0.94	Restricted permeability	0.94
	Restricted permeability	0.94				
Tedrow	Very Limited		Very Limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Restricted permeability	0.94
	Droughty	1.00	Restricted permeability	0.94		
	Restricted permeability	0.94				
Urban Land	Not Rated		Not Rated		Not Rated	
RhA:						
Ritchey	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	0.66
	Droughty	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 bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	0.66
	Droughty	1.00				
RkA:						
Ritchey	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	0.66
	Droughty	1.00				
RmA:						
Risingsun	Very Limited		Very Limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Restricted permeability	0.41	Ponding	1.00	Frost action	1.00
			Restricted permeability	0.41	Subsidence	1.00
					Restricted permeability	0.41
Rollersville	Very Limited		Very Limited		Very limited	

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
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
	Restricted permeability	0.41	Restricted permeability	0.41	Restricted permeability	0.41
RnA:						
Rollersville	Very Limited		Very Limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
	Restricted permeability	0.41	Too sandy	1.00	Cutbanks cave	1.00
			Restricted permeability	0.41	Restricted permeability	0.41
Risingsun	Very Limited		Very Limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Restricted permeability	0.41	Ponding	1.00	Frost action	1.00
			Restricted permeability	0.41	Subsidence	1.00
					Restricted permeability	0.41
RsA:						
Rossburg	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Flooding	1.00
					Depth to saturated zone	1.00
SdA:						
Seward	Somewhat Limited		Very Limited		Not Limited	
	Depth to saturated zone	0.68	Depth to saturated zone	1.00		
Ottokee	Very Limited		Very Limited		Very limited	
	Droughty	1.00	Too sandy	1.00	Cutbanks cave	1.00
	Depth to saturated zone	0.44	Depth to saturated zone	1.00		
SdB:						
Seward	Somewhat Limited		Very Limited		Not Limited	
	Depth to saturated zone	0.68	Depth to saturated zone	1.00		
Ottokee	Very Limited		Very Limited		Very limited	
	Droughty	1.00	Too sandy	1.00	Cutbanks cave	1.00
	Depth to saturated zone	0.44	Depth to saturated zone	1.00		
SeA:						
Shawtown	Somewhat Limited		Very Limited		Not Limited	
	Depth to saturated zone	0.24	Depth to saturated zone	1.00		
SeB:						
Shawtown	Somewhat Limited		Very Limited		Somewhat limited	
	Depth to saturated zone	0.24	Depth to saturated zone	1.00	Slope	0.04

TABLE 27.--WATER MANAGEMENT PART 2--Continued

Map symbol and soil name	Constructing Grassed Waterways: Rating class and limiting features	Value	Constructing Terraces and Diversions: Rating class and limiting features	Value	Drainage: Rating class and limiting features	Value
SgA:						
Shoals	Very Limited		Very Limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Flooding	1.00
					Frost action	1.00
ShA:						
Shoals	Very Limited		Very Limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Flooding	1.00
					Frost action	1.00
SkA:						
Shoals	Very Limited		Very Limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Flooding	1.00
					Frost action	1.00
SmA:						
Shoals	Very Limited		Very Limited		Very limited	
	Depth to bedrock	1.00	Depth to saturated zone	1.00	Frost action	1.00
	Depth to saturated zone	1.00	Depth to bedrock	0.35	Flooding	1.00
					Depth to bedrock	0.09
Sloan	Very Limited		Very Limited		Very limited	
	Depth to bedrock	1.00	Depth to saturated zone	1.00	Ponding	1.00
					Flooding	1.00
	Depth to saturated zone	1.00	Ponding	1.00	Frost action	1.00
			Depth to bedrock	0.90	Depth to bedrock	0.30
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
SoA:						
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
SpA:						
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
SrB:						
Spinks	Very Limited		Very Limited		Very limited	
	Droughty	1.00	Too sandy	1.00	Cutbanks cave	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
					Depth to saturated zone	1.00
SrC:						
Spinks	Very Limited		Very Limited		Very limited	
	Droughty	1.00	Too sandy	1.00	Cutbanks cave	1.00
					Depth to saturated zone	1.00
					Slope	0.84
SrD:						
Spinks	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
SsB:						
Spinks	Very Limited		Very Limited		Very limited	
	Droughty	1.00	Too sandy	1.00	Cutbanks cave	1.00
					Depth to saturated zone	1.00
SsC:						
Spinks	Very Limited		Very Limited		Very limited	
	Droughty	1.00	Too sandy	1.00	Cutbanks cave	1.00
					Depth to saturated zone	1.00
					Slope	0.84
StB:						
St. Clair	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Restricted permeability	0.91
	Restricted permeability	0.91	Depth to saturated zone	1.00		
	Depth to saturated zone	0.68	Restricted permeability	0.91		
StC2:						
St. Clair	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Restricted permeability	0.91
	Restricted permeability	0.91	Depth to saturated zone	1.00	Slope	0.84
	Depth to saturated zone	0.68	Restricted permeability	0.91		
SuB2:						
St. Clair	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Restricted permeability	0.91
	Restricted permeability	0.91	Depth to saturated zone	1.00		
	Depth to saturated zone	0.68	Restricted permeability	0.91		
SuC2:						
St. Clair	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Restricted permeability	0.91

TABLE 27.--WATER MANAGEMENT PART 2--Continued

Map symbol and soil name	Constructing Grassed Waterways: Rating class and limiting features	Value	Constructing Terraces and Diversions: Rating class and limiting features	Value	Drainage: Rating class and limiting features	Value
	Restricted permeability	0.91	Depth to saturated zone	1.00	Slope	0.84
	Depth to saturated zone	0.68	Restricted permeability	0.91		
SuD2:						
St. Clair	Very Limited		Very Limited		Very limited	
	Slope	1.00	Water erosion	1.00	Slope	1.00
	Water erosion	1.00	Slope	1.00	Restricted permeability	0.91
	Restricted permeability	0.91	Depth to saturated zone	1.00		
	Depth to saturated zone	0.68	Restricted permeability	0.91		
SuE2:						
St. Clair	Very Limited		Very Limited		Very limited	
	Slope	1.00	Water erosion	1.00	Slope	1.00
	Water erosion	1.00	Slope	1.00	Restricted permeability	0.91
	Restricted permeability	0.91	Depth to saturated zone	1.00		
	Depth to saturated zone	0.68	Restricted permeability	0.91		
TeA:						
Tedrow	Very Limited		Very Limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Cutbanks cave	1.00
	Droughty	1.00	Too sandy	1.00		
TeB:						
Tedrow	Very Limited		Very Limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Cutbanks cave	1.00
	Droughty	1.00	Too sandy	1.00		
TfA:						
Tedrow	Very Limited		Very Limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Cutbanks cave	1.00
	Droughty	1.00	Too sandy	1.00		
Urban Land	Not Rated		Not Rated		Not Rated	
TpA:						
Toledo	Very Limited		Very Limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Restricted permeability	0.91	Ponding	1.00	Frost action	1.00
			Restricted permeability	0.91	Restricted permeability	0.91
TuA:						
Toledo	Very Limited		Very Limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Restricted permeability	0.91	Ponding	1.00	Frost action	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
			Restricted permeability	0.91	Restricted permeability	0.91
Urban Land	Not Rated		Not Rated		Not Rated	
UcA:						
Udorthents	Not Rated		Not Rated		Not Rated	
UcE:						
Udorthents	Not Rated		Not Rated		Not Rated	
Ur:						
Urban Land	Not Rated		Not Rated		Not Rated	
W:						
Water	Not Rated		Not Rated		Not Rated	
WbA:						
Wabasha	Very Limited		Very Limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Restricted permeability	0.91	Ponding	1.00	Frost action	1.00
			Restricted permeability	0.91	Flooding	1.00
					Restricted permeability	0.91
WmA:						
Wauseon	Very Limited		Very Limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Droughty	1.00	Ponding	1.00	Frost action	1.00
	Restricted permeability	0.94	Restricted permeability	0.94	Restricted permeability	0.94
WnA:						
Wauseon	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
			Too sandy	1.00	Cutbanks cave	1.00
WyA:						
Wauseon	Very Limited		Very Limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Restricted permeability	0.94	Ponding	1.00	Frost action	1.00
			Restricted permeability	0.94	Restricted permeability	0.94
WzA:						
Wauseon	Very Limited		Very Limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Restricted permeability	0.94	Ponding	1.00	Frost action	1.00
			Restricted permeability	0.94	Restricted permeability	0.94

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
Urban Land	Not Rated		Not Rated		Not Rated	

TABLE 28.--ENGINEERING INDEX PROPERTIES

(Absence of an entry indicates that the data were not estimated. See text on page 238 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	
AgA:												
Alvada----------	0-10	Loam	CL	A-6	0	0	85-100	85-100	70-95	50-80	25-40	10-20
	10-39	Clay loam, loam, sandy clay loam	CL, SC	A-2, A-6, A-7	0	0	85-100	80-100	70-95	30-75	25-45	10-25
	39-46	Gravelly loam, gravelly clay loam	CL, SC	A-7, A-2, A-6	0	0-5	60-100	60-100	35-70	30-60	25-45	10-25
	46-50	Loam, very gravelly loamy sand, very gravelly sandy loam	SC, SC-SM, SP-SM, SM	A-6, A-1, A-2, A-3, A-4	0	0-5	60-100	30-100	30-70	5-50	0-30	NP-15
	50-80	Loam, clay loam, silty clay loam	CL	A-6, A-7	0-1	0-5	90-100	90-100	80-100	50-90	30-45	10-25
AmA:												
Aurand----------	0-10	Fine sandy loam	SM, SC, SC-SM	A-2, A-4	0	0	95-100	85-100	65-100	30-50	15-30	NP-10
	10-30	Clay loam, loam, sandy clay loam	SC, CL	A-2, A-6, A-7	0	0	90-100	70-100	65-95	30-85	30-45	10-25
	30-38	Silty clay loam, loam, sandy loam	SC, CL, CL-ML, SC-SM	A-2, A-4, A-5, A-7, A-6	0	0-1	90-100	70-100	60-95	30-85	20-45	5-20
	38-59	Clay, silty clay loam, clay loam	CL	A-6, A-7	0	0-5	95-100	90-100	85-100	65-95	35-50	15-25
	59-80	Clay, silty clay loam, clay loam	CL	A-6, A-7	0	0-5	95-100	90-100	85-100	65-95	35-50	15-25
AnA:												
Aurand----------	0-11	Loam	CL-ML, CL, SC-SM, SC	A-4, A-6	0	0	95-100	85-100	65-100	45-75	20-40	5-20
	11-29	Clay loam, loam, sandy clay loam	CL, SC	A-2, A-6, A-7	0	0	90-100	70-100	65-95	30-85	30-45	10-25
	29-33	Silty clay loam, loam, sandy loam	CL, SC-SM, SC, CL-ML	A-7, A-5, A-2, A-4, A-6	0	0-1	90-100	70-100	60-95	30-85	20-45	5-20
	33-48	Clay, silty clay loam, clay loam	CL	A-6, A-7	0	0-5	95-100	90-100	85-100	65-95	35-50	15-25
	48-80	Clay, silty clay loam, clay loam	CL	A-6, A-7	0	0-5	95-100	90-100	85-100	65-95	35-50	15-25
AsA:												
Aurand----------	0-11	Loam	SC-SM, CL-ML, SC, CL	A-4, A-6	0	0	95-100	85-100	65-100	45-75	20-40	5-20
	11-25	Clay loam, loam, sandy clay loam	CL, SC	A-2, A-6, A-7	0	0	90-100	70-100	65-95	30-85	30-45	10-25
	25-34	Silty clay loam, loam, sandy loam	CL-ML, SC, CL, SC-SM	A-2, A-4, A-6, A-7, A-5	0	0-1	90-100	70-100	60-95	30-85	20-45	5-20
	34-51	Clay, silty clay loam, clay loam	CL	A-6, A-7	0	0-5	95-100	90-100	85-100	65-95	35-50	15-25
	51-80	Clay, silty clay loam, clay loam	CL	A-6, A-7	0	0-5	95-100	90-100	85-100	65-95	35-50	15-25
Urban Land------	---	---	---	---	---	---	---	---	---	---	---	---

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	
BeB:												
Belmore---------	0-8	Sandy loam	CL-ML, CL, SC, SC-SM	A-4	0	0	85-100	80-100	50-90	40-55	15-30	NP-10
	8-40	Sandy clay loam, clay loam, gravelly sandy clay loam, loam	CL, SC-SM, SC, CL-ML	A-2, A-4, A-6	0	0	85-100	50-100	40-75	15-70	20-40	5-20
	40-60	Gravelly loamy sand, sand, coarse sandy loam	SC, SC-SM, SM	A-1, A-2	0	0-5	80-100	45-95	30-60	5-20	10-25	NP-10
BfB:												
Belmore---------	0-8	Loam	CL, CL-ML	A-6, A-4	0	0	85-100	80-100	60-90	50-80	20-35	5-15
	8-40	Sandy clay loam, clay loam, gravelly sandy clay loam, loam	SC, CL, SC-SM, CL-ML	A-4, A-6, A-2	0	0	85-100	50-100	40-75	15-70	20-40	5-20
	40-60	Gravelly loamy sand, sand, coarse sandy loam	SM, SC, SC-SM	A-1, A-2	0	0-5	80-100	45-95	30-60	5-20	10-25	NP-10
CaA:												
Castalia--------	0-7	Very cobbly loam	SC-SM, GC-GM, SC, GC	A-1, A-2	0-15	20-40	45-65	25-50	15-40	10-35	20-30	5-15
	7-21	Extremely cobbly fine sandy loam, very flaggy sandy loam, extremely channery loam, extremely flaggy silt loam	GC-GM, SP-SC, SC-SM, GP-GC, GC, SC	A-1, A-2	0-40	20-50	45-80	10-50	10-45	5-35	20-30	5-15
	21-23	Unweathered bedrock			---	---	---	---	---	---	---	---
CbB:												
Castalia--------	0-9	Very stony fine sandy loam	SC-SM, GC, GC-GM, SC	A-1, A-2	0-15	20-40	45-65	25-60	15-40	5-25	20-30	5-15
	9-16	Extremely stony fine sandy loam, extremely channery loam, very flaggy sandy loam, extremely flaggy silt loam	SP-SC, GC, GC-GM, GP-GC, SC, SC-SM	A-1, A-2	0-40	20-50	45-80	10-50	10-45	5-35	20-30	5-15
	16-22	Extremely stony fine sandy loam, extremely flaggy loam, very flaggy sandy loam, very channery silt loam	GP-GC, GC, SP-SC, GC-GM, SC-SM, SC	A-2, A-1	0-60	30-80	50-85	5-50	5-45	5-35	20-30	5-15
	22-24	Unweathered bedrock			---	---	---	---	---	---	---	---
Marblehead------	0-6	Gravelly silt loam	CL-ML, SC-SM, CL, SC	A-6, A-2, A-4	0-5	0-10	90-100	70-100	60-90	30-75	20-40	5-15
	6-8	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	
CcA:												
Colwood---------	0-8	Fine sandy loam	SC-SM, SM, SC	A-4	0	0	100	100	85-100	35-50	15-30	NP-10
	8-38	Sandy clay loam, silty clay loam, fine sandy loam	SC-SM, CL-ML, SC, CL	A-4, A-6	0	0	100	100	80-100	40-90	25-45	5-20
	38-60	Stratified fine sand to very fine sand to silt	CL, SM, SC, ML, CL-ML, SC-SM	A-2, A-4	0	0	100	100	70-100	30-80	10-25	NP-10
CdA:												
Colwood---------	0-8	Loam	CL, CL-ML	A-4, A-6	0	0	100	100	85-100	50-70	20-35	5-15
	8-38	Sandy clay loam, silty clay loam, fine sandy loam	SC-SM, CL, CL-ML, SC	A-4, A-6	0	0	100	100	80-100	40-90	25-45	5-20
	38-60	Stratified fine sand to very fine sand to silt	SC, SM, SC-SM, ML, CL, CL-ML	A-2, A-4	0	0	100	100	70-100	30-80	10-25	NP-10
CtA:												
Colwood---------	0-8	Loam	CL, CL-ML	A-4, A-6	0	0	100	100	85-100	50-70	20-35	5-15
	8-38	Sandy clay loam, silty clay loam, fine sandy loam	CL, CL-ML, SC, SC-SM	A-4, A-6	0	0	100	100	80-100	40-90	25-45	5-20
	38-60	Stratified fine sand to very fine sand to silt	SC-SM, ML, SC, SM, CL-ML, CL	A-2, A-4	0	0	100	100	70-100	30-80	10-25	NP-10
Urban Land------	---	---	---	---	---	---	---	---	---	---	---	---
CvA:												
Cygnet----------	0-11	Loam	CL-ML, SC-SM, SC, CL	A-4, A-6	0	0	85-100	75-100	70-100	40-70	20-30	5-15
	11-30	Clay loam, loam, gravelly clay loam	CL-ML, SC, CL, SC-SM	A-4, A-6, A-7, A-2	0	0	80-100	55-100	50-100	20-70	25-45	5-25
	30-53	Loam, sandy loam, gravelly loamy coarse sand	SC, SC-SM, ML, CL, SM, CL-ML	A-2, A-4, A-6	0	0	80-100	55-100	45-85	10-65	10-35	NP-15
	53-80	Silty clay loam, clay loam, silty clay	SC, CL	A-6, A-7	0	0-5	95-100	90-100	65-95	45-95	35-50	15-25
CxB:												
Castalia--------	0-9	Very stony fine sandy loam	SC-SM, SC, GC-GM, GC	A-1, A-2	0-15	20-40	45-65	25-60	15-40	5-25	20-30	5-15
	9-16	Extremely stony fine sandy loam, extremely channery loam, very flaggy sandy loam, extremely flaggy silt loam	GC-GM, GP-GC, SC-SM, SP-SC, SC, GC	A-1, A-2	0-40	20-50	45-80	10-50	10-45	5-35	20-30	5-15
	16-22	Extremely stony fine sandy loam, extremely flaggy loam, very flaggy sandy loam, very channery silt loam	SP-SC, SC-SM, SC, GP-GC, GC-GM, GC	A-1, A-2	0-60	30-80	50-85	5-50	5-45	5-35	20-30	5-15
	22-24	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	
Marblehead------	0-6	Gravelly silt loam	CL, CL-ML, SC, SC-SM	A-4, A-2, A-6	0-5	0-10	90-100	70-100	60-90	30-75	20-40	5-15
	6-8	Unweathered bedrock			---	---	---	---	---	---	---	---
Urban Land------	---	---	---	---	---	---	---	---	---	---	---	---
DgA:												
Digby----------	0-7	Sandy loam	SC-SM, SM, SC	A-2, A-4	0	0	85-100	75-100	50-90	30-50	15-30	NP-10
	7-32	Loam, clay loam, sandy loam	SC-SM, SC, CL-ML, CL	A-2, A-4, A-6	0	0	85-100	75-100	65-80	20-60	20-40	5-20
	32-60	Gravelly loamy sand, very gravelly sand, gravelly sandy loam	SM, SC-SM, SC	A-1, A-2	0	0-5	80-100	45-95	30-60	5-20	10-25	NP-10
DhA:												
Digby----------	0-7	Loam	SC, CL, CL-ML, SC-SM	A-4, A-6	0	0	85-100	75-100	70-90	40-70	20-35	5-15
	7-32	Loam, clay loam, sandy loam	CL-ML, CL, SC, SC-SM	A-2, A-4, A-6	0	0	85-100	75-100	65-80	20-60	20-40	5-20
	32-60	Gravelly loamy sand, very gravelly sand, gravelly sandy loam	SC, SM, SC-SM	A-1, A-2	0	0-5	80-100	45-95	30-60	5-20	10-25	NP-10
DrA:												
Dunbridge-------	0-8	Sandy loam	SC, CL, CL-ML, ML, SC-SM, SM	A-2, A-4	0	0-5	90-100	75-100	50-85	20-60	10-25	NP-10
	8-14	Sandy loam, fine sandy loam, loamy fine sand	SC-SM, SC, SM	A-2, A-4, A-1	0	0-5	90-100	75-100	35-90	20-50	15-30	NP-10
	14-25	Sandy clay loam, gravelly loam, fine sandy loam	SC-SM, CL-ML, SC, CL, SP-SC	A-2, A-4, A-1	0	0-5	90-100	50-100	35-85	10-60	20-35	5-20
	25-27	Unweathered bedrock			---	---	---	---	---	---	---	---
DsA:												
Dunbridge-------	0-8	Loamy fine sand	SM, SP-SM, SC-SM	A-4, A-1, A-2	0	0-5	90-100	75-100	40-80	10-45	0-20	NP-5
	8-14	Sandy loam, fine sandy loam, loamy fine sand	SC, SC-SM, SM	A-1, A-2, A-4	0	0-5	90-100	75-100	35-90	20-50	15-30	NP-10
	14-25	Sandy clay loam, gravelly loam, fine sandy loam	CL, SC-SM, SC, CL-ML, SP-SC	A-1, A-2, A-4	0	0-5	90-100	50-100	35-85	10-60	20-35	5-20
	25-27	Unweathered bedrock			---	---	---	---	---	---	---	---
Spinks----------	0-9	Loamy fine sand	SC-SM, SM, SP-SM	A-2	0	0	95-100	90-100	55-80	10-30	0-20	NP-5
	9-51	Loamy fine sand, sand, fine sand	SM, SP-SM, SC-SM	A-2, A-3	0	0	95-100	90-100	65-90	5-35	0-20	NP-5
	51-53	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	
DsB:												
Dunbridge-------	0-8	Loamy fine sand	SC-SM, SP-SM, SM	A-1, A-2, A-4	0	0-5	90-100	75-100	40-80	10-45	0-20	NP-5
	8-14	Sandy loam, fine sandy loam, loamy fine sand	SC, SC-SM, SM	A-2, A-4, A-1	0	0-5	90-100	75-100	35-90	20-50	15-30	NP-10
	14-25	Sandy clay loam, gravelly loam, fine sandy loam	SP-SC, CL-ML, SC, SC-SM, CL	A-2, A-4, A-1	0	0-5	90-100	50-100	35-85	10-60	20-35	5-20
	25-27	Unweathered bedrock			---	---	---	---	---	---	---	---
Spinks----------	0-9	Loamy fine sand	SC-SM, SM, SP-SM	A-2	0	0	95-100	90-100	55-80	10-30	0-20	NP-5
	9-51	Loamy fine sand, sand, fine sand	SM, SC-SM, SP-SM	A-2, A-3	0	0	95-100	90-100	65-90	5-35	0-20	NP-5
	51-53	Unweathered bedrock			---	---	---	---	---	---	---	---
EaA:												
Eel----------	0-8	Loam	CL-ML, CL	A-4, A-6	0	0	100	90-100	90-100	60-75	20-40	5-15
	8-38	Loam, clay loam, silt loam	CL-ML, CL	A-4, A-6	0	0	100	90-100	90-100	55-85	25-45	5-15
	38-60	Loam, fine sandy loam, sandy loam	SC-SM, CL-ML, CL, SC	A-4, A-6, A-2	0	0	100	75-100	60-90	30-70	20-40	5-15
EmA:												
Eel----------	0-8	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	90-100	90-100	75-85	20-40	5-15
	8-38	Loam, clay loam, silt loam	CL-ML, CL	A-4, A-6	0	0	100	90-100	90-100	55-85	25-45	5-15
	38-60	Loam, fine sandy loam, sandy loam	CL, SC-SM, SC, CL-ML	A-2, A-4, A-6	0	0	100	75-100	60-90	30-70	20-40	5-15
EnA:												
Eel----------	0-9	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	90-100	90-100	75-85	20-40	5-15
	9-34	Loam, clay loam, silt loam	CL-ML, CL	A-4, A-6	0	0	100	90-100	90-100	55-85	25-45	5-15
	34-36	Unweathered bedrock			---	---	---	---	---	---	---	---
FcA:												
Flatrock--------	0-11	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	90-100	85-100	70-90	20-40	5-20
	11-52	Silt loam, loam, silty clay loam	CL-ML, CL	A-4, A-6, A-7, A-5	0	0	100	90-100	85-100	60-90	20-45	5-25
	52-80	Stratified coarse sandy loam to loam	SC-SM, SC, CL, CL-ML	A-4, A-6, A-5, A-7, A-2	0	0	100	75-100	60-90	30-80	20-45	5-25
FuA:												
Fulton----------	0-9	Silty clay loam	CL	A-7, A-6	0	0	100	100	85-100	70-90	30-45	10-25
	9-32	Silty clay, clay	CH	A-7	0	0	100	100	90-100	85-100	50-70	25-40
	32-47	Silty clay loam, clay, silty clay	CH, CL	A-7	0	0	100	100	90-100	85-100	40-60	20-35
	47-68	Silty clay loam	CL	A-7, A-6	0	0	100	100	90-100	85-100	35-50	15-25
	68-80	Clay loam, clay, silty clay loam	CL	A-6, A-7	0	0-5	95-100	90-100	85-100	65-95	35-50	15-25
FuB:												
Fulton----------	0-7	Silty clay loam	CL	A-6, A-7	0	0	100	100	85-100	70-90	30-45	10-25
	7-32	Silty clay, clay	CH	A-7	0	0	100	100	90-100	85-100	50-70	25-40
	32-41	Silty clay loam, clay, silty clay	CH, CL	A-7	0	0	100	100	90-100	85-100	40-60	20-35
	41-63	Silty clay loam	CL	A-6, A-7	0	0	100	100	90-100	85-100	35-50	15-25
	63-80	Clay loam, clay, silty clay loam	CL	A-6, A-7	0	0-5	95-100	90-100	85-100	65-95	35-50	15-25

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	
FzA:												
Fulton----------	0-8	Silty clay loam	CL	A-6, A-7	0	0	100	100	85-100	70-90	30-45	10-25
	8-28	Silty clay, clay	CH	A-7	0	0	100	100	90-100	85-100	50-70	25-40
	28-40	Silty clay loam, clay, silty clay	CL, CH	A-7	0	0	100	100	90-100	85-100	40-60	20-35
	40-64	Silty clay loam	CL	A-6, A-7	0	0	100	100	90-100	85-100	35-50	15-25
	64-80	Clay loam, clay, silty clay loam	CL	A-6, A-7	0	0-5	95-100	90-100	85-100	65-95	35-50	15-25
Urban Land------	---	---	---	---	---	---	---	---	---	---	---	---
GmA:												
Genesee---------	0-9	Loam	CL-ML, CL	A-4, A-6	0	0	100	90-100	90-100	50-75	25-45	5-15
	9-42	Loam, silt loam	CL-ML, CL	A-4, A-6	0	0	100	90-100	90-100	50-90	25-45	5-15
	42-60	Stratified sandy loam to silt loam	CL, CL-ML, SC, SC-SM	A-4, A-6, A-2	0	0	90-100	75-100	60-90	30-90	20-35	5-15
GnA:												
Genesee---------	0-9	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	90-100	90-100	75-90	25-45	5-15
	9-42	Loam, silt loam	CL-ML, CL	A-4, A-6	0	0	100	90-100	90-100	50-90	25-45	5-15
	42-60	Stratified sandy loam to silt loam	SC-SM, SC, CL-ML, CL	A-4, A-6, A-2	0	0	90-100	75-100	60-90	30-90	20-35	5-15
GpA:												
Granby----------	0-11	Loamy fine sand	SM, SC-SM	A-2	0	0	100	90-100	50-75	15-30	0-20	NP-5
	11-33	Loamy fine sand, fine sand, sand	SC-SM, SM, SP-SM	A-2, A-3	0	0	100	90-100	50-75	5-35	0-20	NP-5
	33-74	Stratified sand to fine sand to loamy fine sand	SP-SM, SC-SM, SM	A-2, A-3	0	0	100	90-100	65-90	5-35	0-20	NP-5
	74-80	Clay loam, silty clay loam, clay	CL	A-6, A-7	0	0-5	95-100	90-100	80-100	65-95	35-50	15-25
HaA:												
Haney----------	0-7	Sandy loam	SC, SC-SM, SM	A-2, A-4	0	0	85-100	75-100	50-85	30-45	15-25	NP-10
	7-34	Clay loam, sandy clay loam, gravelly loam	SC, CL	A-2, A-6	0	0	80-100	50-100	40-75	20-70	30-40	10-20
	34-60	Gravelly loamy sand, sand, sandy loam	SC, SC-SM, SM	A-1, A-2	0	0-5	80-100	45-95	30-60	5-20	10-25	NP-10
HaB:												
Haney----------	0-7	Sandy loam	SC-SM, SC, SM	A-2, A-4	0	0	85-100	75-100	50-85	30-45	15-25	NP-10
	7-34	Clay loam, sandy clay loam, gravelly loam	SC, CL	A-2, A-6	0	0	80-100	50-100	40-75	20-70	30-40	10-20
	34-60	Gravelly loamy sand, sand, sandy loam	SC, SM, SC-SM	A-1, A-2	0	0-5	80-100	45-95	30-60	5-20	10-25	NP-10
HdA:												
Haney----------	0-7	Loam	CL-ML, CL	A-4, A-6	0	0	85-100	75-100	70-90	50-80	20-30	5-15
	7-34	Clay loam, sandy clay loam, gravelly loam	CL, SC	A-6, A-2	0	0	80-100	50-100	40-75	20-70	30-40	10-20
	34-60	Gravelly loamy sand, sand, sandy loam	SC, SC-SM, SM	A-1, A-2	0	0-5	80-100	45-95	30-60	5-20	10-25	NP-10

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	
HdB:												
Haney----------	0-7	Loam	CL, CL-ML	A-4, A-6	0	0	85-100	75-100	70-90	50-80	20-30	5-15
	7-34	Clay loam, sandy clay loam, gravelly loam	CL, SC	A-2, A-6	0	0	80-100	50-100	40-75	20-70	30-40	10-20
	34-60	Gravelly loamy sand, sand, sandy loam	SC-SM, SC, SM	A-1, A-2	0	0-5	80-100	45-95	30-60	5-20	10-25	NP-10
HeA:												
Haskins---------	0-6	Fine sandy loam	SC, SC-SM	A-2, A-4	0	0	95-100	85-100	55-85	25-50	20-30	5-10
	6-36	Sandy clay loam, clay loam, sandy loam	SC, CL	A-2, A-6	0	0	85-100	70-100	55-85	30-65	25-40	10-20
	36-42	Clay loam, silty clay, clay	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
	42-60	Clay loam, clay, silty clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
Digby----------	0-8	Fine sandy loam	SC, SM, SC-SM	A-2, A-4	0	0	85-100	75-100	50-90	30-50	15-30	NP-10
	8-34	Clay loam, sandy clay loam, loam	SC, CL	A-2, A-6	0	0	85-100	75-100	65-80	20-60	20-40	5-20
	34-37	Gravelly loamy sand, very gravelly sand, gravelly sandy loam	SC, SC-SM, SM	A-1, A-2	0	0-5	80-100	45-95	30-60	5-20	10-25	NP-10
	37-60	Clay loam, clay, silty clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
HeB:												
Haskins---------	0-6	Fine sandy loam	SC, SC-SM	A-2, A-4	0	0	95-100	85-100	55-85	25-50	20-30	5-10
	6-36	Sandy clay loam, clay loam, sandy loam	CL, SC	A-2, A-6	0	0	85-100	70-100	55-85	30-65	25-40	10-20
	36-42	Clay loam, silty clay, clay	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
	42-60	Clay loam, clay, silty clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
Digby----------	0-8	Fine sandy loam	SC, SM, SC-SM	A-2, A-4	0	0	85-100	75-100	50-90	30-50	15-30	NP-10
	8-34	Clay loam, sandy clay loam, loam	SC, CL	A-2, A-6	0	0	85-100	75-100	65-80	20-60	20-40	5-20
	34-37	Gravelly loamy sand, very gravelly sand, gravelly sandy loam	SC-SM, SM, SC	A-1, A-2	0	0-5	80-100	45-95	30-60	5-20	10-25	NP-10
	37-60	Clay loam, clay, silty clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
HfA:												
Haskins---------	0-6	Loam	CL-ML, CL	A-4, A-6	0	0	95-100	85-100	70-100	55-75	20-40	5-15
	6-36	Sandy clay loam, clay loam, sandy loam	SC, CL	A-2, A-6	0	0	85-100	70-100	55-85	30-65	25-40	10-20
	36-42	Clay loam, silty clay, clay	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
	42-60	Clay loam, clay, silty clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25

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	
Digby----------	0-8	Loam	CL-ML, CL, SC, SC-SM	A-4, A-6	0	0	85-100	75-100	70-90	40-70	20-35	5-15
	8-34	Clay loam, sandy clay loam, loam	SC, CL	A-2, A-6	0	0	85-100	75-100	65-80	20-60	20-40	5-20
	34-37	Gravelly loamy sand, very gravelly sand, gravelly sandy loam	SM, SC-SM, SC	A-1, A-2	0	0-5	80-100	45-95	30-60	5-20	10-25	NP-10
	37-60	Clay loam, clay, silty clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
HfB:												
Haskins---------	0-6	Loam	CL-ML, CL	A-4, A-6	0	0	95-100	85-100	70-100	55-75	20-40	5-15
	6-36	Sandy clay loam, clay loam, sandy loam	SC, CL	A-2, A-6	0	0	85-100	70-100	55-85	30-65	25-40	10-20
	36-42	Clay loam, silty clay, clay	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
	42-60	Clay loam, clay, silty clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
Digby----------	0-8	Loam	CL, CL-ML, SC-SM, SC	A-4, A-6	0	0	85-100	75-100	70-90	40-70	20-35	5-15
	8-34	Clay loam, sandy clay loam, loam	SC, CL	A-2, A-6	0	0	85-100	75-100	65-80	20-60	20-40	5-20
	34-37	Gravelly loamy sand, very gravelly sand, gravelly sandy loam	SC, SC-SM, SM	A-1, A-2	0	0-5	80-100	45-95	30-60	5-20	10-25	NP-10
	37-60	Clay loam, clay, silty clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
HgA:												
Hoytville-------	0-9	Clay loam	CL	A-7, A-6	0	0-5	95-100	90-100	85-100	75-95	35-50	15-25
	9-52	Silty clay, clay	CL, CH	A-7	0	0-5	95-100	85-100	80-100	70-95	45-60	25-35
	52-60	Clay loam, silty clay loam, clay	CL, CH	A-7, A-6	0	0-5	95-100	85-100	80-100	70-95	40-60	20-35
	60-80	Clay loam, clay, silty clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
HhA:												
Hoytville-------	0-9	Silty clay loam	CL	A-7, A-6	0	0-5	95-100	90-100	85-100	75-95	35-50	15-25
	9-41	Silty clay, clay	CH, CL	A-7	0	0-5	95-100	85-100	80-100	70-95	45-60	25-35
	41-60	Clay loam, silty clay loam, clay	CL, CH	A-6, A-7	0	0-5	95-100	85-100	80-100	70-95	40-60	20-35
	60-80	Clay loam, clay, silty clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-30
HvA:												
Hoytville-------	0-8	Silty clay	CH, CL	A-7	0	0-5	95-100	90-100	85-100	80-95	45-60	25-35
	8-41	Silty clay, clay	CL, CH	A-7	0	0-5	95-100	85-100	80-100	70-95	45-60	25-35
	41-60	Clay loam, silty clay loam, clay	CL, CH	A-6, A-7	0	0-5	95-100	85-100	80-100	70-95	40-60	20-35
	60-80	Clay loam, clay, silty clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-30

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	
HwA:												
Hoytville-------	0-7	Clay	CL, CH	A-7	0	0-5	95-100	85-100	80-100	80-90	45-60	25-35
	7-18	Silty clay, clay	CL, CH	A-7	0	0-5	95-100	85-100	80-100	70-95	45-60	20-35
	18-44	Silty clay loam, clay, silty clay, clay loam	CL, CH	A-7, A-6	0	0-5	95-100	85-100	80-100	70-95	40-60	20-35
	44-60	Clay loam, clay, silty clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
HyA:												
Hoytville-------	0-9	Clay loam	CL	A-6, A-7	0	0-5	95-100	90-100	85-100	75-95	35-50	15-25
	9-48	Silty clay, clay	CL, CH	A-7	0	0-5	95-100	85-100	80-100	70-95	45-60	25-35
	48-57	Clay loam, silty clay loam, clay	CL, CH	A-6, A-7	0	0-5	95-100	85-100	80-100	70-95	40-60	20-35
	57-80	Clay loam, clay, silty clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
Urban Land------	---	---	---	---	---	---	---	---	---	---	---	---
JoA:												
Joliet----------	0-6	Silty clay loam	CL	A-6, A-7	0-1	0-5	90-100	75-100	70-100	60-85	35-45	15-25
	6-16	Silty clay loam, silty clay, clay loam	CL	A-6, A-7	0-1	0-10	90-100	75-100	65-95	50-90	35-50	15-30
	16-18	Unweathered bedrock			---	---	---	---	---	---	---	---
KeA:												
Kibbie----------	0-16	Loamy fine sand	SC-SM, SM, SC	A-2, A-4	0	0	100	95-100	70-95	30-45	0-25	NP-10
	16-36	Loam, silty clay loam, fine sandy loam	SC, CL	A-6, A-7	0	0	100	95-100	70-95	35-90	25-45	10-20
	36-60	Stratified fine sand to silt loam	SC-SM, ML, CL-ML, CL, SC, SM	A-2, A-4	0	0	100	95-100	70-95	30-80	15-30	NP-10
KfA:												
Kibbie----------	0-10	Fine sandy loam	SC-SM, SM, CL-ML, CL, SC, ML	A-4, A-2	0	0	100	95-100	75-95	30-60	15-30	NP-10
	10-16	Loamy fine sand	SC, SC-SM, SM	A-4, A-2	0	0	100	95-100	70-95	30-45	0-25	NP-10
	16-36	Loam, silty clay loam, fine sandy loam	CL, SC	A-6, A-7	0	0	100	95-100	70-95	35-90	25-45	10-20
	36-60	Stratified fine sand to silt loam	CL-ML, ML, CL, SM, SC-SM, SC	A-2, A-4	0	0	100	95-100	70-95	30-80	15-30	NP-10
KfB:												
Kibbie----------	0-10	Fine sandy loam	SC, SM, SC-SM, ML, CL, CL-ML	A-2, A-4	0	0	100	95-100	75-95	30-60	15-30	NP-10
	10-16	Loamy fine sand	SM, SC, SC-SM	A-2, A-4	0	0	100	95-100	70-95	30-45	0-25	NP-10
	16-36	Loam, silty clay loam, fine sandy loam	CL, SC	A-6, A-7	0	0	100	95-100	70-95	35-90	25-45	10-20
	36-60	Stratified fine sand to silt loam	SC, CL-ML, SC-SM, ML, CL, SM	A-2, A-4	0	0	100	95-100	70-95	30-80	15-30	NP-10

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	
KkA:												
Kibbie----------	0-10	Fine sandy loam	CL-ML, SC-SM, CL, SM, ML, SC	A-2, A-4	0	0	100	95-100	75-95	30-60	15-30	NP-10
	10-16	Loamy fine sand	SC, SC-SM, SM	A-2, A-4	0	0	100	95-100	70-95	30-45	0-25	NP-10
	16-36	Loam, silty clay loam, fine sandy loam	SC, CL	A-6, A-7	0	0	100	95-100	70-95	35-90	25-45	10-20
	36-60	Stratified fine sand to silt loam	SC, ML, CL, SM, CL-ML, SC-SM	A-2, A-4	0	0	100	95-100	70-95	30-80	15-30	NP-10
Urban Land------	---	---	---	---	---	---	---	---	---	---	---	---
LbB:												
Landes----------	0-20	Loamy fine sand	SM, SC-SM	A-2	0	0	100	85-100	70-95	10-30	10-25	NP-10
	20-32	Loamy fine sand, very fine sandy loam, loam	SC-SM, SM, ML, CL-ML, SC, CL	A-2, A-4	0	0	100	85-100	70-90	15-60	10-25	NP-10
	32-80	Stratified fine sand to fine sandy loam	SC, SP-SM, SM, SC-SM	A-2, A-4	0	0	100	85-100	70-85	10-60	10-30	NP-10
LdA:												
Latty----------	0-10	Silty clay	CL, CH	A-7	0	0	100	100	90-100	85-100	45-60	20-35
	10-41	Silty clay, clay	CH	A-7	0	0	100	100	90-100	85-100	50-70	25-40
	41-61	Silty clay loam, silty clay, clay	CL, CH	A-6, A-7	0	0	100	100	90-100	85-100	40-70	20-40
	61-80	Silty clay loam, clay loam, clay	CL	A-6, A-7	0	0-5	95-100	90-100	80-100	65-95	35-50	15-30
LgA:												
Latty----------	0-8	Silty clay	CL, CH	A-7	0	0	100	100	90-100	85-100	45-60	20-35
	8-39	Silty clay, clay	CH	A-7	0	0	100	100	90-100	85-100	50-70	25-40
	39-76	Silty clay loam, silty clay, clay	CH, CL	A-6, A-7	0	0	100	100	90-100	85-100	40-70	20-40
	76-80	Silty clay loam, clay loam, clay	CL	A-6, A-7	0	0-5	95-100	90-100	80-100	65-95	35-50	15-30
Urban Land------	---	---	---	---	---	---	---	---	---	---	---	---
MbA:												
Millgrove-------	0-8	Loam	CL, SC	A-6	0	0	85-100	75-100	60-95	35-75	25-40	10-20
	8-21	Loam, clay loam, sandy clay loam	CL, SC	A-6, A-7, A-2	0	0	85-100	75-100	60-95	20-75	25-45	10-25
	21-43	Sandy loam, gravelly sandy loam	SM, SC, CL, CL-ML, ML, SC-SM	A-2, A-4	0	0	85-100	45-100	30-75	10-55	15-25	NP-10
	43-60	Gravelly loamy sand	ML, SM, SC-SM, SC, CL-ML, CL	A-2, A-4	0	0-5	60-100	45-100	30-70	10-55	15-25	NP-10
McA:												
Mermill---------	0-8	Fine sandy loam	SC, CL, CL-ML, SC-SM	A-4	0	0	95-100	85-100	65-85	35-55	20-30	5-10
	8-38	Sandy clay loam, clay loam, loam	SC, CL, SC-SM, CL-ML	A-5, A-4, A-6, A-7	0	0	90-100	85-100	70-85	40-75	25-45	5-25
	38-60	Clay loam, silty clay loam, clay	CL	A-6, A-7	0	0-2	95-100	85-100	75-100	65-95	35-50	15-25

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	
MdA:												
Mermill---------	0-9	Loam	CL-ML, CL	A-4, A-6	0	0	95-100	85-100	75-100	50-70	20-40	5-20
	9-28	Clay loam, sandy clay loam, loam	CL-ML, SC, CL, SC-SM	A-4, A-6, A-7	0	0	90-100	85-100	70-85	40-75	25-45	5-25
	28-57	Clay, silty clay, clay loam	CL	A-6, A-7	0	0-2	95-100	85-100	75-100	65-95	35-50	15-25
	57-80	Clay, silty clay, clay loam	CL	A-6, A-7	0	0-2	95-100	85-100	75-100	65-95	35-50	15-25
MeA:												
Mermill---------	0-8	Sandy clay loam	CL, SC	A-6, A-7	0	0	95-100	85-100	70-90	35-55	30-45	10-20
	8-38	Sandy clay loam, clay loam, loam	CL-ML, SC, SC-SM, CL	A-5, A-4, A-6, A-7	0	0	90-100	85-100	70-85	40-75	25-45	5-25
	38-60	Clay loam, silty clay loam, clay	CL	A-6, A-7	0	0-2	95-100	85-100	75-100	65-95	35-50	15-25
MfA:												
Mermill---------	0-9	Loam	CL, CL-ML	A-4, A-6	0	0	95-100	85-100	75-100	50-70	20-40	5-20
	9-35	Clay loam, sandy clay loam, loam	SC-SM, CL, SC, CL-ML	A-4, A-6, A-7, A-5	0	0	90-100	85-100	70-85	40-75	25-45	5-25
	35-46	Clay, silty clay, clay loam	CL	A-6, A-7	0	0-2	95-100	85-100	75-100	65-95	35-50	15-25
	46-80	Clay, silty clay, clay loam	CL	A-6, A-7	0	0-2	95-100	85-100	75-100	65-95	35-50	15-25
Aurand----------	0-11	Loam	SC, SC-SM, CL, CL-ML	A-4, A-6	0	0	95-100	85-100	65-100	45-75	20-40	5-20
	11-23	Clay loam, loam, sandy clay loam	CL, SC	A-2, A-6, A-7	0	0	90-100	70-100	65-95	30-85	30-45	10-25
	23-29	Clay loam, silty clay loam, sandy loam	CL-ML, SC-SM, CL, SC	A-2, A-4, A-6, A-7, A-5	0	0-1	90-100	70-100	60-95	30-85	20-45	5-20
	29-51	Clay loam, silty clay loam, clay	CL	A-6, A-7	0	0-5	95-100	90-100	85-100	65-95	35-50	15-25
	51-80	Silty clay loam, clay loam, clay	CL	A-6, A-7	0	0-5	95-100	90-100	85-100	65-95	35-50	15-25
MgA:												
Mermill---------	0-9	Loam	CL-ML, CL	A-4, A-6	0	0	95-100	85-100	75-100	50-70	20-40	5-20
	9-32	Clay loam, sandy clay loam, loam	CL-ML, CL, SC-SM, SC	A-4, A-6, A-7, A-5	0	0	90-100	85-100	70-85	40-75	25-45	5-25
	32-47	Clay, silty clay, clay loam	CL	A-6, A-7	0	0-2	95-100	85-100	75-100	65-95	35-50	15-25
	47-80	Clay, silty clay, clay loam	CL	A-6, A-7	0	0-2	95-100	85-100	75-100	65-95	35-50	15-25
Urban Land------	---	---	---	---	---	---	---	---	---	---	---	---
MhA:												
Millsdale-------	0-7	Silty clay loam	CL	A-6, A-7	0	0	90-100	75-100	70-100	65-95	35-45	15-25
	7-32	Clay, silty clay, clay loam, silty clay loam	CL, CH	A-7, A-6	0	0-5	85-100	75-100	70-100	55-95	40-55	20-35
	32-34	Unweathered bedrock			---	---	---	---	---	---	---	---
MkA:												
Millsdale-------	0-7	Silty clay loam	CL	A-6, A-7	0	0	90-100	75-100	70-100	65-95	35-45	15-25
	7-32	Clay, silty clay, clay loam, silty clay loam	CH, CL	A-6, A-7	0	0-5	85-100	75-100	70-100	55-95	40-55	20-35
	32-34	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	
MmA:												
Millsdale-------	0-7	Silty clay loam	CL	A-6, A-7	0	0	90-100	75-100	70-100	65-95	35-45	15-25
	7-32	Clay, silty clay, clay loam, silty clay loam	CL, CH	A-6, A-7	0	0-5	85-100	75-100	70-100	55-95	40-55	20-35
	32-34	Unweathered bedrock			---	---	---	---	---	---	---	---
Urban Land------	---	---	---	---	---	---	---	---	---	---	---	---
MnA:												
Milton----------	0-6	Loam	SC-SM, SC, CL, CL-ML	A-4, A-6	0	0	95-100	90-100	85-100	45-75	20-40	5-20
	6-11	Loam, clay loam, silty clay loam	CL	A-6, A-7	0	0	95-100	80-100	75-100	50-80	30-50	10-25
	11-26	Clay, silty clay, clay loam	CL, CH	A-6, A-7	0	0-5	95-100	80-100	70-95	50-90	35-55	15-30
	26-28	Unweathered bedrock			---	---	---	---	---	---	---	---
MnB:												
Milton----------	0-6	Loam	SC, SC-SM, CL-ML, CL	A-4, A-6	0	0	95-100	90-100	85-100	45-75	20-40	5-20
	6-11	Loam, clay loam, silty clay loam	CL	A-6, A-7	0	0	95-100	80-100	75-100	50-80	30-50	10-25
	11-26	Clay, silty clay, clay loam	CH, CL	A-6, A-7	0	0-5	95-100	80-100	70-95	50-90	35-55	15-30
	26-28	Unweathered bedrock			---	---	---	---	---	---	---	---
NmA:												
Nappanee--------	0-8	Sandy loam	SC, CL-ML, CL, SC-SM	A-2, A-4	0	0-5	95-100	90-100	50-90	30-55	20-30	5-10
	8-28	Silty clay, clay	CL, CH	A-7	0	0-5	95-100	90-100	85-100	70-95	45-70	25-40
	28-60	Silty clay, clay, clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
NmB:												
Nappanee--------	0-8	Sandy loam	CL-ML, CL, SC-SM, SC	A-2, A-4	0	0-5	95-100	90-100	50-90	30-55	20-30	5-10
	8-28	Silty clay, clay	CH, CL	A-7	0	0-5	95-100	90-100	85-100	70-95	45-70	25-40
	28-60	Silty clay, clay, clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
NnA:												
Nappanee--------	0-8	Loam	CL	A-6	0	0-5	95-100	90-100	85-100	55-90	30-40	10-15
	8-28	Silty clay, clay	CL, CH	A-7	0	0-5	95-100	90-100	85-100	70-95	45-70	25-40
	28-60	Silty clay, clay, clay loam	CL	A-7, A-6	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
NnB:												
Nappanee--------	0-8	Loam	CL	A-6	0	0-5	95-100	90-100	85-100	55-90	30-40	10-15
	8-28	Silty clay, clay	CL, CH	A-7	0	0-5	95-100	90-100	85-100	70-95	45-70	25-40
	28-60	Silty clay, clay, clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
NnB2:												
Nappanee--------	0-8	Loam	CL	A-6	0	0-5	95-100	90-100	85-100	55-90	30-40	10-15
	8-28	Silty clay, clay	CH, CL	A-7	0	0-5	95-100	90-100	85-100	70-95	45-70	25-40
	28-60	Silty clay, clay, clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25

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	
NpA:												
Nappanee--------	0-8	Silty clay loam	CL	A-7	0	0-5	95-100	90-100	85-100	70-95	40-50	20-25
	8-28	Silty clay, clay	CH, CL	A-7	0	0-5	95-100	90-100	85-100	70-95	45-70	25-40
	28-60	Silty clay, clay, clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
NpB:												
Nappanee--------	0-8	Silty clay loam	CL	A-7	0	0-5	95-100	90-100	85-100	70-95	40-50	20-25
	8-28	Silty clay, clay	CH, CL	A-7	0	0-5	95-100	90-100	85-100	70-95	45-70	25-40
	28-60	Silty clay, clay, clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
NpB2:												
Nappanee--------	0-8	Silty clay loam	CL	A-7	0	0-5	95-100	90-100	85-100	70-95	40-50	20-25
	8-28	Silty clay, clay	CH, CL	A-7	0	0-5	95-100	90-100	85-100	70-95	45-70	25-40
	28-60	Silty clay, clay, clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
NsA:												
Nappanee--------	0-8	Silty clay loam	CL	A-6	0	0-5	95-100	90-100	85-100	55-90	30-40	10-15
	8-28	Silty clay, clay	CL, CH	A-7	0	0-5	95-100	90-100	85-100	70-95	45-70	25-40
	28-60	Silty clay, clay, clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
Urban Land------	---	---	---	---	---	---	---	---	---	---	---	---
OsB:												
Oshtemo---------	0-11	Sandy loam	SM, SC, SC-SM	A-2, A-4	0	0	95-100	75-100	55-70	25-40	0-25	NP-10
	11-34	Sandy loam, sandy clay loam, gravelly sandy loam	SC, SC-SM	A-2, A-4, A-1, A-6	0	0	95-100	55-100	35-85	15-50	20-30	5-15
	34-44	Loamy sand, sandy loam, gravelly sandy loam	SC, SP-SM, SC-SM, SM	A-2, A-1	0	0	85-95	55-95	30-70	10-30	0-25	NP-10
	44-75	Loamy sand, loamy coarse sand, gravelly loamy coarse sand	SM, SP-SM, SC-SM	A-1, A-2, A-3	0	0-5	65-95	55-95	20-60	5-15	0-25	NP-5
	75-80	Clay, silty clay loam, clay loam	CL	A-6, A-7	0	0-5	95-100	90-100	85-100	65-95	35-50	15-25
OtA:												
Ottokee---------	0-11	Loamy fine sand	SM, SC-SM	A-2, A-4	0	0	100	90-100	55-80	15-40	0-20	NP-5
	11-47	Loamy fine sand, fine sand, loamy sand	SP-SM, SC-SM, SM	A-2, A-3	0	0	100	90-100	65-90	5-35	0-20	NP-5
	47-60	Loamy fine sand, fine sand, sand	SP-SM, SC-SM, SM	A-2, A-3	0	0	100	95-100	65-90	5-35	0-20	NP-5
Spinks----------	0-7	Loamy fine sand	SP-SM, SM, SC-SM	A-2	0	0	95-100	90-100	55-80	10-30	0-20	NP-5
	7-48	Loamy fine sand, sand, fine sand	SM, SC-SM, SP-SM	A-2, A-3	0	0	95-100	90-100	65-90	5-35	0-20	NP-5
	48-60	Fine sand, loamy fine sand, sand	SC-SM, SM, SP-SM	A-2, A-3	0	0	95-100	90-100	65-90	5-35	0-20	NP-5

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	
OtB:												
Ottokee---------	0-11	Loamy fine sand	SC-SM, SM	A-2, A-4	0	0	100	90-100	55-80	15-40	0-20	NP-5
	11-47	Loamy fine sand, fine sand, loamy sand	SC-SM, SM, SP-SM	A-2, A-3	0	0	100	90-100	65-90	5-35	0-20	NP-5
	47-60	Loamy fine sand, fine sand, sand	SP-SM, SM, SC-SM	A-2, A-3	0	0	100	95-100	65-90	5-35	0-20	NP-5
Spinks----------	0-7	Loamy fine sand	SP-SM, SM, SC-SM	A-2	0	0	95-100	90-100	55-80	10-30	0-20	NP-5
	7-48	Loamy fine sand, sand, fine sand	SC-SM, SM, SP-SM	A-2, A-3	0	0	95-100	90-100	65-90	5-35	0-20	NP-5
	48-60	Fine sand, loamy fine sand, sand	SC-SM, SM, SP-SM	A-2, A-3	0	0	95-100	90-100	65-90	5-35	0-20	NP-5
OzB:												
Ottokee---------	0-11	Loamy fine sand	SM, SC-SM	A-2, A-4	0	0	100	90-100	55-80	15-40	0-20	NP-5
	11-47	Loamy fine sand, fine sand, loamy sand	SP-SM, SM, SC-SM	A-2, A-3	0	0	100	90-100	65-90	5-35	0-20	NP-5
	47-60	Loamy fine sand, fine sand, sand	SP-SM, SC-SM, SM	A-2, A-3	0	0	100	95-100	65-90	5-35	0-20	NP-5
Spinks----------	0-7	Loamy fine sand	SC-SM, SM, SP-SM	A-2	0	0	95-100	90-100	55-80	10-30	0-20	NP-5
	7-48	Loamy fine sand, sand, fine sand	SC-SM, SP-SM, SM	A-2, A-3	0	0	95-100	90-100	65-90	5-35	0-20	NP-5
	48-60	Fine sand, loamy fine sand, sand	SM, SP-SM, SC-SM	A-2, A-3	0	0	95-100	90-100	65-90	5-35	0-20	NP-5
Urban Land------	---	---	---	---	---	---	---	---	---	---	---	---
Pt:												
Pits, Quarry----	---	---	---	---	---	---	---	---	---	---	---	---
RbA:												
Randolph--------	0-10	Loam	CL-ML, CL	A-4, A-6	0	0	95-100	95-100	90-100	50-75	25-35	5-15
	10-32	Silty clay loam, clay loam, silty clay	CH, CL	A-6, A-7	0	0-5	85-100	75-100	75-90	55-90	40-60	20-35
	32-34	Unweathered bedrock			---	---	---	---	---	---	---	---
RbB:												
Randolph--------	0-10	Loam	CL, CL-ML	A-4, A-6	0	0	95-100	95-100	90-100	50-75	25-35	5-15
	10-32	Silty clay loam, clay loam, silty clay	CL, CH	A-6, A-7	0	0-5	85-100	75-100	75-90	55-90	40-60	20-35
	32-34	Unweathered bedrock			---	---	---	---	---	---	---	---
RdA:												
Randolph--------	0-10	Loam	CL, CL-ML	A-4, A-6	0	0	95-100	95-100	90-100	50-75	25-35	5-15
	10-32	Silty clay loam, clay loam, silty clay	CH, CL	A-6, A-7	0	0-5	85-100	75-100	75-90	55-90	40-60	20-35
	32-34	Unweathered bedrock			---	---	---	---	---	---	---	---
ReA:												
Randolph--------	0-10	Loam	CL-ML, CL	A-4, A-6	0	0	95-100	95-100	90-100	50-75	25-35	5-15
	10-32	Silty clay loam, clay loam, silty clay	CL, CH	A-6, A-7	0	0-5	85-100	75-100	75-90	55-90	40-60	20-35
	32-34	Unweathered bedrock			---	---	---	---	---	---	---	---
Urban Land------	---	---	---	---	---	---	---	---	---	---	---	---

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	
RfA:												
Rimer----------	0-8	Loamy fine sand	SM, SC-SM, SC	A-1, A-2, A-4	0	0	100	95-100	45-80	15-40	0-25	NP-10
	8-25	Loamy fine sand, fine sand, loamy sand	SM, SC-SM, SC	A-2, A-4	0	0	100	95-100	75-90	20-40	0-25	NP-10
	25-27	Sandy loam, fine sandy loam	SC, SC-SM, SM	A-4, A-6	0	0	100	95-100	60-80	35-45	15-30	NP-15
	27-32	Clay loam, silty clay, clay	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
	32-60	Clay loam, clay, silty clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
Tedrow----------	0-14	Loamy fine sand	SM, SC-SM, SC	A-2	0	0	100	95-100	60-80	20-35	0-20	NP-10
	14-34	Fine sand, loamy fine sand, sand	SC, SC-SM, SW-SM, SM	A-2, A-3	0	0	100	95-100	60-80	5-35	0-20	NP-10
	34-60	Clay loam, clay, silty clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
RfB:												
Rimer----------	0-8	Loamy fine sand	SC-SM, SM, SC	A-1, A-2, A-4	0	0	100	95-100	45-80	15-40	0-25	NP-10
	8-25	Loamy fine sand, fine sand, loamy sand	SM, SC-SM, SC	A-2, A-4	0	0	100	95-100	75-90	20-40	0-25	NP-10
	25-27	Sandy loam, fine sandy loam	SC-SM, SM, SC	A-4, A-6	0	0	100	95-100	60-80	35-45	15-30	NP-15
	27-32	Clay loam, silty clay, clay	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
	32-60	Clay loam, clay, silty clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
Tedrow----------	0-14	Loamy fine sand	SC-SM, SC, SM	A-2	0	0	100	95-100	60-80	20-35	0-20	NP-10
	14-34	Fine sand, loamy fine sand, sand	SC, SW-SM, SC-SM, SM	A-2, A-3	0	0	100	95-100	60-80	5-35	0-20	NP-10
	34-60	Clay loam, clay, silty clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
RgA:												
Rimer----------	0-8	Loamy fine sand	SC, SM, SC-SM	A-1, A-2, A-4	0	0	100	95-100	45-80	15-40	0-25	NP-10
	8-25	Loamy fine sand, fine sand, loamy sand	SC-SM, SM, SC	A-2, A-4	0	0	100	95-100	75-90	20-40	0-25	NP-10
	25-27	Sandy loam, fine sandy loam	SC, SC-SM, SM	A-4, A-6	0	0	100	95-100	60-80	35-45	15-30	NP-15
	27-32	Clay loam, silty clay, clay	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
	32-60	Clay loam, clay, silty clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
Tedrow----------	0-14	Loamy fine sand	SC, SM, SC-SM	A-2	0	0	100	95-100	60-80	20-35	0-20	NP-10
	14-34	Fine sand, loamy fine sand, sand	SC-SM, SC, SM, SW-SM	A-2, A-3	0	0	100	95-100	60-80	5-35	0-20	NP-10
	34-60	Clay loam, clay, silty clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
Urban Land------	---	---	---	---	---	---	---	---	---	---	---	---

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	
RhA:												
Ritchey---------	0-8	Loam	CL	A-6	0	0	95-100	85-100	80-100	50-75	25-40	10-15
	8-16	Clay loam, loam	CL	A-6	0-1	0-5	90-100	85-100	70-100	50-85	30-45	10-20
	16-18	Unweathered bedrock			---	---	---	---	---	---	---	---
RhB:												
Ritchey---------	0-8	Loam	CL	A-6	0	0	95-100	85-100	80-100	50-75	25-40	10-15
	8-16	Clay loam, loam	CL	A-6	0-1	0-5	90-100	85-100	70-100	50-85	30-45	10-20
	16-18	Unweathered bedrock			---	---	---	---	---	---	---	---
RkA:												
Ritchey---------	0-8	Loam	CL	A-6	0	0	95-100	85-100	80-90	50-75	25-40	10-15
	8-16	Clay loam, loam	CL	A-6	0-1	0-5	90-100	85-100	70-100	50-85	30-45	10-20
	16-18	Unweathered bedrock			---	---	---	---	---	---	---	---
RmA:												
Risingsun-------	0-9	Muck	PT	A-8	0	0	0	0	0	0	---	---
	9-11	Silt loam, silty clay loam	CL	A-7, A-6	0	0	100	100	90-100	80-100	30-45	10-25
	11-26	Loamy sand, fine sandy loam, loamy fine sand	SM, SC-SM, SC	A-4, A-2	0	0	100	85-100	65-85	20-45	0-30	NP-10
	26-43	Clay loam, silty clay loam	CL	A-7, A-6	0	0-2	90-100	90-100	80-100	65-95	35-45	15-20
	43-80	Clay loam, silty clay loam	CL	A-7, A-6	0	0-2	90-100	90-100	80-100	65-95	35-45	15-20
Rollersville----	0-12	Fine sandy loam	SM, SC-SM, SC	A-2, A-4	0	0	100	90-100	50-85	20-45	0-30	NP-10
	12-26	Fine sand, loamy fine sand, sand	SM, SC-SM, SP-SM, SC	A-2	0	0	100	85-100	65-85	10-35	0-30	NP-10
	26-49	Clay loam, silty clay loam	CL	A-7, A-6	0	0-2	90-100	90-100	80-100	65-95	35-45	15-20
	49-80	Clay loam, silty clay loam	CL	A-7, A-6	0	0-2	90-100	90-100	80-100	65-95	35-45	15-20
RnA:												
Rollersville----	0-11	Fine sandy loam	SM, SC, SC-SM	A-2, A-4	0	0	100	90-100	50-85	20-45	0-30	NP-10
	11-38	Fine sand, loamy fine sand, sand	SP-SM, SC-SM, SC, SM	A-2	0	0	100	85-100	65-85	10-35	0-30	NP-10
	38-52	Clay loam, silty clay loam	CL	A-7, A-6	0	0-2	90-100	90-100	80-100	65-95	35-45	15-20
	52-80	Clay loam, silty clay loam	CL	A-7, A-6	0	0-2	90-100	90-100	80-100	65-95	35-45	15-20
Risingsun-------	0-9	Muck	PT	A-8	0	0	0	0	0	0	---	---
	9-14	Silt loam, silty clay loam	CL	A-7, A-6	0	0	100	100	90-100	80-100	30-45	10-25
	14-27	Loamy sand, fine sandy loam, loamy fine sand	SC-SM, SC, SM	A-4, A-2	0	0	100	85-100	65-85	20-45	0-30	NP-10
	27-41	Clay loam, silty clay loam	CL	A-7, A-6	0	0-2	90-100	90-100	80-100	65-95	35-45	15-20
	41-80	Clay loam, silty clay loam	CL	A-7, A-6	0	0-2	90-100	90-100	80-100	65-95	35-45	15-20

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	
RsA:												
Rossburg--------	0-18	Silt loam	CL-ML, CL	A-4, A-6	0	0	95-100	90-100	80-100	60-90	20-35	5-15
	18-36	Loam, silt loam, fine sandy loam	CL, CL-ML	A-4, A-6	0	0	90-100	85-100	70-95	50-80	20-35	5-15
	36-80	Stratified loamy fine sand to fine sandy loam to loam	CL, ML, SM, SC-SM, CL-ML, SC	A-2, A-4	0	0	80-100	50-100	45-90	25-70	15-25	NP-10
SdA:												
Seward----------	0-8	Loamy fine sand	SC-SM, SM, SC	A-1, A-2, A-4	0	0	100	95-100	45-80	15-40	0-25	NP-10
	8-24	Loamy fine sand, fine sand, loamy sand	SC, SM, SC-SM	A-2, A-4	0	0	100	95-100	75-90	20-40	0-25	NP-10
	24-40	Fine sandy loam, sandy loam	SC, SM, SC-SM	A-4, A-6	0	0	100	95-100	60-80	35-45	15-30	NP-15
	40-45	Clay loam, silty clay, clay	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
	45-60	Clay loam, clay, silty clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
Ottokee---------	0-9	Loamy fine sand	SM, SC-SM	A-2, A-4	0	0	100	90-100	55-80	15-40	0-20	NP-5
	9-46	Loamy fine sand, fine sand, loamy sand	SP-SM, SM, SC-SM	A-2, A-3	0	0	100	90-100	65-90	5-35	0-20	NP-5
	46-60	Clay loam, clay, silty clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
SdB:												
Seward----------	0-8	Loamy fine sand	SC-SM, SM, SC	A-1, A-2, A-4	0	0	100	95-100	45-80	15-40	0-25	NP-10
	8-24	Loamy fine sand, fine sand, loamy sand	SC-SM, SM, SC	A-2, A-4	0	0	100	95-100	75-90	20-40	0-25	NP-10
	24-40	Fine sandy loam, sandy loam	SC, SM, SC-SM	A-4, A-6	0	0	100	95-100	60-80	35-45	15-30	NP-15
	40-45	Clay loam, silty clay, clay	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
	45-60	Clay loam, clay, silty clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
Ottokee---------	0-9	Loamy fine sand	SM, SC-SM	A-2, A-4	0	0	100	90-100	55-80	15-40	0-20	NP-5
	9-46	Loamy fine sand, fine sand, loamy sand	SP-SM, SC-SM, SM	A-2, A-3	0	0	100	90-100	65-90	5-35	0-20	NP-5
	46-60	Clay loam, clay, silty clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
SeA:												
Shawtown--------	0-9	Loam	CL-ML, SC-SM, SC, CL	A-4, A-6	0	0	85-100	75-100	70-90	40-75	20-40	5-20
	9-53	Loam, clay loam, gravelly loam	SC, CL-ML, SC-SM, CL	A-1, A-2, A-4, A-6, A-7, A-5	0	0-1	80-100	60-95	35-80	15-60	25-45	5-25
	53-66	Gravelly loamy coarse sand, loamy sand, very gravelly sandy loam	SC, SM, SC-SM, SP-SM	A-1, A-2	0	0-1	80-100	40-95	25-80	10-35	0-25	NP-10
	66-80	Clay loam, silty clay loam, silt loam	CL, SC	A-6, A-7	0	0-5	95-100	90-100	75-95	45-95	30-50	10-30

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	
SeB:												
Shawtown--------	0-9	Loam	SC-SM, CL, SC, CL-ML	A-4, A-6	0	0	85-100	75-100	70-90	40-75	20-40	5-20
	9-53	Loam, clay loam, gravelly loam	SC-SM, CL-ML, SC, CL	A-1, A-2, A-4, A-6, A-7, A-5	0	0-1	80-100	60-95	35-80	15-60	25-45	5-25
	53-66	Gravelly loamy coarse sand, loamy sand, very gravelly sandy loam	SC-SM, SP-SM, SC, SM	A-1, A-2	0	0-1	80-100	40-95	25-80	10-35	0-25	NP-10
	66-80	Clay loam, silty clay loam, silt loam	SC, CL	A-6, A-7	0	0-5	95-100	90-100	75-95	45-95	30-50	10-30
SgA:												
Shoals----------	0-8	Loam	CL	A-6	0	0	100	95-100	90-100	50-75	25-35	10-15
	8-31	Clay loam, loam, silt loam	CL	A-7, A-6	0	0	100	95-100	90-100	55-85	25-45	10-20
	31-60	Loam, sandy loam, silt loam	CL-ML, SC, SC-SM, CL	A-4, A-2, A-6	0	0-3	90-100	75-100	60-80	30-70	20-35	5-15
ShA:												
Shoals----------	0-8	Silt loam	CL, CL-ML	A-6, A-4	0	0	100	90-100	90-100	65-90	25-40	5-20
	8-31	Clay loam, loam, silt loam	CL	A-6, A-7	0	0	100	95-100	90-100	55-85	25-45	10-20
	31-60	Loam, sandy loam, silt loam	SC, CL-ML, CL, SC-SM	A-2, A-4, A-6	0	0-3	90-100	75-100	60-80	30-70	20-35	5-15
SkA:												
Shoals----------	0-8	Silty clay loam	CL	A-6	0	0	100	95-100	95-100	80-90	30-40	15-20
	8-31	Clay loam, loam, silt loam	CL	A-6, A-7	0	0	100	95-100	90-100	55-85	25-45	10-20
	31-60	Loam, sandy loam, silt loam	CL-ML, CL, SC-SM, SC	A-2, A-4, A-6	0	0-3	90-100	75-100	60-80	30-70	20-35	5-15
SmA:												
Shoals----------	0-8	Loam	CL	A-6	0	0	100	95-100	90-100	50-75	25-35	10-15
	8-31	Clay loam, loam, silt loam	CL	A-6, A-7	0	0	100	95-100	90-100	55-85	25-45	10-20
	31-33	Unweathered bedrock			---	---	---	---	---	---	---	---
Sloan----------	0-10	Silty clay loam	CL	A-6, A-7	0	0	100	90-100	90-100	80-95	35-45	15-25
	10-24	Silty clay loam, clay loam, silt loam	CL	A-6, A-7	0	0	100	90-100	85-100	50-95	30-45	10-20
	24-26	Unweathered bedrock			---	---	---	---	---	---	---	---
SnA:												
Sloan----------	0-10	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	90-100	85-100	70-95	25-40	5-15
	10-26	Silty clay loam, clay loam, silt loam	CL	A-6, A-7	0	0	100	90-100	85-100	50-95	30-45	10-20
	26-60	Stratified loam to silty clay loam to gravelly sandy loam	CL, CL-ML, SC-SM, SC	A-4, A-6, A-2	0	0	85-100	50-100	45-95	30-90	20-40	5-20

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	
SoA:												
Sloan----------	0-11	Silty clay loam	CL	A-6, A-7	0	0	100	90-100	90-100	80-95	35-45	15-25
	11-58	Silty clay loam, clay loam, silt loam	CL	A-6, A-7	0	0	100	90-100	85-100	50-95	30-45	10-20
	58-80	Stratified loam to silty clay loam to gravelly sandy loam	CL-ML, CL, SC, SC-SM	A-4, A-6, A-2	0	0	85-100	50-100	45-95	30-90	20-40	5-20
SpA:												
Sloan----------	0-10	Silty clay loam	CL	A-6, A-7	0	0	100	90-100	90-100	80-95	35-45	15-25
	10-26	Silty clay loam, clay loam, silt loam	CL	A-6, A-7	0	0	100	90-100	85-100	50-95	30-45	10-20
	26-60	Stratified loam to silty clay loam to gravelly sandy loam	SC, CL, CL-ML, SC-SM	A-4, A-6, A-2	0	0	85-100	50-100	45-95	30-90	20-40	5-20
SrB:												
Spinks----------	0-7	Fine sand	SC-SM, SM, SP-SM	A-2	0	0	95-100	90-100	55-80	10-30	0-20	NP-5
	7-38	Loamy fine sand, sand, fine sand	SM, SC-SM, SP-SM	A-2, A-3	0	0	95-100	90-100	65-90	5-35	0-20	NP-5
	38-60	Fine sand, loamy fine sand, sand	SP-SM, SM, SC-SM	A-2, A-3	0	0	95-100	90-100	65-90	5-35	0-20	NP-5
SrC:												
Spinks----------	0-7	Fine sand	SC-SM, SM, SP-SM	A-2	0	0	95-100	90-100	55-80	10-30	0-20	NP-5
	7-38	Loamy fine sand, sand, fine sand	SP-SM, SM, SC-SM	A-2, A-3	0	0	95-100	90-100	65-90	5-35	0-20	NP-5
	38-60	Fine sand, loamy fine sand, sand	SM, SC-SM, SP-SM	A-2, A-3	0	0	95-100	90-100	65-90	5-35	0-20	NP-5
SrD:												
Spinks----------	0-7	Fine sand	SP-SM, SM, SC-SM	A-2	0	0	95-100	90-100	55-80	10-30	0-20	NP-5
	7-38	Loamy fine sand, sand, fine sand	SC-SM, SM, SP-SM	A-2, A-3	0	0	95-100	90-100	65-90	5-35	0-20	NP-5
	38-60	Fine sand, loamy fine sand, sand	SC-SM, SM, SP-SM	A-2, A-3	0	0	95-100	90-100	65-90	5-35	0-20	NP-5
SsB:												
Spinks----------	0-7	Loamy fine sand	SP-SM, SM, SC-SM	A-2	0	0	95-100	90-100	55-80	10-30	0-20	NP-5
	7-38	Loamy fine sand, sand, fine sand	SC-SM, SP-SM, SM	A-2, A-3	0	0	95-100	90-100	65-90	5-35	0-20	NP-5
	38-60	Fine sand, loamy fine sand, sand	SP-SM, SM, SC-SM	A-2, A-3	0	0	95-100	90-100	65-90	5-35	0-20	NP-5
SsC:												
Spinks----------	0-7	Loamy fine sand	SM, SP-SM, SC-SM	A-2	0	0	95-100	90-100	55-80	10-30	0-20	NP-5
	7-38	Loamy fine sand, sand, fine sand	SP-SM, SM, SC-SM	A-2, A-3	0	0	95-100	90-100	65-90	5-35	0-20	NP-5
	38-60	Fine sand, loamy fine sand, sand	SM, SC-SM, SP-SM	A-2, A-3	0	0	95-100	90-100	65-90	5-35	0-20	NP-5

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	
StB:												
St. Clair--------	0-8	Loam	CL	A-6	0	0-5	95-100	75-100	70-100	50-80	30-40	10-15
	8-18	Clay, silty clay	CL, CH	A-7	0	0-5	95-100	75-100	75-100	70-95	40-65	20-40
	18-42	Silty clay loam, clay loam, clay	CL	A-7, A-6	0	0-5	95-100	75-100	70-100	65-95	35-50	15-25
	42-60	Silty clay loam, clay loam, clay	CL	A-6, A-7	0	0-5	95-100	75-100	70-100	65-95	35-50	15-25
StC2:												
St. Clair--------	0-8	Loam	CL	A-6	0	0-5	95-100	75-100	70-100	50-80	30-40	10-15
	8-18	Clay, silty clay	CH, CL	A-7	0	0-5	95-100	75-100	75-100	70-95	40-65	20-40
	18-42	Silty clay loam, clay loam, clay	CL	A-7, A-6	0	0-5	95-100	75-100	70-100	65-95	35-50	15-25
	42-60	Silty clay loam, clay loam, clay	CL	A-6, A-7	0	0-5	95-100	75-100	70-100	65-95	35-50	15-25
SuB2:												
St. Clair--------	0-8	Silty clay loam	CL	A-6, A-7	0	0-5	95-100	75-100	70-100	70-95	35-50	15-25
	8-18	Clay, silty clay	CH, CL	A-7	0	0-5	95-100	75-100	75-100	70-95	40-65	20-40
	18-42	Silty clay loam, clay loam, clay	CL	A-7, A-6	0	0-5	95-100	75-100	70-100	65-95	35-50	15-25
	42-60	Silty clay loam, clay loam, clay	CL	A-6, A-7	0	0-5	95-100	75-100	70-100	65-95	35-50	15-25
SuC2:												
St. Clair--------	0-8	Silty clay loam	CL	A-6, A-7	0	0-5	95-100	75-100	70-100	70-95	35-50	15-25
	8-18	Clay, silty clay	CH, CL	A-7	0	0-5	95-100	75-100	75-100	70-95	40-65	20-40
	18-42	Silty clay loam, clay loam, clay	CL	A-7, A-6	0	0-5	95-100	75-100	70-100	65-95	35-50	15-25
	42-60	Silty clay loam, clay loam, clay	CL	A-6, A-7	0	0-5	95-100	75-100	70-100	65-95	35-50	15-25
SuD2:												
St. Clair--------	0-8	Silty clay loam	CL	A-6, A-7	0	0-5	95-100	75-100	70-100	70-95	35-50	15-25
	8-18	Clay, silty clay	CL, CH	A-7	0	0-5	95-100	75-100	75-100	70-95	40-65	20-40
	18-42	Silty clay loam, clay loam, clay	CL	A-7, A-6	0	0-5	95-100	75-100	70-100	65-95	35-50	15-25
	42-60	Silty clay loam, clay loam, clay	CL	A-6, A-7	0	0-5	95-100	75-100	70-100	65-95	35-50	15-25
SuE2:												
St. Clair--------	0-8	Silty clay loam	CL	A-6, A-7	0	0-5	95-100	75-100	70-100	70-95	35-50	15-25
	8-18	Clay, silty clay	CL, CH	A-7	0	0-5	95-100	75-100	75-100	70-95	40-65	20-40
	18-42	Silty clay loam, clay loam, clay	CL	A-7, A-6	0	0-5	95-100	75-100	70-100	65-95	35-50	15-25
	42-60	Silty clay loam, clay loam, clay	CL	A-6, A-7	0	0-5	95-100	75-100	70-100	65-95	35-50	15-25
TeA:												
Tedrow----------	0-8	Loamy fine sand	SM, SC-SM	A-2	0	0	100	95-100	60-80	20-35	0-20	NP-5
	8-47	Loamy fine sand, loamy sand, fine sand	SP-SM, SM, SC-SM	A-2, A-3	0	0	100	95-100	35-90	5-35	0-20	NP-5
	47-60	Fine sand, sand	SP-SM, SM, SC-SM	A-2, A-3	0	0	100	95-100	50-90	5-35	0-20	NP-5

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	
TeB:												
Tedrow----------	0-8	Loamy fine sand	SM, SC-SM	A-2	0	0	100	95-100	60-80	20-35	0-20	NP-5
	8-47	Loamy fine sand, loamy sand, fine sand	SP-SM, SC-SM, SM	A-2, A-3	0	0	100	95-100	35-90	5-35	0-20	NP-5
	47-60	Fine sand, sand	SC-SM, SM, SP-SM	A-2, A-3	0	0	100	95-100	50-90	5-35	0-20	NP-5
TfA:												
Tedrow----------	0-8	Loamy fine sand	SC-SM, SM	A-2	0	0	100	95-100	60-80	20-35	0-20	NP-5
	8-47	Loamy fine sand, loamy sand, fine sand	SP-SM, SC-SM, SM	A-2, A-3	0	0	100	95-100	35-90	5-35	0-20	NP-5
	47-60	Fine sand, sand	SM, SC-SM, SP-SM	A-2, A-3	0	0	100	95-100	50-90	5-35	0-20	NP-5
Urban Land------	---	---	---	---	---	---	---	---	---	---	---	---
TpA:												
Toledo----------	0-9	Silty clay loam	CL	A-6, A-7	0	0	100	100	90-100	80-100	35-50	15-25
	9-57	Silty clay, clay	CH, CL	A-7	0	0	100	100	95-100	80-100	45-65	20-40
	57-60	Silty clay, clay, silty clay loam	CL, CH	A-7	0	0	100	100	95-100	80-100	40-65	20-40
TuA:												
Toledo----------	0-9	Silty clay loam	CL	A-6, A-7	0	0	100	100	90-100	80-100	35-50	15-25
	9-57	Silty clay, clay	CL, CH	A-7	0	0	100	100	95-100	80-100	45-65	20-40
	57-60	Silty clay, clay, silty clay loam	CL, CH	A-7	0	0	100	100	95-100	80-100	40-65	20-40
Urban Land------	---	---	---	---	---	---	---	---	---	---	---	---
UcA:												
Udorthents------	---	---	---	---	---	---	---	---	---	---	---	---
UcE:												
Udorthents------	---	---	---	---	---	---	---	---	---	---	---	---
Ur:												
Urban Land------	---	---	---	---	---	---	---	---	---	---	---	---
W:												
Water----------	---	---	---	---	---	---	---	---	---	---	---	---
WbA:												
Wabasha---------	0-9	Silty clay	CL, CH	A-7	0	0	100	95-100	90-100	85-100	45-55	25-30
	9-50	Silty clay, clay	CL, CH	A-7	0	0	100	90-100	85-100	80-100	45-65	25-35
	50-60	Silty clay loam, clay, silty clay	CH, CL	A-7	0	0	100	90-100	85-100	80-100	40-65	20-35
WmA:												
Wauseon---------	0-11	Loamy fine sand	CL-ML, ML, SM, SC-SM, SC, CL	A-2, A-4	0	0	100	95-100	50-85	20-55	0-25	NP-10
	11-30	Loamy fine sand, fine sandy loam, sandy loam	SC, SC-SM, SM	A-2, A-4	0	0	100	95-100	65-95	20-45	0-30	NP-10
	30-60	Clay loam, silty clay loam, clay	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25

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	
WnA:												
Wauseon---------	0-8	Fine sandy loam	CL-ML, SM, ML, CL, SC-SM, SC	A-2, A-4	0	0	100	95-100	60-85	30-55	0-30	NP-10
	8-34	Loamy fine sand, fine sandy loam, sandy loam	SC-SM, SC, SM	A-2, A-4	0	0	100	95-100	65-95	20-45	0-30	NP-10
	34-59	Loamy fine sand, fine sandy loam, sandy loam	SP, SM, SP-SM, SC-SM	A-2, A-3	0	0	100	95-100	50-70	0-35	0-20	NP-5
	59-60	Clay loam, silty clay loam, clay	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
WyA:												
Wauseon---------	0-11	Fine sandy loam	CL-ML, ML, CL, SM, SC-SM, SC	A-2, A-4	0	0	100	95-100	60-85	30-55	0-30	NP-10
	11-30	Loamy fine sand, fine sandy loam, sandy loam	SC, SM, SC-SM	A-2, A-4	0	0	100	95-100	65-95	20-45	0-30	NP-10
	30-60	Clay loam, silty clay loam, clay	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
WzA:												
Wauseon---------	0-11	Fine sandy loam	SC, SC-SM, ML, SM, CL, CL-ML	A-2, A-4	0	0	100	95-100	60-85	30-55	0-30	NP-10
	11-30	Loamy fine sand, fine sandy loam, sandy loam	SC, SC-SM, SM	A-2, A-4	0	0	100	95-100	65-95	20-45	0-30	NP-10
	30-60	Clay loam, silty clay loam, clay	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
Urban Land------	---	---	---	---	---	---	---	---	---	---	---	---

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 239 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					
AgA:										
Alvada----------	0-10	18-27	1.30-1.45	0.60-2.00	0.18-0.22	Low	.24	.28	5	6
	10-39	18-35	1.35-1.60	0.60-2.00	0.12-0.16	Low	.24	.28		
	39-46	18-32	1.40-1.60	0.60-2.00	0.08-0.15	Low	.24	.28		
	46-50	5-18	1.50-1.70	2.00-6.00	0.08-0.12	Low	.24	.28		
	50-80	22-35	1.60-1.80	0.06-0.60	0.05-0.10	Moderate	.32	.32		
AmA:										
Aurand----------	0-10	10-18	1.30-1.45	2.00-6.00	0.12-0.18	Low	.24	.24	4	3
	10-30	18-35	1.30-1.70	0.60-2.00	0.12-0.16	Low	.24	.28		
	30-38	15-35	1.30-1.70	0.60-2.00	0.10-0.16	Low	.28	.32		
	38-59	27-42	1.40-1.80	0.06-0.60	0.06-0.10	Moderate	.32	.37		
	59-80	27-42	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		
AnA:										
Aurand----------	0-11	12-27	1.30-1.45	0.60-2.00	0.18-0.22	Low	.28	.28	4	5
	11-29	18-35	1.30-1.70	0.60-2.00	0.12-0.16	Low	.24	.28		
	29-33	15-35	1.30-1.70	0.60-2.00	0.10-0.16	Low	.28	.32		
	33-48	27-42	1.40-1.80	0.06-0.60	0.06-0.10	Moderate	.32	.37		
	48-80	27-42	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		
AsA:										
Aurand----------	0-11	12-27	1.30-1.45	0.60-2.00	0.18-0.22	Low	.28	.28	4	5
	11-25	18-35	1.30-1.70	0.60-2.00	0.12-0.16	Low	.24	.28		
	25-34	15-35	1.30-1.70	0.60-2.00	0.10-0.16	Low	.28	.32		
	34-51	27-42	1.40-1.80	0.06-0.60	0.06-0.10	Moderate	.32	.37		
	51-80	27-42	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		
Urban land------	---	---	---	---	---	---	---	---	-	---
BeB:										
Belmore---------	0-8	8-15	1.20-1.45	2.00-6.00	0.12-0.15	Low	.24	.28	5	3
	8-40	15-30	1.35-1.60	2.00-6.00	0.14-0.18	Low	.28	.32		
	40-60	3-15	1.25-1.55	6.00-20.00	0.02-0.09	Low	.15	.20		
BfB:										
Belmore---------	0-8	10-24	1.30-1.45	0.60-2.00	0.14-0.18	Low	.32	.37	5	5
	8-40	15-30	1.35-1.60	2.00-6.00	0.14-0.18	Low	.28	.32		
	40-60	3-15	1.25-1.55	6.00-20.00	0.02-0.09	Low	.15	.20		
CaA:										
Castalia--------	0-7	12-20	1.20-1.35	6.00-20.00	0.04-0.12	Low	.20	.64	2	8
	7-21	12-20	1.30-1.40	6.00-20.00	0.03-0.13	Low	.10	.43		
	21-23	---	---	0.00-0.60	---	---	---	---		
CbB:										
Castalia--------	0-9	12-20	1.20-1.35	6.00-20.00	0.04-0.12	Low	.15	.37	2	8
	9-16	12-20	1.30-1.40	6.00-20.00	0.03-0.13	Low	.10	.43		
	16-22	12-20	1.30-1.40	6.00-20.00	0.02-0.09	Low	.10	.55		
	22-24	---	---	0.00-0.60	---	---	---	---		
Marblehead------	0-6	5-20	1.20-1.40	0.60-2.00	0.16-0.22	Low	.28	.37	1	5
	6-8	---	---	0.00-0.60	---	---	---	---		
CcA:										
Colwood---------	0-8	2-18	1.30-1.60	2.00-6.00	0.16-0.20	Low	.20	.20	5	3
	8-38	18-35	1.30-1.60	0.20-2.00	0.17-0.22	Low	.43	.43		
	38-60	0-12	1.45-1.65	0.60-2.00	0.08-0.22	Low	.43	.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					
CdA:										
Colwood---------	0-8	7-26	1.30-1.60	0.60-6.00	0.20-0.24	Low	.28	.28	5	5
	8-38	18-35	1.30-1.60	0.20-2.00	0.17-0.22	Low	.43	.43		
	38-60	0-12	1.45-1.65	0.60-2.00	0.08-0.22	Low	.43	.43		
CtA:										
Colwood---------	0-8	7-26	1.30-1.60	0.60-6.00	0.20-0.24	Low	.28	.28	5	5
	8-38	18-35	1.30-1.60	0.20-2.00	0.17-0.22	Low	.43	.43		
	38-60	0-12	1.45-1.65	0.60-2.00	0.08-0.22	Low	.43	.43		
Urban land------	---	---	---	---	---	---	---	---	-	---
CvA:										
Cygnet----------	0-11	12-20	1.30-1.50	0.60-2.00	0.16-0.22	Low	.24	.28	4	5
	11-30	18-35	1.25-1.60	0.60-2.00	0.14-0.18	Low	.28	.32		
	30-53	5-25	1.40-1.60	2.00-6.00	0.12-0.16	Low	.24	.28		
	53-80	27-42	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		
CxB:										
Castalia--------	0-9	12-20	1.20-1.35	6.00-20.00	0.04-0.12	Low	.15	.37	2	8
	9-16	12-20	1.30-1.40	6.00-20.00	0.03-0.13	Low	.10	.43		
	16-22	12-20	1.30-1.40	6.00-20.00	0.02-0.09	Low	.10	.55		
	22-24	---	---	0.00-0.60	---	---	---	---		
Marblehead------	0-6	5-20	1.20-1.40	0.60-2.00	0.16-0.22	Low	.28	.37	1	5
	6-8	---	---	0.00-0.60	---	---	---	---		
Urban land------	---	---	---	---	---	---	---	---	-	---
DgA:										
Digby----------	0-7	7-18	1.20-1.40	2.00-6.00	0.11-0.17	Low	.24	.28	4	3
	7-32	18-35	1.45-1.70	0.60-2.00	0.12-0.16	Low	.28	.32		
	32-60	3-15	1.25-1.55	6.00-20.00	0.02-0.09	Low	.15	.20		
DhA:										
Digby----------	0-7	12-20	1.20-1.40	0.60-2.00	0.16-0.22	Low	.32	.37	4	5
	7-32	18-35	1.45-1.70	0.60-2.00	0.12-0.16	Low	.28	.32		
	32-60	3-15	1.25-1.55	6.00-20.00	0.02-0.09	Low	.15	.20		
DrA:										
Dunbridge-------	0-8	6-12	1.35-1.50	2.00-6.00	0.16-0.18	Low	.17	.20	2	3
	8-14	4-12	1.40-1.60	2.00-20.00	0.08-0.12	Low	.32	.55		
	14-25	18-30	1.45-1.70	2.00-6.00	0.10-0.18	Low	.20	.43		
	25-27	---	---	0.00-0.60	---	---	---	---		
DsA:										
Dunbridge-------	0-8	4-8	1.40-1.60	6.00-20.00	0.10-0.13	Low	.17	.20	2	2
	8-14	4-12	1.40-1.60	2.00-20.00	0.08-0.12	Low	.32	.55		
	14-25	18-30	1.45-1.70	2.00-6.00	0.10-0.18	Low	.20	.43		
	25-27	---	---	0.00-0.60	---	---	---	---		
Spinks----------	0-9	2-10	1.40-1.60	6.00-20.00	0.08-0.10	Low	.17	.17	3	2
	9-51	0-15	1.40-1.70	2.00-20.00	0.05-0.10	Low	.17	.17		
	51-53	---	---	0.00-0.60	---	---	---	---		
DsB:										
Dunbridge-------	0-8	4-8	1.40-1.60	6.00-20.00	0.10-0.13	Low	.17	.20	2	2
	8-14	4-12	1.40-1.60	2.00-20.00	0.08-0.12	Low	.32	.55		
	14-25	18-30	1.45-1.70	2.00-6.00	0.10-0.18	Low	.20	.43		
	25-27	---	---	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					
Spinks----------	0-9	2-10	1.40-1.60	6.00-20.00	0.08-0.10	Low	.17	.17	3	2
	9-51	0-15	1.40-1.70	2.00-20.00	0.05-0.10	Low	.17	.17		
	51-53	---	---	0.00-0.60	---	---	---	---		
EaA:										
Eel----------	0-8	18-27	1.30-1.50	0.60-2.00	0.20-0.24	Low	.32	.32	5	6
	8-38	20-32	1.30-1.50	0.60-2.00	0.17-0.22	Low	.32	.32		
	38-60	8-25	1.30-1.50	0.60-6.00	0.19-0.21	Low	.28	.32		
EmA:										
Eel----------	0-8	18-27	1.30-1.50	0.60-2.00	0.20-0.24	Low	.32	.32	5	6
	8-38	20-32	1.30-1.50	0.60-2.00	0.17-0.22	Low	.32	.32		
	38-60	8-25	1.30-1.50	0.60-6.00	0.19-0.21	Low	.28	.32		
EnA:										
Eel----------	0-9	18-27	1.30-1.50	0.60-2.00	0.20-0.24	Low	.32	.32	2	6
	9-34	20-32	1.30-1.50	0.60-2.00	0.17-0.22	Low	.32	.32		
	34-36	---	---	0.00-0.60	---	---	---	---		
FcA:										
Flatrock--------	0-11	18-27	1.20-1.50	0.60-2.00	0.20-0.24	Low	.37	.37	5	6
	11-52	18-35	1.25-1.60	0.60-2.00	0.17-0.22	Low	.32	.32		
	52-80	15-35	1.20-1.60	0.60-6.00	0.12-0.18	Low	.28	.32		
FuA:										
Fulton----------	0-9	27-40	1.35-1.55	0.20-0.60	0.21-0.23	Moderate	.43	.43	5	6
	9-32	45-60	1.40-1.65	0.06-0.20	0.09-0.13	Moderate	.28	.28		
	32-47	35-45	1.40-1.65	0.06-0.20	0.09-0.13	Moderate	.32	.32		
	47-68	27-35	1.45-1.75	0.06-0.20	0.08-0.12	Moderate	.32	.32		
	68-80	27-42	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		
FuB:										
Fulton----------	0-7	27-40	1.35-1.55	0.20-0.60	0.21-0.23	Moderate	.43	.43	5	6
	7-32	45-60	1.40-1.65	0.06-0.20	0.09-0.13	Moderate	.28	.28		
	32-41	35-45	1.40-1.65	0.06-0.20	0.09-0.13	Moderate	.32	.32		
	41-63	27-35	1.45-1.75	0.06-0.20	0.08-0.12	Moderate	.32	.32		
	63-80	27-42	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		
FzA:										
Fulton----------	0-8	27-40	1.35-1.55	0.20-0.60	0.21-0.23	Moderate	.43	.43	5	6
	8-28	45-60	1.40-1.65	0.06-0.20	0.09-0.13	Moderate	.28	.28		
	28-40	35-45	1.40-1.65	0.06-0.20	0.09-0.13	Moderate	.32	.32		
	40-64	27-35	1.45-1.75	0.06-0.20	0.08-0.12	Moderate	.32	.32		
	64-80	27-42	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		
Urban land------	---	---	---	---	---	---	---	---	-	---
GmA:										
Genesee---------	0-9	18-27	1.30-1.50	0.60-2.00	0.20-0.24	Low	.37	.37	5	6
	9-42	18-27	1.30-1.50	0.60-2.00	0.17-0.22	Low	.37	.37		
	42-60	10-25	1.30-1.50	0.60-6.00	0.19-0.21	Low	.28	.32		
GnA:										
Genesee---------	0-9	18-27	1.30-1.50	0.60-2.00	0.20-0.24	Low	.37	.37	5	6
	9-42	18-27	1.30-1.50	0.60-2.00	0.17-0.22	Low	.37	.37		
	42-60	10-25	1.30-1.50	0.60-6.00	0.19-0.21	Low	.28	.32		
GpA:										
Granby----------	0-11	2-14	1.20-1.60	6.00-20.00	0.10-0.12	Low	.17	.17	5	2
	11-33	0-14	1.45-1.65	6.00-20.00	0.05-0.12	Low	.15	.15		
	33-74	0-10	1.45-1.65	6.00-20.00	0.05-0.09	Low	.15	.15		
	74-80	27-42	1.70-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.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					
HaA:										
Haney----------	0-7	7-18	1.40-1.60	2.00-6.00	0.10-0.17	Low	.32	.37	4	3
	7-34	20-35	1.25-1.60	0.60-2.00	0.12-0.16	Low	.28	.32		
	34-60	3-15	1.25-1.55	6.00-20.00	0.02-0.09	Low	.15	.20		
HaB:										
Haney----------	0-7	7-18	1.40-1.60	2.00-6.00	0.10-0.17	Low	.32	.37	4	3
	7-34	20-35	1.25-1.60	0.60-2.00	0.12-0.16	Low	.28	.32		
	34-60	3-15	1.25-1.55	6.00-20.00	0.02-0.09	Low	.15	.20		
HdA:										
Haney----------	0-7	12-20	1.30-1.50	0.60-2.00	0.16-0.22	Low	.32	.37	4	5
	7-34	20-35	1.25-1.60	0.60-2.00	0.12-0.16	Low	.28	.32		
	34-60	3-15	1.25-1.55	6.00-20.00	0.02-0.09	Low	.15	.20		
HdB:										
Haney----------	0-7	12-20	1.30-1.50	0.60-2.00	0.16-0.22	Low	.32	.37	4	5
	7-34	20-35	1.25-1.60	0.60-2.00	0.12-0.16	Low	.28	.32		
	34-60	3-15	1.25-1.55	6.00-20.00	0.02-0.09	Low	.15	.20		
HeA:										
Haskins---------	0-6	10-18	1.30-1.45	2.00-6.00	0.12-0.18	Low	.24	.28	4	3
	6-36	18-35	1.45-1.70	0.60-2.00	0.12-0.16	Low	.28	.32		
	36-42	27-42	1.60-1.80	0.06-0.60	0.06-0.10	Moderate	.32	.37		
	42-60	27-42	1.70-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		
Digby----------	0-8	7-18	1.20-1.40	2.00-6.00	0.12-0.18	Low	.24	.28	4	3
	8-34	18-35	1.45-1.70	0.60-2.00	0.12-0.16	Low	.28	.32		
	34-37	3-15	1.25-1.55	6.00-20.00	0.02-0.09	Low	.15	.20		
	37-60	27-42	1.70-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		
HeB:										
Haskins---------	0-6	10-18	1.30-1.45	2.00-6.00	0.12-0.18	Low	.24	.28	4	3
	6-36	18-35	1.45-1.70	0.60-2.00	0.12-0.16	Low	.28	.32		
	36-42	27-42	1.60-1.80	0.06-0.60	0.06-0.10	Moderate	.32	.37		
	42-60	27-42	1.70-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		
Digby----------	0-8	7-18	1.20-1.40	2.00-6.00	0.12-0.18	Low	.24	.28	4	3
	8-34	18-35	1.45-1.70	0.60-2.00	0.12-0.16	Low	.28	.32		
	34-37	3-15	1.25-1.55	6.00-20.00	0.02-0.09	Low	.15	.20		
	37-60	27-42	1.70-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		
HfA:										
Haskins---------	0-6	12-20	1.30-1.45	0.60-2.00	0.18-0.22	Low	.37	.37	4	5
	6-36	18-35	1.45-1.70	0.60-2.00	0.12-0.16	Low	.28	.32		
	36-42	27-42	1.60-1.80	0.06-0.60	0.06-0.10	Moderate	.32	.37		
	42-60	27-42	1.70-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		
Digby----------	0-8	12-20	1.20-1.40	0.60-2.00	0.18-0.22	Low	.32	.37	4	5
	8-34	18-35	1.45-1.70	0.60-2.00	0.12-0.16	Low	.28	.32		
	34-37	3-15	1.25-1.55	6.00-20.00	0.02-0.09	Low	.15	.20		
	37-60	27-42	1.70-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		
HfB:										
Haskins---------	0-6	12-20	1.30-1.45	0.60-2.00	0.18-0.22	Low	.37	.37	4	5
	6-36	18-35	1.45-1.70	0.60-2.00	0.12-0.16	Low	.28	.32		
	36-42	27-42	1.60-1.80	0.06-0.60	0.06-0.10	Moderate	.32	.37		
	42-60	27-42	1.70-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		
Digby----------	0-8	12-20	1.20-1.40	0.60-2.00	0.18-0.22	Low	.32	.37	4	5
	8-34	18-35	1.45-1.70	0.60-2.00	0.12-0.16	Low	.28	.32		
	34-37	3-15	1.25-1.55	6.00-20.00	0.02-0.09	Low	.15	.20		
	37-60	27-42	1.70-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.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					
HgA:										
Hoytville-------	0-9	27-40	1.25-1.50	0.20-2.00	0.19-0.23	Moderate	.24	.24	5	6
	9-52	40-55	1.35-1.60	0.20-0.60	0.08-0.13	Moderate	.28	.32		
	52-60	35-50	1.40-1.75	0.06-0.20	0.05-0.10	Moderate	.32	.37		
	60-80	27-42	1.70-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		
HhA:										
Hoytville-------	0-9	27-40	1.25-1.50	0.20-2.00	0.19-0.23	Moderate	.28	.28	5	6
	9-41	40-55	1.35-1.60	0.20-0.60	0.08-0.13	Moderate	.28	.32		
	41-60	35-50	1.40-1.75	0.06-0.20	0.05-0.10	Moderate	.32	.37		
	60-80	27-42	1.70-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		
HvA:										
Hoytville-------	0-8	40-48	1.30-1.55	0.20-0.60	0.10-0.14	Moderate	.28	.28	5	4
	8-41	40-55	1.35-1.60	0.20-0.60	0.08-0.13	Moderate	.28	.32		
	41-60	35-50	1.40-1.75	0.06-0.20	0.05-0.10	Moderate	.32	.37		
	60-80	27-42	1.70-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		
HwA:										
Hoytville-------	0-7	40-45	1.35-1.55	0.20-0.60	0.11-0.13	Moderate	.28	.28	5	4
	7-18	40-55	1.35-1.60	0.20-0.60	0.09-0.12	Moderate	.28	.32		
	18-44	30-45	1.40-1.75	0.06-0.20	0.05-0.10	Moderate	.32	.37		
	44-60	27-42	1.70-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		
HyA:										
Hoytville-------	0-9	27-40	1.25-1.50	0.20-2.00	0.19-0.23	Moderate	.24	.24	5	6
	9-48	40-55	1.35-1.60	0.20-0.60	0.08-0.13	Moderate	.28	.32		
	48-57	35-50	1.40-1.75	0.06-0.20	0.05-0.10	Moderate	.32	.37		
	57-80	27-42	1.70-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		
Urban land------	---	---	---	---	---	---	---	---	-	---
JoA:										
Joliet----------	0-6	27-35	1.10-1.30	0.60-2.00	0.15-0.23	Moderate	.28	.28	1	6
	6-16	27-45	1.40-1.70	0.20-0.60	0.12-0.16	Moderate	.37	.37		
	16-18	---	---	0.00-0.60	---	---	---	---		
KeA:										
Kibbie----------	0-16	0-15	1.40-1.65	2.00-6.00	0.13-0.18	Low	.17	.17	5	2
	16-36	18-35	1.40-1.65	0.60-2.00	0.17-0.22	Low	.32	.32		
	36-60	2-18	1.40-1.70	0.60-2.00	0.12-0.22	Low	.32	.32		
KfA:										
Kibbie----------	0-10	2-20	1.40-1.65	0.60-2.00	0.16-0.20	Low	.20	.20	5	3
	10-16	5-15	1.40-1.65	2.00-6.00	0.06-0.11	Low	.17	.17		
	16-36	18-35	1.40-1.65	0.60-2.00	0.17-0.22	Low	.32	.32		
	36-60	2-18	1.40-1.70	0.60-2.00	0.12-0.22	Low	.32	.32		
KfB:										
Kibbie----------	0-10	2-20	1.40-1.65	0.60-2.00	0.16-0.20	Low	.20	.20	5	3
	10-16	5-15	1.40-1.65	2.00-6.00	0.06-0.11	Low	.17	.17		
	16-36	18-35	1.40-1.65	0.60-2.00	0.17-0.22	Low	.32	.32		
	36-60	2-18	1.40-1.70	0.60-2.00	0.12-0.22	Low	.32	.32		
KkA:										
Kibbie----------	0-10	2-20	1.40-1.65	0.60-2.00	0.16-0.20	Low	.20	.20	5	3
	10-16	5-15	1.40-1.65	2.00-6.00	0.06-0.11	Low	.17	.17		
	16-36	18-35	1.40-1.65	0.60-2.00	0.17-0.22	Low	.32	.32		
	36-60	2-18	1.40-1.70	0.60-2.00	0.12-0.22	Low	.32	.32		
Urban land------	---	---	---	---	---	---	---	---	-	---

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					
LbB:										
Landes----------	0-20	5-10	1.40-1.65	0.60-6.00	0.13-0.18	Low	.17	.17	5	2
	20-32	5-18	1.60-1.70	2.00-6.00	0.10-0.15	Low	.32	.32		
	32-80	5-18	1.60-1.80	6.00-20.00	0.05-0.15	Low	.20	.20		
LdA:										
Latty----------	0-10	40-55	1.30-1.50	0.06-0.20	0.11-0.14	Moderate	.28	.28	5	4
	10-41	45-60	1.35-1.65	0.06-0.20	0.09-0.13	Moderate	.28	.28		
	41-61	35-60	1.40-1.75	0.01-0.20	0.08-0.12	Moderate	.28	.28		
	61-80	27-42	1.70-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		
LgA:										
Latty----------	0-8	40-55	1.30-1.50	0.06-0.20	0.11-0.14	Moderate	.28	.28	5	4
	8-39	45-60	1.35-1.65	0.06-0.20	0.09-0.13	Moderate	.28	.28		
	39-76	35-60	1.40-1.75	0.01-0.20	0.08-0.12	Moderate	.28	.28		
	76-80	27-42	1.70-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		
Urban land------	---	---	---	---	---	---	---	---	-	---
MbA:										
Millgrove-------	0-8	18-27	1.30-1.50	0.60-2.00	0.18-0.22	Low	.24	.28	5	6
	8-21	18-35	1.40-1.70	0.60-2.00	0.12-0.16	Low	.28	.32		
	21-43	7-18	1.25-1.60	2.00-6.00	0.10-0.16	Low	.28	.43		
	43-60	3-15	1.25-1.60	2.00-6.00	0.08-0.12	Low	.28	.55		
McA:										
Mermill---------	0-8	12-20	1.30-1.45	2.00-6.00	0.14-0.18	Low	.24	.24	4	3
	8-38	18-35	1.50-1.70	0.60-2.00	0.12-0.16	Low	.28	.32		
	38-60	27-42	1.60-1.80	0.01-0.20	0.05-0.10	Moderate	.28	.32		
MdA:										
Mermill---------	0-9	14-27	1.25-1.50	0.60-2.00	0.18-0.24	Low	.32	.32	4	6
	9-28	18-35	1.50-1.70	0.60-2.00	0.12-0.16	Low	.28	.32		
	28-57	27-42	1.60-1.80	0.01-0.20	0.06-0.10	Moderate	.28	.32		
	57-80	27-42	1.60-1.80	0.01-0.20	0.05-0.10	Moderate	.28	.32		
MeA:										
Mermill---------	0-8	20-30	1.35-1.55	0.60-2.00	0.16-0.20	Low	.32	.32	4	5
	8-38	18-35	1.50-1.70	0.60-2.00	0.12-0.16	Low	.28	.32		
	38-60	27-42	1.60-1.80	0.01-0.20	0.05-0.10	Moderate	.28	.32		
MfA:										
Mermill---------	0-9	14-27	1.25-1.50	0.60-2.00	0.18-0.24	Low	.32	.32	4	6
	9-35	18-35	1.50-1.70	0.60-2.00	0.12-0.16	Low	.28	.32		
	35-46	27-42	1.60-1.80	0.01-0.20	0.06-0.10	Moderate	.28	.32		
	46-80	27-42	1.60-1.80	0.01-0.20	0.05-0.10	Moderate	.28	.32		
Aurand----------	0-11	12-27	1.30-1.45	0.60-2.00	0.18-0.22	Low	.28	.28	4	5
	11-23	18-35	1.30-1.70	0.60-2.00	0.12-0.16	Low	.24	.28		
	23-29	15-35	1.30-1.70	0.60-2.00	0.10-0.16	Low	.28	.32		
	29-51	27-42	1.40-1.80	0.06-0.60	0.06-0.10	Moderate	.32	.37		
	51-80	27-42	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		
MgA:										
Mermill---------	0-9	14-27	1.25-1.50	0.60-2.00	0.18-0.24	Low	.32	.32	4	6
	9-32	18-35	1.50-1.70	0.60-2.00	0.12-0.16	Low	.28	.32		
	32-47	27-42	1.60-1.80	0.01-0.20	0.06-0.10	Moderate	.28	.32		
	47-80	27-42	1.60-1.80	0.01-0.20	0.05-0.10	Moderate	.28	.32		
Urban land------	---	---	---	---	---	---	---	---	-	---

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					
MhA:										
Millsdale-------	0-7	27-35	1.30-1.50	0.60-2.00	0.17-0.22	Moderate	.28	.32	2	6
	7-32	35-45	1.40-1.65	0.20-0.60	0.12-0.16	Moderate	.28	.32		
	32-34	---	---	0.00-0.60	---	---	---	---		
MkA:										
Millsdale-------	0-7	27-35	1.30-1.50	0.60-2.00	0.17-0.22	Moderate	.28	.32	2	8
	7-32	35-45	1.40-1.65	0.20-0.60	0.12-0.16	Moderate	.28	.32		
	32-34	---	---	0.00-0.60	---	---	---	---		
MmA:										
Millsdale-------	0-7	27-35	1.30-1.50	0.60-2.00	0.17-0.22	Moderate	.28	.32	2	6
	7-32	35-45	1.40-1.65	0.20-0.60	0.12-0.16	Moderate	.28	.32		
	32-34	---	---	0.00-0.60	---	---	---	---		
Urban land------	---	---	---	---	---	---	---	---	-	---
MnA:										
Milton----------	0-6	13-27	1.30-1.50	0.60-2.00	0.18-0.23	Low	.37	.37	2	6
	6-11	20-35	1.40-1.65	0.20-2.00	0.14-0.20	Low	.32	.37		
	11-26	35-50	1.40-1.70	0.20-0.60	0.12-0.16	Moderate	.32	.37		
	26-28	---	---	0.00-0.60	---	---	---	---		
MnB:										
Milton----------	0-6	13-27	1.30-1.50	0.60-2.00	0.18-0.23	Low	.37	.37	2	6
	6-11	20-35	1.40-1.65	0.20-2.00	0.14-0.20	Low	.32	.37		
	11-26	35-50	1.40-1.70	0.20-0.60	0.12-0.16	Moderate	.32	.37		
	26-28	---	---	0.00-0.60	---	---	---	---		
NmA:										
Nappanee--------	0-8	10-18	1.20-1.40	2.00-6.00	0.11-0.17	Low	.32	.32	3	3
	8-28	45-60	1.40-1.65	0.06-0.20	0.08-0.14	Moderate	.37	.37		
	28-60	27-42	1.60-1.90	0.01-0.20	0.01-0.12	Moderate	.32	.37		
NmB:										
Nappanee--------	0-8	10-18	1.20-1.40	2.00-6.00	0.11-0.17	Low	.32	.32	3	3
	8-28	45-60	1.40-1.65	0.06-0.20	0.08-0.14	Moderate	.37	.37		
	28-60	27-42	1.60-1.90	0.01-0.20	0.01-0.12	Moderate	.32	.37		
NnA:										
Nappanee--------	0-8	20-27	1.30-1.50	0.60-2.00	0.20-0.24	Low	.37	.37	3	6
	8-28	45-60	1.40-1.65	0.06-0.20	0.08-0.14	Moderate	.37	.37		
	28-60	27-42	1.60-1.90	0.01-0.20	0.01-0.12	Moderate	.32	.37		
NnB:										
Nappanee--------	0-8	20-27	1.30-1.50	0.60-2.00	0.20-0.24	Low	.37	.37	3	6
	8-28	45-60	1.40-1.65	0.06-0.20	0.08-0.14	Moderate	.37	.37		
	28-60	27-42	1.60-1.90	0.01-0.20	0.01-0.12	Moderate	.32	.37		
NnB2:										
Nappanee--------	0-8	20-27	1.30-1.50	0.60-2.00	0.20-0.24	Low	.37	.37	3	6
	8-28	45-60	1.40-1.65	0.06-0.20	0.08-0.14	Moderate	.37	.37		
	28-60	27-42	1.60-1.90	0.01-0.20	0.01-0.12	Moderate	.32	.37		
NpA:										
Nappanee--------	0-8	27-38	1.30-1.50	0.20-0.60	0.18-0.22	Moderate	.43	.43	4	6
	8-28	45-60	1.40-1.65	0.06-0.20	0.08-0.14	Moderate	.37	.37		
	28-60	27-42	1.60-1.90	0.01-0.20	0.01-0.12	Moderate	.32	.37		
NpB:										
Nappanee--------	0-8	27-38	1.30-1.50	0.20-0.60	0.18-0.22	Moderate	.43	.43	4	6
	8-28	45-60	1.40-1.65	0.06-0.20	0.08-0.14	Moderate	.37	.37		
	28-60	27-42	1.60-1.90	0.01-0.20	0.01-0.12	Moderate	.32	.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					
NpB2:										
Nappanee--------	0-8	27-38	1.30-1.50	0.20-0.60	0.18-0.22	Moderate	.43	.43	4	6
	8-28	45-60	1.40-1.65	0.06-0.20	0.08-0.14	Moderate	.37	.37		
	28-60	27-42	1.60-1.90	0.01-0.20	0.01-0.12	Moderate	.32	.37		
NsA:										
Nappanee--------	0-8	27-38	1.30-1.50	0.20-0.60	0.18-0.22	Moderate	.43	.43	4	6
	8-28	45-60	1.40-1.65	0.06-0.20	0.08-0.14	Moderate	.37	.37		
	28-60	27-42	1.60-1.90	0.01-0.20	0.01-0.12	Moderate	.32	.37		
Urban land------	---	---	---	---	---	---	---	---	-	---
OsB:										
Oshtemo---------	0-11	5-15	1.15-1.60	2.00-6.00	0.12-0.15	Low	.24	.24	5	3
	11-34	10-20	1.20-1.60	2.00-6.00	0.12-0.19	Low	.24	.32		
	34-44	5-15	1.20-1.60	2.00-6.00	0.08-0.10	Low	.17	.24		
	44-75	5-10	1.30-1.50	20.00-99.90	0.02-0.04	Low	.10	.24		
	75-80	27-42	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		
OtA:										
Ottokee---------	0-11	2-10	1.40-1.60	6.00-20.00	0.09-0.12	Low	.17	.17	5	2
	11-47	1-12	1.50-1.70	6.00-20.00	0.06-0.10	Low	.17	.17		
	47-60	1-8	1.50-1.70	6.00-20.00	0.03-0.06	Low	.15	.15		
Spinks----------	0-7	2-10	1.40-1.60	6.00-20.00	0.08-0.10	Low	.15	.17	5	2
	7-48	0-15	1.40-1.70	2.00-20.00	0.05-0.10	Low	.17	.17		
	48-60	3-15	1.40-1.70	2.00-6.00	0.04-0.08	Low	.17	.17		
OtB:										
Ottokee---------	0-11	2-10	1.40-1.60	6.00-20.00	0.09-0.12	Low	.17	.17	5	2
	11-47	1-12	1.50-1.70	6.00-20.00	0.06-0.10	Low	.17	.17		
	47-60	1-8	1.50-1.70	6.00-20.00	0.03-0.06	Low	.15	.15		
Spinks----------	0-7	2-10	1.40-1.60	6.00-20.00	0.08-0.10	Low	.15	.17	5	2
	7-48	0-15	1.40-1.70	2.00-20.00	0.05-0.10	Low	.17	.17		
	48-60	3-15	1.40-1.70	2.00-6.00	0.04-0.08	Low	.17	.17		
OzB:										
Ottokee---------	0-11	2-10	1.40-1.60	6.00-20.00	0.09-0.12	Low	.17	.17	5	2
	11-47	1-12	1.50-1.70	6.00-20.00	0.06-0.10	Low	.17	.17		
	47-60	1-8	1.50-1.70	6.00-20.00	0.03-0.06	Low	.15	.15		
Spinks----------	0-7	2-10	1.40-1.60	6.00-20.00	0.08-0.10	Low	.15	.17	5	2
	7-48	0-15	1.40-1.70	2.00-20.00	0.05-0.10	Low	.17	.17		
	48-60	3-15	1.40-1.70	2.00-6.00	0.04-0.08	Low	.17	.17		
Urban land------	---	---	---	---	---	---	---	---	-	---
Pt:										
Pits, Quarry----	---	---	---	---	---	---	---	---	-	---
RbA:										
Randolph--------	0-10	16-27	1.30-1.45	0.60-2.00	0.17-0.22	Low	.37	.37	2	6
	10-32	35-50	1.40-1.65	0.20-0.60	0.13-0.16	Moderate	.28	.32		
	32-34	---	---	0.00-0.60	---	---	---	---		
RbB:										
Randolph--------	0-10	16-27	1.30-1.45	0.60-2.00	0.17-0.22	Low	.37	.37	2	6
	10-32	35-50	1.40-1.65	0.20-0.60	0.13-0.16	Moderate	.28	.32		
	32-34	---	---	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					
RdA:										
Randolph	0-10	16-27	1.30-1.45	0.60-2.00	0.17-0.22	Low	.37	.37	2	8
	10-32	35-50	1.40-1.65	0.20-0.60	0.13-0.16	Moderate	.28	.32		
	32-34	---	---	0.00-0.60	---	---	---	---		
ReA:										
Randolph	0-10	16-27	1.30-1.45	0.60-2.00	0.17-0.22	Low	.37	.37	2	6
	10-32	35-50	1.40-1.65	0.20-0.60	0.13-0.16	Moderate	.28	.32		
	32-34	---	---	0.00-0.60	---	---	---	---		
Urban land	---	---	---	---	---	---	---	---	-	---
RfA:										
Rimer	0-8	3-15	1.40-1.60	6.00-20.00	0.08-0.14	Low	.17	.17	4	2
	8-25	5-15	1.40-1.70	6.00-20.00	0.06-0.12	Low	.17	.17		
	25-27	7-18	1.50-1.70	2.00-6.00	0.12-0.17	Low	.20	.20		
	27-32	30-45	1.60-1.80	0.06-0.20	0.06-0.12	Moderate	.32	.37		
	32-60	27-42	1.60-1.90	0.01-0.20	0.01-0.10	Moderate	.32	.37		
Tedrow	0-14	2-10	1.40-1.60	6.00-20.00	0.08-0.12	Low	.17	.17	4	2
	14-34	2-8	1.50-1.70	6.00-20.00	0.07-0.11	Low	.17	.17		
	34-60	27-42	1.70-1.90	0.01-0.20	0.01-0.10	Moderate	.32	.37		
RfB:										
Rimer	0-8	3-15	1.40-1.60	6.00-20.00	0.08-0.14	Low	.17	.17	4	2
	8-25	5-15	1.40-1.70	6.00-20.00	0.06-0.12	Low	.17	.17		
	25-27	7-18	1.50-1.70	2.00-6.00	0.12-0.17	Low	.20	.20		
	27-32	30-45	1.60-1.80	0.06-0.20	0.06-0.12	Moderate	.32	.37		
	32-60	27-42	1.60-1.90	0.01-0.20	0.01-0.10	Moderate	.32	.37		
Tedrow	0-14	2-10	1.40-1.60	6.00-20.00	0.08-0.12	Low	.17	.17	4	2
	14-34	2-8	1.50-1.70	6.00-20.00	0.07-0.11	Low	.17	.17		
	34-60	27-42	1.70-1.90	0.01-0.20	0.01-0.10	Moderate	.32	.37		
RgA:										
Rimer	0-8	3-15	1.40-1.60	6.00-20.00	0.08-0.14	Low	.17	.17	4	2
	8-25	5-15	1.40-1.70	6.00-20.00	0.06-0.12	Low	.17	.17		
	25-27	7-18	1.50-1.70	2.00-6.00	0.12-0.17	Low	.20	.20		
	27-32	30-45	1.60-1.80	0.06-0.20	0.06-0.12	Moderate	.32	.37		
	32-60	27-42	1.60-1.90	0.01-0.20	0.01-0.10	Moderate	.32	.37		
Tedrow	0-14	2-10	1.40-1.60	6.00-20.00	0.08-0.12	Low	.17	.17	4	2
	14-34	2-8	1.50-1.70	6.00-20.00	0.07-0.11	Low	.17	.17		
	34-60	27-42	1.70-1.90	0.01-0.20	0.01-0.10	Moderate	.32	.37		
Urban land	---	---	---	---	---	---	---	---	-	---
RhA:										
Ritchey	0-8	18-27	1.20-1.40	0.60-2.00	0.22-0.24	Low	.37	.37	1	6
	8-16	25-35	1.35-1.60	0.60-2.00	0.14-0.20	Moderate	.37	.37		
	16-18	---	---	0.00-0.60	---	---	---	---		
RhB:										
Ritchey	0-8	18-27	1.20-1.40	0.60-2.00	0.22-0.24	Low	.37	.37	1	6
	8-16	25-35	1.35-1.60	0.60-2.00	0.14-0.20	Moderate	.37	.37		
	16-18	---	---	0.00-0.60	---	---	---	---		
RkA:										
Ritchey	0-8	18-27	1.20-1.40	0.60-2.00	0.22-0.24	Low	.37	.37	1	8
	8-16	25-35	1.35-1.60	0.60-2.00	0.14-0.20	Moderate	.37	.37		
	16-18	---	---	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					
RmA:										
Risingsun-------	0-9	0-0	0.20-0.80	0.20-6.00	0.35-0.45	Low	---	---	4	2
	9-11	20-35	1.30-1.65	0.20-2.00	0.18-0.24	Low	.28	.28		
	11-26	1-15	1.40-1.75	2.00-6.00	0.06-0.16	Low	.20	.20		
	26-43	27-35	1.60-1.75	0.06-0.60	0.07-0.10	Moderate	.32	.37		
	43-80	27-35	1.80-2.00	0.01-0.20	0.01-0.10	Moderate	.32	.37		
Rollersville----	0-12	2-15	1.40-1.60	2.00-6.00	0.10-0.14	Low	.17	.17	5	3
	12-26	1-15	1.40-1.75	2.00-6.00	0.06-0.16	Low	.20	.20		
	26-49	27-35	1.60-1.75	0.06-0.60	0.07-0.10	Moderate	.32	.37		
	49-80	27-35	1.80-2.00	0.01-0.20	0.01-0.10	Moderate	.32	.37		
RnA:										
Rollersville----	0-11	2-15	1.40-1.60	2.00-6.00	0.10-0.14	Low	.17	.17	5	3
	11-38	1-15	1.40-1.75	2.00-6.00	0.06-0.16	Low	.20	.20		
	38-52	27-35	1.60-1.75	0.06-0.60	0.07-0.10	Moderate	.32	.37		
	52-80	27-35	1.80-2.00	0.01-0.20	0.01-0.10	Moderate	.32	.37		
Risingsun-------	0-9	0-0	0.20-0.80	0.20-6.00	0.35-0.45	Low	---	---	4	2
	9-14	20-35	1.30-1.65	0.20-2.00	0.18-0.24	Low	.28	.28		
	14-27	1-15	1.40-1.75	2.00-6.00	0.06-0.16	Low	.20	.20		
	27-41	27-35	1.60-1.75	0.06-0.60	0.07-0.10	Moderate	.32	.37		
	41-80	27-35	1.80-2.00	0.01-0.20	0.01-0.10	Moderate	.32	.37		
RsA:										
Rossburg--------	0-18	13-27	1.20-1.50	0.60-2.00	0.19-0.24	Low	.28	.28	5	6
	18-36	18-27	1.25-1.60	0.60-2.00	0.15-0.22	Low	.37	.37		
	36-80	5-15	1.30-1.60	2.00-6.00	0.05-0.15	Low	.24	.32		
SdA:										
Seward----------	0-8	3-15	1.40-1.60	6.00-20.00	0.08-0.14	Low	.17	.17	4	2
	8-24	2-15	1.40-1.60	6.00-20.00	0.06-0.12	Low	.17	.17		
	24-40	5-18	1.50-1.70	2.00-6.00	0.12-0.17	Low	.20	.20		
	40-45	27-42	1.60-1.80	0.06-0.20	0.07-0.15	Moderate	.32	.37		
	45-60	27-42	1.60-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		
Ottokee---------	0-9	2-10	1.40-1.60	6.00-20.00	0.09-0.12	Low	.17	.17	4	2
	9-46	1-12	1.50-1.70	6.00-20.00	0.06-0.10	Low	.17	.17		
	46-60	27-42	1.70-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		
SdB:										
Seward----------	0-8	3-15	1.40-1.60	6.00-20.00	0.08-0.14	Low	.17	.17	4	2
	8-24	2-15	1.40-1.60	6.00-20.00	0.06-0.12	Low	.17	.17		
	24-40	5-18	1.50-1.70	2.00-6.00	0.12-0.17	Low	.20	.20		
	40-45	27-42	1.60-1.80	0.06-0.20	0.07-0.15	Moderate	.32	.37		
	45-60	27-42	1.60-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		
Ottokee---------	0-9	2-10	1.40-1.60	6.00-20.00	0.09-0.12	Low	.17	.17	4	2
	9-46	1-12	1.50-1.70	6.00-20.00	0.06-0.10	Low	.17	.17		
	46-60	27-42	1.70-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		
SeA:										
Shawtown--------	0-9	12-27	1.30-1.45	0.60-2.00	0.14-0.18	Low	.32	.37	4	5
	9-53	18-35	1.40-1.60	0.60-2.00	0.12-0.16	Low	.24	.28		
	53-66	3-15	1.30-1.70	6.00-20.00	0.02-0.07	Low	.17	.20		
	66-80	23-40	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		
SeB:										
Shawtown--------	0-9	12-27	1.30-1.45	0.60-2.00	0.14-0.18	Low	.28	.32	4	5
	9-53	18-35	1.40-1.60	0.60-2.00	0.12-0.16	Low	.24	.28		
	53-66	3-15	1.30-1.70	6.00-20.00	0.02-0.07	Low	.17	.20		
	66-80	23-40	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.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					
SgA:										
Shoals----------	0-8	18-27	1.30-1.60	0.60-2.00	0.20-0.24	Low	.24	.24	5	6
	8-31	18-33	1.40-1.70	0.60-2.00	0.15-0.22	Low	.32	.32		
	31-60	5-25	1.35-1.65	0.60-6.00	0.05-0.20	Low	.37	.37		
ShA:										
Shoals----------	0-8	18-27	1.30-1.60	0.60-2.00	0.20-0.24	Low	.24	.24	5	6
	8-31	18-33	1.40-1.70	0.60-2.00	0.15-0.22	Low	.32	.32		
	31-60	5-25	1.35-1.65	0.60-6.00	0.05-0.20	Low	.37	.37		
SkA:										
Shoals----------	0-8	27-32	1.30-1.60	0.60-2.00	0.21-0.23	Moderate	.20	.20	5	6
	8-31	18-33	1.40-1.70	0.60-2.00	0.15-0.22	Low	.32	.32		
	31-60	5-25	1.35-1.65	0.60-6.00	0.05-0.20	Low	.37	.37		
SmA:										
Shoals----------	0-8	18-27	1.30-1.60	0.60-2.00	0.20-0.24	Low	.24	.24	2	6
	8-31	18-33	1.40-1.70	0.60-2.00	0.15-0.22	Low	.32	.32		
	31-33	---	---	0.00-0.60	---	---	---	---		
Sloan----------	0-10	27-35	1.30-1.50	0.60-2.00	0.18-0.22	Moderate	.28	.28	3	6
	10-24	22-35	1.25-1.55	0.20-2.00	0.15-0.19	Low	.32	.37		
	24-26	---	---	0.00-0.60	---	---	---	---		
SnA:										
Sloan----------	0-10	15-27	1.20-1.40	0.60-2.00	0.19-0.24	Low	.28	.28	5	6
	10-26	22-35	1.25-1.55	0.20-2.00	0.15-0.19	Low	.32	.37		
	26-60	10-30	1.20-1.50	0.20-2.00	0.13-0.18	Low	.32	.43		
SoA:										
Sloan----------	0-11	27-35	1.30-1.50	0.60-2.00	0.18-0.22	Moderate	.28	.28	5	6
	11-58	22-35	1.25-1.55	0.20-2.00	0.15-0.19	Low	.32	.37		
	58-80	10-30	1.20-1.50	0.20-2.00	0.13-0.18	Low	.32	.43		
SpA:										
Sloan----------	0-10	27-35	1.30-1.50	0.60-2.00	0.18-0.22	Moderate	.28	.28	5	6
	10-26	22-35	1.25-1.55	0.20-2.00	0.15-0.19	Low	.32	.37		
	26-60	10-30	1.20-1.50	0.20-2.00	0.13-0.18	Low	.32	.43		
SrB:										
Spinks----------	0-7	2-10	1.40-1.60	6.00-20.00	0.08-0.10	Low	.10	.15	5	1
	7-38	0-15	1.40-1.70	2.00-20.00	0.05-0.10	Low	.17	.17		
	38-60	3-15	1.40-1.70	2.00-6.00	0.04-0.08	Low	.17	.17		
SrC:										
Spinks----------	0-7	2-10	1.40-1.60	6.00-20.00	0.08-0.10	Low	.10	.15	5	1
	7-38	0-15	1.40-1.70	2.00-20.00	0.05-0.10	Low	.17	.17		
	38-60	3-15	1.40-1.70	2.00-6.00	0.04-0.08	Low	.17	.17		
SrD:										
Spinks----------	0-7	2-10	1.40-1.60	6.00-20.00	0.08-0.10	Low	.10	.15	5	1
	7-38	0-15	1.40-1.70	2.00-20.00	0.05-0.10	Low	.17	.17		
	38-60	3-15	1.40-1.70	2.00-6.00	0.04-0.08	Low	.17	.17		
SsB:										
Spinks----------	0-7	2-10	1.40-1.60	6.00-20.00	0.08-0.10	Low	.17	.17	5	2
	7-38	0-15	1.40-1.70	2.00-20.00	0.05-0.10	Low	.17	.17		
	38-60	3-15	1.40-1.70	2.00-6.00	0.04-0.08	Low	.17	.17		
SsC:										
Spinks----------	0-7	2-10	1.40-1.60	6.00-20.00	0.08-0.10	Low	.17	.17	5	2
	7-38	0-15	1.40-1.70	2.00-20.00	0.05-0.10	Low	.17	.17		
	38-60	3-15	1.40-1.70	2.00-6.00	0.04-0.08	Low	.17	.17		

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					
StB:										
St. Clair-------	0-8	20-27	1.50-1.65	0.60-2.00	0.20-0.24	Low	.37	.37	3	6
	8-18	40-60	1.35-1.70	0.06-0.20	0.10-0.12	Moderate	.32	.37		
	18-42	35-55	1.60-1.75	0.06-0.20	0.09-0.11	Moderate	.32	.37		
	42-60	27-42	1.60-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		
StC2:										
St. Clair-------	0-8	20-27	1.50-1.65	0.60-2.00	0.20-0.24	Low	.37	.37	3	6
	8-18	40-60	1.35-1.70	0.06-0.20	0.10-0.12	Moderate	.32	.37		
	18-42	35-55	1.60-1.75	0.06-0.20	0.09-0.11	Moderate	.32	.37		
	42-60	27-42	1.60-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		
SuB2:										
St. Clair-------	0-8	27-40	1.50-1.60	0.20-0.60	0.17-0.23	Moderate	.43	.43	4	6
	8-18	40-60	1.35-1.70	0.06-0.20	0.10-0.12	Moderate	.32	.37		
	18-42	35-55	1.60-1.75	0.06-0.20	0.09-0.11	Moderate	.32	.37		
	42-60	27-42	1.60-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		
SuC2:										
St. Clair-------	0-8	27-40	1.50-1.60	0.20-0.60	0.17-0.23	Moderate	.43	.43	4	6
	8-18	40-60	1.35-1.70	0.06-0.20	0.10-0.12	Moderate	.32	.37		
	18-42	35-55	1.60-1.75	0.06-0.20	0.09-0.11	Moderate	.32	.37		
	42-60	27-42	1.60-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		
SuD2:										
St. Clair-------	0-8	27-40	1.50-1.60	0.20-0.60	0.17-0.23	Moderate	.43	.43	4	6
	8-18	40-60	1.35-1.70	0.06-0.20	0.10-0.12	Moderate	.32	.37		
	18-42	35-55	1.60-1.75	0.06-0.20	0.09-0.11	Moderate	.32	.37		
	42-60	27-42	1.60-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		
SuE2:										
St. Clair-------	0-8	27-40	1.50-1.60	0.20-0.60	0.17-0.23	Moderate	.43	.43	4	6
	8-18	40-60	1.35-1.70	0.06-0.20	0.10-0.12	Moderate	.32	.37		
	18-42	35-55	1.60-1.75	0.06-0.20	0.09-0.11	Moderate	.32	.37		
	42-60	27-42	1.60-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		
TeA:										
Tedrow----------	0-8	2-10	1.40-1.60	6.00-20.00	0.08-0.12	Low	.17	.17	5	2
	8-47	2-8	1.50-1.70	6.00-20.00	0.07-0.11	Low	.17	.17		
	47-60	1-8	1.50-1.70	6.00-20.00	0.05-0.07	Low	.17	.17		
TeB:										
Tedrow----------	0-8	2-10	1.40-1.60	6.00-20.00	0.08-0.12	Low	.17	.17	5	2
	8-47	2-8	1.50-1.70	6.00-20.00	0.07-0.11	Low	.17	.17		
	47-60	1-8	1.50-1.70	6.00-20.00	0.05-0.07	Low	.17	.17		
TfA:										
Tedrow----------	0-8	2-10	1.40-1.60	6.00-20.00	0.08-0.12	Low	.17	.17	5	2
	8-47	2-8	1.50-1.70	6.00-20.00	0.07-0.11	Low	.17	.17		
	47-60	1-8	1.50-1.70	6.00-20.00	0.05-0.07	Low	.17	.17		
Urban land------	---	---	---	---	---	---	---	---	-	---
TpA:										
Toledo----------	0-9	27-40	1.40-1.60	0.20-0.60	0.17-0.23	Moderate	.28	.28	5	6
	9-57	40-60	1.40-1.70	0.06-0.20	0.09-0.13	Moderate	.28	.28		
	57-60	35-60	1.45-1.75	0.06-0.20	0.08-0.12	Moderate	.32	.32		
TuA:										
Toledo----------	0-9	27-40	1.40-1.60	0.20-0.60	0.17-0.23	Moderate	.28	.28	5	6
	9-57	40-60	1.40-1.70	0.06-0.20	0.09-0.13	Moderate	.28	.28		
	57-60	35-60	1.45-1.75	0.06-0.20	0.08-0.12	Moderate	.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					
Urban land------	---	---	---	---	---	---	---	---	-	---
UcA:										
Udorthents------	---	---	---	---	---	---	---	---	-	---
UcE:										
Udorthents------	---	---	---	---	---	---	---	---	-	---
Ur:										
Urban land------	---	---	---	---	---	---	---	---	-	---
W:										
Water----------	---	---	---	---	---	---	---	---	-	---
WbA:										
Wabasha---------	0-9	40-45	1.35-1.55	0.20-0.60	0.14-0.18	Moderate	.32	.32	5	4
	9-50	40-55	1.35-1.65	0.06-0.20	0.12-0.16	Moderate	.32	.32		
	50-60	35-55	1.50-1.65	0.06-0.20	0.12-0.17	Moderate	.32	.32		
WmA:										
Wauseon---------	0-11	3-14	1.40-1.65	2.00-6.00	0.10-0.14	Low	.17	.17	4	2
	11-30	5-18	1.40-1.75	2.00-6.00	0.06-0.16	Low	.20	.20		
	30-60	27-42	1.60-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		
WnA:										
Wauseon---------	0-8	7-18	1.40-1.60	2.00-6.00	0.13-0.18	Low	.20	.20	4	3
	8-34	5-18	1.40-1.75	2.00-6.00	0.06-0.16	Low	.20	.20		
	34-59	1-8	1.50-1.70	6.00-20.00	0.05-0.07	Low	.15	.15		
	59-60	27-42	1.60-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		
WyA:										
Wauseon---------	0-11	7-18	1.40-1.60	2.00-6.00	0.13-0.18	Low	.20	.20	4	3
	11-30	5-18	1.40-1.75	2.00-6.00	0.06-0.16	Low	.20	.20		
	30-60	27-42	1.60-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		
WzA:										
Wauseon---------	0-11	7-18	1.40-1.60	2.00-6.00	0.13-0.18	Low	.20	.20	4	3
	11-30	5-18	1.40-1.75	2.00-6.00	0.06-0.16	Low	.20	.20		
	30-60	27-42	1.60-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		
Urban land------	---	---	---	---	---	---	---	---	-	---

TABLE 30.--CHEMICAL PROPERTIES OF THE SOILS

(Absence of an entry indicates that data were not estimated. See text on page 240 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
AgA:					
Alvada----------	0-10	5.6-7.3	3.0-8.0	13-32	0
	10-39	6.1-7.8	0.5-2.0	8.2-25	0-5
	39-46	6.1-7.8	0.5-1.0	8.2-21	0-15
	46-50	7.4-8.4	0.0-0.5	2.0-12	5-30
	50-80	7.4-8.4	0.0-0.5	8.8-22	15-30
AmA:					
Aurand----------	0-10	5.6-7.3	2.0-6.0	8.0-23	0
	10-30	5.6-7.8	0.5-2.0	8.2-25	0-5
	30-38	6.6-7.8	0.0-1.0	6.0-23	0-5
	38-59	7.4-8.4	0.0-0.5	11-26	0-20
	59-80	7.4-8.4	0.0-0.5	11-26	15-30
AnA:					
Aurand----------	0-11	5.6-7.3	2.0-6.0	8.8-28	0
	11-29	5.6-7.8	0.5-2.0	8.2-25	0-5
	29-33	6.6-7.8	0.0-1.0	6.0-23	0-5
	33-48	7.4-8.4	0.0-0.5	11-26	0-20
	48-80	7.4-8.4	0.0-0.5	11-26	15-30
AsA:					
Aurand----------	0-11	5.6-7.3	2.0-6.0	8.8-28	0
	11-25	5.6-7.8	0.5-2.0	8.2-25	0-5
	25-34	6.6-7.8	0.0-1.0	6.0-23	0-5
	34-51	7.4-8.4	0.0-0.5	11-26	0-20
	51-80	7.4-8.4	0.0-0.5	11-26	15-30
Urban land------	---	---	---	---	---
BeB:					
Belmore---------	0-8	5.6-7.3	1.0-3.0	5.2-15	0
	8-40	5.6-7.3	0.0-0.5	6.0-19	0-5
	40-60	7.4-8.4	0.0-0.5	1.2-10	10-30
BfB:					
Belmore---------	0-8	5.6-7.3	1.0-3.0	6.0-20	0
	8-40	5.6-7.3	0.0-0.5	6.0-19	0-5
	40-60	7.4-8.4	0.0-0.5	1.2-10	10-30
CaA:					
Castalia--------	0-7	7.4-8.4	3.0-8.0	11-28	5-20
	7-21	7.4-8.4	0.5-2.0	5.8-16	40-60
	21-23	---	---	---	---
CbB:					
Castalia--------	0-9	7.4-8.4	3.0-8.0	11-28	5-20
	9-16	7.4-8.4	0.5-2.0	5.8-16	40-60
	16-22	7.4-8.4	0.5-2.0	5.8-16	40-60
	22-24	---	---	---	---
Marblehead------	0-6	6.1-8.4	3.0-12	8.0-36	0-25
	6-8	---	---	---	---
CcA:					
Colwood---------	0-8	5.6-7.8	3.0-8.0	6.8-27	0
	8-38	6.1-7.8	0.5-1.0	8.2-23	0-5
	38-60	7.4-8.4	0.0-0.5	0.0-8.2	0-20

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
CdA:					
Colwood---------	0-8	5.6-7.8	3.0-8.0	8.8-32	0
	8-38	6.1-7.8	0.5-1.0	8.2-23	0-5
	38-60	7.4-8.4	0.0-0.5	0.0-8.2	0-20
CtA:					
Colwood---------	0-8	5.6-7.8	3.0-8.0	8.8-32	0
	8-38	6.1-7.8	0.5-1.0	8.2-23	0-5
	38-60	7.4-8.4	0.0-0.5	0.0-8.2	0-20
Urban land------	---	---	---	---	---
CvA:					
Cygnet----------	0-11	5.1-7.3	1.0-3.0	6.8-18	0
	11-30	5.1-7.3	0.5-1.0	8.2-23	0
	30-53	6.6-7.8	0.5-1.0	3.0-17	0-5
	53-80	7.4-8.4	0.0-0.5	11-26	20-35
CxB:					
Castalia--------	0-9	7.4-8.4	3.0-8.0	11-28	5-20
	9-16	7.4-8.4	0.5-2.0	5.8-16	40-60
	16-22	7.4-8.4	0.5-2.0	5.8-16	40-60
	22-24	---	---	---	---
Marblehead------	0-6	6.1-8.4	3.0-12	8.0-36	0-25
	6-8	---	---	---	---
Urban land------	---	---	---	---	---
DgA:					
Digby----------	0-7	5.6-7.3	1.0-3.0	4.8-17	0
	7-32	4.5-7.8	0.5-1.0	8.2-23	0-5
	32-60	7.4-8.4	0.0-0.5	1.2-10	10-30
DhA:					
Digby----------	0-7	5.6-7.3	1.0-3.0	6.8-18	0
	7-32	4.5-7.8	0.5-1.0	8.2-23	0-5
	32-60	7.4-8.4	0.0-0.5	1.2-10	10-30
DrA:					
Dunbridge-------	0-8	6.1-7.8	2.0-4.0	6.4-15	0-5
	8-14	6.1-7.8	0.5-1.0	2.6-9.2	0-15
	14-25	6.1-7.8	0.0-0.5	7.2-19	0-15
	25-27	---	---	---	---
DsA:					
Dunbridge-------	0-8	6.1-7.8	2.0-4.0	5.6-13	0-5
	8-14	6.1-7.8	0.5-1.0	2.6-9.2	0-15
	14-25	6.1-7.8	0.0-0.5	7.2-19	0-15
	25-27	---	---	---	---
Spinks----------	0-9	5.1-7.3	0.5-2.0	1.8-13	0
	9-51	5.1-7.3	0.0-0.5	0.0-10	0
	51-53	---	---	---	---
DsB:					
Dunbridge-------	0-8	6.1-7.8	2.0-4.0	5.6-13	0-5
	8-14	6.1-7.8	0.5-1.0	2.6-9.2	0-15
	14-25	6.1-7.8	0.0-0.5	7.2-19	0-15
	25-27	---	---	---	---
Spinks----------	0-9	5.1-7.3	0.5-2.0	1.8-13	0
	9-51	5.1-7.3	0.0-0.5	0.0-10	0
	51-53	---	---	---	---

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
EaA:					
Eel----------	0-8	6.1-7.3	1.0-3.0	9.2-22	0
	8-38	6.1-7.8	0.5-1.0	9.0-21	0-5
	38-60	6.6-8.4	0.5-1.0	4.2-17	0-20
EmA:					
Eel----------	0-8	6.1-7.3	1.0-3.0	9.2-22	0
	8-38	6.1-7.8	0.5-1.0	9.0-21	0-5
	38-60	6.6-8.4	0.5-1.0	4.2-17	0-20
EnA:					
Eel----------	0-9	6.1-7.3	1.0-3.0	9.2-22	0
	9-34	6.1-7.8	0.5-1.0	9.0-21	0-5
	34-36	---	---	---	---
FcA:					
Flatrock--------	0-11	5.6-7.3	1.0-3.0	9.2-22	0
	11-52	6.1-7.8	0.5-1.0	8.2-23	0-5
	52-80	6.6-8.4	0.5-1.0	7.0-23	0-20
FuA:					
Fulton----------	0-9	5.6-7.3	2.0-3.0	15-30	0
	9-32	5.1-7.8	0.5-1.0	19-38	0-5
	32-47	6.6-8.4	0.0-0.5	14-28	5-20
	47-68	7.4-8.4	0.0-0.5	11-22	10-30
	68-80	7.4-8.4	0.0-0.5	11-26	20-30
FuB:					
Fulton----------	0-7	5.6-7.3	2.0-3.0	15-30	0
	7-32	5.1-7.8	0.5-1.0	19-38	0-5
	32-41	6.6-8.4	0.0-0.5	14-28	5-20
	41-63	7.4-8.4	0.0-0.5	11-22	10-30
	63-80	7.4-8.4	0.0-0.5	11-26	20-30
FzA:					
Fulton----------	0-8	5.6-7.3	2.0-3.0	15-30	0
	8-28	5.1-7.8	0.5-1.0	19-38	0-5
	28-40	6.6-8.4	0.0-0.5	14-28	5-20
	40-64	7.4-8.4	0.0-0.5	11-22	10-30
	64-80	7.4-8.4	0.0-0.5	11-26	20-30
Urban land------	---	---	---	---	---
GmA:					
Genesee---------	0-9	6.1-7.8	1.0-3.0	9.2-22	0-4
	9-42	6.1-7.8	0.5-1.0	8.2-18	0-20
	42-60	6.6-8.4	0.5-1.0	5.0-17	0-20
GnA:					
Genesee---------	0-9	6.1-7.8	1.0-3.0	9.2-22	0-4
	9-42	6.1-7.8	0.5-1.0	8.2-18	0-20
	42-60	6.6-8.4	0.5-1.0	5.0-17	0-20
GpA:					
Granby----------	0-11	5.6-7.3	3.0-6.0	6.8-20	0
	11-33	5.6-7.8	0.5-1.0	1.0-10	0-5
	33-74	6.6-8.4	0.5-1.0	1.0-8.0	0-15
	74-80	7.4-8.4	0.0-0.5	11-26	15-30
HaA:					
Haney----------	0-7	5.6-7.3	1.0-3.0	4.8-17	0
	7-34	4.5-7.8	0.5-1.0	9.0-23	0-5
	34-60	7.4-8.4	0.0-0.5	1.2-10	10-30

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
HaB:					
Haney----------	0-7	5.6-7.3	1.0-3.0	4.8-17	0
	7-34	4.5-7.8	0.5-1.0	9.0-23	0-5
	34-60	7.4-8.4	0.0-0.5	1.2-10	10-30
HdA:					
Haney----------	0-7	5.6-7.3	1.0-3.0	6.8-18	0
	7-34	4.5-7.8	0.5-1.0	9.0-23	0-5
	34-60	7.4-8.4	0.0-0.5	1.2-10	10-30
HdB:					
Haney----------	0-7	5.6-7.3	1.0-3.0	6.8-18	0
	7-34	4.5-7.8	0.5-1.0	9.0-23	0-5
	34-60	7.4-8.4	0.0-0.5	1.2-10	10-30
HeA:					
Haskins---------	0-6	5.1-7.3	1.0-3.0	6.0-17	0
	6-36	5.1-7.3	0.5-1.0	7.2-22	0
	36-42	6.1-7.8	0.0-0.5	11-26	0-5
	42-60	7.4-8.4	0.0-0.5	11-26	18-30
Digby----------	0-8	5.6-7.3	1.0-3.0	4.8-17	0
	8-34	4.5-7.8	0.5-1.0	8.2-23	0-5
	34-37	7.4-8.4	0.0-0.5	1.2-10	10-30
	37-60	7.4-8.4	0.0-0.5	11-26	18-30
HeB:					
Haskins---------	0-6	5.1-7.3	1.0-3.0	6.0-17	0
	6-36	5.1-7.3	0.5-1.0	8.2-23	0
	36-42	6.1-7.8	0.0-0.5	11-26	0-5
	42-60	7.4-8.4	0.0-0.5	11-26	18-30
Digby----------	0-8	5.6-7.3	1.0-3.0	4.8-17	0
	8-34	4.5-7.8	0.5-1.0	8.2-23	0-5
	34-37	7.4-8.4	0.0-0.5	1.2-10	10-30
	37-60	7.4-8.4	0.0-0.5	11-26	18-30
HfA:					
Haskins---------	0-6	5.1-7.3	1.0-3.0	6.8-18	0
	6-36	5.1-7.3	0.0-0.5	7.2-22	0
	36-42	6.1-7.8	0.0-0.5	11-26	0-5
	42-60	7.4-8.4	0.0-0.5	11-26	18-30
Digby----------	0-8	5.6-7.3	1.0-3.0	6.8-18	0
	8-34	4.5-7.8	0.5-1.0	8.2-23	0-5
	34-37	7.4-8.4	0.0-0.5	1.2-10	10-30
	37-60	7.4-8.4	0.0-0.5	11-26	18-30
HfB:					
Haskins---------	0-6	5.1-7.3	1.0-3.0	6.8-18	0
	6-36	5.1-7.3	0.0-0.5	7.2-22	0
	36-42	6.1-7.8	0.0-0.5	11-26	0-5
	42-60	7.4-8.4	0.0-0.5	11-26	18-30
Digby----------	0-8	5.6-7.3	1.0-3.0	6.8-18	0
	8-34	4.5-7.8	0.5-1.0	8.2-23	0-5
	34-37	7.4-8.4	0.0-0.5	1.2-10	10-30
	37-60	7.4-8.4	0.0-0.5	11-26	18-30
HgA:					
Hoytville-------	0-9	6.1-7.3	3.0-6.0	17-36	0
	9-52	6.1-8.4	0.5-1.0	17-35	0-15
	52-60	7.4-8.4	0.5-1.0	15-32	15-30
	60-80	7.4-8.4	0.0-0.5	11-26	15-30

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
HhA:					
Hoytville-------	0-9	6.1-7.3	3.0-6.0	17-36	0
	9-41	6.1-8.4	0.5-1.0	17-35	0-15
	41-60	7.4-8.4	0.5-1.0	15-32	15-30
	60-80	7.4-8.4	0.0-0.5	11-26	15-30
HvA:					
Hoytville-------	0-8	6.1-7.3	3.0-6.0	22-41	0
	8-41	6.1-8.4	0.5-1.0	17-35	0-15
	41-60	7.4-8.4	0.5-1.0	15-32	15-30
	60-80	7.4-8.4	0.0-0.5	11-26	15-30
HwA:					
Hoytville-------	0-7	6.6-7.8	3.0-6.0	22-39	0-15
	7-18	6.6-7.8	0.5-2.0	17-37	0-15
	18-44	7.4-8.4	0.5-1.0	13-29	15-30
	44-60	7.4-8.4	0.0-0.5	11-26	15-30
HyA:					
Hoytville-------	0-9	6.1-7.3	3.0-6.0	17-36	0
	9-48	6.1-8.4	0.5-1.0	17-35	0-15
	48-57	7.4-8.4	0.5-1.0	15-32	15-30
	57-80	7.4-8.4	0.0-0.5	11-26	15-30
Urban land------	---	---	---	---	---
JoA:					
Joliet----------	0-6	6.1-8.4	4.0-5.0	19-31	0-20
	6-16	6.1-8.4	1.0-3.0	13-33	0-20
	16-18	---	---	---	---
KeA:					
Kibbie----------	0-16	5.6-7.3	0.5-3.0	2.0-15	0
	16-36	5.6-7.8	0.0-0.5	7.2-22	0-5
	36-60	7.4-8.4	0.0-0.5	0.8-12	10-35
KfA:					
Kibbie----------	0-10	5.6-7.3	1.0-3.0	2.8-18	0
	10-16	5.6-7.3	0.0-0.5	2.0-10	0
	16-36	5.6-7.8	0.0-0.5	7.2-22	0-5
	36-60	7.4-8.4	0.0-0.5	0.8-12	10-35
KfB:					
Kibbie----------	0-10	5.6-7.3	1.0-3.0	2.8-18	0
	10-16	5.6-7.3	0.0-0.5	2.0-10	0
	16-36	5.6-7.8	0.0-0.5	7.2-22	0-5
	36-60	7.4-8.4	0.0-0.5	0.8-12	10-35
KkA:					
Kibbie----------	0-10	5.6-7.3	1.0-3.0	2.8-18	0
	10-16	5.6-7.3	0.0-0.5	2.0-10	0
	16-36	5.6-7.8	0.0-0.5	7.2-22	0-5
	36-60	7.4-8.4	0.0-0.5	0.8-12	10-35
Urban land------	---	---	---	---	---
LbB:					
Landes----------	0-20	6.6-8.4	1.0-2.0	4.0-10	0-10
	20-32	6.6-8.4	0.0-2.0	2.0-15	0-10
	32-80	6.6-8.4	0.0-2.0	2.0-15	0-20

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
LdA:					
Latty----------	0-10	6.1-7.8	3.0-5.0	22-43	0
	10-41	6.1-7.8	0.5-1.0	19-38	0-5
	41-61	7.4-8.4	0.0-1.0	14-38	5-25
	61-80	7.4-8.4	0.0-0.5	11-26	15-30
LgA:					
Latty----------	0-8	6.1-7.8	3.0-5.0	22-43	0
	8-39	6.1-7.8	0.5-1.0	19-38	0-5
	39-76	7.4-8.4	0.0-1.0	14-38	5-25
	76-80	7.4-8.4	0.0-0.5	11-26	15-30
Urban land------	---	---	---	---	---
MbA:					
Millgrove-------	0-8	5.6-7.3	3.0-8.0	13-32	0
	8-21	6.1-7.8	0.5-1.0	8.2-23	0-5
	21-43	6.1-7.8	0.0-0.5	2.8-12	0-15
	43-60	7.4-8.4	0.0-0.5	1.2-10	10-30
McA:					
Mermill---------	0-8	5.6-7.3	3.0-6.0	11-24	0
	8-38	5.6-7.3	0.5-1.0	8.2-23	0
	38-60	6.6-8.4	0.0-0.5	11-26	0-30
MdA:					
Mermill---------	0-9	5.6-7.3	3.0-6.0	12-28	0
	9-28	5.6-7.3	0.5-1.0	8.2-23	0
	28-57	6.6-8.4	0.0-0.5	11-26	0-30
	57-80	7.4-8.4	0.0-0.5	11-26	15-30
MeA:					
Mermill---------	0-8	5.6-7.3	3.0-6.0	14-30	0
	8-38	5.6-7.3	0.5-1.0	8.2-23	0
	38-60	6.6-8.4	0.0-0.5	11-26	0-30
MfA:					
Mermill---------	0-9	5.6-7.3	3.0-6.0	12-28	0
	9-35	5.6-7.3	0.5-1.0	8.2-23	0
	35-46	6.6-8.4	0.0-0.5	11-26	0-30
	46-80	7.4-8.4	0.0-0.5	11-26	15-30
Aurand----------	0-11	5.6-7.3	2.0-6.0	8.8-28	0
	11-23	5.6-7.8	0.5-2.0	8.2-25	0-5
	23-29	6.6-7.8	0.0-1.0	6.0-23	0-5
	29-51	7.4-8.4	0.0-0.5	11-26	0-20
	51-80	7.4-8.4	0.0-0.5	11-26	15-30
MgA:					
Mermill---------	0-9	5.6-7.3	3.0-6.0	12-28	0
	9-32	5.6-7.3	0.5-1.0	8.2-23	0
	32-47	6.6-8.4	0.0-0.5	11-26	0-30
	47-80	7.4-8.4	0.0-0.5	11-26	15-30
Urban land------	---	---	---	---	---
MhA:					
Millsdale-------	0-7	6.1-7.3	4.0-7.0	19-35	0
	7-32	6.1-8.4	0.5-2.0	15-31	0-15
	32-34	---	---	---	---

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
MkA:					
Millsdale-------	0-7	6.1-7.3	4.0-7.0	19-35	0
	7-32	6.1-8.4	0.5-2.0	15-31	0-15
	32-34	---	---	---	---
MmA:					
Millsdale-------	0-7	6.1-7.3	4.0-7.0	19-35	0
	7-32	6.1-8.4	0.5-2.0	15-31	0-15
	32-34	---	---	---	---
Urban land------	---	---	---	---	---
MnA:					
Milton----------	0-6	5.1-7.3	1.0-3.0	7.2-22	0
	6-11	4.5-7.8	0.0-1.0	8.0-23	0
	11-26	6.1-7.8	0.0-0.5	14-31	0-15
	26-28	---	---	---	---
MnB:					
Milton----------	0-6	5.1-7.3	1.0-3.0	7.2-22	0
	6-11	4.5-7.8	0.0-1.0	8.0-23	0
	11-26	6.1-7.8	0.0-0.5	14-31	0-15
	26-28	---	---	---	---
NmA:					
Nappanee--------	0-8	5.1-7.3	1.0-3.0	6.0-17	0
	8-28	5.1-7.8	0.0-1.0	18-38	0-5
	28-60	7.4-8.4	0.0-0.5	11-26	10-30
NmB:					
Nappanee--------	0-8	5.1-7.3	1.0-3.0	6.0-17	0
	8-28	5.1-7.8	0.0-1.0	18-38	0-5
	28-60	7.4-8.4	0.0-0.5	11-26	10-30
NnA:					
Nappanee--------	0-8	5.1-7.3	1.0-3.0	10-22	0
	8-28	5.1-7.8	0.0-1.0	18-38	0-5
	28-60	7.4-8.4	0.0-0.5	11-26	10-30
NnB:					
Nappanee--------	0-8	5.1-7.3	1.0-3.0	10-22	0
	8-28	5.1-7.8	0.0-1.0	18-38	0-5
	28-60	7.4-8.4	0.0-0.5	11-26	10-30
NnB2:					
Nappanee--------	0-8	5.1-7.3	1.0-3.0	10-22	0
	8-28	5.1-7.8	0.0-1.0	18-38	0-5
	28-60	7.4-8.4	0.0-0.5	11-26	10-30
NpA:					
Nappanee--------	0-8	5.1-7.3	1.0-3.0	13-29	0
	8-28	5.1-7.8	0.0-1.0	18-38	0-5
	28-60	7.4-8.4	0.0-0.5	11-26	10-30
NpB:					
Nappanee--------	0-8	5.1-7.3	1.0-3.0	13-29	0
	8-28	5.1-7.8	0.0-1.0	18-38	0-5
	28-60	7.4-8.4	0.0-0.5	11-26	10-30
NpB2:					
Nappanee--------	0-8	5.1-7.3	1.0-3.0	13-29	0
	8-28	5.1-7.8	0.0-1.0	18-38	0-5
	28-60	7.4-8.4	0.0-0.5	11-26	10-30

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
NsA:					
Nappanee--------	0-8	5.1-7.3	1.0-3.0	13-29	0
	8-28	5.1-7.8	0.0-1.0	18-38	0-5
	28-60	7.4-8.4	0.0-0.5	11-26	10-30
Urban land------	---	---	---	---	---
OsB:					
Oshtemo---------	0-11	5.1-7.3	0.5-3.0	3.0-15	0
	11-34	5.1-7.3	0.0-0.5	4.0-13	0
	34-44	5.1-7.3	0.0-0.5	2.0-10	0
	44-75	7.4-8.4	0.0-0.5	2.0-7.0	10-25
	75-80	7.4-8.4	0.0-0.5	11-26	18-30
OtA:					
Ottokee---------	0-11	5.6-7.3	0.5-2.0	1.8-10	0
	11-47	5.6-7.3	0.0-1.0	0.4-9.2	0
	47-60	6.1-8.4	0.0-0.5	0.4-5.8	0-12
Spinks----------	0-7	5.1-7.3	0.5-2.0	1.8-13	0
	7-48	5.1-7.3	0.0-0.5	0.0-10	0
	48-60	5.1-7.8	0.0-0.5	1.2-10	0
OtB:					
Ottokee---------	0-11	5.6-7.3	0.5-2.0	1.8-10	0
	11-47	5.6-7.3	0.0-1.0	0.4-9.2	0
	47-60	6.1-8.4	0.0-0.5	0.4-5.8	0-12
Spinks----------	0-7	5.1-7.3	0.5-2.0	1.8-13	0
	7-48	5.1-7.3	0.0-0.5	0.0-10	0
	48-60	5.1-7.8	0.0-0.5	1.2-10	0
OzB:					
Ottokee---------	0-11	5.6-7.3	0.5-2.0	1.8-10	0
	11-47	5.6-7.3	0.0-1.0	0.4-9.2	0
	47-60	6.1-8.4	0.0-0.5	0.4-5.8	0-12
Spinks----------	0-7	5.1-7.3	0.5-2.0	1.8-13	0
	7-48	5.1-7.3	0.0-0.5	0.0-10	0
	48-60	5.1-7.8	0.0-0.5	1.2-10	0
Urban land------	---	---	---	---	---
Pt:					
Pits, Quarry----	---	---	---	---	---
RbA:					
Randolph--------	0-10	5.1-7.3	1.0-3.0	8.4-22	0
	10-32	5.1-7.8	0.0-0.5	14-31	0-15
	32-34	---	---	---	---
RbB:					
Randolph--------	0-10	5.1-7.3	1.0-3.0	8.4-22	0
	10-32	5.1-7.8	0.0-0.5	14-31	0-15
	32-34	---	---	---	---
RdA:					
Randolph--------	0-10	5.1-7.3	1.0-3.0	8.4-22	0
	10-32	5.1-7.8	0.0-0.5	14-31	0-15
	32-34	---	---	---	---
ReA:					
Randolph--------	0-10	5.1-7.3	1.0-3.0	8.4-22	0
	10-32	5.1-7.8	0.0-0.5	14-31	0-15
	32-34	---	---	---	---

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
Urban land------	---	---	---	---	---
RfA:					
Rimer----------	0-8	5.1-7.3	1.0-3.0	3.2-15	0
	8-25	5.1-7.3	0.5-1.0	3.0-11	0
	25-27	5.1-7.3	0.0-0.5	2.8-12	0
	27-32	6.1-7.8	0.0-0.5	12-28	0-15
	32-60	7.4-8.4	0.0-0.5	11-26	10-30
Tedrow----------	0-14	6.1-7.3	1.0-3.0	2.8-12	0
	14-34	5.6-8.4	0.0-0.5	0.8-5.8	0-5
	34-60	7.4-8.4	0.0-0.5	11-26	10-30
RfB:					
Rimer----------	0-8	5.1-7.3	1.0-3.0	3.2-15	0
	8-25	5.1-7.3	0.5-1.0	3.0-11	0
	25-27	5.1-7.3	0.0-0.5	2.8-12	0
	27-32	6.1-7.8	0.0-0.5	12-28	0-15
	32-60	7.4-8.4	0.0-0.5	11-26	10-30
Tedrow----------	0-14	6.1-7.3	1.0-3.0	2.8-12	0
	14-34	5.6-8.4	0.0-0.5	0.8-5.8	0-5
	34-60	7.4-8.4	0.0-0.5	11-26	10-30
RgA:					
Rimer----------	0-8	5.1-7.3	1.0-3.0	3.2-15	0
	8-25	5.1-7.3	0.5-1.0	3.0-11	0
	25-27	5.1-7.3	0.0-0.5	2.8-12	0
	27-32	6.1-7.8	0.0-0.5	12-28	0-15
	32-60	7.4-8.4	0.0-0.5	11-26	10-30
Tedrow----------	0-14	6.1-7.3	1.0-3.0	2.8-12	0
	14-34	5.6-8.4	0.0-0.5	0.8-5.8	0-5
	34-60	7.4-8.4	0.0-0.5	11-26	10-30
Urban land------	---	---	---	---	---
RhA:					
Ritchey---------	0-8	5.6-7.8	1.0-3.0	9.2-22	0
	8-16	6.6-8.4	0.5-1.0	11-23	0-20
	16-18	---	---	---	---
RhB:					
Ritchey---------	0-8	5.6-7.8	1.0-3.0	9.2-22	0
	8-16	6.6-8.4	0.5-1.0	11-23	0-20
	16-18	---	---	---	---
RkA:					
Ritchey---------	0-8	5.6-7.8	1.0-3.0	9.2-22	0
	8-16	6.6-8.4	0.5-1.0	11-23	0-20
	16-18	---	---	---	---
RmA:					
Risingsun-------	0-9	6.1-8.4	30-75	60-150	0-10
	9-11	6.6-8.4	5.0-15	18-51	5-40
	11-26	7.4-8.4	0.5-1.0	1.4-11	10-30
	26-43	7.4-8.4	0.0-1.0	11-23	10-30
	43-80	7.4-8.4	0.0-0.5	11-22	15-30
Rollersville----	0-12	7.4-8.4	3.0-7.0	6.8-23	5-20
	12-26	7.4-8.4	0.5-2.0	1.4-13	10-30
	26-49	7.4-8.4	0.0-1.0	11-23	10-30
	49-80	7.4-8.4	0.0-0.5	11-22	15-30

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
RnA:					
Rollersville----	0-11	7.4-8.4	3.0-7.0	6.8-23	5-20
	11-38	7.4-8.4	0.5-2.0	1.4-13	10-30
	38-52	7.4-8.4	0.0-1.0	11-23	10-30
	52-80	7.4-8.4	0.0-0.5	11-22	15-30
Risingsun-------	0-9	6.1-8.4	30-75	60-150	0-10
	9-14	6.6-8.4	5.0-15	18-51	5-40
	14-27	7.4-8.4	0.5-1.0	1.4-11	10-30
	27-41	7.4-8.4	0.0-1.0	11-23	10-30
	41-80	7.4-8.4	0.0-0.5	11-22	15-30
RsA:					
Rossburg--------	0-18	6.1-7.8	4.0-8.0	13-32	0-5
	18-36	6.1-7.8	0.5-2.0	8.2-20	0-10
	36-80	6.6-8.4	0.0-0.5	2.0-10	0-30
SdA:					
Seward----------	0-8	5.1-7.3	1.0-3.0	3.2-15	0
	8-24	5.1-7.3	0.5-1.0	1.8-11	0
	24-40	5.1-7.3	0.5-1.0	3.0-13	0
	40-45	6.1-7.8	0.0-0.5	11-26	0-15
	45-60	7.4-8.4	0.0-0.5	11-26	10-30
Ottokee---------	0-9	5.6-7.3	0.5-2.0	1.8-10	0
	9-46	5.6-7.3	0.0-1.0	0.4-9.2	0
	46-60	7.4-8.4	0.0-0.5	11-26	10-30
SdB:					
Seward----------	0-8	5.1-7.3	1.0-3.0	3.2-15	0
	8-24	5.1-7.3	0.5-1.0	1.8-11	0
	24-40	5.1-7.3	0.5-1.0	3.0-13	0
	40-45	6.1-7.8	0.0-0.5	11-26	0-15
	45-60	7.4-8.4	0.0-0.5	11-26	10-30
Ottokee---------	0-9	5.6-7.3	0.5-2.0	1.8-10	0
	9-46	5.6-7.3	0.0-1.0	0.4-9.2	0
	46-60	7.4-8.4	0.0-0.5	11-26	10-30
SeA:					
Shawtown--------	0-9	5.1-7.3	1.0-3.0	6.8-22	0
	9-53	5.1-7.3	0.0-0.5	7.2-22	0
	53-66	7.4-8.4	0.0-0.5	1.2-10	15-25
	66-80	7.4-8.4	0.0-0.5	9.2-25	15-30
SeB:					
Shawtown--------	0-9	5.1-7.3	1.0-3.0	6.8-22	0
	9-53	5.1-7.3	0.0-0.5	7.2-22	0
	53-66	7.4-8.4	0.0-0.5	1.2-10	15-25
	66-80	7.4-8.4	0.0-0.5	9.2-25	15-30
SgA:					
Shoals----------	0-8	6.6-7.8	2.0-4.0	11-24	0-5
	8-31	6.6-8.4	0.5-2.0	8.2-24	0-10
	31-60	6.6-8.4	0.5-1.0	3.0-17	0-25
ShA:					
Shoals----------	0-8	6.6-7.8	2.0-4.0	11-24	0-5
	8-31	6.6-8.4	0.5-2.0	8.2-24	0-10
	31-60	6.6-8.4	0.5-1.0	3.0-17	0-25
SkA:					
Shoals----------	0-8	6.6-7.8	2.0-4.0	15-27	0-5
	8-31	6.6-8.4	0.5-2.0	8.2-24	0-10
	31-60	6.6-8.4	0.5-1.0	3.0-17	0-25

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
SmA:					
Shoals----------	0-8	6.6-7.8	2.0-4.0	11-24	0-5
	8-31	6.6-8.4	0.5-2.0	8.2-24	0-10
	31-33	---	---	---	---
Sloan----------	0-10	6.1-7.8	3.0-6.0	17-33	0-5
	10-24	6.1-8.4	0.5-1.0	9.8-23	0-20
	24-26	---	---	---	---
SnA:					
Sloan----------	0-10	6.1-7.8	3.0-6.0	12-28	0-5
	10-26	6.1-8.4	0.5-1.0	9.8-23	0-20
	26-60	6.6-8.4	0.0-0.5	4.0-19	0-40
SoA:					
Sloan----------	0-11	6.1-7.8	3.0-6.0	17-33	0-5
	11-58	6.1-8.4	0.5-1.0	9.8-23	0-20
	58-80	6.6-8.4	0.0-0.5	4.0-19	0-40
SpA:					
Sloan----------	0-10	6.1-7.8	3.0-6.0	17-33	0-5
	10-26	6.1-8.4	0.5-1.0	9.8-23	0-20
	26-60	6.6-8.4	0.0-0.5	4.0-19	0-40
SrB:					
Spinks----------	0-7	5.1-7.3	0.5-2.0	1.8-13	0
	7-38	5.1-7.3	0.0-0.5	0.0-10	0
	38-60	5.1-7.8	0.0-0.5	1.2-10	0
SrC:					
Spinks----------	0-7	5.1-7.3	0.5-2.0	1.8-13	0
	7-38	5.1-7.3	0.0-0.5	0.0-10	0
	38-60	5.1-7.8	0.0-0.5	1.2-10	0
SrD:					
Spinks----------	0-7	5.1-7.3	0.5-2.0	1.8-13	0
	7-38	5.1-7.3	0.0-0.5	0.0-10	0
	38-60	5.1-7.8	0.0-0.5	1.2-10	0
SsB:					
Spinks----------	0-7	5.1-7.3	0.5-2.0	1.8-13	0
	7-38	5.1-7.3	0.0-0.5	0.0-10	0
	38-60	5.1-7.8	0.0-0.5	1.2-10	0
SsC:					
Spinks----------	0-7	5.1-7.3	0.5-2.0	1.8-13	0
	7-38	5.1-7.3	0.0-0.5	0.0-10	0
	38-60	5.1-7.8	0.0-0.5	1.2-10	0
StB:					
St. Clair-------	0-8	5.6-7.3	1.0-3.0	10-22	0
	8-18	5.6-7.3	0.0-0.5	16-37	0
	18-42	7.4-8.4	0.0-0.5	14-34	15-30
	42-60	7.4-8.4	0.0-0.5	11-26	15-30
StC2:					
St. Clair-------	0-8	5.6-7.3	1.0-3.0	10-22	0
	8-18	5.6-7.3	0.0-0.5	16-37	0
	18-42	7.4-8.4	0.0-0.5	14-34	15-30
	42-60	7.4-8.4	0.0-0.5	11-26	15-30

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
SuB2:					
St. Clair-------	0-8	5.6-7.3	0.5-2.0	12-28	0
	8-18	5.6-7.3	0.0-0.5	16-37	0
	18-42	7.4-8.4	0.0-0.5	14-34	15-30
	42-60	7.4-8.4	0.0-0.5	11-26	15-30
SuC2:					
St. Clair-------	0-8	5.6-7.3	0.5-2.0	12-28	0
	8-18	5.6-7.3	0.0-0.5	16-37	0
	18-42	7.4-8.4	0.0-0.5	14-34	15-30
	42-60	7.4-8.4	0.0-0.5	11-26	15-30
SuD2:					
St. Clair-------	0-8	5.6-7.3	0.5-2.0	12-28	0
	8-18	5.6-7.3	0.0-0.5	16-37	0
	18-42	7.4-8.4	0.0-0.5	14-34	15-30
	42-60	7.4-8.4	0.0-0.5	11-26	15-30
SuE2:					
St. Clair-------	0-8	5.6-7.3	0.5-2.0	12-28	0
	8-18	5.6-7.3	0.0-0.5	16-37	0
	18-42	7.4-8.4	0.0-0.5	14-34	15-30
	42-60	7.4-8.4	0.0-0.5	11-26	15-30
TeA:					
Tedrow----------	0-8	6.1-7.3	1.0-3.0	2.8-12	0
	8-47	5.6-8.4	0.0-0.5	0.8-5.8	0-5
	47-60	6.6-8.4	0.0-0.5	0.4-5.8	0-10
TeB:					
Tedrow----------	0-8	6.1-7.3	1.0-3.0	2.8-12	0
	8-47	5.6-8.4	0.0-0.5	0.8-5.8	0-5
	47-60	6.6-8.4	0.0-0.5	0.4-5.8	0-10
TfA:					
Tedrow----------	0-8	6.1-7.3	1.0-3.0	2.8-12	0
	8-47	5.6-8.4	0.0-0.5	0.8-5.8	0-5
	47-60	6.6-8.4	0.0-0.5	0.4-5.8	0-10
Urban land------	---	---	---	---	---
TpA:					
Toledo----------	0-9	5.6-7.3	3.0-6.0	17-36	0
	9-57	6.1-7.8	0.5-1.0	17-38	0-5
	57-60	7.4-8.4	0.0-0.5	14-37	8-22
TuA:					
Toledo----------	0-9	5.6-7.3	3.0-6.0	17-36	0
	9-57	6.1-7.8	0.5-1.0	17-38	0-5
	57-60	7.4-8.4	0.0-0.5	14-37	8-22
Urban land------	---	---	---	---	---
UcA:					
Udorthents------	---	---	---	---	---
UcE:					
Udorthents------	---	---	---	---	---
Ur:					
Urban land------	---	---	---	---	---
W:					
Water----------	---	---	---	---	---

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
WbA:					
Wabasha---------	0-9	6.1-7.8	3.0-6.0	22-39	0
	9-50	6.1-7.8	0.5-1.0	17-35	0-5
	50-60	6.1-8.4	0.0-0.5	14-34	0-15
WmA:					
Wauseon---------	0-11	6.1-7.3	3.0-7.0	7.2-22	0
	11-30	6.6-7.8	0.0-1.0	2.0-13	0-5
	30-60	7.4-8.4	0.0-0.5	11-26	15-30
WnA:					
Wauseon---------	0-8	6.1-7.3	4.0-8.0	11-27	0
	8-34	6.6-7.8	0.0-1.0	2.0-13	0-5
	34-59	6.6-8.4	0.0-0.5	0.4-5.8	0-25
	59-60	7.4-8.4	0.0-0.5	11-26	15-30
WyA:					
Wauseon---------	0-11	6.1-7.3	4.0-8.0	11-27	0
	11-30	6.6-7.8	0.0-1.0	2.0-13	0-5
	30-60	7.4-8.4	0.0-0.5	11-26	15-30
WzA:					
Wauseon---------	0-11	6.1-7.3	4.0-8.0	11-27	0
	11-30	6.6-7.8	0.0-1.0	2.0-13	0-5
	30-60	7.4-8.4	0.0-0.5	11-26	15-30
Urban land------	---	---	---	---	---

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 241 for additional information.)

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
AgA:										
Alvada----------	B	Jan-May	0.0-1.0	3.3-5.0	Perched	0.0-1.0	Brief	Occasional	---	None
		Jun-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.0-1.0	3.3-5.0	Perched	0.0-1.0	Brief	Occasional	---	None
AmA:										
Aurand----------	C	Jan-May	0.5-1.5	3.3-5.0	Perched	---	---	None	---	None
		Jun-Nov	---	---	---	---	---	None	---	None
		Dec	0.5-1.5	3.3-5.0	Perched	---	---	None	---	None
AnA:										
Aurand----------	C	Jan-May	0.5-1.5	3.3-5.0	Perched	---	---	None	---	None
		Jun-Nov	---	---	---	---	---	None	---	None
		Dec	0.5-1.5	3.3-5.0	Perched	---	---	None	---	None
AsA:										
Aurand----------	C	Jan-May	0.5-1.5	3.3-5.0	Perched	---	---	None	---	None
		Jun-Nov	---	---	---	---	---	None	---	None
		Dec	0.5-1.5	3.3-5.0	Perched	---	---	None	---	None
BeB:										
Belmore----------	B	Jan-Apr	2.5-3.5	>5.0	Apparent	---	---	None	---	None
		May-Nov	---	---	---	---	---	None	---	None
		Dec	2.5-3.5	>5.0	Apparent	---	---	None	---	None
BfB:										
Belmore----------	B	Jan-Apr	2.5-3.5	>5.0	Apparent	---	---	None	---	None
		May-Nov	---	---	---	---	---	None	---	None
		Dec	2.5-3.5	>5.0	Apparent	---	---	None	---	None
CaA:										
Castalia---------	C	Jan-Dec	>1.7	>1.7	---	---	---	None	---	None
CbB:										
Castalia---------	C	Jan-Dec	>1.8	>1.8	---	---	---	None	---	None
Marblehead------	C	Jan-Dec	>0.5	>0.5	---	---	---	None	---	None
CcA:										
Colwood----------	B	Jan-May	0.0-1.0	>5.0	Apparent	0.0-1.0	Long	Frequent	---	None
		Jun-Sep	---	---	---	---	---	None	---	None
		Oct-Dec	0.0-1.0	>5.0	Apparent	0.0-1.0	Long	Frequent	---	None
CdA:										
Colwood----------	B	Jan-May	0.0-1.0	>5.0	Apparent	0.0-1.0	Long	Frequent	---	None
		Jun-Sep	---	---	---	---	---	None	---	None
		Oct-Dec	0.0-1.0	>5.0	Apparent	0.0-1.0	Long	Frequent	---	None
CtA:										
Colwood----------	B	Jan-May	0.0-1.0	>5.0	Apparent	0.0-1.0	Long	Frequent	---	None
		Jun-Sep	---	---	---	---	---	None	---	None
		Oct-Dec	0.0-1.0	>5.0	Apparent	0.0-1.0	Long	Frequent	---	None
CvA:										
Cygnet----------	B	Jan-Apr	1.0-2.0	3.3-5.0	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
CxB:										
Castalia---------	C	Jan-Dec	>1.8	>1.8	---	---	---	None	---	None
Marblehead------	C	Jan-Dec	>0.5	>0.5	---	---	---	None	---	None
DgA:										
Digby----------	B	Jan-May	0.5-1.5	>5.0	Apparent	---	---	None	---	None
		Jun-Dec	---	---	---	---	---	None	---	None

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
DhA:										
Digby----------	B	Jan-May	0.5-1.5	>5.0	Apparent	---	---	None	---	None
		Jun-Dec	---	---	---	---	---	None	---	None
DrA:										
Dunbridge-------	B	Jan-Dec	>2.5	>2.5	---	---	---	None	---	None
DsA:										
Dunbridge-------	B	Jan-Dec	>2.1	>2.1	---	---	---	None	---	None
Spinks----------	A	Jan-Dec	>4.2	>4.2	---	---	---	None	---	None
DsB:										
Dunbridge-------	B	Jan-Dec	>2.1	>2.1	---	---	---	None	---	None
Spinks----------	A	Jan-Dec	>4.2	>4.2	---	---	---	None	---	None
EaA:										
Eel----------	B	Jan-Apr	1.5-2.0	>5.0	Apparent	---	---	None	Brief	Frequent
		May-Jun	---	---	---	---	---	None	Brief	Frequent
		Jul-Sep	---	---	---	---	---	None	---	None
		Oct-Dec	---	---	---	---	---	None	Brief	Frequent
EmA:										
Eel----------	B	Jan-Apr	1.5-2.0	>5.0	Apparent	---	---	None	Brief	Frequent
		May-Jun	---	---	---	---	---	None	Brief	Frequent
		Jul-Sep	---	---	---	---	---	None	---	None
		Oct-Dec	---	---	---	---	---	None	Brief	Frequent
EnA:										
Eel----------	B	Jan-Apr	1.5-2.0	>2.8	Apparent	---	---	None	Brief	Frequent
		May-Jun	---	---	---	---	---	None	Brief	Frequent
		Jul-Sep	---	---	---	---	---	None	---	None
		Oct-Dec	---	---	---	---	---	None	Brief	Frequent
FcA:										
Flatrock--------	B	Jan-Apr	1.0-2.0	>6.0	Apparent	---	---	None	Brief	Occasional
		May-Nov	---	---	---	---	---	None	---	None
		Dec	1.0-2.0	>6.0	Apparent	---	---	None	Brief	Occasional
FuA:										
Fulton----------	D	Jan-May	0.5-1.0	3.3-5.0	Perched	---	---	None	---	None
		Jun-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.5-1.0	3.3-5.0	Perched	---	---	None	---	None
FuB:										
Fulton----------	D	Jan-May	0.5-1.0	3.3-5.0	Perched	---	---	None	---	None
		Jun-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.5-1.0	3.3-5.0	Perched	---	---	None	---	None
FzA:										
Fulton----------	D	Jan-May	0.5-1.0	3.3-5.0	Perched	---	---	None	---	None
		Jun-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.5-1.0	3.3-5.0	Perched	---	---	None	---	None
GmA:										
Genesee---------	B	Jan-Jun	>2.0	>2.0	---	---	---	None	Brief	Frequent
		Jul-Sep	>2.0	>2.0	---	---	---	None	---	None
		Oct-Dec	>2.0	>2.0	---	---	---	None	Brief	Frequent
GnA:										
Genesee---------	B	Jan-Jun	>2.0	>2.0	---	---	---	None	Brief	Frequent
		Jul-Sep	>2.0	>2.0	---	---	---	None	---	None
		Oct-Dec	>2.0	>2.0	---	---	---	None	Brief	Frequent
GpA:										
Granby----------	A	Jan-Jun	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Occasional	---	None
		Jul-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Occasional	---	None

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
HaA:										
Haney----------	B	Jan-Apr	2.5-3.0	>5.0	Apparent	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
HaB:										
Haney----------	B	Jan-Apr	2.5-3.0	>5.0	Apparent	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
HdA:										
Haney----------	B	Jan-Apr	2.5-3.0	>5.0	Apparent	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
HdB:										
Haney----------	B	Jan-Apr	2.5-3.0	>5.0	Apparent	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
HeA:										
Haskins---------	C	Jan-Apr	0.5-1.5	2.1-4.6	Perched	---	---	None	---	None
		May-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.5-1.5	2.1-4.6	Perched	---	---	None	---	None
Digby----------	C	Jan-Apr	0.5-1.5	1.5-3.5	Perched	---	---	None	---	None
		May-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.5-1.5	1.5-3.5	Perched	---	---	None	---	None
HeB:										
Haskins---------	C	Jan-Apr	0.5-1.5	2.1-4.6	Perched	---	---	None	---	None
		May-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.5-1.5	2.1-4.6	Perched	---	---	None	---	None
Digby----------	C	Jan-Apr	0.5-1.5	1.5-3.5	Perched	---	---	None	---	None
		May-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.5-1.5	1.5-3.5	Perched	---	---	None	---	None
HfA:										
Haskins---------	C	Jan-Apr	0.5-1.5	2.1-4.6	Perched	---	---	None	---	None
		May-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.5-1.5	2.1-4.6	Perched	---	---	None	---	None
Digby----------	C	Jan-Apr	0.5-1.5	1.5-3.5	Perched	---	---	None	---	None
		May-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.5-1.5	1.5-3.5	Perched	---	---	None	---	None
HfB:										
Haskins---------	C	Jan-Apr	0.5-1.5	2.1-4.6	Perched	---	---	None	---	None
		May-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.5-1.5	2.1-4.6	Perched	---	---	None	---	None
Digby----------	C	Jan-Apr	0.5-1.5	1.5-3.5	Perched	---	---	None	---	None
		May-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.5-1.5	1.5-3.5	Perched	---	---	None	---	None
HgA:										
Hoytville-------	C	Jan-Apr	0.0-1.0	3.3-5.4	Perched	0.0-1.0	Brief	Frequent	---	None
		May-Dec	---	---	---	---	---	None	---	None
HhA:										
Hoytville-------	C	Jan-Apr	0.0-1.0	3.3-5.4	Perched	0.0-1.0	Brief	Frequent	---	None
		May-Dec	---	---	---	---	---	None	---	None
HvA:										
Hoytville-------	C	Jan-Apr	0.0-1.0	3.3-5.4	Perched	0.0-1.0	Brief	Frequent	---	None
		May-Dec	---	---	---	---	---	None	---	None
HwA:										
Hoytville-------	C	Jan-Apr	0.0-1.0	2.5-4.6	Perched	0.0-1.0	Long	Frequent	---	None
		May-Dec	---	---	---	---	---	None	---	None
HyA:										
Hoytville-------	C	Jan-Apr	0.0-1.0	3.3-5.4	Perched	0.0-1.0	Brief	Frequent	---	None
		May-Dec	---	---	---	---	---	None	---	None

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
JoA:										
Joliet----------	D	Jan-Feb	---	---	---	---	---	None	---	None
		Mar-Jun	0.0-1.0	>1.3	Apparent	---	---	None	---	None
		Jul-Dec	---	---	---	---	---	None	---	None
KeA:										
Kibbie----------	B	Jan-May	0.5-1.5	>5.0	Apparent	---	---	None	---	None
		Jun-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.5-1.5	>5.0	Apparent	---	---	None	---	None
KfA:										
Kibbie----------	B	Jan-May	0.5-1.5	>5.0	Apparent	---	---	None	---	None
		Jun-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.5-1.5	>5.0	Apparent	---	---	None	---	None
KfB:										
Kibbie----------	B	Jan-May	0.5-1.5	>5.0	Apparent	---	---	None	---	None
		Jun-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.5-1.5	>5.0	Apparent	---	---	None	---	None
KkA:										
Kibbie----------	B	Jan-May	0.5-1.5	>5.0	Apparent	---	---	None	---	None
		Jun-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.5-1.5	>5.0	Apparent	---	---	None	---	None
LbB:										
Landes----------	B	Jan-Jun	>6.0	>6.0	---	---	---	None	Brief	Frequent
		Jul-Dec	>6.0	>6.0	---	---	---	None	---	None
LdA:										
Latty----------	D	Jan-Apr	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Frequent	---	None
		May-Dec	---	---	---	---	---	None	---	None
LgA:										
Latty----------	D	Jan-Apr	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Frequent	---	None
		May-Dec	---	---	---	---	---	None	---	None
MbA:										
Millgrove-------	B	Jan-May	0.0-1.0	>5.0	Apparent	0.0-1.0	Long	Frequent	---	None
		Jun-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.0-1.0	>5.0	Apparent	0.0-1.0	Long	Frequent	---	None
McA:										
Mermill---------	B	Jan-May	0.0-1.0	2.0-5.0	Perched	0.0-1.0	Long	Frequent	---	None
		Jun-Nov	---	---	---	---	---	None	---	None
		Dec	0.0-1.0	2.0-5.0	Perched	0.0-1.0	Long	Frequent	---	None
MdA:										
Mermill---------	B	Jan-May	0.0-1.0	2.0-5.0	Perched	0.0-1.0	Brief	Occasional	---	None
		Jun-Nov	---	---	---	---	---	None	---	None
		Dec	0.0-1.0	2.0-5.0	Perched	0.0-1.0	Brief	Occasional	---	None
MeA:										
Mermill---------	B	Jan-May	0.0-1.0	2.0-5.0	Perched	0.0-1.0	Long	Frequent	---	None
		Jun-Nov	---	---	---	---	---	None	---	None
		Dec	0.0-1.0	2.0-5.0	Perched	0.0-1.0	Long	Frequent	---	None
MfA:										
Mermill---------	B	Jan-May	0.0-1.0	2.0-5.0	Perched	0.0-1.0	Brief	Occasional	---	None
		Jun-Nov	---	---	---	---	---	None	---	None
		Dec	0.0-1.0	2.0-5.0	Perched	0.0-1.0	Brief	Occasional	---	None
Aurand----------	C	Jan-May	0.5-1.5	3.3-5.0	Perched	---	---	None	---	None
		Jun-Nov	---	---	---	---	---	None	---	None
		Dec	0.5-1.5	3.3-5.0	Perched	---	---	None	---	None

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
MgA:										
Mermill---------	B	Jan-May	0.0-1.0	2.0-5.0	Perched	0.0-1.0	Brief	Occasional	---	None
		Jun-Nov	---	---	---	---	---	None	---	None
		Dec	0.0-1.0	2.0-5.0	Perched	0.0-1.0	Brief	Occasional	---	None
MhA:										
Millsdale-------	C	Jan-May	0.0-1.0	>2.7	Apparent	0.0-1.0	Long	Frequent	---	None
		Jun-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.0-1.0	>2.7	Apparent	0.0-1.0	Long	Frequent	---	None
MkA:										
Millsdale-------	C	Jan-May	0.0-1.0	>2.7	Apparent	0.0-1.0	Long	Frequent	---	None
		Jun-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.0-1.0	>2.7	Apparent	0.0-1.0	Long	Frequent	---	None
MmA:										
Millsdale-------	C	Jan-May	0.0-1.0	>2.7	Apparent	0.0-1.0	Long	Frequent	---	None
		Jun-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.0-1.0	>2.7	Apparent	0.0-1.0	Long	Frequent	---	None
MnA:										
Milton----------	C	Jan-Dec	>2.2	>2.2	---	---	---	None	---	None
MnB:										
Milton----------	C	Jan-Dec	>2.2	>2.2	---	---	---	None	---	None
NmA:										
Nappanee--------	D	Jan-May	0.5-1.0	3.3-5.0	Perched	---	---	None	---	None
		Jun-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.5-1.0	3.3-5.0	Perched	---	---	None	---	None
NmB:										
Nappanee--------	D	Jan-May	0.5-1.0	3.3-5.0	Perched	---	---	None	---	None
		Jun-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.5-1.0	3.3-5.0	Perched	---	---	None	---	None
NnA:										
Nappanee--------	D	Jan-May	0.5-1.0	3.3-5.0	Perched	---	---	None	---	None
		Jun-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.5-1.0	3.3-5.0	Perched	---	---	None	---	None
NnB:										
Nappanee--------	D	Jan-May	0.5-1.0	3.3-5.0	Perched	---	---	None	---	None
		Jun-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.5-1.0	3.3-5.0	Perched	---	---	None	---	None
NnB2:										
Nappanee--------	D	Jan-May	0.5-1.0	3.3-5.0	Perched	---	---	None	---	None
		Jun-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.5-1.0	3.3-5.0	Perched	---	---	None	---	None
NpA:										
Nappanee--------	D	Jan-May	0.5-1.0	3.3-5.0	Perched	---	---	None	---	None
		Jun-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.5-1.0	3.3-5.0	Perched	---	---	None	---	None
NpB:										
Nappanee--------	D	Jan-May	0.5-1.0	3.3-5.0	Perched	---	---	None	---	None
		Jun-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.5-1.0	3.3-5.0	Perched	---	---	None	---	None
NpB2:										
Nappanee--------	D	Jan-May	0.5-1.0	3.3-5.0	Perched	---	---	None	---	None
		Jun-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.5-1.0	3.3-5.0	Perched	---	---	None	---	None
NsA:										
Nappanee--------	D	Jan-May	0.5-1.0	3.3-5.0	Perched	---	---	None	---	None
		Jun-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.5-1.0	3.3-5.0	Perched	---	---	None	---	None

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
OsB:										
Oshtemo---------	B	Jan-May	3.5-6.0	5.0-6.6	Perched	---	---	None	---	None
		Jun-Nov	---	---	---	---	---	None	---	None
		Dec	3.5-6.0	5.0-6.6	Perched	---	---	None	---	None
OtA:										
Ottokee---------	A	Jan-Apr	1.5-3.5	>5.0	Apparent	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
Spinks----------	A	Jan-Dec	>4.0	>4.0	---	---	---	None	---	None
OtB:										
Ottokee---------	A	Jan-Apr	1.5-3.5	>5.0	Apparent	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
Spinks----------	A	Jan-Dec	>4.0	>4.0	---	---	---	None	---	None
OzB:										
Ottokee---------	A	Jan-Apr	1.5-3.5	>5.0	Apparent	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
Spinks----------	A	Jan-Dec	>4.0	>4.0	---	---	---	None	---	None
Pt:										
Pits, quarry----	---	Jan-Dec	---	---	---	---	---	None	---	None
RbA:										
Randolph--------	C	Jan-Apr	0.5-1.0	>2.7	Apparent	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
RbB:										
Randolph--------	C	Jan-Apr	0.5-1.0	>2.7	Apparent	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
RdA:										
Randolph--------	C	Jan-Apr	0.5-1.0	>2.7	Apparent	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
ReA:										
Randolph--------	C	Jan-Apr	0.5-1.0	>2.7	Apparent	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
RfA:										
Rimer-----------	C	Jan-Apr	0.5-1.5	2.1-4.6	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
Tedrow----------	C	Jan-Apr	0.5-1.5	2.5-4.0	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
RfB:										
Rimer-----------	C	Jan-Apr	0.5-1.5	2.1-4.6	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
Tedrow----------	C	Jan-Apr	0.5-1.5	2.5-4.0	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
RgA:										
Rimer-----------	C	Jan-Apr	0.5-1.5	2.1-4.6	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
Tedrow----------	C	Jan-Apr	0.5-1.5	2.5-4.0	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
RhA:										
Ritchey---------	D	Jan-Dec	>1.3	>1.3	---	---	---	None	---	None

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
RhB:										
Ritchey---------	D	Jan-Dec	>1.3	>1.3	---	---	---	None	---	None
RkA:										
Ritchey---------	D	Jan-Dec	>1.3	>1.3	---	---	---	None	---	None
RmA:										
Risingsun-------	B	Jan-Apr	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Frequent	---	None
		May-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Frequent	---	None
Rollersville----	B	Jan-Apr	0.0-1.0	>6.0	Apparent	---	---	None	---	None
		May-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.0-1.0	>6.0	Apparent	---	---	None	---	None
RnA:										
Rollersville----	B	Jan-Apr	0.0-1.0	>6.0	Apparent	---	---	None	---	None
		May-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.0-1.0	>6.0	Apparent	---	---	None	---	None
Risingsun-------	B	Jan-Apr	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Frequent	---	None
		May-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Frequent	---	None
RsA:										
Rossburg--------	B	Jan-Jun	>6.0	>6.0	---	---	---	None	Brief	Frequent
		Jul-Oct	>6.0	>6.0	---	---	---	None	---	None
		Nov-Dec	>6.0	>6.0	---	---	---	None	Brief	Frequent
SdA:										
Seward----------	B	Jan-Apr	1.5-3.0	2.5-4.2	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
Ottokee---------	B	Jan-Apr	1.5-3.5	3.0-4.0	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
SdB:										
Seward----------	B	Jan-Apr	1.5-3.0	2.5-4.2	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
Ottokee---------	B	Jan-Apr	1.5-3.5	3.0-4.0	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
SeA:										
Shawtown--------	B	Jan-Apr	2.0-3.5	4.2-5.8	Perched	---	---	None	---	None
		May-Nov	---	---	---	---	---	None	---	None
		Dec	2.0-3.5	4.2-5.8	Perched	---	---	None	---	None
SeB:										
Shawtown--------	B	Jan-Apr	2.0-3.5	4.2-5.8	Perched	---	---	None	---	None
		May-Nov	---	---	---	---	---	None	---	None
		Dec	2.0-3.5	4.2-5.8	Perched	---	---	None	---	None
SgA:										
Shoals----------	C	Jan-Apr	0.5-2.0	>5.0	Apparent	---	---	None	Brief	Frequent
		May-Jun	---	---	---	---	---	None	Brief	Frequent
		Jul-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	---	---	---	---	---	None	Brief	Frequent
ShA:										
Shoals----------	C	Jan-Apr	0.5-2.0	>5.0	Apparent	---	---	None	Brief	Frequent
		May-Jun	---	---	---	---	---	None	Brief	Frequent
		Jul-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	---	---	---	---	---	None	Brief	Frequent

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
SkA:										
Shoals----------	C	Jan-Apr	0.5-2.0	>5.0	Apparent	---	---	None	Brief	Frequent
		May-Jun	---	---	---	---	---	None	Brief	Frequent
		Jul-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	---	---	---	---	---	None	Brief	Frequent
Sloan----------	B	Jan-Jun	0.0-1.0	>5.0	Apparent	0.0-1.0	Brief	Frequent	Brief	Frequent
		Jul-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.0-1.0	>5.0	Apparent	0.0-1.0	Brief	Frequent	Brief	Frequent
SrB:										
Spinks----------	A	Jan-Dec	>4.0	>4.0	---	---	---	None	---	None
SrC:										
Spinks----------	A	Jan-Dec	>4.0	>4.0	---	---	---	None	---	None
SrD:										
Spinks----------	A	Jan-Dec	>4.0	>4.0	---	---	---	None	---	None
SsB:										
Spinks----------	A	Jan-Dec	>4.0	>4.0	---	---	---	None	---	None
SsC:										
Spinks----------	A	Jan-Dec	>4.0	>4.0	---	---	---	None	---	None
StB:										
St. Clair-------	D	Jan-Feb	---	---	---	---	---	None	---	None
		Mar-May	1.5-3.0	1.7-4.0	Perched	---	---	None	---	None
		Jun-Dec	---	---	---	---	---	None	---	None
StC2:										
St. Clair-------	D	Jan-Feb	---	---	---	---	---	None	---	None
		Mar-May	1.5-3.0	1.7-4.0	Perched	---	---	None	---	None
		Jun-Dec	---	---	---	---	---	None	---	None
SuB2:										
St. Clair-------	D	Jan-Feb	---	---	---	---	---	None	---	None
		Mar-May	1.5-3.0	1.7-4.0	Perched	---	---	None	---	None
		Jun-Dec	---	---	---	---	---	None	---	None
SuC2:										
St. Clair-------	D	Jan-Feb	---	---	---	---	---	None	---	None
		Mar-May	1.5-3.0	1.7-4.0	Perched	---	---	None	---	None
		Jun-Dec	---	---	---	---	---	None	---	None
SuD2:										
St. Clair-------	D	Jan-Feb	---	---	---	---	---	None	---	None
		Mar-May	1.5-3.0	1.7-4.0	Perched	---	---	None	---	None
		Jun-Dec	---	---	---	---	---	None	---	None
SuE2:										
St. Clair-------	D	Jan-Feb	---	---	---	---	---	None	---	None
		Mar-May	1.5-3.0	1.7-4.0	Perched	---	---	None	---	None
		Jun-Dec	---	---	---	---	---	None	---	None
TeA:										
Tedrow----------	B	Jan-Apr	0.5-2.0	>5.0	Apparent	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
TeB:										
Tedrow----------	B	Jan-Apr	0.5-2.0	>5.0	Apparent	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
TfA:										
Tedrow----------	B	Jan-Apr	0.5-2.0	>5.0	Apparent	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None

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
TpA:										
Toledo----------	D	Jan-Apr	0.0-1.0	>5.0	Apparent	0.0-1.0	Long	Frequent	---	None
		May-Dec	---	---	---	---	---	None	---	None
TuA:										
Toledo----------	D	Jan-Apr	0.0-1.0	>5.0	Apparent	0.0-1.0	Long	Frequent	---	None
		May-Dec	---	---	---	---	---	None	---	None
UcA:										
Udorthents------	---	Jan-Dec	---	---	---	---	---	None	---	None
UcE:										
Udorthents------	---	Jan-Dec	---	---	---	---	---	None	---	None
Ur:										
Urban land------	---	Jan-Dec	---	---	---	---	---	None	---	None
WbA:										
Wabasha---------	D	Jan-May	0.0-1.0	>5.0	Apparent	0.0-1.0	Brief	Frequent	Long	Frequent
		Jun	0.0-1.0	>5.0	Apparent	0.0-1.0	Brief	Frequent	---	None
		Jul-Nov	---	---	---	---	---	None	---	None
		Dec	0.0-1.0	>5.0	Apparent	0.0-1.0	Brief	Frequent	---	None
WmA:										
Wauseon---------	B	Jan-Apr	0.0-1.0	2.0-3.3	Perched	0.0-1.0	Long	Frequent	---	None
		May-Dec	---	---	---	---	---	None	---	None
WnA:										
Wauseon---------	B	Jan-Apr	0.0-1.0	4.0-5.0	Perched	0.0-1.0	Long	Frequent	---	None
		May-Dec	---	---	---	---	---	None	---	None
WyA:										
Wauseon---------	B	Jan-Apr	0.0-1.0	2.0-3.3	Perched	0.0-1.0	Long	Frequent	---	None
		May-Dec	---	---	---	---	---	None	---	None
WzA:										
Wauseon---------	B	Jan-Apr	0.0-1.0	2.0-3.3	Perched	0.0-1.0	Long	Frequent	---	None
		May-Dec	---	---	---	---	---	None	---	None

TABLE 32.--SOIL FEATURES

(See text on page 242 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			
AgA:									
Alvada	---	> 80	---	---	---	---	High	High	Low.
AmA:									
Aurand	Dense material	40- 60	---	---	---	---	High	High	Moderate.
AnA:									
Aurand	Dense material	40- 60	---	---	---	---	High	High	Moderate.
AsA:									
Aurand	Dense material	40- 60	---	---	---	---	High	High	Moderate.
Urban land	---	---	---	---	---	---	---	---	---
BeB:									
Belmore	---	> 60	---	---	---	---	Moderate	Low	Low.
BfB:									
Belmore	---	> 60	---	---	---	---	Moderate	Low	Low.
CaA:									
Castalia	Bedrock (lithic)	20- 40	---	---	---	---	Moderate	Low	Low.
CbB:									
Castalia	Bedrock (lithic)	20- 40	---	---	---	---	Moderate	Low	Low.
Marblehead	Bedrock (lithic)	4- 10	---	---	---	---	Moderate	Low	Low.
CcA:									
Colwood	---	> 60	---	---	---	---	High	High	Low.
CdA:									
Colwood	---	> 60	---	---	---	---	High	High	Low.
CtA:									
Colwood	---	> 60	---	---	---	---	High	High	Low.
Urban land	---	---	---	---	---	---	---	---	---
CvA:									
Cygnet	Dense material	40- 60	---	---	---	---	High	Moderate	Moderate.
CxB:									
Castalia	Bedrock (lithic)	20- 40	---	---	---	---	Moderate	Low	Low.
Marblehead	Bedrock (lithic)	4- 10	---	---	---	---	Moderate	Low	Low.
Urban land	---	---	---	---	---	---	---	---	---
DgA:									
Digby	---	> 60	---	---	---	---	High	High	Moderate.
DhA:									
Digby	---	> 60	---	---	---	---	High	High	Moderate.
DrA:									
Dunbridge	Bedrock (lithic)	18- 42	---	---	---	---	Moderate	Low	Low.
DsA:									
Dunbridge	Bedrock (lithic)	18- 42	---	---	---	---	Moderate	Low	Low.
Spinks	Bedrock (lithic)	42- 60	---	---	---	---	Low	Low	Low.
DsB:									
Dunbridge	Bedrock (lithic)	18- 42	---	---	---	---	Moderate	Low	Low.
Spinks	Bedrock (lithic)	42- 60	---	---	---	---	Low	Low	Low.
EaA:									
Eel	---	> 60	---	---	---	---	High	Moderate	Low.
EmA:									
Eel	---	> 60	---	---	---	---	High	Moderate	Low.
EnA:									
Eel	Bedrock (lithic)	20- 42	---	---	---	---	High	Moderate	Low.
FcA:									
Flatrock	---	> 80	---	---	---	---	High	Moderate	Low.
FuA:									
Fulton	Dense material	60- 80	---	---	---	---	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			
FuB:									
Fulton	Dense material	60- 80	---	---	---	---	High	High	Moderate.
FzA:									
Fulton	Dense material	60- 80	---	---	---	---	High	High	Moderate.
Urban land	---	---	---	---	---	---	---	---	---
GmA:									
Genesee	---	> 60	---	---	---	---	Moderate	Low	Low.
GnA:									
Genesee	---	> 60	---	---	---	---	Moderate	Low	Low.
GpA:									
Granby	Dense material	60- 80	---	---	---	---	Moderate	High	Moderate.
HaA:									
Haney	---	> 60	---	---	---	---	High	Moderate	Low.
HaB:									
Haney	---	> 60	---	---	---	---	High	Moderate	Low.
HdA:									
Haney	---	> 60	---	---	---	---	High	Moderate	Low.
HdB:									
Haney	---	> 60	---	---	---	---	High	Moderate	Low.
HeA:									
Haskins	---	> 60	---	---	---	---	High	High	Moderate.
Digby	---	> 60	---	---	---	---	High	High	Moderate.
HeB:									
Haskins	---	> 60	---	---	---	---	High	High	Moderate.
Digby	---	> 60	---	---	---	---	High	High	Moderate.
HfA:									
Haskins	---	> 60	---	---	---	---	High	High	Moderate.
Digby	---	> 60	---	---	---	---	High	High	Moderate.
HfB:									
Haskins	---	> 60	---	---	---	---	High	High	Moderate.
Digby	---	> 60	---	---	---	---	High	High	Moderate.
HgA:									
Hoytville	Dense material	50- 70	---	---	---	---	High	High	Low.
HhA:									
Hoytville	Dense material	50- 70	---	---	---	---	High	High	Low.
HvA:									
Hoytville	Dense material	50- 70	---	---	---	---	High	High	Low.
HwA:									
Hoytville	---	> 60	---	---	---	---	High	High	Low.
HyA:									
Hoytville	Dense material	50- 70	---	---	---	---	High	High	Low.
Urban land	---	---	---	---	---	---	---	---	---
JoA:									
Joliet	Bedrock (lithic)	10- 20	---	---	---	---	High	High	Low.
KeA:									
Kibbie	---	> 60	---	---	---	---	High	High	Moderate.
KfA:									
Kibbie	---	> 60	---	---	---	---	High	High	Moderate.
KfB:									
Kibbie	---	> 60	---	---	---	---	High	High	Moderate.
KkA:									
Kibbie	---	> 60	---	---	---	---	High	High	Moderate.
Urban land	---	---	---	---	---	---	---	---	---
LbB:									
Landes	---	> 80	---	---	---	---	Moderate	Low	Low.
LdA:									
Latty	Dense material	60- 80	---	---	---	---	High	High	Low.

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			
LgA:									
Latty	Dense material	60- 80	---	---	---	---	High	High	Low.
Urban land	---	---	---	---	---	---	---	---	---
MbA:									
Millgrove	---	> 60	---	---	---	---	High	High	Low.
McA:									
Mermill	---	> 60	---	---	---	---	High	Moderate	Moderate.
MdA:									
Mermill	---	> 80	---	---	---	---	High	High	Moderate.
MeA:									
Mermill	---	> 60	---	---	---	---	High	Moderate	Moderate.
MfA:									
Mermill	---	> 80	---	---	---	---	High	High	Moderate.
Aurand	Dense material	40- 60	---	---	---	---	High	High	Moderate.
MgA:									
Mermill	---	> 80	---	---	---	---	High	High	Moderate.
Urban land	---	---	---	---	---	---	---	---	---
MhA:									
Millsdale	Bedrock (lithic)	20- 40	---	---	---	---	High	High	Low.
MkA:									
Millsdale	Bedrock (lithic)	20- 40	---	---	---	---	High	High	Low.
MmA:									
Millsdale	Bedrock (lithic)	20- 40	---	---	---	---	High	High	Low.
Urban land	---	---	---	---	---	---	---	---	---
MnA:									
Milton	Bedrock (lithic)	20- 40	---	---	---	---	Moderate	High	Moderate.
MnB:									
Milton	Bedrock (lithic)	20- 40	---	---	---	---	Moderate	High	Moderate.
NmA:									
Nappanee	---	> 60	---	---	---	---	High	High	Low.
NmB:									
Nappanee	---	> 60	---	---	---	---	High	High	Low.
NnA:									
Nappanee	---	> 60	---	---	---	---	High	High	Low.
NnB:									
Nappanee	---	> 60	---	---	---	---	High	High	Low.
NnB2:									
Nappanee	---	> 60	---	---	---	---	High	High	Low.
NpA:									
Nappanee	---	> 60	---	---	---	---	High	High	Low.
NpB:									
Nappanee	---	> 60	---	---	---	---	High	High	Low.
NpB2:									
Nappanee	---	> 60	---	---	---	---	High	High	Low.
NsA:									
Nappanee	---	> 60	---	---	---	---	High	High	Low.
Urban land	---	---	---	---	---	---	---	---	---
OsB:									
Oshtemo	Dense material	60- 80	---	---	---	---	Moderate	Low	Moderate.
OtA:									
Ottokee	---	> 60	---	---	---	---	Low	Low	Low.
Spinks	---	> 60	---	---	---	---	Low	Low	Low.
OtB:									
Ottokee	---	> 60	---	---	---	---	Low	Low	Low.
Spinks	---	> 60	---	---	---	---	Low	Low	Low.
OzB:									
Ottokee	---	> 60	---	---	---	---	Low	Low	Low.

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			
Spinks	---	> 60	---	---	---	---	Low	Low	Low.
Urban land	---	---	---	---	---	---	---	---	---
Pt:									
Pits, Quarry	---	---	---	---	---	---	---	---	---
RbA:									
Randolph	Bedrock (lithic)	20- 40	---	---	---	---	High	High	Moderate.
RbB:									
Randolph	Bedrock (lithic)	20- 40	---	---	---	---	High	High	Moderate.
RdA:									
Randolph	Bedrock (lithic)	20- 40	---	---	---	---	High	High	Moderate.
ReA:									
Randolph	Bedrock (lithic)	20- 40	---	---	---	---	High	High	Moderate.
Urban land	---	---	---	---	---	---	---	---	---
RfA:									
Rimer	---	> 60	---	---	---	---	High	High	Moderate.
Tedrow	---	> 60	---	---	---	---	Moderate	Low	Low.
RfB:									
Rimer	---	> 60	---	---	---	---	High	High	Moderate.
Tedrow	---	> 60	---	---	---	---	Moderate	Low	Low.
RgA:									
Rimer	---	> 60	---	---	---	---	High	High	Moderate.
Tedrow	---	> 60	---	---	---	---	Moderate	Low	Low.
Urban land	---	---	---	---	---	---	---	---	---
RhA:									
Ritchey	Bedrock (lithic)	10- 20	---	---	---	---	Moderate	Moderate	Low.
RhB:									
Ritchey	Bedrock (lithic)	10- 20	---	---	---	---	Moderate	Moderate	Low.
RkA:									
Ritchey	Bedrock (lithic)	10- 20	---	---	---	---	Moderate	Moderate	Low.
RmA:									
Risingsun	Dense material	40- 60	---	---	2-6	7-15	High	High	Low.
Rollersville	Dense material	40- 60	---	---	---	---	High	High	Low.
RnA:									
Rollersville	Dense material	40- 60	---	---	---	---	High	High	Low.
Risingsun	Dense material	40- 60	---	---	2-6	7-15	High	High	Low.
RsA:									
Rossburg	---	> 80	---	---	---	---	Moderate	Low	Low.
SdA:									
Seward	---	> 60	---	---	---	---	Moderate	High	Moderate.
Ottokee	---	> 60	---	---	---	---	Low	Low	Low.
SdB:									
Seward	---	> 60	---	---	---	---	Moderate	High	Moderate.
Ottokee	---	> 60	---	---	---	---	Low	Low	Low.
SeA:									
Shawtown	Dense material	50- 70	---	---	---	---	Moderate	Low	Moderate.
SeB:									
Shawtown	Dense material	50- 70	---	---	---	---	Moderate	Low	Moderate.
SgA:									
Shoals	---	> 60	---	---	---	---	High	High	Low.
ShA:									
Shoals	---	> 60	---	---	---	---	High	High	Low.
SkA:									
Shoals	---	> 60	---	---	---	---	High	High	Low.
SmA:									
Shoals	Bedrock (lithic)	20- 42	---	---	---	---	High	High	Low.
Sloan	Bedrock (lithic)	20- 42	---	---	---	---	High	High	Low.

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			
SnA:									
Sloan	---	> 60	---	---	---	---	High	High	Low.
SoA:									
Sloan	---	> 80	---	---	---	---	High	High	Low.
SpA:									
Sloan	---	> 60	---	---	---	---	High	High	Low.
SrB:									
Spinks	---	> 60	---	---	---	---	Low	Low	Low.
SrC:									
Spinks	---	> 60	---	---	---	---	Low	Low	Low.
SrD:									
Spinks	---	> 60	---	---	---	---	Low	Low	Low.
SsB:									
Spinks	---	> 60	---	---	---	---	Low	Low	Low.
SsC:									
Spinks	---	> 60	---	---	---	---	Low	Low	Low.
StB:									
St. Clair	---	> 60	---	---	---	---	Moderate	High	Moderate.
StC2:									
St. Clair	---	> 60	---	---	---	---	Moderate	High	Moderate.
SuB2:									
St. Clair	---	> 60	---	---	---	---	Moderate	High	Moderate.
SuC2:									
St. Clair	---	> 60	---	---	---	---	Moderate	High	Moderate.
SuD2:									
St. Clair	---	> 60	---	---	---	---	Moderate	High	Moderate.
SuE2:									
St. Clair	---	> 60	---	---	---	---	Moderate	High	Moderate.
TeA:									
Tedrow	---	> 60	---	---	---	---	Moderate	Low	Low.
TeB:									
Tedrow	---	> 60	---	---	---	---	Moderate	Low	Low.
TfA:									
Tedrow	---	> 60	---	---	---	---	Moderate	Low	Low.
Urban land	---	---	---	---	---	---	---	---	---
TpA:									
Toledo	---	> 60	---	---	---	---	High	High	Low.
TuA:									
Toledo	---	> 60	---	---	---	---	High	High	Low.
Urban land	---	---	---	---	---	---	---	---	---
UcA:									
Udorthents	---	---	---	---	---	---	---	---	---
UcE:									
Udorthents	---	---	---	---	---	---	---	---	---
Ur:									
Urban land	---	---	---	---	---	---	---	---	---
W:									
Water	---	---	---	---		---	---	---	---
WbA:									
Wabasha	---	> 60	---	---	---	---	High	High	Low.
WmA:									
Wauseon	---	> 60	---	---	---	---	High	High	Low.
WnA:									
Wauseon	---	> 60	---	---	---	---	High	High	Low.

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			
WyA:									
Wauseon	---	> 60	---	---	---	---	High	High	Low.
WzA:									
Wauseon	---	> 60	---	---	---	---	High	High	Low.
Urban land	---	---	---	---	---	---	---	---	---

TABLE 33.--CLASSIFICATION OF THE SOILS

(An asterisk in the first column indicates a taxadjunct to the series. See text on page 243 for a description of those characteristics that are outside the range of the series.)

Soil name	Family or higher taxonomic class
Alvada	Fine-loamy, mixed, active, mesic Typic Argiaquolls
Aurand	Fine-loamy, mixed, active, mesic Aquic Argiudolls
*Belmore	Fine-loamy, mixed, active, mesic Typic Hapludalfs
Castalia	Loamy-skeletal, carbonatic, mesic Inceptic Haprendolls
*Colwood	Fine-loamy, mixed, active, mesic Typic Endoaquolls
Cygnet	Fine-loamy, mixed, active, mesic Aquic Hapludalfs
Digby	Fine-loamy, mixed, active, mesic Aeric Endoaqualfs
Dunbridge	Fine-loamy, mixed, active, mesic Mollic Hapludalfs
Eel	Fine-loamy, mixed, superactive, mesic Fluvaquentic Eutrudepts
Flatrock	Fine-loamy, mixed, active, mesic Fluvaquentic Eutrudepts
Fulton	Fine, illitic, mesic Aeric Epiaqualfs
Genesee	Fine-loamy, mixed, superactive, mesic Fluventic Eutrudepts
Granby	Sandy, mixed, mesic Typic Endoaquolls
Haney	Fine-loamy, mixed, active, mesic Aquic Hapludalfs
Haskins	Fine-loamy, mixed, active, mesic Aeric Epiaqualfs
Hoytville	Fine, illitic, mesic Mollic Epiaqualfs
*Joliet	Loamy, mixed, superactive, mesic Lithic Endoaquolls
*Kibbie	Fine-loamy, mixed, active, mesic Aquollic Hapludalfs
Landes	Coarse-loamy, mixed, superactive, mesic Fluventic Hapludolls
Latty	Fine, illitic, nonacid, mesic Typic Endoaquepts
Marblehead	Loamy, mixed, superactive, mesic Lithic Hapludolls
Mermill	Fine-loamy, mixed, active, mesic Mollic Epiaqualfs
*Millgrove	Fine-loamy, mixed, superactive, mesic Typic Argiaquolls
*Millsdale	Fine, mixed, active, mesic Typic Argiaquolls
Milton	Fine, mixed, active, mesic Typic Hapludalfs
Nappanee	Fine, illitic, mesic Aeric Epiaqualfs
Oshtemo	Coarse-loamy, mixed, active, mesic Typic Hapludalfs
Ottokee	Mixed, mesic Aquic Udipsamments
Randolph	Fine, mixed, active, mesic Aeric Endoaqualfs
Rimer	Loamy, mixed, active, mesic Aquic Arenic Hapludalfs
Risingsun	Fine-loamy, mixed, superactive, calcareous, mesic Histic Humaquepts
Ritchey	Loamy, mixed, superactive, mesic Lithic Hapludalfs
Rollersville	Sandy over loamy, mixed, active, calcareous, mesic Typic Endoaquolls
Rossburg	Fine-loamy, mixed, superactive, mesic Fluventic Hapludolls
Seward	Coarse-loamy over clayey, mixed over illitic, active, mesic Oxyaquic Hapludalfs
Shawtown	Fine-loamy, mixed, active, mesic Oxyaquic Hapludalfs
Shoals	Fine-loamy, mixed, superactive, nonacid, mesic Fluvaquentic Endoaquepts
Sloan	Fine-loamy, mixed, superactive, mesic Fluvaquentic Endoaquolls
Spinks	Sandy, mixed, mesic Lamellic Hapludalfs
St. Clair	Fine, illitic, mesic Oxyaquic Hapludalfs
Tedrow	Mixed, mesic Aquic Udipsamments
Toledo	Fine, illitic, nonacid, mesic Mollic Endoaquepts
Udorthents	Loamy, mixed, mesic Typic Udorthents
Wabasha	Fine, illitic, nonacid, mesic Fluvaquentic Endoaquepts
Wauseon	Coarse-loamy over clayey, mixed over illitic, superactive, mesic Typic Epiaquolls

TABLE 34.--INTERPRETIVE GROUPS

(Unless otherwise indicated, a complex is treated as a single management unit in the 'Land capability' column. See pages 210-225 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 (p. 222)	Pasture and hayland suitability group (p. 223)	Prime farmland (p. 210}	Hydric)p.212)
AgA:	2w		Prime farmland if drained	
Alvada		C-1		Yes
AmA:	2w		Prime farmland if drained	
Aurand		C-1		No
AnA:	2w		Prime farmland if drained	
Aurand		C-1		No
AsA:	---		Not prime farmland	
Aurand		Not rated		No
Urban Land		Not rated		Unranked
BeB:	2e		All areas are prime farmland	
Belmore		A-1		No
BfB:	2e		All areas are prime farmland	
Belmore		A-1		No
CaA:	6s		Not prime farmland	
Castalia		F-1		No
CbB:	6s		Not prime farmland	
Castalia		F-1		No
Marblehead		E-1		No
CcA:	2w		Prime farmland if drained	
Colwood		C-1		Yes
CdA:	2w		Prime farmland if drained	
Colwood		C-1		Yes
CtA:	---		Not prime farmland	
Colwood		Not rated		Yes
Urban Land		Not rated		Unranked
CvA:	1		All areas are prime farmland	
Cygnet		A-6		No
CxB:	---		Not prime farmland	
Castalia		Not rated		No
Marblehead		Not rated		No
Urban Land		Not rated		Unranked

TABLE 34.--INTERPRETIVE GROUPS--Continued

Map symbol and soil name	Land capability classification	Pasture and hayland suitability group	Prime farmland	Hydric
DgA:	2w		Prime farmland if drained	
Digby		C-1		No
DhA:	2w		Prime farmland if drained	
Digby		C-1		No
DrA:	3s		All areas are prime farmland	
Dunbridge		F-1		No
DsA:	3s		Not prime farmland	
Dunbridge		F-1		No
Spinks		B-1		No
DsB:	3s		Not prime farmland	
Dunbridge		F-1		No
Spinks		B-1		No
EaA:	2w		Prime farmland if protected from flooding or not frequently flooded during the growing season	
Eel		A-5		No
EmA:	2w		Prime farmland if protected from flooding or not frequently flooded during the growing season	
Eel		A-5		No
EnA:	2w		Prime farmland if protected from flooding or not frequently flooded during the growing season	
Eel		A-5		No
FcA:	2w		All areas are prime farmland	
Flatrock		A-5		No
FuA:	3w		Prime farmland if drained	
Fulton		C-2		No
FuB:	3e		Prime farmland if drained	
Fulton		C-2		No
FzA:	---		Not prime farmland	
Fulton		Not rated		No
Urban Land		Not rated		Unranked

TABLE 34.--INTERPRETIVE GROUPS--Continued

Map symbol and soil name	Land capability classification	Pasture and hayland suitability group	Prime farmland	Hydric
GmA:	2w		Prime farmland if protected from flooding or not frequently flooded during the growing season	
Genesee		A-5		No
GnA:	2w		Prime farmland if protected from flooding or not frequently flooded during the growing season	
Genesee		A-5		No
GpA:	4w		Not prime farmland	
Granby		C-1		Yes
HaA:	1		All areas are prime farmland	
Haney		A-6		No
HaB:	2e		All areas are prime farmland	
Haney		A-6		No
HdA:	1		All areas are prime farmland	
Haney		A-6		No
HdB:	2e		All areas are prime farmland	
Haney		A-6		No
HeA:	2w		Prime farmland if drained	
Haskins		C-1		No
Digby		C-1		No
HeB:	2e		Prime farmland if drained	
Haskins		C-1		No
Digby		C-1		No
HfA:	2w		Prime farmland if drained	
Haskins		C-1		No
Digby		C-1		No
HfB:	2e		Prime farmland if drained	
Haskins		C-1		No
Digby		C-1		No
HgA:	2w		Prime farmland if drained	
Hoytville		C-1		Yes

TABLE 34.--INTERPRETIVE GROUPS--Continued

Map symbol and soil name	Land capability classification	Pasture and hayland suitability group	Prime farmland	Hydric
HhA:	2w		Prime farmland if drained	
Hoytville		C-1		Yes
HvA:	2w		Prime farmland if drained	
Hoytville		C-1		Yes
HwA:	2w		Prime farmland if drained	
Hoytville		C-1		Yes
HyA:	---		Not prime farmland	
Hoytville		Not rated		Yes
Urban Land		Not rated		Unranked
JoA:	4w		Not prime farmland	
Joliet		E-1		Yes
KeA:	2w		Prime farmland if drained	
Kibbie		C-1		No
KfA:	2w		Prime farmland if drained	
Kibbie		C-1		No
KfB:	2e		Prime farmland if drained	
Kibbie		C-1		No
KkA:	---		Not prime farmland	
Kibbie		Not rated		No
Urban Land		Not rated		Unranked
LbB:	2w		Prime farmland if protected from flooding or not frequently flooded during the growing season	
Landes		A-5		No
LdA:	3w		Prime farmland if drained	
Latty		C-2		Yes
LgA:	---		Not prime farmland	
Latty		Not rated		Yes
Urban Land		Not rated		Unranked
MbA:	2w		Prime farmland if drained	
Millgrove		C-1		Yes
McA:	2w		Prime farmland if drained	
Mermill		C-1		Yes

TABLE 34.--INTERPRETIVE GROUPS--Continued

Map symbol and soil name	Land capability classification	Pasture and hayland suitability group	Prime farmland	Hydric
MdA:	2w		Prime farmland if drained	
Mermill		C-1		Yes
MeA:	2w		Prime farmland if drained	
Mermill		C-1		Yes
MfA:	2w		Prime farmland if drained	
Mermill		C-1		Yes
Aurand		C-1		No
MgA:	---		Not prime farmland	
Mermill		Not rated		Yes
Urban Land		Not rated		Unranked
MhA:	3w		Prime farmland if drained	
Millsdale		C-2		Yes
MkA:	6s		Not prime farmland	
Millsdale		C-2		Yes
MmA:	---		Not prime farmland	
Millsdale		Not rated		Yes
Urban Land		Not rated		Unranked
MnA:	2s		All areas are prime farmland	
Milton		F-1		No
MnB:	2e		All areas are prime farmland	
Milton		F-1		No
NmA:	3w		Prime farmland if drained	
Nappanee		C-2		No
NmB:	3e		Prime farmland if drained	
Nappanee		C-2		No
NnA:	3w		Prime farmland if drained	
Nappanee		C-2		No
NnB:	3e		Prime farmland if drained	
Nappanee		C-2		No
NnB2:	3e		Prime farmland if drained	
Nappanee		C-2		No
NpA:	3w		Prime farmland if drained	
Nappanee		C-2		No

TABLE 34.--INTERPRETIVE GROUPS--Continued

Map symbol and soil name	Land capability classification	Pasture and hayland suitability group	Prime farmland	Hydric
NpB:	3e		Prime farmland if drained	
Nappanee		C-2		No
NpB2:	3e		Prime farmland if drained	
Nappanee		C-2		No
NsA:	---		Not prime farmland	
Nappanee		Not rated		No
Urban Land		Not rated		Unranked
OsB:	3e		All areas are prime farmland	
Oshtemo		A-1		No
OtA:	3s		Not prime farmland	
Ottokee		B-1		No
Spinks		B-1		No
OtB:	3s		Not prime farmland	
Ottokee		B-1		No
Spinks		B-1		No
OzB:	---		Not prime farmland	
Ottokee		Not rated		No
Spinks		Not rated		No
Urban Land		Not rated		Unranked
Pt:	---		Not prime farmland	
Pits, Quarry		Not rated		Unranked
RbA:	3w		Prime farmland if drained	
Randolph		C-1		No
RbB:	3e		Prime farmland if drained	
Randolph		C-1		No
RdA:	6s		Not prime farmland	
Randolph		C-1		No
ReA:	---		Not prime farmland	
Randolph		Not rated		No
Urban Land		Not rated		Unranked
RfA:	2w		Prime farmland if drained	
Rimer		C-1		No
Tedrow		C-1		No
RfB:	2e		Prime farmland if drained	
Rimer		C-1		No

TABLE 34.--INTERPRETIVE GROUPS--Continued

Map symbol and soil name	Land capability classification	Pasture and hayland suitability group	Prime farmland	Hydric
Tedrow		C-1		No
RgA:	---		Not prime farmland	
Rimer		Not rated		No
Tedrow		Not rated		No
Urban Land		Not rated		Unranked
RhA:	3s		Not prime farmland	
Ritchey		E-1		No
RhB:	3e		Not prime farmland	
Ritchey		E-1		No
RkA:	6s		Not prime farmland	
Ritchey		E-1		No
RmA:	3w		Prime farmland if drained	
Risingsun		D-1		Yes
Rollersville		C-1		Yes
RnA:	3w		Prime farmland if drained	
Rollersville		C-1		Yes
Risingsun		D-1		Yes
RsA:	2w		Prime farmland if protected from flooding or not frequently flooded during the growing season	
Rossburg		A-5		No
SdA:	2s		Not prime farmland	
Seward		B-1		No
Ottokee		B-1		No
SdB:	2e		Not prime farmland	
Seward		B-1		No
Ottokee		B-1		No
SeA:	1		All areas are prime farmland	
Shawtown		A-1		No
SeB:	2e		All areas are prime farmland	
Shawtown		A-1		No

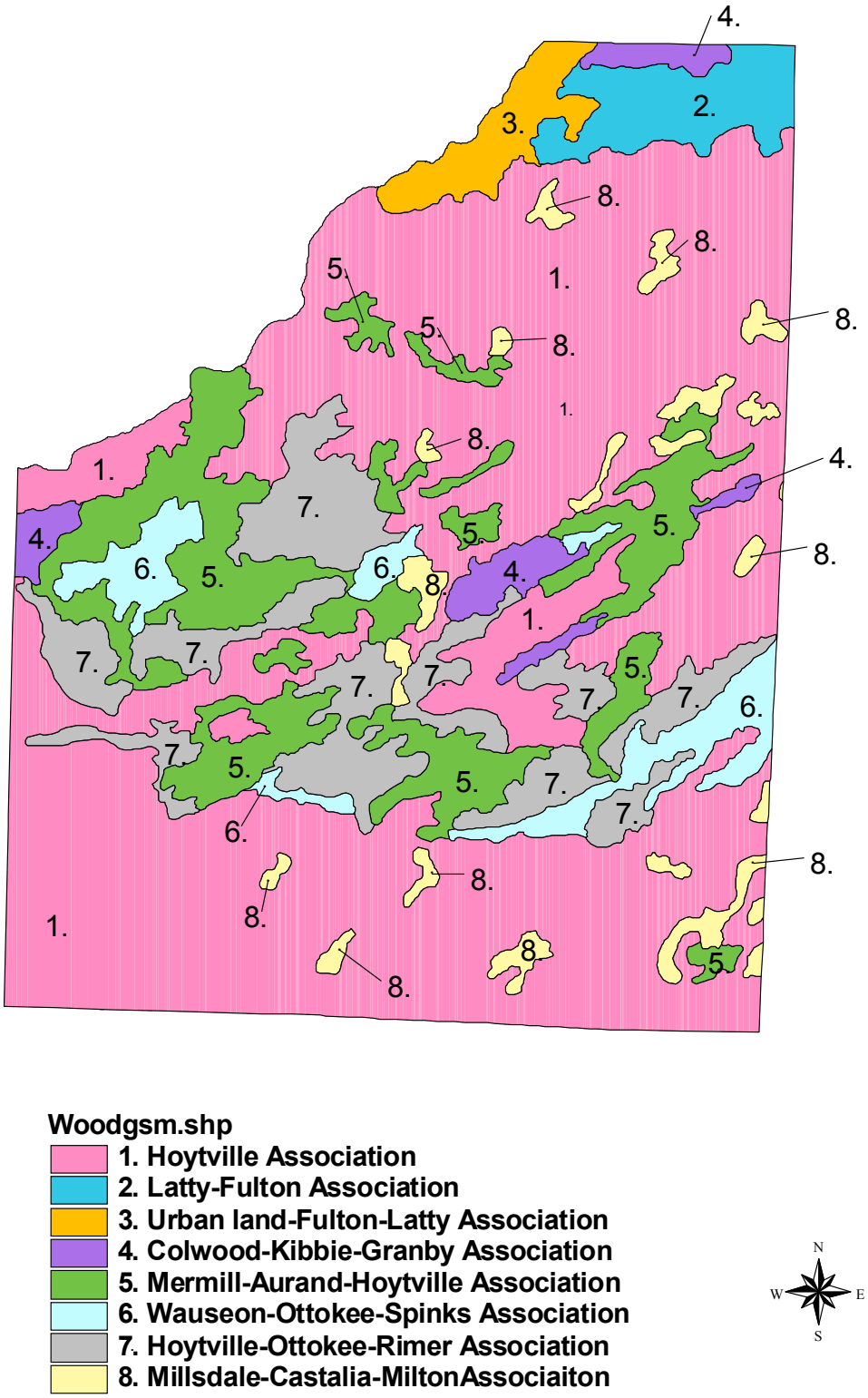
TABLE 34.--INTERPRETIVE GROUPS--Continued

Map symbol and soil name	Land capability classification	Pasture and hayland suitability group	Prime farmland	Hydric
SgA:	2w		Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season	
Shoals		C-3		No
ShA:	2w		Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season	
Shoals		C-3		No
SkA:	2w		Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season	
Shoals		C-3		No
SmA:	3w		Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season	
Shoals		C-3		No
Sloan		B-3		Yes
SnA:	3w		Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season	
Sloan		C-3		Yes
SoA:	3w		Prime farmland if drained	
Sloan		C-3		Yes
SpA:	3w		Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season	
Sloan		C-3		Yes
SrB:	3s		Not prime farmland	
Spinks		B-1		No

TABLE 34.--INTERPRETIVE GROUPS--Continued

Map symbol and soil name	Land capability classification	Pasture and hayland suitability group	Prime farmland	Hydric
SrC:				
Spinks	3e	B-1	Not prime farmland	No
SrD:				
Spinks	4e	B-1	Not prime farmland	No
SsB:				
Spinks	3s	B-1	Not prime farmland	No
SsC:				
Spinks	3e	B-1	Not prime farmland	No
StB:				
St. Clair	3e	F-5	All areas are prime farmland	No
StC2:				
St. Clair	4e	F-5	Not prime farmland	No
SuB2:				
St. Clair	3e	F-5	All areas are prime farmland	No
SuC2:				
St. Clair	4e	F-5	Not prime farmland	No
SuD2:				
St. Clair	6e	F-5	Not prime farmland	No
SuE2:				
St. Clair	7e	F-5	Not prime farmland	No
TeA:				
Tedrow	3s	C-1	Not prime farmland	No
TeB:				
Tedrow	3s	C-1	Not prime farmland	No
TfA:				
Tedrow	---	Not rated	Not prime farmland	No
Urban Land		Not rated		Unranked
TpA:				
Toledo	3w	C-2	Prime farmland if drained	Yes
TuA:				
Toledo	---	Not rated	Not prime farmland	Yes
Urban Land		Not rated		Unranked
UcA:				
Udorthents	---	Not rated	Not prime farmland	Unranked
UcE:				
Udorthents	---	Not rated	Not prime farmland	Unranked
Ur:				
Urban Land	---	Not rated	Not prime farmland	Unranked

TABLE 34.--INTERPRETIVE GROUPS--Continued

Map symbol and soil name	Land capability classification	Pasture and hayland suitability group	Prime farmland	Hydric
W:	---		Not prime farmland	
Water		Not rated		Unranked
WbA:	3w		Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season	
Wabasha		C-3		Yes
WmA:	3w		Prime farmland if drained	
Wauseon		C-1		Yes
WnA:	3w		Prime farmland if drained	
Wauseon		C-1		Yes
WyA:	3w		Prime farmland if drained	
Wauseon		C-1		Yes
WzA:	---		Not prime farmland	
Wauseon		Not rated		Yes
Urban Land		Not rated		Unranked

General Soil Map of Wood County, Ohio