Soil Properties

Data relating to soil properties are collected during the course of the soil survey. The data and the estimates of soil and water features, listed in tables, are explained on the following pages.

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

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

The estimates of soil properties shown in the tables include the range of grain-size distribution and Atterberg limits, the engineering classification, and the physical and chemical properties of the major layers of each soil. Pertinent soil and water features also are given.

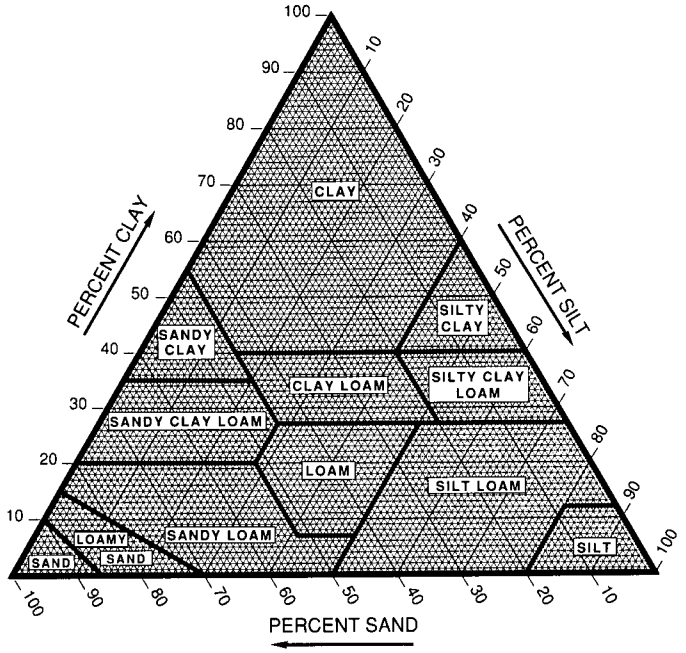

Figure 9.—Percentages of clay, silt, and sand in the basic USDA soil textural classes.

Engineering Index Properties

Table 17 gives estimates of the engineering classification and of the range of index properties for the major layers of each soil in the survey area. Most soils have layers of contrasting properties within the upper 5 or 6 feet.

Depth to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given for each soil series under the heading "Soil Series and Their Morphology."

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter (fig. 9). "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is as much as about 15 percent, an appropriate modifier is added, for example, "gravelly." Textural terms are defined in the Glossary.

Classification of the soils is determined according to the Unified soil classification system (ASTM, 1993) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO, 1986).

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

highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

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

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

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

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

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

The estimates of grain-size distribution, liquid limit, and plasticity index are generally rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterberg limits extend a marginal amount (1 or 2 percentage points) across classification boundaries, the classification in the marginal zone is omitted in the table.

Physical and Chemical Properties

Table 18 shows estimates of some characteristics and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

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

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

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at ⅓-bar moisture tension. Weight is determined after drying the soil at 105 degrees C. In this table, the estimated moist bulk density of each major soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. A bulk density of more than 1.6 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Permeability refers to the ability of a soil to transmit water or air. The estimates indicate the rate of downward movement of water when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems and septic tank absorption fields.

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

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

fertility and stabilization, and in determining the risk of corrosion.

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 measurements of similar soils.

If the shrink-swell potential is rated moderate to very high, shrinking and swelling can cause damage to buildings, roads, and other structures. Special design is often needed.

Shrink-swell potential classes are based on the change in length of an unconfined clod as moisture content is increased from air-dry to field capacity. The classes are *low*, a change of less than 3 percent; *moderate*, 3 to 6 percent; and *high*, more than 6 percent. *Very high*, greater than 9 percent, is sometimes used.

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter (up to 4 percent) and on soil structure and permeability. Values of K range from 0.05 to 0.69. The higher the value, the more susceptible the soil is to sheet and rill erosion by water.

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

Wind erodibility groups are made up of soils that have similar properties affecting their resistance to soil blowing in cultivated areas. The groups indicate the susceptibility to soil blowing. Soils are grouped according to the following distinctions:

1. Coarse sands, sands, fine sands, and very fine sands. These soils are generally not suitable for crops. They are extremely erodible, and vegetation is difficult to establish.
2. Loamy coarse sands, loamy sands, loamy fine sands, loamy very fine sands, and sapric soil material. These soils are very highly erodible. Crops can be grown if intensive measures to control soil blowing are used.
3. Coarse sandy loams, sandy loams, fine sandy loams, and very fine sandy loams. These soils are highly erodible. Crops can be grown if intensive measures to control soil blowing are used.

4L. Calcareous loams, silt loams, clay loams, and silty clay loams. These soils are erodible. Crops can be grown if intensive measures to control soil blowing are used.

4. Clays, silty clays, noncalcareous clay loams, and silty clay loams that are more than 35 percent clay. These soils are moderately erodible. Crops can be grown if measures to control soil blowing are used.
5. Noncalcareous loams and silt loams that are less than 20 percent clay and sandy clay loams, sandy clays, and hemic soil material. These soils are slightly erodible. Crops can be grown if measures to control soil blowing are used.
6. Noncalcareous loams and silt loams that are more than 20 percent clay and noncalcareous clay loams that are less than 35 percent clay. These soils are very slightly erodible. Crops can be grown if ordinary measures to control soil blowing are used.
7. Silts, noncalcareous silty clay loams that are less than 35 percent clay, and fibric soil material. These soils are very slightly erodible. Crops can be grown if ordinary measures to control soil blowing are used.
8. Soils that are not subject to soil blowing because of coarse fragments on the surface or because of surface wetness.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In table 18, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in a soil can be maintained or increased by returning crop residue to the soil. Organic matter affects the available water capacity, infiltration rate, and tilth. It is a source of nitrogen and other nutrients for crops.

Soil and Water Features

Table 19 gives estimates of various soil and water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are used to estimate runoff from precipitation. Soils not protected by vegetation are assigned to one of four groups. They are grouped according to the infiltration of water when the soils 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 permanent 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 two hydrologic groups in table 19, the first letter is for drained areas and the second is for undrained areas.

Flooding, the temporary inundation of an area, is caused by overflowing streams or by runoff from adjacent slopes. Water standing for short periods after rainfall or snowmelt is not considered flooding, nor is water in swamps and marshes.

Table 19 gives the frequency and duration of flooding and the time of year when flooding is most likely.

Frequency, duration, and probable dates of occurrence are estimated. Frequency is expressed as none, rare, occasional, and frequent. *None* means that flooding is not probable; *rare* that it is unlikely but possible under unusual weather conditions (the chance of flooding is nearly 0 percent to 5 percent in any year); *occasional* that it occurs infrequently under normal weather conditions (the chance of flooding is 5 to 50 percent in any year); and *frequent* that it occurs often under normal weather conditions (the chance of flooding is more than 50 percent in any year). Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, *long* if 7 days to 1 month, and *very long* if more than 1 month. Probable dates are expressed in months. About two-thirds to three-fourths of all flooding occurs during the stated period.

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

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

High water table (seasonal) is the highest level of a saturated zone in the soil in most years. The estimates are based mainly on the evidence of a saturated zone, namely grayish colors or mottles in the soil. Indicated in table 19 are depth to the seasonal high water table; the kind of water table—that is, perched or apparent; and the months of the year that the water table commonly is high. A water table that is seasonally high for less than 1 month is not indicated in table 19.

An *apparent* water table is a thick zone of free water in the soil. It is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil. A *perched* water table is water standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

Only saturated zones within a depth of about 6 feet are indicated. A plus sign preceding the range in depth indicates that the water table is above the surface of the soil. The first numeral in the range indicates how high the water rises above the surface. The second numeral indicates the depth below the surface.

Depth to bedrock is given if bedrock is within a depth of 5 feet. The depth is based on many soil borings and on observations during soil mapping. The rock is either soft or hard. If the rock is soft or fractured, excavations can be made with trenching machines, backhoes, or small rippers. If the rock is hard or massive, blasting or special equipment generally is needed for excavation.

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

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

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

Soil Characterization Data for Selected Soils

A few of the soils in Iron County were sampled by the Soil Research Laboratory, Michigan Technological University, Houghton, Michigan, and the Soil Survey Laboratory, Lincoln, Nebraska. The laboratory data obtained from the soil samples include analyses of particle-size distribution, coarse fragments, bulk density, and moisture retention. Complete chemical analyses were also performed on each sample, and spodic horizon criteria were determined on the appropriate samples. Standard procedures of the National Cooperative Soil Survey were used for all of the analyses.

These data were used in classifying and correlating the soils and in evaluating their behavior, especially under forestry uses. Six profiles were selected as representative of their series or family. The series or family and the laboratory identification numbers are as follows: coarse-loamy, mixed, frigid Typic Fragiorthods (S82MI-071-001); Peavy (S88MI-071-001 and S88MI-071-002); and Wabeno (S82MI-071-001, S87MI-071-001, and S87MI-071-002).

In addition to the Iron County data, soil characterization data and forest site data are available from nearby counties that have many of the same soils as Iron County. These data and the Iron County data are available from the Soil Research Laboratory, the Soil and Water Conservation Division of the Michigan Department of Agriculture, and the Natural Resources Conservation Service.

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories (USDA, 1975). 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 20 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Eleven soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Spodosol.

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 Orthod (*Orth*, meaning the common ones, plus *od*, from Spodosol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Haplorthods (*Hapl*, meaning minimal horizonation, plus *orthod*, the suborder of the Spodosols that has a horizon of accumulation of aluminum, iron, and organic carbon in which no one of the elements dominates).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other known kind of soil. Each subgroup is identified by one or more adjectives preceding the name of the great group. An example is Entic Haplorthods.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineral content, temperature regime, depth of the root zone, consistence, moisture equivalent, slope, and permanent cracks. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is sandy, mixed, frigid Entic Haplorthods.

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

Soil Series and Their Morphology

In this section, each soil series or higher taxonomic unit recognized in the survey area is described. The descriptions are arranged in alphabetic order.

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" (USDA, 1993). Many of the technical terms used in the descriptions are defined in "Soil Taxonomy" (USDA, 1975). Unless otherwise stated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

The map units of each soil series are described in the section "Detailed Soil Map Units."

Alfic Fragiorthods, Coarse-Loamy

These soils are coarse-loamy, mixed, frigid Alfic Fragiorthods. They are very deep, moderately well drained soils on ground moraines. The soils formed in

loamy material and in the underlying loamy and sandy glacial till. They are shallow or moderately deep to a fragipan. Permeability is moderate in the upper part of the profile, very slow in the fragipan, and moderate or moderately rapid in the lower part. Slopes range from 1 to 35 percent.

Reference pedon of Alfic Fragiorthods, coarse-loamy, nearly level and undulating, 450 feet north and 1,050 feet east of the center of sec. 26, T. 46 N., R. 37 W.

Oe—0 to 2 inches; black (5YR 2/1), partially decomposed forest litter; weak fine granular structure; very friable; many fine to coarse roots; very strongly acid; abrupt wavy boundary.

A—2 to 3 inches; black (5YR 2/1) fine sandy loam, gray (5YR 5/1) dry; weak fine granular structure; friable; many fine and few medium roots; about 5 percent gravel; very strongly acid; abrupt wavy boundary.

E—3 to 7 inches; reddish gray (5YR 5/2) fine sandy loam; weak fine granular structure; friable; many fine and few medium roots; about 5 percent gravel; very strongly acid; abrupt wavy boundary.

Bs—7 to 19 inches; reddish brown (5YR 4/4) very fine sandy loam; weak fine subangular blocky structure; friable; many fine and few medium roots; about 5 percent gravel; strongly acid; clear wavy boundary.

Ex/Btx—19 to 30 inches; about 60 percent reddish brown (5YR 4/3) very fine sandy loam (E) surrounded by dark reddish brown (5YR 3/4) loam (Bt); common medium prominent strong brown (7.5YR 5/6) mottles; moderate thick platy structure; very firm; common vesicular pores; about 5 percent gravel; strongly acid; gradual wavy boundary.

Bt—30 to 40 inches; dark reddish brown (5YR 3/4) loam; weak medium subangular blocky structure; firm; many distinct reddish gray (5YR 5/2) clay films on faces of peds; about 5 percent gravel; moderately acid; gradual wavy boundary.

2C—40 to 60 inches; reddish brown (5YR 5/4) fine sandy loam; massive; friable; about 5 percent gravel and 4 percent cobbles; moderately acid.

Unless otherwise stated, the depth ranges in this paragraph are measured from the top of the mineral material. The thickness of the loamy mantle ranges from 14 to 32 inches. The thickness of the solum ranges from 35 to 72 inches. Depth to the fragipan ranges from 14 to 30 inches. The content of gravel ranges from 1 to 5 percent in the solum and from 1 to 10 percent in the substratum. The content of cobbles ranges from 0 to 10 percent in the solum and from 0 to 15 percent in the substratum.

The O horizon is less than 4 inches thick. It consists of hardwood and conifer litter in varying stages of decay.

The A horizon has hue of 5YR or 7.5YR, value of 2 or 3, and chroma of 1 or 2, or it is neutral in hue and has value of 2 or 3 and chroma of 0. The E horizon has hue of 5YR or 7.5YR, value of 4 or 5, and chroma of 2 or 3. The A and E horizons are fine sandy loam, loam, or silt loam.

Some pedons have a Bhs horizon. This horizon has hue of 5YR or 7.5YR, value of 3, and chroma of 2 or 3. The Bs horizon has hue of 5YR or 7.5YR and value and chroma of 3 or 4. Value and chroma of 3 do not occur in the same pedon. The Bhs and Bs horizons are fine sandy loam, loam, silt loam, or very fine sandy loam.

The E part of the Ex/Btx horizon has hue of 5YR or 7.5YR, value of 4 or 5, and chroma of 2 to 4. It is very fine sandy loam, fine sandy loam, sandy loam, or loamy sand. The Bt part has hue of 5YR or 7.5YR, value of 4 or 5, and chroma of 3 to 6. It is fine sandy loam, sandy loam, or loam. Some pedons have an Ex and a Btx horizon.

The Bt horizon has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 3 or 4. It is silty clay, clay loam, silty clay loam, sandy clay loam, or loam.

The C horizon has hue of 5YR or 7.5YR, value of 4 or 5, and chroma of 3 to 6. It is dominantly fine sandy loam, sandy loam, loamy sand, sand, or the gravelly or cobbly analogs of those textures. In some pedons, however, it has pockets or bands of sandy clay loam or clay loam.

Alstad Series

The Alstad series consists of very deep, somewhat poorly drained soils on ground moraines. These soils formed in loamy glacial till. Permeability is moderate in the solum and moderately slow in the substratum. Slopes range from 0 to 6 percent.

Typical pedon of Alstad loam, 0 to 6 percent slopes, 1,400 feet east and 1,060 feet south of the northwest corner of sec. 6, T. 43 N., R. 30 W.; in Dickinson County, Michigan:

A—0 to 4 inches; dark reddish brown (5YR 3/2) loam, gray (5YR 6/1) dry; weak medium granular structure; friable; about 2 percent gravel; moderately acid; abrupt wavy boundary.

Bs—4 to 16 inches; dark brown (7.5YR 4/4) loam; common fine distinct brown (7.5YR 5/2) mottles; weak fine subangular blocky structure; friable; about 2 percent gravel; moderately acid; abrupt wavy boundary.

E—16 to 21 inches; grayish brown (10YR 5/2) fine sandy loam; few fine distinct light brown (7.5YR 6/4) mottles; massive; firm; about 2 percent gravel; slightly acid; abrupt wavy boundary.

B/E—21 to 26 inches; about 85 percent reddish brown

(5YR 4/4) clay loam (Bt); common medium distinct strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; firm; grayish brown (10YR 5/2) fine sandy loam (E) surrounding the Bt material; moderate medium subangular blocky structure; friable; about 3 percent gravel; slightly acid; clear wavy boundary.

Bt—26 to 42 inches; reddish brown (5YR 4/4) clay loam; common fine distinct strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; friable; dark reddish brown (5YR 3/3) clay films on faces of peds; about 3 percent gravel; neutral; clear wavy boundary.

C—42 to 60 inches; reddish brown (5YR 4/3) clay loam; massive; firm; about 3 percent gravel; slight effervescence; moderately alkaline.

The thickness of the solum ranges from 24 to 56 inches. The content of gravel ranges from 0 to 15 percent throughout the profile. The content of cobbles ranges from 0 to 2 percent in the C horizon.

Some pedons have a thin Oe horizon. The A, Bs, and E horizons are loam, fine sandy loam, or sandy loam. The A horizon has hue of 5YR, 7.5YR, or 10YR, value of 2 or 3, and chroma of 1 to 3. The Bs horizon has hue of 5YR or 7.5YR, value of 3 to 5, and chroma of 3 to 6. The E horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 2 or 3. The Bt horizon has hue of 5YR or 7.5YR, value of 4 or 5, and chroma of 3 or 4. It is loam or clay loam. The C horizon is sandy loam, loam, or clay loam. Some pedons are not effervescent.

Au Gres Series

The Au Gres series consists of very deep, somewhat poorly drained, rapidly permeable soils on outwash plains and stream terraces. These soils formed in sandy glacial outwash deposits. Slopes range from 0 to 3 percent.

Typical pedon of Au Gres sand, 0 to 3 percent slopes, 2,300 feet north and 100 feet east of the southwest corner of sec. 13, T. 42 N., R. 33 W.

A—0 to 3 inches; very dark gray (10YR 3/1) sand, dark gray (10YR 4/1) dry; moderate medium granular structure; very friable; many fine roots; strongly acid; abrupt wavy boundary.

E—3 to 7 inches; brown (7.5YR 4/2) sand; weak medium subangular blocky structure; very friable; common fine and medium roots; strongly acid; abrupt broken boundary.

Bs—7 to 15 inches; strong brown (7.5YR 4/6) sand; few fine distinct strong brown (7.5YR 5/8) mottles; weak medium subangular blocky structure; very friable; common fine and medium roots; strongly acid; gradual wavy boundary.

BC—15 to 32 inches; brown (7.5YR 5/4) sand; common medium distinct strong brown (7.5YR 5/6) mottles; weak coarse subangular blocky structure; very friable; few fine roots; strongly acid; gradual wavy boundary.

C—32 to 60 inches; dark yellowish brown (10YR 4/4) sand that has few thin strata of coarse sand; single grain; loose; about 10 percent gravel; strongly acid.

The thickness of the solum ranges from 20 to 40 inches. The content of gravel ranges from 0 to 10 percent throughout the profile.

The A horizon has hue of 5YR to 10YR, value of 2 or 3, and chroma of 1 or 2. The E horizon has hue of 5YR to 10YR, value of 4 to 6, and chroma of 1 to 3. The A and E horizons are sand or loamy sand.

The Bs horizon has hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 4 to 6. The content of ortstein in this horizon is as much as 25 percent in some pedons. The Bs horizon is sand or loamy sand. Some pedons have a thin Bhs horizon. This horizon has value and chroma of 2 or 3. The BC horizon has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 3 to 6. It is sand.

The C horizon has colors similar to those of the BC horizon. It is sand. Some pedons have thin strata of very fine sand below a depth of 40 inches.

Beechwood Series

The Beechwood series consists of very deep, somewhat poorly drained, moderately permeable soils on drumlinoid ground moraines. These soils formed in modified loamy eolian material and in the underlying sandy or loamy glacial till. Slopes range from 0 to 2 percent.

Typical pedon of Beechwood silt loam, nearly level, 5,940 feet east of Forest Highway 16 on Forest Road 303, 330 feet west and 200 feet south of the northeast corner of sec. 12, T. 43 N., R. 37 W.; in Stambaugh Township:

Oa—0 to 2 inches; dark yellowish brown (10YR 3/4), well decomposed organic material; moderate fine granular structure; very friable; many fine and medium and few coarse roots; few fine irregular segregated dark brown (7.5YR 3/2) accumulations of iron; extremely acid; abrupt smooth boundary.

E—2 to 4 inches; grayish brown (10YR 5/2) silt loam; many fine distinct yellowish brown (10YR 5/6) and many common faint very dark grayish brown (10YR 3/2) organic stains; weak medium platy structure; friable; many fine and medium and few very fine roots; about 5 percent cobbles; few fine rounded

segregated dark brown (7.5YR 3/2) concretions of iron and manganese; very strongly acid; abrupt smooth boundary.

Bw1—4 to 18 inches; brown (10YR 4/3) silt loam; many common distinct yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure parting to moderate medium granular; friable; common fine and medium roots; about 5 percent cobbles; few fine rounded segregated dark brown (7.5YR 3/2) concretions of iron and manganese; very strongly acid; clear irregular boundary.

Bw2—18 to 34 inches; yellowish brown (10YR 5/6) silt loam; many medium distinct yellowish brown (10YR 5/8) and few medium prominent light brownish gray (2.5Y 6/2) mottles; moderate medium subangular blocky structure; friable; common fine and very fine roots; about 3 percent cobbles; few fine rounded segregated dark brown (7.5YR 3/2) concretions of iron and manganese; strongly acid; gradual irregular boundary.

2Bw3—34 to 49 inches; dark yellowish brown (10YR 4/6) sandy loam; few fine faint yellowish brown (10YR 5/6) and common medium prominent light brownish gray (2.5Y 6/2) mottles; moderate thick platy structure; friable; few fine and very fine roots; about 10 percent cobbles; strongly acid; gradual wavy boundary.

2C—49 to 71 inches; reddish yellow (7.5YR 6/6) loamy sand; common medium prominent light brownish gray (2.5Y 6/2) mottles; massive; friable; about 10 percent cobbles and 5 percent gravel; moderately acid.

Unless otherwise stated, the depth ranges in this paragraph are measured from the top of the mineral material. The thickness of the solum ranges from 40 to 51 inches. The content of gravel ranges from 0 to 5 percent in the E and Bw horizons and from 5 to 20 percent in the 2Bw and 2C horizons. The content of cobbles ranges from 0 to 5 percent in the E and Bw horizons and from 5 to 15 percent in the 2Bw and 2C horizons.

Some pedons have an A horizon. This horizon has hue of 7.5YR or 10YR, value of 2 or 3, and chroma of 1 or 2. The E horizon has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 2 or 3. The A and E horizons are silt loam.

The Bw and 2Bw horizons have hue of 7.5YR or 10YR. The Bw horizon has value of 4 to 6, and the 2Bw horizon has value of 4 or 5. The Bw and 2Bw horizons are silt loam, loam, sandy loam, or fine sandy loam.

The 2C horizon has hue of 7.5YR or 10YR and value and chroma of 4 to 6. It is loamy sand, sandy loam, or the gravelly or cobbly analogs of those textures. In some pedons it has pockets or strata of sand or loam.

Cathro Series

The Cathro series consists of very deep, very poorly drained soils on ground moraines, outwash plains, and flood plains. These soils formed in highly decomposed herbaceous and woody material overlying loamy glacial till and outwash. Permeability is moderately slow to moderately rapid in the organic material and moderate or moderately slow in the loamy material. Slopes are 0 to 1 percent.

Typical pedon of Cathro muck, in an area of Lupton-Cathro-Humaquepts complex; 1,400 feet south and 120 feet west of the center of sec. 12, T. 41 N., R. 31 W.

Oa1—0 to 7 inches; muck, black (5YR 2/1) broken face and rubbed; about 20 percent fiber, 5 percent rubbed; weak medium granular structure; many fine roots; herbaceous fibers; moderately acid; clear wavy boundary.

Oa2—7 to 26 inches; muck, black (5YR 2/1) broken face and rubbed; about 50 percent fiber, 15 percent rubbed; massive; common fine and medium roots; herbaceous fibers; moderately acid; abrupt wavy boundary.

C1—26 to 30 inches; dark gray (5YR 4/1) very fine sandy loam; massive; friable; moderately acid; clear wavy boundary.

C2—30 to 60 inches; brown (10YR 5/3) fine sandy loam; massive; friable; about 5 percent gravel; slightly acid.

Depth to the C horizon ranges from 16 to 51 inches. Woody fragments are in some pedons.

The organic material has hue of 5YR to 10YR or is neutral in hue. It has value of 2 or 3 and chroma of 0 to 3. It is dominantly sapric material but has thin layers of hemic material in some pedons.

The C horizon is silt loam, fine sandy loam, very fine sandy loam, or the gravelly analogs of those textures. The content of gravel ranges from 0 to 25 percent.

Champion Series

The Champion series consists of very deep, well drained and moderately well drained soils on ground moraines and end moraines. These soils formed in modified loamy eolian deposits and in the underlying loamy and sandy glacial till. They are shallow or moderately deep to a fragipan. Permeability is moderate above the fragipan, very slow in the fragipan, and moderate or moderately rapid in the substratum. Slopes range from 1 to 35 percent.

Typical pedon of Champion very fine sandy loam, 1

to 6 percent slopes, very stony, 1,580 feet west and 1,320 feet south of the northeast corner of sec. 18, T. 46 N., R. 33 W.

Oe—0 to 1 inch; black (N 2/0), partially decomposed forest litter; weak fine granular structure; very friable; many fine roots; very strongly acid; abrupt smooth boundary.

E—1 to 4 inches; gray (5YR 5/1) very fine sandy loam; weak medium subangular blocky structure; friable; few fine roots; about 5 percent cobbles and 5 percent gravel; strongly acid; clear wavy boundary.

Bhs1—4 to 7 inches; dark reddish brown (5YR 3/3) very fine sandy loam; weak fine and medium subangular blocky structure; very friable; many fine and medium roots; about 5 percent cobbles and 5 percent gravel; very strongly acid; clear wavy boundary.

Bhs2—7 to 11 inches; dark brown (7.5YR 3/3) very fine sandy loam; weak fine and medium subangular blocky structure; friable; many fine and medium roots; about 5 percent cobbles and 5 percent gravel; very strongly acid; clear wavy boundary.

Bs1—11 to 16 inches; dark brown (7.5YR 3/4) very fine sandy loam; weak fine and medium subangular blocky structure; friable; common fine and medium roots; about 5 percent cobbles and 5 percent gravel; very strongly acid; gradual wavy boundary.

Bs2—16 to 20 inches; brown (7.5YR 4/4) very fine sandy loam; weak thin platy structure; friable; common fine and medium roots; about 8 percent gravel and 5 percent cobbles; strongly acid; clear smooth boundary.

2Ex—20 to 26 inches; dark grayish brown (10YR 4/2) gravelly fine sandy loam; many coarse prominent dark yellowish brown (10YR 4/6) mottles; moderate medium platy structure; extremely firm; few fine roots; many fine vesicular pores; about 20 percent gravel and 5 percent cobbles; moderately acid; gradual wavy boundary.

2Bx/Ex—26 to 49 inches; about 70 percent dark brown (7.5YR 3/3) gravelly fine sandy loam (B) surrounded by dark grayish brown (10YR 4/2) gravelly fine sandy loam (E); weak very thick platy structure; extremely firm; many fine vesicular pores; common faint brown (7.5YR 4/4) silt and clay coatings in pebble casings and pores; about 25 percent gravel and 5 percent cobbles; moderately acid; diffuse wavy boundary.

2C—49 to 60 inches; grayish brown (10YR 5/2) gravelly fine sandy loam; massive; friable; about 20 percent gravel and 5 percent cobbles; moderately acid.

Unless otherwise stated, the depth ranges in this paragraph are measured from the top of the mineral material. The thickness of the solum ranges from 30 to 70 inches. The thickness of the eolian material ranges from 16 to 24 inches. Depth to the fragipan ranges from 14 to 24 inches. The content of gravel ranges from 3 to 10 percent in the A, E, and B horizons and from 15 to 30 percent in the 2Ex, 2Bx/Ex, and 2C horizons. The content of cobbles ranges from 3 to 20 percent in the A, E, and B horizons and from 0 to 10 percent in the 2Ex, 2Bx/Ex, and 2C horizons. The content of stones on the surface ranges from 0.01 to 0.3 percent.

Some pedons have an A horizon. This horizon has hue of 5YR to 10YR, value of 2 to 4, and chroma of 1 or 2. The E horizon has hue of 5YR or 7.5YR, value of 4 to 6, and chroma of 1 or 2. The A and E horizons are silt loam, very fine sandy loam, or the cobbly analogs of those textures.

The Bhs horizon has hue of 2.5YR to 7.5YR, value of 3, and chroma of 2 or 3. The Bs horizon has hue of 2.5YR to 10YR, value of 3 to 5, and chroma of 3 or 4. The Bhs and Bs horizons are silt loam, very fine sandy loam, fine sandy loam, or the cobbly analogs of those textures.

The 2Ex horizon has hue of 5YR to 10YR, value of 4 or 5, and chroma of 2. The E part of the 2Bx/Ex horizon has colors similar to those of the 2Ex horizon. The B part has hue of 5YR to 10YR, value of 3 to 5, and chroma of 3 or 4.

The 2C horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 2 to 4. The 2Ex, 2Bx/Ex, and 2C horizons are gravelly fine sandy loam, gravelly sandy loam, gravelly loamy sand, or gravelly loamy fine sand. They have pockets and lenses of gravelly sand in some pedons.

Channing Series

The Channing series consists of very deep, somewhat poorly drained soils on outwash plains and stream terraces. These soils formed in modified loamy eolian deposits overlying sandy glacial outwash. Permeability is moderate in the upper part of the profile and very rapid in the lower part. Slopes range from 0 to 3 percent.

Typical pedon of Channing very fine sandy loam, in an area of Minocqua-Channing complex, 0 to 3 percent slopes; 500 feet south and 1,200 feet west of the center of sec. 15, T. 45 N., R. 33 W.

Ap—0 to 7 inches; dark brown (10YR 3/3) very fine sandy loam, light brownish gray (10YR 6/2) dry; weak fine granular structure; friable; strongly acid; abrupt smooth boundary.

E—7 to 9 inches; grayish brown (10YR 5/2) very fine sandy loam; many fine distinct yellowish brown (10YR 5/4) mottles; weak medium subangular

blocky structure; friable; moderately acid; abrupt broken boundary.

Bs1—9 to 16 inches; dark yellowish brown (10YR 3/4) very fine sandy loam; many fine prominent strong brown (7.5YR 5/6) and many fine faint brown (10YR 4/3) mottles; weak medium subangular blocky structure; friable; about 1 percent gravel; moderately acid; clear wavy boundary.

Bs2—16 to 24 inches; dark yellowish brown (10YR 4/4) very fine sandy loam; many medium distinct yellowish brown (10YR 5/6) and common fine prominent yellowish red (5YR 5/6) mottles; weak medium subangular blocky structure; friable; about 2 percent gravel; moderately acid; clear wavy boundary.

2C1—24 to 28 inches; strong brown (7.5YR 5/6) sand; single grain; loose; moderately acid; abrupt smooth boundary.

2C2—28 to 43 inches; brown (10YR 4/3) loamy sand; massive; very friable; moderately acid; abrupt smooth boundary.

2C3—43 to 60 inches; brown (10YR 4/3), stratified coarse sand and very gravelly sand; single grain; loose; about 35 percent gravel; moderately acid.

The thickness of the solum ranges from 15 to 30 inches. The content of gravel ranges from 0 to 10 percent in the solum and averages 15 to 50 percent in the substratum. The content of cobbles ranges from 0 to 10 percent throughout the profile.

In areas that have not been cultivated, the A horizon is 1 to 3 inches thick. It has hue of 7.5YR or 10YR, value of 2 or 3, and chroma of 1 or 2. The E horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 2 or 3. The Ap, A, and E horizons are very fine sandy loam or fine sandy loam.

The Bs horizon has hue of 5YR to 10YR, value of 3 or 4, and chroma of 4 to 6. It is very fine sandy loam or fine sandy loam.

The C horizon has hue of 5YR to 10YR, value of 4 or 5, and chroma of 3 to 6. It is typically stratified loamy sand, sand, coarse sand, and the gravelly and very gravelly analogs of those textures.

Croswell Series

The Croswell series consists of very deep, moderately well drained, rapidly permeable soils on outwash plains and stream terraces. These soils formed in sandy glacial outwash deposits. Slopes range from 0 to 3 percent.

Typical pedon of Croswell sand, in an area of Karlin, moderately wet-Croswell complex, 0 to 3 percent slopes; 1,700 feet south and 210 feet east of the northwest corner of sec. 20, T. 42 N., R. 32 W.

A—0 to 1 inch; black (5YR 2/1) sand, dark gray (5YR 4/1) dry; weak fine granular structure; very friable; many fine roots; very strongly acid; abrupt wavy boundary.

E—1 to 5 inches; reddish gray (5YR 5/2) sand; single grain; loose; many fine and medium roots; very strongly acid; abrupt wavy boundary.

Bs1—5 to 8 inches; dark reddish brown (5YR 3/4) sand; single grain; loose; many fine and medium roots; about 15 percent weakly cemented ortstein; strongly acid; clear wavy boundary.

Bs2—8 to 20 inches; yellowish red (5YR 4/6) sand; single grain; loose; common fine and medium roots; strongly acid; gradual wavy boundary.

C—20 to 60 inches; brown (7.5YR 5/4) sand; common medium distinct strong brown (7.5YR 5/6) mottles; single grain; loose; few fine and medium roots; moderately acid.

The thickness of the solum ranges from 20 to 40 inches. The content of gravel ranges from 0 to 5 percent throughout the profile, and the content of cobbles ranges from 0 to 2 percent.

The A horizon has hue of 5YR to 10YR, value of 2 or 3, and chroma of 1 or 2. The E horizon has hue of 5YR to 10YR, value of 4 to 6, and chroma of 1 or 2. The A and E horizons are sand or loamy sand.

The Bs horizon has hue of 5YR to 10YR, value of 3 to 5, and chroma of 4 to 6. Some pedons have a thin Bhs horizon. The Bs and Bhs horizons are sand.

The C horizon has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 3 to 5. It is sand.

Ensley Series

The Ensley series consists of very deep, poorly drained soils on ground moraines and end moraines. These soils formed in loamy glacial till. Permeability is moderate in the upper part of the profile and moderately rapid in the lower part. Slopes are 0 to 1 percent.

Typical pedon of Ensley fine sandy loam, stony, 2,350 feet south and 2,620 feet west of the northeast corner of sec. 20, T. 43 N., R. 29 W.; in Dickinson County, Michigan:

A—0 to 3 inches; black (7.5YR 2/0) fine sandy loam, very dark gray (N 3/0) dry; moderate medium granular structure; friable; about 3 percent gravel and cobbles; neutral; abrupt smooth boundary.

EB—3 to 9 inches; dark grayish brown (10YR 4/2) fine sandy loam; many coarse prominent yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; friable; about 5 percent gravel and cobbles; neutral; clear wavy boundary.

Bw—9 to 20 inches; dark yellowish brown (10YR 4/4)

fine sandy loam; many medium distinct reddish yellow (7.5YR 6/6) mottles; moderate medium subangular blocky structure; friable; about 8 percent gravel and cobbles; neutral; clear wavy boundary.

C1—20 to 30 inches; yellowish brown (10YR 5/4) fine sandy loam; common medium distinct reddish yellow (7.5YR 6/6) mottles; massive; friable; about 7 percent gravel and cobbles; neutral; gradual wavy boundary.

C2—30 to 46 inches; brown (7.5YR 5/4) fine sandy loam; massive; friable; about 9 percent gravel and cobbles; slightly alkaline; clear wavy boundary.

C3—46 to 60 inches; strong brown (7.5YR 4/6) fine sandy loam; massive; friable; about 10 percent gravel and cobbles; slightly alkaline.

The thickness of the solum ranges from 15 to 35 inches. The content of coarse fragments ranges from 2 to 15 percent throughout the profile. The content of stones on the surface ranges from 0.01 to 0.1 percent.

Some pedons have a thin Oa horizon. The A horizon has hue of 7.5YR or 10YR or is neutral in hue. It has value of 1 or 2 and chroma of 0 to 2. It is fine sandy loam or mucky fine sandy loam. The EB horizon has hue of 10YR or 2.5Y and value of 2 to 6.

The Bw horizon has hue of 7.5YR, 10YR, or 2.5Y, value of 4 to 6, and chroma of 2 to 4. It is sandy loam or fine sandy loam.

The C horizon has hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 1 to 6. It is dominantly sandy loam or fine sandy loam, but in some pedons it has thin layers of loamy sand or sand. It has free carbonates in some pedons.

Entic Fragiorthods, Coarse-Loamy

These soils are coarse-loamy, mixed, frigid Entic Fragiorthods. They are very deep, moderately well drained soils on ground moraines. The soils formed in loamy and sandy glacial till. They have a fragipan. Permeability is moderate in the upper part of the profile, very slow in the fragipan, and moderate or moderately rapid in the sandy substratum. Slopes range from 1 to 6 percent.

Reference pedon of Entic Fragiorthods, coarse-loamy, nearly level and undulating, 1,800 feet north and 600 feet east of the center of sec. 2, T. 46 N., R. 35 W.

Oe—0 to 2 inches; dark reddish brown (5YR 3/2), partially decomposed forest litter; abrupt smooth boundary.

A—2 to 4 inches; very dark gray (5YR 3/1) very fine sandy loam, gray (5YR 5/1) dry; weak medium granular structure; friable; many fine and medium roots; about 3 percent gravel and 2 percent cobbles; very strongly acid; abrupt wavy boundary.

E—4 to 8 inches; reddish gray (5YR 5/2) very fine sandy loam; weak medium subangular blocky structure; friable; common fine and medium roots; about 3 percent gravel and 2 percent cobbles; very strongly acid; abrupt wavy boundary.

Bs1—8 to 10 inches; dark reddish brown (5YR 3/4) very fine sandy loam; weak fine subangular blocky structure; friable; many fine and common medium roots; about 3 percent gravel and 2 percent cobbles; strongly acid; abrupt wavy boundary.

Bs2—10 to 21 inches; dark brown (7.5YR 4/4) very fine sandy loam; weak fine subangular blocky structure; friable; common medium roots; about 3 percent gravel and 2 percent cobbles; strongly acid; abrupt wavy boundary.

2Ex/Bx—21 to 35 inches; about 60 percent dark grayish brown (10YR 4/2) gravelly loamy sand (E); many coarse prominent dark yellowish brown (10YR 4/6) mottles; peds of dark brown (7.5YR 3/2) gravelly sandy loam (B) surrounded by the E material; moderate thick platy structure; very firm; about 20 percent gravel and 5 percent cobbles; strongly acid; diffuse wavy boundary.

2C—35 to 60 inches; grayish brown (10YR 5/2) gravelly loamy sand; about 20 percent gravel; single grain; loose; strongly acid.

Unless otherwise stated, the depth ranges in this paragraph are measured from the top of the mineral material. The thickness of the solum ranges from 32 to 52 inches. Depth to the fragipan ranges from 14 to 25 inches. The content of rock fragments ranges from 5 to 30 percent in the A, E, and Bs horizons and from 5 to 40 percent in the 2Ex/Bx and 2C horizons.

The O horizon consists of undecomposed to decomposed conifer and hardwood litter.

The A horizon has hue of 5YR or 7.5YR, value of 2 or 3, and chroma of 1 or 2. The E horizon has hue of 5YR or 7.5YR and value of 4 or 5. The A and E horizons are fine sandy loam, loam, very fine sandy loam, sandy loam, silt loam, or the gravelly or cobbly analogs of those textures.

The Bs horizon has hue of 5YR or 7.5YR and value of 3 or 4. It is fine sandy loam, very fine sandy loam, sandy loam, loam, silt loam, or the gravelly or cobbly analogs of those textures.

The E part of the 2Ex/Bx horizon has hue of 7.5YR or 10YR and chroma of 2 or 3. It is fine sandy loam, sandy loam, gravelly loamy sand, or very gravelly loamy sand. The B part has value of 3 or 4 and chroma of 2 to 4. It is fine sandy loam, sandy loam, or the gravelly or very gravelly analogs of those textures.

The 2C horizon has value of 4 or 5 and chroma of 2

to 4. It is loamy sand, fine sandy loam, sandy loam, or the gravelly or very gravelly analogs of those textures.

Entic Haplorthods, Coarse-Loamy

These soils are coarse-loamy, mixed, frigid Entic Haplorthods. They are very deep, moderately well drained soils on deltas, alluvial fans, and terraces and in small glacial drainageways. Permeability is moderate in the upper part and rapid in the lower part. The soils formed in loamy glacial drift. Slopes range from 0 to 6 percent.

Reference pedon of Entic Haplorthods, coarse-loamy, deep water table, nearly level and undulating, 270 feet east and 800 feet north of the southwest corner of sec. 23, T. 44 N., R. 36 W.

Oe—0 to 1 inch; black (5YR 2/1), partially decomposed hardwood and conifer litter; abrupt smooth boundary.

A—1 to 2 inches; black (5YR 2/1) fine sandy loam, gray (5YR 5/1) dry; weak medium granular structure; friable; many fine and few medium roots; about 1 percent gravel; very strongly acid; abrupt wavy boundary.

E—2 to 8 inches; reddish gray (5YR 5/2) fine sandy loam; weak fine subangular blocky structure; friable; common fine and medium roots; about 1 percent gravel; very strongly acid; abrupt wavy boundary.

Bhs—8 to 10 inches; dark reddish brown (5YR 3/3) fine sandy loam; weak fine subangular blocky structure; friable; many fine and common medium roots; about 1 percent gravel; very strongly acid; abrupt wavy boundary.

Bs1—10 to 19 inches; dark reddish brown (5YR 3/4) fine sandy loam; weak medium subangular blocky structure; friable; common fine and few medium roots; about 1 percent gravel; strongly acid; gradual wavy boundary.

Bs2—19 to 30 inches; reddish brown (5YR 4/4) fine sandy loam; weak medium subangular blocky structure; very friable; few medium roots; about 1 percent gravel; strongly acid; clear wavy boundary.

2BC—30 to 47 inches; yellowish red (5YR 4/6) sand; single grain; loose; few medium and fine roots; about 3 percent gravel; moderately acid; diffuse wavy boundary.

2C—47 to 60 inches; reddish brown (5YR 5/4) sand that has thin bands of reddish brown (5YR 4/4) sandy loam as much as ¾ inch thick; common medium distinct yellowish red (5YR 5/8) mottles; single grain; loose; about 3 percent gravel; moderately acid.

Unless otherwise stated, the depth ranges in this paragraph are measured from the top of the mineral material. The thickness of the solum ranges from 40 to 60 inches. The content of rock fragments ranges from 1 to 20 percent in the solum and from 3 to 30 percent in the substratum. Depth to the sandy material ranges from 27 to 35 inches.

The O horizon consists of undecomposed to decomposed conifer and hardwood litter.

The A horizon has hue of 5YR or 7.5YR or is neutral in hue. It has value of 2 to 4 and chroma of 0 to 2. The E horizon has hue of 5YR or 7.5YR and value of 4 or 5. The A and E horizons are sandy loam, fine sandy loam, loam, silt loam, or the gravelly analogs of those textures.

The Bhs horizon, if it occurs, has hue of 5YR or 7.5YR and value and chroma of 2 or 3. It is less than 3 inches thick. The Bs horizon has hue of 5YR or 7.5YR and value of 3 or 4. The Bhs and Bs horizons are sandy loam, fine sandy loam, loam, silt loam, or the gravelly analogs of those textures.

The 2BC horizon has hue of 5YR or 7.5YR and chroma of 4 to 6. It is sand, loamy sand, coarse sand, or the gravelly analogs of those textures.

The 2C horizon has hue of 5YR or 7.5YR and chroma of 4 to 8. It is sand, loamy sand, coarse sand, or the gravelly analogs of those textures.

Entic Haplorthods, Sandy

These soils are sandy, mixed, frigid Entic Haplorthods. They are very deep, somewhat excessively drained soils on outwash plains. Permeability is moderately rapid in the solum and very rapid in the substratum. The soils formed in sandy outwash deposits. Slopes range from 0 to 18 percent.

Reference pedon of Entic Haplorthods, sandy, stratified substratum, rolling, 1,450 feet south and 600 feet west of the northeast corner of sec. 6, T. 46 N., R. 35 W.

A—0 to 1 inch; black (N 2/0) sandy loam; weak fine granular structure; friable; many very fine and fine and common medium and coarse roots; about 2 percent gravel; very strongly acid; abrupt smooth boundary.

E—1 to 2 inches; reddish gray (5YR 5/2) loamy sand; weak fine granular structure; very friable; many fine and medium and common very fine and coarse roots; about 2 percent gravel; very strongly acid; abrupt broken boundary.

Bs1—2 to 6 inches; reddish brown (5YR 4/4) loamy sand; weak medium subangular blocky structure parting to weak fine subangular blocky; friable; many fine, common medium, and few coarse roots;

about 2 percent gravel; moderately acid; abrupt wavy boundary.
Bs2—6 to 19 inches; yellowish red (7.5YR 4/6) gravelly coarse sand; single grain; loose; few fine roots; about 15 percent gravel; moderately acid; gradual wavy boundary.
BC—19 to 41 inches; light brown (7.5YR 6/4) sand; single grain; loose; few fine roots; about 5 percent gravel; moderately acid; gradual wavy boundary.
C—41 to 60 inches; light brown (7.5YR 6/4) sand that has strata of fine sand, loamy fine sand, and gravelly coarse sand; single grain; loose; about 10 percent gravel; moderately acid.

The thickness of the solum ranges from 20 to 45 inches. Depth to the sandy material ranges from 0 to 22 inches. The content of gravel ranges from 0 to 15 percent in the solum and from 0 to 30 percent in the substratum.

Some pedons have an O horizon, which consists of undecomposed to decomposed conifer and hardwood litter. The Oa horizon, if it occurs, has hue of 5YR or 7.5YR or is neutral in hue. It has value of 2 or 3 and chroma of 0 or 1.

The A horizon has hue of 7.5YR or is neutral in hue. It has value of 2 to 4 and chroma of 0 to 2. The E horizon has hue of 5YR or 7.5YR, value of 4 or 5, and chroma of 2 or 3. The A and E horizons are sandy loam, loamy sand, or sand.

The Bs1 horizon has hue of 5YR or 7.5YR, value of 3 or 4, and chroma of 4 to 6. The Bs2 horizon has hue of 5YR or 7.5YR and value and chroma of 4 to 6. These horizons are loamy sand, sand, coarse sand, or the gravelly analogs of those textures.

The BC horizon has hue of 5YR or 7.5YR and value and chroma of 4 to 6. It is sand, loamy sand, coarse sand, or loamy coarse sand.

The C horizon has hue of 5YR or 7.5YR, value of 4 to 6, and chroma of 4 or 5. It is stratified sand, fine sand, gravelly coarse sand, coarse sand, or the gravelly analogs of those textures.

Entic Haplorthods, Sandy-Skeletal

These soils are sandy-skeletal, mixed, frigid Entic Haplorthods. They are very deep, well drained soils on end moraines and eskers. Permeability is moderate in the solum and rapid in the underlying material. The soils formed in loamy and gravelly sandy glacial drift. Slopes range from 0 to 50 percent.

Reference pedon of Entic Haplorthods, sandy-skeletal, rolling and hilly, 1,620 feet west and 2,180 feet north of the southeast corner of sec. 24, T. 46 N., R. 36 W.

Oe—0 to 2 inches; partially decomposed conifer and hardwood litter; abrupt smooth boundary.
E—2 to 5 inches; brown (7.5YR 5/2) cobbly sandy loam; weak fine subangular blocky structure; friable; common fine and few medium and coarse roots; about 8 percent cobbles and 8 percent gravel; strongly acid; abrupt wavy boundary.
Bs1—5 to 18 inches; dark brown (7.5YR 3/4) gravelly sandy loam; weak fine subangular blocky structure; friable; common fine and few medium and coarse roots; about 16 percent gravel and 14 percent cobbles; moderately acid; gradual wavy boundary.
2Bs2—18 to 52 inches; dark yellowish brown (10YR 4/4) extremely cobbly coarse sand; single grain; loose; few fine and medium roots; about 55 percent cobbles and 20 percent gravel; moderately acid; gradual wavy boundary.
2C—52 to 65 inches; very dark grayish brown (10YR 3/2) extremely cobbly coarse sand; single grain; loose; about 40 percent cobbles and 25 percent gravel; moderately acid.

Unless otherwise stated, the depth ranges in this paragraph are measured from the top of the mineral material. The thickness of the solum ranges from 28 to 56 inches. Depth to the sandy material ranges from 8 to 22 inches. The content of rock fragments ranges from 5 to 50 percent in the upper part of the solum and from 35 to 80 percent in the lower part of the solum and in the substratum.

The O horizon consists of undecomposed to decomposed conifer and hardwood litter.

Some pedons have an A horizon. This horizon is as much as 2 inches thick. The A and E horizons are sandy loam, fine sandy loam, silt loam, or the gravelly, cobbly, very gravelly, or very cobbly analogs of those textures.

The Bs horizon has hue of 7.5YR or 5YR and value of 3 or 4. It has textures similar to those of the A and E horizons. The 2Bs horizon has hue of 7.5YR or 10YR and value of 3 or 4. It is the very gravelly, very cobbly, extremely gravelly, or extremely cobbly analogs of sand, coarse sand, and loamy sand.

The 2C horizon has value of 3 to 5 and chroma of 2 to 6. It has textures similar to those of the 2Bs horizon.

Escanaba Series

The Escanaba series consists of very deep, well drained soils on ground moraines and end moraines. These soils formed in sandy and loamy glacial till. Permeability is moderately rapid in the upper part of the profile and moderate in the lower part. Slopes range from 1 to 6 percent.

Typical pedon of Escanaba loamy fine sand, 1 to 6

percent slopes, 800 feet south of the northeast corner of sec. 23, T. 43 N., R. 31 W.

A—0 to 1 inch; black (5YR 2/1) loamy fine sand, very dark gray (5YR 3/1) dry; weak fine granular structure; very friable; many fine roots; strongly acid; abrupt smooth boundary.
E—1 to 9 inches; reddish gray (5YR 5/2) loamy fine sand; weak medium subangular blocky structure; very friable; common fine and medium roots; strongly acid; clear irregular boundary.
Bs1—9 to 24 inches; dark reddish brown (5YR 3/4) loamy fine sand; weak medium subangular blocky structure; very friable; many fine and medium roots; moderately acid; gradual wavy boundary.
Bs2—24 to 28 inches; strong brown (7.5YR 4/6) loamy fine sand; weak medium subangular blocky structure; friable; weakly cemented; common fine and medium roots; moderately acid; clear wavy boundary.
2B/E—28 to 36 inches; about 80 percent reddish brown (5YR 4/4) fine sandy loam (B) surrounded by dark reddish gray (5YR 4/2) loamy fine sand (E); moderate coarse subangular blocky structure; firm; few fine roots; few fine vesicular pores; about 5 percent gravel; moderately acid; clear wavy boundary.
2Bt—36 to 49 inches; dark reddish brown (5YR 3/4) fine sandy loam; weak coarse subangular blocky structure; friable; few fine roots; few fine vesicular pores; common reddish brown (5YR 4/4) clay films in pebble casings and pores; about 10 percent gravel; neutral; gradual wavy boundary.
2C—49 to 60 inches; reddish brown (5YR 4/4) fine sandy loam; massive; friable; about 10 percent gravel; slightly alkaline.

The thickness of the solum ranges from 24 to 50 inches. The thickness of the sandy upper part of the solum ranges from 20 to 35 inches. The content of gravel ranges from 0 to 10 percent in the solum and from 3 to 12 percent in the substratum. The content of cobbles ranges from 0 to 10 percent throughout the profile.

The A horizon has hue of 10YR to 5YR, value of 2 or 3, and chroma of 1 or 2. The E horizon has hue of 7.5YR or 5YR, value of 4 to 6, and chroma of 2 or 3. The A and E horizons are loamy fine sand or fine sand.

The Bs horizon has hue of 7.5YR or 5YR, value of 3 or 4, and chroma of 4 to 6. It is loamy fine sand, fine sand, loamy sand, or sand. The E part of the 2B/E horizon has hue of 7.5YR or 5YR, value of 4 or 5, and chroma of 2 or 3. It is loamy fine sand, loamy sand, or fine sand. The B part of the 2B/E horizon and the 2Bt horizon have hue of 7.5YR or 5YR, value of 3 to 5, and chroma of 4 or 5. They are fine sandy loam or sandy loam.

The 2C horizon has hue of 7.5YR or 5YR, value of 4 or 5, and chroma of 3 to 5. It is fine sandy loam or sandy loam.

Fence Series

The Fence series consists of very deep, moderately well drained and well drained, moderately slowly permeable soils on outwash plains and ground moraines. These soils formed in modified loamy eolian deposits. Slopes range from 1 to 18 percent.

Typical pedon of Fence silt loam, 1 to 2 percent slopes, 1,250 feet west and 2,500 feet north of the southeast corner of sec. 18, T. 42 N., R. 33 W.

A—0 to 2 inches; very dark gray (10YR 3/1) silt loam, dark gray (10YR 4/1) dry; moderate fine granular structure; friable; many fine roots; moderately acid; abrupt wavy boundary.
E—2 to 5 inches; brown (7.5YR 4/2) silt loam; moderate thin platy structure; friable; common fine and medium roots; moderately acid; clear wavy boundary.
Bs—5 to 9 inches; dark brown (7.5YR 4/4) silt loam; moderate fine subangular blocky structure; friable; common fine and medium roots; strongly acid; gradual irregular boundary.
E/B—9 to 27 inches; about 70 percent brown (7.5YR 5/4) silt loam (E) surrounded by reddish brown (5YR 4/4) silt loam (B); moderate medium platy structure; firm; common fine and medium roots; strongly acid; diffuse irregular boundary.
Bt—27 to 41 inches; reddish brown (5YR 4/4) silt loam; few medium prominent strong brown (7.5YR 5/6) mottles; moderate medium platy structure; friable; few fine roots; few reddish brown (5YR 5/4) clay films on faces of peds; strongly acid; gradual wavy boundary.
C—41 to 60 inches; reddish brown (5YR 4/4) very fine sandy loam; many medium prominent brown (7.5YR 5/2) and many medium prominent strong brown (7.5YR 5/6) mottles; massive; friable; few fine roots; strongly acid.

The thickness of the solum ranges from 30 to 60 inches. The content of gravel is less than 2 percent throughout the profile.

The A horizon has hue of 10YR to 5YR, value of 2 or 3, and chroma of 1 or 2. The E horizon has hue of 7.5YR or 5YR, value of 4 to 6, and chroma of 2 or 3. The A and E horizons are silt loam or very fine sandy loam.

The Bs horizon has hue of 7.5YR or 5YR, value of 3

to 5, and chroma of 4 or 5. The E part of the E/B horizon has hue of 7.5YR or 5YR, value of 5 or 6, and chroma of 2 to 4. The B part of the E/B horizon and the Bt horizon have hue of 7.5YR or 5YR and value and chroma of 4 or 5. The Bs, E/B, and Bt horizons are silt loam or very fine sandy loam.

The C horizon has hue of 5YR or 7.5YR, value of 4 to 6, and chroma of 3 to 6. It generally is silt loam, very fine sandy loam, or fine sandy loam, but in some pedons it has thin strata of sand, fine sand, and loamy fine sand.

Gaastra Series

The Gaastra series consists of very deep, somewhat poorly drained, moderately slowly permeable soils in glacial lake basins and on ground moraines. These soils formed in modified loamy eolian deposits. Slopes range from 0 to 3 percent.

Typical pedon of Gaastra silt loam, 0 to 3 percent slopes, stony, 1,650 feet east and 2,050 feet north of the southwest corner of sec. 11, T. 42 N., R. 35 W.

Oa—0 to 1 inch; black (N 2/0), well decomposed organic material; weak fine granular structure; very friable; many fine and medium roots; strongly acid; abrupt smooth boundary.

A—1 to 4 inches; dark brown (7.5YR 3/2) silt loam, brown (7.5YR 5/2) dry; moderate medium granular structure; friable; many fine and medium roots; about 2 percent gravel; moderately acid; abrupt smooth boundary.

E—4 to 6 inches; brown (7.5YR 5/2) silt loam; common fine distinct strong brown (7.5YR 4/6) mottles; moderate medium subangular blocky structure parting to weak thin platy; friable; common fine vesicular pores; common fine and medium roots; about 2 percent gravel; moderately acid; clear wavy boundary.

Bs—6 to 14 inches; brown (7.5YR 4/4) silt loam; common fine prominent yellowish red (5YR 4/6) and common medium prominent dark grayish brown (10YR 4/2) mottles; weak medium subangular blocky structure; friable; common fine vesicular pores; common fine and medium roots; about 2 percent gravel; moderately acid; clear smooth boundary.

E′—14 to 22 inches; brown (10YR 5/3) silt loam; many coarse distinct brown (7.5YR 5/2) and many medium distinct yellowish brown (10YR 5/6) mottles; moderate thick platy structure; slightly compact in place; friable; common fine vesicular pores; few fine roots; about 2 percent gravel; moderately acid; clear wavy boundary.

Bt—22 to 37 inches; dark yellowish brown (10YR 4/4) silt loam; many coarse prominent brown (7.5YR 5/2) and few medium prominent yellowish red (5YR 4/6) mottles; weak coarse subangular blocky structure parting to weak thick platy; slightly compact in place; friable; common fine vesicular pores; few fine roots; common reddish brown (5YR 4/4) clay films in pores and on faces of peds; about 2 percent gravel; moderately acid; gradual wavy boundary.

BC—37 to 51 inches; brown (7.5YR 4/4) silt loam; many medium distinct brown (7.5YR 5/2) and common medium distinct strong brown (7.5YR 4/6) mottles; weak coarse subangular blocky structure; slightly compact in place; friable; common fine vesicular pores; about 2 percent gravel; moderately acid; gradual wavy boundary.

C—51 to 60 inches; reddish brown (5YR 4/4) silt loam; common medium prominent strong brown (7.5YR 4/6) and few fine prominent brown (7.5YR 5/2) mottles; massive; slightly compact in place; friable; common fine vesicular pores; about 2 percent gravel; moderately acid.

Unless otherwise stated, depth ranges in this paragraph are measured from the top of the mineral soil. The thickness of the solum ranges from 26 to 55 inches. The content of gravel and cobbles is less than 5 percent throughout the profile.

The A horizon has hue of 10YR to 5YR, value of 2 or 3, and chroma of 1 or 2. The E horizon has hue of 10YR to 5YR, value of 4 to 6, and chroma of 1 or 2. The A and E horizons are silt loam or very fine sandy loam.

The Bs horizon has hue of 10YR to 5YR, value of 3 to 5, and chroma of 3 or 4. The E′ horizon has hue of 10YR to 5YR, value of 4 or 5, and chroma of 2 or 3. Some pedons have an E/B or a B/E horizon. The Bt and BC horizons have hue of 10YR to 5YR, value of 4 or 5, and chroma of 4 to 6. The Bs, E′, Bt, and BC horizons are silt loam or very fine sandy loam.

The C horizon has hue of 10YR to 5YR, value of 4 or 5, and chroma of 3 to 6. It is silt loam, very fine sandy loam, or fine sandy loam. In some pedons strata of sandy loam, loamy sand, sand, or the gravelly analogs of those textures are below a depth of 40 inches.

Gogebic Series

The Gogebic series consists of very deep, well drained and moderately well drained soils on end moraines. These soils formed in modified loamy eolian deposits and in the underlying loamy and sandy glacial till. They have a fragipan. Permeability is moderate in the upper part of the profile, very slow in the fragipan, and moderate in the lower part. Slopes range from 1 to 35 percent.

Typical pedon of Gogebic fine sandy loam, rolling, 1,750 feet north and 2,600 feet east of the southwest corner of sec. 10, T. 45 N., R. 37 W.

Oa—0 to 2 inches; dark reddish brown (5YR 2/2), decomposed organic material; weak medium granular structure; very friable; many fine and few medium roots; very strongly acid; abrupt wavy boundary.

E—2 to 7 inches; reddish gray (5YR 5/2) fine sandy loam; weak fine subangular blocky structure; friable; many fine and few medium roots; about 3 percent gravel; strongly acid; abrupt smooth boundary.

Bs1—7 to 9 inches; dark reddish brown (5YR 3/3) fine sandy loam; weak fine subangular blocky structure; friable; many fine and few medium roots; about 3 percent gravel; strongly acid; abrupt wavy boundary.

Bs2—9 to 21 inches; reddish brown (5YR 4/4) fine sandy loam; weak medium subangular blocky structure; friable; many fine and few medium roots; about 3 percent gravel; strongly acid; clear wavy boundary.

2Ex/Bx—21 to 28 inches; about 60 percent reddish brown (5YR 5/3) loamy fine sand (E) surrounded by reddish brown (2.5YR 4/4) fine sandy loam (B); common medium distinct yellowish red (5YR 4/6) mottles; weak thin platy structure; very firm; common vesicular pores; about 2 percent gravel and 2 percent cobbles; strongly acid; gradual wavy boundary.

2Bt—28 to 37 inches; reddish brown (2.5YR 4/4) fine sandy loam; weak medium platy structure; firm; common distinct reddish gray (5YR 5/2) clay films on faces of plates; about 3 percent gravel and 2 percent cobbles; strongly acid; gradual wavy boundary.

2C—37 to 60 inches; reddish brown (2.5YR 5/4) sandy loam; massive; friable; about 5 percent gravel and 3 percent cobbles; moderately acid.

Unless otherwise stated, the depth ranges in this paragraph are measured from the top of the mineral material. The thickness of the loamy mantle ranges from 15 to 28 inches. The thickness of the solum ranges from 30 to 70 inches. Depth to the fragipan ranges from 18 to 36 inches. The content of rock fragments ranges from 0 to 25 percent in the solum and from 0 to 30 percent in the substratum.

The O horizon ranges from 0 to 4 inches in thickness. It consists of hardwood and conifer litter in varying stages of decay.

Some pedons have an A horizon. This horizon has hue of 5YR or 7.5YR, value of 2 or 3, and chroma of 1 or 2. The E horizon has hue of 5YR or 7.5YR, value of 4 or 5, and chroma of 2.

The Bs horizon has hue of 5YR or 7.5YR and value and chroma of 3 or 4. It is fine sandy loam, sandy loam, or the gravelly analogs of those textures.

The E part of the 2Ex/Bx horizon has hue of 2.5YR to 7.5YR, value of 4 or 5, and chroma of 2 to 4. It is loamy fine sand, loamy sand, or the gravelly analogs of those textures. The B part has hue of 2.5YR to 7.5YR, value of 4 or 5, and chroma of 4 to 6. It is fine sandy loam, sandy loam, or the gravelly analogs of those textures. Some pedons have a 2Ex/Bx horizon or have a 2Ex and a 2Bx horizon.

The 2Bt horizon has hue of 5YR or 2.5YR, value of 4 or 5, and chroma of 3 to 6. It is sandy loam, fine sandy loam, loam, or the gravelly analogs of those textures.

The 2C horizon has hue of 5YR or 2.5YR, value of 4 or 5, and chroma of 4 to 6. It is dominantly sandy loam, gravelly loamy sand, gravelly sand, or gravelly sandy loam and has pockets of loam, clay loam, or fine sandy loam.

Goodman Series

The Goodman series consists of very deep, well drained, moderately permeable soils on ground moraines and end moraines. These soils formed in modified loamy eolian deposits and in the underlying loamy and sandy glacial till. Slopes range from 1 to 45 percent.

Typical pedon of Goodman silt loam, in an area of Goodman-Wabeno-Sundog, sandy substratum, complex, 6 to 18 percent slopes, stony; 1,480 feet west and 200 feet north of the southeast corner of sec. 22, T. 45 N., R. 31 W.

A—0 to 3 inches; very dark gray (10YR 3/1) silt loam, grayish brown (10YR 5/2) dry; moderate medium granular structure; friable; many fine roots; about 3 percent gravel and 2 percent cobbles; moderately acid; abrupt wavy boundary.

E—3 to 5 inches; dark grayish brown (10YR 4/2) silt loam; weak fine subangular blocky structure; friable; many fine roots; about 3 percent gravel and 2 percent cobbles; moderately acid; abrupt wavy boundary.

2Bs—5 to 14 inches; dark brown (7.5YR 4/4) very fine sandy loam; weak fine subangular blocky structure; friable; many fine and medium roots; about 3 percent gravel and 2 percent cobbles; moderately acid; clear wavy boundary.

2E/B—14 to 33 inches; about 60 percent brown (7.5YR 5/4) very fine sandy loam (E) surrounding peds of dark brown (7.5YR 4/4) very fine sandy loam (Bt); weak medium subangular blocky structure; friable;

common fine and medium roots; few clay films in pebble casings and on faces of peds; about 3 percent gravel and 2 percent cobbles; strongly acid; clear wavy boundary.

2B/E—33 to 49 inches; about 85 percent dark reddish brown (5YR 3/4) fine sandy loam (Bt) with reddish brown (5YR 5/4) loamy sand (E) on faces of most peds; weak medium subangular blocky structure; friable; few medium roots; many clay films in pebble casings and pores and on faces of some peds; about 8 percent gravel and 3 percent cobbles; strongly acid; gradual wavy boundary.

2C—49 to 60 inches; reddish brown (5YR 4/4) fine sandy loam; weak medium subangular blocky structure; friable; few medium roots; about 8 percent gravel and 3 percent cobbles; strongly acid.

The thickness of the solum ranges from 40 to 60 inches. The thickness of the eolian material ranges from 15 to 40 inches. The content of gravel ranges from 1 to 5 percent in the eolian mantle and from 5 to 10 percent in the glacial till. The content of cobbles ranges from 0 to 5 percent throughout the profile.

The A horizon has hue of 7.5YR or 10YR, value of 2 or 3, and chroma of 1 or 2. The E horizon has hue of 5YR to 10YR, value of 4 to 6, and chroma of 2 or 3. The A and E horizons are silt loam.

The Bs horizon has hue of 5YR or 7.5YR and value and chroma of 3 or 4. It is silt loam. The E part of the 2E/B horizon has hue of 7.5YR, value of 4 to 6, and chroma of 2 to 4. The Bt part has hue of 5YR or 7.5YR, value of 4 or 5, and chroma of 4 to 6. The 2E/B horizon is silt loam or very fine sandy loam. The 2B/E horizon has hue and value similar to those of the 2E/B horizon and has chroma of 3 or 4. The Bt part of the 2B/E horizon is fine sandy loam or sandy loam. The E part is loamy sand, sandy loam, or fine sandy loam.

The 2C horizon has hue of 5YR or 7.5YR, value of 4 or 5, and chroma of 4 to 6. It is fine sandy loam, sandy loam, or loamy sand.

Greenwood Series

The Greenwood series consists of very deep, very poorly drained soils on ground moraines and outwash plains. These soils formed in moderately decomposed herbaceous material. Permeability is moderate or moderately rapid. Slopes are 0 to 1 percent.

Typical pedon of Greenwood peat, in an area of Greenwood and Merwin peats; 1,450 feet west and 2,700 feet south of the northeast corner of sec. 10, T. 42 N., R. 32 W.

Oi1—0 to 5 inches; peat, reddish brown (5YR 4/4) broken face and rubbed; about 100 percent fiber, 95 percent rubbed; massive; primarily live roots and sphagnum moss; extremely acid; clear wavy boundary.

Oi2—5 to 9 inches; peat, dark reddish brown (5YR 3/3) broken face, dark reddish brown (5YR 3/2) rubbed; about 95 percent fiber, 85 percent rubbed; massive; mainly sphagnum moss and herbaceous material; extremely acid; clear wavy boundary.

Oi3—9 to 18 inches; peat, dark brown (7.5YR 3/2) broken face, black (5YR 2/1) rubbed; about 95 percent fiber, 85 percent rubbed; massive; mainly sphagnum moss and herbaceous material; extremely acid; clear wavy boundary.

Oe1—18 to 25 inches; mucky peat, dark reddish brown (5YR 3/3) broken face, dark reddish brown (5YR 2/2) rubbed; about 80 percent fiber, 40 percent rubbed; massive; herbaceous fibers; extremely acid; gradual wavy boundary.

Oe2—25 to 52 inches; mucky peat, dark reddish brown (5YR 2/2) broken face, black (5YR 2/1) rubbed; about 80 percent fiber, 30 percent rubbed; massive; herbaceous fibers and a few woody fragments; extremely acid; gradual wavy boundary.

Oa—52 to 60 inches; muck, dark reddish brown (5YR 2/2) broken face, black (5YR 2/1) rubbed; about 40 percent fiber, 10 percent rubbed; massive; woody and herbaceous fibers; extremely acid.

The organic material is more than 51 inches thick. Woody fragments are in some pedons.

The Oi layer has hue of 5YR to 10YR, value of 2 to 5, and chroma of 1 to 4. The Oe layer has hue of 5YR to 10YR, value of 2 or 3, and chroma of 1 to 4. The surface tier is commonly fibric material derived from sphagnum moss. The lower tiers are commonly hemic material derived from herbaceous plants. Some pedons do not have an Oa layer.

Kalkaska Series

The Kalkaska series consists of very deep, somewhat excessively drained and well drained, rapidly permeable soils on outwash plains and ground moraines. These soils formed in sandy glacial drift. Slopes range from 0 to 35 percent.

Typical pedon of Kalkaska sand, banded substratum, hilly, 2,310 feet north and 990 feet east of the southwest corner of sec. 2, T. 46 N., R. 36 W.

A—0 to 1 inch; very dark gray (7.5YR 3/0) sand; moderate medium granular structure; friable; common fine to coarse roots; about 5 percent gravel; very strongly acid; abrupt irregular boundary.

E—1 to 5 inches; brown (7.5YR 5/2) sand; weak medium subangular blocky structure; very friable;

common fine to coarse roots; about 5 percent gravel; very strongly acid; abrupt wavy boundary.
Bhs—5 to 8 inches; dark brown (7.5YR 3/2) sand; weak medium subangular blocky structure; very friable; common fine to coarse roots; about 5 percent gravel; very strongly acid; clear irregular boundary.
Bs1—8 to 19 inches; dark brown (7.5YR 4/4) sand; weak coarse subangular blocky structure; very friable; common fine and medium and few coarse roots; about 5 percent gravel; strongly acid; clear wavy boundary.
Bs2—19 to 29 inches; strong brown (7.5YR 4/6) sand; massive; friable; few fine to coarse roots; about 5 percent gravel; strongly acid; clear smooth boundary.
BC—29 to 50 inches; strong brown (7.5YR 5/4) sand; massive; friable; few fine to coarse roots; about 5 percent gravel; moderately acid; clear smooth boundary.
C1—50 to 58 inches; strong brown (7.5YR 5/4) sand; weak thick platy structure; friable; few fine and medium roots; about 5 percent gravel; moderately acid; gradual wavy boundary.
C2—58 to 90 inches; light brown (7.5YR 6/4) sand that has bands of strong brown (7.5YR 5/8) fine sand and loamy fine sand at a depth of more than 84 inches; massive; about 5 percent gravel; moderately acid.

The thickness of the solum ranges from 26 to 55 inches. The content of rock fragments ranges from 0 to 10 percent throughout the solum.

Some pedons have an O horizon, which consists of undecomposed to decomposed conifer and hardwood litter. The Oa horizon, if it occurs, has hue of 5YR or 7.5YR, value of 2 or 3, and chroma of 1 or 2.

The A horizon has hue of 5YR or 7.5YR, value of 2 to 4, and chroma of 1 or 2. The E horizon has hue of 5YR or 7.5YR, value of 5, and chroma of 2. The A and E horizons are sand or loamy sand.

The Bhs horizon has hue of 5YR or 7.5YR and value and chroma of 2 or 3. It is sand or loamy sand. The Bs horizon has hue of 5YR or 7.5YR, value of 3 or 4, and chroma of 4 to 6. It is sand. The BC horizon has hue of 7.5YR, value of 5, and chroma of 4 to 6. It is sand.

The C horizon has hue of 7.5YR, value of 4 to 6, and chroma of 3 to 6. It is sand that has bands of loamy fine sand, fine sand, or loamy sand. Some pedons do not have bands of loamy fine sand at a depth of more than 40 inches.

Karlin Series

The Karlin series consists of very deep, somewhat excessively drained and moderately well drained soils on outwash plains, stream terraces, ground moraines, and end moraines. These soils formed in loamy and sandy glacial till and outwash deposits. Permeability is moderately rapid in the upper part of the profile and rapid in the lower part. Slopes range from 0 to 35 percent.

Typical pedon of Karlin fine sandy loam, 1 to 6 percent slopes, 2,100 feet west and 1,580 feet south of the northeast corner of sec. 10, T. 42 N., R. 32 W.

A—0 to 2 inches; black (5YR 2/1) fine sandy loam, dark gray (5YR 4/1) dry; weak fine granular structure; friable; many fine roots; strongly acid; abrupt wavy boundary.
E—2 to 3 inches; reddish gray (5YR 5/2) fine sandy loam; weak fine subangular blocky structure; friable; many fine and medium roots; strongly acid; abrupt wavy boundary.
Bs1—3 to 10 inches; brown (7.5YR 4/4) fine sandy loam; weak fine subangular blocky structure; friable; many fine and medium roots; strongly acid; clear wavy boundary.
Bs2—10 to 24 inches; brown (7.5YR 4/4) sandy loam; weak medium subangular blocky structure; friable; common fine and medium roots; about 3 percent gravel; strongly acid; gradual wavy boundary.
BC—24 to 35 inches; yellowish red (5YR 4/6) loamy sand; weak medium subangular blocky structure; very friable; few fine roots; about 10 percent gravel; strongly acid; clear wavy boundary.
C—35 to 60 inches; brown (7.5YR 5/4) sand; single grain; loose; moderately acid.

The thickness of the solum ranges from 20 to 40 inches. The content of gravel ranges from 0 to 10 percent throughout the profile, and the content of cobbles ranges from 0 to 3 percent. The content of stones on the surface ranges from less than 0.01 to 0.1 percent.

The A horizon has hue of 10YR to 5YR, value of 2 or 3, and chroma of 1 or 2. The E horizon has hue of 10YR to 5YR, value of 4 to 6, and chroma of 1 or 2. The A and E horizons are fine sandy loam or loamy fine sand.

The Bs horizon has hue of 10YR to 5YR, value of 3 to 5, and chroma of 4 to 6. It is fine sandy loam, loamy fine sand, or sandy loam. The BC horizon has hue of 10YR to 5YR, value of 3 to 5, and chroma of 4 to 6. It is loamy sand, fine sand, or sand.

The C horizon has hue of 10YR to 5YR, value of 4 to 7, and chroma of 4 to 6. It is dominantly sand, but thin, discontinuous lamellae of loamy sand and sandy loam are below a depth of 40 inches in many pedons. Some pedons have mottles in the C horizon.

Keweenaw Series

The Keweenaw series consists of very deep, well drained, moderately permeable or moderately rapidly permeable soils on ground moraines and end moraines. These soils formed in sandy glacial till. Slopes range from 1 to 35 percent.

Typical pedon of Keweenaw loamy fine sand, 1 to 6 percent slopes, 600 feet north and 125 feet east of the southwest corner of sec. 26, T. 42 N., R. 31 W.

A—0 to 1 inch; black (5YR 2/1) loamy fine sand, very dark gray (5YR 3/1) dry; weak fine granular structure; very friable; many fine roots; moderately acid; abrupt wavy boundary.

E—1 to 6 inches; brown (7.5YR 5/2) loamy fine sand; weak medium subangular blocky structure; very friable; common fine and medium roots; strongly acid; abrupt wavy boundary.

Bs1—6 to 23 inches; yellowish red (5YR 4/6) loamy fine sand; weak medium subangular blocky structure; very friable; many fine and medium roots; moderately acid; clear wavy boundary.

Bs2—23 to 33 inches; yellowish red (5YR 4/6) loamy sand; weak medium subangular blocky structure; very friable; common fine and medium roots; about 5 percent gravel; moderately acid; clear wavy boundary.

2E/B—33 to 39 inches; about 70 percent brown (7.5YR 5/4) loamy sand (E) surrounding peds of dark reddish brown (5YR 3/4) sandy loam (Bt); weak medium subangular blocky structure; friable; common fine and medium roots; few reddish brown (5YR 4/4) clay films on faces of peds; about 5 percent gravel; moderately acid; clear irregular boundary.

2E and Bt—39 to 60 inches; strong brown (7.5YR 5/6) loamy sand (E); weak coarse subangular blocky structure; very friable; thin bands of yellowish red (5YR 4/6) sandy loam (Bt) 1/8 to 3/8 inch thick; total thickness of the bands is more than 6 inches; massive; friable; few fine roots; few reddish brown (5YR 4/4) clay coatings in pebble casings; about 5 percent gravel; moderately acid.

The thickness of the solum ranges from 30 to more than 60 inches. The content of gravel ranges from 2 to 10 percent in the A, E, and Bs horizons and from 3 to 25 percent in the 2E/B and 2E and Bt horizons. The content of cobbles ranges from 0 to 5 percent throughout the profile.

The A horizon has hue of 10YR to 5YR, value of 2 or 3, and chroma of 1 or 2. The E horizon has hue of 10YR to 5YR, value of 4 to 6, and chroma of 2. The A and E horizons are sandy loam, loamy fine sand, or loamy sand.

The Bs horizon has hue of 5YR or 7.5YR, value of 3 to 5, and chroma of 4 to 6. It is loamy sand or loamy fine sand. The E part of the 2E/B horizon has hue of 5YR or 7.5YR, value of 5 or 6, and chroma of 2 to 6. It is sand, loamy sand, loamy fine sand, or the gravelly analogs of those textures. The Bt part of this horizon has hue of 2.5YR to 7.5YR, value of 3 to 5, and chroma of 4 to 6. It is loamy sand, fine sandy loam, sandy loam, or the gravelly analogs of those textures. The 2E and Bt horizon has colors and textures similar to those of the 2E/B horizon.

Some pedons have a C horizon. This horizon has hue of 5YR or 7.5YR, value of 4 to 6, and chroma of 3 to 6. It ranges from uniform loamy sand to water-worked, interbedded sand and loamy sand that have bands or pockets of sandy loam. The gravelly analogs of those textures are in some pedons.

Kinross Series

The Kinross series consists of very deep, very poorly drained, rapidly permeable soils on outwash plains and stream terraces. These soils formed in sandy glacial outwash deposits. Slopes range from 0 to 2 percent.

Typical pedon of Kinross muck, 1,850 feet east and 600 feet north of the southwest corner of sec. 33, T. 44 N., R. 31 W.

Oa—0 to 5 inches; black (N 2/0) muck; weak medium granular structure; very friable; many fine roots; strongly acid; abrupt wavy boundary.

E1—5 to 10 inches; brown (7.5YR 5/2) fine sand; single grain; loose; few fine and medium roots; moderately acid; clear broken boundary.

E2—10 to 20 inches; brown (7.5YR 5/2) loamy fine sand; many coarse prominent strong brown (7.5YR 4/6) mottles; massive; very friable; few fine roots; moderately acid; clear irregular boundary.

Bhs—20 to 27 inches; dark brown (7.5YR 3/3) fine sand; single grain; loose; moderately acid; gradual wavy boundary.

Bs—27 to 40 inches; brown (7.5YR 4/4) fine sand; single grain; loose; moderately acid; diffuse wavy boundary.

BC—40 to 52 inches; brown (7.5YR 5/4) fine sand; common medium distinct strong brown (7.5YR 4/6) mottles; single grain; loose; moderately acid; diffuse wavy boundary.

C—52 to 60 inches; yellowish red (5YR 4/6) fine sand; single grain; loose; slightly acid.

The thickness of the solum ranges from 16 to 55 inches.

The Oa horizon has hue of 5YR to 10YR or is neutral in hue. It has value of 2 or 3 and chroma of 0 to 2. Some pedons have an A horizon. This horizon is 1 to 6 inches thick. It has hue of 5YR to 10YR, value of 1 to 3, and chroma of 1 or 2. It is mucky sand, mucky fine sand, or mucky loamy sand. The E horizon has hue of 7.5YR or 10YR, value of 5 to 7, and chroma of 1 to 3. It is sand, fine sand, loamy sand, or loamy fine sand.

The Bhs horizon has hue of 5YR to 10YR and value and chroma of 2 or 3. The Bs horizon has hue of 5YR to 10YR and value and chroma of 3 to 6. The Bhs and Bs horizons are sand, fine sand, or loamy sand. The BC horizon has hue of 5YR to 10YR and value and chroma of 4 to 6. It is sand or fine sand.

The C horizon has hue of 5YR to 10YR, value of 4 to 6, and chroma of 2 to 6. It is sand or fine sand. In some pedons it has strata of coarse sand or fine gravel.

Lode Series

The Lode series consists of very deep, well drained soils on stream terraces, outwash plains, and deltas and in glacial drainageways. These soils formed in modified loamy eolian material and in the underlying sandy glacial outwash. Permeability is moderate in the upper part of the profile and very rapid in the lower part. Slopes range from 1 to 35 percent.

Typical pedon of Lode silt loam, nearly level and undulating, 1,620 feet east and 20 feet south of the northwest corner of sec. 29, T. 44 N., R. 36 W.; in Iron River Township:

Ap—0 to 7 inches; dark brown (7.5YR 3/2) silt loam, pinkish gray (7.5YR 6/2) dry; weak fine granular structure; friable; many fine and few coarse roots; few very fine vesicular pores; about 1 percent gravel; strongly acid; abrupt wavy boundary.

Bs1—7 to 18 inches; dark brown (7.5YR 3/4) loam; weak medium subangular blocky structure; friable; common fine roots; few fine tubular pores; about 1 percent gravel; strongly acid; clear wavy boundary.

Bs2—18 to 24 inches; dark brown (7.5YR 4/4) loam; moderate medium subangular blocky structure; friable; few fine prominent yellowish red (5YR 4/6) mottles; very few fine roots; common fine tubular pores; about 1 percent gravel; strongly acid; clear wavy boundary.

Bs3—24 to 31 inches; reddish brown (5YR 5/3) sandy loam; moderate thick platy structure; firm; few fine roots; common fine vesicular pores; few clay films on faces of peds; common coarse faint reddish brown (5YR 4/4) mottles; about 5 percent gravel; very strongly acid; clear wavy boundary.

2BC—31 to 37 inches; strong brown (7.5YR 4/6) coarse sand; single grain; loose; common fine roots; about 8 percent gravel; strongly acid; clear wavy boundary.

2C1—37 to 59 inches; brown (7.5YR 4/4) sand; single grain; loose; about 5 percent gravel; moderately acid; abrupt wavy boundary.

2C2—59 to 80 inches; dark yellowish brown (10YR 4/4) sand; single grain; loose; about 5 percent gravel; moderately acid.

The thickness of the solum ranges from 24 to 48 inches. The content of gravel ranges from 1 to 20 percent in the upper part of the solum and from 5 to 40 percent in the 2BC and 2C horizons. The content of cobbles ranges from 0 to 10 percent throughout the profile.

Pedons in undisturbed areas have an A horizon, which has hue of 5YR, 7.5YR, or 10YR, value of 2 or 3, and chroma of 1 or 2, and an E horizon, which has hue of 5YR or 7.5YR, value of 5, and chroma of 2 or 3.

The Bs1 and Bs2 horizons have hue of 5YR or 7.5YR, value of 3 or 4, and chroma of 3 to 6. They are fine sandy loam, sandy loam, loam, or the gravelly analogs of those textures. The Bs3 horizon has hue of 5YR or 7.5YR, value of 4 or 5, and chroma of 2 or 3. It is sandy loam, fine sandy loam, or the gravelly analogs of those textures.

The 2C horizon has hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 3 to 6. It is sand, coarse sand, or the gravelly or very gravelly analogs of those textures.

Lupton Series

The Lupton series consists of very deep, very poorly drained soils on ground moraines and outwash plains. These soils formed in highly decomposed herbaceous and woody material. Permeability is moderately slow to moderately rapid. Slopes are 0 to 1 percent.

Typical pedon of Lupton muck, in an area of Lupton-Cathro-Humaquepts complex, 1,300 feet east and 420 feet south of the northwest corner of sec. 5, T. 41 N., R. 32 W.

Oa1—0 to 10 inches; muck, black (5YR 2/1) broken face and rubbed; about 20 percent fiber, 5 percent rubbed; weak medium granular structure; many fine roots; about 5 percent woody fragments; slightly acid; gradual wavy boundary.

Oa2—10 to 40 inches; muck, black (5YR 2/1) broken face and rubbed; about 50 percent fiber, 10 percent rubbed; massive; few fine roots; about 15 percent woody fragments; slightly acid; diffuse wavy boundary.

Oa3—40 to 60 inches; muck, black (5YR 2/1) broken face and rubbed; about 30 percent fiber, 5 percent

rubbed; massive; about 15 percent woody fragments; slightly acid.

The organic material is more than 51 inches thick. The content of woody fragments is as much as 30 percent, by volume, throughout the profile.

The organic material has hue of 5YR to 10YR or is neutral in hue. It has value of 2 or 3 and chroma of 0 to 3. Some pedons have as much as 4 inches of fibric material on the surface. The surface tier generally is sapric material, but in some areas it is hemic material. The subsurface and bottom tiers are dominantly sapric material but have as much as 10 inches of hemic material.

Manitowish Series

The Manitowish series consists of very deep, moderately well drained soils on stream terraces and outwash plains. These soils formed in loamy and sandy glacial outwash deposits. Permeability is moderate in the loamy upper part, moderately rapid in the sandy part, and rapid in the substratum. Slopes range from 0 to 3 percent.

Typical profile of Manitowish fine sandy loam, 0 to 3 percent slopes, 1,200 feet east and 30 feet south of the northwest corner of sec. 5, T. 45 N., R. 32 W.

A—0 to 1 inch; very dark gray (10YR 3/1) fine sandy loam, dark gray (10YR 4/1) dry; weak fine granular structure; friable; common roots; very strongly acid; abrupt wavy boundary.

E—1 to 4 inches; brown (7.5YR 4/2) fine sandy loam; weak fine subangular blocky structure; friable; common roots; very strongly acid; abrupt wavy boundary.

Bs1—4 to 13 inches; dark brown (7.5YR 4/4) fine sandy loam; weak fine subangular blocky structure; friable; common roots; strongly acid; gradual wavy boundary.

Bs2—13 to 19 inches; dark brown (7.5YR 4/4) fine sandy loam; weak fine subangular blocky structure; friable; few roots; strongly acid; clear wavy boundary.

2BC—19 to 26 inches; dark yellowish brown (10YR 4/4) gravelly loamy sand; weak fine subangular blocky structure; very friable; few roots; about 20 percent gravel; strongly acid; clear wavy boundary.

2C—26 to 60 inches; yellowish brown (10YR 5/4), stratified gravelly sand (60 percent) and sand (40 percent); common coarse prominent strong brown (7.5YR 5/6) mottles between depths of 30 and 60 inches; single grain; loose; few roots; about 30 percent gravel in the strata of gravelly sand; moderately acid.

The thickness of the solum ranges from 18 to 28 inches. The loamy upper part of the solum is 10 to 20 inches thick. The content of gravel ranges from 0 to 10 percent in the A, E, and Bs horizons and from 0 to 35 percent in the 2BC and 2C horizons. The content of cobbles ranges from 0 to 5 percent throughout the profile.

The A horizon has hue of 7.5YR or 10YR, value of 2 or 3, and chroma of 1 or 2. The E horizon has hue of 5YR or 7.5YR, value of 4 or 5, and chroma of 2. The A and E horizons are fine sandy loam.

The Bs horizon has hue of 7.5YR and value of 3 or 4. It is fine sandy loam or sandy loam. The 2BC horizon has hue of 7.5YR, value of 4 or 5, and chroma of 4 to 6. It is loamy sand or gravelly loamy sand.

The 2C horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 6. It is typically stratified coarse sand, sand, and the gravelly analogs of those textures.

Merwin Series

The Merwin series consists of very deep, very poorly drained soils on ground moraines and outwash plains. These soils formed in moderately decomposed herbaceous material overlying loamy glacial till and outwash. Permeability is rapid in the organic material and moderately slow in the loamy material. Slopes are 0 to 1 percent.

Typical pedon of Merwin peat, in an area of Greenwood and Merwin peats; 2,000 feet west and 2,200 feet north of the southeast corner of sec. 5, T. 41 N., R. 32 W.

Oi—0 to 8 inches; peat, yellowish brown (10YR 5/4) broken face and rubbed; about 100 percent fiber, 90 percent rubbed; massive; primarily live roots and sphagnum moss; extremely acid; clear wavy boundary.

Oe1—8 to 14 inches; mucky peat, dark reddish brown (5YR 3/3) broken face, very dark gray (5YR 3/1) rubbed; about 80 percent fiber, 50 percent rubbed; massive; herbaceous fibers; extremely acid; gradual wavy boundary.

Oe2—14 to 25 inches; mucky peat, dark reddish brown (5YR 2/2) broken face, black (5YR 2/1) rubbed; about 60 percent fiber, 35 percent rubbed; massive; herbaceous fibers; extremely acid; gradual wavy boundary.

Oe3—25 to 36 inches; mucky peat, dark reddish brown (5YR 2/2) broken face, black (5YR 2/1) rubbed; about 50 percent fiber, 20 percent rubbed; massive; herbaceous fibers; extremely acid; abrupt smooth boundary.

Ab—36 to 37 inches; black (5YR 2/1) silt loam;

massive; firm; extremely acid; abrupt wavy boundary.
Cg—37 to 41 inches; very dark grayish brown (10YR 3/2) sandy loam; massive; friable; extremely acid; clear wavy boundary.
C—41 to 60 inches; brown (7.5YR 4/4) sandy loam; many coarse prominent very dark grayish brown (10YR 3/2) mottles; massive; friable; extremely acid.

Depth to the Ab horizon ranges from 16 to 51 inches. Woody fragments are in some pedons.

The Oi layer has hue of 5YR to 10YR, value of 2 to 5, and chroma of 1 to 4. The Oe layer has hue of 5YR to 10YR and value and chroma of 2 or 3. The surface tier is commonly fibric or hemic material derived from sphagnum moss. The subsurface tier is commonly hemic material derived from herbaceous plants.

The Ab and C horizons are sandy loam, loam, silt loam, or the gravelly analogs of those textures. The content of gravel ranges from 0 to 20 percent.

Minocqua Series

The Minocqua series consists of very deep, poorly drained soils on outwash plains and stream terraces. These soils formed in modified loamy eolian deposits overlying sandy glacial outwash. Permeability is moderate in the upper part of the profile and rapid or very rapid in the lower part. Slopes range from 0 to 2 percent.

Typical pedon of Minocqua muck, in an area of Minocqua-Channing complex, 0 to 3 percent slopes; 1,850 feet east and 1,440 feet south of the northwest corner of sec. 10, T. 45 N., R. 33 W.

Oa—0 to 4 inches; black (10YR 2/1) muck; weak medium granular structure; friable; many fine roots; about 5 percent cobbles; very strongly acid; abrupt wavy boundary.
A—4 to 6 inches; very dark gray (10YR 3/1) silt loam, dark gray (10YR 4/1) dry; weak fine granular structure; friable; common fine and medium roots; about 5 percent gravel and 5 percent cobbles; strongly acid; clear wavy boundary.
Bg—6 to 25 inches; gray (5Y 5/1) loam; many medium and coarse prominent olive brown (2.5Y 4/4) mottles; weak thick and very thick platy structure; firm; few fine roots; about 8 percent gravel and 3 percent cobbles; strongly acid; clear wavy boundary.
2BCg—25 to 29 inches; grayish brown (2.5Y 5/2) loamy coarse sand; massive; very friable; about 8 percent gravel and 3 percent cobbles; strongly acid; gradual wavy boundary.
2Cg—29 to 60 inches; dark grayish brown (2.5Y 4/2), stratified coarse sand and gravelly coarse sand; single grain; loose; about 30 percent gravel and 5 percent cobbles in the strata of gravelly coarse sand; strongly acid.

The thickness of the solum ranges from 20 to 40 inches. The content of gravel ranges from 0 to 10 percent in the A and Bg horizons, from 0 to 40 percent in the 2BCg horizon, and from 0 to 60 percent in the 2Cg horizon. The content of cobbles ranges from 0 to 5 percent throughout the profile.

The Oa horizon has hue of 5YR to 10YR or is neutral in hue. It has value of 2 or 3 and chroma of 0 to 2. The A horizon has hue of 5YR to 10YR or is neutral in hue. It has value of 2 or 3 and chroma of 0 to 2. It is silt loam.

The Bg horizon has hue of 5GY to 7.5YR, value of 4 to 6, and chroma of 1 or 2. It is silt loam, loam, sandy loam, or fine sandy loam. The 2BCg horizon has hue of 5Y to 7.5YR, value of 3 to 6, and chroma of 1 or 2. It is sand, loamy sand, loamy coarse sand, or the gravelly or very gravelly analogs of those textures.

The 2Cg horizon has hue of 5Y to 7.5YR, value of 4 to 6, and chroma of 2 to 4. It is typically stratified loamy sand, sand, coarse sand, and the gravelly and very gravelly analogs of those textures.

Monico Series

The Monico series consists of very deep, somewhat poorly drained, moderately permeable soils in areas between drumlins. These soils formed in loamy glacial drift. Slopes range from 0 to 3 percent.

Typical pedon of Monico loam, nearly level, 2,310 feet north and 1,650 feet west of the southeast corner of sec. 36, T. 44 N., R. 37 W.

Oe—0 to 2 inches; partially decomposed organic material; abrupt smooth boundary.
A—2 to 4 inches; very dark gray (10YR 3/1) loam, grayish brown (10YR 5/2) dry; weak fine subangular blocky structure; friable; many fine to coarse roots; about 3 percent gravel and 2 percent cobbles; strongly acid; abrupt wavy boundary.
E—4 to 7 inches; dark grayish brown (10YR 4/2) loam; few fine faint gray (10YR 4/1) mottles; weak fine subangular blocky structure; friable; many fine and medium roots; about 3 percent gravel and 2 percent cobbles; strongly acid; clear wavy boundary.
Bs—7 to 47 inches; dark brown (7.5YR 3/4) sandy loam; common medium prominent grayish brown (10YR 5/2) mottles; moderate medium subangular blocky structure; friable; common fine and medium roots; about 5 percent gravel and 3 percent cobbles; moderately acid; clear wavy boundary.

C—47 to 60 inches; dark brown (10YR 3/3) gravelly sandy loam; few fine faint dark grayish brown (10YR 4/2) and distinct yellowish brown (10YR 5/1) mottles; massive; firm; few fine roots; about 10 percent gravel and 8 percent cobbles; moderately acid.

Unless otherwise stated, the depth ranges in this paragraph are measured from the top of the mineral material. The thickness of the solum ranges from 32 to 50 inches. The content of rock fragments ranges from 0 to 35 percent in the solum.

The A horizon has hue of 10YR or 7.5YR or is neutral in hue. It has value of 2 or 3 and chroma of 0 to 2. The E horizon has hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 2. The A and E horizons are loam, silt loam, sandy loam, or fine sandy loam.

The Bs horizon has value of 3 to 5 and chroma of 4 to 6. It is sandy loam, fine sandy loam, loam, silt loam, or the gravelly analogs of those textures.

The C horizon has hue of 10YR or 7.5YR, value of 3 to 5, and chroma of 3 to 6. It has textures similar to those of the Bs horizon.

Net Series

The Net series consists of very deep, somewhat poorly drained soils on ground moraines and end moraines. These soils formed in modified loamy eolian deposits and in the underlying loamy and sandy glacial till. They are shallow or moderately deep to a fragipan. Permeability is moderate above the fragipan, very slow in the fragipan, and moderate or moderately rapid in the substratum. Slopes range from 0 to 4 percent.

Typical pedon of Net very fine sandy loam, 0 to 4 percent slopes, very stony, 2,376 feet south and 792 feet east of the northwest corner of sec. 9, T. 46 N., R. 34 W.

A—0 to 3 inches; dark brown (7.5YR 3/2) very fine sandy loam, brown (7.5YR 5/2) dry; weak medium granular structure; friable; many fine roots; about 5 percent gravel and 7 percent cobbles; strongly acid; abrupt smooth boundary.

E—3 to 6 inches; brown (7.5YR 5/2) very fine sandy loam; common medium distinct dark gray (N 4/0) mottles; weak medium subangular blocky structure; friable; many fine roots; about 5 percent gravel and 7 percent cobbles; strongly acid; abrupt wavy boundary.

Bhs—6 to 12 inches; dark brown (7.5YR 3/2) very fine sandy loam; few fine prominent yellowish red (5YR 4/6) and few medium distinct dark gray (N 4/0) mottles; weak fine and medium subangular blocky structure; friable; many fine and medium roots; about 5 percent gravel and 5 percent cobbles; strongly acid; clear wavy boundary.

Bs1—12 to 21 inches; dark brown (10YR 4/3) very fine sandy loam; many fine prominent yellowish red (5YR 4/6) and many medium distinct brown (7.5YR 5/4) mottles; weak medium subangular blocky structure; friable; many fine and medium roots; about 5 percent gravel and 5 percent cobbles; strongly acid; clear wavy boundary.

Bs2—21 to 28 inches; dark brown (7.5YR 4/4) fine sandy loam; many medium prominent strong brown (7.5YR 5/8) mottles; weak medium subangular blocky structure; friable; common fine and medium roots; about 8 percent gravel and 5 percent cobbles; strongly acid; gradual wavy boundary.

2Ex/Bx—28 to 35 inches; about 70 percent brown (10YR 5/2) gravelly loamy sand (E) surrounding peds of dark brown (7.5YR 4/2) gravelly sandy loam (B); common medium distinct dark gray (N 4/0) and common fine prominent strong brown (7.5YR 5/8) mottles; moderate medium platy structure; very firm; common fine vesicular pores; about 20 percent gravel and 5 percent cobbles; moderately acid; clear smooth boundary.

2Bx/Ex—35 to 49 inches; about 80 percent dark brown (10YR 4/2) gravelly sandy loam (B) surrounded by brown (7.5YR 5/2) gravelly loamy sand (E); few fine prominent strong brown (7.5YR 5/8) and common medium distinct dark gray (N 4/0) mottles; weak medium subangular blocky structure; very firm; common fine vesicular pores; about 20 percent gravel and 5 percent cobbles; moderately acid; clear smooth boundary.

2C—49 to 60 inches; dark brown (7.5YR 4/2) gravelly sandy loam; massive; friable; about 20 percent gravel and 5 percent cobbles; moderately acid.

The thickness of the solum ranges from 30 to 52 inches. The thickness of the eolian material ranges from 16 to 38 inches. Depth to the fragipan ranges from 15 to 30 inches. The content of gravel ranges from 3 to 10 percent in the eolian material and from 15 to 35 percent in the glacial till. The content of cobbles ranges from 1 to 10 percent throughout the profile. The content of stones on the surface ranges from 0.01 to 3.0 percent.

The A horizon has hue of 5YR to 10YR, value of 2 or 3, and chroma of 1 or 2. The E horizon has hue of 5YR to 10YR, value of 4 or 5, and chroma of 2 or 3. The A and E horizons are very fine sandy loam or silt loam.

The Bhs horizon has hue of 5YR or 7.5YR and value and chroma of 2 or 3. The Bs horizon has hue of 5YR to 10YR, value of 3 to 5, and chroma of 3 or 4. The Bhs and Bs horizons are very fine sandy loam, silt loam, or fine sandy loam. The Ex part of the Ex/Bx and Bx/Ex

horizons has hue of 7.5YR or 10YR, value of 5, and chroma of 2 or 3. The Bx part has hue of 7.5YR or 10YR, value of 4, and chroma of 2 to 4. The Ex/Bx and Bx/Ex horizons are sandy loam, loamy sand, or the gravelly analogs of those textures or very fine sandy loam or silt loam.

The 2C horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 2 to 4. It is gravelly sandy loam or gravelly loamy sand.

Oconto Series

The Oconto series consists of very deep, well drained soils on outwash plains. These soils formed in modified loamy eolian deposits overlying sandy glacial outwash. Permeability is moderate in the upper part of the profile and rapid or very rapid in the lower part. Slopes range from 1 to 18 percent.

Typical pedon of Oconto very fine sandy loam, 1 to 2 percent slopes, 2,350 feet south and 1,650 feet west of the northeast corner of sec. 35, T. 43 N., R. 31 W.

Ap—0 to 7 inches; dark brown (7.5YR 3/2) very fine sandy loam, light brownish gray (10YR 6/2) dry; moderate fine granular structure; friable; many fine roots; about 2 percent gravel and 1 percent cobbles; slightly acid; clear wavy boundary.

E—7 to 11 inches; brown (7.5YR 5/2) very fine sandy loam; weak fine subangular blocky structure parting to weak fine granular; friable; many fine roots; about 2 percent gravel and 1 percent cobbles; moderately acid; clear wavy boundary.

Bs1—11 to 18 inches; strong brown (7.5YR 4/6) very fine sandy loam; weak fine subangular blocky structure parting to weak fine granular; friable; common fine and medium roots; about 2 percent gravel and 1 percent cobbles; moderately acid; gradual wavy boundary.

Bs2—18 to 28 inches; dark brown (7.5YR 4/4) very fine sandy loam; weak medium subangular blocky structure; firm; common fine and medium roots; about 2 percent gravel and 1 percent cobbles; moderately acid; clear wavy boundary.

2Bt—28 to 35 inches; dark brown (7.5YR 3/4) gravelly loam; weak medium subangular blocky structure; friable; many fine and medium roots; many reddish brown (5YR 4/4) clay films occurring as bridges between sand grains and in pebble casings; about 20 percent gravel and 5 percent cobbles; neutral; clear smooth boundary.

2C—35 to 60 inches; strong brown (7.5YR 5/6) very gravelly coarse sand that has a few thin strata of sand; single grain; loose; few fine roots; about 45 percent gravel and 5 percent cobbles; strong effervescence; slightly alkaline.

The thickness of the solum ranges from 30 to 40 inches. The content of gravel ranges from 0 to 5 percent in the upper part of the solum, from 10 to 25 percent in the Bt horizon, and from 35 to 60 percent in the 2C horizon. The content of cobbles ranges from 0 to 10 percent throughout the profile.

In areas that have not been cultivated, the A horizon is 1 to 3 inches thick. It has hue of 7.5YR or 10YR, value of 2 or 3, and chroma of 1 or 2. The E horizon has hue of 5YR or 7.5YR, value of 4 to 6, and chroma of 2 or 3. The Ap, A, and E horizons are very fine sandy loam or fine sandy loam.

The Bs horizon has hue of 5YR or 7.5YR, value of 3 or 4, and chroma of 4 to 6. It very fine sandy loam or fine sandy loam. The Bt horizon has hue of 5YR or 7.5YR and value and chroma of 3 or 4. It is loam, sandy loam, or the gravelly analogs of those textures.

The 2C horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 6.

Ocqueoc Series

The Ocqueoc series consists of very deep, well drained soils on outwash plains. These soils formed in sandy glacial outwash deposits overlying loamy ice-contact sediments. Permeability is rapid in the upper part of the profile and moderately slow in the lower part. Slopes range from 1 to 18 percent.

Typical pedon of Ocqueoc loamy fine sand, 6 to 18 percent slopes, 1,840 feet east and 510 feet north of the southwest corner of sec. 12, T. 41 N., R. 31 W.

A—0 to 3 inches; dark reddish brown (5YR 2/2) loamy fine sand, reddish gray (5YR 5/2) dry; weak fine granular structure; very friable; common fine and medium roots; about 1 percent gravel and 1 percent cobbles; very strongly acid; abrupt wavy boundary.

E—3 to 5 inches; dark reddish gray (5YR 4/2) loamy fine sand; weak very fine subangular blocky structure; very friable; common fine and medium roots; about 1 percent gravel and 1 percent cobbles; very strongly acid; abrupt broken boundary.

Bhs—5 to 7 inches; dark reddish brown (5YR 3/3) loamy fine sand; weak fine subangular blocky structure; very friable; common fine and medium roots; about 1 percent gravel and 1 percent cobbles; strongly acid; clear wavy boundary.

Bs1—7 to 17 inches; dark reddish brown (5YR 3/4) loamy fine sand; weak fine subangular blocky structure; very friable; common fine and medium roots; about 1 percent gravel and 1 percent cobbles; strongly acid; clear wavy boundary.

Bs2—17 to 23 inches; reddish brown (5YR 4/4) loamy fine sand; weak medium subangular blocky

structure; very friable; few fine and medium roots; about 1 percent gravel and 1 percent cobbles; strongly acid; clear wavy boundary.

2C1—23 to 40 inches; 75 percent reddish brown (5YR 4/4) very fine sand; 20 percent bands of reddish brown (5YR 3/3) very fine sandy loam that are ¼ to ¾ inch thick; massive; 70 percent very friable and friable and 30 percent weakly cemented; few fine and medium roots; moderately acid; gradual wavy boundary.

2C2—40 to 60 inches; 80 percent reddish brown (5YR 5/4) very fine sand; 20 percent bands of reddish brown (2.5YR 4/4) very fine sandy loam that are ⅓ to ½ inch thick; massive; very friable and friable; few fine roots; moderately acid.

The thickness of the solum ranges from 15 to 30 inches. Depth to the loamy 2C horizon ranges from 20 to 39 inches. The content of gravel ranges from 0 to 2 percent in the sandy material. The content of cobbles ranges from 0 to 4 percent in the sandy material.

The A horizon has hue of 5YR or 7.5YR, value of 2 or 3, and chroma of 1 or 2. The E horizon has hue of 5YR or 7.5YR, value of 5 or 6, and chroma of 1 or 2. The A and E horizons are loamy fine sand.

The Bhs horizon has hue of 5YR or 7.5YR, value of 3, and chroma of 2 or 3. The Bs horizon has hue of 5YR or 7.5YR, value of 3 to 5, and chroma of 4 to 6. These horizons are loamy fine sand or fine sand.

The 2C horizon has hue of 2.5YR to 7.5YR, value of 4 or 5, and chroma of 4 to 6. Some pedons have strata of fine sand or loamy fine sand.

Padus Series

The Padus series consists of very deep, well drained soils on outwash plains, stream terraces, and eskers. These soils formed in loamy glacial outwash deposits overlying sandy glacial outwash. Permeability is moderate or moderately rapid in the upper part of the profile and rapid or very rapid in the lower part. Slopes range from 1 to 35 percent.

Typical pedon of Padus fine sandy loam, 1 to 2 percent slopes, 800 feet south and 50 feet east of the northwest corner of sec. 22, T. 42 N., R. 33 W.

Ap—0 to 7 inches; very dark grayish brown (10YR 3/2) fine sandy loam, light brownish gray (10YR 6/2) dry; moderate medium granular structure; friable; many fine roots; about 5 percent gravel and 2 percent cobbles; strongly acid; abrupt smooth boundary.

Bs1—7 to 17 inches; dark brown (7.5YR 4/4) fine sandy loam; weak medium subangular blocky structure; friable; common fine and medium roots; about 5 percent gravel and 2 percent cobbles; strongly acid; clear wavy boundary.

Bs2—17 to 25 inches; brown (7.5YR 5/4) fine sandy loam; weak medium subangular blocky structure; friable; common fine and medium roots; about 10 percent gravel and 2 percent cobbles; strongly acid; gradual wavy boundary.

2B/E—25 to 35 inches; about 80 percent reddish brown (5YR 4/4) gravelly fine sandy loam (Bt) surrounded by brown (7.5YR 5/4) fine sandy loam (E); weak medium subangular blocky structure; friable; few fine and medium roots; few clay films in pebble casings and pores; about 20 percent gravel; strongly acid; clear wavy boundary.

2Bt—35 to 39 inches; reddish brown (5YR 4/4) gravelly fine sandy loam; weak medium subangular blocky structure; friable; few fine and medium roots; common clay films in pebble casings and on faces of peds; about 20 percent gravel; strongly acid; abrupt wavy boundary.

2C—39 to 60 inches; brown (7.5YR 4/4) gravelly coarse sand; single grain; loose; about 25 percent gravel; moderately acid.

The thickness of the solum ranges from 24 to 40 inches. The depth to sand or gravelly sand is less than 40 inches. The content of gravel ranges from 0 to 12 percent in the upper part of the solum and from 15 to 40 percent in the lower part of the solum and in the substratum. The content of cobbles ranges from 0 to 5 percent throughout the profile. The content of stones on the surface ranges from less than 0.01 to 0.1 percent.

Areas that have not been cultivated have an A and an E horizon. The A horizon is 1 to 3 inches thick. It has hue of 7.5YR or 10YR, value of 2 or 3, and chroma of 1 or 2. The E horizon has hue of 5YR or 7.5YR, value of 4 or 5, and chroma of 2 or 3. The Ap, A, and E horizons are fine sandy loam.

The Bs horizon has hue of 5YR or 7.5YR, value of 3 to 5, and chroma of 4 or 5. Some pedons have a thin Bhs horizon. This horizon has value and chroma of 2 or 3. The Bs and Bhs horizons are fine sandy loam. The E part of the 2B/E horizon has hue of 5YR or 7.5YR, value of 5 or 6, and chroma of 2 to 4. The B part of the 2B/E horizon and the 2Bt horizon have hue of 5YR or 7.5YR, value of 4 or 5, and chroma of 4. The 2B/E and 2Bt horizons are fine sandy loam, sandy loam, loam, or the gravelly or very gravelly analogs of those textures.

The 2C horizon has hue of 5YR to 10YR, value of 4 or 5, and chroma of 4 to 6. It commonly is stratified sand, coarse sand, and the gravelly and very gravelly analogs of those textures.

Peavy Series

The Peavy series consists of well drained and moderately well drained soils on ground moraines. These soils are moderately deep or deep over dense basal till. They formed in modified loamy eolian material and in the underlying loamy, dense glacial till. Permeability is moderate in the upper part of the profile and very slow in the lower part. Slopes range from 1 to 18 percent.

Typical pedon of Peavy silt loam, 1 to 6 percent slopes, stony, 780 feet south and 390 feet west of the northeast corner of sec. 36, T. 43 N., R. 33 W.

Ap—0 to 6 inches; dark reddish brown (5YR 3/2) silt loam, reddish brown (5YR 4/3) dry; weak fine granular structure; friable; many fine roots; about 3 percent channers and 2 percent flagstones; moderately acid; abrupt wavy boundary.

Bs—6 to 22 inches; dark reddish brown (2.5YR 3/4) very fine sandy loam; weak fine subangular blocky structure; friable; common fine and medium roots; about 3 percent gravel and 2 percent flagstones; moderately acid; abrupt broken boundary.

E—22 to 27 inches; reddish brown (5YR 4/4) fine sandy loam; few fine distinct yellowish red (5YR 4/6) mottles; weak fine subangular blocky structure; friable; few fine roots; about 3 percent channers and 2 percent flagstones; moderately acid; abrupt wavy boundary.

2Btd—27 to 41 inches; dark reddish brown (2.5YR 3/4) channery loam; moderate thin platy structure; very firm; many red (2.5YR 4/6) clay films on faces of peds; about 20 percent channers and 10 percent flagstones; moderately acid; clear wavy boundary.

2Cd—41 to 70 inches; dark reddish brown (5YR 3/3) channery sandy loam; weak medium platy structure; extremely firm; about 20 percent channers and 10 percent flagstones; slightly acid.

The thickness of the solum ranges from 26 to 50 inches. The depth to dense till ranges from 20 to 42 inches. The content of channers ranges from 2 to 10 percent in the Ap, Bs, and E horizons; from 2 to 20 percent in the 2Btd horizon; and from 15 to 50 percent in the dense till. The content of flagstones ranges from 1 to 5 percent in the upper part of the profile and from 5 to 10 percent in the dense till. The content of stones on the surface ranges from 0.01 to 0.1 percent.

The Ap horizon has hue of 5YR or 7.5YR, value of 2 or 3, and chroma of 1 to 3. In areas that have not been cultivated, the A horizon is 1 to 3 inches thick. It has hue of 5YR or 7.5YR, value of 2 or 3, and chroma of 1 or 2. Some pedons have an E horizon directly below the Ap or A horizon. This horizon has hue of 5YR or 7.5YR, value of 4 or 5, and chroma of 2 or 3. The Ap horizon and the A and E horizons, if they occur, are silt loam or very fine sandy loam.

The Bs horizon has hue of 2.5YR to 7.5YR, value of 3 or 4, and chroma of 3 to 6. The E horizon has hue of 5YR or 7.5YR, value of 4 or 5, and chroma of 3 or 4. The Bs and E horizons are very fine sandy loam, silt loam, loam, or fine sandy loam. The 2Btd horizon has hue of 2.5YR or 5YR and value and chroma of 3 or 4. It is channery loam or very channery loam.

The 2Cd horizon has colors similar to those of the 2Btd horizon. It is channery loam, very channery loam, channery sandy loam, or very channery sandy loam.

Pence Series

The Pence series consists of very deep, well drained soils on outwash plains, stream terraces, and eskers. These soils formed in loamy and sandy glacial outwash deposits. Permeability is moderately rapid in the upper part of the profile and rapid or very rapid in the lower part. Slopes range from 0 to 35 percent.

Typical pedon of Pence fine sandy loam, 6 to 18 percent slopes, 900 feet east of the northwest corner of sec. 1, T. 44 N., R. 31 W.

Oe—0 to 1 inch; black (10YR 2/1), partially decomposed forest litter; weak very fine granular structure; very friable; many fine roots; strongly acid; abrupt smooth boundary.

E—1 to 4 inches; light brownish gray (10YR 6/2) fine sandy loam; weak medium subangular blocky structure; friable; common fine and medium roots; strongly acid; clear wavy boundary.

Bs1—4 to 13 inches; dark brown (7.5YR 4/4) fine sandy loam; weak medium subangular blocky structure; friable; many fine and medium roots; strongly acid; clear wavy boundary.

Bs2—13 to 20 inches; dark brown (7.5YR 4/4) sandy loam; weak medium subangular blocky structure; friable; few fine and medium roots; about 10 percent gravel; strongly acid; gradual wavy boundary.

2BC—20 to 33 inches; strong brown (7.5YR 4/6) gravelly sand; single grain; loose; few fine roots; about 30 percent gravel; strongly acid; clear wavy boundary.

2C—33 to 60 inches; dark yellowish brown (10YR 4/4), stratified gravelly coarse sand and sand; single grain; loose; about 20 percent gravel in the strata of gravelly coarse sand; strongly acid.

Unless otherwise stated, the depth ranges in this paragraph are measured from the top of the mineral material. The thickness of the solum ranges from 20 to 36 inches. The loamy deposit is 10 to 20 inches thick.

The content of gravel ranges from 0 to 15 percent in the A, E, and Bs horizons and from 15 to 35 percent in the 2BC and 2C horizons. The content of cobbles ranges from 0 to 5 percent throughout the profile.

Some pedons have an A horizon. This horizon has hue of 5YR to 10YR, value of 2 or 3, and chroma of 1 or 2. The E horizon has hue of 5YR to 10YR, value of 4 to 6, and chroma of 2. The A and E horizons are fine sandy loam or loamy sand.

The Bs horizon has hue of 5YR or 7.5YR, value of 3 or 4, and chroma of 4 to 6. It is fine sandy loam, sandy loam, or the gravelly analogs of those textures. The 2BC horizon has hue of 5YR or 7.5YR and value and chroma of 4 to 6. It is sand, coarse sand, loamy sand, or the gravelly analogs of those textures.

The 2C horizon has hue of 5YR to 10YR, value of 4 to 6, and chroma of 3 to 6. It is typically stratified coarse sand, sand, and the gravelly analogs of those textures. Some pedons have layers of very gravelly sand and very gravelly coarse sand. In some places the water table is at a depth of 6 to 10 feet.

Petticoat Series

The Petticoat series consists of very deep, moderately well drained and well drained soils on ground moraines. These soils formed in modified loamy eolian deposits overlying sandy glacial till. Permeability is moderate in the upper part of the profile and moderately rapid in the lower part. Slopes range from 1 to 18 percent.

Typical pedon of Petticoat silt loam, in an area of Petticoat-Wabeno silt loams, 1 to 6 percent slopes, very stony; 1,500 feet east and 560 feet north of the southwest corner of sec. 20, T. 46 N., R. 32 W.

A—0 to 1 inch; black (5YR 2/1) silt loam, dark reddish gray (5YR 4/2) dry; weak medium granular structure; friable; many fine roots; about 10 percent cobbles and 2 percent gravel; very strongly acid; abrupt wavy boundary.

E—1 to 4 inches; reddish gray (5YR 5/2) silt loam; weak fine subangular blocky structure; friable; many fine roots; about 10 percent cobbles and 2 percent gravel; very strongly acid; abrupt wavy boundary.

Bhs—4 to 8 inches; dark reddish brown (5YR 3/2) silt loam; weak fine subangular blocky structure; friable; many fine and medium roots; about 10 percent cobbles and 2 percent gravel; very strongly acid; clear wavy boundary.

Bs1—8 to 14 inches; dark reddish brown (5YR 3/4) silt loam; weak fine subangular blocky structure; friable; many fine and medium roots; about 5 percent cobbles and 5 percent gravel; very strongly acid; clear wavy boundary.

Bs2—14 to 20 inches; dark brown (7.5YR 4/4) silt loam; weak fine subangular blocky structure; friable; common fine and medium roots; about 5 percent cobbles and 5 percent gravel; very strongly acid; clear wavy boundary.

E'—20 to 30 inches; brown (10YR 5/3) silt loam; common medium prominent strong brown (7.5YR 5/6) mottles; weak medium platy structure; friable; few fine and medium roots; about 5 percent cobbles and 5 percent gravel; very strongly acid; gradual wavy boundary.

Bt—30 to 38 inches; dark brown (7.5YR 4/4) loam; common fine prominent grayish brown (10YR 5/2) and common medium prominent yellowish red (5YR 4/8) mottles; weak medium platy structure; firm; few fine roots; many dark brown (7.5YR 4/4) clay films on faces of peds; about 5 percent cobbles and 5 percent gravel; strongly acid; abrupt wavy boundary.

2C—38 to 60 inches; brown (10YR 5/3) gravelly loamy sand; common medium prominent strong brown (7.5YR 5/6) and few fine prominent yellowish red (5YR 4/8) mottles; massive; very friable; few fine roots; about 20 percent gravel and 5 percent cobbles; strongly acid.

The thickness of the solum ranges from 25 to 40 inches. The content of gravel ranges from 1 to 10 percent in the solum and from 15 to 30 percent in the C horizon. The content of cobbles ranges from 10 to 20 percent in the upper part of the solum and from 5 to 10 percent in the lower part of the solum and in the C horizon. The content of stones on the surface ranges from 0.1 to 3.0 percent.

The A horizon has hue of 5YR or 7.5YR and value and chroma of 1 or 2. The E horizon has hue of 5YR or 7.5YR, value of 4 or 5, and chroma of 2. The A and E horizons are silt loam or very fine sandy loam.

The Bhs horizon has hue of 5YR or 7.5YR and value and chroma of 2 or 3. The Bs horizon has hue of 5YR or 7.5YR, value of 3 or 4, and chroma of 4 to 6. The E′ horizon has hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 2 or 3. The Bt horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 6. The E′ and Bt horizons are fine sandy loam, silt loam, or loam.

The 2C horizon has hue of 10YR, value of 4 or 5, and chroma of 2 to 4. It is gravelly loamy sand or gravelly loamy fine sand.

Sagola Series

The Sagola series consists of very deep, well drained, moderately rapidly permeable soils on ground moraines and end moraines. These soils formed in loamy glacial till. Slopes range from 1 to 35 percent.

Typical pedon of Sagola fine sandy loam, 6 to 18 percent slopes, stony, 3,600 feet south and 1,450 feet west of the northeast corner of sec. 36, T. 42 N., R. 31 W.

A—0 to 1 inch; black (5YR 2/1) fine sandy loam, very dark gray (5YR 3/1) dry; weak fine granular structure; friable; many fine roots; about 3 percent gravel and 2 percent cobbles; strongly acid; abrupt wavy boundary.

E—1 to 7 inches; reddish gray (5YR 5/2) fine sandy loam; weak fine subangular blocky structure; friable; common fine roots; about 3 percent gravel and 2 percent cobbles; strongly acid; abrupt wavy boundary.

Bs—7 to 18 inches; reddish brown (5YR 4/4) fine sandy loam; weak fine subangular blocky structure; friable; common fine and medium roots; about 3 percent gravel and 2 percent cobbles; moderately acid; clear wavy boundary.

E/B—18 to 30 inches; about 80 percent brown (10YR 5/3) fine sandy loam (E) surrounding peds of dark brown (7.5YR 4/4) fine sandy loam (Bt); weak medium subangular blocky structure; friable; few clay films on faces of peds; few medium roots; about 3 percent gravel and 2 percent cobbles; moderately acid; clear wavy boundary.

B/E—30 to 47 inches; about 60 percent dark reddish brown (5YR 3/4) fine sandy loam (Bt); many clay films on faces of peds; surrounded by reddish brown (5YR 5/3) loamy fine sand (E); weak thick platy structure; firm; few medium roots; about 3 percent gravel and 2 percent cobbles; neutral; abrupt wavy boundary.

2C—47 to 60 inches; reddish brown (5YR 5/4) loamy fine sand; weak fine subangular blocky structure; very friable; few medium roots; about 10 percent gravel; neutral.

The thickness of the solum ranges from 40 to more than 60 inches. The content of gravel ranges from 1 to 10 percent. The content of cobbles also ranges from 1 to 10 percent. The content of stones on the surface ranges from 0 to 3 percent.

The A horizon has hue of 5YR to 10YR, value of 2 or 3, and chroma of 1 or 2. The E horizon has hue of 5YR or 7.5YR, value of 4 to 6, and chroma of 2 or 3. The A and E horizons are fine sandy loam or loamy fine sand.

The Bs horizon has hue of 5YR or 7.5YR and value and chroma of 3 or 4. It is fine sandy loam or loamy fine sand. The E part of the E/B and B/E horizons has hue of 5YR to 10YR, value of 4 to 6, and chroma of 2 to 4. It is loamy sand, loamy fine sand, or fine sandy loam. The Bt part has hue of 5YR or 7.5YR and value and chroma of 3 or 4. It is sandy loam or fine sandy loam. Some pedons have an E and Bt horizon underlying the B/E horizon. This horizon has colors and textures similar to those of the E/B and B/E horizons.

The C horizon is sandy loam, loamy fine sand, or loamy sand. It is calcareous in some pedons.

Sarona Series

The Sarona series consists of very deep, well drained, moderately permeable soils on ground moraines and end moraines. These soils formed in loamy glacial till. Slopes range from 1 to 35 percent.

Typical pedon of Sarona fine sandy loam, 1 to 6 percent slopes, stony, 575 feet east and 1,800 feet south of the northwest corner of sec. 14, T. 42 N., R. 33 W.

A—0 to 2 inches; very dark gray (10YR 3/1) fine sandy loam, dark gray (10YR 4/1) dry; moderate medium granular structure; friable; many fine roots; about 5 percent gravel; moderately acid; abrupt smooth boundary.

E—2 to 7 inches; brown (7.5YR 5/2) fine sandy loam; weak thin platy structure; friable; many fine and medium roots; about 5 percent gravel; strongly acid; clear wavy boundary.

Bs—7 to 18 inches; dark brown (7.5YR 4/4) fine sandy loam; weak medium subangular blocky structure; friable; common fine and medium roots; about 5 percent gravel; moderately acid; clear wavy boundary.

E/B—18 to 33 inches; about 70 percent brown (7.5YR 5/4) loamy fine sand (E) surrounding peds of dark brown (7.5YR 4/4) fine sandy loam (Bt); moderate thick platy structure; friable; common fine and medium roots; few fine vesicular pores; few reddish brown (5YR 5/4) clay films in gravel casings and pores; about 8 percent gravel; strongly acid; clear wavy boundary.

Bt—33 to 37 inches; dark brown (7.5YR 4/4) loam; moderate thick platy structure; friable; few fine and medium roots; few fine vesicular pores; few reddish brown (5YR 5/4) clay films in pebble casings and pores; about 8 percent gravel; strongly acid; clear wavy boundary.

C—37 to 60 inches; reddish brown (5YR 4/4) gravelly sandy loam; massive; firm; about 25 percent gravel; strongly acid.

The thickness of the solum ranges from 30 to 60 inches. The content of gravel ranges from 0 to 12 percent in the upper part of the solum and from 5 to 25 percent in the lower part of the solum and in the C horizon. The content of cobbles ranges from 0 to 5 percent throughout the profile. The content of stones on

the surface ranges from 0.01 to 0.1 percent.

The A horizon has hue of 10YR to 5YR, value of 2 or 3, and chroma of 1 or 2. The E horizon has hue of 10YR to 5YR, value of 4 or 5, and chroma of 2 or 3. The A and E horizons are fine sandy loam or loamy sand.

The Bs horizon has hue of 7.5YR or 5YR, value of 3 or 4, and chroma of 4 to 6. The E part of the E/B horizon has hue of 7.5YR or 5YR, value of 4 to 6, and chroma of 2 to 4. It is loamy fine sand, loamy sand, fine sandy loam, or sandy loam. The Bt part of the E/B horizon has hue of 7.5YR or 5YR, value of 4, and chroma of 4 to 6. It is fine sandy loam, loam, or sandy loam. The Bt horizon has hue of 7.5YR or 5YR, value of 3 or 4, and chroma of 4 to 6. It is loam, sandy loam, or the gravelly analogs of those textures.

The C horizon has hue of 7.5YR or 5YR and value and chroma of 4 to 6. It is sandy loam, loamy sand, or the gravelly analogs of those textures.

Solona Series

The Solona series consists of very deep, somewhat poorly drained, moderately permeable soils on ground moraines. These soils formed in loamy glacial till. Slopes range from 0 to 3 percent.

Typical pedon of Solona very fine sandy loam, 0 to 3 percent slopes, stony, 1,240 feet west and 2,640 feet south of the northeast corner of sec. 36, T. 43 N., R. 31 W.

A—0 to 6 inches; black (5YR 2/1) very fine sandy loam, dark gray (5YR 4/1) dry; weak fine granular structure; friable; many fine roots; about 10 percent cobbles; neutral; clear wavy boundary.

E—6 to 12 inches; brown (7.5YR 5/2) very fine sandy loam; many fine prominent yellowish red (5YR 4/6) mottles; moderate thin platy structure; firm; common fine and medium roots; few fine vesicular pores; about 10 percent cobbles; neutral; clear wavy boundary.

Bw—12 to 30 inches; brown (7.5YR 5/4) very fine sandy loam; many medium prominent yellowish red (5YR 5/8) and common fine prominent reddish gray (5YR 5/2) mottles; moderate medium subangular blocky structure; friable; common fine and medium roots; neutral; clear wavy boundary.

B/E— 30 to 36 inches; about 90 percent yellowish red (5YR 4/6) loam (Bt); many yellowish red (5YR 5/6) clay films in gravel casings and pores; surrounded by brown (7.5YR 5/3) loamy sand (E); weak coarse subangular blocky structure; friable; few fine and medium roots; about 5 percent gravel; neutral; gradual wavy boundary.

C—36 to 60 inches; yellowish red (5YR 4/6) sandy loam; massive; friable; about 5 percent gravel; slight effervescence; slightly alkaline.

The thickness of the solum ranges from 30 to 40 inches. The content of gravel ranges from 0 to 10 percent throughout the profile. The content of cobbles also ranges from 0 to 10 percent.

The A horizon has hue of 5YR or 7.5YR, value of 2 or 3, and chroma of 1 or 2. The E horizon has hue of 5YR or 7.5YR, value of 4 or 5, and chroma of 2 or 3. The A and E horizons are very fine sandy loam or fine sandy loam.

The Bw horizon and the Bt part of the B/E horizon have hue of 5YR or 7.5YR, value of 4 or 5, and chroma of 4 to 6. They are very fine sandy loam, fine sandy loam, or loam. The E part of the B/E horizon has hue of 5YR or 7.5YR, value of 4 or 5, and chroma of 3. It is sandy loam or loamy sand.

The C horizon has hue of 5YR or 7.5YR, value of 4 or 5, and chroma of 3 to 6. It is sandy loam or fine sandy loam. Thin strata of sand, gravelly sand, very fine sand, or silt loam are common below a depth of 40 inches.

Soperton Series

The Soperton series consists of very deep, well drained soils on end moraines. These soils formed in modified loamy eolian deposits and in the underlying loamy and sandy glacial till. They are moderately deep to a fragipan. Permeability is moderate above the fragipan, moderately slow in the fragipan, and moderate or moderately rapid below the fragipan. Slopes range from 18 to 35 percent.

Typical pedon of Soperton silt loam, 18 to 35 percent slopes, very stony, 2,000 feet east of the northwest corner of sec. 19, T. 43 N., R. 33 W.

A—0 to 1 inch; very dark gray (5YR 3/1) silt loam, dark gray (5YR 4/1) dry; weak fine granular structure; friable; many fine roots; about 2 percent gravel and 2 percent cobbles; strongly acid; abrupt wavy boundary.

E—1 to 5 inches; brown (7.5YR 4/2) silt loam; weak fine subangular blocky structure; friable; many fine and medium roots; about 2 percent gravel and 2 percent cobbles; strongly acid; abrupt wavy boundary.

Bs—5 to 16 inches; dark brown (7.5YR 4/4) silt loam; weak fine subangular blocky structure; friable; common fine and medium roots; about 2 percent gravel and 2 percent cobbles; strongly acid; gradual wavy boundary.

B/E—16 to 25 inches; about 85 percent dark brown (7.5YR 4/4) silt loam (Bt) surrounded by brown (10YR 5/3) silt loam (E) on faces of peds; weak

medium subangular blocky structure; friable; common fine and medium roots; about 2 percent gravel and 2 percent cobbles; strongly acid; clear irregular boundary.

2Btx/Ex—25 to 32 inches; about 85 percent dark brown (7.5YR 4/4) loam (Btx); few distinct reddish brown (5YR 4/4) clay films on faces of peds; surrounded by brown (10YR 5/3) loam (Ex) on faces of peds and as intrusions; weak thin platy structure; very firm; about 5 percent gravel and 2 percent cobbles; moderately acid; clear irregular boundary.

2Btx—32 to 41 inches; dark brown (7.5YR 4/4) sandy loam; moderate medium platy structure; very firm; common distinct reddish brown (5YR 5/4) clay films on faces of peds; about 8 percent gravel and 3 percent cobbles; moderately acid; gradual wavy boundary.

2C—41 to 60 inches; 70 percent brown (7.5YR 5/4) sandy loam; 30 percent pockets and strata of gravelly loamy sand; massive; friable; about 10 percent gravel and 2 percent cobbles; moderately acid.

The thickness of the solum ranges from 40 to 50 inches. The thickness of the eolian material ranges from 15 to 36 inches. Depth to the fragipan ranges from 20 to 40 inches. The content of gravel ranges from 0 to 10 percent in the eolian material and from 5 to 25 percent in the glacial till. The content of cobbles ranges from 0 to 10 percent in the eolian material and from 1 to 20 percent in the glacial till.

The A horizon has hue of 5YR to 10YR, value of 2 or 3, and chroma of 1 or 2. The E horizon has hue of 5YR or 7.5YR, value of 4 to 6, and chroma of 2 or 3. The A and E horizons are silt loam.

The Bs horizon has hue of 5YR or 7.5YR and value and chroma of 3 or 4. The B part of the B/E and Btx/Ex horizons has hue of 7.5YR or 10YR, value of 3 or 4, and chroma of 4 to 6. The E part has hue of 7.5YR or 10YR, value of 4 to 7, and chroma of 2 or 3. The Bs and B/E horizons are silt loam. The 2Btx/Ex horizon is loam. The 2Btx horizon has hue of 7.5YR or 10YR, value of 3 to 6, and chroma of 4 to 6. It is sandy loam, loam, or the gravelly or cobbly analogs of those textures. In some pedons it has strata of loamy sand or gravelly loamy sand.

The 2C horizon has colors similar to those of the 2Btx horizon. It is sandy loam, loamy sand, or the gravelly or cobbly analogs of those textures.

Stambaugh Series

The Stambaugh series consists of very deep, well drained and moderately well drained soils on outwash plains and stream terraces. These soils formed in modified loamy eolian deposits overlying sandy glacial outwash. Permeability is moderately slow in the solum and rapid in the substratum. Slopes range from 1 to 18 percent.

Typical pedon of Stambaugh silt loam, 1 to 2 percent slopes, stony, 900 feet north and 700 feet west of the center of sec. 13, T. 42 N., R. 34 W.

A—0 to 4 inches; very dark gray (10YR 3/1) silt loam, grayish brown (10YR 5/2) dry; moderate fine and medium granular structure; friable; many fine and medium roots; about 2 percent gravel; moderately acid; abrupt smooth boundary.

Bs1—4 to 10 inches; dark brown (7.5YR 4/4) silt loam; weak fine subangular blocky structure; friable; many fine and medium roots; about 1 percent gravel; common very dark gray (10YR 3/1) wormcasts; moderately acid; clear wavy boundary.

Bs2—10 to 18 inches; brown (7.5YR 5/4) silt loam; weak fine subangular blocky structure; friable; common fine and medium roots; very few dark gray (10YR 3/1) wormcasts in the upper 3 inches; moderately acid; clear wavy boundary.

E—18 to 22 inches; yellowish brown (10YR 5/4) very fine sandy loam; very weak medium platy structure; friable; few fine and medium roots; common very fine pores; very thin coatings of light yellowish brown (10YR 6/4) very fine sand between plates; moderately acid; abrupt irregular boundary.

B/E—22 to 39 inches; about 70 percent reddish brown (5YR 4/4) silt loam (Bt); few reddish brown (5YR 5/4) clay films in pores; brown (7.5YR 5/4) silt loam (E) surrounding the Bt material; common fine distinct strong brown (7.5YR 5/6) mottles; weak thick platy structure parting to moderate fine angular blocky; firm; few fine roots; common fine pores; about 2 percent gravel; moderately acid; abrupt smooth boundary.

2C1—39 to 50 inches; dark brown (7.5YR 4/4) very gravelly sand; single grain; loose; few fine roots; about 35 percent gravel; moderately acid; abrupt smooth boundary.

2C2—50 to 60 inches; reddish brown (5YR 4/4) gravelly sand; single grain; loose; about 25 percent gravel and 5 percent cobbles; moderately acid.

The thickness of the solum ranges from 24 to 40 inches. The content of gravel ranges from 0 to 5 percent in the solum and from 25 to 60 percent in the 2C horizon. The content of cobbles ranges from 0 to 5 percent in the solum and from 0 to 10 percent in the 2C horizon. The content of stones on the surface ranges from 0.01 to 0.1 percent.

The A horizon has hue of 10YR to 5YR, value of 2 or 3, and chroma of 1. Some pedons have an E horizon

directly below the A horizon. This horizon has hue of 10YR to 5YR, value of 4 to 6, and chroma of 1 or 2. The A horizon and the E horizon, if it occurs, are silt loam or very fine sandy loam.

The Bs horizon has hue of 10YR to 5YR, value of 3 to 5, and chroma of 4 to 6. The E horizon and the E part of the B/E horizon have hue of 10YR to 5YR, value of 4 or 5, and chroma of 2 to 4. The B part of the B/E horizon has hue of 7.5YR or 5YR, value of 3 or 4, and chroma of 4. The Bs, E, and B/E horizons are silt loam or very fine sandy loam.

The 2C horizon has hue of 5YR or 7.5YR, value of 4 or 5, and chroma of 3 to 6. It is gravelly sand or very gravelly sand.

Sundog Series

The Sundog series consists of very deep, well drained and moderately well drained soils on outwash plains and eskers, in crevasse fillings, and on stream terraces and moraines. These soils formed in modified loamy eolian deposits overlying sandy glacial outwash and till. Permeability is moderate in the upper part of the profile and rapid or very rapid in the lower part. Slopes range from 1 to 50 percent.

Typical pedon of Sundog very fine sandy loam, 1 to 6 percent slopes, 1,550 feet south and 200 feet east of the northwest corner of sec. 11, T. 45 N., R. 33 W.

A—0 to 4 inches; dark brown (7.5YR 3/2) very fine sandy loam, grayish brown (10YR 5/2) dry; weak fine granular structure; friable; common fine roots; about 5 percent gravel and 5 percent cobbles; moderately acid; abrupt smooth boundary.

E—4 to 6 inches; gray (5YR 5/1) very fine sandy loam; weak fine subangular blocky structure; friable; few fine and medium roots; about 5 percent gravel and 5 percent cobbles; moderately acid; abrupt wavy boundary.

Bs1—6 to 9 inches; dark reddish brown (5YR 3/4) very fine sandy loam; weak medium subangular blocky structure; friable; many fine and medium roots; about 5 percent gravel and 5 percent cobbles; strongly acid; clear wavy boundary.

Bs2—9 to 15 inches; dark brown (7.5YR 4/4) very fine sandy loam; weak medium subangular blocky structure; friable; common fine and medium roots; about 5 percent gravel and 5 percent cobbles; moderately acid; clear wavy boundary.

BC—15 to 22 inches; brown (7.5YR 5/4) gravelly very fine sandy loam; moderate medium subangular blocky structure; friable; few fine roots; about 20 percent gravel and 5 percent cobbles; moderately acid; clear wavy boundary.

2C1—22 to 43 inches; brown (7.5YR 5/4) sand that has bands of loamy sand; single grain; loose; few fine roots; about 5 percent gravel and 5 percent cobbles; moderately acid; clear wavy boundary.

2C2—43 to 60 inches; brown (7.5YR 5/4) very gravelly coarse sand that has pockets of very fine sandy loam; single grain; loose; about 50 percent gravel and 5 percent cobbles; moderately acid.

The thickness of the solum ranges from 15 to 30 inches. The content of gravel ranges from 0 to 15 percent in the A and E horizons, from 0 to 8 percent in the Bs horizon, from 15 to 35 percent in the BC horizon, and from 0 to 60 percent in the 2C horizon. The content of cobbles ranges from 0 to 35 percent throughout the profile. The content of stones on the surface ranges from 0.01 to 0.1 percent.

Some pedons have an O horizon. This horizon has hue of 5YR or 7.5YR or is neutral in hue. It has value of 2 or 3 and chroma of 0 or 1. The A horizon has hue of 5YR or 7.5YR, value of 2 or 3, and chroma of 1 or 2. The E horizon has hue of 5YR or 7.5YR, value of 4 or 5, and chroma of 1 or 2. The A and E horizons are silt loam, very fine sandy loam, fine sandy loam, or the gravelly or cobbly analogs of those textures.

The Bs horizon has hue of 5YR or 7.5YR, value of 3 to 5, and chroma of 4. It is silt loam, loam, very fine sandy loam, or fine sandy loam. The BC horizon has hue of 5YR to 10YR, value of 4 or 5, and chroma of 4 to 6. It is gravelly very fine sandy loam or gravelly fine sandy loam.

The 2C horizon has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 2 to 6. It is sand, coarse sand, or the gravelly, very gravelly, or cobbly analogs of those textures. Thin strata and pockets of loamy sand, very fine sand, and very fine sandy loam are common.

Trenary Series

The Trenary series consists of very deep, well drained, moderately permeable soils on ground moraines and end moraines. These soils formed in loamy glacial till. Slopes range from 1 to 18 percent.

Typical pedon of Trenary fine sandy loam, 1 to 6 percent slopes, stony, 1,850 feet west and 2,475 feet south of the northeast corner of sec. 36, T. 43 N., R. 31 W.

A—0 to 4 inches; black (5YR 2/1) fine sandy loam, dark gray (5YR 4/1) dry; moderate fine granular structure; friable; many fine roots; slightly acid; abrupt wavy boundary.

E—4 to 5 inches; brown (7.5YR 4/2) fine sandy loam; weak medium subangular blocky structure; friable; many fine and medium roots; slightly acid; abrupt broken boundary.

Bs—5 to 12 inches; dark brown (7.5YR 4/4) fine sandy loam; weak medium subangular blocky structure; friable; common fine and medium roots; neutral; clear wavy boundary.

Btx/Ex—12 to 23 inches; about 80 percent dark reddish brown (5YR 3/4) sandy loam (Btx); about 20 percent reddish brown (5YR 5/3) loamy sand (E) on faces of peds; weak coarse subangular blocky structure; firm; common fine and medium roots; few fine vesicular pores; few reddish brown (5YR 4/4) clay films in pebble casings and pores; about 5 percent gravel; neutral; gradual wavy boundary.

B/E—23 to 36 inches; about 80 percent dark reddish brown (2.5YR 3/4) loam (Bt); about 20 percent reddish brown (5YR 5/3) loamy sand (E) on faces of peds; weak coarse subangular blocky structure; friable; common fine and medium roots; few fine vesicular pores; many reddish brown (5YR 4/4) clay films in pebble casings and pores; about 5 percent gravel; neutral; gradual wavy boundary.

C—36 to 60 inches; reddish brown (5YR 4/4) sandy loam; massive; friable; few fine roots; about 5 percent gravel; slight effervescence; slightly alkaline.

The thickness of the solum ranges from 30 to 42 inches. The content of gravel ranges from 0 to 10 percent throughout the profile. The content of cobbles ranges from 0 to 5 percent. The content of stones on the surface ranges from 0.01 to 0.1 percent.

The A horizon has hue of 5YR or is neutral in hue. It has value of 2 or 3 and chroma of 0 or 1. The E horizon has hue of 5YR or 7.5YR, value of 4 to 6, and chroma of 1 or 2. The A and E horizons are fine sandy loam or very fine sandy loam.

The Bs horizon has hue of 5YR or 7.5YR, value of 3 or 4, and chroma of 4 or 5. It is fine sandy loam or very fine sandy loam. The Bt part of the B/E horizon has hue of 2.5YR or 5YR, value of 3 or 4, and chroma of 4 or 5. It is sandy loam or loam. The E part has hue of 5YR or 7.5YR, value of 5 or 6, and chroma of 2 to 4. It is sandy loam or loamy sand. The B/E horizon does not meet fragipan requirements, but it commonly has characteristics associated with fragipans, such as platy structure, vesicles, and slight brittleness.

The C horizon has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 3 or 4. It is generally sandy loam, but thin layers of sand and gravelly sand are common.

Typic Dystrochrepts, Coarse-Loamy

These soils are coarse-loamy, mixed, frigid Typic Dystrochrepts. They are very deep, moderately well drained and well drained soils on ground moraines, outwash plains, stream terraces, and alluvial fans at the base of drumlins, eskers, and beach ridges. Permeability is moderate or is moderate in the upper part and rapid in the lower part. Slopes range from 0 to 35 percent.

Reference pedon of Typic Dystrochrepts, coarse-loamy, 330 feet south and 400 feet east of the center of sec. 19, T. 43 N., R. 36 W.

Oa—0 to 3 inches; black (5YR 2/1), decomposed organic material; weak fine granular structure; friable; many fine roots; extremely acid; abrupt smooth boundary.

A—3 to 5 inches; dark brown (7.5YR 3/2) silt loam; moderate fine subangular blocky structure; friable; common fine and medium roots; about 3 percent cobbles and 2 percent gravel; strongly acid; clear smooth boundary.

Bw1—5 to 12 inches; dark yellowish brown (10YR 4/4) cobbly silt loam; moderate medium subangular blocky structure; friable; common fine and few medium and coarse roots; about 10 percent cobbles and 5 percent gravel; strongly acid; clear wavy boundary.

Bw2—12 to 28 inches; dark brown (7.5YR 4/4) cobbly silt loam; many medium faint strong brown (7.5YR 5/6) and distinct strong brown (7.5YR 5/8) mottles; moderate coarse subangular blocky structure; firm; common fine and few medium and coarse roots; about 10 percent cobbles and 5 percent gravel; strongly acid; clear smooth boundary.

Bw3—28 to 51 inches; dark yellowish brown (10YR 4/4) cobbly silt loam; common medium distinct strong brown and prominent strong brown (7.5YR 5/8) mottles; strong coarse subangular blocky structure; firm; few fine roots; about 10 percent cobbles and 5 percent gravel; strongly acid; clear smooth boundary.

BC—51 to 63 inches; dark yellowish brown (10YR 4/4) silt loam; many medium distinct brown (7.5YR 5/2) and prominent strong brown (7.5YR 5/8) mottles; weak coarse subangular blocky structure; firm; few fine roots; about 5 percent cobbles and 2 percent gravel; strongly acid; gradual wavy boundary.

2C—63 to 72 inches; dark brown (10YR 4/3) silt loam; common medium distinct yellowish brown (10YR 5/4) mottles; massive; friable; about 5 percent cobbles and 2 percent gravel; moderately acid.

Unless otherwise stated, the depth ranges in this paragraph are measured from the top of the mineral material. The thickness of the solum ranges from 28 to 64 inches. The content of rock fragments ranges from 0 to 20 percent in the solum and from 5 to 30 percent in the substratum.

The O horizon consists of undecomposed to

decomposed conifer and hardwood litter.

The A horizon has hue of 7.5YR or 10YR, value of 2 or 3, and chroma of 1 or 2. Some pedons have an E horizon. This horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 2 or 3. The A and E horizons are silt loam, fine sandy loam, sandy loam, or loam.

The Bw horizon has hue of 7.5YR or 10YR and value and chroma of 3 to 5. It is silt loam, loam, fine sandy loam, sandy loam, loam, or the gravelly or cobbly analogs of those textures.

The C horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 to 6. It has textures similar to those of the Bw horizon. Some pedons have sandy or gravelly material at a depth of 40 to 60 inches.

Typic Fragiaquods, Coarse-Loamy

These soils are coarse-loamy, mixed, frigid Typic Fragiaquods. They are very deep, somewhat poorly drained soils on ground moraines. The soils formed in modified loamy eolian material and in the underlying loamy or sandy glacial till. They are shallow to a fragipan. Permeability is moderate above and below the fragipan and very slow in the fragipan. Slopes range from 0 to 3 percent.

Reference pedon of Typic Fragiaquods, coarse-loamy, nearly level, 1,370 feet south and 1,470 feet west of the northeast corner of sec. 8, T. 44 N., R. 36 W.; in Iron River Township:

Oa—0 to 2 inches; black (10YR 2/1), well decomposed organic material; weak fine granular structure; friable; many fine roots; extremely acid; abrupt wavy boundary.

A—2 to 7 inches; black (10YR 2/1) loam, dark grayish brown (10YR 4/2) dry; weak fine and medium granular structure; friable; many fine and medium roots; about 5 percent cobbles; extremely acid; abrupt smooth boundary.

E—7 to 9 inches; dark gray (10YR 4/1) loam; common medium prominent yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; friable; common fine and medium roots; about 2 percent cobbles; very strongly acid; clear broken boundary.

Bs—9 to 15 inches; brown (7.5YR 4/4) sandy loam; few fine distinct grayish brown (10YR 5/2), few fine prominent yellowish red (5YR 5/8), and few medium distinct strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; friable; many fine and medium roots; about 5 percent cobbles; very strongly acid; clear wavy boundary.

Ex—15 to 32 inches; grayish brown (10YR 5/2) sandy loam; many medium prominent strong brown (7.5YR 5/6) and common medium prominent yellowish red (5YR 5/8) mottles; moderate thick platy structure; firm; few fine roots; few fine and medium vesicular pores; about 6 percent cobbles; very strongly acid; abrupt wavy boundary.

Ex/Bx—32 to 38 inches; about 70 percent grayish brown (10YR 5/2) sandy loam (E) surrounding peds of reddish brown (5YR 4/4) sandy loam (B); common coarse prominent yellowish red (5YR 4/6) mottles; moderate thick platy structure; very firm; common fine vesicular pores; few clay films in cavities and on faces of peds; about 6 percent cobbles; strongly acid; abrupt wavy boundary.

2C—38 to 60 inches; grayish brown (10YR 5/2) cobbly sandy loam; few fine distinct yellowish brown (10YR 5/6) mottles; massive; friable; about 15 percent cobbles and 10 percent gravel; moderately acid.

Unless otherwise stated, the depth ranges in this paragraph are measured from the top of the mineral material. The thickness of the solum ranges from 36 to 64 inches. The content of gravel ranges from 0 to 10 percent in the solum and from 5 to 20 percent in the C horizon. The content of cobbles ranges from 5 to 10 percent in the solum and from 5 to 15 percent in the C horizon. Depth to the fragipan ranges from 12 to 20 inches.

The A horizon has hue of 7.5YR or 10YR, value of 2 or 3, and chroma of 1 or 2. The E horizon has hue of 5YR, 7.5YR, or 10YR, value of 4 to 6, and chroma of 1 or 2.

The Bs horizon has hue of 7.5YR or 10YR and value and chroma of 3 or 4. It is loam, fine sandy loam, or sandy loam.

The Ex horizon and the E part of the Ex/Bx horizon have hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 1 to 3. They are sandy loam, loamy sand, or cobbly loamy sand. The B part of the Bx/Ex horizon has hue of 5YR or 7.5YR and value and chroma of 4 to 6. It is fine sandy loam or sandy loam.

The 2C horizon has value of 4 or 5 and chroma of 2 to 4. It is sandy loam, cobbly sandy loam, or loamy sand. In some pedons it has thin bands or pockets of silt loam.

Vilas Series

The Vilas series consists of very deep, excessively drained soils on outwash plains. These soils formed in sandy glacial outwash deposits. Permeability is rapid. Slopes range from 1 to 35 percent.

Typical pedon of Vilas loamy sand, in an area of Vilas-Karlin complex, 1 to 6 percent slopes; 1,420 feet north and 2,100 feet east of the southwest corner of sec. 16, T. 42 N., R. 32 W.

A—0 to 4 inches; dark reddish brown (5YR 2/2) loamy sand, dark reddish gray (5YR 4/2) dry; weak medium granular structure; very friable; many fine roots; very strongly acid; abrupt wavy boundary.
E—4 to 5 inches; dark reddish gray (5YR 4/2) loamy sand; weak fine subangular blocky structure; very friable; many fine and medium roots; very strongly acid; abrupt broken boundary.
Bs1—5 to 12 inches; dark reddish brown (5YR 3/4) loamy sand; weak fine subangular blocky structure; very friable; many fine and medium roots; strongly acid; clear wavy boundary.
Bs2—12 to 17 inches; dark brown (7.5YR 4/4) loamy sand; weak fine subangular blocky structure; very friable; common fine and medium roots; strongly acid; clear wavy boundary.
BC—17 to 24 inches; dark brown (7.5YR 4/4) sand; single grain; loose; common fine and medium roots; strongly acid; clear wavy boundary.
C1—24 to 41 inches; brown (7.5YR 5/4) sand; single grain; loose; few fine roots; about 5 percent gravel; strongly acid; abrupt wavy boundary.
C2—41 to 60 inches; light brown (7.5YR 6/4) sand; single grain; loose; few fine roots; strongly acid.

The thickness of the solum ranges from 20 to 40 inches. The content of gravel ranges from 0 to 10 percent throughout the profile. The content of stones on the surface ranges from less than 0.01 to 0.1 percent.

The A horizon has hue of 10YR to 5YR, value of 2 or 3, and chroma of 1 to 3. The E horizon has hue of 10YR to 5YR, value of 4 or 5, and chroma of 1 or 2. The A and E horizons are loamy sand.

The Bs horizon has hue of 7.5YR or 5YR, value of 3 to 5, and chroma of 4 to 6. It is loamy sand. The BC and C horizons have hue of 10YR to 5YR, value of 4 to 6, and chroma of 4 to 8. They are sand.

Wabeno Series

The Wabeno series consists of very deep, moderately well drained soils on ground moraines and end moraines. These soils formed in modified loamy eolian deposits and in the underlying loamy and sandy glacial till. They are moderately deep to a fragipan. Permeability is moderate above the fragipan, moderately slow in the fragipan, and moderate in the substratum. Slopes range from 1 to 18 percent.

Typical pedon of Wabeno silt loam, 6 to 18 percent slopes, very stony, 1,850 feet north and 1,900 feet east of the southwest corner of sec. 36, T. 43 N., R. 34 E.

A—0 to 2 inches; black (5YR 2/1) silt loam, very dark gray (5YR 3/1) dry; weak fine granular structure; friable; many fine roots; about 5 percent gravel; strongly acid; abrupt wavy boundary.
E—2 to 4 inches; brown (7.5YR 4/2) silt loam; weak fine subangular blocky structure; friable; many fine and medium roots; about 5 percent gravel; strongly acid; abrupt broken boundary.
Bs1—4 to 11 inches; dark brown (7.5YR 3/4) silt loam; weak fine subangular blocky structure; friable; many fine and medium roots; about 5 percent gravel; strongly acid; gradual wavy boundary.
Bs2—11 to 23 inches; brown (7.5YR 4/4) silt loam; weak fine subangular blocky structure; friable; common fine and medium roots; about 5 percent gravel; strongly acid; clear wavy boundary.
B/E—23 to 32 inches; about 80 percent dark brown (7.5YR 4/4) silt loam (B) that has brown (10YR 5/3) silt loam (E) on faces of peds; common medium distinct strong brown (7.5YR 4/6) mottles; weak medium subangular blocky structure; friable; few fine roots; about 5 percent gravel; strongly acid; clear irregular boundary.
Bx/Ex—32 to 42 inches; about 80 percent dark brown (7.5YR 4/4) very fine sandy loam (Bx) that has brown (10YR 5/3) very fine sandy loam (Ex) on faces of peds; common fine distinct strong brown (7.5YR 4/6) mottles; weak thin platy structure; very firm; common fine vesicular pores; about 8 percent gravel; moderately acid; clear irregular boundary.
2Btx—42 to 50 inches; dark brown (7.5YR 4/4) sandy loam; weak medium platy structure; very firm; common fine vesicular pores; common reddish brown (5YR 5/4) clay films in pebble casings and pores; about 10 percent gravel; moderately acid; gradual wavy boundary.
2C—50 to 60 inches; brown (7.5YR 4/4) sandy loam; massive; friable; about 10 percent gravel; moderately acid.

The thickness of the solum ranges from 30 to 50 inches. The thickness of the eolian material ranges from 20 to 38 inches. Depth to the fragipan ranges from 20 to 40 inches. The content of gravel ranges from 0 to 10 percent in the upper part of the solum and from 5 to 25 percent in the lower part of the solum and in the 2C horizon. The content of cobbles ranges from 0 to 10 percent in the upper part of the solum and from 0 to 20 percent in the lower part of the solum and in the 2C horizon. The content of stones on the surface ranges from 0.01 to 3.0 percent.

The A horizon has hue of 10YR to 5YR, value of 2 or 3, and chroma of 1 or 2. The E horizon has hue of 10YR to 5YR, value of 4 to 6, and chroma of 2 or 3. The A and E horizons are silt loam.

The Bs horizon has hue of 7.5YR or 5YR, value of 3 or 4, and chroma of 4. It is silt loam. The B/E horizon

also is silt loam. The B part of the B/E horizon has hue of 10YR or 7.5YR, value of 3 or 4, and chroma of 4 or 5. The E part has hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 2 or 3.

The E part of the Bx/Ex horizon has colors similar to those of the E part of the B/E horizon. It is very fine sandy loam, cobbly loamy sand, or loam. The B part has colors similar to those of the B part of the B/E horizon. It is very fine sandy loam, sandy loam, cobbly sandy loam, or loam.

The 2Btx horizon has hue of 5YR to 10YR, value of 4 or 5, and chroma of 4 to 6. It is sandy loam or gravelly sandy loam.

The 2C horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 6. It is sandy loam, loamy sand, or the gravelly or cobbly analogs of those textures. In some pedons it has thin strata or pockets of sand and coarse sand.

Waucedah Series

The Waucedah series consists of very deep, poorly drained or very poorly drained, moderately permeable soils on flood plains. These soils formed in loamy alluvial deposits. Slopes are 0 to 1 percent.

Typical pedon of Waucedah muck, in an area of Waucedah-Cathro mucks, frequently flooded; 1,740 feet north and 1,220 feet east of the southwest corner of sec. 16, T. 42 N., R. 32 W.

Oa—0 to 10 inches; black (5YR 2/1) muck; weak medium granular structure; friable; many fine and medium roots; slightly acid; abrupt smooth boundary.

Cg1—10 to 36 inches; grayish brown (10YR 5/2) fine sandy loam; thin layers of sand and partially decomposed vegetation; common medium prominent strong brown (7.5YR 5/6) mottles; massive; friable; few fine roots; moderately acid; diffuse smooth boundary.

Cg2—36 to 60 inches; dark grayish brown (10YR 4/2) fine sandy loam; thin layers of sand, fine sand, and partially decomposed vegetation; massive; friable; moderately acid.

The Oa horizon has hue of 10YR to 5YR or is neutral in hue. It has value of 2 and chroma of 0 or 1. Some pedons have an A horizon. This horizon has hue of 10YR to 5YR or is neutral in hue. It has value of 2 or 3 and chroma of 0 or 1. It is fine sandy loam or loam.

The C horizon has hue of 10YR to 5Y, value of 3 to 5, and chroma of 1 to 3. It is fine sandy loam, sandy loam, or loam. Thin strata of gravelly sand, sand, fine sand, loamy sand, loamy fine sand, silt loam, clay loam, or organic material are common. The total content of rock fragments is less than 5 percent.

Witbeck Series

The Witbeck series consists of very deep, poorly drained, moderately permeable or moderately slowly permeable soils on ground moraines and end moraines. These soils formed in loamy glacial till. Slopes range from 0 to 2 percent.

Typical pedon of Witbeck muck, in an area of Net-Witbeck complex, 0 to 4 percent slopes, very stony; 550 feet east and 1,340 feet north of the southwest corner of sec. 3, T. 46 N., R. 32 W.

Oa—0 to 5 inches; black (5YR 2/1) muck; weak fine granular structure; friable; many fine and medium roots; strongly acid; abrupt wavy boundary.

A—5 to 8 inches; black (5YR 2/1) silt loam, very dark gray (5YR 3/1) dry; weak fine granular structure; friable; many fine and medium roots; about 5 percent cobbles; strongly acid; abrupt wavy boundary.

Bg—8 to 18 inches; dark brown (7.5YR 4/2) silt loam; common fine prominent yellowish red (5YR 4/6) mottles; weak fine subangular blocky structure; friable; few fine and medium roots; about 5 percent gravel and 5 percent cobbles; strongly acid; abrupt wavy boundary.

Cg1—18 to 31 inches; grayish brown (2.5Y 5/2) fine sandy loam; common fine prominent yellowish brown (10YR 5/6) mottles; massive; friable; few fine roots; about 5 percent gravel and 5 percent cobbles; strongly acid; clear wavy boundary.

Cg2—31 to 51 inches; grayish brown (10YR 5/2) fine sandy loam; many coarse prominent brown (7.5YR 4/4) and few medium faint gray (10YR 6/1) mottles; massive; friable; about 5 percent gravel and 5 percent cobbles; strongly acid; abrupt wavy boundary.

C—51 to 60 inches; brown (10YR 4/3) gravelly sandy loam; common medium prominent strong brown (7.5YR 5/6) mottles; massive; friable; about 20 percent gravel and 5 percent cobbles; strongly acid.

The thickness of the solum ranges from 18 to 24 inches. The content of gravel ranges from 0 to 10 percent in the A horizon and from 5 to 35 percent in the B and C horizons. The content of cobbles ranges from 5 to 15 percent throughout the profile. The content of stones on the surface ranges from 0.1 to 3.0 percent.

The Oa horizon has hue of 5YR to 10YR or is neutral in hue. It has value of 2 or 3 and chroma of 0 to 2. The A horizon has hue of 5YR to 10YR, value of 2 or 3, and chroma of 1 or 2. It is silt loam or cobbly silt loam. The B horizon has hue of 7.5YR to 2.5Y, value of 3 to 5,

and chroma of 1 to 4. It is silt loam, very fine sandy loam, fine sandy loam, or the gravelly or cobbly analogs of those textures.

The C horizon has hue of 10YR to 5Y, value of 3 to 5, and chroma of 1 to 4. It is fine sandy loam, sandy loam, very fine sandy loam, or the gravelly or cobbly analogs of those textures. Thin strata of sand or loamy sand are common.

Formation of the Soils

This section relates the factors of soil formation to the soils in Iron County. It also describes the processes of soil formation.

Factors of Soil Formation

Soil formation is the natural development of horizons in a profile. Soil forms through the interaction of five major factors—the physical, chemical, and mineral composition of the parent material; the climate under which the soil material has accumulated and existed since accumulation; the plant and animal life on and in the soil; the relief, or lay of the land; and the length of time that the processes of soil formation have acted on the parent material (Jenny, 1941).

Climate and plant and animal life are the active forces of soil formation. They slowly change the parent material into a natural body of soil that has genetically related layers, called horizons. The effects of climate and plant and animal life are conditioned by relief. The nature of the parent material affects the kind of soil profile that forms. In extreme cases, it determines the soil profile entirely. Finally, time is needed for the transformation of the parent material into a soil. Some time is always needed for the differentiation of soil horizons.

The factors of soil formation are so closely interrelated in their effects on the soils that few generalizations can be made regarding the effect of any one factor unless conditions are specified for the other four.

Parent Material

Parent material is the unconsolidated mass in which a soil forms. It determines the limits of the chemical and mineralogical composition of the soil. Nearly all of the parent materials of the soils in Iron County were deposited by glaciers or by glacial meltwater. Some of the glacial material has been reworked and redeposited by the subsequent action of water and wind. Although most of the parent materials are of a common glacial origin, their properties vary greatly, sometimes within small areas, depending on how the materials were deposited. The dominant parent materials in Iron County were deposited as glacial till, outwash, eolian material, alluvium, and organic material.

Glacial till was deposited directly by glaciers with a minimum of water action. It is a mixture of particles of different sizes. The small pebbles in glacial till have sharp corners, indicating that they have not been worn by water. Trenary and Keweenaw soils are examples of soils that formed in glacial till on till plains and moraines.

Outwash was deposited by running water from melting glaciers. The size of the particles varies according to the speed of the stream that carried them. As the speed of the stream decreased, the coarser particles were deposited. Only the finer particles, such as very fine sand, silt, and clay, can be carried by slow-moving water. Outwash deposits generally occur as layers of particles of similar size, such as sand, gravel, or other coarse particles. Vilas and Pence soils are examples of soils that formed in deposits of outwash.

Eolian material was redeposited by wind after initial deposition by glaciers or meltwater from the glaciers. These deposits are typically very fine sandy loam or silt loam and occur as a layer 2 or 3 feet thick over glacial till or outwash material. Wabeno and Champion soils are examples of soils that formed in eolian material over glacial till. Stambaugh and Sundog soils are examples of soils that formed in eolian material over outwash. Because eolian deposits in Iron County are thin, there has been some modification or mixing of the eolian material with the underlying material. Freeze-thaw cycles and the uprooting of trees by the wind are two possible causes of this modification.

Alluvium is material recently deposited by floodwater from streams. This material varies in texture, depending on the speed of the water from which it was deposited. Waucedah soils are examples of soils that formed in alluvium.

Organic material occurs as deposits of plant remains. After the glaciers receded, water was left standing in depressions on outwash plains, flood plains, moraines, and till plains. Because of the wetness, the grasses, sedges, and water-tolerant plants that grew around the

edges of these depressions did not decompose quickly after they died. Eventually, the plant residue filled the depressions and decomposed into muck. Lupton soils are examples of soils that formed in organic material.

Plant and Animal Life

Plants, animals, insects, bacteria, and fungi are important in the formation of soils. Additions of organic matter and nitrogen to the soil, gains or losses in plant nutrients, and alterations in soil structure and porosity are among the changes caused by living organisms. In this survey area, vegetation, dominantly hardwood and coniferous trees, has affected soil formation more than the other living organisms.

Climate

Climate determines the kind of plant and animal life on and in the soil and the amount of water available for the weathering of minerals and the translocation of soil material. Through its influence on soil temperature, climate also determines the rate of chemical reaction in the soil.

The climate in Iron County is cool and humid. It is generally uniform throughout the county. It is presumably similar to the climate under which the soils formed. The soils in this county differ from the soils that formed under a dry, warm climate and from those that formed under a moist, hot climate. Differences in climate account for only minor differences among the soils within the county.

Relief

Relief affects the natural drainage of soils, the rate of erosion, the kind of plant cover, and the soil temperature. Slopes range from 0 to 60 percent in Iron County. The soils range from excessively drained on sandy ridgetops to very poorly drained in depressions.

Through its effect on soil aeration, drainage determines the color of the soil. Water and air move freely through well drained soils and slowly through very poorly drained soils. In Wabeno and other well aerated soils, the iron and aluminum compounds that give most soils their color are brightly colored and oxidized. Witbeck and other poorly aerated soils are dull gray or mottled because the iron compounds are reduced. The Wabeno and Witbeck soils formed in similar kinds of parent material.

Time

Generally, a long time is required for the development of distinct soil horizons. Differences in the length of time that the parent material has been in place are commonly reflected in the degree of profile development. Some soils form rapidly, and others form slowly.

The soils in Iron County range in geologic age from young to mature. The glacial deposits in which most of the soils formed have been exposed to soil-forming factors long enough for distinct horizons to develop. Soils that formed in recent alluvial material have not been in place long enough for the development of distinct horizons. Waucedah soils are examples of young alluvial soils. Champion soils are examples of mature soils.

Processes of Soil Formation

The processes responsible for the development of soil horizons in the parent material are referred to as soil genesis. Several processes were involved in the development of horizons in the soils of Iron County—the accumulation of organic matter, the leaching of lime (calcium carbonate) and other bases, the reduction and transfer of iron, the formation and translocation of silicate clay minerals, and the development of soil structure. In most of the soils, more than one of these processes have been active in the development of horizons.

As organic matter accumulates at the surface of a soil, an A horizon forms. In general, the A horizon in wet soils is thicker and has a higher content of organic matter than the A horizon in well drained soils. The poorly drained Witbeck soils, for example, have an A horizon that is thicker and darker than that in the well drained Wabeno soils.

The leaching of carbonates and other bases has occurred in most of the soils in the county. The leaching of bases generally precedes the translocation of silicate clay minerals. Many of the soils are moderately leached or strongly leached. For example, Oconto soils are leached of carbonates to a depth of about 35 inches and Padus soils are leached to a depth of more than 60 inches. Differences in the depth of leaching are primarily a result of differences in the parent material. Most of the parent material in Iron County probably did not contain carbonates at the time of deposition.

Gleying, or the reduction and transfer of iron, is evident in somewhat poorly drained to very poorly drained soils, such as Minocqua soils. A gray subsoil in these soils indicates the reduction and loss of iron. Some horizons have mottles, which indicate the segregation of iron. This process has taken place in Gaastra soils.

The translocation of clay minerals has contributed to horizon development in some soils. An eluviated, or leached, E horizon typically is lower in content of clay than the illuviated Bt horizon and typically is lighter in

color. The Bt horizon typically has an accumulation of clay or clay films in pores and on the faces of peds. Soils at this stage of formation, such as Peavy soils, probably were leached of carbonates and soluble salts to a considerable extent before the silicate clays were translocated.

In many of the soils in Iron County, iron, aluminum, and humus have been transferred from the A and E horizons to the illuvial Bs horizon. Au Gres and Vilas soils are examples of soils in which this process has taken place.

With the passage of time, the primary soil particles of sand, silt, and clay become combined or arranged into secondary compound particles, or peds. The causes of this aggregation may be physical processes, such as wetting and drying and freezing and thawing cycles; chemical weathering processes; and the activities of organisms, such as earthworms. Soil structure is important because it affects aeration and permeability. The ability of a soil to support plants and its response to management depend as much on soil structure as on fertility.

References

American Association of State Highway and Transportation Officials (AASHTO). 1986. Standard specifications for highway materials and methods of sampling and testing. 14th edition, 2 vols.

American Society for Testing and Materials (ASTM). 1993. Standard classification of soils for engineering purposes. ASTM Standard D 2487.

Brenner, R.N., and J.K. Jordan. 1991. The role of an ecological classification system in forest plan development and implementation. Proceedings of the Symposium on Systems Analysis in Forest Resources, Charleston, South Carolina.

Coffman, M.S., and others. 1980 (Reprinted 1983). Field guide habitat classification system for Upper Peninsula of Michigan and northeast Wisconsin. Michigan Technological University.

Driscoll, R.S., and others. 1984. An ecological land classification framework for the United States. U.S. Department of Agriculture, Forest Service, Miscellaneous Publication 1439.

Hannah, P.R., and R. Zahner. 1970. Nonpedogenic texture bands in outwash sands of Michigan: Their origin and influence on tree growth. Soil Science Society of America Journal 34: 134-136.

Jenny, Hans. 1941. Factors of soil formation.

Jordan, J.K. 1977. Soil, landform, and vegetation composition and relationships of sample land types. (Prepared by the staff of the Ottawa National Forest)

Jordan, J.K. 1982. Application of an integrated land classification. Proceedings, Artificial Regeneration of Conifers in the Upper Great Lakes Region, pp. 65-82.

Michigan Department of Agriculture. 1990. Michigan agricultural statistics.

Michigan History Magazine. 1984. Michigan's 83 counties: Iron County. March/ April 1984.

Mokma, D.L., and others. 1978. Soil management units and land use planning. Michigan State University, Extension Bulletin E-1262.

Nelson, D., and J.K. Jordan. 1987. Application of multifactor land classification on national forests. Proceedings, Society of American Foresters, National Convention, Minneapolis, Minnesota, pp. 162-165.

Peterson, Warren L. 1985. Surficial geologic map of the Iron River quadrangle, Michigan and Wisconsin. U.S. Geological Survey Miscellaneous Investigations Series Map 1-1360.

Reiman, Lewis C. 1951. Between the Iron and the Pine.

Russell, W.E., and J.K. Jordan. 1991. Ecological classification system for classifying land capability in Midwestern and Northeastern U.S. national forests. (Available from the Southeastern Forest Experiment Station, Asheville, North Carolina)

United States Department of Agriculture. National forestry manual. Soil Conservation Service. (Available in the State Office of the Natural Resources Conservation Service at East Lansing, Michigan)

United States Department of Agriculture. 1937. Soil survey of Iron County, Michigan. Bureau of Chemistry and Soils.

United States Department of Agriculture. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210.

United States Department of Agriculture. 1975. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. Soil Conservation Service, U.S. Department of Agriculture Handbook 436.

United States Department of Agriculture. 1983. National soil survey handbook. Soil Conservation Service (Available in the State Office of the Natural Resources Conservation Service at East Lansing, Michigan)

United States Department of Agriculture. 1993. Soil survey manual. U.S. Department of Agriculture Handbook 18.

Glossary

Ablation till. Loose, permeable till deposited during the final downwasting of glacial ice. Lenses of crudely sorted sand and gravel are common.

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.

Area reclaim (in tables). An area difficult to reclaim after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Association, soil. A group of soils 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

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.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bisequum. Two sequences of soil horizons, each of which consists of an illuvial horizon and the overlying eluvial horizons.

Bottom land. The normal flood plain of a stream, subject to flooding.

Boulders. Rock fragments larger than 2 feet (60 centimeters) in diameter.

Calcareous soil. A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

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.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay 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 vegetation. 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 fragments. If round, mineral or rock particles 2 millimeters to 25 centimeters (10 inches) in diameter; if flat, mineral or rock particles 2 millimeters to 38 centimeters (15 inches) long.

Coarse textured soil. Sand or loamy sand.

Cobblestone (or cobble). A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

Complex slope. Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.

Complex, soil. A map unit of two or more kinds of soil 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 are somewhat similar in all areas.

Concretions. Grains, pellets, or nodules of various sizes, shapes, and colors consisting of concentrated compounds or cemented soil grains. The composition of most concretions is unlike that of the surrounding soil. Calcium carbonate and iron oxide are common compounds in concretions.

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. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are:

Loose.—Noncoherent when dry or moist; does not hold together in a mass.

Friable.—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.

Firm.—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

Plastic.—When wet, readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.

Sticky.—When wet, adheres to other material and tends to stretch somewhat and pull apart rather than to pull free from other material.

Hard.—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.

Soft.—When dry, breaks into powder or individual grains under very slight pressure.

Cemented.—Hard; little affected by moistening.

Contour stripcropping. Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Coprogenous earth (sedimentary peat). Fecal material deposited in water by aquatic organisms.

Corrosion. Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

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.

Dense layer (in tables). A very firm, massive layer that has a bulk density of more than 1.8 grams per cubic centimeter. Such a layer affects the ease of digging and can affect filling and compacting.

Depression. A landform position that is sunken or lower than adjacent positions.

Depth to rock (in tables). Bedrock is too near the surface for the specified use.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Drainage class (natural). Refers to the frequency and duration of periods of saturation or partial saturation during soil formation, as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation but may be caused by the sudden deepening of channels or the blocking of drainage outlets. Seven classes of natural soil drainage are recognized:

Excessively drained.—Water is removed from the soil very rapidly. Excessively drained soils are commonly very coarse textured, rocky, or shallow. Some are steep. All are free of the mottling related to wetness.

Somewhat excessively drained.—Water is removed from the soil rapidly. Many somewhat excessively drained soils are sandy and rapidly pervious. Some are shallow. Some are so steep that much of the water they receive is lost as runoff. All are free of the mottling related to wetness.

Well drained.—Water is removed from the soil

readily, but not rapidly. It is available to plants throughout most of the growing season, and wetness does not inhibit growth of roots for significant periods during most growing seasons. Well drained soils are commonly medium textured. They are mainly free of mottling.

Moderately well drained.—Water is removed from the soil somewhat slowly during some periods. Moderately well drained soils are wet for only a short time during the growing season, but periodically they are wet long enough that most mesophytic crops are affected. They commonly have a slowly pervious layer within or directly below the solum or periodically receive high rainfall, or both.

Somewhat poorly drained.—Water is removed slowly enough that the soil is wet for significant periods during the growing season. Wetness markedly restricts the growth of mesophytic crops unless artificial drainage is provided. Somewhat poorly drained soils commonly have a slowly pervious layer, a high water table, additional water from seepage, nearly continuous rainfall, or a combination of these.

Poorly drained.—Water is removed so slowly that the soil is saturated periodically during the growing season or remains wet for long periods. Free water is commonly at or near the surface for long enough during the growing season that most mesophytic crops cannot be grown unless the soil is artificially drained. The soil is not continuously saturated in layers directly below plow depth. Poor drainage results from a high water table, a slowly pervious layer within the profile, seepage, nearly continuous rainfall, or a combination of these.

Very poorly drained.—Water is removed from the soil so slowly that free water remains at or on the surface during most of the growing season. Unless the soil is artificially drained, most mesophytic crops cannot be grown. Very poorly drained soils are commonly level or depressed and are frequently ponded. Yet, where rainfall is high and nearly continuous, they can have moderate or high slope gradients.

Drainage, surface. Runoff, or surface flow of water, from an area.

Drumlin. A low, smooth, elongated oval hill, mound, or ridge of compact glacial till. The longer axis is parallel to the path of the glacier and commonly has a blunt nose pointing in the direction from which the ice approached.

Dune. A mound, ridge, or hill of loose, windblown sand, either bare or covered with vegetation.

Ecological land type. An ecological unit designed for resource management planning for a management area or landscape area (several thousand acres). The aerial extent of individual map unit delineations generally ranges from about 10 acres to hundreds of acres.

Ecological land type phase. An ecological unit designed for resource management planning at the project level. The aerial extent of individual map unit delineations generally ranges from 1 acre to not more than 100 acres, depending on the uniformity of the ecosystem.

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.

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.

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, for example, fire, that exposes the surface.

Erosion pavement. A layer of gravel or stones that remains on the surface after fine particles are removed by sheet or rill erosion.

Esker (geology). A narrow, winding ridge of stratified gravelly and sandy drift deposited by a stream flowing in a tunnel beneath a glacier.

Excess fines (in tables). Excess silt and clay in the soil. The soil is not a source of gravel or sand for construction purposes.

Fallow. Cropland left idle in order to restore productivity through accumulation of moisture. Summer fallow is common in regions of limited rainfall where cereal grains are grown. The soil is tilled for at least one growing season for weed control and decomposition of plant residue.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Fibric soil material (peat). The least decomposed of all

organic soil material. Peat contains a large amount of well preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity.*

Fine textured soil. Sandy clay, silty clay, or clay.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Foot slope. The inclined surface at the base of a hill.

Forb. Any herbaceous plant not a grass or a sedge.

Fragipan. A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Frost action (in tables). Freezing and thawing of soil moisture. Frost action can damage roads, buildings and other structures, and plant roots.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Glacial drift (geology). 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 (geology). Gravel, sand, and silt, commonly stratified, deposited by glacial meltwater.

Glacial till (geology). Unsorted, nonstratified glacial drift consisting of clay, silt, sand, and boulders transported and deposited by glacial ice.

Glaciofluvial deposits (geology). 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 and mottles.

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 up to 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material that is 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, up to 3 inches (7.6 centimeters) in diameter.

Green manure crop (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water (geology). 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.

Hemic soil material (mucky peat). Organic soil material intermediate in degree of decomposition between the less decomposed fibric 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. The major horizons 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, any plowed or disturbed surface layer.

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 O, A, or E horizon. The B horizon is in part a layer of transition from the overlying horizon 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) granular, 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 horizon. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon.—Soft, consolidated bedrock beneath the soil.

R layer.—Hard, consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon but 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-producing characteristics. The chief consideration is the inherent capacity of soil bare of vegetation to permit infiltration. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff. Soils are assigned to four groups. In group A are soils having a high infiltration rate when thoroughly wet and having a low runoff potential. They are mainly deep, well drained, and sandy or gravelly. In group D, at the other extreme, are soils having a very slow infiltration rate and thus a high runoff potential. They have a claypan or clay layer at or near the surface, have a permanent high water table, or are shallow over nearly impervious bedrock or other material. A soil is assigned to two hydrologic groups if part of the acreage is artificially drained and part is undrained.

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.

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.

Intake rate. The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

Less than 0.2	very low
0.2 to 0.4	low
0.4 to 0.75	moderately low
0.75 to 1.25	moderate
1.25 to 1.75	moderately high
1.75 to 2.5	high
More than 2.5	very high

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are:

Basin.—Water is applied rapidly to nearly level plains surrounded by levees or dikes.

Border.—Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.

Controlled flooding.—Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

Corrugation.—Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

Drip (or trickle).—Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

Furrow.—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Subirrigation.—Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

Wild flooding.—Water, released at high points, is allowed to flow onto an area without controlled distribution.

Kame (geology). An irregular, short ridge or hill of stratified glacial drift.

Lacustrine deposit (geology). Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

Land type association. An ecological unit designed for overview resource management planning for an entire National forest or another area of comparable size, generally hundreds of thousands of acres. The aerial extent of individual map unit delineations can range from about 10 acres to thousands of acres.

Large stones (in tables). Rock fragments 3 inches (7.6 centimeters) or more across. Large stones

adversely affect the specified use of the soil.

Leaching. The removal of soluble material from soil or other material by percolating water.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Low strength. The soil is not strong enough to support loads.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

Metamorphic rock. Rock of any origin altered in mineralogical composition, chemical composition, or structure by heat, pressure, and movement. Nearly all such rocks are crystalline.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

Moderately coarse textured soil. Coarse sandy loam, sandy loam, or fine sandy loam.

Moderately fine textured soil. Clay loam, sandy clay loam, or silty clay loam.

Moraine (geology). 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. Mottling generally indicates poor aeration and impeded drainage. 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.)

Mucky peat. Organic soil material intermediate in degree of decomposition between the less decomposed fibric and the more decomposed sapric material. (See Hemic soil material.)

Munsell notation. A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Neutral soil. A soil having a pH value between 6.6 and 7.3. (See Reaction, soil.)

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.

Outwash plain. A landform of mainly sandy or coarse textured material of glaciofluvial origin. An outwash plain is commonly smooth; where pitted, it is generally low in relief.

Parent material. The unconsolidated organic and mineral material in which soil forms.

Peat. Unconsolidated material, largely undecomposed organic matter, that has accumulated under excess moisture. (See Fibric soil material.)

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

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 downward movement of water through the soil.

Percs slowly (in tables). The slow movement of water through the soil, adversely affecting the specified use.

Permeability. The quality of the soil that enables water to move downward through the profile. Permeability is measured as the number of inches per hour that water moves downward through the saturated soil. Terms describing permeability are:

Very slow	less than 0.06 inch
Slow	0.06 tc 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 thickness.

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.

Poor filter (in tables). Because of rapid permeability, the soil may not adequately filter effluent from a waste disposal system.

Poorly graded. Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

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.

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:

Extremely acid	below 4.5
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

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.

Ridge. A long, narrow elevation of the land surface, typically sharp crested with steep sides and forming an extended upland between valleys.

Rill. A steep-sided channel resulting from accelerated erosion. A rill is generally a few inches deep and not wide enough to be an obstacle to farm machinery.

Rippable. Bedrock or hardpan can be excavated using a single-tooth ripping attachment mounted on a tractor with a 200-300 drawbar horsepower rating.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Rock outcrop. A miscellaneous area consisting of exposures of bare rock. Lava flows and rock-lined pits are not considered rock outcrop.

Rooting depth (in tables). Shallow root zone. The soil is shallow over a layer that greatly restricts roots.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandstone. Sedimentary rock containing dominantly sand-sized particles.

Sapric soil material (muck). The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

Sedimentary rock. Rock made up of particles deposited from suspension in water. The chief kinds of sedimentary rock are conglomerate, formed from gravel; sandstone, formed from sand; shale, formed from clay; and limestone, formed from soft masses of calcium carbonate. There are many intermediate types. Some wind-deposited sand is consolidated into sandstone.

Seepage (in tables). The movement of water through the soil. Seepage adversely affects the specified use.

Sequum. A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer or of the substratum. 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.

Shrink-swell. 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.

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 soils. Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75 feet.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance. In this survey, classes for simple slopes are as follows:

Nearly level	0 to 3 percent
Nearly level and gently sloping	1 to 6 percent
Strongly sloping	6 to 18 percent
Moderately steep	18 to 35 percent
Steep	35 to 45 percent
Very steep	45 to 60 percent

Classes for complex slopes are as follows:

Nearly level	0 to 3 percent
Nearly level and undulating	1 to 6 percent
Rolling	6 to 18 percent
Hilly	18 to 35 percent
Steep	35 to 45 percent
Very steep	45 to 60 percent

Slope (in tables). Slope is great enough that special practices are required to ensure satisfactory performance of the soil for a specific use.

Slow refill (in tables). The slow filling of ponds, resulting from restricted permeability in the soil.

Small stones (in tables). Rock fragments less than 3 inches (7.6 centimeters) in diameter. Small stones adversely affect the specified use of the soil.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the substratum. 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.

Stripcropping. Growing crops in a systematic arrangement of strips or bands which provide vegetative barriers to soil blowing and water erosion.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular. Structureless* soils are either *single grain* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Stubble mulch. Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from soil blowing and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Substratum. The part of the soil below the solum.

Subsurface layer. Any surface soil horizon (A, E, AB, or EB) below the surface layer.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from about 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

Surface soil. The A, E, AB, and EB horizons. It includes all subdivisions of these horizons.

Terminal moraine. A belt of thick glacial drift that generally marks the termination of important glacial advances.

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet.

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). A layer of 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.

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.

Upland (geology). Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

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.

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.

Tables

TABLE 1.--TEMPERATURE AND PRECIPITATION

(Recorded in the period 1956-85 at Beechwood, Crystal Falls, and Stambaugh, Michigan)

Month	Temperature						Precipitation				
				2 years in 10 will have--		Average		2 years in 10 will have--		Average	
	Average daily maximum	Average daily minimum	Average	Maximum temperature higher than--	Minimum temperature lower than--	number of growing degree days*	Average	Less than--	More than--	number of days with 0.10 inch or more	Average snowfall
	°F	°F	°F	°F	°F	Units	In	In	In		In
BEECHWOOD:											
January------	20.4	0.9	10.6	43	-30	0	1.28	0.68	1.81	4	21.5
February-----	26.2	3.9	15.1	51	-28	0	1.20	.58	1.73	4	16.7
March--------	37.0	13.9	25.4	60	-19	0	1.75	.85	2.53	4	16.2
April--------	51.6	27.8	39.7	79	3	28	2.54	1.60	3.39	5	7.4
May----------	65.8	38.9	52.3	86	18	159	3.73	2.30	5.03	7	1.3
June---------	73.1	48.0	60.5	89	29	322	4.10	2.77	5.32	8	.0
July---------	77.7	53.4	65.6	91	37	482	3.55	2.16	4.79	7	.0
August-------	75.5	52.2	63.9	89	35	430	4.32	2.27	6.12	6	.0
September----	66.1	44.4	55.3	85	25	200	4.07	2.30	5.64	7	.0
October------	55.9	35.4	45.6	79	15	62	2.96	1.71	4.08	6	2.6
November-----	37.8	22.5	30.2	63	-5	2	2.42	1.38	3.34	6	16.5
December-----	24.7	8.1	16.4	47	-21	0	1.71	1.15	2.22	6	24.2
Yearly:											
Average-----	51.0	29.1	40.1	---	---	---	---	---	---	---	---
Extreme-----	96	-36	---	92	-31	---	---	---	---	---	---
Total-------	---	---	---	---	---	1,686	33.63	28.28	37.50	70	106.3
CRYSTAL FALLS:											
January------	19.6	-3.5	8.0	43	-34	0	1.15	0.51	1.70	3	15.7
February-----	24.7	-1.2	11.7	51	-35	0	.96	.37	1.44	2	11.3
March--------	35.4	10.3	22.8	61	-24	0	1.58	.79	2.27	4	11.5
April--------	50.1	25.7	37.9	82	-2	21	2.40	1.54	3.18	6	4.7
May----------	64.7	36.9	50.8	89	17	136	3.21	2.07	4.25	7	.5
June---------	72.9	46.0	59.5	92	28	295	3.89	2.50	5.14	7	.0
July---------	78.2	50.8	64.5	94	35	450	3.27	1.98	4.43	6	.0
August-------	75.1	49.0	62.1	91	31	376	3.66	2.04	5.09	6	.0
September----	65.4	41.2	53.3	87	23	156	3.83	2.07	5.39	7	.0
October------	54.4	32.7	43.6	80	13	44	2.40	1.23	3.42	5	.7
November-----	37.9	21.4	29.7	63	-7	0	2.07	1.05	2.95	5	8.7
December-----	24.5	5.8	15.1	46	-25	0	1.50	.94	2.01	4	17.6
Yearly:											
Average-----	50.2	26.3	38.2	---	---	---	---	---	---	---	---
Extreme-----	99	-42	---	96	-37	---	---	---	---	---	---
Total-------	---	---	---	---	---	1,477	29.92	25.96	33.30	62	70.8

See footnote at end of table.

TABLE 1.--TEMPERATURE AND PRECIPITATION--Continued

Month	Temperature						Precipitation				
				2 years in 10 will have--		Average		2 years in 10 will have--		Average	
	Average daily maximum	Average daily minimum	Average	Maximum temperature higher than--	Minimum temperature lower than--	number of growing degree days*	Average	Less than--	More than--	number of days with 0.10 inch or more	Average snowfall
	°F	°F	°F	°F	°F	Units	In	In	In		In
STAMBAUGH:											
January------	21.4	-0.9	10.3	44	-34	0	1.13	0.59	1.61	3	16.1
February-----	27.0	1.7	14.4	52	-34	0	.97	.36	1.48	2	11.7
March--------	37.4	13.2	25.3	60	-23	0	1.60	.74	2.35	4	11.9
April--------	52.5	27.2	39.8	81	0	30	2.51	1.58	3.36	6	5.8
May----------	66.1	37.9	52.0	87	18	151	3.68	2.34	4.89	7	1.3
June---------	74.1	46.6	60.3	90	28	316	3.92	2.77	4.98	8	.0
July---------	78.7	51.5	65.1	92	34	469	3.45	2.35	4.46	7	.0
August-------	76.3	50.0	63.1	91	30	409	4.24	2.25	5.99	7	.0
September----	66.7	42.1	54.4	87	21	182	3.85	2.11	5.39	7	.0
October------	56.5	34.1	45.3	80	13	57	2.60	1.29	3.73	5	1.3
November-----	39.0	21.9	30.4	64	-6	2	2.12	1.10	3.01	5	11.0
December-----	25.8	7.2	16.5	49	-26	0	1.60	.99	2.16	4	17.9
Yearly:											
Average-----	51.8	27.7	39.8	---	---	---	---	---	---	---	---
Extreme-----	98	-44	---	94	-37	---	---	---	---	---	---
Total-------	---	---	---	---	---	1,616	31.68	27.42	35.54	65	76.9

* 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 1956-85 at Beechwood and Stambaugh, Michigan, and 1962-85 at Crystal Falls, Michigan)

Probability	Temperature		
	24 °F or lower	28 °F or lower	32 °F or lower
BEECHWOOD:			
Last freezing temperature in spring:			
1 year in 10 later than--	May 20	June 3	June 22
2 years in 10 later than--	May 14	May 28	June 16
5 years in 10 later than--	May 5	May 18	June 5
First freezing temperature in fall:			
1 year in 10 earlier than--	Sept. 24	Sept. 12	Sept. 3
2 years in 10 earlier than--	Oct. 1	Sept. 17	Sept. 8
5 years in 10 earlier than--	Oct. 13	Sept. 27	Sept. 17
CRYSTAL FALLS:			
Last freezing temperature in spring:			
1 year in 10 later than--	May 24	June 9	June 22
2 years in 10 later than--	May 19	June 5	June 18
5 years in 10 later than--	May 9	May 27	June 9
First freezing temperature in fall:			
1 year in 10 earlier than--	Sept. 20	Sept. 6	Aug. 15
2 years in 10 earlier than--	Sept. 26	Sept. 12	Aug. 21
5 years in 10 earlier than--	Oct. 7	Sept. 22	Sept. 2

TABLE 2.--FREEZE DATES IN SPRING AND FALL--Continued

Probability	Temperature		
	24 °F or lower	28 °F or lower	32 °F or lower
STAMBAUGH:			
Last freezing temperature in spring:			
1 year in 10 later than--	May 23	June 8	June 30
2 years in 10 later than--	May 18	June 3	June 24
5 years in 10 later than--	May 8	May 24	June 12
First freezing temperature in fall:			
1 year in 10 earlier than--	Sept. 13	Sept. 5	Aug. 12
2 years in 10 earlier than--	Sept. 20	Sept. 9	Aug. 19
5 years in 10 earlier than--	Oct. 2	Sept. 17	Aug. 31

TABLE 3.--GROWING SEASON

(Recorded in the period 1956-85 at Beechwood and Stambaugh, Michigan, and 1962-85 at Crystal Falls, Michigan)

Probability	Daily minimum temperature during growing season		
	Higher than 24 °F	Higher than 28 °F	Higher than 32 °F
	Days	Days	Days
BEECHWOOD:			
9 years in 10	136	107	85
8 years in 10	145	116	92
5 years in 10	161	131	104
2 years in 10	177	147	116
1 year in 10	185	155	122
CRYSTAL FALLS:			
9 years in 10	126	97	59
8 years in 10	134	104	68
5 years in 10	150	117	84
2 years in 10	166	131	100
1 year in 10	174	138	109
STAMBAUGH:			
9 years in 10	120	92	48
8 years in 10	129	100	59
5 years in 10	146	115	79
2 years in 10	163	130	100
1 year in 10	172	137	111

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Acres	Percent
50	Aquents and Histosols, ponded	6,988	0.9
51	Lupton-Cathro-Humaquepts complex	39,618	5.2
52	Greenwood and Merwin peats	18,710	2.4
53	Waucedah-Cathro mucks, frequently flooded	11,627	1.5
54	Pits, sand and gravel	495	0.1
55A	Oconto very fine sandy loam, 1 to 2 percent slopes	3,717	0.5
55B	Oconto very fine sandy loam, 2 to 6 percent slopes	617	0.1
55D	Oconto very fine sandy loam, 6 to 18 percent slopes	401	0.1
56	Pits and dumps, mine	887	0.1
57A	Padus fine sandy loam, 1 to 2 percent slopes	2,082	0.3
57B	Padus fine sandy loam, 2 to 6 percent slopes	6,940	0.9
57D	Padus fine sandy loam, 6 to 18 percent slopes, stony	7,090	0.9
57F	Padus fine sandy loam, 18 to 35 percent slopes, stony	3,076	0.4
58B	Trenary fine sandy loam, 1 to 6 percent slopes, stony	2,097	0.3
58D	Trenary fine sandy loam, 6 to 18 percent slopes, stony	1,985	0.3
59A	Solona very fine sandy loam, 0 to 3 percent slopes, stony	941	0.1
60D	Trenary-Rock outcrop complex, 1 to 18 percent slopes, very stony	448	0.1
64A	Channing very fine sandy loam, 0 to 3 percent slopes	2,029	0.3
65	Witbeck muck, very stony	3,620	0.5
67B	Net very fine sandy loam, 0 to 4 percent slopes, very stony	3,135	0.4
68B	Net-Witbeck complex, 0 to 4 percent slopes, very stony	12,199	1.6
69A	Karlin, moderately wet-Croswell complex, 0 to 3 percent slopes	11,053	1.4
70B	Sundog-Channing very fine sandy loams, 0 to 6 percent slopes, rocky, stony	592	0.1
71D	Karlin-Vilas-Rock outcrop complex, 1 to 18 percent slopes, stony	4,194	0.5
72B	Karlin fine sandy loam, 1 to 6 percent slopes	3,397	0.4
72D	Karlin fine sandy loam, 6 to 18 percent slopes	1,693	0.2
72F	Karlin fine sandy loam, 18 to 35 percent slopes	446	0.1
73A	Gaastra silt loam, 0 to 3 percent slopes, stony	3,935	0.5
74A	Au Gres sand, 0 to 3 percent slopes	885	0.1
75	Kinross muck	505	0.1
76	Ensley fine sandy loam, stony	218	*
77B	Vilas loamy sand, 1 to 6 percent slopes	5,411	0.7
77D	Vilas loamy sand, 6 to 18 percent slopes	2,738	0.4
78B	Vilas-Karlin complex, 1 to 6 percent slopes	10,682	1.4
78D	Vilas-Karlin complex, 6 to 18 percent slopes	10,792	1.4
78F	Vilas-Karlin complex, 18 to 35 percent slopes	1,047	0.1
79A	Fence silt loam, 1 to 2 percent slopes	127	*
79B	Fence silt loam, 2 to 6 percent slopes	291	*
79D	Fence silt loam, 6 to 18 percent slopes	48	*
80B	Pence fine sandy loam, 1 to 6 percent slopes	5,311	0.7
80D	Pence fine sandy loam, 6 to 18 percent slopes	3,947	0.5
80F	Pence fine sandy loam, 18 to 35 percent slopes	100	*
82B	Keweenaw loamy fine sand, 1 to 6 percent slopes	997	0.1
82D	Keweenaw loamy fine sand, 6 to 18 percent slopes	861	0.1
82F	Keweenaw loamy fine sand, 18 to 35 percent slopes	670	0.1
100B	Keweenaw-Karlin complex, 1 to 6 percent slopes	846	0.1
100D	Keweenaw-Karlin complex, 6 to 18 percent slopes	152	*
101B	Trenary-Solona complex, 0 to 6 percent slopes, stony	300	*
102B	Escanaba loamy fine sand, 1 to 6 percent slopes	544	0.1
103B	Wabeno-Sarona complex, 1 to 6 percent slopes, stony	2,975	0.4
103D	Wabeno-Sarona complex, 6 to 18 percent slopes, stony	1,429	0.2
104A	Stambaugh silt loam, 1 to 2 percent slopes, stony	1,440	0.2
104B	Stambaugh silt loam, 2 to 6 percent slopes, stony	5,949	0.8
104D	Stambaugh silt loam, 6 to 18 percent slopes, stony	3,273	0.4
105D	Wabeno-Rock outcrop complex, 1 to 18 percent slopes, very stony	5,855	0.8
106D	Champion very fine sandy loam, 1 to 18 percent slopes, rocky, very stony	690	0.1
107B	Sarona fine sandy loam, 1 to 6 percent slopes, stony	2,797	0.4
107D	Sarona fine sandy loam, 6 to 18 percent slopes, stony	1,296	0.2
107F	Sarona fine sandy loam, 18 to 35 percent slopes, stony	969	0.1
108D	Sarona-Rock outcrop complex, 1 to 18 percent slopes, very stony	6,782	0.9
108F	Sarona-Rock outcrop complex, 18 to 35 percent slopes, very stony	1,128	0.1
109D	Udorthents, nearly level to rolling	1,125	0.1

See footnote at end of table.

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS--Continued

Map symbol	Soil name	Acres	Percent
110B	Petticoat-Wabeno silt loams, 1 to 6 percent slopes, very stony	28,843	3.7
110D	Petticoat-Wabeno silt loams, 6 to 18 percent slopes, very stony	7,834	1.0
111B	Champion-Net very fine sandy loams, 0 to 6 percent slopes, very stony	12,727	1.6
112B	Sundog very fine sandy loam, 1 to 6 percent slopes	7,809	1.0
112D	Sundog very fine sandy loam, 6 to 18 percent slopes	15,582	2.0
112F	Sundog cobbly fine sandy loam, 18 to 50 percent slopes, stony	3,835	0.5
113A	Sundog very fine sandy loam, moderately wet, 0 to 3 percent slopes	7,875	1.0
114A	Minocqua-Channing complex, 0 to 3 percent slopes	18,993	2.5
115A	Manitowish fine sandy loam, 0 to 3 percent slopes	4,187	0.5
116B	Wabeno silt loam, 1 to 6 percent slopes, very stony	32,696	4.3
116D	Wabeno silt loam, 6 to 18 percent slopes, very stony	25,366	3.3
121B	Peavy silt loam, 1 to 6 percent slopes, stony	4,893	0.6
121D	Peavy silt loam, 6 to 18 percent slopes, stony	3,338	0.4
122B	Sarona-Karlin fine sandy loams, 1 to 6 percent slopes, stony	6,732	0.9
122D	Sarona-Karlin fine sandy loams, 6 to 18 percent slopes, stony	6,964	0.9
123B	Ocqueoc loamy fine sand, 1 to 6 percent slopes	231	*
123D	Ocqueoc loamy fine sand, 6 to 18 percent slopes	511	0.1
124B	Wabeno-Net silt loams, 0 to 6 percent slopes, very stony	6,417	0.8
125B	Wabeno-Net silt loams, 0 to 6 percent slopes, rocky, very stony	1,804	0.2
126B	Champion very fine sandy loam, 1 to 6 percent slopes, very stony	13,240	1.7
126D	Champion very fine sandy loam, 6 to 18 percent slopes, very stony	9,995	1.3
126F	Champion very fine sandy loam, 18 to 35 percent slopes, very stony	824	0.1
127D	Goodman silt loam, 1 to 18 percent slopes, rocky, very stony	376	*
128B	Goodman-Wabeno-Sundog, sandy substratum, complex, 1 to 6 percent slopes, stony	3,865	0.5
128D	Goodman-Wabeno-Sundog, sandy substratum, complex, 6 to 18 percent slopes, stony	6,628	0.9
128F	Goodman-Sundog, sandy substratum, complex, 18 to 45 percent slopes, stony	1,784	0.2
163B	Sagola fine sandy loam, 1 to 6 percent slopes, stony	394	0.1
163D	Sagola fine sandy loam, 6 to 18 percent slopes, stony	2,147	0.3
163F	Sagola fine sandy loam, 18 to 35 percent slopes, stony	120	*
164B	Alstad loam, 0 to 6 percent slopes	69	*
165B	Sundog-Channing very fine sandy loams, 0 to 6 percent slopes	3,446	0.4
166F	Soperton silt loam, 18 to 35 percent slopes, very stony	4,249	0.5
167A	Monico loam, 0 to 3 percent slopes	44	*
168F	Soperton-Rock outcrop complex, 18 to 35 percent slopes, very stony	239	*
500B	Wabeno silt loam, nearly level and undulating, very stony	36,199	4.8
500D	Wabeno silt loam, rolling, very stony	20,053	2.6
501F	Soperton silt loam, hilly, very stony	3,908	0.5
502B	Champion very fine sandy loam, moderately wet, nearly level and undulating, very stony	33,746	4.5
502D	Champion very fine sandy loam, moderately wet, rolling, very stony	10,877	1.4
502F	Champion very fine sandy loam, hilly, very stony	2,383	0.3
503A	Typic Fragiaquods, coarse-loamy, nearly level	4,769	0.6
504B	Pence fine sandy loam, nearly level and undulating	10,730	1.4
504D	Pence fine sandy loam, rolling	1,709	0.2
504F	Pence fine sandy loam, hilly	292	*
505	Humaquepts, acid, very stony	670	0.1
506	Humaquepts, nonacid, very stony	4,419	0.6
507A	Monico loam, nearly level	2,492	0.3
508A	Beechwood silt loam, nearly level	3,485	0.4
509A	Typic Dystrochrepts, coarse-loamy, deep water table, nearly level	703	0.1
510	Borosaprists, nonacid	12,077	1.6
511B	Typic Dystrochrepts, coarse-loamy, sandy substratum, nearly level and undulating	1,316	0.2
511D	Typic Dystrochrepts, coarse-loamy, sandy substratum, rolling	1,217	0.2
511F	Typic Dystrochrepts, coarse-loamy, sandy substratum, hilly	5,118	0.7
512	Borosaprists, acid	5,118	0.7
513B	Entic Haplorthods, coarse-loamy, deep water table, nearly level and undulating	1,241	0.2
514B	Stambaugh silt loam, moderately wet, nearly level and undulating, stony	3,225	0.4
515	Borosaprists, frequently flooded	1,389	0.2
516B	Fragiorthods, nearly level and undulating	3,730	0.5
516D	Fragiorthods, rolling	1,582	0.2
517B	Lode silt loam, nearly level and undulating	6,270	0.8
517D	Lode silt loam, rolling	944	0.1

See footnote at end of table.

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS--Continued

Map symbol	Soil name	Acres	Percent
517F	Lode silt loam, hilly	62	*
518	Humaquepts, sandy substratum	3,636	0.5
519A	Monico loam, sandy substratum, nearly level	1,634	0.2
520B	Haplorthods, deep water table, nearly level and undulating	2,582	0.3
521B	Pence sandy loam, very deep water table, nearly level and undulating	3,781	0.5
522D	Entic Fragiorthods, coarse-loamy-Typic Dystrochrepts complex, nearly level to hilly, rocky, stony	1,973	0.3
523B	Entic Haplorthods-Typic Haplaquepts complex, nearly level and undulating	2,979	0.4
524D	Haplorthods, bedrock substratum, rolling, rocky	251	*
524F	Haplorthods, bedrock substratum, hilly to very steep, rocky	159	*
525B	Entic Haplorthods, sandy-skeletal, nearly level and undulating	1,247	0.2
525D	Entic Haplorthods, sandy-skeletal, rolling and hilly	2,494	0.3
525F	Entic Haplorthods, sandy-skeletal, steep and very steep	48	*
527	Borohemists-Borosaprists, acid, complex	4,590	0.6
528	Borohemists, acid	869	0.1
529	Borohemists, nonacid	2,593	0.3
530	Borosaprists-Histic Humaquepts, nonacid, complex	5,482	0.7
531C	Champion silt loam, nearly level to rolling, very stony	342	*
532F	Champion-Haplorthods complex, hilly, rocky, very stony	73	*
533B	Entic Fragiorthods, coarse-loamy, nearly level and undulating	45	*
534B	Entic Haplorthods, sandy, stratified substratum, nearly level and undulating	2,328	0.3
534D	Entic Haplorthods, sandy, stratified substratum, rolling	1,808	0.2
535B	Vilas loamy sand, nearly level and undulating	468	0.1
535D	Vilas loamy sand, rolling	42	*
536F	Entic Haplorthods, sandy-skeletal, esker, very steep	44	*
537B	Haplorthods, moderately deep water table, nearly level and undulating	112	*
538B	Entic Haplorthods, sandy substratum, nearly level and undulating	523	0.1
538D	Entic Haplorthods, sandy substratum, rolling	50	*
539B	Karlin sandy loam, very deep water table, nearly level and undulating	957	0.1
540B	Entic Fragiorthods-Typic Fragiaquods-Borosaprists, nonacid, complex, nearly level and undulating	1,503	0.2
541	Fluvaquents, frequently flooded	3,265	0.4
542B	Gogebic fine sandy loam, nearly level and undulating	2,598	0.3
542D	Gogebic fine sandy loam, rolling	2,029	0.3
542F	Gogebic fine sandy loam, well drained, hilly	331	*
543A	Haplaquods, nearly level	704	0.1
544C	Haplorthods, esker, rolling	46	*
544D	Haplorthods, esker, hilly	243	*
544F	Haplorthods, esker, steep	188	*
545B	Haplorthods, nearly level and undulating	5,288	0.7
545D	Haplorthods, rolling	24,333	3.1
545F	Haplorthods, hilly	1,806	0.2
546C	Entic Haplorthods, esker, rolling	42	*
546D	Entic Haplorthods, esker, hilly and steep	45	*
546F	Entic Haplorthods, esker, very steep	121	*
547B	Haplorthods, very deep water table, nearly level and undulating	306	*
548	Humaquepts-Terric Borosaprists, nonacid, complex, frequently flooded	976	0.1
549B	Karlin-Pence complex, nearly level and undulating	820	0.1
549D	Karlin-Pence complex, rolling	3,152	0.4
549F	Karlin-Pence complex, hilly	344	*
550	Terric Borosaprists, nonacid, frequently flooded	856	0.1
551A	Typic Fragiorthods, nearly level, stony	17	*
552F	Kalkaska sand, banded substratum, hilly	344	*
553D	Kalkaska loamy sand, rolling	47	*
554B	Alfic Fragiorthods, coarse-loamy, nearly level and undulating	12	*
555B	Entic Haplorthods, very deep water table, nearly level and undulating	313	*
556	Haplaquods, wet	123	*
	Water	24,156	3.1
	Total	775,091	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)

Map symbol	Soil name
55A	Oconto very fine sandy loam, 1 to 2 percent slopes
55B	Oconto very fine sandy loam, 2 to 6 percent slopes
57A	Padus fine sandy loam, 1 to 2 percent slopes
57B	Padus fine sandy loam, 2 to 6 percent slopes
79A	Fence silt loam, 1 to 2 percent slopes
79B	Fence silt loam, 2 to 6 percent slopes
101B	Trenary-Solona complex, 0 to 6 percent slopes
102B	Escanaba loamy fine sand, 1 to 6 percent slopes
112B	Sundog very fine sandy loam, 1 to 6 percent slopes
113A	Sundog very fine sandy loam, moderately wet, 0 to 3 percent slopes
164B	Alstad loam, 0 to 6 percent slopes (where drained)
165B	Sundog-Channing very fine sandy loams, 0 to 6 percent slopes (where drained)
167A	Monico loam, 0 to 3 percent slopes (where drained)
507A	Monico loam, nearly level (where drained)
508A	Beechwood silt loam, nearly level (where drained)
517B	Lode silt loam, nearly level and undulating
519A	Monico loam, sandy substratum, nearly level (where drained)

TABLE 6.--YIELDS PER ACRE OF CROPS

(Yields are those that can be expected under a high level of management. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil. Soils that are not likely to be used for crops are not listed)

Soil name and map symbol	Corn	Corn silage	Oats	Irish potatoes	Alfalfa hay	Bromegrass-alfalfa hay
	Bu	Tons	Bu	Cwt	Tons	Tons
55A, 558---------- Oconto	70	11	60	---	---	3.5
55D---------- Oconto	50	8	40	---	---	2.5
57A, 57B---------- Padus	70	11	70	---	---	4.0
57D---------- Padus	55	9	55	---	---	3.4
58B---------- Trenary	---	14	75	350	---	3.3
58D---------- Trenary	---	---	60	---	---	2.5
59A---------- Solona	85	14	75	---	---	4.5
64A---------- Channing	---	---	60	---	---	---
72B---------- Karlin	70	13	60	---	---	---
72D---------- Karlin	---	---	50	---	---	---
73A---------- Gaastra	---	---	85	---	---	2.8
79A---------- Fence	75	12	75	---	---	4.5
79B---------- Fence	70	11	75	---	---	4.5
79D---------- Fence	60	10	70	---	---	4.0
80B---------- Pence	60	10	55	---	---	3.5
80D---------- Pence	---	---	---	---	---	2.9
82B---------- Keweenaw	---	10	60	250	3.0	2.1
82D---------- Keweenaw	---	---	---	---	2.4	1.7
100B---------- Keweenaw-Karlin	---	12	60	250	3.0	2.1

TABLE 6.--YIELDS PER ACRE OF CROPS--Continued

Soil name and map symbol	Corn	Corn silage	Oats	Irish potatoes	Alfalfa hay	Bromegrass-alfalfa hay
	Bu	Tons	Bu	Cwt	Tons	Tons
100D---------- Keweenaw-Karlin	---	---	---	---	2.4	1.7
101B---------- Trenary-Solona	---	14	75	350	---	3.3
102B---------- Escanaba	75	12	70	350	3.5	---
103B---------- Wabeno-Sarona	---	13	75	---	3.5	2.5
103D---------- Wabeno-Sarona	---	---	---	---	3.0	2.0
104A---------- Stambaugh	---	14	80	350	4.0	3.0
104B---------- Stambaugh	---	14	75	350	4.0	3.0
104D---------- Stambaugh	---	---	60	---	3.0	2.0
107B---------- Sarona	80	13	65	---	---	3.7
107D---------- Sarona	---	---	---	---	---	3.1
112B---------- Sundog	---	---	55	275	---	3.0
112D---------- Sundog	---	---	---	---	---	2.0
113A---------- Sundog	---	---	60	275	---	3.0
115A---------- Manitowish	---	10	50	---	---	2.5
121B---------- Peavy	80	13	75	---	3.5	---
121D---------- Peavy	---	---	65	---	3.0	---
122B---------- Sarona-Karlin	76	13	62	---	---	3.7
122D---------- Sarona-Karlin	---	---	---	---	---	3.1
163B---------- Sagola	---	---	60	275	---	3.0
163D---------- Sagola	---	---	---	---	---	2.5
164B---------- Alstad	90	15	70	---	---	4.0

TABLE 6.--YIELDS PER ACRE OF CROPS--Continued

Soil name and map symbol	Corn	Corn silage	Oats	Irish potatoes	Alfalfa hay	Bromegrass-alfalfa hay
	Bu	Tons	Bu	Cwt	Tons	Tons
165B---------- Sundog-Channing	---	---	57	---	---	---
167A---------- Monico	---	12	60	---	---	3.0
504B---------- Pence	60	10	55	---	---	3.5
504D---------- Pence	---	---	---	---	---	2.9
507A---------- Monico	---	12	60	---	---	3.0
508A---------- Beechwood	---	---	70	---	---	---
514B---------- Stambaugh	---	14	75	350	4.0	3.0
517B---------- Lode	---	---	75	---	3.5	---
517D---------- Lode	---	---	---	---	2.5	---
519A---------- Monico	---	12	60	---	---	3.0
521B---------- Pence	60	10	55	---	---	3.5

TABLE 7.--CAPABILITY CLASSES AND SUBCLASSES

(Miscellaneous areas are excluded. Absence of an entry indicates no acreage)

Class	Total acreage	Major management concerns (Subclass)		
		Erosion (e)	Wetness (w)	Soil problem (s)
		Acres	Acres	Acres
I	127	---	---	---
II	47,450	30,158	10,790	6,502
III	97,930	28,861	17,079	51,990
IV	218,807	35,606	1,163	182,038
V	17,202	---	17,202	---
VI	132,676	34,475	48,873	49,328
VII	149,043	44,935	50,262	53,846
VIII	11,392	---	5,813	5,579

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY

(Only the soils suitable for production of commercial trees are listed. Absence of an entry indicates that information was not available)

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	Volume*	
51:									
Lupton	2W	Slight	Severe	Severe	Severe	Black spruce	20	29	---
						Balsam fir	46	86	
						Black ash	---	---	
						Northern whitecedar	---	---	
						Paper birch	---	---	
						Tamarack	---	---	
						Red maple	---	---	
						Quaking aspen	---	---	
						White spruce	---	---	
Cathro	5W	Slight	Severe	Severe	Severe	Balsam fir	40	71	---
						Northern whitecedar	15	21	
						Tamarack	35	23	
						Paper birch	---	---	
						Red maple	40	26	
						Black spruce	15	23	
						White spruce	---	---	
Humaquepts	---	Slight	Severe	Severe	Severe	---	---	---	---
52:									
Greenwood	2W	Slight	Severe	Severe	Severe	Black spruce	15	23	---
						Balsam fir	39	69	
						Tamarack	---	---	
Merwin	2W	Slight	Severe	Severe	Severe	Black spruce	25	35	---
						Tamarack	35	23	
53:									
Waucedah	3W	Slight	Severe	Severe	Severe	Northern whitecedar	30	42	---
						Balsam fir	40	71	
						Black ash	35	22	
						Quaking aspen	40	22	
						Red maple	---	---	
						Black spruce	---	---	
Cathro	5W	Slight	Severe	Severe	Severe	Balsam fir	40	71	---
						Northern whitecedar	15	21	
						Tamarack	35	23	
						Paper birch	---	---	
						Red maple	40	26	
						Black spruce	15	23	
						White spruce	---	---	
55A, 55B, 55D---Oconto	3L	Slight	Moderate	Slight	Slight	Sugar maple	70	43	Eastern white pine, red pine, white spruce.
						American basswood	---	---	
						White ash	---	---	
						Northern red oak	---	---	

See footnote at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	Volume*	
57A, 57B, 57D---Padus	3L	Slight	Moderate	Slight	Slight	Sugar maple	67	41	Red pine, eastern white pine, white spruce.
						Northern red oak	70	66	
						Bigtooth aspen	78	91	
						White ash	---	---	
						American basswood	---	---	
						Red pine	---	---	
57F---Padus	3R	Moderate	Moderate	Slight	Slight	Sugar maple	67	41	Red pine, eastern white pine, white spruce.
						Northern red oak	70	66	
						Bigtooth aspen	78	91	
						White ash	---	---	
						American basswood	---	---	
						Red pine	---	---	
58B, 58D---Trenary	3L	Slight	Moderate	Slight	Slight	Sugar maple	61	38	White spruce, red pine, eastern white pine.
						American basswood	65	59	
						Yellow birch	61	38	
						American beech	---	---	
						Quaking aspen	---	---	
						Balsam fir	---	---	
						Eastern hemlock	---	---	
59A---Solona	3W	Slight	Severe	Slight	Moderate	Sugar maple	64	40	Eastern white pine, white ash, white spruce.
						Northern red oak	---	---	
						White ash	---	---	
						American basswood	---	---	
60D:									
Trenary	3L	Slight	Slight	Slight	Slight	Sugar maple	61	38	White spruce, red pine, eastern white pine.
						American basswood	65	59	
						Yellow birch	61	38	
						American beech	---	---	
						Quaking aspen	---	---	
						Balsam fir	---	---	
						Eastern hemlock	---	---	
Rock outcrop.									
64A---Channing	2W	Slight	Severe	Moderate	Severe	Red maple	55	35	White spruce, eastern white pine.
						Quaking aspen	---	---	
						Balsam fir	---	---	
						Paper birch	---	---	
						Black spruce	---	---	
						White spruce	---	---	
						Northern whitecedar	---	---	
						Yellow birch	---	---	
65---Witbeck	5W	Slight	Severe	Severe	Severe	Black spruce	48	63	---
						Quaking aspen	---	---	
						White spruce	41	75	
						Balsam fir	48	90	
						Black ash	---	---	
						Yellow birch	---	---	
						Red maple	---	---	
						Northern whitecedar	---	---	
						Tamarack	40	27	

See footnote at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	Volume*	
67B---------- Net	3W	Slight	Severe	Moderate	Severe	Red maple----------	60	38	White spruce, eastern white pine.
						Balsam fir----------	58	113	
						Bigtooth aspen------	---	---	
						Quaking aspen-------	---	---	
						White spruce--------	49	94	
						Paper birch---------	53	53	
						Yellow birch--------	---	---	
						Eastern hemlock-----	---	---	
68B:									
Net----------	3W	Slight	Severe	Moderate	Severe	Red maple----------	60	38	White spruce, eastern white pine.
						Balsam fir----------	58	113	
						Bigtooth aspen------	---	---	
						Quaking aspen-------	---	---	
						White spruce--------	49	94	
						Paper birch---------	53	53	
						Yellow birch--------	---	---	
						Eastern hemlock-----	---	---	
Witbeck--------	5W	Slight	Severe	Severe	Severe	Black spruce--------	48	63	---
						Quaking aspen-------	---	---	
						White spruce--------	41	75	
						Balsam fir----------	48	90	
						Black ash-----------	---	---	
						Yellow birch--------	---	---	
						Red maple-----------	---	---	
						Northern whitecedar-	---	---	
						Tamarack------------	40	27	
69A:									
Karlin---------	5A	Slight	Slight	Slight	Moderate	Quaking aspen-------	68	78	Red pine, jack pine, eastern white pine.
						Bigtooth aspen------	---	---	
						Red maple-----------	---	---	
						Northern red oak----	---	---	
						Red pine------------	---	---	
						Paper birch---------	---	---	
						Balsam fir----------	---	---	
Croswell-------	5S	Slight	Moderate	Moderate	Moderate	Quaking aspen-------	68	78	Red pine, eastern white pine, white spruce.
						Red pine------------	55	88	
						Jack pine-----------	53	73	
						Northern red oak----	---	---	
						Black cherry--------	---	---	
						Eastern white pine--	---	---	
						Bigtooth aspen------	69	80	
						Red maple-----------	---	---	
						Paper birch---------	54	55	
70B:									
Sundog---------	2L	Slight	Moderate	Slight	Slight	Red maple-----------	53	34	Red pine, white spruce.
						Eastern hemlock-----	---	---	
						Quaking aspen-------	65	73	
						Sugar maple---------	---	---	
						Red pine------------	75	142	
						Balsam fir----------	---	---	

See footnote at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	Volume*	
70B:									
Channing	2W	Slight	Severe	Moderate	Severe	Red maple	55	35	White spruce, northern whitecedar, eastern white pine.
						Balsam fir	54	105	
						Yellow birch	---	---	
						White spruce	---	---	
						Northern whitecedar	---	---	
						Quaking aspen	---	---	
						Paper birch	---	---	
						Black spruce	---	---	
71D:									
Karlin	3A	Slight	Slight	Slight	Slight	Sugar maple	61	38	Red pine, eastern white pine, jack pine.
						Yellow birch	---	---	
						Bigtooth aspen	---	---	
						Northern red oak	---	---	
						American basswood	---	---	
						Red pine	65	115	
						Eastern white pine	---	---	
Vilas	6A	Slight	Slight	Slight	Slight	Red pine	57	93	Red pine, eastern white pine, jack pine.
						Jack pine	65	94	
						Eastern white pine	56	109	
						Northern pin oak	---	---	
						Balsam fir	---	---	
						Quaking aspen	---	---	
						Northern red oak	---	---	
						Red maple	---	---	
						Paper birch	---	---	
Rock outcrop.									
72B, 72D Karlin	3A	Slight	Slight	Slight	Slight	Sugar maple	61	38	Red pine, eastern white pine, jack pine.
						Yellow birch	---	---	
						Bigtooth aspen	---	---	
						Northern red oak	---	---	
						American basswood	---	---	
						Red pine	65	115	
						Eastern white pine	---	---	
72F Karlin	3R	Moderate	Moderate	Slight	Slight	Sugar maple	61	38	Red pine, eastern white pine, jack pine.
						Yellow birch	---	---	
						Bigtooth aspen	---	---	
						Northern red oak	---	---	
						American basswood	---	---	
						Red pine	65	115	
						Eastern white pine	---	---	
73A Gaastra	3W	Slight	Severe	Slight	Moderate	Red maple	65	40	White spruce, eastern white pine.
						Quaking aspen	---	---	
						White ash	---	---	
						White spruce	---	---	
						Balsam fir	---	---	
						American elm	---	---	
						Sugar maple	---	---	
						American basswood	---	---	
						Black ash	---	---	
						Yellow birch	---	---	
						Black cherry	---	---	

See footnote at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	Volume*	
74A---------- Au Gres	6W	Slight	Severe	Moderate	Severe	Quaking aspen-------	70	81	White spruce, red pine, eastern white pine, Norway spruce.
						Bigtooth aspen------	---	---	
						Balsam fir----------	---	---	
						Paper birch---------	---	---	
						Yellow birch--------	---	---	
						Red maple-----------	65	40	
						Eastern hemlock-----	---	---	
						Eastern white pine--	---	---	
						Northern whitecedar-	---	---	
						Jack pine-----------	51	69	
						Red pine------------	61	104	
75---------- Kinross	2W	Slight	Severe	Severe	Severe	Quaking aspen-------	45	32	---
						Black spruce--------	---	---	
						Tamarack------------	---	---	
						Northern whitecedar-	---	---	
						Balsam fir----------	---	---	
						Red maple-----------	---	---	
						Jack pine-----------	---	---	
76---------- Ensley	2W	Slight	Severe	Severe	Severe	Red maple-----------	45	26	---
						White spruce--------	---	---	
77B, 77D-------- Vilas	6A	Slight	Slight	Slight	Slight	Red pine------------	57	93	Red pine, jack pine, eastern white pine.
						Jack pine-----------	65	94	
						Eastern white pine--	56	109	
						Northern pin oak----	---	---	
						Balsam fir----------	---	---	
						Quaking aspen-------	---	---	
						Northern red oak----	---	---	
						Red maple-----------	---	---	
						Paper birch---------	---	---	
78B, 78D: Vilas----------	6A	Slight	Slight	Slight	Slight	Red pine------------	57	93	Red pine, jack pine, eastern white pine.
						Jack pine-----------	65	94	
						Eastern white pine--	56	109	
						Northern pin oak----	---	---	
						Balsam fir----------	---	---	
						Quaking aspen-------	---	---	
						Northern red oak----	---	---	
						Red maple-----------	---	---	
						Paper birch---------	---	---	
Karlin---------	3A	Slight	Slight	Slight	Slight	Sugar maple---------	61	38	Red pine, eastern white pine, jack pine.
						Yellow birch--------	---	---	
						Bigtooth aspen------	---	---	
						Northern red oak----	---	---	
						American basswood---	---	---	
						Red pine------------	65	115	
						Eastern white pine--	---	---	

See footnote at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	Volume*	
78F:									
Vilas	6R	Moderate	Moderate	Slight	Slight	Red pine	57	93	Red pine, jack pine, eastern white pine.
						Jack pine	65	94	
						Eastern white pine	56	109	
						Northern pin oak	---	---	
						Balsam fir	---	---	
						Quaking aspen	---	---	
						Northern red oak	---	---	
						Red maple	---	---	
						Paper birch	---	---	
Karlin	3R	Moderate	Moderate	Slight	Slight	Sugar maple	61	38	Red pine, eastern white pine, jack pine.
						Yellow birch	---	---	
						Bigtooth aspen	---	---	
						Northern red oak	---	---	
						American basswood	---	---	
						Red pine	65	115	
						Eastern white pine	---	---	
79A, 79B, 79D---Fence	3L	Slight	Severe	Slight	Slight	Sugar maple	65	40	Red pine, eastern white pine, white spruce.
						Yellow birch	---	---	
						American basswood	---	---	
						Quaking aspen	---	---	
						Bigtooth aspen	---	---	
80B, 80D---Pence	3A	Slight	Slight	Slight	Slight	Sugar maple	59	37	Red pine, eastern white pine, jack pine.
						Red pine	59	99	
						Eastern white pine	57	112	
						American basswood	---	---	
						Balsam fir	---	---	
						Quaking aspen	---	---	
						Paper birch	---	---	
						Yellow birch	---	---	
80F---Pence	3R	Moderate	Moderate	Slight	Slight	Sugar maple	59	37	Red pine, eastern white pine, jack pine.
						Red pine	59	99	
						Eastern white pine	57	112	
						American basswood	---	---	
						Balsam fir	---	---	
						Quaking aspen	---	---	
						Paper birch	---	---	
						Yellow birch	---	---	
82B, 82D---Keweenaw	3A	Slight	Slight	Slight	Slight	Sugar maple	61	38	Eastern white pine, red pine.
						Eastern hemlock	---	---	
						Yellow birch	---	---	
						Northern red oak	64	57	
						Paper birch	60	65	
						Red maple	50	32	
						Black cherry	---	---	
						Eastern white pine	---	---	
						Balsam fir	---	---	
						Quaking aspen	---	---	
						Red pine	60	101	
						Bigtooth aspen	74	86	

See footnote at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	Volume*	
82F---------- Keweenaw	3R	Moderate	Moderate	Slight	Slight	Sugar maple---------	61	38	Eastern white pine, red pine.
						Eastern hemlock-----	---	---	
						Yellow birch--------	---	---	
						Northern red oak----	64	57	
						Paper birch---------	60	65	
						Red maple-----------	50	32	
						Black cherry--------	---	---	
						Eastern white pine--	---	---	
						Balsam fir----------	---	---	
						Quaking aspen-------	---	---	
						Red pine------------	60	101	
						Bigtooth aspen------	74	86	
100B, 100D:									
Keweenaw-------	3A	Slight	Slight	Slight	Slight	Sugar maple---------	61	38	Eastern white pine, red pine.
						Eastern hemlock-----	---	---	
						Yellow birch--------	---	---	
						Northern red oak----	64	57	
						Paper birch---------	60	65	
						Red maple-----------	50	32	
						Black cherry--------	---	---	
						Eastern white pine--	---	---	
						Balsam fir----------	---	---	
						Quaking aspen-------	---	---	
						Red pine------------	60	101	
						Bigtooth aspen------	74	86	
Karlin---------	3A	Slight	Slight	Slight	Slight	Sugar maple---------	61	38	Red pine, eastern white pine, jack pine.
						Yellow birch--------	---	---	
						Bigtooth aspen------	---	---	
						Northern red oak----	---	---	
						American basswood---	---	---	
						Red pine------------	65	115	
						Eastern white pine--	---	---	
101B:									
Trenary--------	3L	Slight	Moderate	Slight	Slight	Sugar maple---------	61	38	White spruce, red pine, eastern white pine.
						American basswood---	65	59	
						Yellow birch--------	61	38	
						American beech------	---	---	
						Quaking aspen-------	---	---	
						Balsam fir----------	---	---	
						Eastern hemlock-----	---	---	
Solona---------	3W	Slight	Severe	Slight	Moderate	Sugar maple---------	64	40	Eastern white pine, white ash, white spruce.
						Northern red oak----	---	---	
						White ash-----------	---	---	
						American basswood---	---	---	
102B---------- Escanaba	3S	Slight	Moderate	Moderate	Slight	Sugar maple---------	60	38	Red pine, white spruce.
						Basswood------------	---	---	
						Red maple-----------	---	---	
						Bigtooth aspen------	---	---	
						Quaking aspen-------	---	---	
						Eastern white pine--	75	166	
						Red pine------------	---	---	

See footnote at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	Volume*	
103B, 103D:									
Wabeno	3L	Slight	Moderate	Slight	Moderate	Sugar maple	67	41	White spruce, red pine.
						American basswood	74	72	
						Yellow birch	72	44	
						White ash	78	78	
						Eastern hemlock	56	---	
Sarona	3L	Slight	Moderate	Slight	Slight	Sugar maple	64	40	Red pine, white spruce, eastern white pine.
						Northern red oak	72	69	
						American basswood	70	66	
						Quaking aspen	---	---	
						White ash	75	73	
104A, 104B, 104D--Stambaugh	3L	Slight	Moderate	Slight	Slight	Sugar maple	61	38	Eastern white pine, white spruce, red pine.
						Yellow birch	---	---	
						American basswood	---	---	
						Eastern hemlock	---	---	
						Eastern white pine	---	---	
						Red maple	---	---	
						Balsam fir	---	---	
105D:									
Wabeno	3L	Slight	Moderate	Slight	Moderate	Sugar maple	67	41	White spruce, red pine.
						American basswood	74	72	
						Yellow birch	72	44	
						White ash	78	78	
						Eastern hemlock	56	---	
Rock outcrop.									
106D--Champion	3W	Slight	Severe	Slight	Moderate	Sugar maple	60	38	White spruce, eastern white pine.
						American basswood	---	---	
						Yellow birch	60	38	
						Eastern hemlock	---	---	
						Balsam fir	---	---	
						Quaking aspen	---	---	
						Red maple	---	---	
						Bigtooth aspen	---	---	
						Black cherry	---	---	
						Eastern hophornbeam	---	---	
						White spruce	---	---	
						American elm	---	---	
107B, 107D--Sarona	3L	Slight	Moderate	Slight	Slight	Sugar maple	64	40	Red pine, white spruce, eastern white pine.
						Northern red oak	72	69	
						American basswood	70	66	
						Quaking aspen	---	---	
						White ash	75	73	
107F--Sarona	3R	Slight	Moderate	Slight	Slight	Sugar maple	64	40	Red pine, white spruce, eastern white pine.
						Northern red oak	72	69	
						American basswood	70	66	
						Quaking aspen	---	---	
						White ash	75	73	

See footnote at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	Volume*	
108D:									
Sarona	3L	Slight	Moderate	Slight	Slight	Sugar maple	64	40	Red pine, white spruce, eastern white pine.
						Northern red oak	72	69	
						American basswood	70	66	
						Quaking aspen	---	---	
						White ash	75	73	
Rock outcrop.									
108F:									
Sarona	3R	Moderate	Moderate	Slight	Slight	Sugar maple	64	40	Red pine, white spruce, eastern white pine.
						Northern red oak	72	69	
						American basswood	70	66	
						Quaking aspen	---	---	
						White ash	75	73	
Rock outcrop.									
110B, 110D:									
Petticoat	3L	Slight	Moderate	Slight	Slight	Sugar maple	66	41	Red maple, white spruce, eastern white pine.
						Yellow birch	---	---	
						American basswood	---	---	
						Balsam fir	---	---	
						Quaking aspen	---	---	
						Black cherry	---	---	
						Paper birch	---	---	
						Red maple	---	---	
						American elm	---	---	
Wabeno	3L	Slight	Moderate	Slight	Moderate	Sugar maple	67	41	White spruce, red pine.
						American basswood	74	72	
						Yellow birch	72	44	
						White ash	78	78	
						Eastern hemlock	56	---	
111B:									
Champion	3W	Slight	Severe	Slight	Moderate	Sugar maple	60	38	White spruce, eastern white pine.
						American basswood	---	---	
						Yellow birch	60	38	
						Eastern hemlock	---	---	
						Balsam fir	---	---	
						Quaking aspen	---	---	
						Red maple	---	---	
						Bigtooth aspen	---	---	
						Black cherry	---	---	
						Eastern hophornbeam	---	---	
						White spruce	---	---	
						American elm	---	---	
Net	3W	Slight	Severe	Moderate	Severe	Red maple	60	38	White spruce, eastern white pine.
						Balsam fir	58	113	
						Bigtooth aspen	---	---	
						Quaking aspen	---	---	
						White spruce	49	94	
						Paper birch	53	53	
						Yellow birch	---	---	
						Eastern hemlock	---	---	

See footnote at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	Volume*	
112B, 112D--- Sundog	2L	Slight	Moderate	Slight	Slight	Red maple	53	34	Red pine, white spruce.
						Eastern hemlock	---	---	
						Quaking aspen	65	73	
						Sugar maple	---	---	
						Red pine	75	142	
						Balsam fir	---	---	
112F--- Sundog	2R	Moderate	Moderate	Slight	Slight	Red maple	53	34	Red pine, white spruce.
						Eastern hemlock	---	---	
						Quaking aspen	65	73	
						Sugar maple	---	---	
						Red pine	75	142	
						Balsam fir	---	---	
113A--- Sundog	4L	Slight	Moderate	Slight	Slight	Black spruce	50	65	Red pine, white spruce.
						Balsam fir	53	102	
						Quaking aspen	73	85	
						Red pine	---	---	
						Red maple	50	32	
						Eastern hemlock	---	---	
114A:									
Minocqua---	7W	Slight	Severe	Severe	Severe	Balsam fir	54	105	Red maple, white ash, white spruce, black spruce.
						Red maple	55	35	
						White ash	---	---	
						Black ash	---	---	
						Tamarack	55	50	
						Northern whitecedar-	---	---	
						Quaking aspen	---	---	
Channing---	2W	Slight	Severe	Moderate	Severe	Red maple	55	35	White spruce, eastern white pine.
						Quaking aspen	---	---	
						Balsam fir	---	---	
						Paper birch	---	---	
						Black spruce	---	---	
						White spruce	---	---	
						Northern whitecedar-	---	---	
						Yellow birch	---	---	
115A--- Manitowish	3S	Slight	Slight	Moderate	Slight	Sugar maple	60	38	Red pine, eastern white pine, jack pine.
						Red pine	59	99	
						Quaking aspen	---	---	
						Eastern white pine--	---	---	
116B, 116D--- Wabeno	3L	Slight	Moderate	Slight	Moderate	Sugar maple	67	41	White spruce, red pine.
						American basswood---	74	72	
						Yellow birch	72	44	
						White ash	78	78	
						Eastern hemlock	56	---	
121B--- Peavy	3W	Slight	Moderate	Slight	Moderate	Sugar maple	69	42	Red pine, white spruce.
						Yellow birch	---	---	
						Northern whitecedar-	---	---	
						American basswood---	---	---	
						Bigtooth aspen	---	---	
						Eastern white pine--	---	---	
						Eastern hemlock	---	---	
						American elm	---	---	

See footnote at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	Volume*	
121D---------- Peavy	3D	Slight	Moderate	Slight	Moderate	Sugar maple---------	69	42	Red pine, white spruce.
						Yellow birch--------	---	---	
						Northern whitecedar-	---	---	
						American basswood---	---	---	
						Bigtooth aspen------	---	---	
						Eastern white pine--	---	---	
						Eastern hemlock-----	---	---	
						American elm--------	---	---	
122B, 122D:									
Sarona---------	3L	Slight	Moderate	Slight	Slight	Sugar maple---------	64	40	Red pine,
						Northern red oak----	72	69	eastern white
						American basswood---	70	66	pine, white
						Quaking aspen-------	---	---	spruce.
						White ash-----------	75	73	
Karlin---------	3A	Slight	Slight	Slight	Slight	Sugar maple---------	61	38	Red pine,
						Yellow birch--------	---	---	eastern white
						Bigtooth aspen------	---	---	pine, jack
						Northern red oak----	---	---	pine.
						American basswood---	---	---	
						Red pine------------	65	115	
						Eastern white pine--	---	---	
123B, 123D------ Ocqueoc	3A	Slight	Slight	Slight	Slight	Sugar maple---------	63	39	Red pine, white spruce, eastern white pine.
						American beech------	---	---	
						Yellow birch--------	---	---	
						Quaking aspen-------	---	---	
						Eastern white pine--	---	---	
						Red pine------------	---	---	
						Jack pine-----------	---	---	
						Paper birch---------	---	---	
						Red maple-----------	---	---	
124B, 125B:									
Wabeno---------	3L	Slight	Moderate	Slight	Moderate	Sugar maple---------	67	41	White spruce, red pine.
						American basswood---	74	72	
						Yellow birch--------	72	44	
						White ash-----------	78	78	
						Eastern hemlock-----	56	---	
Net------------	3W	Slight	Severe	Moderate	Severe	Red maple-----------	60	38	White spruce, eastern white pine.
						Balsam fir----------	58	113	
						Bigtooth aspen------	---	---	
						Quaking aspen-------	---	---	
						White spruce--------	49	94	
						Paper birch---------	53	53	
						Yellow birch--------	---	---	
						Eastern hemlock-----	---	---	

See footnote at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	Volume*	
126B, 126D--Champion	3W	Slight	Severe	Slight	Moderate	Sugar maple	60	38	White spruce, eastern white pine.
						American basswood	---	---	
						Yellow birch	60	38	
						Eastern hemlock	---	---	
						Balsam fir	---	---	
						Quaking aspen	---	---	
						Red maple	---	---	
						Bigtooth aspen	---	---	
						Black cherry	---	---	
						Eastern hophornbeam	---	---	
						White spruce	---	---	
						American elm	---	---	
126F--Champion	3R	Moderate	Moderate	Slight	Moderate	Sugar maple	60	38	White spruce, eastern white pine.
						American basswood	---	---	
						Yellow birch	60	38	
						Eastern hemlock	---	---	
						Balsam fir	---	---	
						Quaking aspen	---	---	
						Red maple	---	---	
						Bigtooth aspen	---	---	
						Black cherry	---	---	
						Eastern hophornbeam	---	---	
						White spruce	---	---	
						American elm	---	---	
127D--Goodman	3L	Slight	Moderate	Slight	Slight	Sugar maple	69	42	Eastern white pine, red pine, white spruce.
						Yellow birch	---	---	
						American basswood	68	63	
						Bigtooth aspen	---	---	
						Quaking aspen	---	---	
						Paper birch	---	---	
128B:									
Goodman	3L	Slight	Moderate	Slight	Slight	Sugar maple	69	42	Eastern white pine, red pine, white spruce.
						Yellow birch	---	---	
						American basswood	68	63	
						Bigtooth aspen	---	---	
						Quaking aspen	---	---	
						Paper birch	---	---	
Wabeno	3L	Slight	Moderate	Slight	Moderate	Sugar maple	67	41	White spruce, red pine.
						American basswood	74	72	
						Yellow birch	72	44	
						White ash	78	78	
						Eastern hemlock	56	---	
Sundog	2L	Slight	Moderate	Slight	Slight	Red maple	53	34	Red pine, white spruce, jack pine.
						Eastern hemlock	---	---	
						Quaking aspen	65	73	
						Sugar maple	---	---	
						Red pine	75	142	
						Balsam fir	---	---	
						White spruce	55	107	

See footnote at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	Volume*	
128D:									
Goodman	3L	Slight	Moderate	Slight	Slight	Sugar maple	69	42	Eastern white pine, red pine, white spruce.
						Yellow birch	---	---	
						American basswood	68	63	
						Bigtooth aspen	---	---	
						Quaking aspen	---	---	
						Paper birch	---	---	
Wabeno	3L	Slight	Moderate	Slight	Moderate	Sugar maple	67	41	White spruce, red pine.
						American basswood	74	72	
						Yellow birch	72	44	
						White ash	78	78	
						Eastern hemlock	56	---	
Sundog	2L	Slight	Moderate	Slight	Slight	Red maple	53	34	Red pine, white spruce.
						Eastern hemlock	---	---	
						Quaking aspen	65	73	
						Sugar maple	---	---	
						Red pine	75	142	
						Balsam fir	---	---	
128F:									
Goodman	3R	Slight	Moderate	Slight	Slight	Sugar maple	69	42	Eastern white pine, red pine, white spruce.
						Yellow birch	---	---	
						American basswood	68	42	
						Bigtooth aspen	---	---	
						Quaking aspen	---	---	
						Paper birch	---	---	
Sundog	2R	Moderate	Moderate	Slight	Slight	Red maple	53	34	Red pine, white spruce.
						Eastern hemlock	---	---	
						Quaking aspen	65	73	
						Sugar maple	---	---	
						Red pine	75	142	
						Balsam fir	---	---	
163B, 163D----- Sagola	4L	Slight	Moderate	Slight	Slight	Northern red oak	63	56	Red pine, white spruce, eastern white pine.
						Red maple	---	---	
						Paper birch	---	---	
163F---------- Sagola	4R	Moderate	Moderate	Slight	Slight	Northern red oak	63	56	Red pine, white spruce, eastern white pine.
						Red maple	---	---	
						Paper birch	---	---	
164B---------- Alstad	3W	Slight	Severe	Slight	Moderate	Red maple	65	40	Eastern white pine, white spruce, black spruce.
						American basswood	---	---	
						American elm	---	---	
						Quaking aspen	---	---	
						Northern red oak	64	57	
						Sugar maple	---	---	
						Bigtooth aspen	---	---	

See footnote at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	Productivity class*	
165B:									
Sundog	2L	Slight	Moderate	Slight	Slight	Red maple	53	34	Red pine, white spruce.
						Eastern hemlock	---	---	
						Quaking aspen	65	73	
						Sugar maple	---	---	
						Red pine	75	142	
						Balsam fir	---	---	
Channing	2W	Slight	Severe	Moderate	Severe	Red maple	55	35	White spruce, eastern white pine.
						Quaking aspen	---	---	
						Balsam fir	---	---	
						Paper birch	---	---	
						Black spruce	---	---	
						White spruce	---	---	
						Northern whitecedar	---	---	
						Yellow birch	---	---	
166F Soperton	3R	Moderate	Moderate	Slight	Moderate	Sugar maple	67	41	White spruce, red pine.
						American basswood	74	44	
						Yellow birch	72	44	
						White ash	78	78	
						Eastern hemlock	56	---	
167A Monico	3W	Slight	Moderate	Slight	Moderate	Sugar maple	63	39	White spruce, black spruce, eastern white pine, red maple, white ash.
						American basswood	---	---	
						Yellow birch	---	---	
						Red maple	---	---	
						White ash	---	---	
168F:									
Soperton	3R	Moderate	Moderate	Slight	Moderate	Sugar maple	67	41	White spruce, red pine.
						American basswood	74	72	
						Yellow birch	72	44	
						White ash	78	78	
						Eastern hemlock	56	---	
Rock outcrop.									
500B, 500D Wabeno	3L	Slight	Moderate	Slight	Moderate	Sugar maple	67	41	White spruce, red pine.
						American basswood	74	72	
						Yellow birch	72	44	
						White ash	78	78	
						Eastern hemlock	56	---	
501F Soperton	3R	Moderate	Moderate	Slight	Moderate	Sugar maple	67	41	White spruce, red pine.
						American basswood	74	72	
						Yellow birch	72	44	
						White ash	78	78	
						Eastern hemlock	56	---	

See footnote at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	Volume*	
502B, 502D--- Champion	3W	Slight	Severe	Slight	Moderate	Sugar maple	60	38	White spruce, eastern white pine.
						American basswood	---	---	
						Yellow birch	60	38	
						Eastern hemlock	---	---	
						Balsam fir	---	---	
						Quaking aspen	---	---	
						Red maple	---	---	
						Bigtooth aspen	---	---	
						Black cherry	---	---	
						Eastern hophornbeam	---	---	
						White spruce	---	---	
						American elm	---	---	
502F--- Champion	3R	Moderate	Moderate	Slight	Moderate	Sugar maple	60	38	White spruce, eastern white pine.
						American basswood	---	---	
						Yellow birch	60	38	
						Eastern hemlock	---	---	
						Balsam fir	---	---	
						Quaking aspen	---	---	
						Red maple	---	---	
						Bigtooth aspen	---	---	
						Black cherry	---	---	
						Eastern hophornbeam	---	---	
						White spruce	---	---	
						American elm	---	---	
503A--- Typic Fragiaquods	2W	Slight	Severe	Moderate	Severe	Sugar maple	50	32	Eastern white pine, white spruce.
						Red maple	55	35	
						Yellow birch	55	35	
						American elm	55	---	
						Black ash	50	32	
						Eastern hemlock	---	---	
						Quaking aspen	---	---	
504B, 504D--- Pence	3A	Slight	Slight	Slight	Slight	Sugar maple	59	37	Red pine, eastern white pine, jack pine.
						Red pine	59	84	
						Eastern white pine	57	112	
						American basswood	---	---	
						Balsam fir	---	---	
						Quaking aspen	---	---	
						Paper birch	---	---	
						Yellow birch	---	---	
504F--- Pence	3R	Moderate	Moderate	Slight	Slight	Sugar maple	59	37	Red pine, eastern white pine, jack pine.
						Red pine	59	99	
						Eastern white pine	57	112	
						American basswood	---	---	
						Balsam fir	---	---	
						Quaking aspen	---	---	
						Paper birch	---	---	
						Yellow birch	---	---	
505, 506--- Humaquepts	---	Slight	Severe	Severe	Severe	---	---	---	---

See footnote at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	Volume*	
507A---------- Monico	3W	Slight	Moderate	Slight	Moderate	Sugar maple---------	63	39	White spruce, black spruce, eastern white pine, red maple, white ash.
						American basswood---	---	---	
						Yellow birch--------	---	---	
						Red maple----------	---	---	
						White ash----------	---	---	
508A---------- Beechwood	2W	Slight	Severe	Moderate	Moderate	Sugar maple---------	50	32	White spruce, eastern white pine.
						White spruce--------	60	118	
						Yellow birch--------	60	38	
						Red maple----------	60	38	
509A---------- Typic Dystrochrepts	3L	Slight	Moderate	Slight	Slight	Sugar maple---------	66	41	Tamarack, eastern white pine.
						American basswood---	---	---	
						Quaking aspen-------	---	---	
510---------- Borosaprists	---	Slight	Severe	Severe	Severe	---	---	---	---
511B, 511D------ Typic Dystrochrepts	9L	Slight	Moderate	Slight	Slight	Red pine-----------	70	128	Red pine, jack pine, northern red oak.
						Sugar maple---------	---	---	
						Northern red oak----	---	---	
						Quaking aspen-------	---	---	
						Jack pine----------	---	---	
511F---------- Typic Dystrochrepts	9R	Moderate	Moderate	Slight	Slight	Red pine-----------	70	128	Red pine, jack pine, northern red oak.
						Sugar maple---------	---	---	
						Northern red oak----	---	---	
						Quaking aspen-------	---	---	
						Jack pine----------	---	---	
512---------- Borosaprists	---	Slight	Severe	Severe	Severe	Black spruce--------	---	---	---
						Tamarack-----------	---	---	
513B---------- Entic Haplorthods	3L	Slight	Moderate	Slight	Slight	Sugar maple---------	66	41	Red pine, white spruce.
						Red maple----------	61	38	
						Yellow birch--------	66	41	
						Quaking aspen-------	75	87	
						American basswood---	71	67	
514B---------- Stambaugh	3L	Slight	Moderate	Slight	Slight	Sugar maple---------	61	38	Eastern white pine, white spruce, red pine.
						Yellow birch--------	---	---	
						American basswood---	---	---	
						Eastern hemlock-----	---	---	
						Eastern white pine--	---	---	
						Red maple----------	---	---	
						Balsam fir---------	---	---	
515---------- Borosaprists	---	Slight	Severe	Severe	Severe	---	---	---	---
517B, 517D------ Lode	7L	Slight	Moderate	Slight	Slight	Jack pine----------	70	103	Jack pine, red pine.
						Red pine-----------	70	128	
						White spruce--------	65	129	
						Sugar maple---------	60	38	
						Red maple----------	65	40	
						Quaking aspen-------	65	73	

See footnote at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	Volume*	
517F---------- Lode	7R	Moderate	Moderate	Slight	Slight	Jack pine----------	70	103	Jack pine, red pine.
						Red pine----------	70	128	
						White spruce--------	65	129	
						Sugar maple---------	60	38	
						Red maple----------	65	40	
						Quaking aspen-------	65	73	
518---------- Humaquepts	---	Slight	Severe	Severe	Severe	---	---	---	---
519A---------- Monico	5W	Slight	Severe	Slight	Moderate	Quaking aspen-------	65	73	---
						Black spruce--------	---	---	
						White spruce--------	---	---	
						Red maple----------	---	---	
						Eastern white pine--	---	---	
						Balsam fir----------	---	---	
						Black ash----------	---	---	
						Eastern hemlock	---	---	
521B---------- Pence	9A	Slight	Slight	Slight	Slight	Jack pine----------	70	103	Red pine, eastern white pine, jack pine.
						Quaking aspen-------	65	73	
522D: Entic Fragiorthods--	8W	Slight	Severe	Slight	Moderate	Balsam fir----------	55	107	White spruce, black spruce, tamarack.
						Red maple----------	50	32	
						Quaking aspen-------	---	---	
						Bigtooth aspen------	---	---	
Typic Dystrochrepts.									
523B: Entic Haplorthods.									
Typic Haplaquepts---	---	Slight	Severe	Severe	Severe	---	---	---	---
525B---------- Entic Haplorthods	3F	Slight	Severe	Slight	Slight	Sugar maple---------	63	39	Red pine.
						American basswood---	---	---	
						Red maple----------	---	---	
						Quaking aspen-------	---	---	
525D---------- Entic Haplorthods	3R	Moderate	Severe	Slight	Slight	Sugar maple---------	63	39	Red pine.
						American basswood---	---	---	
						Red maple----------	---	---	
						Quaking aspen-------	---	---	
525F---------- Entic Haplorthods	3R	Severe	Severe	Slight	Slight	Sugar maple---------	63	39	Red pine.
						American basswood---	---	---	
						Red maple----------	---	---	
						Quaking aspen-------	---	---	

See footnote at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	Volume*	
527:									
Borohemists	---	Slight	Severe	Severe	Severe	---	---	---	---
Borosaprists	---	Slight	Severe	Severe	Severe	Black spruce	---	---	---
						Tamarack	---	---	
528 Borohemists	---	Slight	Severe	Severe	Severe	---	---	---	---
529 Borohemists	---	Slight	Severe	Severe	Severe	---	---	---	---
530:									
Borosaprists	---	Slight	Severe	Severe	Severe	---	---	---	---
Histic Humaquepts	---	Slight	Severe	Severe	Severe	---	---	---	---
531C Champion	3W	Slight	Severe	Slight	Moderate	Sugar maple	60	38	White spruce, eastern white pine.
						American basswood	---	---	
						Yellow birch	60	38	
						Eastern hemlock	---	---	
						Balsam fir	---	---	
						Quaking aspen	---	---	
						Red maple	---	---	
						Bigtooth aspen	---	---	
						Black cherry	---	---	
						Eastern hophornbeam	---	---	
						White spruce	---	---	
						American elm	---	---	
532F:									
Champion	3R	Moderate	Moderate	Slight	Moderate	Sugar maple	60	38	White spruce, eastern white pine.
						American basswood	---	---	
						Yellow birch	60	38	
						Eastern hemlock	---	---	
						Balsam fir	---	---	
						Quaking aspen	---	---	
						Red maple	---	---	
						Bigtooth aspen	---	---	
						Black cherry	---	---	
						Eastern hophornbeam	---	---	
						White spruce	---	---	
						American elm	---	---	
Haplorthods.									
533B Entic Fragiorthods	8W	Slight	Severe	Slight	Moderate	Balsam fir	55	107	White spruce, black spruce, tamarack.
						Red maple	50	32	
						Quaking aspen	---	---	
						Bigtooth aspen	---	---	

See footnote at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	Volume*	
534B, 534D--Entic Haplorthods	6A	Slight	Slight	Slight	Slight	Bigtooth aspen	75	87	Red pine, jack pine.
						Red pine	68	123	
						Jack pine	70	103	
						Red maple	---	---	
						Northern red oak	---	---	
						Balsam fir	---	---	
						Eastern white pine	---	---	
						Paper birch	---	---	
535B, 535D--Vilas	6A	Slight	Slight	Slight	Slight	Red pine	57	93	Red pine, jack pine, eastern white pine.
						Jack pine	65	94	
						Eastern white pine	56	109	
						Northern pin oak	---	---	
						Balsam fir	---	---	
						Quaking aspen	---	---	
						Northern red oak	---	---	
						Red maple	---	---	
						Paper birch	---	---	
536F--Entic Haplorthods	3R	Severe	Severe	Slight	Slight	Sugar maple	63	39	Red pine.
						American basswood	---	---	
						Red maple	---	---	
539B--Karlin	3A	Slight	Slight	Slight	Slight	Northern red oak	55	42	Jack pine.
						Red maple	---	---	
						Eastern white pine	---	---	
						Balsam fir	---	---	
						Quaking aspen	---	---	
540B: Entic Fragiorthods. Typic Fragiaquods.									
Borosaprists	---	Slight	Severe	Severe	Severe	---	---	---	---
541--Fluvaquents	---	Slight	Severe	Severe	Severe	---	---	---	---
542B, 542D--Gogebic	3W	Slight	Severe	Moderate	Severe	Sugar maple	59	37	White spruce, eastern white pine, jack pine.
						Yellow birch	58	37	
						American basswood	67	61	
						Eastern hemlock	---	---	
						Balsam fir	61	120	
542F--Gogebic	3R	Moderate	Moderate	Moderate	Moderate	Sugar maple	59	37	White spruce, eastern white pine, jack pine, red pine.
						Yellow birch	58	37	
						American basswood	67	61	
						Eastern hemlock	---	---	
						Balsam fir	61	120	
548: Humaquepts	---	Slight	Severe	Severe	Severe	---	---	---	---
Terric Borosaprists	---	Slight	Severe	Severe	Severe	---	---	---	---

See footnote at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	Volume*	
549B, 549D:									
Karlin	3A	Slight	Slight	Slight	Slight	Sugar maple	61	38	Red pine, eastern white pine, jack pine.
						Yellow birch	---	---	
						Bigtooth aspen	---	---	
						Northern red oak	---	---	
						American basswood	---	---	
						Red pine	65	115	
						Eastern white pine	---	---	
Pence	3A	Slight	Slight	Slight	Slight	Sugar maple	59	37	Red pine, eastern white pine, jack pine.
						Red pine	59	99	
						Eastern white pine	57	112	
						American basswood	---	---	
						Balsam fir	---	---	
						Quaking aspen	---	---	
						Paper birch	---	---	
						Yellow birch	---	---	
549F:									
Karlin	3R	Moderate	Moderate	Slight	Slight	Sugar maple	61	38	Red pine, eastern white pine, jack pine.
						Yellow birch	---	---	
						Bigtooth aspen	---	---	
						Northern red oak	---	---	
						American basswood	---	---	
						Red pine	65	115	
						Eastern white pine	---	---	
Pence	3R	Moderate	Moderate	Slight	Slight	Sugar maple	59	37	Red pine, eastern white pine, jack pine.
						Red pine	59	99	
						Eastern white pine	57	112	
						American basswood	---	---	
						Balsam fir	---	---	
						Quaking aspen	---	---	
						Paper birch	---	---	
						Yellow birch	---	---	
550, Terric Borosaprists	---	Slight	Severe	Severe	Severe	---	---	---	---
552F, Kalkaska	3R	Moderate	Moderate	Moderate	Slight	Sugar maple	72	44	Red pine.
						Red pine	---	---	
						Eastern white pine	---	---	
						Bigtooth aspen	---	---	
						Quaking aspen	---	---	
553D, Kalkaska	3A	Slight	Slight	Slight	Slight	Sugar maple	64	40	Red pine.
						Quaking aspen	---	---	
						Red pine	---	---	
						Eastern white pine	---	---	
						Paper birch	---	---	
						Northern red oak	---	---	
						Red maple	63	39	
						Bigtooth aspen	80	95	

See footnote at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	Volume*	
554B---------- Alfic Fragiorthods	3W	Slight	Severe	Moderate	Moderate	Sugar maple--------- Quaking aspen------- American basswood--- Yellow birch--------	64 75 65 65	40 87 59 40	Red pine, white spruce, eastern white pine.
556---------- Haplaquods	---	Slight	Severe	Severe	Severe	---	---	---	---

* Volume is the yield in cubic feet per acre per year calculated at the age of culmination of mean annual increment for fully stocked unmanaged stands.

TABLE 9.--EQUIPMENT LIMITATIONS ON WOODLAND

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated)

Soil name and map symbol	Ratings for most limiting season(s)			Preferred operating season(s)	Ratings for preferred operating season(s)		
	Logging areas and skid trails	Landings	Logging roads		Logging areas and skid trails	Landings	Logging roads
51:							
Lupton	Severe: wetness, low strength.	Severe: wetness, low strength.	Severe: wetness, low strength.	Winter	Moderate: low strength.	Severe: low strength.	Moderate: low strength.
Cathro	Severe: wetness, low strength.	Severe: wetness, low strength.	Severe: wetness, low strength.	Winter	Moderate: low strength.	Severe: low strength.	Moderate: low strength.
Humaquepts	Severe: wetness.	Severe: wetness.	Severe: wetness.	Summer, winter	Slight	Slight	Slight.
52:							
Greenwood	Severe: wetness, low strength.	Severe: wetness, low strength.	Severe: wetness, low strength.	Winter	Moderate: low strength.	Severe: low strength.	Moderate: low strength.
Merwin	Severe: wetness, low strength.	Severe: wetness, low strength.	Severe: wetness, low strength.	Winter	Moderate: low strength.	Severe: low strength.	Moderate: low strength.
53:							
Waucedah	Severe: wetness.	Severe: wetness.	Severe: wetness.	Summer, winter	Slight	Slight	Slight.
Cathro	Severe: wetness, low strength.	Severe: wetness, low strength.	Severe: wetness, low strength.	Winter	Moderate: low strength.	Severe: low strength.	Moderate: low strength.
55A, 55B Oconto	Slight	Slight	Slight	Year round	Slight	Slight	Slight.
55D Oconto	Slight	Severe: slope.	Slight	Year round	Slight	Severe: slope.	Slight.
57A, 57B Padus	Moderate: low strength.	Moderate: low strength.	Moderate: low strength.	Spring, fall, winter.	Slight	Slight	Slight.
57D Padus	Moderate: low strength.	Moderate: slope.	Moderate: low strength.	Spring, fall, winter.	Slight	Moderate: slope.	Slight.
57F Padus	Moderate: slope, low strength.	Severe: slope.	Moderate: slope, low strength.	Summer, fall, winter.	Moderate: slope.	Severe: slope.	Moderate: slope.

TABLE 9.--EQUIPMENT LIMITATIONS ON WOODLAND--Continued

Soil name and map symbol	Ratings for most limiting season(s)			Preferred operating season(s)	Ratings for preferred operating season(s)		
	Logging areas and skid trails	Landings	Logging roads		Logging areas and skid trails	Landings	Logging roads
58B---------- Trenary	Moderate: low strength.	Moderate: low strength.	Moderate: low strength.	Summer, fall, winter.	Slight---------	Slight--------	Slight.
58D---------- Trenary	Moderate: low strength.	Moderate: slope, low strength.	Moderate: low strength.	Summer, fall, winter.	Slight---------	Moderate: slope.	Slight.
59A---------- Solona	Severe: wetness, low strength.	Severe: wetness, low strength.	Severe: wetness, low strength.	Summer, fall, winter.	Slight---------	Slight--------	Slight.
60D: Trenary----------	Moderate: low strength, rock outcrop.	Moderate: slope, low strength, rock outcrop.	Moderate: low strength, rock outcrop.	Summer, fall, winter.	Moderate: rock outcrop.	Moderate: slope, rock outcrop.	Moderate: rock outcrop.
Rock outcrop.							
64A---------- Channing	Severe: wetness, low strength.	Severe: wetness, low strength.	Severe: wetness, low strength.	Summer, fall, winter.	Slight---------	Slight--------	Slight.
65---------- Witbeck	Severe: wetness, low strength.	Severe: wetness, low strength.	Severe: wetness, low strength.	Summer, winter	Slight---------	Moderate: too stony.	Moderate: too stony.
67B---------- Net	Severe: wetness, low strength.	Severe: wetness, low strength.	Severe: wetness, low strength.	Summer, winter	Slight---------	Moderate: too stony.	Moderate: too stony.
68B: Net----------	Severe: wetness, low strength.	Severe: wetness, low strength.	Severe: wetness, low strength.	Summer, winter	Slight---------	Moderate: too stony.	Moderate: too stony.
Witbeck----------	Severe: wetness, low strength.	Severe: wetness, low strength.	Severe: wetness, low strength.	Summer, winter	Slight---------	Moderate: too stony.	Moderate: too stony.
69A: Karlin----------	Slight---------	Slight--------	Slight--------	Year round-----	Slight---------	Slight--------	Slight.
Croswell----------	Moderate: too sandy.	Moderate: too sandy.	Moderate: too sandy.	Spring, fall, winter.	Moderate: too sandy.	Moderate: too sandy.	Moderate: too sandy.
70B: Sundog----------	Moderate: low strength, rock outcrop.	Moderate: low strength, rock outcrop.	Moderate: low strength, rock outcrop.	Summer, fall, winter.	Moderate: rock outcrop.	Moderate: rock outcrop.	Moderate: rock outcrop.

TABLE 9.--EQUIPMENT LIMITATIONS ON WOODLAND--Continued

Soil name and map symbol	Ratings for most limiting season(s)			Preferred operating season(s)	Ratings for preferred operating season(s)		
	Logging areas and skid trails	Landings	Logging roads		Logging areas and skid trails	Landings	Logging roads
70B:							
Channing	Severe: wetness, low strength.	Severe: wetness, low strength.	Severe: wetness, low strength.	Summer, fall, winter.	Moderate: rock outcrop.	Moderate: rock outcrop.	Moderate: rock outcrop.
71D:							
Karlin	Moderate: rock outcrop.	Moderate: slope, rock outcrop.	Moderate: rock outcrop.	Year round	Moderate: rock outcrop.	Moderate: slope, rock outcrop.	Moderate: rock outcrop.
Vilas	Moderate: rock outcrop.	Moderate: slope, rock outcrop.	Moderate: rock outcrop.	Year round	Moderate: rock outcrop.	Moderate: slope, rock outcrop.	Moderate: rock outcrop.
Rock outcrop.							
72B Karlin	Slight	Slight	Slight	Year round	Slight	Slight	Slight.
72D Karlin	Slight	Moderate: slope.	Slight	Year round	Slight	Moderate: slope.	Slight.
72F Karlin	Moderate: slope.	Severe: slope.	Moderate: slope.	Year round	Moderate: slope.	Severe: slope.	Moderate: slope.
73A Gaastra	Severe: wetness, low strength.	Severe: wetness, low strength.	Severe: wetness, low strength.	Summer, fall, winter.	Slight	Slight	Slight.
74A Au Gres	Severe: wetness.	Severe: wetness.	Severe: wetness.	Summer, fall, winter.	Slight	Slight	Slight.
75 Kinross	Severe: wetness.	Severe: wetness.	Severe: wetness.	Summer, winter	Slight	Slight	Slight.
77B Vilas	Slight	Slight	Slight	Year round	Slight	Slight	Slight.
78B:							
Vilas	Slight	Slight	Slight	Year round	Slight	Slight	Slight.
Karlin	Slight	Slight	Slight	Year round	Slight	Slight	Slight.
78D:							
Vilas	Slight	Moderate: slope.	Slight	Year round	Slight	Moderate: slope.	Slight.
Karlin	Slight	Moderate: slope.	Slight	Year round	Slight	Moderate: slope.	Slight.

TABLE 9.--EQUIPMENT LIMITATIONS ON WOODLAND--Continued

Soil name and map symbol	Ratings for most limiting season(s)			Preferred operating season(s)	Ratings for preferred operating season(s)		
	Logging areas and skid trails	Landings	Logging roads		Logging areas and skid trails	Landings	Logging roads
78F:							
Vilas	Moderate: slope.	Severe: slope.	Moderate: slope.	Year round	Moderate: slope.	Severe: slope.	Moderate: slope.
Karlin	Moderate: slope.	Severe: slope.	Moderate: slope.	Year round	Moderate: slope.	Severe: slope.	Moderate: slope.
79A, 79B Fence	Severe: low strength.	Severe: low strength.	Severe: low strength.	Summer, fall, winter.	Slight	Slight	Slight.
79D Fence	Severe: low strength.	Severe: low strength.	Severe: low strength.	Summer, fall, winter.	Slight	Moderate: slope.	Slight.
80B Pence	Slight	Slight	Slight	Year round	Slight	Slight	Slight.
80D Pence	Slight	Moderate: slope.	Slight	Year round	Slight	Moderate: slope.	Slight.
80F Pence	Moderate: slope.	Severe: slope.	Moderate: slope.	Year round	Moderate: slope.	Severe: slope.	Moderate: slope.
82B Keweenaw	Slight	Slight	Slight	Year round	Slight	Slight	Slight.
82D Keweenaw	Slight	Moderate: slope.	Slight	Year round	Slight	Moderate: slope.	Slight.
82F Keweenaw	Moderate: slope.	Severe: slope.	Moderate: slope.	Year round	Moderate: slope.	Severe: slope.	Moderate: slope.
100B:							
Keweenaw	Slight	Slight	Slight	Year round	Slight	Slight	Slight.
Karlin	Slight	Slight	Slight	Year round	Slight	Slight	Slight.
100D:							
Keweenaw	Slight	Moderate: slope.	Slight	Year round	Slight	Moderate: slope.	Slight.
Karlin	Slight	Moderate: slope.	Slight	Year round	Slight	Moderate: slope.	Slight.
101B:							
Trenary	Moderate: low strength.	Moderate: low strength.	Moderate: low strength.	Summer, fall, winter.	Slight	Slight	Slight.
Solona	Severe: wetness, low strength.	Severe: wetness, low strength.	Severe: wetness, low strength.	Summer, fall, winter.	Slight	Slight	Slight.

TABLE 9.--EQUIPMENT LIMITATIONS ON WOODLAND--Continued

Soil name and map symbol	Ratings for most limiting season(s)			Preferred operating season(s)	Ratings for preferred operating season(s)		
	Logging areas and skid trails	Landings	Logging roads		Logging areas and skid trails	Landings	Logging roads
102B---------- Escanaba	Moderate: low strength.	Moderate: low strength.	Moderate: low strength.	Summer, fall, winter.	Slight---------	Slight---------	Slight.
103B:							
Wabeno----------	Moderate: low strength.	Moderate: low strength.	Moderate: low strength.	Summer, fall, winter.	Slight---------	Slight---------	Slight.
Sarona----------	Moderate: low strength.	Moderate: low strength.	Moderate: low strength.	Summer, fall, winter.	Slight---------	Slight---------	Slight.
103D:							
Wabeno----------	Moderate: low strength.	Moderate: low strength, slope.	Moderate: low strength.	Summer, fall, winter.	Slight---------	Moderate: slope.	Slight.
Sarona----------	Moderate: low strength.	Moderate: low strength, slope.	Moderate: low strength.	Summer, fall, winter.	Slight---------	Moderate: slope.	Slight.
104A, 104B---------- Stambaugh	Moderate: low strength.	Moderate: low strength.	Moderate: low strength.	Summer, fall, winter.	Slight---------	Slight---------	Slight.
104D---------- Stambaugh	Moderate: low strength.	Moderate: low strength, slope.	Moderate: low strength.	Summer, fall, winter.	Slight---------	Moderate: slope.	Slight.
105D:							
Wabeno----------	Moderate: low strength.	Moderate: low strength, slope.	Moderate: low strength.	Summer, fall, winter.	Slight---------	Moderate: slope.	Slight.
Rock outcrop.							
106D---------- Champion	Moderate: low strength.	Moderate: low strength.	Moderate: low strength.	Summer, fall, winter.	Slight---------	Slight---------	Slight.
107B---------- Sarona	Moderate: low strength.	Moderate: low strength.	Moderate: low strength.	Summer, fall, winter.	Slight---------	Slight---------	Slight.
107D---------- Sarona	Moderate: low strength.	Moderate: low strength, slope.	Moderate: low strength.	Summer, fall, winter.	Slight---------	Moderate: slope.	Slight.
107F---------- Sarona	Moderate: low strength, slope.	Severe: slope.	Moderate: low strength, slope.	Summer, fall, winter.	Moderate: slope.	Severe: slope.	Moderate: slope.

TABLE 9.--EQUIPMENT LIMITATIONS ON WOODLAND--Continued

Soil name and map symbol	Ratings for most limiting season(s)			Preferred operating season(s)	Ratings for preferred operating season(s)		
	Logging areas and skid trails	Landings	Logging roads		Logging areas and skid trails	Landings	Logging roads
108D:							
Sarona	Moderate: low strength, rock outcrop.	Moderate: low strength, slope, rock outcrop.	Moderate: low strength, rock outcrop.	Summer, fall, winter.	Moderate: rock outcrop.	Moderate: slope, rock outcrop.	Moderate: rock outcrop.
Rock outcrop.							
110B:							
Petticoat	Moderate: low strength.	Moderate: low strength, too stony.	Moderate: low strength, too stony.	Summer, fall, winter.	Slight	Moderate: too stony.	Moderate: too stony.
Wabeno	Moderate: low strength.	Moderate: low strength, too stony.	Moderate: low strength, too stony.	Summer, fall, winter.	Slight	Moderate: too stony.	Moderate: too stony.
110D:							
Petticoat	Moderate: low strength.	Moderate: low strength, slope, too stony.	Moderate: low strength, too stony.	Summer, fall, winter.	Slight	Moderate: slope, too stony.	Moderate: too stony.
Wabeno	Moderate: low strength.	Moderate: low strength, too stony.	Moderate: low strength, too stony.	Summer, fall, winter.	Slight	Moderate: slope, too stony.	Moderate: too stony.
111B:							
Champion	Severe: wetness, low strength.	Severe: wetness, low strength.	Severe: wetness, low strength.	Summer, winter	Slight	Slight	Slight.
Net	Severe: wetness, low strength.	Severe: wetness, low strength.	Severe: wetness, low strength.	Summer, winter	Slight	Slight	Slight.
112B	Moderate: low strength.	Moderate: low strength.	Moderate: low strength.	Summer, fall, winter.	Slight	Slight	Slight.
Sundog							
112D	Moderate: low strength.	Moderate: low strength, slope.	Moderate: low strength,	Summer, fall, winter.	Slight	Moderate: slope.	Slight.
Sundog							
112F	Severe: slope.	Severe: slope.	Severe: slope.	Summer, fall, winter.	Severe: slope.	Severe: slope.	Severe: slope.
Sundog							
113A	Moderate: low strength.	Moderate: low strength.	Moderate: low strength.	Summer, fall, winter.	Slight	Slight	Slight.
Sundog							

TABLE 9.--EQUIPMENT LIMITATIONS ON WOODLAND--Continued

Soil name and map symbol	Ratings for most limiting season(s)			Preferred operating season(s)	Ratings for preferred operating season(s)		
	Logging areas and skid trails	Landings	Logging roads		Logging areas and skid trails	Landings	Logging roads
114A:							
Minocqua	Severe: wetness, low strength.	Severe: wetness, low strength.	Severe: wetness, low strength.	Summer, winter	Slight	Slight	Slight.
Channing	Severe: wetness, low strength.	Severe: wetness, low strength.	Severe: wetness, low strength.	Summer, fall, winter.	Slight	Slight	Slight.
115A Manitowish	Slight	Slight	Slight	Year round	Slight	Slight	Slight.
116B Wabeno	Moderate: low strength.	Moderate: low strength.	Moderate: low strength.	Summer, fall, winter.	Slight	Slight	Slight.
116D Wabeno	Moderate: low strength.	Moderate: low strength, slope.	Moderate: low strength.	Summer, fall, winter.	Slight	Moderate: slope.	Slight.
121B Peavy	Moderate: wetness, low strength.	Moderate: wetness, low strength.	Moderate: wetness, low strength.	Summer, winter	Slight	Slight	Slight.
121D Peavy	Moderate: low strength.	Moderate: low strength, slope.	Moderate: low strength.	Summer, winter	Slight	Moderate: slope.	Slight.
122B:							
Sarona	Moderate: low strength.	Moderate: low strength.	Moderate: low strength.	Summer, fall, winter.	Slight	Slight	Slight.
Karlin	Moderate: low strength.	Moderate: low strength.	Moderate: low strength.	Summer, fall, winter.	Slight	Slight	Slight.
122D:							
Sarona	Moderate: low strength.	Moderate: low strength, slope.	Moderate: low strength.	Summer, fall, winter.	Slight	Moderate: slope.	Slight.
Karlin	Moderate: low strength.	Moderate: low strength, slope.	Moderate: low strength.	Summer, fall, winter.	Slight	Moderate:	Slight.
123B Ocqueoc	Slight	Slight	Slight	Year round	Slight	Slight	Slight.
123D Ocqueoc	Slight	Moderate: slope.	Slight	Year round	Slight	Moderate: slope.	Slight.

TABLE 9.--EQUIPMENT LIMITATIONS ON WOODLAND--Continued

Soil name and map symbol	Ratings for most limiting season(s)			Preferred operating season(s)	Ratings for preferred operating season(s)		
	Logging areas and skid trails	Landings	Logging roads		Logging areas and skid trails	Landings	Logging roads
124B:							
Wabeno	Moderate: low strength.	Moderate: low strength.	Moderate: low strength.	Summer, fall, winter.	Slight	Slight	Slight.
Net	Severe: wetness, low strength.	Severe: wetness, low strength.	Severe: wetness, low strength.	Summer, winter	Slight	Moderate: too stony.	Moderate: too stony.
125B:							
Wabeno	Moderate: low strength.	Moderate: low strength.	Moderate: low strength.	Summer, fall, winter.	Slight	Slight	Slight.
Net	Severe: wetness, low strength.	Severe: wetness, low strength.	Severe: wetness, low strength.	Summer, winter	Slight	Moderate: too stony.	Moderate: too stony.
126B Champion	Severe: wetness, low strength.	Severe: wetness, low strength.	Severe: wetness, low strength.	Summer, winter	Slight	Slight	Slight.
126D Champion	Severe: wetness, low strength.	Severe: wetness, low strength.	Severe: wetness, low strength.	Summer, winter	Slight	Moderate: slope.	Slight.
126F Champion	Moderate: low strength, slope.	Severe: slope.	Moderate: low strength, slope.	Summer, fall, winter.	Moderate: slope.	Severe: slope.	Moderate: slope.
127D Goodman	Moderate: low strength.	Moderate: low strength, slope, too stony.	Moderate: low strength, too stony.	Summer, fall, winter.	Slight	Moderate: slope, too stony.	Moderate: too stony.
128B:							
Goodman	Moderate: low strength.	Moderate: low strength, too stony.	Moderate: low strength, too stony.	Summer, fall, winter.	Slight	Moderate: too stony.	Moderate: too stony.
Wabeno	Moderate: low strength.	Moderate: low strength.	Moderate: low strength.	Summer, fall, winter.	Slight	Slight	Slight.
Sundog	Moderate: low strength.	Moderate: low strength.	Moderate: low strength.	Summer, fall, winter.	Slight	Slight	Slight.
128D:							
Goodman	Moderate: low strength.	Moderate: low strength, slope, too stony.	Moderate: low strength, too stony.	Summer, fall, winter.	Slight	Moderate: slope, too stony.	Moderate: too stony.

TABLE 9.--EQUIPMENT LIMITATIONS ON WOODLAND--Continued

Soil name and map symbol	Ratings for most limiting season(s)			Preferred operating season(s)	Ratings for preferred operating season(s)		
	Logging areas and skid trails	Landings	Logging roads		Logging areas and skid trails	Landings	Logging roads
128D:							
Wabeno	Moderate: low strength.	Moderate: low strength, slope.	Moderate: low strength.	Summer, fall, winter.	Slight	Moderate: slope.	Slight.
Sundog	Moderate: low strength.	Moderate: low strength.	Moderate: low strength.	Summer, fall, winter.	Slight	Moderate: slope.	Slight.
128F:							
Goodman	Severe: slope.	Severe: slope.	Severe: slope.	Year round	Severe: slope.	Severe: slope.	Severe: slope.
Sundog	Severe: slope.	Severe: slope.	Severe: slope.	Year round	Severe: slope.	Severe: slope.	Severe: slope.
500B Wabeno	Severe: wetness, low strength.	Severe: wetness, low strength.	Severe: wetness, low strength.	Summer, winter	Slight	Slight	Slight.
500D Wabeno	Severe: wetness, low strength.	Severe: wetness, low strength.	Severe: wetness, low strength.	Summer, winter	Slight	Moderate: slope.	Slight.
501F Soperton	Severe: wetness, low strength.	Severe: slope.	Severe: wetness, low strength.	Summer, winter	Slight	Severe: slope.	Slight.
502B Champion	Severe: wetness.	Severe: wetness.	Severe: wetness.	Summer, winter	Slight	Slight	Slight.
502D Champion	Severe: wetness.	Severe: wetness.	Severe: wetness.	Summer, winter	Slight	Moderate: slope.	Slight.
502F Champion	Moderate: slope, low strength.	Severe: slope.	Moderate: slope, low strength.	Summer, fall, winter.	Moderate: slope.	Severe: slope.	Moderate: slope.
503A Typic Fragiaquods	Severe: wetness, low strength.	Severe: wetness, low strength.	Severe: wetness, low strength.	Summer, winter	Slight	Slight	Slight.
504B Pence	Slight	Slight	Slight	Year round	Slight	Slight	Slight.
504D Pence	Slight	Moderate: slope.	Slight	Year round	Slight	Moderate: slope.	Slight.
504F Pence	Moderate: slope.	Severe: slope.	Moderate: slope.	Year round	Moderate: slope.	Severe: slope.	Moderate: slope.

TABLE 9.--EQUIPMENT LIMITATIONS ON WOODLAND--Continued

Soil name and map symbol	Ratings for most limiting season(s)			Preferred operating season(s)	Ratings for preferred operating season(s)		
	Logging areas and skid trails	Landings	Logging roads		Logging areas and skid trails	Landings	Logging roads
505, 506---------- Humaquepts	Severe: wetness.	Severe: wetness.	Severe: wetness.	Summer, winter	Slight---------	Slight--------	Slight.
507A---------- Monico	Severe: wetness, low strength.	Severe: wetness, low strength.	Severe: wetness, low strength.	Summer, winter	Slight---------	Slight--------	Slight.
508A---------- Beechwood	Severe: wetness, low strength.	Severe: wetness, low strength.	Severe: wetness, low strength.	Summer, winter	Slight---------	Slight--------	Slight.
509A---------- Typic Dystrochrepts	Moderate: low strength.	Moderate: low strength.	Moderate: low strength.	Summer, fall, winter.	Slight---------	Slight--------	Slight.
510---------- Borosaprists	Severe: wetness, low strength.	Severe: wetness, low strength.	Severe: wetness, low strength.	Summer, winter	Moderate: low strength.	Severe: low strength.	Moderate: low strength.
511B---------- Typic Dystrochrepts	Moderate: low strength.	Moderate: low strength.	Moderate: low strength.	Summer, fall, winter.	Slight---------	Slight--------	Slight.
511D---------- Typic Dystrochrepts	Moderate: low strength.	Moderate: low strength, slope.	Moderate: low strength.	Summer, fall, winter.	Slight---------	Moderate: slope.	Slight.
511F---------- Typic Dystrochrepts	Moderate: low strength, slope.	Severe: slope.	Moderate: low strength, slope.	Summer, fall, winter.	Moderate: slope.	Severe: slope.	Moderate: slope.
512---------- Borosaprists	Severe: wetness, low strength.	Severe: wetness, low strength.	Severe: wetness, low strength.	Summer, winter	Moderate: low strength.	Severe: low strength.	Moderate: low strength.
513B---------- Entic Haplorthods	Moderate: low strength.	Moderate: low strength.	Moderate: low strength.	Summer, fall, winter.	Slight---------	Slight--------	Slight.
514B---------- Stambaugh	Moderate: low strength.	Moderate: low strength.	Moderate: low strength.	Summer, fall, winter.	Slight---------	Slight--------	Slight.
515---------- Borosaprists	Severe: wetness, low strength.	Severe: wetness, low strength.	Severe: wetness, low strength.	Summer, winter	Moderate: low strength.	Severe: low strength.	Moderate: low strength.
516B, 516D. Fragiorthods							
517B---------- Lode	Moderate: low strength.	Moderate: low strength.	Moderate: low strength.	Summer, fall, winter.	Slight---------	Slight--------	Slight.

TABLE 9.--EQUIPMENT LIMITATIONS ON WOODLAND--Continued

Soil name and map symbol	Ratings for most limiting season(s)			Preferred operating season(s)	Ratings for preferred operating season(s)		
	Logging areas and skid trails	Landings	Logging roads		Logging areas and skid trails	Landings	Logging roads
517D---------- Lode	Moderate: low strength.	Moderate: low strength, slope.	Moderate: low strength.	Summer, fall, winter.	Slight---------	Moderate: slope.	Slight.
517F---------- Lode	Moderate: low strength, slope.	Severe: slope.	Moderate: low strength, slope.	Summer, fall, winter.	Moderate: slope.	Severe: slope.	Moderate: slope.
518---------- Humaquepts	Severe: wetness.	Severe: wetness.	Severe: wetness.	Summer, winter	Slight---------	Slight--------	Slight.
519A---------- Monico	Severe: wetness, low strength.	Severe: wetness, low strength.	Severe: wetness, low strength.	Summer, fall, winter.	Slight---------	Slight--------	Slight.
520B. Haplorthods							
521B---------- Pence	Slight---------	Slight--------	Slight--------	Year round-----	Slight---------	Slight--------	Slight.
522D: Entic Fragiorthods------	Severe: wetness.	Severe: wetness.	Severe: wetness.	Summer, fall, winter.	Slight---------	Moderate: slope.	Slight.
Typic Dystrochrepts.							
523B: Entic Haplorthods.							
Typic Haplaquepts--	Severe: wetness.	Severe: wetness.	Severe: wetness.	Summer, fall, winter.	Slight---------	Slight--------	Slight.
524D, 524F. Haplorthods							
525B---------- Entic Haplorthods	Slight---------	Severe: too cobbly.	Severe: too cobbly.	Year round-----	Slight---------	Severe: too cobbly.	Severe: too cobbly.
525D---------- Entic Haplorthods	Moderate: slope.	Severe: slope, too cobbly.	Severe: too cobbly.	Year round-----	Moderate: slope.	Severe: slope, too cobbly.	Severe: too cobbly.
525F---------- Entic Haplorthods	Severe: slope.	Severe: slope, too cobbly.	Severe: too cobbly, slope.	Year round-----	Severe: slope.	Severe: too cobbly, slope.	Severe: too cobbly, slope.

TABLE 9.--EQUIPMENT LIMITATIONS ON WOODLAND--Continued

Soil name and map symbol	Ratings for most limiting season(s)			Preferred operating season(s)	Ratings for preferred operating season(s)		
	Logging areas and skid trails	Landings	Logging roads		Logging areas and skid trails	Landings	Logging roads
527:							
Borohemists	Severe: low strength, wetness.	Severe: low strength, wetness.	Severe: low strength, wetness.	Summer, winter	Moderate: low strength.	Severe: low strength.	Moderate: low strength.
Borosaprists	Severe: low strength, wetness.	Severe: low strength, wetness.	Severe: low strength, wetness.	Summer, winter	Moderate: low strength.	Severe: low strength.	Moderate: low strength.
528, 529---------- Borohemists	Severe: low strength, wetness.	Severe: low strength, wetness.	Severe: low strength, wetness.	Summer, winter	Moderate: low strength.	Severe: low strength.	Moderate: low strength.
530:							
Borosaprists	Severe: low strength, wetness.	Severe: low strength, wetness.	Severe: low strength, wetness.	Summer, winter	Moderate: low strength.	Severe: low strength.	Moderate: low strength.
Histic Humaquepts	Severe: wetness.	Severe: wetness.	Severe: wetness.	Summer, winter	Slight	Slight	Slight.
531C---------- Champion	Severe: wetness, low strength.	Severe: wetness, low strength.	Severe: wetness, low strength.	Summer, winter	Slight	Moderate: slope.	Slight.
532F:							
Champion	Severe: wetness, low strength.	Severe: wetness, low strength.	Severe: wetness, low strength.	Summer, winter	Moderate: slope.	Severe: slope.	Moderate: slope.
Haplorthods.							
533B---------- Entic Fragiorthods	Severe: wetness.	Severe: wetness.	Severe: wetness.	Summer, fall, winter.	Slight	Slight	Slight.
534B---------- Entic Haplorthods	Slight	Slight	Slight	Year round	Slight	Slight	Slight.
534D---------- Entic Haplorthods	Slight	Moderate: slope.	Slight	Year round	Slight	Moderate: slope.	Slight.
535B---------- Vilas	Slight	Slight	Slight	Year round	Slight	Slight	Slight.
535D---------- Vilas	Slight	Moderate: slope.	Slight	Year round	Slight	Moderate: slope.	Slight.
536F---------- Entic Haplorthods	Severe: slope.	Severe: slope.	Severe: slope.	Year round	Severe: slope.	Severe: slope.	Severe: slope.

TABLE 9.--EQUIPMENT LIMITATIONS ON WOODLAND--Continued

Soil name and map symbol	Ratings for most limiting season(s)			Preferred operating season(s)	Ratings for preferred operating season(s)		
	Logging areas and skid trails	Landings	Logging roads		Logging areas and skid trails	Landings	Logging roads
537B. Haplorthods							
538B, 538D. Entic Haplorthods							
539B---------- Karlin	Slight---------	Slight--------	Slight--------	Year round-----	Slight---------	Slight--------	Slight.
540B: Entic Fragiorthods.							
Typic Fragiaquods.							
Borosaprists-------	Severe: wetness, low strength.	Severe: wetness, low strength.	Severe: wetness, low strength.	Summer, winter	Moderate: low strength.	Severe: low strength.	Moderate: low strength.
541---------- Fluvaquents	Severe: wetness, low strength.	Severe: wetness, low strength.	Severe: wetness, low strength.	Summer, winter	Slight---------	Slight--------	Slight.
542B---------- Gogebic	Severe: wetness, low strength.	Severe: wetness, low strength.	Severe: wetness, low strength.	Summer, winter	Slight---------	Slight--------	Slight.
542D---------- Gogebic	Severe: wetness, low strength.	Severe: wetness, low strength.	Severe: wetness, low strength.	Summer, winter	Slight---------	Moderate: slope.	Slight.
542F---------- Gogebic	Severe: wetness, low strength.	Severe: wetness, low strength, slope.	Severe: wetness, low strength.	Summer, winter	Moderate: slope.	Severe: slope.	Moderate: slope.
543A---------- Haplaquods	Severe: wetness.	Severe: wetness.	Severe: wetness.	Summer, fall, winter.	Slight---------	Slight--------	Slight.
544C, 544D, 544F. Haplorthods							
545B, 545D, 545F. Haplorthods							
546C, 546D, 546F. Entic Haplorthods							
547B. Haplorthods							

TABLE 9.--EQUIPMENT LIMITATIONS ON WOODLAND--Continued

Soil name and map symbol	Ratings for most limiting season(s)			Preferred operating season(s)	Ratings for preferred operating season(s)		
	Logging areas and skid trails	Landings	Logging roads		Logging areas and skid trails	Landings	Logging roads
548: Humaquepts	Severe: wetness.	Severe: wetness.	Severe: wetness.	Summer, fall, winter.	Slight	Slight	Slight.
Terric Borosaprists	Severe: wetness, low strength.	Severe: wetness, low strength.	Severe: wetness, low strength.	Summer, winter	Slight	Moderate: low strength.	Slight.
549B: Karlin	Slight	Slight	Slight	Year round	Slight	Slight	Slight.
Pence	Slight	Slight	Slight	Year round	Slight	Slight	Slight.
549D: Karlin	Slight	Moderate: slope.	Slight	Year round	Slight	Moderate: slope.	Slight.
Pence	Slight	Moderate: slope.	Slight	Year round	Slight	Moderate: slope.	Slight.
549F: Karlin	Moderate: slope.	Severe: slope.	Moderate: slope.	Year round	Moderate: slope.	Severe: slope.	Moderate: slope.
Pence	Moderate: slope.	Severe: slope.	Moderate: slope.	Year round	Moderate: slope.	Severe: slope.	Moderate: slope.
550--- Terric Borosaprists	Severe: wetness, low strength.	Severe: wetness, low strength.	Severe: wetness, low strength.	Summer, winter	Moderate: low strength.	Severe: low strength.	Moderate: low strength.
551A. Typic Fragiorthods							
552F--- Kalkaska	Moderate: slope, too sandy.	Severe: slope.	Moderate: slope, too sandy.	Spring, fall, winter.	Moderate: slope.	Severe: slope.	Moderate: slope.
553D--- Kalkaska	Moderate: too sandy.	Moderate: too sandy, slope.	Moderate: too sandy.	Spring, fall, winter.	Slight	Moderate: slope.	Slight.
554B--- Alfic Fragiorthods	Severe: wetness, low strength.	Severe: wetness, low strength.	Severe: wetness, low strength.	Summer, winter	Slight	Slight	Slight.
555B. Entic Haplorthods							

TABLE 9.--EQUIPMENT LIMITATIONS ON WOODLAND--Continued

Soil name and map symbol	Ratings for most limiting season(s)			Preferred operating season(s)	Ratings for preferred operating season(s)		
	Logging areas and skid trails	Landings	Logging roads		Logging areas and skid trails	Landings	Logging roads
556---------- Haplaquods	Severe: wetness.	Severe: wetness.	Severe: wetness.	Summer, fall, winter.	Slight---------	Slight---------	Slight.

TABLE 10.--WINDBREAKS AND ENVIRONMENTAL PLANTINGS

(Only the soils likely to be used for windbreaks and environmental plantings are listed. The symbol < means less than; > means more than. Absence of an entry indicates that trees generally do not grow to the given height on that soil)

Soil name and map symbol	Trees having predicted 20-year average height, in feet, of--			
	8-15	16-25	26-35	>35
55A, 55B, 55D----- Oconto	Lilac, Siberian peashrub, eastern redcedar, American cranberrybush, Amur maple, gray dogwood, silky dogwood.	Norway spruce---------	Eastern white pine, red pine, jack pine.	---
57A, 57B---------- Padus	Gray dogwood, silky dogwood, Siberian peashrub, American cranberrybush, Amur maple, lilac, eastern redcedar.	Norway spruce---------	Jack pine, red pine, eastern white pine.	---
64A---------- Channing	American cranberrybush, lilac, silky dogwood, Roselow sargent crabapple, nannyberry viburnum, Amur maple.	White spruce, northern whitecedar, Siberian crabapple.	Norway spruce, eastern white pine, green ash.	---
69A: Karlin----------	Siberian peashrub, lilac, staghorn sumac, eastern redcedar, smooth sumac.	Red pine, eastern white pine, jack pine, Austrian pine.	---	---
Croswell---------	Amur maple, lilac, eastern redcedar, Siberian peashrub.	Red pine, jack pine---	Eastern white pine----	---
70B: Sundog----------	Eastern redcedar, Siberian peashrub, common ninebark, silver buffaloberry, lilac, Peking cotoneaster, Roselow sargent crabapple.	Eastern white pine, jack pine, green ash, Austrian pine, red pine.	---	---
Channing.				
71D: Karlin----------	Staghorn sumac, lilac, smooth sumac, eastern redcedar, Siberian peashrub.	Red pine, jack pine, eastern white pine, Austrian pine.	---	---
Vilas----------	Eastern redcedar, lilac, Amur maple, American cranberrybush, Siberian peashrub, silky dogwood, gray dogwood.	Norway spruce---------	Eastern white pine, red pine, jack pine.	---
Rock outcrop.				

TABLE 10.--WINDBREAKS AND ENVIRONMENTAL PLANTINGS--Continued

Soil name and map symbol	Trees having predicted 20-year average height, in feet, of--			
	8-15	16-25	26-35	>35
72B, 72D, 72F----- Karlin	Lilac, staghorn sumac, eastern redcedar, Siberian peashrub, smooth sumac.	Red pine, jack pine, eastern white pine, Austrian pine.	---	---
73A---------- Gaastra	Northern whitecedar, Roselow sargent crabapple, American cranberrybush, nannyberry viburnum, silky dogwood, common ninebark, arrowwood.	White spruce, Manchurian crabapple.	Eastern white pine, Norway spruce, green ash.	---
74A---------- Au Gres	Silky dogwood, American cranberrybush, Amur maple, common ninebark, nannyberry viburnum.	White spruce, jack pine, Manchurian crabapple.	Norway spruce, green ash, eastern white pine.	Imperial Carolina poplar.
77B, 77D---------- Vilas	Eastern redcedar, lilac, Amur maple, American cranberrybush, Siberian peashrub, silky dogwood, gray dogwood.	Norway spruce---------	Eastern white pine, red pine, jack pine.	---
78B, 78D, 78F: Vilas----------	Eastern redcedar, lilac, Amur maple, American cranberrybush, Siberian peashrub, silky dogwood, gray dogwood.	Norway spruce---------	Eastern white pine, red pine, jack pine.	---
Karlin----------	Lilac, staghorn sumac, eastern redcedar, Siberian peashrub, smooth sumac.	Red pine, jack pine, eastern white pine, Austrian pine.	---	---
79A, 79B---------- Fence	Northern whitecedar, lilac, American cranberrybush, Amur maple, silky dogwood, gray dogwood.	White spruce, Norway spruce.	Eastern white pine, red pine, white ash, red maple.	---
79D---------- Fence	Northern whitecedar, lilac, silky dogwood, American cranberrybush, Amur maple, gray dogwood.	White spruce, Norway spruce.	Eastern white pine, red pine, red maple, white ash.	---
80B, 80D, 80F----- Pence	Eastern redcedar, lilac, Amur maple, American cranberrybush, Siberian peashrub, silky dogwood, gray dogwood.	Norway spruce---------	Eastern white pine, red pine, jack pine.	---

TABLE 10.--WINDBREAKS AND ENVIRONMENTAL PLANTINGS--Continued

Soil name and map symbol	Trees having predicted 20-year average height, in feet, of--			
	8-15	16-25	26-35	>35
82B, 82D, 82F----- Keweenaw	Lilac, northern whitecedar, Amur maple, Siberian peashrub, Peking cotoneaster.	Manchurian crabapple, white spruce, Norway spruce, jack pine.	Red pine, eastern white pine.	Imperial Carolina poplar.
100B, 100D: Keweenaw---------	Lilac, northern whitecedar, Amur maple, Siberian peashrub, Peking cotoneaster.	Manchurian crabapple, white spruce, Norway spruce, jack pine.	Red pine, eastern white pine.	Imperial Carolina poplar.
Karlin----------	Lilac, staghorn sumac, eastern redcedar, Siberian peashrub, smooth sumac.	Red pine, jack pine, eastern white pine, Austrian pine.	---	---
102B---------- Escanaba	Lilac, Amur maple, Siberian peashrub, common ninebark, Roselow sargent crabapple, nannyberry viburnum.	Norway spruce, jack pine, Manchurian crabapple, white spruce.	Eastern white pine, red pine.	---
104A---------- Stambaugh	Silky dogwood, Siberian crabapple, nannyberry viburnum, eastern redcedar, Amur privet, northern whitecedar, American cranberrybush.	White spruce, red pine, jack pine.	Eastern white pine----	---
104B, 104D-------- Stambaugh	Nannyberry viburnum, eastern redcedar, lilac, Amur maple, Siberian peashrub, silky dogwood, northern whitecedar, common ninebark.	Eastern white pine, red pine, green ash, jack pine.	---	---
112B, 112D, 112F, 113A---------- Sundog	Eastern redcedar, Siberian peashrub, common ninebark, silver buffaloberry, lilac, Peking cotoneaster, Roselow sargent crabapple.	Eastern white pine, jack pine, green ash, Austrian pine, red pine.	---	---
114A: Minocqua.				
Channing---------	American cranberrybush, lilac, silky dogwood, Roselow sargent crabapple, nannyberry viburnum, Amur maple.	White spruce, northern whitecedar, Siberian crabapple.	Norway spruce, eastern white pine, green ash.	---

TABLE 10.--WINDBREAKS AND ENVIRONMENTAL PLANTINGS--Continued

Soil name and map symbol	Trees having predicted 20-year average height, in feet, of--			
	8-15	16-25	26-35	>35
115A---------- Manitowish	Eastern redcedar, lilac, Amur maple, American cranberrybush, Siberian peashrub, silky dogwood, gray dogwood.	Norway spruce---------	Eastern white pine, red pine, jack pine.	---
122B: Sarona----------	Eastern redcedar, Siberian peashrub, lilac, American cranberrybush, Amur maple, silky dogwood, gray dogwood.	Norway spruce---------	Eastern white pine, red pine, jack pine.	---
Karlin----------	Staghorn sumac, lilac, smooth sumac, eastern redcedar, Siberian peashrub.	Red pine, jack pine, eastern white pine, Austrian pine.	---	---
122D: Sarona.				
Karlin----------	Staghorn sumac, lilac, smooth sumac, eastern redcedar, Siberian peashrub.	Red pine, jack pine, eastern white pine, Austrian pine.	---	---
123B, 123D-------- Ocqueoc	Amur maple, eastern redcedar, Siberian peashrub, silky dogwood.	White spruce, Norway spruce, jack pine, green ash, red pine, Siberian crabapple.	Eastern white pine----	---
128B, 128D: Goodman.				
Wabeno.				
Sundog----------	Eastern redcedar, Siberian peashrub, common ninebark, silver buffaloberry, lilac, Peking cotoneaster, Roselow sargent crabapple.	Eastern white pine, jack pine, green ash, Austrian pine, red pine.	---	---
128F: Goodman.				
Sundog----------	Eastern redcedar, Siberian peashrub, common ninebark, silver buffaloberry, lilac, Peking cotoneaster, Roselow sargent crabapple.	Eastern white pine, jack pine, green ash, Austrian pine, red pine.	---	---

TABLE 10.--WINDBREAKS AND ENVIRONMENTAL PLANTINGS--Continued

Soil name and map symbol	Trees having predicted 20-year average height, in feet, of--			
	8-15	16-25	26-35	>35
163B, 163D, 163F--Sagola	Northern whitecedar, arrowwood, common ninebark, silky dogwood, eastern redcedar.	White spruce, Siberian crabapple, Norway spruce, red maple.	Eastern white pine, red pine.	Imperial Carolina poplar.
164B--Alstad	Northern whitecedar, lilac, American cranberrybush, nannyberry viburnum, silky dogwood, redosier dogwood.	White spruce	Eastern white pine, green ash, white ash, red maple, silver maple.	---
165B:				
Sundog	Eastern redcedar, Siberian peashrub, common ninebark, silver buffaloberry, lilac, Peking cotoneaster, Roselow sargent crabapple.	Eastern white pine, jack pine, green ash, Austrian pine, red pine.	---	---
Channing	American cranberrybush, lilac, silky dogwood, Roselow sargent crabapple, nannyberry viburnum, Amur maple.	White spruce, northern whitecedar, Siberian crabapple.	Norway spruce, eastern white pine, green ash.	---
167A--Monico	Silky dogwood, northern whitecedar, nannyberry viburnum, redosier dogwood, common ninebark, lilac, American cranberrybush.	White spruce	Red maple, eastern white pine, white ash, silver maple.	---
504B, 504D, 504F--Pence	Eastern redcedar, lilac, Amur maple, American cranberrybush, Siberian peashrub, silky dogwood, gray dogwood.	Norway spruce	Eastern white pine, red pine, jack pine.	---
507A--Monico	Silky dogwood, northern whitecedar, nannyberry viburnum, redosier dogwood, common ninebark, lilac, American cranberrybush.	White spruce	Red maple, eastern white pine, white ash, silver maple.	---
508A--Beechwood	Northern whitecedar, American cranberrybush, nannyberry viburnum, Roselow sargent crabapple, common ninebark.	White spruce, Manchurian crabapple.	Norway spruce, eastern white pine, green ash.	Imperial Carolina poplar.

TABLE 10.--WINDBREAKS AND ENVIRONMENTAL PLANTINGS--Continued

Soil name and map symbol	Trees having predicted 20-year average height, in feet, of--			
	8-15	16-25	26-35	>35
514B---------- Stambaugh	Silky dogwood, Siberian crabapple, nannyberry viburnum, eastern redcedar, Amur privet, northern whitecedar, American cranberrybush.	White spruce, red pine, jack pine.	Eastern white pine----	---
519A---------- Monico	Silky dogwood, northern whitecedar, nannyberry viburnum, redosier dogwood, common ninebark, lilac, American cranberrybush.	White spruce----------	Red maple, eastern white pine, white ash, silver maple.	---
521B---------- Pence	Eastern redcedar, lilac, Amur maple, American cranberrybush, Siberian peashrub, silky dogwood, gray dogwood.	Norway spruce---------	Eastern white pine, red pine, jack pine.	---
535B, 535D-------- Vilas	Eastern redcedar, lilac, Amur maple, American cranberrybush, Siberian peashrub, silky dogwood, gray dogwood.	Norway spruce---------	Eastern white pine, red pine, jack pine.	---
542B, 542D-------- Gogebic	Amur maple, nannyberry viburnum, redosier dogwood, American cranberrybush, lilac, northern whitecedar, common ninebark, silky dogwood.	White spruce, Siberian crabapple, Norway spruce, eastern white pine.	---	---
542F---------- Gogebic	Common ninebark, American cranberrybush, lilac, redosier dogwood, silky dogwood, Amur maple.	White spruce, eastern white pine, Siberian crabapple, Norway spruce, red pine.	Green ash----------	---
549B, 549D, 549F:				
Karlin----------	Lilac, staghorn sumac, eastern redcedar, Siberian peashrub, smooth sumac.	Red pine, jack pine, eastern white pine, Austrian pine.	---	---
Pence----------	Eastern redcedar, lilac, Amur maple, American cranberrybush, Siberian peashrub, silky dogwood, gray dogwood.	Norway spruce---------	Eastern white pine, red pine, jack pine.	---

TABLE 11.--RECREATIONAL DEVELOPMENT

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated)

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
50:					
Aquents	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
Histosols	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding, excess humus.
51:					
Lupton	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding, excess humus.
Cathro	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding, excess humus.
Humaquepts	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
52:					
Greenwood	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding, excess humus.
Merwin	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding, excess humus.
53:					
Waucedah	Severe: flooding, ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding, flooding.	Severe: ponding, excess humus.	Severe: ponding, flooding, excess humus.
Cathro	Severe: flooding, ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding, flooding.	Severe: ponding, excess humus.	Severe: ponding, flooding, excess humus.
54. Pits					
55A Oconto	Slight	Slight	Moderate: small stones.	Slight	Moderate: droughty.
55B Oconto	Slight	Slight	Moderate: slope, small stones.	Slight	Moderate: droughty.
55D Oconto	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: droughty, slope.
56. Pits and dumps					

TABLE 11.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
57A Padus	Slight	Slight	Moderate: small stones.	Slight	Moderate: large stones, droughty.
57B Padus	Slight	Slight	Moderate: slope, small stones.	Slight	Moderate: large stones, droughty.
57D Padus	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: large stones, droughty, slope.
57F Padus	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
58B Trenary	Slight	Slight	Moderate: slope.	Slight	Slight.
58D Trenary	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.
59A Solona	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: large stones, wetness.
60D: Trenary	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: large stones, slope.
Rock outcrop.					
64A Channing	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
65 Witbeck	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding, excess humus.
67B Net	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness, large stones.
68B: Net	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.
Witbeck	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humas, ponding.	Severe: ponding, excess humus.	Severe: ponding, excess humus.
69A: Karlin	Moderate: wetness.	Moderate: wetness.	Moderate: small stones, wetness.	Slight	Moderate: droughty.
Croswell	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty, too sandy.

TABLE 11.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
70B:					
Sundog	Slight	Slight	Moderate: slope, small stones.	Severe: erodes easily.	Moderate: large stones, droughty.
Channing	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: large stones, wetness.
71D:					
Karlin	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: droughty, slope.
Vilas	Moderate: slope, too sandy.	Moderate: slope, too sandy.	Severe: slope.	Moderate: too sandy.	Moderate: large stones, droughty, slope.
Rock outcrop.					
72B Karlin	Slight	Slight	Moderate: slope, small stones.	Slight	Moderate: droughty.
72D Karlin	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: droughty, slope.
72F Karlin	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
73A Gaastra	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
74A Au Gres	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness.	Severe: wetness, too sandy.	Severe: wetness.
75 Kinross	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: ponding, excess humus.
76 Ensley	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
77B Vilas	Moderate: too sandy.	Moderate: too sandy.	Moderate: slope, small stones, too sandy.	Moderate: too sandy.	Moderate: droughty.
77D Vilas	Moderate: slope, too sandy.	Moderate: slope, too sandy.	Severe: slope.	Moderate: too sandy.	Moderate: droughty, slope.
78B:					
Vilas	Moderate: too sandy.	Moderate: too sandy.	Moderate: slope, small stones, too sandy.	Moderate: too sandy.	Moderate: droughty.

TABLE 11.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
78B:					
Karlin	Slight	Slight	Moderate: slope, small stones.	Slight	Moderate: droughty.
78D:					
Vilas	Moderate: slope, too sandy.	Moderate: slope, too sandy.	Severe: slope.	Moderate: too sandy.	Moderate: droughty, slope.
Karlin	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: droughty, slope.
78F:					
Vilas	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Karlin	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
79A---------- Fence	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Slight	Slight.
79B---------- Fence	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Slight	Slight.
79D---------- Fence	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
80B---------- Pence	Slight	Slight	Moderate: slope, small stones.	Slight	Moderate: large stones, droughty.
80D---------- Pence	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: large stones, droughty, slope.
80F---------- Pence	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
82B---------- Keweenaw	Moderate: too sandy.	Moderate: too sandy.	Moderate: slope, small stones, too sandy.	Moderate: too sandy.	Moderate: large stones, droughty.
82D---------- Keweenaw	Moderate: slope, too sandy.	Moderate: slope, too sandy.	Severe: slope.	Moderate: too sandy.	Moderate: large stones, droughty, slope.
82F---------- Keweenaw	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.

TABLE 11.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
100B:					
Keweenaw	Moderate: too sandy.	Moderate: too sandy.	Moderate: slope, small stones, too sandy.	Moderate: too sandy.	Moderate: large stones, droughty.
Karlin	Slight	Slight	Moderate: slope, small stones.	Slight	Moderate: droughty.
100D:					
Keweenaw	Moderate: slope, too sandy.	Moderate: slope, too sandy.	Severe: slope.	Moderate: too sandy.	Moderate: large stones, droughty, slope.
Karlin	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: droughty, slope.
101B:					
Trenary	Slight	Slight	Moderate: slope.	Slight	Slight.
Solona	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: large stones, wetness.
102B---------- Escanaba	Moderate: too sandy.	Moderate: too sandy.	Moderate: slope, too sandy.	Moderate: too sandy.	Moderate: large stones, droughty.
103B:					
Wabeno	Moderate: percs slowly, wetness.	Moderate: wetness, percs slowly.	Moderate: small stones, slope, wetness.	Moderate: wetness.	Moderate: large stones, wetness.
Sarona	Slight	Slight	Moderate: slope, small stones.	Slight	Severe: large stones.
103D:					
Wabeno	Moderate: slope, percs slowly, wetness.	Moderate: slope, wetness, percs slowly.	Severe: slope.	Severe: erodes easily.	Moderate: large stones, wetness, slope.
Sarona	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: large stones.	Severe: large stones.
104A---------- Stambaugh	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: percs slowly.	Slight	Moderate: large stones.
104B---------- Stambaugh	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, percs slowly.	Slight	Moderate: large stones.
104D---------- Stambaugh	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Slight	Moderate: large stones, slope.

TABLE 11.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
105D: Wabeno	Moderate: slope, large stones, wetness.	Moderate: slope, wetness.	Severe: slope.	Severe: erodes easily.	Moderate: large stones, slope, wetness.
Rock outcrop.					
106D--Champion	Severe: wetness, percs slowly.	Severe: percs slowly.	Severe: slope, wetness, percs slowly.	Moderate: wetness.	Moderate: large stones, wetness, slope.
107B--Sarona	Slight	Slight	Moderate: slope, small stones.	Slight	Severe: large stones.
107D--Sarona	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: large stones.	Severe: large stones.
107F--Sarona	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: large stones, slope.
108D: Sarona	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Severe: large stones.
Rock outcrop.					
108F: Sarona	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: large stones, slope.
Rock outcrop.					
109D--Udorthents	Variable	Variable	Variable	Variable	Variable.
110B: Petticoat	Moderate: wetness.	Moderate: slope.	Moderate: slope, small stones, wetness.	Moderate: wetness.	Moderate: large stones.
Wabeno	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: small stones, slope, wetness.	Moderate: wetness.	Moderate: large stones, wetness.
110D: Petticoat	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: large stones, slope.
Wabeno	Moderate: slope, wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Severe: slope.	Severe: erodes easily.	Moderate: large stones, slope, wetness.

TABLE 11.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
111B: Champion	Severe: wetness, percs slowly.	Severe: percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: large stones, wetness.
Net	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness, large stones.
112B Sundog	Slight	Slight	Moderate: slope, small stones.	Slight	Moderate: large stones, droughty.
112D Sundog	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: large stones, droughty, slope.
112F Sundog	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
113A Sundog	Slight	Slight	Slight	Slight	Moderate: large stones.
114A: Minocqua	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding, excess humus.
Channing	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
115A Manitowish	Slight	Slight	Moderate: small stones.	Slight	Moderate: droughty, large stones.
116B Wabeno	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: small stones, slope, wetness.	Moderate: wetness.	Moderate: large stones.
116D Wabeno	Moderate: slope, wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Severe: slope.	Severe: erodes easily.	Moderate: large stones, slope.
121B Peavy	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: large stones, slope, small stones.	Moderate: wetness.	Moderate: large stones, wetness.
121D Peavy	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Slight	Moderate: large stones, slope.
122B: Sarona	Slight	Slight	Moderate: slope, small stones.	Slight	Moderate: large stones, droughty.
Karlin	Slight	Slight	Moderate: slope, small stones.	Slight	Moderate: droughty.

TABLE 11.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
122D:					
Sarona	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: large stones.	Severe: large stones.
Karlin	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: droughty, slope.
123B	Moderate: percs slowly, too sandy.	Moderate: too sandy, percs slowly.	Moderate: slope, too sandy.	Moderate: too sandy.	Moderate: droughty.
123D	Moderate: slope, percs slowly.	Moderate: slope, too sandy.	Severe: slope.	Moderate: too sandy.	Moderate: droughty, slope.
124B, 125B:					
Wabeno	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: small stones. slope, wetness.	Moderate: wetness.	Moderate: large stones, wetness.
Net	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.
126B	Severe: wetness, percs slowly.	Severe: percs slowly.	Severe: percs slowly, wetness.	Moderate: wetness.	Moderate: large stones, wetness.
126D	Severe: wetness, percs slowly.	Severe: percs slowly.	Severe: slope, wetness, percs slowly.	Moderate: wetness.	Moderate: large stones, wetness, slope.
126F	Severe: slope, percs slowly.	Severe: slope, percs slowly.	Severe: slope, percs slowly.	Severe: slope.	Severe: slope.
127D	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: large stones, slope.
128B:					
Goodman	Slight	Slight	Moderate: slope, small stones.	Slight	Moderate: large stones.
Wabeno	Moderate: percs slowly, wetness.	Moderate: wetness, percs slowly.	Moderate: small stones, slope, wetness.	Moderate: wetness.	Moderate: large stones, wetness.
Sundog	Slight	Slight	Moderate: slope.	Slight	Moderate: large stones, droughty.
128D:					
Goodman	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: large stones, slope.

TABLE 11.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
128D:					
Wabeno	Moderate: slope, percs slowly, wetness.	Moderate: slope, wetness, percs slowly.	Severe: slope.	Severe: erodes easily.	Moderate: large stones, wetness, slope.
Sundog	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: large stones, droughty, slope.
128F:					
Goodman	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.
Sundog	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
163B---- Sagola	Slight	Slight	Moderate: slope, small stones.	Slight	Moderate: large stones, droughty.
163D---- Sagola	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: large stones, droughty, slope.
163F---- Sagola	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
164B---- Alstad	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
165B:					
Sundog	Slight	Slight	Moderate: slope, small stones.	Slight	Moderate: large stones, droughty.
Channing	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
166F---- Soperton	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.
167A---- Monico	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: large stones, wetness.
168F:					
Soperton	Severe: slope.	Severe: slope.	Severe: large stones, slope.	Severe: slope, erodes easily.	Severe: slope.
Rock outcrop.					
500B---- Wabeno	Moderate: wetness, percs slowly.	Moderate: percs slowly, wetness.	Moderate: slope, small stones, wetness.	Moderate: wetness.	Moderate: large stones, wetness.

TABLE 11.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
500D---------- Wabeno	Moderate: slope, wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Severe: slope.	Severe: erodes easily.	Moderate: large stones, slope, wetness.
501F---------- Soperton	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.
502B---------- Champion	Severe: wetness, percs slowly.	Severe: percs slowly.	Severe: percs slowly, wetness.	Moderate: wetness.	Moderate: large stones, wetness.
502D---------- Champion	Severe: wetness, percs slowly.	Severe: percs slowly.	Severe: percs slowly, slope, wetness.	Moderate: wetness.	Moderate: large stones, wetness, slope.
502F---------- Champion	Severe: slope, percs slowly.	Severe: slope, percs slowly.	Severe: slope, percs slowly.	Severe: slope.	Severe: slope.
503A---------- Typic Fragiaquods	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.
504B---------- Pence	Slight----------	Slight----------	Moderate: slope, small stones.	Slight----------	Moderate: large stones, droughty.
504D---------- Pence	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight----------	Moderate: large stones, droughty, slope.
504F---------- Pence	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
505, 506---------- Humaquepts	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
507A---------- Monico	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: large stones, wetness.
508A---------- Beechwood	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
509A---------- Typic Dystrochrepts	Slight----------	Slight----------	Slight----------	Slight----------	Slight.
510---------- Borosaprists	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding, excess humus.
511B---------- Typic Dystrochrepts	Slight----------	Slight----------	Moderate: slope, small stones.	Slight----------	Slight.
511D---------- Typic Dystrochrepts	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight----------	Moderate: slope.

TABLE 11.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
511F---------- Typic Dystrochrepts	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
512---------- Borosaprists	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding, excess humus.
513B---------- Entic Haplorthods	Slight----------	Slight----------	Moderate: slope, small stones.	Slight----------	Moderate: large stones, droughty.
514B---------- Stambaugh	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, percs slowly.	Slight----------	Moderate: large stones.
515---------- Borosaprists	Severe: flooding, wetness, excess humus.	Severe: wetness, excess humus.	Severe: excess humus, wetness, flooding.	Severe: wetness, excess humus.	Severe: wetness, flooding, excess humus.
516B, 516D---------- Fragiorthods	Variable--------	Variable--------	Variable--------	Variable--------	Variable.
517B---------- Lode	Slight----------	Slight----------	Moderate: slope, small stones.	Slight----------	Moderate: large stones, droughty.
517D---------- Lode	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: large stones, droughty, slope.
517F---------- Lode	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.
518---------- Humaquepts	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
519A---------- Monico	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: large stones, wetness.
520B---------- Haplorthods	Variable--------	Variable--------	Variable--------	Variable--------	Variable.
521B---------- Pence	Slight----------	Slight----------	Moderate: slope, small stones.	Slight----------	Moderate: large stones, droughty.
522D: Entic Fragiorthods---	Severe: wetness, percs slowly.	Severe: percs slowly.	Severe: wetness, percs slowly.	Moderate: wetness.	Moderate: large stones, wetness, droughty.
Typic Dystrochrepts--	Variable--------	Variable--------	Variable--------	Variable--------	Variable.
523B: Entic Haplorthods----	Variable--------	Variable--------	Variable--------	Variable--------	Variable.
Typic Haplaquepts----	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.

TABLE 11.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
524D, 524F---------- Haplorthods	Variable--------	Variable--------	Variable--------	Variable--------	Variable.
525B---------- Entic Haplorthods	Moderate: large stones.	Moderate: large stones.	Severe: large stones.	Moderate: large stones.	Severe: large stones.
525D---------- Entic Haplorthods	Severe: slope.	Severe: slope.	Severe: large stones, slope.	Moderate: large stones, slope.	Severe: large stones, slope.
525F---------- Entic Haplorthods	Severe: slope.	Severe: slope.	Severe: large stones, slope.	Severe: slope.	Severe: large stones, slope.
527:					
Borohemists----------	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding, excess humus.
Borosaprists---------	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding, excess humus.
528, 529---------- Borohemists	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding, excess humus.
530:					
Borosaprists---------	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding, excess humus.
Histic Humaquepts----	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding, excess humus.
531C---------- Champion	Severe: wetness, percs slowly.	Severe: percs slowly.	Severe: percs slowly, slope, wetness.	Moderate: wetness.	Moderate: large stones, wetness.
532F:					
Champion----------	Severe: slope, percs slowly.	Severe: slope, percs slowly.	Severe: slope, percs slowly.	Severe: slope.	Severe: slope.
Haplorthods----------	Variable--------	Variable--------	Variable--------	Variable--------	Variable.
533B---------- Entic Fragiorthods	Severe: wetness, percs slowly.	Severe: percs slowly.	Severe: wetness, percs slowly.	Moderate: wetness.	Moderate: large stones, wetness, droughty.
534B---------- Entic Haplorthods	Slight----------	Slight----------	Moderate: slope.	Slight----------	Moderate: droughty.
534D---------- Entic Haplorthods	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight----------	Moderate: droughty, slope.

TABLE 11.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
535B---------- Vilas	Moderate: too sandy.	Moderate: too sandy.	Moderate: slope, small stones, too sandy.	Moderate: too sandy.	Moderate: droughty.
535D---------- Vilas	Moderate: slope, too sandy.	Moderate: slope, too sandy.	Severe: slope.	Moderate: too sandy.	Moderate: droughty, slope.
536F---------- Entic Haplorthods	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.
537B---------- Haplorthods	Variable--------	Variable--------	Variable--------	Variable--------	Variable.
538B, 538D---------- Entic Haplorthods	Variable--------	Variable--------	Variable--------	Variable--------	Variable.
539B---------- Karlin	Slight----------	Slight----------	Moderate: slope.	Slight----------	Moderate: droughty.
540B: Entic Fragiorthods---	Variable--------	Variable--------	Variable--------	Variable--------	Variable.
Typic Fragiaquods----	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Borosaprists---------	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding, excess humus.
541---------- Fluvaquents	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness, flooding.
542B---------- Gogebic	Severe: wetness, percs slowly.	Severe: percs slowly.	Severe: wetness, percs slowly.	Moderate: wetness.	Moderate: large stones, wetness.
542D---------- Gogebic	Severe: wetness, percs slowly.	Severe: percs slowly.	Severe: slope, wetness, percs slowly.	Moderate: wetness.	Moderate: large stones, wetness, slope.
542F---------- Gogebic	Severe: slope, percs slowly.	Severe: slope, percs slowly.	Severe: slope, percs slowly.	Severe: slope.	Severe: slope.
543A---------- Haplaquods	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
544C, 544D, 544F------ Haplorthods	Variable--------	Variable--------	Variable--------	Variable--------	Variable.
545B, 545D, 545F------ Haplorthods	Variable--------	Variable--------	Variable--------	Variable--------	Variable.
546C, 546D, 546F------ Entic Haplorthods	Variable--------	Variable--------	Variable--------	Variable--------	Variable.
547B---------- Haplorthods	Variable--------	Variable--------	Variable--------	Variable--------	Variable.

TABLE 11.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
548:					
Humaquepts	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness, flooding.
Terric Borosaprists	Severe: flooding, wetness, excess humus.	Severe: wetness, excess humus.	Severe: excess humus, wetness, flooding.	Severe: wetness, excess humus.	Severe: wetness, flooding, excess humus.
549B:					
Karlin	Slight	Slight	Moderate: slope, small stones.	Slight	Moderate: droughty.
Pence	Slight	Slight	Moderate: slope, small stones.	Slight	Moderate: large stones, droughty.
549D:					
Karlin	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: droughty, slope.
Pence	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: large stones, droughty, slope.
549F:					
Karlin	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Pence	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
550 Terric Borosaprists	Severe: flooding, wetness, excess humus.	Severe: wetness, excess humus.	Severe: excess humus, wetness, flooding.	Severe: wetness, excess humus.	Severe: wetness, flooding, excess humus.
551A Typic Fragiorthods	Variable	Variable	Variable	Variable	Variable.
552F Kalkaska	Severe: slope, too sandy.	Severe: slope, too sandy.	Severe: slope, too sandy.	Severe: too sandy, slope.	Severe: slope.
553D Kalkaska	Moderate: slope, too sandy.	Moderate: slope, too sandy.	Severe: slope.	Moderate: too sandy.	Moderate: droughty, slope.
554B Alfic Fragiorthods	Severe: wetness, percs slowly.	Severe: percs slowly.	Severe: wetness, percs slowly.	Moderate: wetness.	Moderate: large stones, wetness.
555B Entic Haplorthods	Variable	Variable	Variable	Variable	Variable.
556 Haplaquods	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.

TABLE 12.--WILDLIFE HABITAT

(See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates that the soil was not rated)

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
50: Aquents. Histosols.										
51: Lupton	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Cathro	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Humaquepts	Poor	Poor	Poor	Fair	Fair	Good	Good	Poor	Fair	Good.
52: Greenwood	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Merwin	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Very poor.	Very poor.	Good.
53: Waucedah	Very poor.	Poor	Poor	Fair	Fair	Good	Good	Poor	Fair	Good.
Cathro	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Good	Good	Very poor.	Very poor.	Good.
54. Pits										
55A, 55B Oconto	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
55D Oconto	Poor	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
56. Pits and dumps										
57A, 57B Padus	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
57D, 57F Padus	Very poor.	Poor	Good	Good	Good	Poor	Very poor.	Poor	Good	Very poor.
58B Trenary	Poor	Fair	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
58D Trenary	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
59A Solona	Very poor.	Poor	Good	Good	Good	Fair	Fair	Poor	Good	Fair.

TABLE 12.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
60D:										
Trenary	Poor	Poor	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Rock outcrop.										
64A Channing	Fair	Good	Good	Fair	Fair	Fair	Fair	Good	Fair	Fair.
65 Witbeck	Very poor.	Poor	Fair	Fair	Fair	Good	Good	Poor	Fair	Good.
67B Net	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
68B:										
Net	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
Witbeck	Very poor.	Poor	Fair	Fair	Fair	Good	Good	Poor	Fair	Good.
69A:										
Karlin	Fair	Fair	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
Croswell	Poor	Poor	Fair	Fair	Fair	Poor	Very poor.	Poor	Fair	Very poor.
70B:										
Sundog	Fair	Fair	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Channing	Very poor.	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair.
71D:										
Karlin	Fair	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Vilas	Very poor.	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Rock outcrop.										
72B, 72D Karlin	Fair	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
72F Karlin	Very poor.	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
73A Gaastra	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
74A Au Gres	Poor	Fair	Good	Good	Good	Poor	Poor	Fair	Good	Poor.
75 Kinross	Very poor.	Poor	Poor	Fair	Fair	Good	Good	Very poor.	Fair	Good.

TABLE 12.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
76--Ensley	Very poor.	Poor	Fair	Fair	Fair	Good	Good	Poor	Fair	Good.
77B--Vilas	Poor	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Poor	Very poor.
77D--Vilas	Very poor.	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
78B:										
Vilas	Poor	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Poor	Very poor.
Karlin	Fair	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
78D:										
Vilas	Very poor.	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Karlin	Fair	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
78F:										
Vilas	Very poor.	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Karlin	Very poor.	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
79A, 79B--Fence	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
79D--Fence	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
80B--Pence	Fair	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
80D, 80F--Pence	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
82B--Keweenaw	Fair	Fair	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
82D--Keweenaw	Fair	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
82F--Keweenaw	Very poor.	Fair	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
100B:										
Keweenaw	Fair	Fair	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
Karlin	Fair	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.

TABLE 12.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
100D:										
Keweenaw	Fair	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Karlin	Fair	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
101B:										
Trenary	Poor	Fair	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
Solona	Very poor.	Poor	Good	Good	Good	Fair	Fair	Poor	Good	Fair.
102B---------- Escanaba	Poor	Fair	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
103B, 103D:										
Wabeno	Very poor.	Poor	Good	Good	Good	Poor	Poor	Poor	Good	Poor.
Sarona	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
104A---------- Stambaugh	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
104B---------- Stambaugh	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
104D---------- Stambaugh	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
105D:										
Wabeno	Very poor.	Poor	Good	Good	Good	Poor	Poor	Poor	Good	Poor.
Rock outcrop.										
106D---------- Champion	Poor	Poor	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
107B, 107D, 107F--- Sarona	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
108D, 108F:										
Sarona	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
Rock outcrop.										
109D. Udorthents										
110B:										
Petticoat	Poor	Poor	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
Wabeno	Very poor.	Poor	Good	Good	Good	Poor	Poor	Poor	Good	Poor.

TABLE 12.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
110D:										
Petticoat	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Wabeno	Very poor.	Poor	Good	Good	Good	Poor	Poor	Poor	Good	Poor.
111B:										
Champion	Poor	Poor	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
Net	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
112B Sundog	Fair	Fair	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
112D Sundog	Fair	Fair	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
112F Sundog	Very poor.	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
113A Sundog	Fair	Good	Good	Good	Good	Poor	Poor	Good	Good	Very poor.
114A:										
Minocqua	Fair	Good	Fair	Fair	Fair	Good	Fair	Fair	Fair	Fair.
Channing	Fair	Good	Good	Fair	Fair	Fair	Fair	Good	Fair	Fair.
115A Manitowish	Fair	Fair	Good	Good	Good	Poor	Poor	Fair	Good	Poor.
116B, 116D Wabeno	Very poor.	Poor	Good	Good	Good	Poor	Poor	Poor	Good	Poor.
121B Peavy	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
121D Peavy	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
122B:										
Sarona	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Karlin	Fair	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
122D:										
Sarona	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
Karlin	Fair	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
123B Ocqueoc	Fair	Fair	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.

TABLE 12.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
123D---------- Ocqueoc	Fair	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
124B, 125B:										
Wabeno----------	Very poor.	Poor	Good	Good	Good	Poor	Poor	Poor	Good	Poor.
Net----------	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
126B---------- Champion	Poor	Poor	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
126D---------- Champion	Poor	Poor	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
126F---------- Champion	Very poor.	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
127D---------- Goodman	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
128B:										
Goodman----------	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Poor	Very poor.
Wabeno----------	Very poor.	Poor	Good	Good	Good	Poor	Poor	Poor	Good	Poor.
Sundog----------	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
128D:										
Goodman----------	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Poor	Very poor.
Wabeno----------	Very poor.	Poor	Good	Good	Good	Poor	Poor	Poor	Good	Poor.
Sundog----------	Fair	Fair	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
128F:										
Goodman----------	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Poor	Very poor.
Sundog----------	Very poor.	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
163B---------- Sagola	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
163D---------- Sagola	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
163F---------- Sagola	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
164B---------- Alstad	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.

TABLE 12.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
165B: Sundog	Fair	Fair	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Channing	Fair	Good	Good	Fair	Fair	Fair	Fair	Good	Fair	Fair.
166F: Soperton	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
167A: Monico	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
168F: Soperton	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
Rock outcrop.										
500B, 500D: Wabeno	Very poor.	Poor	Good	Good	Good	Poor	Poor	Poor	Good	Poor.
501F: Soperton	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
502B: Champion	Poor	Poor	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
502D: Champion	Poor	Poor	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
502F: Champion	Very poor.	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
503A: Typic Fragiaquods	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
504B: Pence	Fair	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
504D, 504F: Pence	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
505, 506: Humaquepts	Poor	Poor	Poor	Fair	Fair	Good	Good	Poor	Fair	Good.
507A: Monico	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
508A: Beechwood	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
509A: Typic Dystrochrepts	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
510: Borosaprists	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
511B: Typic Dystrochrepts	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.

TABLE 12.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
511D---------- Typic Dystrochrepts	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
511F---------- Typic Dystrochrepts	Very poor.	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
512---------- Borosaprists	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
513B---------- Entic Haplorthods	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
514B---------- Stambaugh	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
515---------- Borosaprists	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
516B, 516D. Fragiorthods										
517B---------- Lode	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
517D---------- Lode	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
517F---------- Lode	Poor	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
518---------- Humaquepts	Poor	Poor	Poor	Fair	Fair	Good	Good	Poor	Fair	Good.
519A---------- Monico	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
520B. Haplorthods										
521B---------- Pence	Fair	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
522D: Entic Fragiorthods	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Typic Dystrochrepts.										
523B: Entic Haplorthods.										
Typic Haplaquepts-	Poor	Fair	Poor	Fair	Fair	Good	Good	Poor	Fair	Good.
524D, 524F. Haplorthods										

TABLE 12.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
525B, 525D, 525F--- Entic Haplorthods	Poor	Poor	Fair	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
527:										
Borohemists-------	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Borosaprists------	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
528---------- Borohemists	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
529---------- Borohemists	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Poor.
530:										
Borosaprists------	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Histic Humaquepts-	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
531C---------- Champion	Poor	Poor	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
532F:										
Champion----------	Very poor.	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Haplorthods.										
533B---------- Entic Fragiorthods	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
534B, 534D--------- Entic Haplorthods	Poor	Poor	Fair	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
535B---------- Vilas	Poor	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Poor	Very poor.
535D---------- Vilas	Very poor.	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
536F---------- Entic Haplorthods	Poor	Poor	Fair	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
537B. Haplorthods										
538B, 538D. Entic Haplorthods										
539B---------- Karlin	Poor	Poor	Fair	Fair	Fair	Poor	Very poor.	Poor	Fair	Very poor.
540B: Entic Fragiorthods.										
Typic Fragiaquods.										

TABLE 12.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
540B: Borosaprists	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
541--- Fluvaquents	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
542B--- Gogebic	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
542D--- Gogebic	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
542F--- Gogebic	Very poor.	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
543A. Haplaquods										
544C, 544D, 544F, 545B, 545D, 545F, 546C, 546D, 546F, 547B. Haplorthods										
548: Humaquepts	Poor	Poor	Poor	Fair	Fair	Good	Good	Poor	Fair	Good.
Terric Borosaprists	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
549B: Karlin	Fair	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Pence	Fair	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
549D: Karlin	Fair	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Pence	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
549F: Karlin	Very poor.	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Pence	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
550--- Terric Borosaprists	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
551A. Typic Fragiorthods										

TABLE 12.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
552F---------- Kalkaska	Very poor.	Poor	Fair	Good	Good	Very poor.	Very poor.	Poor	Fair	Very poor.
553D---------- Kalkaska	Poor	Fair	Fair	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
554B---------- Alfic Fragiorthods	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
555B. Entic Haplorthods										
556---------- Haplaquods	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.

TABLE 13.--BUILDING SITE DEVELOPMENT

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
50:						
Aquents	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding, frost action.	Severe: ponding.
Histosols	Severe: excess humus, ponding.	Severe: ponding, low strength.	Severe: ponding.	Severe: ponding, low strength.	Severe: ponding, frost action.	Severe: ponding, excess humus.
51:						
Lupton	Severe: excess humus, ponding.	Severe: subsides, ponding, low strength.	Severe: subsides, ponding, low strength.	Severe: subsides, ponding, low strength.	Severe: subsides, ponding, frost action.	Severe: ponding, excess humus.
Cathro	Severe: excess humus, ponding.	Severe: subsides, ponding, low strength.	Severe: subsides, ponding.	Severe: subsides, ponding, low strength.	Severe: subsides, ponding, frost action.	Severe: ponding, excess humus.
Humaquepts	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding, frost action.	Severe: ponding.
52:						
Greenwood	Severe: excess humus, ponding.	Severe: ponding, low strength.	Severe: ponding, low strength.	Severe: ponding, low strength.	Severe: ponding, excess humus.	Severe: ponding, excess humus.
Merwin	Severe: excess humus, ponding.	Severe: ponding, low strength.	Severe: ponding.	Severe: ponding, low strength.	Severe: ponding, frost action.	Severe: ponding, excess humus.
53:						
Waucedah	Severe: ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: ponding, flooding, frost action.	Severe: ponding, flooding, excess humus.
Cathro	Severe: excess humus, ponding.	Severe: flooding, ponding, low strength.	Severe: flooding, ponding.	Severe: flooding, ponding, low strength.	Severe: ponding, flooding, frost action.	Severe: ponding, flooding, excess humus.
54. Pits						
55A Oconto	Severe: cutbanks cave.	Slight	Slight	Slight	Moderate: frost action.	Slight.
55B Oconto	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Moderate: frost action.	Slight.

TABLE 13.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
55D---------- Oconto	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: slope.
56. Pits and dumps						
57A---------- Padus	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Moderate: frost action.	Moderate: large stones, droughty, small stones.
57B---------- Padus	Severe: cutbanks cave.	Slight---------	Slight---------	Moderate: slope.	Moderate: frost action.	Moderate: large stones, droughty, small stones.
57D---------- Padus	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: large stones, droughty, slope.
57F---------- Padus	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
58B---------- Trenary	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Moderate: frost action.	Slight.
58D---------- Trenary	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: slope.
59A---------- Solona	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: frost action.	Moderate: large stones, wetness, droughty.
60D: Trenary----------	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: large stones, slope.
Rock outcrop.						
64A---------- Channing	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness.
65---------- Witbeck	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding, frost action.	Severe: ponding, excess humus.
67B---------- Net	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness.
68B: Net----------	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness.

TABLE 13.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
68B: Witbeck	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding, frost action.	Severe: ponding, excess humus.
69A: Karlin	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: droughty.
Croswell	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: droughty, too sandy.
70B: Sundog	Severe: cutbanks cave.	Slight	Slight	Slight	Moderate: frost action.	Moderate: large stones, droughty.
Channing	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, frost action.	Severe: large stones, wetness.
71D: Karlin	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
Vilas	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: large stones, droughty, slope.
Rock outcrop.						
72B--- Karlin	Severe: cutbanks cave.	Slight	Slight	Slight	Slight	Moderate: droughty.
72D--- Karlin	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
72F--- Karlin	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
73A--- Gaastra	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: frost action.	Moderate: wetness.
74A--- Au Gres	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
75--- Kinross	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding, excess humus.
76--- Ensley	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding, frost action.	Severe: ponding.

TABLE 13.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
77B---------- Vilas	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Slight---------	Moderate: droughty.
77D---------- Vilas	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
78B: Vilas----------	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Slight---------	Moderate: droughty.
Karlin----------	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Slight---------	Moderate: droughty.
78D: Vilas----------	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
Karlin----------	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
78F: Vilas----------	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Karlin----------	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
79A---------- Fence	Severe: wetness, cutbanks cave.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Severe: frost action.	Slight.
79B---------- Fence	Severe: wetness, cutbanks cave.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Severe: frost action.	Slight.
79D---------- Fence	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: frost action.	Moderate: slope.
80B---------- Pence	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Slight---------	Moderate: large stones, droughty.
80D---------- Pence	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: large stones, droughty, slope.
80F---------- Pence	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
82B---------- Keweenaw	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Slight---------	Moderate: large stones, droughty.

TABLE 13.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
82D---------- Keweenaw	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: large stones, droughty, slope.
82F---------- Keweenaw	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
100B:						
Keweenaw---------	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Slight---------	Moderate: large stones, droughty.
Karlin----------	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Slight---------	Moderate: droughty.
100D:						
Keweenaw---------	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: large stones, droughty, slope.
Karlin----------	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
101B:						
Trenary----------	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Moderate: frost action.	Slight.
Solona----------	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: frost action.	Moderate: large stones, wetness.
102B---------- Escanaba	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Moderate: frost action.	Moderate: large stones, droughty.
103B:						
Wabeno----------	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness, frost action.	Moderate: large stones, wetness.
Sarona----------	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Moderate: frost action.	Moderate: large stones, droughty.
103D:						
Wabeno----------	Severe: cutbanks cave, wetness.	Moderate: wetness, slope.	Severe: wetness.	Severe: slope.	Moderate: wetness, slope, frost action.	Moderate: large stones, wetness, slope.
Sarona----------	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: large stones, droughty, slope.
104A---------- Stambaugh	Severe: cutbanks cave.	Slight---------	Moderate: wetness.	Slight---------	Moderate: frost action.	Moderate: large stones.

TABLE 13.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
104B---------- Stambaugh	Severe: cutbanks cave.	Slight---------	Slight---------	Moderate: slope.	Moderate: frost action.	Moderate: large stones.
104D---------- Stambaugh	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: large stones, slope.
105D: Wabeno----------	Severe: cutbanks cave, wetness.	Moderate: slope, wetness.	Moderate: slope, wetness.	Severe: slope.	Moderate: slope, frost action, wetness.	Moderate: large stones, slope, wetness.
Rock outcrop.						
106D---------- Champion	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, slope.	Moderate: wetness, slope, frost action.	Moderate: large stones, wetness, slope.
107B---------- Sarona	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Moderate: frost action.	Moderate: large stones, droughty.
107D---------- Sarona	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: large stones, droughty, slope.
107F---------- Sarona	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
108D: Sarona----------	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: large stones, droughty, slope.
Rock outcrop.						
108F: Sarona----------	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: large stones, slope.
Rock outcrop.						
109D---------- Udorthents	Variable-------	Variable-------	Variable-------	Variable-------	Variable-------	Variable.
110B: Petticoat---------	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness, frost action.	Moderate: large stones, wetness.
Wabeno----------	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: frost action, wetness.	Moderate: large stones, wetness.

TABLE 13.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
110D:						
Petticoat	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: large stones, slope.
Wabeno	Severe: cutbanks cave, wetness.	Moderate: slope, wetness.	Moderate: slope, wetness.	Severe: slope.	Moderate: slope, frost action, wetness.	Moderate: large stones, slope, wetness.
111B:						
Champion	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Moderate: wetness, frost action.	Moderate: large stones, wetness.
Net	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, frost action.	
112B Sundog	Severe: cutbanks cave.	Slight	Slight	Slight	Moderate: frost action.	Moderate: large stones, droughty.
112D Sundog	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: large stones, droughty, slope.
112F Sundog	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
113A Sundog	Severe: cutbanks cave.	Slight	Moderate: wetness.	Slight	Moderate: frost action.	Moderate: large stones.
114A:						
Minocqua	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding, frost action.	Severe: ponding, excess humus.
Channing	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness.
115A Manitowish	Severe: cutbanks cave.	Slight	Moderate: wetness.	Slight	Slight	Moderate: droughty, large stones.
116B Wabeno	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: frost action, wetness.	Moderate: large stones, wetness.
116D Wabeno	Severe: wetness.	Moderate: slope, wetness.	Severe: wetness.	Severe: slope.	Moderate: slope, frost action, wetness.	Moderate: large stones, slope, wetness.
121B Peavy	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness, frost action.	Moderate: large stones, wetness.

TABLE 13.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
121D--- Peavy	Moderate: dense layer, slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: large stones, slope.
122B: Sarona---	Severe: cutbanks cave.	Slight---	Slight---	Slight---	Moderate: frost action.	Moderate: large stones, droughty, small stones.
Karlin---	Severe: cutbanks cave.	Slight---	Slight---	Slight---	Slight---	Moderate: droughty.
122D: Sarona---	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: large stones, droughty, slope.
Karlin---	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
123B--- Ocqueoc	Severe: cutbanks cave.	Slight---	Slight---	Slight---	Slight---	Moderate: droughty.
123D--- Ocqueoc	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
124B, 125B: Wabeno---	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: frost action, wetness.	Moderate: large stones, wetness.
Net---	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness.
126B--- Champion	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Moderate: wetness, frost action.	Moderate: large stones, wetness, droughty.
126D--- Champion	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, slope.	Moderate: wetness, slope, frost action.	Moderate: large stones, wetness, droughty.
126F--- Champion	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
127D--- Goodman	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: large stones, slope.
128B: Goodman---	Severe: cutbanks cave.	Slight---	Slight---	Moderate: slope.	Moderate: frost action.	Moderate: large stones.

TABLE 13.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
128B:						
Wabeno	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness, frost action.	Moderate: large stones, wetness.
Sundog	Severe: cutbanks cave.	Slight	Slight	Slight	Moderate: frost action.	Moderate: large stones.
128D:						
Goodman	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: large stones, slope.
Wabeno	Severe: cutbanks cave, wetness.	Moderate: wetness, slope.	Severe: wetness.	Severe: slope.	Moderate: wetness, slope, frost action.	Moderate: large stones, wetness, slope.
Sundog	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: large stones, slope.
128F:						
Goodman	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Sundog	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
163B--Sagola	Severe: cutbanks cave.	Slight	Slight	Slight	Moderate: frost action.	Moderate: large stones, droughty.
163D--Sagola	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: large stones, droughty, slope.
163F--Sagola	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
164B--Alstad	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: frost action.	Moderate: wetness.
165B:						
Sundog	Severe: cutbanks cave.	Slight	Slight	Slight	Moderate: frost action.	Moderate: large stones, droughty.
Channing	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness.
166F--Soperton	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.

TABLE 13.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
167A---------- Monico	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: frost action.	Moderate: large stones, wetness, droughty.
168F: Soperton---------	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Rock outcrop.						
500B---------- Wabeno	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: frost action, wetness.	Moderate: large stones, wetness, droughty.
500D---------- Wabeno	Severe: cutbanks cave, wetness.	Moderate: slope, wetness.	Moderate: slope, wetness.	Severe: slope.	Moderate: slope, frost action, wetness.	Moderate: large stones, droughty, wetness.
501F---------- Soperton	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
502B---------- Champion	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Moderate: wetness, frost action.	Moderate: large stones, wetness, droughty.
502D---------- Champion	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, slope.	Moderate: wetness, slope, frost action.	Moderate: large stones, wetness, slope.
502F---------- Champion	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
503A---------- Typic Fragiaquods	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness.
504B---------- Pence	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Slight---------	Moderate: large stones, droughty.
504D---------- Pence	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: large stones, droughty, slope.
504F---------- Pence	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
505, 506---------- Humaquepts	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding, frost action.	Severe: ponding.

TABLE 13.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
507A---------- Monico	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: frost action.	Moderate: large stones, wetness, droughty.
508A---------- Beechwood	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: frost action.	Moderate: wetness.
509A---------- Typic Dystrochrepts	Moderate: large stones, wetness.	Moderate: large stones.	Moderate: wetness, large stones.	Moderate: large stones.	Moderate: frost action, large stones.	Slight.
510---------- Borosaprists	Severe: excess humus, ponding.	Severe: ponding, low strength.	Severe: ponding.	Severe: ponding, low strength.	Severe: ponding, frost action.	Severe: ponding, excess humus.
511B---------- Typic Dystrochrepts	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Moderate: frost action.	Slight.
511D---------- Typic Dystrochrepts	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: slope.
511F---------- Typic Dystrochrepts	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
512---------- Borosaprists	Severe: excess humus, ponding.	Severe: ponding, low strength.	Severe: ponding.	Severe: ponding, low strength.	Severe: ponding, frost action.	Severe: ponding, excess humus.
513B---------- Entic Haplorthods	Severe: cutbanks cave.	Slight---------	Moderate: wetness.	Slight---------	Moderate: frost action.	Moderate: large stones, droughty.
514B---------- Stambaugh	Severe: cutbanks cave.	Slight---------	Moderate: wetness.	Moderate: slope.	Moderate: frost action.	Moderate: large stones.
515---------- Borosaprists	Severe: excess humus, wetness.	Severe: flooding, wetness, low strength.	Severe: flooding, wetness.	Severe: flooding, wetness, low strength.	Severe: wetness, flooding, frost action.	Severe: wetness, flooding, excess humus.
516B, 516D-------- Fragiorthods	Variable-------	Variable-------	Variable-------	Variable-------	Variable-------	Variable.
517B---------- Lode	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Moderate: frost action.	Moderate: large stones, droughty.
517D---------- Lode	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: large stones, droughty, slope.
517F---------- Lode	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.

TABLE 13.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
518---------- Humaquepts	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding, frost action.	Severe: ponding.
519A---------- Monico	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: frost action.	Moderate: large stones, wetness, droughty.
520B---------- Haplorthods	Variable-------	Variable-------	Variable-------	Variable-------	Variable-------	Variable.
521B---------- Pence	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Slight---------	Moderate: large stones, droughty.
522D: Entic Fragiorthods----	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Moderate: wetness, frost action.	Moderate: large stones, wetness, droughty.
Typic Dystrochrepts---	Variable-------	Variable-------	Variable-------	Variable-------	Variable-------	Variable.
523B: Entic Haplorthods	Variable-------	Variable-------	Variable-------	Variable-------	Variable-------	Variable.
Typic Haplaquepts	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
524D, 524F-------- Haplorthods	Variable-------	Variable-------	Variable-------	Variable-------	Variable-------	Variable.
525B---------- Entic Haplorthods	Severe: cutbanks cave, large stones.	Severe: large stones.	Severe: large stones.	Severe: large stones.	Severe: large stones.	Severe: large stones.
525D, 525F-------- Entic Haplorthods	Severe: cutbanks cave, large stones, slope.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: large stones, slope.
527: Borohemists------	Severe: excess humus, ponding.	Severe: ponding, low strength.	Severe: ponding.	Severe: ponding, low strength.	Severe: ponding, frost action.	Severe: ponding, excess humus.
Borosaprists-----	Severe: excess humus, ponding.	Severe: ponding, low strength.	Severe: ponding.	Severe: ponding, low strength.	Severe: ponding, frost action.	Severe: ponding, excess humus.
528, 529---------- Borohemists	Severe: excess humus, ponding.	Severe: ponding, low strength.	Severe: ponding.	Severe: ponding, low strength.	Severe: ponding, frost action.	Severe: ponding, excess humus.
530: Borosaprists-----	Severe: excess humus, ponding.	Severe: ponding, low strength.	Severe: ponding.	Severe: ponding, low strength.	Severe: ponding, frost action.	Severe: ponding, excess humus.

TABLE 13.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
530: Histic Humaquepts	Severe: ponding.	Severe: ponding, low strength.	Severe: ponding.	Severe: ponding, low strength.	Severe: ponding, frost action.	Severe: ponding, excess humus.
531C---Champion	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Moderate: wetness, frost action.	Moderate: large stones, wetness, droughty.
532F: Champion---	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Haplorthods---	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope.
533B---Entic Fragiorthods	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Moderate: wetness, frost action.	Moderate: large stones, wetness, droughty.
534B---Entic Haplorthods	Severe: cutbanks cave.	Slight---	Slight---	Slight---	Slight---	Moderate: droughty.
534D---Entic Haplorthods	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
535B---Vilas	Severe: cutbanks cave.	Slight---	Slight---	Slight---	Slight---	Moderate: droughty.
535D---Vilas	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
536F---Entic Haplorthods	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
537B---Haplorthods	Variable---	Variable---	Variable---	Variable---	Variable---	Variable.
538B, 538D---Entic Haplorthods	Variable---	Variable---	Variable---	Variable---	Variable---	Variable.
539B---Karlin	Severe: cutbanks cave.	Slight---	Slight---	Slight---	Slight---	Moderate: droughty.
540B: Entic Fragiorthods---	Variable---	Variable---	Variable---	Variable---	Variable---	Variable.
Typic Fragiaquods	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness.
Borosaprists---	Severe: excess humus, ponding.	Severe: ponding, low strength.	Severe: ponding.	Severe: ponding, low strength.	Severe: ponding, frost action.	Severe: ponding, excess humus.

TABLE 13.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
541--- Fluvaquents	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding, frost action.	Severe: wetness, flooding.
542B--- Gogebic	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Moderate: wetness, frost action.	Moderate: large stones, wetness, droughty.
542D--- Gogebic	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, slope.	Moderate: wetness, slope, frost action.	Moderate: large stones, wetness, droughty.
542F--- Gogebic	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
543A--- Haplaquods	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
544C, 544D, 544F--- Haplorthods	Variable---	Variable---	Variable---	Variable---	Variable---	Variable.
545B, 545D, 545F--- Haplorthods	Variable---	Variable---	Variable---	Variable---	Variable---	Variable.
546C, 546D, 546F--- Entic Haplorthods	Variable---	Variable---	Variable---	Variable---	Variable---	Variable.
547B--- Haplorthods	Variable---	Variable---	Variable---	Variable---	Variable---	Variable.
548:						
Humaquepts---	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding, frost action.	Severe: wetness, flooding.
Terric Borosaprists---	Severe: excess humus, wetness.	Severe: flooding, wetness, low strength.	Severe: flooding, wetness.	Severe: flooding, wetness, low strength.	Severe: wetness, flooding, frost action.	Severe: wetness, flooding, excess humus.
549B:						
Karlin---	Severe: cutbanks cave.	Slight---	Slight---	Slight---	Slight---	Moderate: droughty.
Pence---	Severe: cutbanks cave.	Slight---	Slight---	Slight---	Slight---	Moderate: large stones, droughty.
549D:						
Karlin---	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
Pence---	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: large stones, droughty, slope.

TABLE 13.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
549F:						
Karlin	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Pence	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
550 Terric Borosaprists	Severe: excess humus, wetness.	Severe: flooding, wetness, low strength.	Severe: flooding, wetness.	Severe: flooding, wetness, low strength.	Severe: wetness, flooding, frost action.	Severe: wetness, flooding, excess humus.
551A Typic Fragiorthods	Variable	Variable	Variable	Variable	Variable	Variable.
552F Kalkaska	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
553D Kalkaska	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
554B Alfic Fragiorthods	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Moderate: wetness, frost action.	Moderate: large stones, wetness.
555B Entic Haplorthods	Variable	Variable	Variable	Variable	Variable	Variable.
556 Haplaquods	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.

TABLE 14.--SANITARY FACILITIES

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "good," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
50:					
Aquents	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Poor: ponding.
Histosols	Severe: ponding.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding.	Poor: ponding, excess humus.
51:					
Lupton	Severe: subsides, ponding, percs slowly.	Severe: seepage, excess humus, ponding.	Severe: seepage, ponding, excess humus.	Severe: seepage, ponding.	Poor: ponding, excess humus.
Cathro	Severe: ponding, percs slowly.	Severe: seepage, excess humus, ponding.	Severe: ponding.	Severe: seepage, ponding.	Poor: ponding.
Humaquepts	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Poor: ponding.
52:					
Greenwood	Severe: ponding.	Severe: seepage, excess humus, ponding.	Severe: seepage, ponding, excess humus.	Severe: seepage, ponding.	Poor: ponding, excess humus.
Merwin	Severe: ponding.	Severe: seepage, excess humus, ponding.	Severe: seepage, ponding, excess humus.	Severe: seepage, ponding.	Poor: ponding, excess humus.
53:					
Waucedah	Severe: flooding, ponding.	Severe: flooding, excess humus, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Poor: ponding.
Cathro	Severe: flooding, ponding, percs slowly.	Severe: seepage, flooding, excess humus.	Severe: flooding, ponding.	Severe: flooding, seepage, ponding.	Poor: ponding.
54. Pits					
55A--- Oconto	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.

TABLE 14.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
55B---------- Oconto	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
55D---------- Oconto	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
56. Pits and dumps					
57A---------- Padus	Severe: poor filter.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Poor: small stones.
57B, 57D---------- Padus	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
57F---------- Padus	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: seepage, slope, too sandy.	Severe: seepage, slope.	Poor: seepage, too sandy, small stones.
58B---------- Trenary	Moderate: percs slowly.	Severe: seepage, slope.	Slight----------	Slight----------	Good.
58D---------- Trenary	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: slope.
59A---------- Solona	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
60D: Trenary----------	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: slope.
Rock outcrop.					
64A---------- Channing	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, small stones.
65---------- Witbeck	Severe: ponding, percs slowly.	Severe: excess humus, ponding.	Severe: ponding.	Severe: ponding.	Poor: small stones, ponding.
67B---------- Net	Severe: wetness, percs slowly.	Severe: seepage, wetness.	Severe: seepage, wetness.	Severe: wetness.	Poor: small stones, wetness.
68B: Net----------	Severe: wetness, percs slowly.	Severe: seepage, wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Poor: seepage, small stones, wetness.

TABLE 14.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
68B:					
Witbeck	Severe: ponding, percs slowly.	Severe: excess humus, ponding.	Severe: ponding.	Severe: ponding.	Poor: small stones, ponding.
69A:					
Karlin	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Poor: seepage.
Croswell	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy.
70B:					
Sundog	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
Channing	Severe: wetness, poor filter.	Severe: seepage, wetness, large stones.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, small stones.
71D:					
Karlin	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
Vilas	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
Rock outcrop.					
72B---------- Karlin	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
72D---------- Karlin	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
72F---------- Karlin	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: seepage, slope, too sandy.	Severe: seepage, slope.	Poor: seepage, too sandy, slope.
73A---------- Gaastra	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
74A---------- Au Gres	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, wetness.
75---------- Kinross	Severe: ponding, poor filter.	Severe: seepage, excess humus, ponding.	Severe: seepage, ponding, too sandy.	Severe: seepage, ponding.	Poor: seepage, too sandy, ponding.

TABLE 14.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
76---------- Ensley	Severe: ponding.	Severe: seepage, ponding.	Severe: seepage, ponding.	Severe: seepage, ponding.	Poor: ponding.
77B---------- Vilas	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
77D---------- Vilas	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
78B:					
Vilas----------	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
Karlin----------	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
78D:					
Vilas----------	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
Karlin----------	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
78F:					
Vilas----------	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: seepage, slope, too sandy.	Severe: seepage, slope.	Poor: seepage, too sandy, slope.
Karlin----------	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: seepage, slope, too sandy.	Severe: seepage, slope.	Poor: seepage, too sandy, slope.
79A, 79B---------- Fence	Severe: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Fair: wetness.
79D---------- Fence	Severe: percs slowly.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: slope.
80B---------- Pence	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
80D---------- Pence	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
80F---------- Pence	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: seepage, slope, too sandy.	Severe: seepage, slope.	Poor: seepage, too sandy, small stones.

TABLE 14.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
82B---------- Keweenaw	Moderate: percs slowly.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Poor: seepage, small stones.
82D---------- Keweenaw	Moderate: percs slowly, slope.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Poor: seepage, small stones.
82F---------- Keweenaw	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: seepage, small stones, slope.
100B: Keweenaw----------	Moderate: percs slowly.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Poor: seepage, small stones.
Karlin----------	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
100D: Keweenaw----------	Moderate: percs slowly, slope.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Poor: seepage, small stones.
Karlin----------	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
101B: Trenary----------	Moderate: percs slowly.	Severe: seepage.	Slight----------	Slight----------	Good.
Solona----------	Severe: wetness.	Moderate: seepage.	Severe: wetness.	Severe: wetness.	Poor: small stones, wetness.
102B---------- Escanaba	Moderate: percs slowly.	Severe: seepage.	Severe: too sandy.	Severe: seepage.	Poor: seepage, too sandy.
103B: Wabeno----------	Severe: wetness, percs slowly.	Severe: seepage, wetness.	Severe: seepage, wetness.	Moderate: wetness.	Fair: small stones, wetness, thin layer.
Sarona----------	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too sandy.	Slight----------	Poor: seepage.
103D: Wabeno----------	Severe: wetness, percs slowly.	Severe: seepage, slope, wetness.	Severe: seepage, wetness.	Moderate: wetness, slope.	Fair: small stones, slope, wetness.
Sarona----------	Moderate: slope, percs slowly.	Severe: slope.	Moderate: slope, too sandy.	Moderate: slope.	Poor: seepage.

TABLE 14.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
104A---------- Stambaugh	Severe: wetness, percs slowly, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Poor: thin layer.
104B---------- Stambaugh	Severe: percs slowly, poor filter.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Poor: thin layer.
104D---------- Stambaugh	Severe: percs slowly, poor filter.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Poor: thin layer.
105D: Wabeno----------	Severe: percs slowly, wetness.	Severe: slope, wetness, seepage.	Severe: seepage, wetness.	Moderate: slope, wetness.	Poor: seepage, small stones.
Rock outcrop.					
106D---------- Champion	Severe: wetness, percs slowly.	Severe: seepage, slope.	Severe: seepage, wetness.	Severe: wetness.	Poor: seepage, wetness.
107B---------- Sarona	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too sandy.	Slight----------	Poor: seepage.
107D---------- Sarona	Moderate: slope, percs slowly.	Severe: slope.	Moderate: slope, too sandy.	Moderate: slope.	Poor: seepage.
107F---------- Sarona	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: seepage, slope.
108D: Sarona----------	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope, too sandy.	Moderate: slope.	Poor: seepage.
Rock outcrop.					
108F: Sarona----------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: seepage, slope.
Rock outcrop.					
109D---------- Udorthents	Variable---------	Variable---------	Variable---------	Variable---------	Variable.
110B: Petticoat----------	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Poor: thin layer.
Wabeno----------	Severe: percs slowly, wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Moderate: wetness.	Poor: seepage, small stones.

TABLE 14.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
110D: Petticoat	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Poor: thin layer.
Wabeno	Severe: percs slowly, wetness.	Severe: slope, wetness, seepage.	Severe: seepage, wetness.	Moderate: slope, wetness.	Poor: seepage, small stones.
111B: Champion	Severe: wetness, percs slowly.	Severe: seepage.	Severe: seepage, wetness.	Severe: wetness.	Poor: seepage, wetness.
Net	Severe: wetness, percs slowly.	Severe: seepage, wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Poor: seepage, small stones, wetness.
112B--Sundog	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
112D--Sundog	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
112F--Sundog	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: seepage, slope, too sandy.	Severe: seepage, slope.	Poor: seepage, too sandy, small stones.
113A--Sundog	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, small stones.
114A: Minocqua	Severe: ponding, poor filter.	Severe: seepage, excess humus, ponding.	Severe: seepage, ponding, too sandy.	Severe: seepage, ponding.	Poor: seepage, too sandy, small stones.
Channing	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, small stones.
115A--Manitowish	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, small stones.
116B--Wabeno	Severe: percs slowly.	Moderate: seepage, slope.	Moderate: too sandy, large stones.	Slight	Poor: seepage, small stones.

TABLE 14.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
116D---------- Wabeno	Severe: percs slowly.	Severe: slope.	Moderate: slope, too sandy, large stones.	Moderate: slope.	Poor: seepage, small stones.
121B---------- Peavy	Severe: wetness, percs slowly.	Moderate: seepage, slope.	Severe: wetness.	Moderate: wetness.	Poor: small stones.
121D---------- Peavy	Severe: percs slowly.	Severe: slope.	Moderate: slope.	Moderate: slope.	Poor: small stones.
122B:					
Sarona----------	Moderate: percs slowly.	Moderate: seepage, slope, large stones.	Moderate: too sandy, large stones.	Slight----------	Poor: seepage, small stones.
Karlin----------	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
122D:					
Sarona----------	Moderate: slope, percs slowly.	Severe: slope.	Moderate: slope, too sandy.	Moderate: slope.	Poor: seepage.
Karlin----------	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
123B---------- Ocqueoc	Severe: percs slowly.	Severe: seepage.	Severe: too sandy.	Severe: seepage.	Poor: too sandy.
123D---------- Ocqueoc	Severe: percs slowly.	Severe: seepage, slope.	Severe: too sandy.	Severe: seepage.	Poor: too sandy.
124B, 125B:					
Wabeno----------	Severe: percs slowly, wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Moderate: wetness.	Poor: seepage, small stones.
Net----------	Severe: wetness, percs slowly.	Severe: seepage, wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Poor: seepage, small stones, wetness.
126B---------- Champion	Severe: wetness, percs slowly.	Severe: seepage.	Severe: seepage, wetness.	Severe: wetness.	Poor: seepage, wetness.
126D---------- Champion	Severe: wetness, percs slowly.	Severe: seepage, slope.	Severe: seepage, wetness.	Severe: wetness.	Poor: seepage, wetness.
126F---------- Champion	Severe: percs slowly, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: slope.	Poor: seepage, slope.
127D---------- Goodman	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope, too sandy.	Moderate: slope.	Poor: seepage, thin layer.

TABLE 14.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
128B:					
Goodman	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too sandy.	Slight	Poor: seepage, thin layer.
Wabeno	Severe: wetness, percs slowly.	Severe: seepage, wetness.	Severe: seepage, wetness.	Moderate: wetness.	Poor: seepage, small stones.
Sundog	Moderate: percs slowly.	Severe: seepage.	Severe: seepage.	Slight	Fair: thin layer.
128D:					
Goodman	Moderate: percs slowly, slope.	Severe: slope, seepage.	Moderate: slope, too sandy.	Moderate: slope.	Poor: seepage, thin layer.
Wabeno	Severe: wetness, percs slowly.	Severe: seepage, slope, wetness.	Severe: seepage, wetness.	Moderate: wetness, slope.	Poor: seepage, small stones.
Sundog	Moderate: percs slowly, slope.	Severe: seepage, slope.	Severe: seepage.	Moderate: slope.	Fair: slope, thin layer.
128F:					
Goodman	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: seepage, small stones, slope.
Sundog	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: slope.
163B Sagola	Slight	Severe: seepage.	Severe: seepage.	Severe: seepage.	Poor: seepage.
163D Sagola	Moderate: slope.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Poor: seepage.
163F Sagola	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: seepage, slope.
164B Alstad	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
165B:					
Sundog	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
Channing	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, small stones.

TABLE 14.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
166F---------- Soperton	Severe: percs slowly, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: slope.	Poor: seepage, small stones, slope.
167A---------- Monico	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: small stones, wetness.
168F: Soperton----------	Severe: percs slowly, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: slope.	Poor: seepage, small stones, slope.
Rock outcrop.					
500B---------- Wabeno	Severe: percs slowly, wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Moderate: wetness.	Poor: seepage, small stones.
500D---------- Wabeno	Severe: percs slowly, wetness.	Severe: slope, wetness, seepage.	Severe: seepage, wetness.	Moderate: slope, wetness.	Poor: seepage, small stones.
501F---------- Soperton	Severe: percs slowly, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: slope.	Poor: seepage, small stones, slope.
502B---------- Champion	Severe: wetness, percs slowly.	Severe: seepage.	Severe: seepage, wetness.	Severe: wetness.	Poor: seepage, wetness.
502D---------- Champion	Severe: wetness, percs slowly.	Severe: seepage, slope.	Severe: seepage, wetness.	Severe: wetness.	Poor: seepage, wetness.
502F---------- Champion	Severe: percs slowly, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: slope.	Poor: seepage, slope.
503A---------- Typic Fragiaquods	Severe: wetness, percs slowly.	Moderate: seepage.	Severe: wetness.	Severe: wetness.	Poor: seepage, wetness.
504B---------- Pence	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
504D---------- Pence	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
504F---------- Pence	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: seepage, slope, too sandy.	Severe: seepage, slope.	Poor: seepage, too sandy, small stones.

TABLE 14.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
505, 506---------- Humaquepts	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Poor: ponding.
507A---------- Monico	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
508A---------- Beechwood	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
509A---------- Typic Dystrochrepts	Moderate: wetness, percs slowly, large stones.	Moderate: seepage, wetness, large stones.	Severe: wetness.	Moderate: wetness.	Poor: large stones.
510---------- Borosaprists	Severe: ponding.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding.	Poor: ponding, excess humus.
511B---------- Typic Dystrochrepts	Moderate: percs slowly.	Severe: seepage.	Severe: seepage.	Slight----------	Fair: small stones, thin layer.
511D---------- Typic Dystrochrepts	Moderate: percs slowly, slope.	Severe: seepage, slope.	Severe: seepage.	Moderate: slope.	Fair: small stones, slope, thin layer.
511F---------- Typic Dystrochrepts	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: slope.	Poor: slope.
512---------- Borosaprists	Severe: ponding.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding.	Poor: ponding, excess humus.
513B---------- Entic Haplorthods	Severe: poor filter.	Severe: seepage.	Severe: seepage, wetness, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
514B---------- Stambaugh	Severe: wetness, percs slowly.	Severe: seepage, wetness.	Severe: seepage, wetness.	Severe: wetness.	Poor: thin layer, wetness.
515---------- Borosaprists	Severe: flooding, wetness, percs slowly.	Severe: seepage, flooding, excess humus.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Poor: wetness, excess humus.
516B, 516D---------- Fragiorthods	Variable---------	Variable---------	Variable---------	Variable---------	Variable.
517B---------- Lode	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
517D---------- Lode	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.

TABLE 14.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
517F---------- Lode	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: seepage, slope, too sandy.	Severe: seepage, slope.	Poor: seepage, too sandy, small stones.
518---------- Humaquepts	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Poor: ponding.
519A---------- Monico	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: small stones, wetness.
520B---------- Haplorthods	Variable---------	Variable---------	Variable---------	Variable---------	Variable.
521B---------- Pence	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
522D: Entic Fragiorthods-	Severe: wetness, percs slowly.	Severe: seepage, wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Poor: seepage, small stones, wetness.
Typic Dystrochrepts	Variable---------	Variable---------	Variable---------	Variable---------	Variable.
523B: Entic Haplorthods--	Variable---------	Variable---------	Variable---------	Variable---------	Variable.
Typic Haplaquepts--	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Poor: ponding.
524D, 524F---------- Haplorthods	Variable---------	Variable---------	Variable---------	Variable---------	Variable.
525B---------- Entic Haplorthods	Severe: poor filter, large stones.	Severe: seepage, large stones.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, large stones.
525D, 525F---------- Entic Haplorthods	Severe: poor filter, slope, large stones.	Severe: seepage, slope, large stones.	Severe: seepage, slope, too sandy.	Severe: seepage, slope.	Poor: seepage, too sandy, large stones.
527: Borohemists--------	Severe: ponding.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding.	Poor: ponding, excess humus.
Borosaprists-------	Severe: ponding.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding.	Poor: ponding, excess humus.
528, 529---------- Borohemists	Severe: ponding.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding.	Poor: ponding, excess humus.

TABLE 14.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
530:					
Borosaprists	Severe: ponding.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding.	Poor: ponding, excess humus.
Histic Humaquepts	Severe: ponding.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding.	Poor: ponding, excess humus.
531C---------- Champion	Severe: wetness, percs slowly.	Moderate: seepage, slope.	Severe: wetness.	Severe: wetness.	Poor: seepage, wetness.
532F:					
Champion	Severe: percs slowly, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: slope.	Poor: seepage, slope.
Haplorthods	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, slope.
533B---------- Entic Fragiorthods	Severe: wetness, percs slowly.	Severe: seepage, wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Poor: seepage, small stones, wetness.
534B---------- Entic Haplorthods	Severe: poor filter.	Severe: seepage.	Severe: cemented pan, seepage.	Severe: seepage.	Poor: seepage, too sandy.
534D---------- Entic Haplorthods	Severe: poor filter.	Severe: seepage, slope.	Severe: cemented pan, seepage.	Severe: seepage.	Poor: seepage, too sandy.
535B---------- Vilas	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
535D---------- Vilas	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
536F---------- Entic Haplorthods	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: seepage, slope, too sandy.	Severe: seepage, slope.	Poor: seepage, too sandy, small stones.
537B---------- Haplorthods	Variable---------	Variable---------	Variable---------	Variable---------	Variable.
538B, 538D---------- Entic Haplorthods	Variable---------	Variable---------	Variable---------	Variable---------	Variable.
539B---------- Karlin	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
540B:					
Entic Fragiorthods	Variable---------	Variable---------	Variable---------	Variable---------	Variable.
Typic Fragiaquods	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.

TABLE 14.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
540B: Borosaprists	Severe: ponding.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding.	Poor: ponding, excess humus.
541 Fluvaquents	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
542B Gogebic	Severe: wetness, percs slowly.	Moderate: seepage, slope.	Severe: wetness.	Severe: wetness.	Poor: wetness.
542D Gogebic	Severe: wetness, percs slowly.	Severe: slope.	Severe: wetness.	Severe: wetness.	Poor: wetness.
542F Gogebic	Severe: percs slowly, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
543A Haplaquods	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
544C, 544D, 544F Haplorthods	Variable	Variable	Variable	Variable	Variable.
545B, 545D, 545F Haplorthods	Variable	Variable	Variable	Variable	Variable.
546C, 546D, 546F Entic Haplorthods	Variable	Variable	Variable	Variable	Variable.
547B Haplorthods	Variable	Variable	Variable	Variable	Variable.
548: Humaquepts	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
Terric Borosaprists	Severe: flooding, wetness, percs slowly.	Severe: seepage, flooding, excess humus.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Poor: wetness, excess humus.
549B: Karlin	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
Pence	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
549D: Karlin	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.

TABLE 14.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
549D:					
Pence	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
549F:					
Karlin	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: seepage, slope, too sandy.	Severe: seepage, slope.	Poor: seepage, too sandy, slope.
Pence	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: seepage, slope, too sandy.	Severe: seepage, slope.	Poor: seepage, too sandy, small stones.
550 Terric Borosaprists	Severe: flooding, wetness, percs slowly.	Severe: seepage, flooding, excess humus.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Poor: wetness, excess humus.
551A Typic Fragiorthods	Variable	Variable	Variable	Variable	Variable.
552F Kalkaska	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: seepage, slope, too sandy.	Severe: seepage, slope.	Poor: seepage, too sandy, slope.
553D Kalkaska	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
554B Alfic Fragiorthods	Severe: wetness, percs slowly.	Severe: seepage.	Severe: seepage, wetness.	Severe: wetness.	Poor: small stones, wetness.
555B Entic Haplorthods	Variable	Variable	Variable	Variable	Variable.
556 Haplaquods	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Poor: ponding.

TABLE 15.--CONSTRUCTION MATERIALS

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
50:				
Aquents	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Histosols	Poor: wetness, low strength.	Improbable: excess humus.	Improbable: excess humus.	Poor: excess humus, wetness.
51:				
Lupton	Poor: wetness.	Improbable: excess humus.	Improbable: excess humus.	Poor: excess humus, wetness.
Cathro	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess humus, wetness.
Humaquepts	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
52:				
Greenwood	Poor: wetness, low strength.	Improbable: excess humus.	Improbable: excess humus.	Poor: excess humus, wetness.
Merwin	Poor: wetness.	Improbable: excess humus.	Improbable: excess humus.	Poor: excess humus, wetness.
53:				
Waucedah	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Cathro	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer, wetness.
54. Pits				
55A Oconto	Good	Probable	Probable	Poor: small stones, area reclaim.
55B, 55D Oconto	Good	Probable	Probable	Poor: small stones, area reclaim.
56. Pits and dumps				
57A, 57B, 57D Padus	Good	Probable	Probable	Poor: small stones, area reclaim.

TABLE 15.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
57F Padus	Poor: slope.	Probable	Probable	Poor: small stones, area reclaim, slope.
58B Trenary	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
58D Trenary	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, slope.
59A Solona	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
60D: Trenary	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, slope.
Rock outcrop.				
64A Channing	Poor: wetness.	Probable	Probable	Poor: small stones, area reclaim, wetness.
65 Witbeck	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, wetness.
67B Net	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, wetness.
68B: Net	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, wetness.
Witbeck	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, wetness.
69A: Karlin	Fair: wetness.	Probable	Improbable: too sandy.	Fair: too sandy, small stones, thin layer.
Croswell	Fair: wetness.	Probable	Improbable: too sandy.	Poor: too sandy.

TABLE 15.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
70B:				
Sundog	Good	Probable	Probable	Poor: too sandy, small stones, area reclaim.
Channing	Poor: wetness.	Probable	Probable	Poor: too sandy, small stones, area reclaim.
71D:				
Karlin	Good	Probable	Improbable: too sandy.	Fair: too sandy, small stones, slope.
Vilas	Good	Probable	Improbable: too sandy.	Poor: too sandy, small stones.
Rock outcrop.				
72B---- Karlin	Good	Probable	Improbable: too sandy.	Fair: too sandy, small stones.
72D---- Karlin	Good	Probable	Improbable: too sandy.	Fair: too sandy, small stones, slope.
72F---- Karlin	Poor: slope.	Probable	Improbable: too sandy.	Poor: slope.
73A---- Gaastra	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
74A---- Au Gres	Poor: wetness.	Probable	Improbable: too sandy.	Poor: too sandy, wetness.
75---- Kinross	Poor: wetness.	Probable	Improbable: too sandy.	Poor: too sandy, wetness.
76---- Ensley	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, wetness.
77B, 77D---- Vilas	Good	Probable	Improbable: too sandy.	Poor: too sandy.
78B:				
Vilas	Good	Probable	Improbable: too sandy.	Poor: too sandy.
Karlin	Good	Probable	Improbable: too sandy.	Fair: too sandy, small stones.

TABLE 15.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
78D:				
Vilas	Good	Probable	Improbable: too sandy.	Poor: too sandy.
Karlin	Good	Probable	Improbable: too sandy.	Fair: too sandy, small stones, slope.
78F:				
Vilas	Poor: slope.	Probable	Improbable: too sandy.	Poor: too sandy, slope.
Karlin	Poor: slope.	Probable	Improbable: too sandy.	Poor: slope.
79A, 79B Fence	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
79D Fence	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: slope.
80B, 80D Pence	Good	Probable	Probable	Poor: too sandy, small stones, area reclaim.
80F Pence	Poor: slope.	Probable	Probable	Poor: too sandy, small stones, area reclaim.
82B, 82D Keweenaw	Good	Probable	Improbable: too sandy.	Poor: large stones, area reclaim.
82F Keweenaw	Poor: slope.	Probable	Improbable: too sandy.	Poor: slope, large stones, area reclaim.
100B:				
Keweenaw	Good	Probable	Improbable: too sandy.	Poor: large stones, area reclaim.
Karlin	Good	Probable	Improbable: too sandy.	Fair: too sandy, small stones.
100D:				
Keweenaw	Good	Probable	Improbable: too sandy.	Poor: too sandy, large stones, area reclaim.

TABLE 15.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
100D: Karlin	Good	Probable	Improbable: too sandy.	Fair: too sandy, small stones, slope.
101B: Trenary	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
Solona	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
102B--Escanaba	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy, large stones.
103B, 103D: Wabeno	Fair: wetness.	Probable	Probable	Poor: small stones.
Sarona	Good	Probable	Probable	Poor: small stones, area reclaim.
104A--Stambaugh	Fair: wetness.	Probable	Probable	Poor: area reclaim.
104B, 104D--Stambaugh	Good	Probable	Probable	Poor: area reclaim.
105D: Wabeno	Fair: wetness.	Probable	Probable	Poor: small stones.
Rock outcrop.				
106D--Champion	Fair: wetness.	Probable	Improbable: too sandy.	Poor: small stones, area reclaim.
107B, 107D--Sarona	Good	Probable	Probable	Poor: small stones, area reclaim.
107F--Sarona	Poor: slope.	Probable	Probable	Poor: small stones, slope, area reclaim.
108D: Sarona	Good	Probable	Probable	Poor: small stones, area reclaim.
Rock outcrop.				

TABLE 15.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
108F: Sarona	Poor: slope.	Probable	Probable	Poor: small stones, slope, area reclaim.
Rock outcrop.				
109D---- Udorthents	Variable	Variable	Variable	Variable.
110B: Petticoat	Fair: wetness.	Improbable	Probable	Poor: large stones, area reclaim.
Wabeno	Fair: wetness.	Probable	Probable	Poor: small stones.
110D: Petticoat	Good	Improbable	Probable	Poor: large stones, area reclaim.
Wabeno	Fair: wetness.	Probable	Probable	Poor: small stones.
111B: Champion	Fair: wetness.	Probable	Improbable: too sandy.	Poor: small stones, area reclaim.
Net	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, wetness.
112B, 112D---- Sundog	Good	Probable	Probable	Poor: too sandy, small stones, area reclaim.
112F---- Sundog	Poor: slope.	Probable	Probable	Poor: too sandy, small stones, area reclaim.
113A---- Sundog	Fair: wetness.	Probable	Probable	Poor: small stones, area reclaim.
114A: Minocqua	Poor: wetness.	Probable	Probable	Poor: excess humus, small stones, area reclaim.

TABLE 15.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
114A: Channing	Poor: wetness.	Probable	Probable	Poor: small stones, area reclaim, wetness.
115A Manitowish	Good	Probable	Probable	Poor: small stones, area reclaim, too sandy.
116B, 116D Wabeno	Fair: wetness.	Probable	Probable	Poor: small stones.
121B Peavy	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
121D Peavy	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
122B: Sarona	Good	Probable	Probable	Poor: small stones, area reclaim.
Karlin	Good	Probable	Improbable: too sandy.	Fair: too sandy, small stones.
122D: Sarona	Good	Probable	Probable	Poor: small stones.
Karlin	Good	Probable	Improbable: too sandy.	Fair: too sandy, small stones, slope.
123B, 123D Ocqueoc	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy.
124B, 125B: Wabeno	Fair: wetness.	Probable	Probable	Poor: small stones.
Net	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, wetness.
126B, 126D Champion	Fair: wetness.	Probable	Improbable: too sandy.	Poor: small stones, area reclaim.

TABLE 15.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
126F---------- Champion	Poor: slope.	Improbable: thin layer.	Improbable: too sandy.	Poor: small stones, area reclaim, slope.
127D---------- Goodman	Good----------	Probable----------	Probable----------	Poor: small stones.
128B: Goodman----------	Good----------	Probable----------	Probable----------	Poor: small stones.
Wabeno----------	Fair: wetness.	Probable----------	Probable----------	Poor: small stones.
Sundog----------	Good----------	Probable----------	Improbable: too sandy.	Fair: small stones.
128D: Goodman----------	Good----------	Probable----------	Probable----------	Poor: small stones.
Wabeno----------	Fair: wetness.	Probable----------	Probable----------	Poor: small stones.
Sundog----------	Good----------	Probable----------	Improbable: too sandy.	Fair: slope, small stones.
128F: Goodman----------	Poor: slope.	Probable----------	Probable----------	Poor: small stones, area reclaim, slope.
Sundog----------	Poor: slope.	Probable----------	Improbable: too sandy.	Poor: slope.
163B, 163D---------- Sagola	Good----------	Probable----------	Improbable: too sandy.	Poor: small stones.
163F---------- Sagola	Poor: slope.	Probable----------	Improbable: too sandy.	Poor: small stones, slope.
164B---------- Alstad	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
165B: Sundog----------	Good----------	Probable----------	Probable----------	Poor: too sandy, small stones, area reclaim.
Channing----------	Poor: wetness.	Probable----------	Probable----------	Poor: small stones, area reclaim, wetness.

TABLE 15.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
166F Soperton	Poor: slope.	Probable	Probable	Poor: small stones, area reclaim, slope.
167A Monico	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
168F: Soperton	Poor: slope.	Probable	Probable	Poor: small stones, area reclaim, slope.
Rock outcrop.				
500B, 500D Wabeno	Fair: wetness.	Probable	Probable	Poor: large stones, area reclaim.
501F Soperton	Poor: slope.	Probable	Probable	Poor: small stones, area reclaim, slope.
502B, 502D Champion	Fair: wetness.	Probable	Improbable: too sandy.	Poor: small stones, area reclaim.
502F Champion	Poor: slope.	Improbable: thin layer.	Improbable: too sandy.	Poor: small stones, area reclaim, slope.
503A Typic Fragiaquods	Poor: wetness.	Probable	Improbable: too sandy.	Poor: area reclaim, small stones, wetness.
504B, 504D Pence	Good	Probable	Probable	Poor: small stones, area reclaim.
504F Pence	Poor: slope.	Probable	Probable	Poor: too sandy, small stones, slope.
505, 506 Humaquepts	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
507A Monico	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
508A Beechwood	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim.

TABLE 15.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
509A---------- Typic Dystrochrepts	Fair: large stones.	Improbable: excess fines.	Improbable: excess fines.	Poor: large stones, area reclaim.
510---------- Borosaprists	Poor: wetness.	Improbable: excess humus.	Improbable: excess humus.	Poor: excess humus, wetness.
511B, 511D---------- Typic Dystrochrepts	Good----------	Probable----------	Probable----------	Poor: small stones, area reclaim.
511F---------- Typic Dystrochrepts	Poor: slope.	Probable----------	Probable----------	Poor: small stones, area reclaim, slope.
512---------- Borosaprists	Poor: wetness.	Improbable: excess humus.	Improbable: excess humus.	Poor: excess humus, wetness.
513B---------- Entic Haplorthods	Good----------	Probable----------	Improbable: too sandy.	Poor: small stones.
514B---------- Stambaugh	Fair: wetness.	Probable----------	Probable----------	Poor: area reclaim.
515---------- Borosaprists	Poor: wetness.	Improbable: excess humus.	Improbable: excess humus.	Poor: excess humus, wetness.
516B, 516D---------- Fragiorthods	Variable----------	Variable----------	Variable----------	Variable.
517B, 517D---------- Lode	Good----------	Probable----------	Probable----------	Poor: small stones, area reclaim.
517F---------- Lode	Poor: slope.	Probable----------	Probable----------	Poor: small stones, area reclaim, slope.
518---------- Humaquepts	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
519A---------- Monico	Fair: wetness.	Improbable: excess fines.	Improbable: too sandy.	Poor: small stones.
520B---------- Haplorthods	Variable----------	Variable----------	Variable----------	Variable.
521B---------- Pence	Good----------	Probable----------	Probable----------	Poor: too sandy, small stones, area reclaim.
522D: Entic Fragiorthods---	Fair: wetness.	Probable----------	Improbable: too sandy.	Poor: area reclaim, small stones.
Typic Dystrochrepts--	Variable----------	Variable----------	Variable----------	Variable.

TABLE 15.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
523B:				
Entic Haplorthods	Variable	Improbable: excess fines.	Improbable: excess fines.	Variable.
Typic Haplaquepts	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
524D, 524F Haplorthods	Variable	Variable	Variable	Variable.
525B, 525D Entic Haplorthods	Poor: large stones.	Improbable: large stones.	Improbable: too sandy, large stones.	Poor: too sandy, large stones, area reclaim.
525F Entic Haplorthods	Poor: large stones, slope.	Improbable: large stones.	Improbable: too sandy, large stones.	Poor: too sandy, large stones, area reclaim.
527:				
Borohemists	Poor: wetness.	Improbable: excess humus.	Improbable: excess humus.	Poor: excess humus, wetness.
Borosaprists	Poor: wetness.	Improbable: excess humus.	Improbable: excess humus.	Poor: excess humus, wetness.
528, 529 Borohemists	Poor: wetness.	Improbable: excess humus.	Improbable: excess humus.	Poor: excess humus, wetness.
530:				
Borosaprists	Poor: wetness.	Improbable: excess humus.	Improbable: excess humus.	Poor: excess humus, wetness.
Histic Humaquepts	Poor: thin layer, wetness.	Improbable: excess humus.	Improbable: excess humus.	Poor: excess humus, wetness.
531C Champion	Fair: wetness.	Probable	Improbable: too sandy.	Poor: small stones, area reclaim.
532F:				
Champion	Poor: slope.	Improbable: thin layer.	Improbable: too sandy.	Poor: small stones, area reclaim, slope.
Haplorthods	Variable	Variable	Variable	Variable.
533B Entic Fragiorthods	Fair: wetness.	Probable	Improbable: too sandy.	Poor: area reclaim, small stones.
534B, 534D Entic Haplorthods	Good	Probable	Improbable: too sandy.	Poor: too sandy.

TABLE 15.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
535B, 535D---------- Vilas	Good----------	Probable----------	Improbable: too sandy.	Poor: too sandy.
536F---------- Entic Haplorthods	Poor: slope.	Probable----------	Probable----------	Poor: too sandy, small stones, area reclaim.
537B---------- Entic Haplorthods	Variable----------	Variable----------	Variable----------	Variable.
538B, 538D---------- Entic Haplorthods	Variable----------	Variable----------	Variable----------	Variable.
539B---------- Karlin	Good----------	Probable----------	Improbable: too sandy.	Poor: too sandy.
540B:				
Entic Fragiorthods---	Variable----------	Variable----------	Variable----------	Variable.
Typic Fragiaquods----	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Borosaprists---------	Poor: wetness.	Improbable: excess humus.	Improbable: excess humus.	Poor: excess humus, wetness.
541---------- Fluvaquents	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
542B, 542D---------- Gogebic	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
542F---------- Gogebic	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
543A---------- Haplaquods	Variable----------	Variable----------	Variable----------	Variable.
544C, 544D, 544F------ Haplorthods	Variable----------	Variable----------	Variable----------	Variable.
545B, 545D, 545F------ Haplorthods	Variable----------	Variable----------	Variable----------	Variable.
546C, 546D, 546F------ Entic Haplorthods	Variable----------	Variable----------	Variable----------	Variable.
547B---------- Haplorthods	Variable----------	Variable----------	Variable----------	Variable.
548:				
Humaquepts----------	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Terric Borosaprists--	Poor: wetness.	Improbable: excess humus.	Improbable: excess humus.	Poor: excess humus, wetness.

TABLE 15.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
549B:				
Karlin	Good	Probable	Improbable: too sandy.	Fair: too sandy, small stones, thin layer.
Pence	Good	Probable	Probable	Poor: too sandy, small stones, area reclaim.
549D:				
Karlin	Good	Probable	Improbable: too sandy.	Fair: too sandy, small stones, slope.
Pence	Good	Probable	Probable	Poor: too sandy, small stones, area reclaim.
549F:				
Karlin	Poor: slope.	Probable	Improbable: too sandy.	Poor: slope.
Pence	Poor: slope.	Probable	Probable	Poor: too sandy, small stones, area reclaim.
550 Terric Borosaprists	Poor: wetness.	Improbable: excess humus.	Improbable: excess humus.	Poor: excess humus, wetness.
551A Typic Fragiorthods	Variable	Variable	Variable	Variable.
552F Kalkaska	Poor: slope.	Probable	Improbable: too sandy.	Poor: too sandy, slope.
553D Kalkaska	Good	Probable	Improbable: too sandy.	Poor: too sandy.
554B Alfic Fragiorthods	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones.
555B Entic Haplorthods	Variable	Variable	Variable	Variable.
556 Haplaquods	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.

TABLE 16.--WATER MANAGEMENT

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not evaluated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Terraces and diversions	Grassed waterways
50:						
Aquents	Slight	Severe: ponding.	Slight	Ponding, frost action.	Ponding	Wetness.
Histosols	Slight	Severe: excess humus, ponding.	Slight	Ponding, frost action.	Ponding	Wetness.
51:						
Lupton	Severe: seepage.	Severe: excess humus, ponding.	Severe: slow refill.	Ponding, subsides, frost action.	Ponding, soil blowing.	Wetness.
Cathro	Severe: seepage.	Severe: piping, ponding.	Severe: slow refill.	Ponding, subsides, frost action.	Ponding, soil blowing.	Wetness.
Humaquepts	Slight	Severe: ponding.	Slight	Ponding, frost action.	Ponding	Wetness.
52:						
Greenwood	Severe: seepage.	Severe: excess humus, ponding.	Moderate: slow refill.	Ponding, frost action.	Ponding	Wetness.
Merwin	Severe: seepage.	Severe: excess humus, ponding.	Moderate: slow refill.	Ponding, subsides, frost action.	Ponding	Wetness.
53:						
Waucedah	Moderate: seepage.	Severe: piping, ponding.	Severe: slow refill.	Ponding, flooding, frost action.	Ponding, soil blowing.	Wetness.
Cathro	Severe: seepage.	Severe: piping, ponding.	Severe: slow refill.	Ponding, flooding, frost action.	Ponding, soil blowing.	Wetness.
54. Pits						
55A Oconto	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Too sandy, soil blowing.	Droughty.
55B Oconto	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Too sandy, soil blowing.	Droughty.
55D Oconto	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, too sandy, soil blowing.	Slope, droughty.
56. Pits and dumps						

TABLE 16.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Terraces and diversions	Grassed waterways
57A, 57B---------- Padus	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Too sandy, soil blowing.	Droughty, rooting depth.
57D, 57F---------- Padus	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, too sandy.	Slope, droughty, rooting depth.
58B---------- Trenary	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Soil blowing---	Rooting depth.
58D---------- Trenary	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, soil blowing.	Slope, rooting depth.
59A---------- Solona	Moderate: seepage.	Severe: piping, wetness.	Moderate: slow refill.	Frost action	Wetness, erodes easily.	Erodes easily, wetness, droughty.
60D: Trenary----------	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, soil blowing.	Slope, rooting depth.
Rock outcrop.						
64A---------- Channing	Severe: seepage.	Severe: seepage, wetness.	Severe: cutbanks cave.	Frost action, cutbanks cave.	Wetness, too sandy, soil blowing.	Wetness, droughty.
65---------- Witbeck	Moderate: seepage.	Severe: piping, ponding.	Severe: slow refill.	Ponding, frost action, cutbanks cave.	Large stones, ponding.	Large stones, wetness, droughty.
67B---------- Net	Severe: seepage.	Severe: seepage, wetness.	Severe: no water.	Percs slowly, frost action, cutbanks cave.	Large stones, wetness, rooting depth.	Large stones, wetness, droughty.
68B: Net----------	Severe: seepage.	Severe: seepage, wetness.	Severe: no water.	Percs slowly, frost action.	Large stones, wetness, rooting depth.	Large stones, wetness, droughty.
Witbeck----------	Moderate: seepage.	Severe: seepage, piping, ponding.	Severe: slow refill, cutbanks cave.	Ponding, frost action, cutbanks cave.	Large stones, ponding.	Large stones, wetness, droughty.
69A: Karlin----------	Severe: seepage.	Severe: seepage, piping.	Severe: cutbanks cave.	Cutbanks cave	Wetness, too sandy, soil blowing.	Droughty.
Croswell----------	Severe: seepage.	Severe: seepage, piping.	Severe: cutbanks cave.	Cutbanks cave	Wetness, too sandy.	Droughty.
70B: Sundog----------	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Erodes easily, too sandy, soil blowing.	Erodes easily, droughty.

TABLE 16.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Terraces and diversions	Grassed waterways
70B:						
Channing	Severe: seepage.	Severe: seepage, wetness.	Severe: cutbanks cave.	Frost action, cutbanks cave.	Large stones, wetness, too sandy.	Large stones, wetness, droughty.
71D:						
Karlin	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, too sandy, soil blowing.	Slope, droughty.
Vilas	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, too sandy.	Slope, droughty.
Rock outcrop.						
72B--Karlin	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Too sandy, soil blowing.	Droughty.
72D, 72F--Karlin	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, too sandy, soil blowing.	Slope, droughty.
73A--Gaastra	Moderate: seepage.	Severe: piping, wetness.	Severe: slow refill.	Frost action---	Erodes easily, wetness.	Wetness, erodes easily.
74A--Au Gres	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Cutbanks cave	Wetness, too sandy, soil blowing.	Wetness, droughty.
75--Kinross	Severe: seepage.	Severe: seepage, piping, ponding.	Severe: cutbanks cave.	Ponding, cutbanks cave.	Ponding, too sandy, soil blowing.	Wetness.
76--Ensley	Severe: seepage.	Severe: seepage, piping, ponding.	Moderate: slow refill.	Ponding, frost action.	Ponding, soil blowing.	Wetness.
77B--Vilas	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Too sandy, soil blowing.	Droughty.
77D--Vilas	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, too sandy, soil blowing.	Slope, droughty.
78B:						
Vilas	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Too sandy, soil blowing.	Droughty.
Karlin	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Too sandy, soil blowing.	Droughty.

TABLE 16.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Terraces and diversions	Grassed waterways
78D, 78F:						
Vilas	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, too sandy, soil blowing.	Slope, droughty.
Karlin	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, too sandy, soil blowing.	Slope, droughty.
79A	Slight	Severe: piping.	Severe: no water.	Frost action	Erodes easily, wetness.	Erodes easily.
Fence						
79B	Moderate: slope.	Severe: piping.	Severe: no water.	Frost action, slope.	Erodes easily, wetness.	Erodes easily.
Fence						
79D	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.
Fence						
80B	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Too sandy, soil blowing.	Droughty, rooting depth.
Pence						
80D, 80F	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, too sandy, soil blowing.	Slope, droughty, rooting depth.
Pence						
82B	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Large stones, too sandy, soil blowing.	Large stones, droughty.
Keweenaw						
82D, 82F	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, large stones, too sandy.	Large stones, slope, droughty.
Keweenaw						
100B:						
Keweenaw	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Large stones, too sandy, soil blowing.	Large stones, droughty.
Karlin	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Too sandy, soil blowing.	Droughty.
100D:						
Keweenaw	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, large stones, too sandy.	Large stones, slope, droughty.
Karlin	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, too sandy, soil blowing.	Slope, droughty.
101B:						
Trenary	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Favorable	Rooting depth.
Solona	Moderate: seepage.	Severe: piping, wetness.	Moderate: slow refill.	Frost action	Erodes easily, wetness, soil blowing.	Erodes easily, wetness, droughty.
102B	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Large stones, soil blowing.	Large stones, droughty.
Escanaba						

TABLE 16.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Terraces and diversions	Grassed waterways
103B:						
Wabeno	Severe: seepage.	Severe: seepage.	Severe: no water.	Percs slowly, slope.	Wetness, erodes easily.	Percs slowly, erodes easily, rooting depth.
Sarona	Moderate: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Too sandy, soil blowing.	Droughty.
103D:						
Wabeno	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Percs slowly, slope.	Slope, wetness, erodes easily.	Rooting depth, slope, erodes easily.
Sarona	Severe: slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, too sandy.	Slope, droughty.
104A--- Stambaugh	Severe: seepage.	Severe: piping.	Severe: slow refill, cutbanks cave.	Favorable------	Erodes easily, wetness.	Erodes easily.
104B--- Stambaugh	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Erodes easily	Erodes easily.
104D--- Stambaugh	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.
105D:						
Wabeno	Severe: slope, seepage.	Severe: seepage.	Severe: no water.	Percs slowly, slope.	Slope, wetness, erodes easily.	Rooting depth, slope, erodes easily.
Rock outcrop.						
106D--- Champion	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Percs slowly, slope, cutbanks cave.	Slope, erodes easily, wetness.	Wetness, slope, erodes easily.
107B--- Sarona	Moderate: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Too sandy, soil blowing.	Droughty.
107D, 107F--- Sarona	Severe: slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, too sandy, soil blowing.	Slope, droughty.
108D, 108F:						
Sarona	Severe: slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, too sandy, soil blowing.	Slope, droughty.
Rock outcrop.						
109D--- Udorthents	Variable-------	Variable-------	Variable-------	Variable-------	Variable-------	Variable.
110B:						
Petticoat	Severe: seepage.	Severe: seepage, wetness.	Severe: cutbanks cave.	Slope----------	Large stones, erodes easily, wetness.	Large stones, erodes easily.

TABLE 16.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Terraces and diversions	Grassed waterways
110B:						
Wabeno	Moderate: seepage.	Severe: seepage.	Severe: no water.	Percs slowly, slope.	Wetness, erodes easily.	Percs slowly, erodes easily, rooting depth.
110D:						
Petticoat	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, large stones, erodes easily.	Large stones, slope, erodes easily.
Wabeno	Severe: slope, seepage.	Severe: seepage.	Severe: no water.	Percs slowly, slope.	Slope, wetness, erodes easily.	Rooting depth, slope, erodes easily.
111B:						
Champion	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Percs slowly, slope, cutbanks cave.	Erodes easily, wetness, rooting depth.	Wetness, erodes easily, droughty.
Net	Severe: seepage.	Severe: seepage, wetness.	Severe: no water.	Percs slowly, frost action, cutbanks cave.	Large stones, wetness, rooting depth.	Large stones, wetness, droughty.
112B Sundog	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Erodes easily, too sandy, soil blowing.	Erodes easily, droughty.
112D Sundog	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, erodes easily, too sandy.	Slope, erodes easily, droughty.
112F Sundog	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, too sandy.	Slope, droughty.
113A Sundog	Severe: seepage.	Severe: seepage.	Severe: cutbanks cave.	Cutbanks cave	Erodes easily, wetness, too sandy.	Erodes easily.
114A:						
Minocqua	Severe: seepage.	Severe: seepage, piping, ponding.	Severe: cutbanks cave.	Ponding, frost action, cutbanks cave.	Erodes easily, ponding, too sandy.	Wetness, erodes easily.
Channing	Severe: seepage.	Severe: seepage, wetness.	Severe: cutbanks cave.	Frost action, cutbanks cave.	Wetness, too sandy, soil blowing.	Wetness, droughty.
115A Manitowish	Severe: seepage.	Severe: seepage, piping.	Severe: cutbanks cave.	Deep to water	Too sandy, soil blowing.	Droughty.
116B Wabeno	Moderate: seepage, slope.	Severe: seepage.	Severe: no water.	Percs slowly, slope.	Wetness, erodes easily, rooting depth.	Rooting depth, erodes easily, percs slowly.
116D Wabeno	Severe: slope.	Severe: seepage.	Severe: no water.	Percs slowly, slope.	Slope, wetness, erodes easily.	Rooting depth, slope, erodes easily.

TABLE 16.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Terraces and diversions	Grassed waterways
121B---------- Peavy	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Percs slowly, slope.	Erodes easily, wetness, percs slowly.	Erodes easily, rooting depth, percs slowly.
121D---------- Peavy	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, erodes easily, percs slowly.	Slope, erodes easily, rooting depth.
122B:						
Sarona----------	Moderate: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Soil blowing, too sandy.	Large stones, droughty.
Karlin----------	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Too sandy, soil blowing.	Droughty.
122D:						
Sarona----------	Severe: slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, soil blowing.	Slope, droughty.
Karlin----------	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, too sandy, soil blowing.	Slope, droughty.
123B---------- Ocqueoc	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Erodes easily, too sandy, soil blowing.	Erodes easily, droughty.
123D---------- Ocqueoc	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, erodes easily, too sandy.	Slope, erodes easily, droughty.
124B, 125B:						
Wabeno----------	Moderate: seepage.	Severe: seepage.	Severe: no water.	Percs slowly, slope.	Wetness, erodes easily, rooting depth.	Percs slowly, erodes easily, rooting depth.
Net----------	Severe: seepage.	Severe: seepage, wetness.	Severe: no water.	Percs slowly, frost action.	Large stones, wetness, rooting depth.	Large stones, wetness, droughty.
126B---------- Champion	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Percs slowly, slope, cutbanks cave.	Erodes easily, wetness, rooting depth.	Wetness, erodes easily, droughty.
126D---------- Champion	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Percs slowly, slope, cutbanks cave.	Slope, erodes easily, wetness.	Wetness, slope, erodes easily.
126F---------- Champion	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, erodes easily, rooting depth.	Slope, erodes easily, droughty.
127D---------- Goodman	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.
128B:						
Goodman----------	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Erodes easily	Erodes easily.

TABLE 16.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Terraces and diversions	Grassed waterways
128B:						
Wabeno	Severe: seepage.	Severe: seepage.	Severe: no water.	Percs slowly, slope.	Wetness, erodes easily, rooting depth.	Rooting depth, erodes easily, percs slowly.
Sundog	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Erodes easily, soil blowing.	Erodes easily.
128D:						
Goodman	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.
Wabeno	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Percs slowly, slope.	Slope, wetness, erodes easily.	Rooting depth, slope, erodes easily.
Sundog	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, erodes easily, soil blowing.	Slope, erodes easily.
128F:						
Goodman	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.
Sundog	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, erodes easily, soil blowing.	Slope, erodes easily.
163B Sagola	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Large stones, too sandy, soil blowing.	Large stones, droughty.
163D, 163F Sagola	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, large stones, too sandy.	Large stones, slope, droughty.
164B Alstad	Moderate: seepage, slope.	Moderate: thin layer, piping, wetness.	Severe: no water.	Frost action, slope.	Erodes easily, wetness.	Wetness, erodes easily.
165B:						
Sundog	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Erodes easily, too sandy, soil blowing.	Erodes easily, droughty.
Channing	Severe: seepage.	Severe: seepage, wetness.	Severe: cutbanks cave.	Frost action, cutbanks cave.	Wetness, too sandy, soil blowing.	Wetness, droughty.
166F Soperton	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, large stones, erodes easily.	Large stones, slope, erodes easily.
167A Monico	Moderate: seepage.	Severe: seepage, piping.	Severe: no water.	Frost action---	Large stones, erodes easily, wetness.	Droughty, wetness, erodes easily.

TABLE 16.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Terraces and diversions	Grassed waterways
168F: Soperton	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, large stones, erodes easily.	Large stones, slope, erodes easily.
Rock outcrop.						
500B--Wabeno	Moderate: seepage.	Severe: seepage.	Severe: no water.	Percs slowly, large stone, slope.	Large stones, erodes easily, wetness.	Large stones, erodes easily, droughty.
500D--Wabeno	Severe: slope, seepage.	Severe: seepage.	Severe: no water.	Percs slowly, large stone, slope.	Slope, large stones, erodes easily.	Large stones, slope, erodes easily.
501F--Soperton	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, large stones, erodes easily.	Large stones, slope, erodes easily.
502B--Champion	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Percs slowly, slope, cutbanks cave.	Erodes easily, wetness, rooting depth.	Wetness, erodes easily, droughty.
502D--Champion	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Percs slowly, slope, cutbanks cave.	Slope, erodes easily, wetness.	Wetness, slope, erodes easily.
502F--Champion	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, erodes easily, rooting depth.	Slope, erodes easily, droughty.
503A--Typic Fragiaquods	Moderate: seepage.	Severe: seepage, piping.	Severe: no water.	Percs slowly, frost action, cutbanks cave.	Large stones, wetness, rooting depth.	Large stones, wetness, droughty.
504B--Pence	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Too sandy, soil blowing.	Droughty, rooting depth.
504D, 504F--Pence	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, too sandy, soil blowing.	Slope, droughty, rooting depth.
505, 506--Humaquepts	Slight	Severe: ponding.	Slight	Ponding, frost action.	Ponding	Wetness.
507A--Monico	Moderate: seepage.	Severe: piping.	Severe: no water.	Frost action	Erodes easily, wetness.	Droughty, wetness, erodes easily.
508A--Beechwood	Moderate: seepage.	Severe: piping, wetness.	Severe: cutbanks cave.	Frost action	Erodes easily, wetness.	Wetness, erodes easily.
509A--Typic Dystrochrepts	Moderate: seepage.	Severe: piping.	Moderate: deep to water, slow refill, large stones.	Deep to water	Large stones, erodes easily.	Large stones, erodes easily.
510--Borosaprists	Slight	Severe: excess humus, ponding.	Slight	Ponding, frost action.	Ponding, soil blowing.	Wetness.

TABLE 16.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Terraces and diversions	Grassed waterways
511B---------- Typic Dystrochrepts	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Favorable------	Favorable.
511D, 511F-------- Typic Dystrochrepts	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope----------	Slope.
512---------- Borosaprists	Slight---------	Severe: excess humus, ponding.	Slight---------	Ponding, frost action.	Ponding, soil blowing.	Wetness.
513B---------- Entic Haplorthods	Severe: seepage.	Severe: seepage, piping.	Severe: cutbanks cave.	Deep to water	Too sandy, soil blowing.	Droughty.
514B---------- Stambaugh	Severe: seepage.	Severe: piping.	Severe: slow refill, cutbanks cave.	Slope----------	Erodes easily, wetness.	Erodes easily.
515---------- Borosaprists	Severe: seepage.	Severe: excess humus, wetness.	Severe: slow refill.	Flooding, frost action.	Wetness, soil blowing.	Wetness.
516B, 516D-------- Fragiorthods	Variable-------	Variable-------	Variable-------	Variable-------	Variable-------	Variable.
517B---------- Lode	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Erodes easily, too sandy.	Erodes easily, droughty.
517D, 517F-------- Lode	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, erodes easily, too sandy.	Slope, erodes easily, droughty.
518---------- Humaquepts	Slight---------	Severe: ponding.	Slight---------	Ponding, frost action.	Ponding--------	Wetness.
519A---------- Monico	Moderate: seepage.	Severe: seepage, piping.	Severe: no water.	Frost action---	Soil blowing, wetness.	Droughty, wetness.
520B---------- Haplorthods	Variable-------	Variable-------	Variable-------	Variable-------	Variable-------	Variable.
521B---------- Pence	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Too sandy, soil blowing.	Droughty, rooting depth.
522D: Entic Fragiorthods----	Severe: seepage.	Severe: seepage.	Severe: no water.	Percs slowly, slope, cutbanks cave.	Erodes easily, wetness, too sandy.	Wetness, erodes easily, droughty.
Typic Dystrochrepts---	Variable-------	Variable-------	Variable-------	Variable-------	Variable-------	Variable.
523B: Entic Haplorthods	Variable-------	Variable-------	Variable-------	Variable-------	Variable-------	Variable.
Typic Haplaquepts	Slight---------	Severe: ponding.	Slight---------	Ponding--------	Ponding--------	Wetness.

TABLE 16.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Terraces and diversions	Grassed waterways
524D, 524F-------- Haplorthods	Variable-------	Variable-------	Variable-------	Variable-------	Variable-------	Variable.
525B-------------- Entic Haplorthods	Severe: seepage.	Severe: seepage, piping, large stones.	Severe: no water.	Deep to water	Large stones, too sandy.	Large stones, droughty.
525D, 525F-------- Entic Haplorthods	Severe: seepage, slope.	Severe: seepage, piping, large stones.	Severe: no water.	Deep to water	Slope, large stones, too sandy.	Large stones, slope, droughty.
527: Borohemists------	Slight---------	Severe: excess humus, ponding.	Slight---------	Ponding, frost action.	Ponding, soil blowing.	Wetness.
Borosaprists-----	Slight---------	Severe: excess humus, ponding.	Slight---------	Ponding, frost action.	Ponding, soil blowing.	Wetness.
528, 529---------- Borohemists	Slight---------	Severe: excess humus, ponding.	Slight---------	Ponding, frost action.	Ponding, soil blowing.	Wetness.
530: Borosaprists-----	Slight---------	Severe: excess humus, ponding.	Slight---------	Ponding, frost action.	Ponding, soil blowing.	Wetness.
Histic Humaquepts	Slight---------	Severe: excess humus, ponding.	Slight---------	Ponding, frost action.	Ponding, soil blowing.	Wetness.
531C-------------- Champion	Moderate: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Percs slowly, slope, cutbanks cave.	Erodes easily, wetness, rooting depth.	Wetness, erodes easily, droughty.
532F: Champion---------	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, erodes easily, rooting depth.	Slope, erodes easily, droughty.
Haplorthods------	Variable-------	Variable-------	Variable-------	Variable-------	Variable-------	Variable.
533B-------------- Entic Fragiorthods	Severe: seepage.	Severe: seepage.	Severe: no water.	Percs slowly, slope, cutbanks cave.	Erodes easily, wetness, too sandy.	Wetness, erodes easily, droughty.
534B-------------- Entic Haplorthods	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Too sandy, soil blowing.	Droughty.
534D-------------- Entic Haplorthods	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, too sandy, soil blowing.	Slope, droughty.
535B-------------- Vilas	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Too sandy, soil blowing.	Droughty.

TABLE 16.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Terraces and diversions	Grassed waterways
535D---------- Vilas	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, too sandy, soil blowing.	Slope, droughty.
536F---------- Entic Haplorthods	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, erodes easily, too sandy.	Slope, erodes easily, droughty.
537B---------- Haplorthods	Variable-------	Variable-------	Variable-------	Variable-------	Variable-------	Variable.
538B, 538D--------- Entic Haplorthods	Variable-------	Variable-------	Variable-------	Variable-------	Variable-------	Variable.
539B---------- Karlin	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Too sandy, soil blowing.	Droughty.
540B:						
Entic Fragiorthods----	Variable-------	Variable-------	Variable-------	Variable-------	Variable-------	Variable.
Typic Fragiaquods	Slight---------	Severe: wetness.	Severe: no water.	Frost action---	Wetness, rooting depth.	Wetness, rooting depth.
Borosaprists-----	Slight---------	Severe: excess humus, ponding.	Slight---------	Ponding, frost action.	Ponding, soil blowing.	Wetness.
541---------- Fluvaquents	Slight---------	Severe: wetness.	Slight---------	Flooding, frost action.	Wetness--------	Wetness.
542B---------- Gogebic	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Percs slowly, slope.	Large stones, wetness, rooting depth.	Large stones, wetness, droughty.
542D---------- Gogebic	Severe: slope.	Severe: piping.	Severe: no water.	Percs slowly, slope.	Slope, large stones, wetness.	Large stones, wetness, slope.
542F---------- Gogebic	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, large stones, rooting depth.	Large stones, slope, droughty.
543A---------- Haplaquods	Slight---------	Severe: wetness.	Slight---------	Favorable------	Wetness--------	Wetness.
544C, 544D, 544F-- Haplorthods	Variable-------	Variable-------	Variable-------	Variable-------	Variable-------	Variable.
545B, 545D, 545F, 546C, 546D, 546F, 547B---------- Haplorthods	Variable-------	Variable-------	Variable-------	Variable-------	Variable-------	Variable.
548:						
Humaquepts-------	Slight---------	Severe: wetness.	Slight---------	Flooding, frost action.	Wetness--------	Wetness.
Terric Borosaprists----	Slight---------	Severe: excess humus, wetness.	Slight---------	Flooding, frost action.	Wetness, soil blowing.	Wetness.

TABLE 16.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Terraces and diversions	Grassed waterways
549B:						
Karlin	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Too sandy, soil blowing.	Droughty.
Pence	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Too sandy, soil blowing.	Droughty, rooting depth.
549D, 549F:						
Karlin	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, too sandy, soil blowing.	Slope, droughty.
Pence	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, too sandy, soil blowing.	Slope, droughty, rooting depth.
550---- Terric Borosaprists	Slight----	Severe: excess humus, wetness.	Slight----	Flooding, frost action.	Wetness, soil blowing.	Wetness.
551A---- Typic Fragiorthods	Variable----	Variable----	Variable----	Variable----	Variable----	Variable.
552F, 553D---- Kalkaska	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, too sandy, soil blowing.	Slope, droughty.
554B---- Alfic Fragiorthods	Severe: seepage.	Severe: piping.	Severe: no water.	Percs slowly, slope.	Large stones---	Large stones, wetness.
555B---- Entic Haplorthods	Variable----	Variable----	Variable----	Variable----	Variable----	Variable.
556---- Haplaquods	Slight----	Severe: ponding.	Slight----	Ponding----	Ponding----	Wetness.

TABLE 17.--ENGINEERING INDEX PROPERTIES

(The symbol < means less than; > means more than. Absence of an entry indicates that data were not estimated)

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments >10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
50:												
Aquents	0-60	Variable	---	---	---	---	---	---	---	---	---	---
Histosols	0-51	Muck	PT	A-8	0	0	---	---	---	---	---	NP
	51-60	Variable	---	---	---	---	---	---	---	---	---	---
51:												
Lupton	0-10	Muck	PT	A-8	0	0	---	---	---	---	---	---
	10-60	Muck	PT	A-8	0	0	---	---	---	---	---	---
Cathro	0-7	Muck	PT	A-8	0	0	---	---	---	---	---	---
	7-26	Muck	PT	A-8	0	0	---	---	---	---	---	---
	26-60	Fine sandy loam, very fine sandy loam, gravelly sandy loam.	SC-SM, CL-ML, SC, CL	A-4, A-6	0	0-5	80-100	70-95	35-95	20-75	20-40	4-20
Humaquepts	0-60	Variable	---	---	---	---	---	---	---	---	---	---
52:												
Greenwood	0-18	Peat	PT	A-8	0	0	---	---	---	---	---	---
	18-60	Mucky peat	PT	A-8	0	0	---	---	---	---	---	---
Merwin	0-8	Peat	PT	A-8	0	0	---	---	---	---	---	---
	8-36	Mucky peat	PT	A-8	0	0	---	---	---	---	---	---
	36-60	Silt loam, gravelly loam, sandy loam.	CL, ML, SM, SC	A-4, A-6	0	0-5	85-100	80-100	35-95	20-75	<30	1-15
53:												
Waucedah	0-10	Muck	PT	A-8	0	0	---	---	---	---	---	---
	10-60	Loam, fine sandy loam, sandy loam.	SM, ML, SC, CL	A-2-4, A-4	0	0	100	100	70-95	30-75	<25	3-8
Cathro	0-7	Muck	PT	A-8	0	0	---	---	---	---	---	---
	7-26	Muck	PT	A-8	0	0	---	---	---	---	---	---
	26-60	Fine sandy loam, very fine sandy loam, gravelly sandy loam.	SC-SM, CL-ML, SC, CL	A-4, A-6	0	0-5	80-100	70-90	35-95	20-75	20-40	4-20
54. Pits												

TABLE 17.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments >10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
55A, 55B, 55D---- Oconto	0-7	Very fine sandy loam.	SM, SC-SM, ML, CL-ML	A-2, A-4	0	0	80-100	75-100	45-85	25-55	<23	2-7
	7-35	Very fine sandy loam, gravelly sandy loam, loam.	ML, CL, SM, SC	A-2, A-4	0	0	80-100	60-100	35-95	20-75	<28	3-9
	35-60	Sand, very gravelly coarse sand.	SP, SP-SM, GP, GP-GM	A-1, A-2, A-3	---	0-3	30-100	25-95	7-65	1-25	---	NP
56. Pits and dumps												
57A, 57B--------- Padus	0-7	Fine sandy loam	SM	A-2, A-4, A-1-b	0	0-9	55-100	50-100	30-90	15-50	<21	NP-4
	7-39	Fine sandy loam, gravelly fine sandy loam.	SM, SC, ML, CL	A-2, A-4, A-1	0	0-9	55-100	50-100	30-95	15-80	<28	NP-9
	39-60	Gravelly coarse sand.	SP, SP-SM, GP, GP-GM	A-1, A-2, A-3	0	0-9	30-100	25-95	7-65	1-25	---	NP
57D, 57F--------- Padus	0-7	Fine sandy loam	SM	A-2, A-4, A-1-b	1-2	0-9	80-100	75-100	45-85	20-50	<21	NP-4
	7-39	Fine sandy loam, gravelly fine sandy loam.	SM, SC, ML, CL	A-2, A-4, A-1	0	0-9	55-100	50-100	30-95	15-75	<28	NP-10
	39-60	Gravelly coarse sand.	SP, SP-SM, GP, GP-GM	A-1, A-2, A-3	0	0-9	30-100	25-100	10-70	1-12	---	NP
58B, 58D--------- Trenary	0-4	Fine sandy loam	SM, ML, CL-ML, SC-SM	A-4	1-2	0-5	95-100	90-100	65-95	35-65	<25	NP-7
	4-12	Fine sandy loam, very fine sandy loam.	SM, ML, CL-ML, SC-SM	A-4	0	0-5	95-100	90-100	65-95	35-65	<25	NP-7
	12-23	Sandy loam, loamy sand.	SM, SC-SM, SP-SM	A-2, A-4, A-1	0	0-5	95-100	90-100	45-70	10-40	<25	NP-7
	23-36	Loamy sand, loam	SC, CL, SP-SM	A-2, A-4, A-1	0	0-5	95-100	75-100	45-75	10-65	<30	NP-15
	36-60	Sandy loam-------	SM, ML, CL, SC	A-2, A-4	0	0-5	95-100	90-100	55-90	25-75	<30	NP-10

TABLE 17.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments >10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
59A---------- Solona	0-6	Stony very fine sandy loam.	ML, CL, SC, SM	A-4	1-2	5-15	80-100	75-100	65-95	35-65	<30	NP-10
	6-36	Very fine sandy loam, sandy loam, loam.	CL, SC-SM, SC, CL-ML	A-2, A-4	0	0-13	80-100	75-100	45-100	25-80	20-30	5-10
	36-60	Fine sandy loam, sandy loam, gravelly sandy loam.	ML, CL, SM, SC	A-2, A-4, A-1	0	0-13	75-100	60-100	35-95	20-75	<30	NP-10
60D:												
Trenary----------	0-4	Fine sandy loam	SM, SC-SM	A-2, A-4	2-3	0-8	95-100	85-100	55-85	30-50	<25	NP-7
	4-12	Fine sandy loam, very fine sandy loam, sandy loam.	SM, ML, CL-ML, SC-SM	A-4	0	0-8	95-100	85-100	65-95	35-65	<25	NP-7
	12-23	Sandy loam, loamy sand.	SM, SC-SM, SP-SM	A-2, A-4, A-1	0	0-8	95-100	85-100	45-70	10-40	<25	NP-7
	23-36	Loam, loamy sand	SC, CL, SP-SM	A-2, A-4, A-1	0	0-8	95-100	75-100	45-75	10-65	<30	NP-15
	36-60	Sandy loam-------	SM, ML, CL, SC	A-2, A-4	0	0-8	95-100	85-100	55-90	25-75	<30	NP-10
Rock outcrop----	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
64A---------- Channing	0-7	Very fine sandy loam.	SM, ML, CL-ML, SC-SM	A-2-4, A-4	0-5	0-20	95-100	95-100	55-95	25-65	<25	NP-6
	7-24	Very fine sandy loam, fine sandy loam.	SM, ML, CL-ML, SC-SM	A-2-4, A-4	0	0-5	95-100	95-100	55-95	25-75	<25	NP-7
	24-60	Stratified sand to very gravelly sand.	SP, SP-SM	A-1	0	0-10	65-95	40-80	20-30	0-10	---	NP
65----------	0-5	Muck----------	PT	A-8	2-3	8-25	---	---	---	---	---	---
Witbeck	5-18	Silt loam, very fine sandy loam, gravelly fine sandy loam.	ML, CL, CL-ML	A-4, A-6	0-3	8-25	90-100	55-100	35-90	25-70	<35	NP-15
	18-51	Sandy loam, fine sandy loam, gravelly sandy loam.	SM, ML, CL, SC	A-2-4, A-4, A-1-b	0	0-25	75-95	50-90	45-90	20-70	<30	NP-10
	51-60	Sandy loam, fine sandy loam, gravelly sandy loam.	SM, ML, CL, SC	A-2-4, A-4, A-1-b	0	0-25	75-95	50-90	45-90	15-70	<30	NP-10

TABLE 17.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments >10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
67B---------- Net	0-3	Very fine sandy loam.	SM, SC-SM	A-4, A-2-4	1-5	5-25	95-100	85-95	50-85	30-50	<20	NP-6
	3-28	Silt loam, fine sandy loam, very fine sandy loam.	ML, SM, CL-ML, SC-SM	A-4, A-1-b, A-2-4	0	0-25	95-100	90-100	85-95	40-85	<20	NP-6
	28-49	Gravelly sandy loam, gravelly loamy sand, very fine sandy loam.	SM, SC-SM	A-2-4, A-4, A-1-b	0	0-25	75-100	50-75	25-70	15-45	<20	NP-4
	49-60	Gravelly sandy loam, gravelly loamy sand.	SM, SC-SM	A-2-4, A-4, A-1-b	0	0-25	75-100	50-75	25-70	15-45	<20	NP-6
68B:												
Net----------	0-3	Silt loam--------	ML, CL-ML	A-4	1-5	5-25	95-100	85-95	70-95	50-90	<20	NP-6
	3-28	Silt loam, fine sandy loam, very fine sandy loam.	ML, SM, CL-ML, SC-SM	A-4, A-1-b, A-2-4	0	0-25	95-100	90-100	85-95	40-85	<20	NP-6
	28-49	Gravelly sandy loam, gravelly loamy sand, very fine sandy loam.	SM, SC-SM	A-2-4, A-4, A-1-b	0	0-25	75-100	50-75	25-70	15-45	<20	NP-4
	49-60	Gravelly sandy loam, gravelly loamy sand.	SM, SC-SM	A-2-4, A-4, A-1-b	0	0-25	75-100	50-75	25-70	15-45	<20	NP-6
Witbeck---------	0-5	Muck----------	PT	A-8	2-3	8-25	---	---	---	---	---	---
	5-18	Silt loam, very fine sandy loam, gravelly fine sandy loam.	ML, CL, CL-ML	A-4, A-6	0-3	8-25	90-100	55-100	35-90	25-70	<35	NP-15
	18-51	Sandy loam, fine sandy loam, gravelly sandy loam.	SM, ML, CL, SC	A-2-4, A-4, A-1-b	0	0-25	75-95	50-90	45-90	20-70	<30	NP-10
	51-60	Sandy loam, fine sandy loam, gravelly sandy loam.	SM, ML, CL, SC	A-2-4, A-4, A-1-b	0	0-25	75-95	50-90	45-90	15-70	<30	NP-10

TABLE 17.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments >10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
69A:												
Karlin----------	0-2	Fine sandy loam	SM, ML	A-4, A-1, A-2	0	0	90-100	75-100	45-85	20-55	<20	NP-4
	2-35	Fine sandy loam, loamy sand, sandy loam.	SP-SM, SM, ML	A-2, A-4	0	0	90-100	75-100	60-100	10-55	<20	NP-4
	35-60	Sand----------	SP, SP-SM, SM	A-2, A-3, A-1	0	0	80-100	75-100	35-70	0-15	---	NP
Croswell--------	0-1	Sand----------	SP-SM, SM	A-3, A-2-4, A-1-b	0	0	90-100	75-100	40-70	5-15	---	NP
	1-20	Sand----------	SP-SM, SM, SP	A-3, A-2-4, A-1-b	0	0	90-100	75-100	40-75	3-30	---	NP
	20-60	Sand----------	SP-SM, SM, SP	A-3, A-2-4, A-1-b	0	0	90-100	75-100	40-70	3-15	---	NP
70B:												
Sundog----------	0-4	Very fine sandy loam.	ML, CL-ML, SM, SC-SM	A-4	1-2	0-20	95-100	75-100	65-95	35-65	<25	NP-6
	4-15	Silt loam, very fine sandy loam, fine sandy loam.	ML, CL-ML, SM, SC-SM	A-4, A-2-4	0	0-7	95-100	75-100	50-100	30-90	<25	NP-6
	15-22	Gravelly very fine sandy loam, gravelly fine sandy loam.	SM, SC-SM, GM, GM-GC	A-2-4, A-4	0	0-7	50-95	50-75	45-75	25-50	<25	NP-6
	22-60	Stratified sand to very gravelly coarse sand.	SW, SP-SM, GP, SP	A-1, A-2-4, A-3	0	0-7	50-95	25-90	10-70	0-10	---	NP
Channing--------	0-7	Very fine sandy loam.	SM, ML, SC-SM, CL-ML	A-2-4, A-4	1-2	0-25	95-100	85-100	50-85	25-65	<25	NP-6
	7-24	Very fine sandy loam, fine sandy loam, sandy loam.	SM, ML, SC-SM, CL-ML	A-2-4, A-4	0-10	0-25	95-100	95-100	80-95	30-60	<25	NP-7
	24-60	Stratified sand to very gravelly sand.	SP, SP-SM	A-1	0-5	0-25	65-85	35-75	20-30	0-10	---	NP

TABLE 17.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments >10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
71D:												
Karlin----------	0-3	Fine sandy loam	SM, SC-SM	A-2, A-4	1-2	0	90-100	75-100	50-85	30-50	<25	NP-7
	3-35	Loamy fine sand, loamy sand, sandy loam.	SP-SM, SM	A-2, A-4	0	0	90-100	75-100	60-100	10-50	<20	NP-4
	35-60	Sand----------	SP, SP-SM, SM	A-2, A-3, A-1	0	0	90-100	75-100	35-70	0-15	---	NP
Vilas----------	0-4	Stony loamy sand	SM, SP-SM	A-1, A-2	1-2	5-10	80-100	75-100	35-90	12-30	---	NP
	4-17	Loamy sand-------	SP-SM, SM	A-1, A-2	0	0	80-100	75-100	35-90	12-30	---	NP
	17-24	Sand----------	SM, SP-SM	A-1, A-2, A-3	0	0	80-100	75-100	35-90	5-20	---	NP
	24-60	Sand----------	SP, SP-SM, SM	A-1, A-2, A-3	0	0	80-100	75-100	35-90	1-20	---	NP
Rock outcrop----	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
72B, 72D, 72F---- Karlin	0-3	Fine sandy loam	SM, ML	A-4, A-1, A-2	0	0	90-100	75-100	45-85	20-55	<20	NP-4
	3-35	Loamy fine sand, loamy sand, sandy loam.	SP-SM, SM, ML	A-2, A-4	0	0	90-100	75-100	60-100	10-55	<20	NP-4
	35-60	Sand----------	SP, SP-SM, SM	A-2, A-3, A-1	0	0	80-100	75-100	35-70	0-15	---	NP
73A---------- Gaastra	0-4	Silt loam--------	CL-ML, CL	A-4	1-2	0	95-100	90-100	85-100	50-90	20-30	5-10
	4-22	Silt loam, very fine sandy loam.	ML, CL, SM, SC	A-4	0	0	95-100	90-100	60-100	35-60	<30	NP-10
	22-51	Silt loam, very fine sandy loam.	CL-ML, CL, SC, SC-SM	A-4, A-6	0	0	95-100	90-100	85-100	40-90	20-35	5-15
	51-60	Silt loam, fine sandy loam, very fine sandy loam.	CL-ML, CL, SC, SC-SM	A-4	0	0	95-100	90-100	85-100	40-90	20-30	5-10
74A---------- Au Gres	0-3	Sand----------	SM, SP-SM	A-2-4, A-3, A-1-b	0	0	95-100	85-100	40-65	5-15	---	NP
	3-32	Sand----------	SP-SM, SM, SC-SM	A-2-4, A-3, A-1-b	0	0	95-100	85-100	40-75	5-30	<25	NP-7
	32-60	Sand----------	SP-SM, SM	A-3, A-2-4, A-1-b	0	0	95-100	85-100	40-60	5-15	---	NP
75---------- Kinross	0-5	Muck----------	PT	A-8	0	0	---	---	---	---	---	NP
	5-52	Sand, fine sand, loamy sand.	SP-SM, SM	A-3, A-2-4	0	0	100	90-100	50-80	5-30	---	NP
	52-60	Sand, fine sand	SP-SM, SM	A-3, A-2-4	0	0	100	90-100	50-80	5-30	---	NP

TABLE 17.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments >10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
76---------- Ensley	0-9	Fine sandy loam	SC-SM	A-2-4, A-4, A-1-b	1-2	0-10	85-100	75-100	45-85	20-40	20-25	4-7
	9-20	Sandy loam, fine sandy loam.	CL, SC, SC-SM, CL-ML	A-2-4, A-4, A-6, A-1	0	0-10	85-100	75-100	65-90	30-65	15-30	4-16
	20-60	Sandy loam, fine sandy loam.	SC-SM, SM, SC	A-2-4, A-4, A-1	0	0-10	95-100	90-100	55-90	25-55	<25	2-9
77B, 77D---------- Vilas	0-4	Loamy sand-------	SM, SP-SM	A-1, A-2	0	0	80-100	75-100	35-90	12-30	---	NP
	4-17	Loamy sand-------	SP-SM, SM	A-1, A-2	0	0	80-100	75-100	35-90	12-30	---	NP
	17-24	Sand-------------	SM, SP-SM	A-1, A-2, A-3	0	0	80-100	75-100	35-90	5-20	---	NP
	24-60	Sand-------------	SP, SP-SM, SM	A-1, A-2, A-3	0	0	80-100	75-100	35-90	1-20	---	NP
78B, 78D, 78F: Vilas----------	0-4	Loamy sand-------	SM, SP-SM	A-1, A-2	0	0	80-100	75-100	35-90	12-30	---	NP
	4-17	Loamy sand-------	SP-SM, SM	A-1, A-2	0	0	80-100	75-100	35-90	12-30	---	NP
	17-24	Sand-------------	SM, SP-SM	A-1, A-2, A-3	0	0	80-100	75-100	35-90	5-20	---	NP
	24-60	Sand-------------	SP, SP-SM, SM	A-1, A-2, A-3	0	0	80-100	75-100	35-90	1-20	---	NP
Karlin----------	0-3	Fine sandy loam	SM, ML	A-4, A-1, A-2	0	0	90-100	75-100	45-85	20-55	<20	NP-4
	3-35	Loamy fine sand, loamy sand, sandy loam.	SP-SM, SM, ML	A-2, A-4	0	0	90-100	75-100	60-100	10-55	<20	NP-4
	35-60	Sand-------------	SP, SP-SM, SM	A-2, A-3, A-1	0	0	80-100	75-100	35-70	0-15	---	NP
79A, 79B, 79D---- Fence	0-2	Silt loam--------	ML, CL-ML, CL	A-4	0	0	100	100	90-100	70-100	20-35	NP-10
	2-9	Silt loam, very fine sandy loam.	ML, CL, SM, SC	A-4	0	0	100	100	85-100	40-100	<30	NP-9
	9-41	Silt loam, very fine sandy loam.	ML, CL-ML, CL	A-4, A-6	0	0	100	100	85-100	70-100	<30	NP-12
	41-60	Stratified silt loam to very fine sand.	ML, CL-ML	A-4	0	0	100	100	85-100	50-100	<25	NP-7

TABLE 17.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
80B, 80D, 80F---- Pence	0-4	Fine sandy loam	SM, ML	A-4, A-2, A-1	0	0-15	85-100	75-100	45-85	20-55	<21	NP-4
	4-20	Fine sandy loam, sandy loam, gravelly sandy loam.	SM, ML, CL-ML, SC-SM	A-4, A-2, A-1	0-4	0-15	55-100	50-100	30-95	15-75	<25	NP-7
	20-33	Gravelly sand, loamy sand, sand.	SM, SP-SM, GM, GP-GM	A-2, A-1, A-3	0-4	0-15	55-100	50-100	25-75	2-30	---	NP
	33-60	Gravelly coarse sand, sand, sand and gravel.	SP, SM	A-1, A-3, A-2	0-4	0-15	55-85	50-75	15-55	2-15	---	NP
82B, 82D, 82F---- Keweenaw	0-1	Loamy fine sand	SM, SC, SC-SM, SP-SM	A-2, A-1-b, A-4	0	0-10	90-100	75-100	35-85	10-40	<20	NP-10
	1-23	Loamy fine sand, loamy sand.	SM, SC, SC-SM, SP-SM	A-2, A-1-b, A-4, A-3	0	0-25	95-100	90-100	50-85	15-35	<20	NP-10
	23-33	Sand, loamy fine sand, loamy sand.	SM, SC, SP-SM, SC-SM	A-2, A-3, A-1-b, A-4	0	0-25	95-100	90-100	50-85	15-35	<20	NP-10
	33-39	Fine sandy loam, sandy loam, gravelly loamy sand.	SM, SC, SP-SM, SC-SM	A-2, A-3, A-1-b, A-4	0	0-25	85-100	60-100	30-85	5-50	<30	NP-10
	39-60	Loamy sand, gravelly loamy sand, sandy loam.	SM, SC, SC-SM, SP-SM	A-2, A-3 A-1-b, A-4	0	0-25	85-100	60-100	30-85	10-30	<20	NP-10
100B, 100D: Keweenaw--------	0-1	Loamy fine sand	SM, SC, SC-SM, SP-SM	A-2, A-1-b, A-4	0	0-10	90-100	75-100	35-85	10-40	<20	NP-10
	1-23	Loamy fine sand, loamy sand.	SM, SC, SC-SM, SP-SM	A-2, A-1-b, A-4, A-3	0	0-25	95-100	90-100	50-85	15-35	<20	NP-10
	23-33	Sand, loamy fine sand, loamy sand.	SM, SC, SP-SM, SC-SM	A-2, A-3, A-1-b, A-4	0	0-25	95-100	90-100	50-85	15-35	<20	NP-10
	33-39	Fine sandy loam, sandy loam, gravelly loamy sand.	SM, SC, SP-SM, SC-SM	A-2, A-3, A-1-b, A-4	0	0-25	85-100	60-100	30-85	5-50	<30	NP-10
	39-60	Loamy sand, gravelly loamy sand, sandy loam.	SM, SC, SC-SM, SP-SM	A-2, A-3, A-1-b, A-4	0	0-25	85-100	60-100	30-85	10-30	<20	NP-10

TABLE 17.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments >10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
100B, 100D:												
Karlin----------	0-3	Fine sandy loam	SM, ML	A-4, A-1, A-2	0	0	90-100	75-100	45-85	20-55	<20	NP-4
	3-35	Loamy fine sand, loamy sand, sandy loam.	SP-SM, SM, ML	A-2, A-4	0	0	90-100	75-100	60-100	10-55	<20	NP-4
	35-60	Sand----------	SP, SP-SM, SM	A-2, A-3, A-1	0	0	80-100	75-100	35-70	0-15	---	NP
101B:												
Trenary---------	0-4	Fine sandy loam	SM, ML, CL-ML, SC-SM	A-4	1-2	0-5	95-100	90-100	65-95	35-65	<25	NP-7
	4-12	Fine sandy loam, very fine sandy loam.	SM, ML, CL-ML, SC-SM	A-4	0	0-5	95-100	90-100	65-95	35-65	<25	NP-7
	12-23	Sandy loam, loamy sand.	SM, SC-SM, SP-SM	A-2, A-4, A-1	0	0-5	95-100	90-100	45-70	10-40	<25	NP-7
	23-36	Loamy sand, loam	SC, CL, SP-SM	A-2, A-4, A-1	0	0-5	95-100	90-100	45-90	10-40	<30	NP-15
	36-60	Sandy loam-------	SM, ML, CL, SC	A-2, A-4	0	0-5	95-100	90-100	55-90	25-75	<30	NP-10
Solona----------	0-6	Stony very fine sandy loam.	ML, CL, SC, SM	A-4	1-2	5-15	80-100	75-100	65-95	35-65	<30	NP-10
	6-36	Fine sandy loam, very fine sandy loam, loam.	CL, SC-SM, SC, CL-ML	A-2, A-4	0-5	0-13	80-100	75-100	45-100	25-80	20-30	5-10
	36-60	Fine sandy loam, sandy loam, gravelly sandy loam.	ML, CL, SM, SC	A-2, A-4, A-1	0-5	0-13	75-100	60-100	35-95	20-75	<30	NP-10
102B---------- Escanaba	0-1	Loamy fine sand	SM, SC-SM, SW-SM, SP-SM	A-2-4, A-3, A-1-b	0	0-20	95-100	85-100	40-75	5-30	<25	NP-7
	1-24	Loamy fine sand, fine sand, sand.	SM, SC-SM, SW-SM, SP-SM	A-2-4, A-3, A-1-b	0	0-20	90-100	85-100	40-75	5-30	<25	NP-7
	24-36	Loamy fine sand, loamy sand, fine sandy loam.	SM, SC-SM, ML, CL-ML	A-2-4, A-4	0	0-20	90-100	85-100	50-85	15-55	<25	NP-7
	36-49	Fine sandy loam, sandy loam.	SC, SC-SM, CL, CL-ML	A-2-4, A-4	0	0-20	90-100	85-100	50-85	25-55	<30	4-10
	49-60	Fine sandy loam, sandy loam.	SM, SC, ML, CL	A-2-4, A-4	0	0-20	90-100	85-100	50-85	25-55	<30	NP-10

TABLE 17.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
103B, 103D:												
Wabeno----------	0-2	Silt loam--------	ML, CL-ML	A-4	1-2	0-15	90-100	85-100	70-100	60-90	<25	NP-6
	2-23	Silt loam--------	ML, CL-ML	A-4	1-5	0-15	90-100	85-100	70-100	60-95	<25	NP-7
	23-32	Silt loam--------	ML, CL, CL-ML	A-4	0-5		90-100	85-100	70-100	60-90	<30	NP-10
	32-50	Very fine sandy loam, gravelly sandy loam, loam.	SM, SC, SC-SM	A-1, A-2-4	0-5	0-15	85-100	70-95	35-90	15-75	<30	NP-10
	50-60	Gravelly sandy loam, sandy loam, loamy sand.	SM, SC-SM, SP-SM	A-1, A-2-4	0-5	0-15	70-90	65-90	25-60	10-25	<23	NP-6
Sarona----------	0-2	Stony fine sandy loam.	SM, SC-SM, ML, CL-ML	A-2, A-4	1-2	0-15	75-100	75-100	45-85	25-55	<20	2-7
	2-33	Fine sandy loam, sandy loam, loamy fine sand.	SM, SC-SM, ML, CL-ML	A-2, A-4, A-1	0-2	0-15	75-100	75-100	40-95	13-55	<20	NP-7
	33-37	Sandy loam, gravelly sandy loam.	SM, SC-SM, SP-SM	A-2, A-1, A-4	0	0-15	65-100	65-100	40-90	12-40	<20	NP-7
	37-60	Loamy sand, sandy loam, gravelly sandy loam.	SM, SC-SM, SP-SM	A-2, A-1, A-4	0	0-15	65-95	65-95	40-80	12-40	<20	NP-7
104A, 104B, 104D-Stambaugh	0-4	Silt loam--------	ML, CL-ML	A-4	1-2	0-8	100	90-100	80-100	55-90	<25	2-7
	4-18	Silt loam, very fine sandy loam.	ML, CL-ML	A-4	0	0-8	100	90-100	80-100	55-90	<25	2-7
	18-39	Silt loam, very fine sandy loam.	ML, CL-ML, CL	A-4	0	0-8	100	90-100	80-100	80-95	<30	2-9
	39-60	Gravelly sand, very gravelly sand.	SP, SP-SM	A-1	0	0-15	70-90	25-60	15-40	0-10	---	NP
105D:												
Wabeno----------	0-2	Silt loam--------	ML, CL-ML	A-4	2-3	0-15	90-100	85-100	70-100	60-90	<25	NP-6
	2-23	Silt loam--------	ML, CL-ML,	A-4	0	0-15	90-100	85-100	70-100	60-95	<25	NP-7
	23-32	Silt loam--------	ML, CL, CL-ML	A-4	0	0-15	90-100	85-100	70-100	60-90	<30	NP-10
	32-50	Very fine sandy loam, loam, gravelly sandy loam.	SM, SC, SC-SM	A-1, A-2-4	0	0-15	85-100	70-95	35-90	15-75	<30	NP-10
	50-60	Gravelly sandy loam, sandy loam, loamy sand.	SM, SC-SM, SP-SM	A-1, A-2-4	0	0-15	70-90	65-90	25-60	10-25	<23	NP-6

TABLE 17.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments >10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
105D:												
Rock outcrop----	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
106D---------- Champion	0-4	Very fine sandy loam.	ML, CL-ML	A-4	2-3	5-20	95-100	85-100	70-95	50-70	<25	NP-7
	4-20	Cobbly silt loam, silt loam, very fine sandy loam.	SM, CL-ML, ML, SC-SM	A-2-4, A-4	0-1	0-5	95-100	85-100	55-100	30-90	<25	NP-7
	20-49	Gravelly fine sandy loam, sandy loam, gravelly loamy sand.	SM, SC-SM, SP-SM	A-2-4, A-4, A-1-b	0-1	0-5	75-100	55-90	25-80	10-50	<25	NP-6
	49-60	Gravelly fine sandy loam, sandy loam, gravelly loamy sand.	SM, SC-SM, SP-SM	A-2-4, A-4, A-1-b	0-1	0-5	80-100	50-90	25-80	5-50	<25	NP-6
107B, 107D, 107F- Sarona	0-2	Stony fine sandy loam.	SM, SC-SM, ML, CL-ML	A-2, A-4	1-2	0-15	80-100	75-98	55-90	30-55	<25	NP-7
	2-33	Fine sandy loam, sandy loam, loamy fine sand.	SM, SC-SM, ML, CL-ML	A-2, A-4, A-1	0-2	0-15	80-100	75-98	30-90	10-55	<23	NP-6
	33-37	Loam, sandy loam, gravelly sandy loam.	SM, SC-SM, SP-SM	A-2, A-1, A-4	0	0-15	55-100	50-98	30-90	13-55	<23	NP-6
	37-60	Loamy sand, sandy loam, gravelly sandy loam.	SM, SC-SM, SP-SM	A-2, A-1, A-4, A-3	0	0-15	55-100	50-98	20-75	7-45	<25	NP-7
108D, 108F:												
Sarona----------	0-2	Fine sandy loam	ML, CL-ML, SM, SC-SM	A-4, A-2, A-1	2-3	0-15	80-100	75-98	30-90	10-55	<23	NP-6
	2-33	Fine sandy loam, sandy loam, loamy fine sand.	SM, SP-SM, ML, CL-ML	A-2, A-4, A-1	0-2	0-15	80-100	75-98	30-90	10-55	<23	NP-6
	33-37	Loam, sandy loam, gravelly sandy loam.	SM, SC-SM, ML, CL-ML	A-2, A-1, A-4	0	0-15	55-100	50-98	30-90	13-55	<23	NP-6
	37-60	Loamy sand, sandy loam, gravelly sandy loam.	SM, SC-SM, SP-SM	A-2, A-1, A-4, A-3	0	0-15	55-100	50-98	20-75	7-75	<25	NP-7
Rock outcrop----	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

TABLE 17.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
109D---------- Udorthents	0-10	Gravelly sandy loam.	---	---	---	---	---	---	---	---	---	NP-15
	10-60	Variable---------	---	---	---	---	---	---	---	---	---	---
110B, 110D:												
Petticoat-------	0-1	Silt loamy-------	ML, CL-ML	A-4	2-3	5-20	95-100	85-100	75-95	55-85	<25	NP-7
	1-38	Silt loam, fine sandy loam.	ML, SM	A-4	0	8-20	95-100	85-100	65-95	35-75	<30	NP-7
	38-60	Gravelly loamy sand, gravelly loamy fine sand.	SM, SP-SM, GM, GP-GM	A-2-4, A-4, A-1, A-3	0	8-20	60-90	50-70	25-75	5-50	<20	NP-4
Wabeno----------	0-2	Silt loam--------	ML, CL-ML	A-4	2-3	0-15	90-100	85-100	70-100	60-90	<25	NP-6
	2-23	Silt loam--------	ML, CL-ML,	A-4	0	0-15	90-100	85-100	70-100	60-95	<25	NP-7
	23-32	Silt loam--------	ML, CL, CL-ML	A-4	0	0-15	90-100	85-100	70-100	60-90	<30	NP-10
	32-50	Very fine sandy loam, gravelly sandy loam, loam.	SM, SC, SC-SM,	A-1, A-2-4	0	0-15	85-100	70-95	35-90	15-75	<30	NP-10
	50-60	Gravelly sandy loam, sandy loam, loamy sand.	SM, SC-SM, SP-SM	A-1, A-2-4	0	0-15	70-90	65-90	25-60	10-25	<23	NP-6
111B:												
Champion--------	0-4	Very fine sandy loam.	ML, CL-ML	A-4	2-35	5-20	95-100	85-100	70-90	50-70	<25	NP-7
	4-20	Cobbly silt loam, silt loam, very fine sandy loam.	SM, CL-ML, ML, SC-SM	A-2-4, A-4	0-1	0-5	95-100	85-100	55-100	30-90	<25	NP-7
	20-49	Gravelly fine sandy loam, sandy loam, gravelly loamy sand.	SM, SC-SM, SP-SM	A-2-4, A-4, A-1-b	0-1	0-5	75-100	55-90	25-80	10-50	<25	NP-6
	49-60	Gravelly fine sandy loam, sandy loam, gravelly loamy sand.	SM, SC-SM, SP-SM	A-2-4, A-4, A-1-b	0-1	0-5	75-100	55-90	25-80	10-50	<25	NP-6

TABLE 17.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments >10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
111B:												
Net----------	0-3	Very fine sandy loam.	SM, SC-SM	A-4, A-2-4	1-55	5-25	95-100	85-95	50-85	30-50	<20	NP-6
	3-28	Silt loam, fine sandy loam, very fine sandy loam.	ML, SM, CL-ML, SC-SM	A-4, A-1-b, A-2-4	0	0-25	95-100	90-100	85-95	40-85	<20	NP-6
	28-49	Gravelly sandy loam, gravelly loamy sand, very fine sandy loam.	SM, SC-SM	A-2-4, A-4, A-1-b	0	0-25	75-100	50-85	25-70	15-45	<20	NP-4
	49-60	Gravelly sandy loam, gravelly loamy sand.	SM, SC-SM	A-2-4, A-4, A-1-b	0	0-25	75-100	50-75	25-70	15-45	<20	NP-6
112B, 112D------- Sundog	0-4	Very fine sandy loam.	ML, CL-ML, SM, SC-SM	A-4	0	0-20	95-100	75-100	65-95	35-65	<25	NP-6
	4-15	Silt loam, gravelly fine sandy loam, fine sandy loam.	ML, CL-ML, SM, SC-SM	A-4, A-2-4	0	0-7	50-95	50-75	45-75	25-90	<25	NP-6
	15-22	Gravelly very fine sandy loam, gravelly fine sandy loam.	SM, SC-SM, GM, GM-GC	A-2-4, A-4	0	0-7	50-95	50-75	45-75	25-50	<25	NP-6
	22-60	Stratified sand to very gravelly coarse sand.	SW, SP-SM, GP, SP	A-1, A-2-4, A-3	0	0-7	50-95	25-90	10-70	0-10	---	NP
112F---------- Sundog	0-4	Cobbly fine sandy loam.	ML, CL-ML, SM, SC-SM	A-2-4, A-4	0	20-50	85-100	80-100	45-95	25-90	<25	NP-7
	4-15	Silt loam, gravelly fine sandy loam, fine sandy loam.	ML, CL-ML, SM, SC-SM	A-4	0	0-7	50-95	50-75	45-75	25-90	<25	NP-7
	15-22	Gravelly very fine sandy loam, gravelly fine sandy loam.	SM, SC-SM, GM, GM-GC	A-2-4, A-4	0	0-7	50-95	50-75	45-70	30-50	<25	NP-7
	22-60	Stratified sand to very gravelly coarse sand.	SW, SP-SM, GP, SP	A-1, A-2-4, A-3	0	0-7	50-95	25-75	10-55	0-10	---	NP

TABLE 17.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments >10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
113A---------- Sundog	0-2	Very fine sandy loam.	ML, CL-ML, SM, SC-SM	A-4	0	0-20	95-100	90-100	75-95	45-65	<25	NP-6
	2-25	Silt loam, very fine sandy loam, fine sandy loam.	ML, CL-ML, SM, SC-SM	A-4	0	0-7	95-100	90-100	50-100	35-90	<25	NP-6
	25-60	Stratified sand to very gravelly coarse sand.	SW, SP-SM, GP, SP	A-1, A-2-4, A-3	0	0-7	50-95	25-80	10-70	0-10	---	NP
114A:												
Minocqua--------	0-4	Muck----------	PT	A-8	0	0	---	---	---	---	---	---
	4-25	Silt loam, loam, gravelly loam.	SC, SM, CL, ML	A-2, A-4, A-6	0-1	0-9	80-100	75-100	45-100	25-90	<35	NP-13
	25-29	Gravelly loamy sand, loamy coarse sand.	SM, GM, GP, SP	A-2, A-1, A-3	0	0-9	40-100	35-100	5-70	2-40	<20	NP-4
	29-60	Gravelly coarse sand, sand, gravelly sand.	SP, SM, GP, GM	A-1, A-3, A-2	0	0-9	35-100	30-100	5-70	0-30	---	NP
Channing--------	0-7	Very fine sandy loam.	SM, ML, CL-ML, SC-SM	A-2-4, A-4	0	0-20	95-100	95-100	55-95	25-65	<25	NP-6
	7-24	Very fine sandy loam, fine sandy loam, sandy loam.	SM, ML, CL-ML, SC-SM	A-2-4, A-4	0	0-5	95-100	95-100	55-95	25-75	<25	NP-7
	24-60	Stratified sand to very gravelly sand.	SP, SP-SM	A-1	0	0-10	65-90	40-80	20-30	0-10	---	NP
115A---------- Manitowish	0-1	Fine sandy loam	SM, ML	A-4	0	0-7	80-100	75-100	50-85	35-55	<21	NP-4
	1-19	Sandy loam, fine sandy loam.	SM, SC-SM, ML, CL-ML	A-4, A-2	0	0-7	80-100	85-100	45-95	30-75	<25	NP-7
	19-26	Loamy sand, gravelly loamy sand.	SM, SC-SM, GM, GM-GC	A-2, A-1, A-3, A-4	0	0-8	55-100	50-100	20-90	5-50	<25	NP-6
	26-60	Gravelly sand, gravelly coarse sand, coarse sand.	SP, SP-SM	A-1, A-3, A-2	0	0-15	55-100	50-75	20-70	0-12	---	NP

TABLE 17.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments >10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
116B, 116D-------	0-2	Silt loam---------	ML, CL-ML	A-4	2-3	0-15	90-100	85-100	70-100	60-90	<25	NP-6
Wabeno	2-23	Silt loam---------	ML, CL-ML	A-4	0	0-15	90-100	85-100	70-100	60-95	<25	NP-7
	23-32	Silt loam---------	ML, CL, CL-ML	A-4	0	0-15	85-100	70-95	35-90	15-75	<30	NP-10
	32-50	Very fine sandy loam, loam, gravelly sandy loam.	SM, SC, SC-SM	A-1, A-2-4	0	0-15	85-100	70-95	35-90	15-75	<30	NP-10
	50-60	Gravelly sandy loam, sandy loam, loamy sand.	SM, SC-SM, SP-SM	A-1, A-2-4	0	0-15	70-90	65-90	25-60	10-25	<23	NP-6
121B, 121D-------	0-6	Silt loam---------	CL-ML, ML	A-4	1-2	2-8	90-100	85-95	75-95	55-90	<20	NP-4
Peavy	6-27	Silt loam, very fine sandy loam, fine sandy loam.	CL-ML, ML, SM, SC-SM	A-4	0	2-8	90-100	85-95	60-95	35-85	<20	NP-4
	27-41	Channery loam, very channery loam, channery sandy loam.	GC, SC, CL-ML, CL	A-4, A-2-4, A-1-b	0	2-8	45-85	35-75	25-70	20-55	20-30	4-11
	41-60	Channery loam, very channery loam, channery sandy loam.	GM, SM, ML, SC-SM	A-4, A-2-4, A-1-b	0	7-15	45-85	35-75	25-70	20-55	<25	NP-7
122B, 122D:												
Sarona----------	0-2	Fine sandy loam	SM, SC-SM	A-2, A-4, A-1	2-3	0-25	55-100	50-98	30-90	15-50	<25	NP-7
	2-33	Fine sandy loam, sandy loam, loamy fine sand.	SM, SC-SM, ML, CL-ML	A-2, A-4, A-1	0-2	0-15	80-100	75-98	30-90	15-55	<25	NP-7
	33-37	Loam, sandy loam, gravelly sandy loam.	SM, SC-SM, ML, CL-ML	A-2, A-4, A-1	0	0-15	55-100	50-98	30-95	15-80	<25	NP-7
	37-60	Sandy loam, gravelly sandy loam, loamy sand.	SM, SC-SM, SP-SM	A-2, A-1, A-4	0	0-15	55-100	50-98	20-80	7-50	15-25	NP-7
Karlin----------	0-2	Fine sandy loam	SM, SC-SM	A-2, A-4	1-2	0	90-100	75-100	50-85	30-50	<25	NP-7
	2-35	Loamy fine sand, loamy sand, sandy loam.	SP-SM, SM	A-2, A-4	0	0	90-100	75-100	60-100	10-50	<20	NP-4
	35-60	Sand----------	SP, SP-SM, SM	A-2, A-3, A-1	0	0	90-100	75-100	35-70	0-15	---	NP

TABLE 17.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
123B, 123D-------	0-3	Loamy fine sand	SM, SC-SM	A-2, A-4	0	0	100	100	50-80	15-50	<25	NP-7
Ocqueoc	3-23	Fine sand, loamy fine sand.	SP-SM, SM, SC-SM	A-2, A-3, A-4	0	0	100	100	50-80	5-50	<25	NP-7
	23-60	Stratified fine sand to silt loam.	SC-SM, CL-ML, CL, SC	A-2, A-4, A-6	0	0	100	100	65-95	20-85	20-40	4-20
124B, 125B:												
Wabeno----------	0-2	Silt loam--------	ML, CL-ML	A-4	2-3	0-15	90-100	85-100	70-100	60-90	<25	NP-6
	2-23	Silt loam--------	ML, CL-ML	A-4	0	0-15	90-100	85-100	70-100	60-95	<25	NP-7
	23-32	Silt loam--------	ML, CL, CL-ML	A-4	0	0-15	90-100	85-100	70-100	60-90	<30	NP-10
	32-50	Very fine sandy loam, gravelly sandy loam, loam.	SM, SC, SC-SM	A-1, A-2-4	0	0-15	85-100	70-95	35-90	15-75	<30	NP-10
	50-60	Gravelly sandy loam, sandy loam, loamy sand.	SM, SC-SM, SP-SM	A-1, A-2-4	0	0-15	70-90	65-90	25-60	10-25	<23	NP-6
Net----------	0-3	Silt loam--------	ML, CL-ML	A-4	1-5	5-25	95-100	85-95	70-95	50-90	<20	NP-6
	3-28	Silt loam, fine sandy loam, very fine sandy loam.	ML, SM, CL-ML, SC-SM	A-4, A-1-b, A-2-4	0	0-25	75-100	50-95	40-95	20-85	<20	NP-6
	28-49	Gravelly sandy loam, gravelly loamy sand, very fine sandy loam.	SM, SC-SM	A-2-4, A-4, A-1-b	0	0-25	95-100	50-85	25-70	15-45	<20	NP-4
	49-60	Gravelly sandy loam, gravelly loamy sand.	SM, SC-SM	A-2-4, A-4, A-1-b	0	0-25	75-100	50-75	25-70	15-45	<20	NP-6
126B, 126D, 126F-	0-4	Very fine sandy loam.	ML, CL-ML	A-4	2-3	10-20	95-100	85-100	70-95	50-70	<25	NP-7
Champion	4-20	Cobbly silt loam, silt loam, very fine sandy loam.	SM, CL-ML, ML, SC-SM	A-2-4, A-4	0-1	0-5	95-100	85-100	55-100	30-90	<25	NP-7
	20-49	Gravelly fine sandy loam, sandy loam, gravelly loamy sand.	SM, SC-SM, SP-SM	A-2-4, A-4, A-1-b	0-1	0-5	75-100	55-90	25-80	10-50	<25	NP-6
	49-60	Gravelly fine sandy loam, sandy loam, gravelly loamy sand.	SM, SC-SM, SP-SM	A-2-4, A-4, A-1-b	0-1	0-5	80-100	50-90	25-80	5-50	<25	NP-6

TABLE 17.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments >10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
127D---------- Goodman	0-3	Very stony silt loam.	ML, CL-ML	A-4	2-3	0-10	90-100	85-100	85-100	75-100	<23	NP-6
	3-5	Silt loam--------	ML	A-4	0	0-10	90-100	85-100	70-100	60-90	<25	NP-7
	5-14	Silt loam--------	ML, CL-ML	A-4	0	0-10	90-100	85-100	70-100	60-90	<25	NP-7
	14-33	Silt loam, very fine sandy loam.	ML, CL-ML	A-4	0	0-10	90-100	85-100	70-100	60-90	<25	NP-7
	33-49	Fine sandy loam, loamy sand, sandy loam.	ML, CL-ML, SM, SP-SM	A-4, A-1-b, A-2-4	0	0-10	65-100	75-100	40-90	15-75	<23	NP-6
	49-60	Loamy sand, fine sandy loam, sandy loam.	SC-SM, SM, SP-SM	A-4, A-1-b, A-2-4	0	0-10	65-100	75-100	40-85	15-75	<23	NP-6
128B:												
Goodman---------	0-3	Silt loam--------	ML, CL-ML	A-4	1-2	0-10	90-100	85-100	85-100	75-100	<23	NP-6
	3-5	Silt loam--------	ML	A-4	0	0-10	90-100	85-100	70-100	60-90	<25	NP-7
	5-14	Silt loam--------	ML, CL-ML	A-4	0	0-10	90-100	85-100	70-100	60-90	<25	NP-7
	14-33	Silt loam, very fine sandy loam.	ML, CL-ML	A-4	0	0-10	90-100	85-100	70-100	60-90	<25	NP-7
	33-49	Fine sandy loam, loamy sand, sandy loam.	ML, CL-ML, SM, SP-SM	A-4, A-1-b, A-2-4	0	0-10	65-100	75-100	40-90	15-75	<23	NP-6
	49-60	Sandy loam, fine sandy loam, loamy sand.	SC-SM, SM, SP-SM	A-4, A-1-b, A-2-4	0	0-10	65-100	75-100	40-85	15-75	<23	NP-6
Wabeno----------	0-2	Silt loam--------	ML, CL-ML	A-4	1-2	0-15	90-100	85-100	70-100	60-90	<25	NP-6
	2-23	Silt loam--------	ML, CL-ML	A-4	0	0-15	90-100	85-100	70-100	60-95	<25	NP-7
	23-32	Silt loam--------	ML, CL, CL-ML	A-4	0	0-15	90-100	85-100	70-100	60-90	<30	NP-10
	32-50	Very fine sandy loam, gravelly sandy loam, loam.	SM, SC, SC-SM	A-1, A-2-4	0	0-15	85-100	70-95	35-90	15-75	<30	NP-10
	50-60	Gravelly sandy loam, sandy loam, loamy sand.	SM, SC-SM, SP-SM	A-1, A-2-4	0-5	0-15	70-90	65-90	25-60	10-25	<23	NP-6
Sundog----------	0-3	Very fine sandy loam.	ML, CL-ML, SM, SC-SM	A-4	1-2	0-10	95-100	90-100	75-95	45-65	<25	NP-6
	3-46	Silt loam, very fine sandy loam, fine sandy loam.	ML, CL-ML, SM, SC-SM	A-4	0	0-7	95-100	90-100	70-100	45-90	<25	NP-6
	46-60	Sand-------------	SP-SM, SM	A-1, A-2-4, A-3	0	0-5	95-100	90-100	45-70	5-15	---	NP

TABLE 17.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments >10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
128D:												
Goodman---------	0-3	Silt loam--------	ML, CL-ML	A-4	1-2	0-10	90-100	85-100	85-100	75-100	<23	NP-6
	3-5	Silt loam--------	ML	A-4	0	0-10	90-100	85-100	70-100	60-90	<25	NP-7
	5-14	Silt loam--------	ML, CL-ML	A-4	0	0-10	90-100	85-100	70-100	60-90	<25	NP-7
	14-33	Silt loam, very fine sandy loam.	ML, CL-ML	A-4	0	0-10	90-100	85-100	70-100	60-90	<25	NP-7
	33-49	Fine sandy loam, loamy sand, sandy loam.	ML, CL-ML, SM, SP-SM	A-4, A-1-b, A-2-4	0	0-10	65-100	75-100	40-90	15-75	<23	NP-6
	49-60	Sandy loam, fine sandy loam, gravelly loamy sand.	SC-SM, SM, SP-SM	A-4, A-1-b, A-2-4	0	0-10	65-100	75-100	40-85	15-75	<23	NP-6
Wabeno----------	0-2	Silt loam--------	ML, CL-ML	A-4	1-2	0-15	90-100	85-100	70-100	60-90	<25	NP-6
	2-23	Silt loam--------	ML, CL-ML	A-4	0	0-15	90-100	85-100	70-100	60-95	<25	NP-7
	23-32	Silt loam--------	ML, CL, CL-ML	A-4	0	0-15	90-100	85-100	70-100	60-90	<30	NP-10
	32-50	Very fine sandy loam, gravelly sandy loam, loam.	SM, SC, SC-SM	A-1, A-2-4	0	0-15	85-100	70-95	35-90	15-75	<30	NP-10
	50-60	Gravelly sandy loam, sandy loam, loamy sand.	SM, SC-SM, SP-SM	A-1, A-2-4	0	0-15	70-90	65-90	25-60	10-25	<23	NP-6
Sundog----------	0-3	Very fine sandy loam.	ML, CL-ML, SM, SC-SM	A-4	1-2	0-20	95-100	75-100	65-95	35-65	<25	NP-6
	3-46	Silt loam, very fine sandy loam, fine sandy loam.	ML, CL-ML, SM, SC-SM	A-4	0	0-7	95-100	90-100	70-100	45-90	<25	NP-6
	46-60	Sand-------------	SP-SM, SM	A-1, A-2-4, A-3	0	0-5	95-100	90-100	45-70	5-15	<25	NP
128F:												
Goodman---------	0-3	Silt loam--------	ML, CL-ML	A-4	1-2	0-10	90-100	85-100	85-100	75-100	<23	NP-6
	3-5	Silt loam--------	ML	A-4	0	0-10	90-100	85-100	70-100	60-90	<25	NP-7
	5-14	Silt loam--------	ML, CL-ML	A-4	0	0-10	90-100	85-100	70-100	60-90	<25	NP-7
	14-33	Silt loam, very fine sandy loam.	ML, CL-ML	A-4	0	0-10	90-100	85-100	70-100	60-90	<25	NP-7
	33-49	Fine sandy loam, gravelly loamy sand, loam.	ML, CL-ML, SM, SP-SM	A-4, A-1-b, A-2-4	0	0-10	65-100	55-95	20-90	8-75	<23	NP-6
	49-60	Sandy loam, fine sandy loam, loamy sand.	SC-SM, SM, SP-SM	A-4, A-1-b, A-2-4	0	0-10	65-100	75-100	40-85	15-75	<23	NP-6

TABLE 17.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments >10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
128F:												
Sundog----------	0-3	Very fine sandy loam.	ML, CL-ML, SM, SC-SM	A-4	1-2	0-20	95-100	75-100	65-95	35-65	<25	NP-6
	3-46	Silt loam, very fine sandy loam, fine sandy loam.	ML, CL-ML, SM, SC-SM	A-4	0	0-7	95-100	90-100	70-100	45-90	<25	NP-6
	46-60	Sand----------	SP-SM, SM	A-1, A-2-4, A-3	0	0-5	95-100	90-100	45-70	5-15	<25	NP
163B, 163D, 163F-Sagola	0-3	Fine sandy loam	SM, SC-SM	A-4, A-2-4	1-2	0-20	95-100	75-100	50-85	30-50	<25	NP-7
	3-18	Fine sandy loam, loamy fine sand.	SM, SC-SM	A-4	0-2	0-20	95-100	75-100	50-95	40-50	<25	NP-7
	18-47	Loamy sand, sandy loam, fine sandy loam.	SP-SM, SM, SC-SM	A-2-4, A-4, A-1-b	0-2	0-20	95-100	75-100	35-85	10-50	<25	NP-7
	47-60	Sandy loam, loamy fine sand.	SP-SM, SM, SC-SM	A-2-4, A-4, A-1-b	0-2	0-20	95-100	75-100	35-75	10-40	<25	NP-7
164B---------- Alstad	0-4	Loam----------	CL, CL-ML, ML	A-4	0	0-3	80-100	75-98	65-98	45-98	<28	3-9
	4-21	Sandy loam, loam, fine sandy loam.	ML, CL, SM, SC	A-2, A-4	0	0-3	80-100	75-98	50-98	30-98	<26	2-8
	21-26	Fine sandy loam, clay loam, loam.	CL, SC, SM, ML	A-4, A-6, A-2	0	0-3	80-100	75-98	50-95	25-75	20-40	5-20
	26-42	Clay loam, loam	CL, SC	A-6, A-4, A-2, A-7	0	0-3	80-100	75-98	45-95	20-75	25-45	9-25
	42-60	Sandy loam, loam, clay loam.	SC, CL, SM, ML	A-6, A-4, A-2, A-1	0	0-3	80-100	75-98	45-95	20-75	20-45	3-25
165B:												
Sundog----------	0-4	Very fine sandy loam.	ML, CL-ML, SM, SC-SM	A-4	0	0-20	95-100	75-100	65-95	35-65	<25	NP-6
	4-15	Silt loam, very fine sandy loam, fine sandy loam.	ML, CL-ML, SM, SC-SM	A-4, A-2-4	0	0-7	95-100	75-100	50-100	30-90	<25	NP-6
	15-22	Gravelly very fine sandy loam, gravelly fine sandy loam.	SM, SC-SM, GM, GM-GC	A-2-4, A-4	0	0-7	50-95	50-75	45-75	25-50	<25	NP-6
	22-60	Stratified sand to very gravelly coarse sand.	SW, SP-SM, GP, SP	A-1, A-2-4, A-3	0	0-7	50-95	25-90	10-70	0-10	---	NP

TABLE 17.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments >10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
165B:												
Channing--------	0-7	Very fine sandy loam.	SM, ML, CL-ML, SC-SM	A-2-4, A-4	0-5	0-20	95-100	95-100	55-95	25-65	<25	NP-6
	7-24	Very fine sandy loam, fine sandy loam, sandy loam.	SM, ML, CL-ML, SC-SM	A-2-4, A-4	0	0-5	95-100	95-100	55-95	25-75	<25	NP-7
	24-60	Stratified sand to very gravelly sand.	SP, SP-SM	A-1	0	0-10	65-95	40-80	20-30	0-10	---	NP
166F----------	0-1	Silt loam--------	ML	A-4	2-3	5-15	90-100	85-100	70-100	60-85	<20	NP-4
Soperton	1-25	Silt loam--------	ML, CL-ML	A-4	0	0-15	90-100	85-100	70-100	60-85	<25	NP-6
	25-41	Gravelly sandy loam, loam.	SM, SC, SC-SM	A-4, A-2, A-1-b	0	0-30	70-100	65-90	40-70	20-45	<25	NP-8
	41-60	Gravelly loamy sand, sandy loam.	SM, SP-SM	A-1, A-2, A-4	0	0-30	70-100	65-90	25-70	10-45	<20	NP-4
167A----------	0-4	Loam----------	ML, CL-ML	A-4	0	0-15	85-100	75-100	65-100	50-90	<25	NP-7
Monico	4-7	Fine sandy loam, loam, silt loam.	SM, SC, ML, CL	A-4, A-2-4	0	0-15	65-100	75-100	50-95	30-85	<30	NP-10
	7-47	Sandy loam, gravelly sandy loam.	SM, GM, GM-GC	A-1, A-2	0	0-15	60-100	60-95	30-85	13-35	<20	NP-4
	47-60	Sandy loam, gravelly sandy loam.	SM, GM, GM-GC	A-1, A-2	0	0-15	60-100	60-95	30-85	13-35	<20	NP-4
168F:												
Soperton--------	0-1	Silt loam--------	ML	A-4	2-3	5-15	90-100	85-100	70-100	60-85	<20	NP-4
	1-25	Silt loam--------	ML, CL-ML	A-4	0	0-15	90-100	85-100	70-100	60-85	<25	NP-6
	25-41	Gravelly sandy loam, loam.	SM, SC, SC-SM	A-4, A-2, A-1-b	0	0-30	70-100	65-90	40-70	20-45	<25	NP-8
	41-60	Gravelly loamy sand, sandy loam.	SM, SP-SM	A-1, A-2, A-4	0	0-30	70-100	65-90	25-70	10-45	<20	NP-4
Rock outcrop----	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

TABLE 17.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments >10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
500B, 500D-------	0-3	Silt loam--------	ML, CL-ML	A-4	2-3	0-15	90-100	85-100	70-100	60-90	<25	NP-6
Wabeno	3-19	Silt loam--------	ML, CL-ML	A-4	0	0-15	90-100	85-100	70-100	60-95	<25	NP-7
	19-63	Sandy loam, cobbly, loamy sand, cobbly sandy loam.	SM, SC, SP-SM, SC-SM	A-1, A-2-4	0	0-30	70-100	65-95	30-65	10-35	<30	NP-10
	63-72	Cobbly sandy loam, gravelly loamy sand, loamy sand.	SM, SC-SM, SP-SM	A-1, A-2-4	0	0-30	70-90	65-90	25-60	10-25	<23	NP-6
501F----------	0-1	Silt loam--------	ML	A-4	2-3	5-15	90-100	85-100	70-100	60-85	<20	NP-4
Soperton	1-25	Silt loam--------	ML, CL-ML	A-4	0	0-15	90-100	85-100	70-100	60-85	<25	NP-6
	25-41	Gravelly sandy loam, loam.	SM, SC, SC-SM	A-4, A-2, A-1-b	0	0-30	70-100	65-90	40-70	20-45	<25	NP-8
	41-60	Gravelly loamy sand, sandy loam.	SM, SP-SM	A-1, A-2, A-4	0	0-30	70-100	65-90	25-70	10-45	<20	NP-4
502B, 502D, 502F-	0-4	Very fine sandy loam.	ML, CL-ML	A-4	2-3	5-20	95-100	85-100	70-95	50-70	<25	NP-7
Champion	4-20	Cobbly silt loam, silt loam, very fine sandy loam.	SM, CL-ML, ML, SC-SM	A-2-4, A-4	0-1	0-5	95-100	85-100	55-100	30-90	<25	NP-7
	20-49	Gravelly fine sandy loam, sandy loam, gravelly loamy sand.	SM, SC-SM, SP-SM	A-2-4, A-4, A-1-b	0-1	0-5	75-100	55-90	25-80	10-50	<25	NP-6
	49-60	Gravelly fine sandy loam, sandy loam, gravelly loamy sand.	SM, SC-SM, SP-SM	A-2-4, A-4, A-1-b	0-1	0-5	80-100	50-90	25-80	5-50	<25	NP-6
503A----------	0-7	Loam----------	ML, CL-ML	A-4	0-2	0-15	80-100	75-100	65-90	50-70	<25	NP-7
Typic Fragiaquods	7-15	Fine sandy loam, sandy loam, loam.	SM, SC-SM, ML, CL-ML	A-4, A-2-4	0-2	0-15	80-100	75-100	50-90	30-55	<25	NP-7
	15-38	Sandy loam, fine sandy loam, cobbly loamy sand.	SM, SC-SM, SP-SM	A-2, A-4, A-1-b	0-2	0-25	85-95	75-90	40-75	10-50	<20	NP-7
	38-60	Sandy loam, loamy sand, cobbly sandy loam.	SM, SP-SM	A-2-4, A-1-b	0-2	0-25	89-95	75-90	35-60	10-35	<20	NP-4

TABLE 17.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments >10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
504B, 504D, 504F-Pence	0-2	Fine sandy loam	SM, ML	A-4, A-2, A-1	0	0-15	85-100	75-100	45-85	20-55	<21	NP-4
	2-20	Fine sandy loam, sandy loam, gravelly sandy loam.	SM, ML, CL-ML, SC-SM	A-4, A-2, A-1	0	0-15	55-100	50-100	30-95	15-75	<25	NP-7
	20-35	Gravelly sand, loamy sand, sand.	SM, SP-SM, GM, GP-GM	A-2, A-1, A-3	0	0-15	55-100	50-100	25-75	2-30	---	NP
	35-60	Gravelly coarse sand, sand, sand and gravel.	SP, SM	A-1, A-3, A-2	0	0-15	55-85	50-75	15-55	2-15	---	NP
505, 506---------- Humaquepts	0-60	Variable---------	---	---	---	---	---	---	---	---	---	---
507A---------- Monico	0-4	Loam----------	ML, CL-ML	A-4	0	0-15	85-100	75-100	65-100	50-90	<25	NP-7
	4-7	Fine sandy loam, loam, silt loam.	SM, SC, ML, CL	A-4, A-2-4	0	0-15	65-100	60-95	50-95	30-85	<30	NP-10
	7-47	Sandy loam, gravelly sandy loam.	SM, GM, GM-GC	A-1, A-2	0	0-15	90-100	75-95	40-70	20-40	<20	NP-6
	47-60	Gravelly loamy sand, loamy sand, gravelly sandy loam.	SM, GM, GM-GC	A-1, A-2	0	0-15	60-100	60-95	30-85	13-35	<20	NP-4
508A---------- Beechwood	0-4	Silt loam--------	ML, CL-ML	A-4	0	0-7	95-100	85-100	80-100	50-90	<25	NP-7
	4-34	Silt loam, loam, sandy loam.	ML, CL-ML	A-4	0	0-7	95-100	85-100	80-100	50-90	<25	NP-7
	34-49	Silt loam, loam, sandy loam.	SM, ML, CL-ML, SC-SM	A-2-4, A-4	0	0-7	95-100	85-100	50-95	20-90	<25	NP-7
	49-71	Loamy sand, gravelly sandy loam, cobbly sandy loam.	SM	A-2-4, A-4, A-1-b	0-5	8-50	85-95	70-90	35-90	15-50	<20	NP
509A---------- Typic Dystrochrepts	0-2	Silt loam--------	ML, CL, CL-ML	A-4, A-6	0	0-5	100	90-100	85-100	60-90	15-35	2-12
	2-60	Cobbly silt loam, silt loam, gravelly sandy loam.	CL-ML, SC-SM, SM, ML	A-2-4, A-4, A-1-b	0	5-30	80-95	75-90	45-90	20-75	<25	NP-7
	60-72	Cobbly silt loam, silt loam, gravelly sandy loam.	CL-ML, SC-SM, SM, ML	A-2-4, A-4, A-1-b	0	5-30	80-95	75-90	45-90	20-75	<25	NP-7

TABLE 17.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments >10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
510----------	0-51	Sapric material	PT	A-8	---	---	---	---	---	---	---	---
Borosaprists	51-60	Variable---------	---	---	---	---	---	---	---	---	---	---
511B, 511D, 511F-Typic Dystrochrepts	0-3	Fine sandy loam	ML, CL-ML, SM, SC-SM	A-2-4, A-4, A-1-b	0	0-5	90-100	75-100	40-95	20-55	<25	2-7
	3-41	Fine sandy loam, cobbly silt loam, gravelly sandy loam.	SM, CL-ML, ML, SC-SM	A-2-4, A-4	0	5-15	90-100	75-95	75-90	10-75	<25	NP-7
	41-60	Sand, gravelly sand, very gravelly coarse sand.	SP, SP-SM, GP, GP-GM	A-3, A-1-b, A-2-4	0	5-15	50-85	40-85	30-55	3-12	---	NP
512----------	0-51	Sapric material	PT	A-8	---	---	---	---	---	---	---	---
Borosaprists	51-60	Variable---------	---	---	---	---	---	---	---	---	---	---
513B----------	0-2	Fine sandy loam	SM, SC-SM	A-4, A-2-4	0	0-15	80-100	80-100	50-70	30-40	<25	NP-7
Entic Haplorthods	2-30	Fine sandy loam, loam, gravelly sandy loam.	SM, SC, SC-SM, SP-SM	A-2-4, A-4, A-1-b	0	0-15	80-100	70-100	40-95	10-50	<25	NP-10
	30-60	Sand, gravelly coarse sand.	SP, SP-SM, SM	A-2-4, A-3, A-1-b	0	0-5	90-100	55-100	40-80	0-20	---	NP
514B----------	0-8	Silt loam---------	ML, CL-ML	A-4	1-2	0-8	100	90-100	80-100	55-90	<25	2-7
Stambaugh	8-23	Silt loam, very fine sandy loam.	ML, CL-ML	A-4	0	0-8	100	90-100	80-100	55-90	<25	2-7
	23-44	Silt loam, very fine sandy loam.	ML, CL-ML, CL	A-4	0	0-8	100	90-100	80-100	80-95	<30	2-9
	44-60	Gravelly sand, very gravelly sand.	SP, SP-SM	A-1	0	0-15	70-90	25-60	15-40	0-10	---	NP
515----------	0-51	Sapric material	PT	A-8	---	---	---	---	---	---	---	---
Borosaprists	51-60	Variable---------	---	---	---	---	---	---	---	---	---	---
516B, 516D------- Fragiorthods	0-60	Variable---------	---	---	---	---	---	---	---	---	---	---

TABLE 17.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
517B, 517D, 517F-Lode	0-7	Silt loam--------	ML, CL-ML	A-4	0	0-15	80-100	75-100	70-95	50-80	<25	NP-7
	7-31	Loam, fine sandy loam, gravelly sandy loam.	ML, CL-ML, SM, SC-SM	A-4	0	0-15	80-100	75-100	50-90	45-70	<25	NP-7
	31-70	Sand, gravelly coarse sand, very gravelly sand.	SP, SP-SM	A-1	0	0-15	55-95	45-95	10-35	1-10	---	NP
518---------- Humaquepts	0-60	Variable---------	---	---	---	---	---	---	---	---	---	---
519A---------- Monico	0-7	Loam-------------	ML, CL-ML	A-4	0	0-15	85-100	75-100	65-100	50-90	<25	NP-7
	7-19	Fine sandy loam, sandy loam, silt loam.	SM, SC-SM, ML, CL-ML	A-2, A-4, A-1	0	0-15	55-100	50-98	30-95	15-80	<25	NP-7
	19-46	Fine sandy loam, silt loam.	SM, SC-SM, ML, CL-ML	A-2, A-4, A-1	0	0-15	55-100	50-98	30-95	15-80	<25	NP-7
	46-60	Loamy sand-------	SM, SP-SM	A-2, A-1, A-3	0	0-15	90-100	85-100	40-75	0-30	<25	NP-7
520B---------- Haplorthods	0-60	Variable---------	---	---	---	---	---	---	---	---	---	---
521B---------- Pence	0-4	Sandy loam-------	SM, ML	A-4, A-2, A-1	0	0-7	85-100	75-100	45-85	20-55	<21	NP-4
	4-20	Sandy loam, loam, gravelly sandy loam.	SM, ML, CL-ML, SC-SM	A-4, A-2, A-1	0	0-7	55-100	50-100	30-95	15-75	<25	NP-7
	20-33	Gravelly sand, loamy sand.	SM, SP-SM, GM, GP-GM	A-2, A-1, A-3	0	0-7	55-100	50-100	25-75	2-30	---	NP
	33-60	Loamy sand, coarse sand.	SP, SP-SM, GP, GP-GM	A-1, A-3, A-2	0	5-15	50-100	50-100	25-70	1-12	---	NP
522D: Entic Fragiorthods---	0-7	Loam-------------	ML, CL-ML	A-4	1-2	0-10	95-100	85-100	70-95	50-75	<25	NP-7
	7-16	Loam, silt loam, gravelly sandy loam.	SM, SC-SM, CL-ML, ML	A-2-4, A-4, A-1-b	0	0-10	95-100	50-100	25-100	10-90	<25	NP-7
	16-26	Gravelly loamy sand, sandy loam, very gravelly sandy loam.	SM, SC-SM, SP-SM, ML	A-2-4, A-4, A-1-b, A-3	0	0-15	80-100	45-90	25-70	5-55	<25	NP-6
	26-60	Gravelly loamy sand, gravelly sandy loam, very gravelly sandy loam.	SM, SC-SM, SP-SM, ML	A-2, A-4, A-1-b, A-3	0	0-15	80-100	45-70	25-70	5-55	<25	NP-6

TABLE 17.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments >10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
522D:												
Typic Dystrochrepts--	0-60	Variable---------	---	---	---	---	---	---	---	---	---	---
523B:												
Entic Haplorthods----	0-60	Variable---------	---	---	---	---	---	---	---	---	---	---
Typic Haplaquepts----	0-60	Variable---------	---	---	---	---	---	---	---	---	---	---
524D, 524F-------	0-20	Variable---------	---	---	---	---	---	---	---	---	---	---
Haplorthods	20-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
525B, 525D, 525F-Entic Haplorthods	0-5	Cobbly sandy loam	SM, SC-SM	A-2-4, A-4, A-1-b	0-3	10-50	95-100	85-100	45-85	20-50	<20	NP-4
	5-18	Gravelly sandy loam, cobbly silt loam.	SM, SC-SM, CL-ML, ML	A-4, A-2-4, A-1-b	0-3	10-50	95-100	50-75	30-75	10-70	<25	NP-7
	18-52	Extremely cobbly coarse sand, very cobbly sand.	SP, SP-SM, SM	A-1, A-2, A-3	0-3	55-75	85-95	60-90	40-75	0-30	---	NP
	52-65	Extremely cobbly coarse sand, very cobbly sand.	SP, SM, SP-SM	A-1, A-3, A-2	0-3	55-75	85-95	60-90	40-75	0-30	---	NP
527:												
Borohemists-----	0-51	Mucky peat-------	PT	A-8	---	---	---	---	---	---	---	---
	51-60	Variable---------	---	---	---	---	---	---	---	---	---	---
Borosaprists----	0-51	Sapric material	PT	A-8	---	---	---	---	---	---	---	---
	51-60	Variable---------	---	---	---	---	---	---	---	---	---	---
528--------------	0-51	Mucky peat-------	PT	A-8	---	---	---	---	---	---	---	---
Borohemists	51-60	Variable---------	---	---	---	---	---	---	---	---	---	---
529--------------	0-51	Hemic material---	PT	A-8	---		---	---	---	---	---	---
Borohemists	51-60	Variable---------	---	---	---	---	---	---	---	---	---	---
530:												
Borosaprists----	0-51	Sapric material	PT	A-8	---	---	---	---	---	---	---	---
	51-60	Variable---------	---	---	---	---	---	---	---	---	---	---

TABLE 17.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
530:												
Histic Humaquepts-----	0-15	Muck----------	PT	A-8	---	---	---	---	---	---	---	---
	15-60	Variable---------	---	---	---	---	---	---	---	---	---	---
531C---------- Champion	0-2	Silt loam--------	ML, CL-ML	A-4	2-3	10-25	95-100	85-100	75-100	55-90	<25	NP-7
	2-29	Cobbly fine sandy loam, silt loam, fine sandy loam.	SM, CL-ML, ML, SC-SM	A-2-4, A-4	0-1	0-5	95-100	85-100	55-100	30-90	<25	
	29-60	Cobbly sandy loam, cobbly loamy sand.	SM, SC-SM, SP-SM	A-2-4, A-4, A-1-b	0-1	0-5	75-100	55-90	25-80	10-50	<25	NP-6
532F:												
Champion--------	0-2	Silt loam--------	ML, CL-ML	A-4	2-3	10-25	95-100	85-100	75-100	55-90	<25	NP-7
	2-29	Cobbly silt loam, silt loam, fine sandy loam.	SM, CL-ML, ML, SC-SM	A-2-4, A-4	0-1	0-5	95-100	85-100	55-100	30-90	<25	
	29-60	Cobbly sandy loam, cobbly loamy sand.	SM, SC-SM, SP-SM	A-2-4, A-4, A-1-b	0-1	0-5	75-100	55-90	20-80	10-50	<25	NP-6
Haplorthods-----	0-20	Variable---------	---	---	---	---	---	---	---	---	---	---
	20-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
533B---------- Entic Fragiorthods	0-4	Very fine sandy loam.	SM, ML, CL-ML, SC-SM	A-4	0	0-10	95-100	85-100	70-100	40-90	<25	NP-7
	4-21	Very fine sandy loam, silt loam, gravelly sandy loam.	SM, SC-SM, CL-ML, ML	A-2-4, A-4, A-1-b	0	0-10	95-100	50-100	25-100	10-90	<25	NP-7
	21-35	Gravelly loamy sand, gravelly sandy loam, very gravelly sandy loam.	SM, SC-SM, SP-SM, ML	A-2-4, A-4, A-1-b, A-3	0	0-15	80-100	45-90	25-70	5-55	<25	NP-6
	35-60	Gravelly loamy sand, gravelly fine sandy loam, very gravelly sandy loam.	SM, SC-SM, SP-SM, ML	A-2, A-4, A-1-b, A-3	0	0-15	80-100	45-70	25-70	5-55	<25	NP-6

TABLE 17.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments >10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
534B, 534D-------	0-1	Sandy loam--------	SM, SC-SM	A-2, A-4	0	0-5	95-100	90-100	70-90	25-50	<25	2-7
Entic Haplorthods	1-6	Sandy loam, loamy sand, sand.	SP-SM, SM, ML	A-2, A-4	0	0-5	90-100	75-100	60-100	10-55	<20	NP-4
	6-41	Loamy sand, sand, fine sand.	SP-SM, SM	A-1, A-2, A-3	0	0-5	95-100	90-100	45-75	5-25	---	NP
	41-60	Stratified loamy fine sand to coarse sand.	SP-SM, SM, SP	A-2, A-1, A-4	0	0-5	90-100	75-100	45-100	0-40	---	NP-4
535B, 535D-------	0-2	Loamy sand--------	SM, SP-SM	A-1, A-2	0	0	80-100	75-100	35-90	12-30	---	NP
Vilas	2-30	Loamy sand--------	SP-SM, SM	A-1, A-2	0	0	80-100	75-100	35-90	12-30	---	NP
	30-42	Sand--------------	SM, SP-SM	A-1, A-2, A-3	0	0	80-100	75-100	35-90	5-20	---	NP
	42-95	Sand--------------	SP, SP-SM, SM	A-1, A-2, A-3	0	0	80-100	75-100	35-90	1-20	---	NP
536F-------------	0-6	Silt loam---------	CL, CL-ML	A-4, A-6	0-3	0-15	95-100	85-100	75-100	50-90	20-35	5-15
Entic Haplorthods	6-18	Gravelly sandy loam, gravelly silt loam.	SM, SC-SM, CL-ML, ML	A-2-4, A-4, A-1-b	0-3	0-15	95-100	55-85	35-80	10-75	<25	NP-7
	18-29	Very gravelly coarse sand, extremely gravelly sand.	SP, SP-SM, GP, GM	A-1	0-3	5-15	40-85	15-50	15-40	0-15	---	NP
	29-60	Very gravelly coarse sand, extremely gravelly sand.	SP, SP-SM, GP, GM	A-1	0-3	5-15	40-85	15-50	15-40	0-15	---	NP
537B-------------	0-60	Variable----------	---	---	---	---	---	---	---	---	---	---
Haplorthods												
538B, 538D-------	0-40	Variable----------	---	---	---	---	---	---	---	---	---	---
Entic Haplorthods	40-60	Sand, loamy sand	SP, SP-SM, SM	A-1, A-2, A-3	0	0	80-100	75-100	35-75	0-30	---	NP
539B-------------	0-1	Sandy loam--------	SM, SC-SM	A-2, A-4	0	0-5	95-100	90-100	70-90	25-50	<25	2-7
Karlin	1-6	Sandy loam, loamy sand.	SP-SM, SM, ML	A-2, A-4	0	0-5	90-100	75-100	60-100	10-55	<20	NP-4
	6-61	Loamy sand, sand, fine sand.	SP-SM, SM	A-1, A-2, A-3	0	0-5	95-100	90-100	45-75	5-25	---	NP
	61-95	Sand, loamy sand	SP-SM, SP	A-1, A-2, A-3	0	0-5	80-100	75-100	30-70	0-10	---	NP
540B:												
Entic Fragiorthods---	0-60	Variable----------	---	---	---	---	---	---	---	---	---	---

TABLE 17.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments >10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
540B:												
Typic Fragiaquods----	0-60	Variable---------	---	---	---	---	---	---	---	---	---	---
Borosaprists----	0-51	Sapric material	PT	A-8	---	---	---	---	---	---	---	---
	51-60	Variable---------	---	---	---	---	---	---	---	---	---	---
541---------- Fluvaquents	0-60	Variable---------	---	---	---	---	---	---	---	---	---	---
542B, 542D, 542F- Gogebic	0-7	Fine sandy loam	SM, SC, SC-SM	A-2, A-4, A-1	0-5	5-20	80-100	75-100	45-85	20-50	<25	NP-10
	7-21	Sandy loam, fine sandy loam, gravelly very fine sandy loam.	SM, ML, CL, SC	A-2, A-4	0-5	5-20	80-100	75-100	35-70	25-65	<25	NP-10
	21-28	Sandy loam, fine sandy loam, loamy fine sand.	SM, ML, SP-SM	A-2, A-4	0-5	5-20	80-100	75-90	35-70	25-60	<25	NP-10
	28-37	Sandy loam, fine sandy loam, gravelly loam.	SC, CL, SM, ML	A-2, A-6, A-4	0-5	5-10	80-100	75-100	35-70	25-65	<25	NP-15
	37-60	Sandy loam, gravelly sandy loam, loamy sand.	SM, SP-SM, ML	A-2, A-4	0-5	5-10	80-100	75-90	35-70	20-60	<25	NP-10
543A---------- Haplaquods	0-60	Variable---------	---	---	---	---	---	---	---	---	---	---
544C, 544D, 544F, 545B, 545D, 545F, 546C, 546D, 546F, 547B---------- Haplorthods	0-60	Variable---------	---	---	---	---	---	---	---	---	---	---
548:												
Humaquepts------	0-60	Variable---------	---	---	---	---	---	---	---	---	---	---
Terric Borosaprists---	0-40	Sapric material	PT	A-8	---	---	---	---	---	---	---	---
	40-60	Variable---------	---	---	---	---	---	---	---	---	---	---

TABLE 17.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments >10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
549B, 549D, 549F:												
Karlin----------	0-2	Fine sandy loam	SM, ML	A-4, A-1, A-2	0	0	90-100	75-100	45-85	20-55	<20	NP-4
	2-35	Loamy fine sand, loamy sand, fine sandy loam.	SP-SM, SM, ML	A-2, A-4	0	0	90-100	75-100	60-100	10-55	<20	NP-4
	35-60	Sand----------	SP, SP-SM, SM	A-2, A-3, A-1	0	0	80-100	75-100	35-70	0-15	---	NP
Pence----------	0-4	Fine sandy loam	SM, ML	A-4, A-2, A-1	0	0-15	85-100	75-100	45-85	20-55	<21	NP-4
	4-20	Fine sandy loam, sandy loam, gravelly sandy loam.	SM, ML, CL-ML, SC-SM	A-4, A-2, A-1	0	0-15	55-100	50-100	30-95	15-75	<25	NP-7
	20-33	Gravelly sand, loamy sand, sand.	SM, SP-SM, GM, GP-GM	A-2, A-1, A-3	0	0-15	55-100	50-100	25-75	2-30	---	NP
	33-60	Gravelly sand, loamy sand, sand.	SP, SM	A-1, A-3, A-2	0	0-15	55-85	50-75	15-55	2-15	---	NP
550----------	0-40	Sapric material	PT	A-8	---	---	---	---	---	---	---	---
Terric Borosaprists	40-60	Variable---------	---	---	---	---	---	---	---	---	---	---
551A----------	0-60	Variable---------	---	---	---	---	---	---	---	---	---	---
Typic Fragiorthods												
552F----------	0-1	Sand----------	SP-SM, SM	A-1, A-2, A-3	0	0-5	95-100	90-100	45-75	5-25	---	NP
Kalkaska	1-19	Sand----------	SP-SM, SM	A-2, A-1	0	0-5	95-100	85-100	45-75	5-25	---	NP
	19-58	Sand----------	SP-SM, SM	A-2, A-3, A-1	0	0-5	95-100	85-100	45-75	5-15	---	NP
	58-90	Sand, fine sand, loamy fine sand.	SP, SP-SM, SM	A-2, A-3, A-1	0	0-5	95-100	85-100	45-75	0-15	---	NP
553D----------	0-4	Loamy sand-------	SM, SP-SM	A-1-b, A-2-4	0	0-5	95-100	85-100	45-75	10-30	---	NP
Kalkaska	4-16	Sand----------	SM, SP-SM	A-1-b, A-2-4, A-3	0	0-5	95-100	85-100	45-75	5-30	---	NP
	16-58	Sand----------	SM, SP-SM	A-1, A-2, A-3	0	0	95-100	85-100	45-70	5-15	---	NP
	58-95	Sand----------	SP, SP-SM, SM	A-1-b, A-2-4, A-3	0	0-5	95-100	85-100	45-70	0-15	---	NP

TABLE 17.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments >10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
554B---------- Alfic Fragiorthods	0-3	Fine sandy loam	SM, SC-SM	A-2-4, A-4	0-2	0-15	80-100	75-100	50-70	30-40	<25	NP-7
	3-19	Fine sandy loam, sandy loam, loam.	SM, SC-SM, ML, CL-ML	A-4, A-2-4	0-2	0-15	80-100	75-100	50-90	30-55	<25	NP-7
	19-30	Loam, gravelly sandy loam, sandy loam.	SM	A-2-4, A-4	0-2	0-25	75-95	70-90	60-80	25-50	<20	NP-2
	30-60	Loam, gravelly sandy loam, loamy sand.	SM	A-2-4, A-4	0-2	0-25	70-95	70-90	50-65	15-50	<20	NP
555B---------- Entic Haplorthods	0-60	Variable---------	---	---	---	---	---	---	---	---	---	---
556---------- Haplaquods	0-60	Variable---------	---	---	---	---	---	---	---	---	---	---

TABLE 18.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS

(The symbol < means less than; > means more than. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" and "Organic matter" apply only to the surface layer. Absence of an entry indicates that data were not available or were not estimated)

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
								K	T		
	In	Pct	g/cc	In/hr	In/in	pH					Pct
50:											
Aquents	0-60	---	---	---	---	---	---	---	---	---	---
Histosols	0-51	---	---	0.2-6.0	---	---	---	---	---	---	50-70
	51-60	---	---	---	---	---	---	---			
51:											
Lupton	0-10	---	0.10-0.35	0.2-6.0	0.35-0.45	5.6-7.8	---	---	5	2	70-90
	10-60	---	0.10-0.35	0.2-6.0	0.35-0.45	5.6-7.8	---	---			
Cathro	0-7	---	0.28-0.45	0.2-6.0	0.45-0.55	4.5-7.8	---	---	5	2	60-85
	7-26	---	0.15-0.30	0.2-6.0	0.35-0.45	4.5-7.8	---	---			
	26-60	10-30	1.50-1.70	0.2-2.0	0.11-0.22	5.6-8.4	Low	0.32			
Humaquepts	0-60	---	---	---	---	4.5-7.3	---	---	---	---	---
52:											
Greenwood	0-18	---	0.30-0.40	>6.0	0.55-0.65	3.6-4.4	---	---	5	7	55-75
	18-60	---	0.10-0.25	0.6-6.0	0.45-0.55	3.6-4.4	---	---			
Merwin	0-8	---	0.02-0.20	>6.0	0.55-0.65	3.6-5.5	---	---	5	7	>25
	8-36	---	0.04-0.15	0.6-6.0	0.07-0.19	3.6-7.3	---	---			
	36-60	10-20	1.10-1.20	0.6-6.0	0.35-0.55	3.6-5.5	---	---			
53:											
Waucedah	0-10	---	0.30-0.40	0.2-6.0	0.35-0.45	6.1-7.3	---	---	5	2	20-70
	10-60	6-18	1.50-1.70	0.6-2.0	0.11-0.19	5.6-8.4	Low	0.32			
Cathro	0-7	---	0.28-0.45	0.2-6.0	0.45-0.55	4.5-7.8	---	---	5	2	60-85
	7-26	---	0.15-0.30	0.2-6.0	0.35-0.45	4.5-7.8	---	---			
	26-60	10-30	1.50-1.70	0.2-2.0	0.11-0.22	5.6-8.4	Low	0.32			
54. Pits											
55A, 55B, 55D---- Oconto	0-7	6-13	1.35-1.70	0.6-2.0	0.20-0.22	6.1-7.8	Low	0.37	4	3	1-2
	7-35	8-18	1.40-1.65	0.6-2.0	0.10-0.19	6.1-7.8	Low	0.24			
	35-60	0-3	1.50-1.80	>6.0	0.02-0.07	7.4-8.4	Low	0.15			
56. Pits and dumps											
57A, 57B, 57D, 57F---------- Padus	0-7	3-10	1.35-1.70	0.6-6.0	0.10-0.15	4.5-6.5	Low	0.24	4	3	.5-2
	7-39	5-18	1.40-1.65	0.6-6.0	0.09-0.22	4.5-6.5	Low	0.24			
	39-60	0-3	1.55-1.80	>6.0	0.02-0.06	5.1-6.5	Low	0.10			
58B, 58D---------- Trenary	0-4	2-15	1.35-1.55	2.0-6.0	0.14-0.22	5.1-6.5	Low	0.17	5	3	1-3
	4-12	2-15	1.35-1.55	2.0-6.0	0.14-0.22	5.1-7.3	Low	0.24			
	12-23	5-15	1.40-1.70	0.6-2.0	0.08-0.14	5.1-7.3	Low	0.24			
	23-36	10-25	1.40-1.80	0.6-2.0	0.14-0.20	5.1-7.8	Low	0.32			
	36-60	5-18	1.40-1.80	0.6-2.0	0.07-0.19	6.6-8.4	Low	0.24			

TABLE 18.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
								K	T		
	In	Pct	g/cc	In/hr	In/in	pH					Pct
59A	0-6	5-20	1.35-1.55	0.6-2.0	0.16-0.24	6.6-7.8	Low	0.32	5	5	1-3
Solona	6-36	12-18	1.45-1.65	0.6-2.0	0.09-0.19	6.6-7.8	Low	0.24			
	36-60	5-20	1.45-1.70	0.6-2.0	0.08-0.19	7.4-8.4	Low	0.37			
60D:											
Trenary	0-4	2-15	1.35-1.55	2.0-6.0	0.14-0.18	5.1-6.5	Low	0.17	5	3	1-3
	4-12	2-15	1.35-1.60	2.0-6.0	0.14-0.19	5.1-7.3	Low	0.24			
	12-23	5-15	1.40-1.70	0.6-2.0	0.08-0.14	5.1-7.3	Low	0.24			
	23-36	10-25	1.40-1.80	0.6-2.0	0.14-0.20	5.1-7.8	Low	0.32			
	36-60	5-18	1.40-1.80	0.6-2.0	0.09-0.19	6.6-8.4	Low	0.24			
Rock outcrop	0-60	---	---	0.01-0.06	---	---		----	---	---	---
64A	0-7	2-12	1.10-1.65	0.6-2.0	0.12-0.18	4.5-6.0	Low	0.24	4	3	1-3
Channing	7-24	2-15	1.25-1.70	0.6-2.0	0.11-0.16	4.5-6.0	Low	0.24			
	24-60	0-5	1.50-1.65	>20	0.02-0.04	5.1-6.5	Low	0.10			
65	0-5	---	0.15-0.40	0.2-6.0	0.35-0.45	4.5-6.0	Low	----	5	5	40-70
Witbeck	5-18	5-25	1.25-1.60	0.6-2.0	0.08-0.16	4.5-6.0	Low	0.24			
	18-51	5-20	1.55-1.75	0.6-2.0	0.04-0.18	4.5-6.0	Low	0.24			
	51-60	5-20	1.55-1.75	0.2-2.0	0.04-0.17	5.1-6.5	Low	0.24			
67B	0-3	2-12	1.30-1.60	0.6-2.0	0.08-0.12	3.6-6.0	Low	0.17	4	5	2-6
Net	3-28	2-12	1.40-1.65	0.6-2.0	0.09-0.21	3.6-6.0	Low	0.28			
	28-49	2-10	1.80-2.05	<0.06	0.01-0.02	3.6-6.0	Low	0.20			
	49-60	2-10	1.30-1.70	0.6-6.0	0.01-0.02	5.1-6.5	Low	0.20			
68B:											
Net	0-3	2-12	1.30-1.60	0.6-2.0	0.12-0.16	3.6-6.0	Low	0.28	4	5	2-6
	3-28	2-12	1.40-1.65	0.6-2.0	0.09-0.21	3.6-6.0	Low	0.28			
	28-49	2-10	1.80-2.05	<0.06	0.01-0.02	3.6-6.0	Low	0.20			
	49-60	2-10	1.30-1.70	0.6-6.0	0.01-0.02	5.1-6.5	Low	0.20			
Witbeck	0-5	---	0.15-0.40	0.2-6.0	0.35-0.45	4.5-6.0	Low	----	5	5	40-70
	5-18	5-25	1.25-1.60	0.6-2.0	0.08-0.16	4.5-6.0	Low	0.24			
	18-51	5-20	1.55-1.75	0.6-2.0	0.04-0.18	4.5-6.0	Low	0.24			
	51-60	5-20	1.55-1.75	0.2-2.0	0.04-0.17	5.1-6.5	Low	0.24			
69A:											
Karlin	0-2	5-15	1.35-1.60	2.0-6.0	0.15-0.17	3.6-6.5	Low	0.24	4	3	.5-2
	2-35	2-15	1.35-1.60	2.0-6.0	0.08-0.16	3.6-6.5	Low	0.17			
	35-60	0-10	1.40-1.70	6.0-20	0.03-0.04	5.6-7.3	Low	0.15			
Croswell	0-1	0-10	1.30-1.55	6.0-20	0.06-0.09	3.6-6.5	Low	0.15	5	1	.5-2
	1-20	0-10	1.40-1.60	6.0-20	0.06-0.10	4.5-7.3	Low	0.15			
	20-60	0-10	1.50-1.65	6.0-20	0.05-0.07	5.1-8.4	Low	0.15			
70B:											
Sundog	0-4	3-12	1.30-1.60	0.6-2.0	0.18-0.22	5.1-6.0	Low	0.37	4	3	1-3
	4-15	3-15	1.35-1.70	0.6-2.0	0.14-0.22	5.1-6.0	Low	0.28			
	15-22	3-12	1.35-1.70	0.6-2.0	0.13-0.19	5.1-6.0	Low	0.32			
	22-60	0-5	1.55-1.65	>20	0.02-0.04	5.6-6.0	Low	0.10			
Channing	0-7	2-12	1.10-1.65	0.6-2.0	0.07-0.18	4.5-6.0	Low	0.17	4	3	1-3
	7-24	2-15	1.25-1.70	0.6-2.0	0.09-0.19	4.5-6.0	Low	0.24			
	24-60	0-5	1.50-1.65	>20	0.02-0.04	5.1-6.5	Low	0.10			
71D:											
Karlin	0-3	10-15	1.35-1.60	2.0-6.0	0.14-0.18	3.6-6.5	Low	0.17	4	3	.5-2
	3-35	2-15	1.35-1.60	2.0-6.0	0.08-0.16	3.6-6.5	Low	0.17			
	35-60	0-10	1.40-1.70	6.0-20	0.03-0.04	5.6-7.3	Low	0.15			

TABLE 18.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
								K	T		
	In	Pct	g/cc	In/hr	In/in	pH					Pct
71D:											
Vilas	0-4	2-6	1.35-1.65	6.0-20	0.09-0.12	4.5-6.5	Low	0.17	5	2	<1
	4-17	2-6	1.50-1.65	6.0-20	0.07-0.12	4.5-6.5	Low	0.17			
	17-24	1-3	1.50-1.70	6.0-20	0.05-0.08	4.5-6.5	Low	0.17			
	24-60	0-3	1.50-1.70	6.0-20	0.04-0.07	5.1-6.5	Low	0.17			
Rock outcrop	0-60	---	---	0.01-0.06	---	---	---	---	---	---	---
72B, 72D, 72F	0-3	12-15	1.35-1.60	2.0-6.0	0.15-0.17	3.6-6.5	Low	0.24	4	3	.5-2
Karlin	3-35	2-15	1.35-1.60	2.0-6.0	0.08-0.16	3.6-6.5	Low	0.17			
	35-60	0-10	1.40-1.70	6.0-20	0.03-0.04	5.6-7.3	Low	0.15			
73A	0-4	10-18	1.40-1.60	0.6-2.0	0.20-0.24	4.5-6.5	Low	0.28	5	5	3-4
Gaastra	4-22	6-18	1.40-1.60	0.6-2.0	0.15-0.22	5.1-6.5	Low	0.37			
	22-51	10-18	1.45-1.70	0.2-0.6	0.15-0.22	4.5-6.5	Low	0.37			
	51-60	10-18	1.50-1.70	0.2-0.6	0.14-0.22	5.1-7.3	Low	0.37			
74A	0-3	0-8	1.30-1.55	6.0-20	0.07-0.10	3.6-7.3	Low	0.15	5	1	2-4
Au Gres	3-32	1-15	1.50-1.70	6.0-20	0.06-0.09	4.5-7.3	Low	0.15			
	32-60	0-8	1.50-1.70	6.0-20	0.05-0.07	5.1-7.3	Low	0.15			
75	0-5	---	0.10-0.35	2.0-6.0	0.35-0.45	3.6-5.0	---	---	5	2	20-70
Kinross	5-52	0-10	1.40-1.70	6.0-20	0.04-0.09	3.6-6.0	Low	0.15			
	52-60	0-10	1.40-1.70	6.0-20	0.04-0.06	4.5-6.5	Low	0.15			
76	0-9	10-15	1.30-1.60	2.0-6.0	0.10-0.18	6.1-7.8	Low	0.17	5	3	3-6
Ensley	9-20	10-18	1.30-1.70	0.6-2.0	0.11-0.18	6.6-8.4	Moderate	0.28			
	20-60	8-18	1.45-1.70	0.6-6.0	0.10-0.14	7.4-8.4	Low	0.28			
77B, 77D	0-4	2-6	1.35-1.65	6.0-20	0.09-0.12	4.5-6.5	Low	0.17	5	2	<1
Vilas	4-17	2-6	1.50-1.65	6.0-20	0.07-0.12	4.5-6.5	Low	0.17			
	17-24	1-3	1.50-1.70	6.0-20	0.05-0.08	4.5-6.5	Low	0.17			
	24-60	0-3	1.50-1.70	6.0-20	0.04-0.07	5.1-6.5	Low	0.17			
78B, 78D, 78F:											
Vilas	0-4	2-6	1.35-1.65	6.0-20	0.09-0.12	4.5-6.5	Low	0.17	5	2	<1
	4-17	2-6	1.50-1.65	6.0-20	0.07-0.12	4.5-6.5	Low	0.17			
	17-24	1-3	1.50-1.70	6.0-20	0.05-0.08	4.5-6.5	Low	0.17			
	24-60	0-3	1.50-1.70	6.0-20	0.04-0.07	5.1-6.5	Low	0.17			
Karlin	0-3	12-15	1.35-1.60	2.0-6.0	0.15-0.17	3.6-6.5	Low	0.24	4	3	.5-2
	3-35	2-15	1.35-1.60	2.0-6.0	0.08-0.16	3.6-6.5	Low	0.17			
	35-60	0-10	1.40-1.70	6.0-20	0.03-0.04	5.6-7.3	Low	0.15			
79A, 79B, 79D	0-2	8-20	1.20-1.35	0.6-2.0	0.22-0.24	3.6-6.5	Low	0.37	5	5	1-2
Fence	2-9	5-18	1.50-1.60	0.2-0.6	0.11-0.22	3.6-6.5	Low	0.37			
	9-41	8-18	1.50-1.60	0.2-0.6	0.17-0.22	3.6-6.5	Low	0.37			
	41-60	5-15	1.50-1.60	0.2-0.6	0.17-0.22	4.5-7.8	Low	0.37			
80B, 80D, 80F	0-4	3-11	1.20-1.65	2.0-6.0	0.10-0.18	4.5-6.5	Low	0.24	3	3	1-3
Pence	4-20	2-12	1.35-1.45	2.0-6.0	0.10-0.15	4.5-6.5	Low	0.24			
	20-33	2-10	1.65-1.75	2.0-20	0.05-0.08	4.5-6.5	Low	0.10			
	33-60	0-4	1.35-1.80	>6.0	0.02-0.05	5.1-6.5	Low	0.10			
82B, 82D, 82F	0-1	2-15	1.35-1.60	2.0-6.0	0.09-0.12	4.5-6.5	Low	0.17	5	2	.5-2
Keweenaw	1-23	2-15	1.45-1.80	2.0-6.0	0.08-0.11	4.5-6.5	Low	0.17			
	23-33	0-15	1.50-1.80	2.0-6.0	0.05-0.11	4.5-6.5	Low	0.17			
	33-39	0-15	1.50-1.80	0.6-6.0	0.06-0.14	4.5-6.5	Low	0.17			
	39-60	2-15	1.50-1.70	2.0-6.0	0.04-0.13	5.1-6.5	Low	0.17			

TABLE 18.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
								K	T		
	In	Pct	g/cc	In/hr	In/in	pH					Pct
100B, 100D:											
Keweenaw---------	0-1	2-15	1.35-1.60	2.0-6.0	0.09-0.12	4.5-6.5	Low----------	0.17	5	2	.5-2
	1-23	2-15	1.45-1.80	2.0-6.0	0.08-0.11	4.5-6.5	Low----------	0.17			
	23-33	0-15	1.50-1.80	2.0-6.0	0.05-0.11	4.5-6.5	Low----------	0.17			
	33-39	0-15	1.50-1.80	0.6-6.0	0.06-0.14	4.5-6.5	Low----------	0.17			
	39-60	2-15	1.50-1.70	2.0-6.0	0.04-0.13	5.1-6.5	Low----------	0.17			
Karlin----------	0-3	12-15	1.35-1.60	2.0-6.0	0.15-0.17	3.6-6.5	Low----------	0.24	4	3	.5-2
	3-35	2-15	1.35-1.60	2.0-6.0	0.08-0.16	3.6-6.5	Low----------	0.17			
	35-60	0-10	1.40-1.70	6.0-20	0.03-0.04	5.6-7.3	Low----------	0.15			
101B:											
Trenary---------	0-4	2-15	1.35-1.55	2.0-6.0	0.14-0.22	5.1-6.5	Low----------	0.17	5	3	1-3
	4-12	2-15	1.35-1.55	2.0-6.0	0.14-0.22	5.1-7.3	Low----------	0.24			
	12-23	5-15	1.40-1.70	0.6-2.0	0.08-0.14	5.1-7.3	Low----------	0.24			
	23-36	10-25	1.40-1.80	0.6-2.0	0.14-0.20	5.1-7.8	Low----------	0.32			
	36-60	5-18	1.40-1.80	0.6-2.0	0.07-0.19	6.6-8.4	Low----------	0.24			
Solona----------	0-6	5-20	1.35-1.55	0.6-2.0	0.16-0.24	6.6-7.8	Low----------	0.32	5	5	1-3
	6-36	12-18	1.45-1.65	0.6-2.0	0.09-0.19	6.6-7.8	Low----------	0.24			
	36-60	5-20	1.45-1.70	0.6-2.0	0.08-0.19	7.4-8.4	Low----------	0.37			
102B----------	0-1	0-15	1.35-1.65	2.0-6.0	0.09-0.12	5.1-6.5	Low----------	0.17	5	2	.5-3
Escanaba	1-24	0-15	1.30-1.65	2.0-6.0	0.08-0.11	5.1-7.3	Low----------	0.17			
	24-36	5-15	1.30-1.65	2.0-6.0	0.09-0.11	5.1-7.3	Low----------	0.17			
	36-49	7-20	1.30-1.70	0.6-2.0	0.12-0.17	6.6-7.8	Low----------	0.28			
	49-60	4-20	1.30-1.70	0.6-2.0	0.10-0.16	6.6-7.8	Low----------	0.28			
103B, 103D:											
Wabeno----------	0-2	3-10	1.20-1.50	0.6-2.0	0.18-0.23	3.6-6.0	Low----------	0.37	4	5	1-2
	2-23	4-12	1.30-1.45	0.6-2.0	0.18-0.24	3.6-6.0	Low----------	0.43			
	23-32	6-16	1.65-1.80	0.6-2.0	0.18-0.22	3.6-6.0	Low----------	0.43			
	32-50	6-16	1.80-1.95	0.2-0.6	0.08-0.12	3.6-6.0	Low----------	0.17			
	50-60	3-10	1.80-1.95	0.6-6.0	0.03-0.05	4.5-6.5	Low----------	0.20			
Sarona----------	0-2	4-15	1.35-1.65	0.6-2.0	0.08-0.15	4.5-6.5	Low----------	0.17	5	3	1-3
	2-33	4-12	1.55-1.65	0.6-2.0	0.07-0.17	4.5-6.5	Low----------	0.24			
	33-37	5-12	1.60-1.70	0.6-2.0	0.08-0.19	4.5-6.5	Low----------	0.24			
	37-60	4-15	1.60-1.70	0.6-2.0	0.05-0.13	5.1-6.5	Low----------	0.24			
104A, 104B, 104D-	0-4	5-15	1.10-1.60	0.6-2.0	0.21-0.24	4.5-6.0	Low----------	0.28	4	5	1-3
Stambaugh	4-18	5-15	1.10-1.60	0.6-2.0	0.21-0.24	4.5-6.0	Low----------	0.43			
	18-39	8-18	1.25-1.70	0.2-0.6	0.20-0.22	4.5-6.0	Low----------	0.43			
	39-60	0-8	1.50-1.70	>20	0.02-0.04	5.1-6.5	Low----------	0.10			
105D:											
Wabeno----------	0-2	3-10	1.20-1.50	0.6-2.0	0.18-0.23	3.6-6.0	Low----------	0.37	4	5	1-2
	2-23	4-12	1.30-1.45	0.6-2.0	0.17-0.24	3.6-6.0	Low----------	0.43			
	23-32	6-16	1.65-1.80	0.6-2.0	0.12-0.22	3.6-6.0	Low----------	0.43			
	32-50	6-16	1.80-1.95	0.2-0.6	0.08-0.12	3.6-6.0	Low----------	0.28			
	50-60	3-10	1.80-1.95	0.6-2.0	0.03-0.05	4.5-6.5	Low----------	0.28			
Rock outcrop----	0-60	---	---	0.01-0.06	---	---	----------	----	---	---	---
106D----------	0-4	2-15	1.10-1.65	0.6-2.0	0.07-0.20	3.6-6.0	Low----------	0.28	4	3	1-3
Champion	4-20	2-15	1.10-1.65	0.6-2.0	0.09-0.20	3.6-6.0	Low----------	0.37			
	20-49	2-12	1.80-2.05	<0.06	0.01-0.04	3.6-6.0	Low----------	0.20			
	49-60	1-12	1.30-1.65	0.6-6.0	0.01-0.04	3.6-6.0	Low----------	0.20			

TABLE 18.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
								K	T		
	In	Pct	g/cc	In/hr	In/in	pH					Pct
107B, 107D, 107F-Sarona	0-2	4-15	1.35-1.65	0.6-2.0	0.08-0.15	4.5-6.5	Low	0.17	5	3	1-3
	2-33	4-12	1.55-1.65	0.6-2.0	0.07-0.17	4.5-6.5	Low	0.24			
	33-37	5-12	1.60-1.70	0.6-2.0	0.08-0.19	4.5-6.5	Low	0.24			
	37-60	4-15	1.60-1.70	0.6-2.0	0.05-0.13	5.1-6.5	Low	0.24			
108D, 108F:											
Sarona	0-2	4-15	1.35-1.65	0.6-2.0	0.08-0.15	4.5-6.5	Low	0.17	5	3	1-3
	2-33	4-12	1.55-1.65	0.6-2.0	0.07-0.17	4.5-6.5	Low	0.24			
	33-37	5-12	1.60-1.70	0.6-2.0	0.08-0.19	4.5-6.5	Low	0.24			
	37-60	4-15	1.60-1.70	0.6-2.0	0.05-0.13	5.1-6.5	Low	0.24			
Rock outcrop	0-60	---	---	0.01-0.06	---	---	---	---	---	---	---
109D	0-10	2-18	1.50-1.70	0.6-2.0	0.11-0.18	---	Low	0.24	5	3	---
Udorthents	10-60	---	---	---	---	---	---	---			
110B, 110D:											
Petticoat	0-1	3-15	1.30-1.55	0.6-2.0	0.14-0.20	3.6-6.0	Low	0.28	4	5	1-3
	1-38	3-15	1.40-1.70	0.6-2.0	0.10-0.20	4.5-6.5	Low	0.43			
	38-60	2-10	1.45-1.70	6.0-20	0.04-0.08	5.1-6.5	Low	0.10			
Wabeno	0-2	3-10	1.20-1.50	0.6-2.0	0.18-0.23	3.6-6.0	Low	0.37	4	5	1-2
	2-23	4-12	1.30-1.45	0.6-2.0	0.17-0.24	3.6-6.0	Low	0.43			
	23-32	6-16	1.65-1.80	0.6-2.0	0.12-0.22	3.6-6.0	Low	0.43			
	32-50	6-16	1.80-1.95	0.2-0.6	0.08-0.12	3.6-6.0	Low	0.28			
	50-60	3-10	1.80-1.95	0.6-2.0	0.03-0.05	4.5-6.5	Low	0.28			
111B:											
Champion	0-4	2-15	1.10-1.65	0.6-2.0	0.07-0.20	3.6-6.0	Low	0.28	4	3	1-3
	4-20	2-15	1.10-1.65	0.6-2.0	0.09-0.20	3.6-6.0	Low	0.37			
	20-49	2-12	1.80-2.05	<0.06	0.01-0.04	3.6-6.0	Low	0.20			
	49-60	1-12	1.30-1.65	0.6-6.0	0.01-0.04	3.6-6.0	Low	0.20			
Net	0-3	2-12	1.30-1.60	0.6-2.0	0.08-0.12	3.6-6.0	Low	0.17	4	5	2-6
	3-28	2-12	1.40-1.65	0.6-2.0	0.09-0.21	3.6-6.0	Low	0.28			
	28-49	2-10	1.80-2.05	<0.06	0.01-0.02	3.6-6.0	Low	0.20			
	49-60	2-10	1.30-1.70	0.6-6.0	0.01-0.02	5.1-6.5	Low	0.20			
112B, 112D-Sundog	0-4	3-12	1.30-1.60	0.6-2.0	0.18-0.22	5.1-6.0	Low	0.37	4	3	1-3
	4-15	3-15	1.35-1.70	0.6-2.0	0.14-0.22	5.1-6.0	Low	0.28			
	15-22	3-12	1.35-1.70	0.6-2.0	0.13-0.19	5.1-6.0	Low	0.32			
	22-60	0-5	1.55-1.65	>20	0.02-0.04	5.6-6.0	Low	0.10			
112F-Sundog	0-4	3-12	1.30-1.60	0.6-2.0	0.15-0.18	5.1-6.0	Low	0.24	4	3	1-3
	4-15	3-15	1.35-1.70	0.6-2.0	0.14-0.22	5.1-6.0	Low	0.28			
	15-22	3-12	1.35-1.70	0.6-2.0	0.13-0.19	5.1-6.0	Low	0.32			
	22-60	0-5	1.55-1.65	>20	0.02-0.04	5.6-6.0	Low	0.10			
113A-Sundog	0-2	3-12	1.30-1.60	0.6-2.0	0.19-0.22	5.1-6.0	Low	0.37	4	3	1-3
	2-25	3-15	1.35-1.70	0.6-2.0	0.15-0.22	5.1-6.0	Low	0.28			
	25-60	0-5	1.55-1.65	>20	0.02-0.04	5.6-6.0	Low	0.10			
114A:											
Minocqua	0-4	---	0.15-0.45	2.0-6.0	0.35-0.45	4.5-7.8	Low	0.10	4	2	60-90
	4-25	10-18	1.50-1.60	0.6-2.0	0.11-0.19	4.5-7.8	Low	0.37			
	25-29	3-10	1.65-1.75	2.0-6.0	0.06-0.10	4.5-7.8	Low	0.15			
	29-60	0-3	1.75-1.85	>6.0	0.02-0.04	4.5-7.8	Low	0.10			

TABLE 18.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
								K	T		
	In	Pct	g/cc	In/hr	In/in	pH					Pct
114A:											
Channing--------	0-7	2-12	1.10-1.65	0.6-2.0	0.12-0.18	4.5-6.0	Low----------	0.24	4	3	1-3
	7-24	2-15	1.25-1.70	0.6-2.0	0.11-0.16	4.5-6.0	Low----------	0.24			
	24-60	0-5	1.50-1.65	>20	0.02-0.04	5.1-6.5	Low----------	0.10			
115A----------	0-1	4-10	1.30-1.70	2.0-6.0	0.11-0.18	4.5-6.5	Low----------	0.24	3	3	1-3
Manitowish	1-19	5-15	1.40-1.70	2.0-6.0	0.10-0.19	4.5-6.5	Low----------	0.24			
	19-26	3-12	1.45-1.65	2.0-6.0	0.04-0.12	4.5-6.5	Low----------	0.15			
	26-60	0-3	1.55-1.70	>6.0	0.02-0.07	5.6-6.5	Low----------	0.10			
116B, 116D-------	0-2	3-10	1.20-1.50	0.6-2.0	0.18-0.23	3.6-6.0	Low----------	0.37	4	6	1-2
Wabeno	2-23	4-12	1.30-1.45	0.6-2.0	0.17-0.24	3.6-6.0	Low----------	0.43			
	23-32	6-16	1.65-1.80	0.6-2.0	0.12-0.22	3.6-6.0	Low----------	0.43			
	32-50	6-16	1.80-1.95	0.2-0.6	0.08-0.12	3.6-6.0	Low----------	0.28			
	50-60	3-10	1.80-1.95	0.6-2.0	0.03-0.05	4.5-6.5	Low----------	0.28			
121B, 121D-------	0-6	5-10	1.35-1.55	0.6-2.0	0.20-0.24	5.6-6.5	Low----------	0.28	4	5	1-3
Peavy	6-27	3-10	1.35-1.70	0.6-2.0	0.12-0.22	5.6-6.5	Low----------	0.43			
	27-41	10-18	1.80-2.00	0.06-0.2	0.03-0.04	5.6-6.5	Low----------	0.28			
	41-60	8-15	1.80-2.10	<0.06	0.02-0.03	5.6-6.5	Low----------	0.28			
122B, 122D:											
Sarona----------	0-2	4-15	1.35-1.65	0.6-2.0	0.10-0.18	4.5-6.5	Low----------	0.24	5	3	1-3
	2-33	4-12	1.55-1.65	0.6-2.0	0.07-0.17	4.5-6.5	Low----------	0.24			
	33-37	5-12	1.60-1.70	0.6-2.0	0.06-0.14	4.5-6.5	Low----------	0.24			
	37-60	4-15	1.60-1.70	0.6-2.0	0.06-0.13	5.1-6.5	Low----------	0.24			
Karlin----------	0-2	5-15	1.35-1.60	2.0-6.0	0.14-0.18	3.6-6.5	Low----------	0.17	4	3	.5-2
	2-35	2-15	1.35-1.60	2.0-6.0	0.08-0.16	3.6-6.5	Low----------	0.17			
	35-60	0-10	1.40-1.70	6.0-20	0.03-0.04	5.6-7.3	Low----------	0.15			
123B, 123D-------	0-3	2-15	1.30-1.60	6.0-20	0.10-0.12	4.5-6.5	Low----------	0.17	4	2	1-3
Ocqueoc	3-23	0-15	1.30-1.60	6.0-20	0.06-0.12	4.5-6.5	Low----------	0.15			
	23-60	10-27	1.50-1.80	0.2-0.6	0.05-0.21	5.6-7.8	Low----------	0.37			
124B, 125B:											
Wabeno----------	0-2	3-10	1.20-1.50	0.6-2.0	0.18-0.23	3.6-6.0	Low----------	0.37	4	5	1-2
	2-23	4-12	1.30-1.45	0.6-2.0	0.17-0.24	3.6-6.0	Low----------	0.43			
	23-32	6-16	1.65-1.80	0.6-2.0	0.12-0.22	3.6-6.0	Low----------	0.43			
	32-50	6-16	1.80-1.95	0.2-0.6	0.08-0.12	3.6-6.0	Low----------	0.28			
	50-60	3-10	1.80-1.95	0.6-2.0	0.03-0.05	4.5-6.5	Low----------	0.28			
Net----------	0-3	2-12	1.30-1.60	0.6-2.0	0.12-0.16	3.6-6.0	Low----------	0.28	4	5	2-6
	3-28	2-12	1.40-1.65	0.6-2.0	0.09-0.21	3.6-6.0	Low----------	0.28			
	28-49	2-10	1.80-2.05	<0.06	0.01-0.02	3.6-6.0	Low----------	0.20			
	49-60	2-10	1.30-1.70	0.6-6.0	0.01-0.02	5.1-6.5	Low----------	0.20			
126B, 126D, 126F-	0-4	2-15	1.10-1.65	0.6-2.0	0.07-0.20	3.6-6.0	Low----------	0.28	4	3	1-3
Champion	4-20	2-15	1.10-1.65	0.6-2.0	0.09-0.20	3.6-6.0	Low----------	0.37			
	20-49	2-12	1.80-2.05	<0.06	0.01-0.04	3.6-6.0	Low----------	0.20			
	49-60	1-12	1.30-1.65	0.6-6.0	0.01-0.04	3.6-6.0	Low----------	0.20			
127D----------	0-3	5-12	1.35-1.45	0.6-2.0	0.19-0.24	3.6-6.5	Low----------	0.37	5	5	2-4
Goodman	3-5	4-10	1.45-1.60	0.6-2.0	0.18-0.24	3.6-6.5	Low----------	0.43			
	5-14	8-14	1.45-1.60	0.6-2.0	0.17-0.22	3.6-6.5	Low----------	0.43			
	14-33	8-14	1.50-1.60	0.6-2.0	0.17-0.22	3.6-6.5	Low----------	0.43			
	33-49	2-12	1.50-1.70	0.6-2.0	0.05-0.18	3.6-6.5	Low----------	0.28			
	49-60	2-12	1.50-1.75	0.6-2.0	0.05-0.16	5.1-6.5	Low----------	0.28			

TABLE 18.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
								K	T		
	In	Pct	g/cc	In/hr	In/in	pH					Pct
128B:											
Goodman----------	0-3	5-12	1.35-1.45	0.6-2.0	0.19-0.24	3.6-6.5	Low----------	0.37	5	5	2-4
	3-5	4-10	1.45-1.60	0.6-2.0	0.18-0.24	3.6-6.5	Low----------	0.43			
	5-14	8-14	1.45-1.60	0.6-2.0	0.17-0.22	3.6-6.5	Low----------	0.43			
	14-33	8-14	1.50-1.60	0.6-2.0	0.17-0.22	3.6-6.5	Low----------	0.43			
	33-49	2-12	1.50-1.70	0.6-2.0	0.05-0.18	3.6-6.5	Low----------	0.28			
	49-60	2-12	1.50-1.75	0.6-2.0	0.05-0.16	5.1-6.5	Low----------	0.28			
Wabeno----------	0-2	3-10	1.20-1.50	0.6-2.0	0.18-0.23	3.6-6.0	Low----------	0.37	4	5	1-2
	2-23	4-12	1.30-1.45	0.6-2.0	0.18-0.24	3.6-6.0	Low----------	0.43			
	23-32	6-16	1.65-1.80	0.6-2.0	0.18-0.22	3.6-6.0	Low----------	0.43			
	32-50	6-16	1.80-1.95	0.2-0.6	0.08-0.12	3.6-6.0	Low----------	0.17			
	50-60	3-10	1.80-1.95	0.6-6.0	0.03-0.05	4.5-6.5	Low----------	0.20			
Sundog----------	0-3	3-12	1.30-1.60	0.6-2.0	0.19-0.22	5.1-6.0	Low----------	0.28	4	3	1-3
	3-46	3-12	1.35-1.70	0.6-2.0	0.15-0.22	5.1-6.0	Low----------	0.43			
	46-60	0-5	1.55-1.65	6.0-20	0.02-0.04	5.6-6.0	Low----------	0.10			
128D:											
Goodman----------	0-3	5-12	1.35-1.45	0.6-2.0	0.19-0.24	3.6-6.5	Low----------	0.37	5	5	2-4
	3-5	4-10	1.45-1.60	0.6-2.0	0.18-0.24	3.6-6.5	Low----------	0.43			
	5-14	8-14	1.45-1.60	0.6-2.0	0.17-0.22	3.6-6.5	Low----------	0.43			
	14-33	8-14	1.50-1.60	0.6-2.0	0.17-0.22	3.6-6.5	Low----------	0.43			
	33-49	2-12	1.50-1.70	0.6-2.0	0.05-0.18	3.6-6.5	Low----------	0.28			
	49-60	2-12	1.50-1.75	0.6-2.0	0.05-0.16	5.1-6.5	Low----------	0.28			
Wabeno----------	0-2	3-10	1.20-1.50	0.6-2.0	0.18-0.23	3.6-6.0	Low----------	0.37	4	5	1-2
	2-23	4-12	1.30-1.45	0.6-2.0	0.18-0.24	3.6-6.0	Low----------	0.43			
	23-32	6-16	1.65-1.80	0.6-2.0	0.18-0.22	3.6-6.0	Low----------	0.43			
	32-50	6-16	1.80-1.95	0.2-0.6	0.08-0.12	3.6-6.0	Low----------	0.17			
	50-60	3-10	1.80-1.95	0.6-6.0	0.03-0.05	4.5-6.5	Low----------	0.20			
Sundog----------	0-3	3-12	1.30-1.60	0.6-2.0	0.18-0.22	5.1-6.0	Low----------	0.37	4	3	1-3
	3-46	3-15	1.35-1.70	0.6-2.0	0.14-0.22	5.1-6.0	Low----------	0.28			
	46-60	3-12	1.35-1.70	0.6-2.0	0.13-0.19	5.1-6.0	Low----------	0.32			
	22-60	0-5	1.55-1.65	>20	0.02-0.04	5.6-6.0	Low----------	0.10			
128F:											
Goodman----------	0-3	5-12	1.35-1.45	0.6-2.0	0.19-0.24	3.6-6.5	Low----------	0.37	5	5	2-4
	3-5	4-10	1.45-1.60	0.6-2.0	0.18-0.24	3.6-6.5	Low----------	0.43			
	5-14	8-14	1.45-1.60	0.6-2.0	0.17-0.22	3.6-6.5	Low----------	0.43			
	14-33	8-14	1.50-1.60	0.6-2.0	0.17-0.22	3.6-6.5	Low----------	0.43			
	33-49	2-12	1.50-1.70	0.6-2.0	0.05-0.18	3.6-6.5	Low----------	0.28			
	49-60	2-12	1.50-1.75	0.6-2.0	0.05-0.16	5.1-6.5	Low----------	0.28			
Sundog----------	0-4	3-12	1.30-1.60	0.6-2.0	0.15-0.18	5.1-6.0	Low----------	0.24	4	3	1-3
	4-22	3-15	1.35-1.70	0.6-2.0	0.14-0.22	5.1-6.0	Low----------	0.28			
	22-60	0-5	1.55-1.65	>20	0.02-0.04	5.6-6.0	Low----------	0.10			
163B, 163D, 163F- Sagola	0-3	2-15	1.30-1.60	2.0-6.0	0.14-0.18	5.1-6.5	Low----------	0.24	5	3	1-3
	3-18	2-15	1.20-1.55	2.0-6.0	0.08-0.17	5.1-6.5	Low----------	0.17			
	18-47	2-15	1.20-1.55	2.0-6.0	0.08-0.17	6.6-7.8	Low----------	0.17			
	47-60	2-15	1.40-1.80	2.0-6.0	0.08-0.13	6.6-7.8	Low----------	0.17			
164B---------- Alstad	0-4	7-18	1.35-1.60	0.6-2.0	0.20-0.24	5.1-7.3	Low----------	0.37	5	5	2-5
	4-21	6-16	1.55-1.65	0.6-2.0	0.13-0.22	4.5-7.3	Low----------	0.32			
	21-26	11-30	1.55-1.70	0.6-2.0	0.13-0.21	5.1-7.3	Low----------	0.32			
	26-42	18-35	1.55-1.70	0.6-2.0	0.13-0.19	5.1-7.8	Low----------	0.32			
	42-60	8-35	1.60-1.80	0.2-0.6	0.09-0.19	5.6-8.4	Low----------	0.32			

TABLE 18.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
								K	T		
	In	Pct	g/cc	In/hr	In/in	pH					Pct
165B:											
Sundog----------	0-4	3-12	1.30-1.60	0.6-2.0	0.18-0.22	5.1-6.0	Low----------	0.37	4	3	1-3
	4-15	3-15	1.35-1.70	0.6-2.0	0.14-0.22	5.1-6.0	Low----------	0.28			
	15-22	3-12	1.35-1.70	0.6-2.0	0.13-0.19	5.1-6.0	Low----------	0.32			
	22-60	0-5	1.55-1.65	>20	0.02-0.04	5.6-6.0	Low----------	0.10			
Channing--------	0-7	2-12	1.10-1.65	0.6-2.0	0.12-0.18	4.5-6.0	Low----------	0.24	4	3	1-3
	7-24	2-15	1.25-1.70	0.6-2.0	0.11-0.16	4.5-6.0	Low----------	0.24			
	24-60	0-5	1.50-1.65	>20	0.02-0.04	5.1-6.5	Low----------	0.10			
166F----------	0-1	3-10	1.20-1.50	0.6-2.0	0.16-0.23	3.6-6.5	Low----------	0.37	4	5	2-3
Soperton	1-25	4-12	1.30-1.45	0.6-2.0	0.16-0.21	3.6-6.5	Low----------	0.43			
	25-41	6-16	1.80-1.95	0.06-0.6	0.06-0.12	3.6-6.5	Low----------	0.17			
	41-60	3-10	1.80-1.95	0.6-6.0	0.04-0.10	4.5-6.5	Low----------	0.10			
167A----------	0-4	8-15	1.10-1.40	0.6-2.0	0.18-0.24	4.5-6.5	Low----------	0.37	5	5	1-4
Monico	4-7	3-18	1.65-1.75	0.6-2.0	0.09-0.19	4.5-6.5	Low----------	0.24			
	7-47	2-8	1.70-1.80	0.6-2.0	0.06-0.12	5.1-7.3	Low----------	0.17			
	47-60	2-8	1.70-1.80	0.6-2.0	0.06-0.12	5.1-7.3	Low----------	0.10			
168F:											
Soperton--------	0-1	3-10	1.20-1.50	0.6-2.0	0.16-0.23	3.6-6.5	Low----------	0.37	4	5	2-3
	1-25	4-12	1.30-1.45	0.6-2.0	0.16-0.21	3.6-6.5	Low----------	0.43			
	25-41	6-16	1.80-1.95	0.06-0.6	0.06-0.12	3.6-6.5	Low----------	0.17			
	41-60	3-10	1.80-1.95	0.6-6.0	0.04-0.10	4.5-6.5	Low----------	0.10			
Rock outcrop----	0-60	---	---	0.01-0.06	---	---	----------	----	---	---	---
500B, 500D-------	0-3	3-10	1.20-1.50	0.6-2.0	0.18-0.23	3.6-6.0	Low----------	0.37	4	6	1-2
Wabeno	3-19	4-12	1.30-1.45	0.6-2.0	0.17-0.24	3.6-6.0	Low----------	0.43			
	19-63	6-16	1.80-1.95	0.2-0.6	0.08-0.12	3.6-6.0	Low----------	0.28			
	63-72	3-10	1.80-1.95	0.6-2.0	0.03-0.05	4.5-6.5	Low----------	0.28			
501F----------	0-1	3-10	1.20-1.50	0.6-2.0	0.16-0.23	3.6-6.5	Low----------	0.37	4	5	2-3
Soperton	1-25	4-12	1.30-1.45	0.6-2.0	0.16-0.21	3.6-6.5	Low----------	0.43			
	25-41	6-16	1.80-1.95	0.06-0.6	0.06-0.12	3.6-6.5	Low----------	0.17			
	41-60	3-10	1.80-1.95	0.6-6.0	0.04-0.10	4.5-6.5	Low----------	0.10			
502B, 502D, 502F-	0-4	2-15	1.10-1.65	0.6-2.0	0.07-0.20	3.6-6.0	Low----------	0.28	4	3	1-3
Champion	4-20	2-15	1.10-1.65	0.6-2.0	0.09-0.20	3.6-6.0	Low----------	0.37			
	20-49	2-12	1.80-2.05	<0.06	0.01-0.04	3.6-6.0	Low----------	0.20			
	49-60	1-12	1.30-1.65	0.6-6.0	0.01-0.04	3.6-6.0	Low----------	0.20			
503A----------	0-7	5-13	1.10-1.60	0.6-2.0	0.17-0.22	3.6-5.5	Low----------	0.32	3	5	1-3
Typic	7-15	2-13	1.10-1.60	0.6-2.0	0.10-0.22	3.6-5.5	Low----------	0.32			
Fragiaquods	15-38	5-15	1.75-2.05	<0.06	0.02-0.04	3.6-5.5	Low----------	0.32			
	38-60	1-8	1.30-1.70	0.6-2.0	0.02-0.04	5.1-6.5	Low----------	0.32			
504B, 504D, 504F-	0-2	3-11	1.20-1.65	2.0-6.0	0.10-0.18	4.5-6.5	Low----------	0.24	3	3	1-3
Pence	2-20	2-12	1.35-1.45	2.0-6.0	0.10-0.15	4.5-6.5	Low----------	0.24			
	20-35	2-10	1.65-1.75	2.0-20	0.05-0.08	4.5-6.5	Low----------	0.10			
	35-60	0-4	1.35-1.80	>6.0	0.02-0.05	5.1-6.5	Low----------	0.10			
505----------	0-60	---	---	---	---	3.6-4.4	----------	----	---	---	---
Humaquepts											
506----------	0-60	---	---	---	---	4.5-7.3	----------	----	---	---	---
Humaquepts											

TABLE 18.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
								K	T		
	In	Pct	g/cc	In/hr	In/in	pH					Pct
507A----------	0-4	8-15	1.10-1.40	0.6-2.0	0.18-0.24	4.5-6.5	Low----------	0.37	5	5	1-4
Monico	4-7	3-18	1.65-1.75	0.6-2.0	0.09-0.19	4.5-6.5	Low----------	0.24			
	7-47	2-8	1.70-1.80	0.6-2.0	0.06-0.12	5.1-7.3	Low----------	0.17			
	47-60	2-8	1.70-1.80	0.6-2.0	0.06-0.12	5.1-7.3	Low----------	0.10			
508A----------	0-4	6-16	1.10-1.40	0.6-2.0	0.20-0.24	4.5-5.5	Low----------	0.37	5	5	2-4
Beechwood	4-34	6-16	1.10-1.40	0.6-2.0	0.20-0.24	4.5-5.5	Low----------	0.37			
	34-49	6-16	1.30-1.65	0.6-2.0	0.10-0.22	4.5-5.5	Low----------	0.37			
	49-71	5-8	1.70-1.90	0.6-2.0	0.05-0.12	5.1-6.5	Low----------	0.24			
509A----------	0-2	5-26	1.30-1.60	0.6-2.0	0.20-0.24	4.5-5.5	Low----------	0.37	5	5	2-3
Typic	2-60	4-12	1.35-1.65	0.6-2.0	0.12-0.22	4.5-6.0	Low----------	0.24			
Dystrochrepts	60-72	4-12	1.55-1.70	0.6-2.0	0.11-0.22	5.1-6.5	Low----------	0.24			
510----------	0-51	---	---	0.2-6.0	---	4.5-7.3	----------	----	2	2	---
Borosaprists	51-60	---	---	---	---	---	----------	----			
511B, 511D, 511F-	0-3	8-15	1.30-1.65	2.0-6.0	0.12-0.18	4.5-5.5	Low----------	0.24	5	3	2-3
Typic	3-41	4-12	1.35-1.65	0.6-2.0	0.10-0.22	4.5-6.0	Low----------	0.24			
Dystrochrepts	41-60	1-8	1.50-1.70	6.0-20	0.02-0.05	5.1-6.5	Low----------	0.15			
512----------	0-51	---	---	0.2-6.0	---	3.6-4.4	----------	----	2	2	---
Borosaprists	51-60	---	---	---	---	---	----------	----			
513B----------	0-2	8-13	1.10-1.60	0.6-2.0	0.10-0.18	3.6-5.5	Low----------	0.24	5	3	1-3
Entic	2-30	8-20	1.10-1.60	0.6-2.0	0.10-0.18	3.6-5.5	Low----------	0.24			
Haplorthods	30-60	0-10	1.35-1.45	6.0-20	0.03-0.06	5.1-6.5	Low----------	0.15			
514B----------	0-8	5-15	1.10-1.60	0.6-2.0	0.21-0.24	4.5-6.0	Low----------	0.28	4	5	1-3
Stambaugh	8-23	5-15	1.10-1.60	0.6-2.0	0.21-0.24	4.5-6.0	Low----------	0.43			
	23-44	8-18	1.25-1.70	0.2-0.6	0.20-0.22	4.5-6.0	Low----------	0.43			
	44-60	0-8	1.50-1.70	>20	0.02-0.04	5.1-6.5	Low----------	0.10			
515----------	0-51	---	---	0.2-6.0	---	4.5-7.3	----------	----	2	2	---
Borosaprists	51-60	---	---	---	---	---	----------	----			
516B, 516D-------	0-60	---	---	---	---	---	----------	----	---	---	---
Fragiorthods											
517B, 517D, 517F-	0-7	5-12	1.10-1.40	0.6-2.0	0.18-0.24	4.5-6.0	Low----------	0.37	4	5	.5-2
Lode	7-31	5-12	1.10-1.40	0.6-2.0	0.10-0.19	4.5-6.0	Low----------	0.24			
	31-70	0-7	1.50-1.70	>20	0.02-0.04	5.1-6.5	Low----------	0.15			
518----------	0-60	---	---	---	---	4.5-7.3	----------	----	---	---	---
Humaquepts											
519A----------	0-7	8-15	1.10-1.40	0.6-2.0	0.18-0.24	4.5-6.5	Low----------	0.37	5	5	1-4
Monico	7-19	3-18	1.65-1.75	0.6-2.0	0.09-0.19	4.5-6.5	Low----------	0.24			
	19-46	2-8	1.70-1.80	0.6-2.0	0.06-0.12	5.1-7.3	Low----------	0.17			
	46-60	2-8	1.70-1.80	0.6-2.0	0.08-0.10	5.1-7.3	Low----------	0.10			
520B----------	0-60	---	---	---	---	---	----------	----	---	---	---
Haplorthods											
521B----------	0-4	3-11	1.20-1.65	2.0-6.0	0.10-0.18	4.5-6.5	Low----------	0.24	3	3	1-3
Pence	4-20	2-12	1.35-1.45	2.0-6.0	0.10-0.15	4.5-6.5	Low----------	0.24			
	20-33	2-10	1.65-1.75	2.0-20	0.05-0.08	4.5-6.5	Low----------	0.10			
	33-60	0-4	1.35-1.80	>6.0	0.02-0.05	5.1-6.5	Low----------	0.10			

TABLE 18.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
								K	T		
	In	Pct	g/cc	In/hr	In/in	pH					Pct
522D:											
Entic Fragiorthods---	0-7	7-15	1.10-1.35	0.6-2.0	0.20-0.22	4.5-5.5	Low----------	0.32	4	5	1-3
	7-16	2-15	1.25-1.60	0.6-2.0	0.09-0.20	4.5-5.5	Low----------	0.24			
	16-26	1-12	1.80-2.05	<0.06	0.01-0.04	5.6-6.0	Low----------	0.20			
	26-60	1-12	1.40-1.70	0.6-6.0	0.01-0.04	5.6-6.0	Low----------	0.20			
Typic Dystrochrepts--	0-60	---	---	---	---	---	----------	----	---	---	---
523B:											
Entic Haplorthods----	0-60	---	---	---	---	---	----------	----	---	---	---
Typic Haplaquepts----	0-60	---	---	---	---	---	----------	----	---	---	---
524D, 524F-------	0-20	---	---	---	---	---	----------	----	---	---	---
Haplorthods	20-60	---	---	0.01-0.06	---	---	----------	----			
525B, 525D, 525F-	0-5	2-10	1.10-1.35	0.6-2.0	0.08-0.15	4.5-6.0	Low----------	0.28	4	3	1-3
Entic	5-18	2-15	1.25-1.65	0.6-2.0	0.12-0.22	4.5-6.0	Low----------	0.28			
Haplorthods	18-52	0-5	1.30-1.60	6.0-20	0.02-0.07	5.1-6.0	Low----------	0.10			
	52-65	0-5	1.45-1.60	6.0-20	0.02-0.07	5.1-6.0	Low----------	0.10			
527:											
Borohemists-----	0-51	---	---	0.6-6.0	---	3.6-4.4	----------	----	2	2	---
	51-60	---	---	---	---	---	----------	----			
Borosaprists----	0-51	---	---	0.2-6.0	---	3.6-4.4	----------	----	2	2	---
	51-60	---	---	---	---	---	----------	----			
528----------	0-51	---	---	0.6-6.0	---	3.6-4.4	----------	----	2	2	---
Borohemists	51-60	---	---	---	---	---	----------	----			
529----------	0-51	---	---	0.6-6.0	---	4.5-7.3	----------	----	2	2	---
Borohemists	51-60	---	---	---	---	---	----------	----			
530:											
Borosaprists----	0-51	---	---	0.2-6.0	---	4.5-7.3	----------	----	2	2	---
	51-60	---	---	---	---	---	----------	----			
Histic Humaquepts-----	0-15	---	---	0.6-6.0	---	---	----------	----	2	2	---
	15-60	---	---	---	---	---	----------	----			
531C----------	0-2	5-15	1.10-1.35	0.6-2.0	0.13-0.22	3.6-6.0	Low----------	0.28	4	5	1-3
Champion	2-29	2-15	1.10-1.65	0.6-2.0	0.09-0.20	3.6-6.0	Low----------	0.37			
	29-60	2-12	1.80-2.05	<0.06	0.01-0.04	3.6-6.0	Low----------	0.20			
532F:											
Champion--------	0-2	5-15	1.10-1.35	0.6-2.0	0.13-0.22	3.6-6.0	Low----------	0.28	4	5	1-3
	2-29	2-15	1.25-1.65	0.6-2.0	0.10-0.20	3.6-6.0	Low----------	0.37			
	29-60	2-12	1.80-2.05	<0.06	0.01-0.04	3.6-6.0	Low----------	0.20			
Haplorthods-----	0-20	---	---	---	---	---	----------	----	---	---	---
	20-60	---	---	0.01-0.06	---	---	----------	----			

TABLE 18.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
								K	T		
	In	Pct	g/cc	In/hr	In/in	pH					Pct
533B----------	0-4	2-15	1.10-1.35	0.6-2.0	0.20-0.24	4.5-5.5	Low----------	0.37	4	5	1-3
Entic	4-21	2-15	1.25-1.60	0.6-2.0	0.09-0.20	4.5-5.5	Low----------	0.24			
Fragiorthods	21-35	1-12	1.80-2.05	<0.06	0.01-0.04	5.0-6.0	Low----------	0.20			
	35-60	1-12	1.40-1.70	0.6-6.0	0.01-0.04	5.0-6.0	Low----------	0.20			
534B, 534D-------	0-1	8-20	1.45-1.60	2.0-6.0	0.13-0.22	4.5-5.5	Low----------	0.20	5	3	1-3
Entic	1-6	2-15	1.35-1.60	2.0-6.0	0.08-0.16	4.5-6.5	Low----------	0.17			
Haplorthods	6-41	0-15	1.35-1.60	6.0-20	0.05-0.10	5.1-6.5	Low----------	0.15			
	41-60	0-15	1.35-1.70	2.0-20	0.05-0.10	5.1-6.5	Low----------	----			
535B, 535D-------	0-2	2-6	1.35-1.65	6.0-20	0.09-0.12	4.5-6.5	Low----------	0.17	5	2	<1
Vilas	2-30	2-6	1.50-1.65	6.0-20	0.07-0.12	4.5-6.5	Low----------	0.17			
	30-42	1-3	1.50-1.70	6.0-20	0.05-0.08	4.5-6.5	Low----------	0.17			
	42-95	0-3	1.50-1.70	6.0-20	0.04-0.07	5.1-6.5	Low----------	0.17			
536F----------	0-6	12-27	1.40-1.65	0.6-2.0	0.20-0.24	4.5-6.0	Low----------	0.37	3	5	1-3
Entic	6-18	2-15	1.25-1.65	0.6-2.0	0.03-0.08	4.5-6.0	----------	0.28			
Haplorthods	18-29	0-5	1.30-1.60	6.0-20	0.02-0.07	5.1-6.0	----------	0.10			
	29-60	0-5	1.45-1.60	6.0-20	---	5.1-6.0	----------	0.10			
537B----------	0-60	---	---	---	---	---	----------	----	---	---	---
Haplorthods											
538B, 538D-------	0-40	---	---	---	---	---	----------	----	---	---	---
Entic	40-60	1-10	1.55-1.65	>6.0	0.04-0.09	---	Low----------	----			
Haplorthods											
539B----------	0-1	8-20	1.45-1.60	2.0-6.0	0.13-0.22	4.5-5.5	Low----------	0.20	5	3	1-3
Karlin	1-6	2-15	1.35-1.60	2.0-6.0	0.08-0.16	5.1-6.5	Low----------	0.17			
	6-61	0-15	1.35-1.60	6.0-20	0.05-0.10	5.1-6.5	Low----------	0.15			
	61-95	0-15	1.35-1.60	6.0-20	0.02-0.04	5.1-6.5	Low----------	0.10			
540B:											
Entic											
Fragiorthods---	0-60	---	---	---	---	---	----------	----	---	---	---
Typic											
Fragiaquods----	0-60	---	---	---	---	---	----------	----	---	---	---
Borosaprists----	0-51	---	---	0.2-6.0	---	4.5-7.3	----------	----	2	2	---
	51-60	---	---	---	---	---	----------	----			
541----------	0-60	---	---	---	---	---	----------	----	---	---	---
Fluvaquents											
542B, 542D, 542F-	0-7	2-15	1.25-1.65	0.6-2.0	0.10-0.18	4.5-6.0	Low----------	0.24	3	3	1-3
Gogebic	7-21	2-15	1.25-1.65	0.6-2.0	0.14-0.21	4.5-6.0	Low----------	0.32			
	21-28	5-18	1.80-2.05	<0.06	0.02-0.04	4.5-6.0	Low----------	0.28			
	28-37	10-18	1.50-1.80	0.6-2.0	0.02-0.04	4.5-6.0	Low----------	0.28			
	37-60	2-15	1.30-1.70	0.6-2.0	0.02-0.04	5.6-7.3	Low----------	0.28			
543A----------	0-60	---	---	---	---	---	----------	----	---	---	---
Haplaquods											

TABLE 18.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
								K	T		
	In	Pct	g/cc	In/hr	In/in	pH					Pct
544C, 544D, 544F, 545B, 545D, 545F, 546C, 546D, 546F, 547B---------- Haplorthods	0-60	---	---	---	---	---	----------	----	---	---	---
548: Humaquepts------	0-60	---	---	---	---	4.5-7.3	----------	----	---	---	---
Terric Borosaprists---	0-40	---	---	0.2-6.0	---	4.5-7.3	----------	----	2	2	---
	40-60	---	---	---	---	---	----------	----			
549B, 549D, 549F: Karlin----------	0-2	5-15	1.35-1.60	2.0-6.0	0.15-0.17	3.6-6.5	Low----------	0.24	4	3	.5-2
	2-35	2-15	1.35-1.60	2.0-6.0	0.08-0.16	3.6-6.5	Low----------	0.17			
	35-60	0-10	1.40-1.70	6.0-20	0.03-0.04	5.6-7.3	Low----------	0.15			
Pence----------	0-4	3-11	1.20-1.65	2.0-6.0	0.10-0.18	4.5-6.5	Low----------	0.24	3	3	1-3
	4-20	2-12	1.35-1.45	2.0-6.0	0.10-0.15	4.5-6.5	Low----------	0.24			
	20-33	2-10	1.65-1.75	2.0-20	0.05-0.08	4.5-6.5	Low----------	0.10			
	33-60	0-4	1.35-1.80	>6.0	0.02-0.05	5.1-6.5	Low----------	0.10			
550----------	0-40	---	---	0.2-6.0	---	4.5-7.3	----------	----	2	2	---
Terric Borosaprists	40-60	---	---	---	---	---	----------	----			
551A---------- Typic Fragiorthods	0-60	---	---	---	---	---	----------	----	---	---	---
552F----------	0-1	0-15	1.25-1.45	6.0-20	0.06-0.08	4.5-5.5	Low----------	0.15	5	1	.5-4
Kalkaska	1-19	0-15	1.35-1.45	6.0-20	0.06-0.08	4.5-6.0	Low----------	0.15			
	19-58	0-10	1.35-1.45	6.0-20	0.06-0.08	4.5-6.0	Low----------	0.15			
	58-90	0-10	1.40-1.65	2.0-20	0.06-0.12	5.1-6.0	Low----------	0.15			
553D----------	0-4	0-15	1.25-1.45	6.0-20	0.09-0.12	3.6-6.0	Low----------	0.17	5	2	1-4
Kalkaska	4-16	0-15	1.35-1.45	6.0-20	0.06-0.08	3.6-6.0	Low----------	0.15			
	16-58	0-10	1.35-1.45	6.0-20	0.06-0.08	4.5-6.0	Low----------	0.15			
	58-95	0-10	1.35-1.50	6.0-20	0.04-0.06	4.5-6.5	Low----------	0.15			
554B----------	0-3	2-13	1.10-1.60	0.6-2.0	0.10-0.18	3.6-5.5	Low----------	0.24	3	3	1-3
Alfic Fragiorthods	3-19	2-13	1.10-1.60	0.6-2.0	0.10-0.22	3.6-5.5	Low----------	0.32			
	19-30	3-12	1.80-2.10	<0.06	0.06-0.08	5.1-6.0	Low----------	0.32			
	30-60	1-10	1.50-1.70	2.0-6.0	0.02-0.05	5.1-6.5	Low----------	0.32			
555B---------- Entic Haplorthods	0-60	---	---	---	---	---	----------	----	---	---	---
556---------- Haplaquods	0-60	---	---	---	---	---	----------	----	---	---	---

TABLE 19.--SOIL AND WATER FEATURES

("Flooding" and "water table" and terms such as "brief," "apparent," and "perched" are explained in the text. The symbol < means less than; > means more than. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness	Uncoated steel	Concrete
					Ft			In			
50:											
Aquents	D	None	---	---	+1-1.0	Apparent	Jan-Dec	>60	---	---	---
Histosols	D	None	---	---	+1-1.0	Apparent	Jan-Dec	>60	---	---	---
51:											
Lupton	A/D	None	---	---	+1-1.0	Apparent	Sep-May	>60	---	High	Low.
Cathro	A/D	None	---	---	+1-1.0	Apparent	Nov-Jun	>60	---	High	Low.
Humaquepts	D	None	---	---	+1-1.0	Apparent	Nov-May	>60	---	---	---
52:											
Greenwood	A/D	None	---	---	+1-1.0	Apparent	Sep-Jun	>60	---	High	High.
Merwin	A/D	None	---	---	+1-1.0	Apparent	Oct-Jun	>60	---	High	High.
53:											
Waucedah	D	Frequent	Brief to very long.	Mar-May	+2-1.0	Apparent	Jan-Dec	>60	---	Moderate	Low.
Cathro	D	Frequent	Brief to very long.	Mar-May	+2-1.0	Apparent	Jan-Dec	>60	---	High	Low.
54. Pits											
55A, 55B, 55D--Oconto	B	None	---	---	>6.0	---	---	>60	---	Low	Moderate.
56. Pits and dumps											
57A, 57B, 57D, 57F--Padus	B	None	---	---	>6.0	---	---	>60	---	Low	High.
58B, 58D--Trenary	B	None	---	---	>6.0	---	---	>60	---	Low	Moderate.
59A--Solona	C	None	---	---	1.0-3.0	Apparent	Mar-Jul	>60	---	High	Low.
60D:											
Trenary	B	None	---	---	>6.0	---	---	>60	---	Low	Moderate.
Rock outcrop	---	None	---	---	>6.0	---	---	0-4	Hard	---	---
64A--Channing	B	None	---	---	0.5-1.5	Apparent	Nov-May	>60	---	Moderate	Moderate.
65--Witbeck	B/D	None	---	---	+.5-1.0	Apparent	Nov-Jun	>60	---	High	Moderate.

TABLE 19.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness	Uncoated steel	Concrete
					Ft			In			
67B----------Net	C	None--------	---	---	0.5-1.5	Perched	Nov-May	>60	---	Moderate	Moderate.
68B:											
Net----------	C	None--------	---	---	0.5-1.5	Perched	Nov-May	>60	---	Moderate	Moderate.
Witbeck----------	B/D	None--------	---	---	+.5-1.0	Apparent	Nov-Jun	>60	---	High-----	Moderate.
69A:											
Karlin----------	A	None--------	---	---	2.0-4.0	Apparent	Nov-Apr	>60	---	Low------	High.
Croswell---------	A	None--------	---	---	2.0-5.0	Apparent	Nov-May	>60	---	Low------	Moderate.
70B:											
Sundog----------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	Moderate.
Channing---------	B	None--------	---	---	0.5-1.5	Apparent	Nov-May	>60	---	Moderate	Moderate.
71D:											
Karlin----------	A	None--------	---	---	>6.0	---	---	>60	---	Low------	High.
Vilas----------	A	None--------	---	---	>6.0	---	---	>60	---	Low------	High.
Rock outcrop-----	---	None--------	---	---	>6.0	---	---	0-4	Hard	---	---
72B, 72D, 72F-----Karlin	A	None--------	---	---	>6.0	---	---	>60	---	Low------	High.
73A----------Gaastra	C	None--------	---	---	1.0-2.0	Apparent	Nov-May	>60	---	Moderate	Moderate.
74A----------Au Gres	B	None--------	---	---	0.5-1.5	Apparent	Nov-May	>60	---	Low------	Moderate.
75----------Kinross	A/D	None--------	---	---	+1-1.0	Apparent	Sep-Jun	>60	---	High-----	Moderate.
76----------Ensley	B/D	None--------	---	---	+1-0.5	Apparent	Oct-Jun	>60	---	High-----	Low.
77B, 77D----------Vilas	A	None--------	---	---	>6.0	---	---	>60	---	Low------	High.
78B, 78D, 78F:											
Vilas----------	A	None--------	---	---	>6.0	---	---	>60	---	Low------	High.
Karlin----------	A	None--------	---	---	>6.0	---	---	>60	---	Low------	High.
79A, 79B----------Fence	B	None--------	---	---	2.0-6.0	Perched	Nov-May	>60	---	Low------	High.
79D----------Fence	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High.
80B, 80D, 80F-----Pence	B	None--------	---	---	>6.0	---	---	>60	---	Low------	Moderate.
82B, 82D, 82F-----Keweenaw	A	None--------	---	---	>6.0	---	---	>60	---	Low------	Moderate.

TABLE 19.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness	Uncoated steel	Concrete
					Ft			In			
100B, 100D:											
Keweenaw	A	None	---	---	>6.0	---	---	>60	---	Low	Moderate.
Karlin	A	None	---	---	>6.0	---	---	>60	---	Low	High.
101B:											
Trenary	B	None	---	---	>6.0	---	---	>60	---	Low	Moderate.
Solona	C	None	---	---	1.0-3.0	Apparent	Mar-Jul	>60	---	High	Low.
102B--Escanaba	A	None	---	---	>6.0	---	---	>60	---	Low	Low.
103B, 103D:											
Wabeno	B	None	---	---	1.5-3.5	Perched	Oct-Jun	>60	---	Moderate	High.
Sarona	B	None	---	---	>6.0	---	---	>60	---	Low	High.
104A--Stambaugh	B	None	---	---	2.5-5.0	Apparent	Nov-Apr	>60	---	Low	Moderate.
104B, 104D--Stambaugh	B	None	---	---	>6.0	---	---	>60	---	Low	Moderate.
105D:											
Wabeno	B	None	---	---	1.5-3.5	Perched	Oct-Jun	>60	---	Moderate	High.
Rock outcrop	---	None	---	---	>6.0	---	---	0-4	Hard	---	---
106D--Champion	B	None	---	---	1.0-2.0	Perched	Nov-May	>60	---	Moderate	High.
107B, 107D, 107F--Sarona	B	None	---	---	>6.0	---	---	>60	---	Low	High.
108D, 108F:											
Sarona	B	None	---	---	>6.0	---	---	---	---	Low	High.
Rock outcrop	---	None	---	---	>6.0	---	---	0-4	Hard	---	---
109D--Udorthents	---	None	---	---	>6.0	---	---	>60	---	---	---
110B:											
Petticoat	B	None	---	---	1.5-4.0	Apparent	Nov-May	>60	---	Low	Moderate.
Wabeno	B	None	---	---	1.5-3.5	Perched	Oct-Jun	>60	---	Moderate	High.
110D:											
Petticoat	B	None	---	---	>6.0	---	---	>60	---	Low	Moderate.
Wabeno	B	None	---	---	1.5-3.5	Perched	Oct-Jun	>60	---	Moderate	High.
111B:											
Champion	B	None	---	---	1.0-2.0	Perched	Nov-May	>60	---	Moderate	High.
Net	C	None	---	---	0.5-1.5	Perched	Nov-May	>60	---	Moderate	Moderate.
112B, 112D, 112F--Sundog	B	None	---	---	>6.0	---	---	>60	---	Low	Moderate.

TABLE 19.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness	Uncoated steel	Concrete
					Ft			In			
113A--- Sundog	B	None	---	---	2.5-6.0	Apparent	Nov-May	>60	---	Low	Moderate.
114A:											
Minocqua	B/D	None	---	---	+1-1.0	Apparent	Nov-May	>60	---	High	High.
Channing	B	None	---	---	0.5-1.5	Apparent	Nov-May	>60	---	Moderate	Moderate.
115A--- Manitowish	B	None	---	---	3.0-6.0	Apparent	Nov-May	>60	---	Low	Moderate.
116B, 116D--- Wabeno	B	None	---	---	1.5-3.5	Perched	Nov-Jun	>60	---	Moderate	High.
121B--- Peavy	B	None	---	---	1.5-3.0	Perched	Nov-Apr	>60	---	Moderate	Moderate.
121D--- Peavy	B	None	---	---	>6.0	---	---	>60	---	Low	Moderate.
122B, 122D:											
Sarona	B	None	---	---	>6.0	---	---	>60	---	Low	High.
Karlin	A	None	---	---	>6.0	---	---	>60	---	Low	High.
123B, 123D--- Ocqueoc	A	None	---	---	>6.0	---	---	>60	---	Low	Moderate.
124B, 125B:											
Wabeno	B	None	---	---	1.5-3.5	Perched	Oct-Jun	>60	---	Moderate	High.
Net	C	None	---	---	0.5-1.5	Perched	Nov-May	>60	---	Moderate	Moderate.
126B, 126D--- Champion	B	None	---	---	1.0-2.0	Perched	Nov-May	>60	---	Moderate	High.
126F--- Champion	B	None	---	---	>6.0	---	---	>60	---	Moderate	High.
127D--- Goodman	B	None	---	---	>6.0	---	---	>60	---	Low	High.
128B, 128D:											
Goodman	B	None	---	---	>6.0	---	---	>60	---	Low	High.
Wabeno	B	None	---	---	1.5-3.5	Perched	Oct-Jun	>60	---	Moderate	High.
Sundog	B	None	---	---	>6.0	---	---	>60	---	Low	Moderate.
128F:											
Goodman	B	None	---	---	>6.0	---	---	>60	---	Low	High.
Sundog	B	None	---	---	>6.0	---	---	>60	---	Low	Moderate.
163B, 163D, 163F--- Sagola	B	None	---	---	>6.0	---	---	>80	---	Low	Low.
164B--- Alstad	C	None	---	---	1.0-3.0	Perched	Nov-May	>60	---	Moderate	Moderate.

TABLE 19.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness	Uncoated steel	Concrete
					Ft			In			
165B: Sundog	B	None	---	---	>6.0	---	---	>60	---	Low	Moderate.
Channing	B	None	---	---	0.5-1.5	Apparent	Nov-May	>60	---	Moderate	Moderate.
166F: Soperton	B	None	---	---	>6.0	---	---	>60	---	Low	High.
167A: Monico	C	None	---	---	1.0-3.0	Perched	Nov-May	>60	---	Moderate	High.
168F: Soperton	B	None	---	---	>6.0	---	---	>60	---	Low	High.
Rock outcrop	---	None	---	---	1.5-3.5	Perched	Oct-Jun	0-4	Hard	---	---
500B, 500D: Wabeno	B	None	---	---	>6.0	---	---	>60	---	Moderate	High.
501F: Soperton	B	None	---	---	>6.0	---	---	>60	---	Low	High.
502B, 502D: Champion	B	None	---	---	1.0-2.0	Perched	Nov-May	>60	---	Moderate	High.
502F: Champion	B	None	---	---	>6.0	---	---	>60	---	Moderate	High.
503A: Typic Fragiaquods	C	None	---	---	0.5-1.5	Perched	Oct-Jun	>60	---	Moderate	Moderate.
504B, 504D, 504F: Pence	B	None	---	---	>6.0	---	---	>60	---	Low	Moderate.
505, 506: Humaquepts	D	None	---	---	+1-1.0	Apparent	Nov-May	>60	---	---	---
507A: Monico	C	None	---	---	1.0-3.0	Perched	Nov-May	>60	---	Moderate	High.
508A: Beechwood	C	None	---	---	1.0-2.0	Apparent	Sep-Jul	>60	---	Moderate	Moderate.
509A: Typic Dystrochrepts	B	None	---	---	4.0-6.0	Apparent	Nov-May	>60	---	Moderate	Moderate.
510: Borosaprists	A/D	None	---	---	+1-1.0	Apparent	Sep-Jun	>60	---	Moderate	Moderate.
511B, 511D, 511F: Typic Dystrochrepts	B	None	---	---	>6.0	---	---	>60	---	Low	Moderate.
512: Borosaprists	A/D	None	---	---	+1-1.0	Apparent	Sep-Jun	>60	---	Moderate	High.
513B: Entic Haplorthods	A	None	---	---	4.0-6.0	Apparent	Nov-May	>60	---	Moderate	Moderate.

TABLE 19.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness	Uncoated steel	Concrete
					Ft			In			
514B---------- Stambaugh	B	None--------	---	---	2.5-5.0	Apparent	Nov-Apr	>60	---	Low------	Moderate.
515---------- Borosaprists	A/D	Frequent----	Brief-----	Oct-May	0-1.0	Apparent	Sep-Jun	>60	---	Moderate	Moderate.
516B, 516D-------- Fragiorthods	---	None--------	---	---	1.0-2.0	Perched	Oct-May	>60	---	---	---
517B, 517D, 517F-- Lode	B	None--------	---	---	>6.0	---	---	>60	---	Low------	Moderate.
518---------- Humaquepts	D	None--------	---	---	+1-1.0	Apparent	Nov-May	>60	---	---	---
519A---------- Monico	C	None--------	---	---	1.0-2.0	Apparent	Nov-May	>60	---	Moderate	High.
520B---------- Haplorthods	---	None--------	---	---	4.0-6.0	Apparent	Nov-May	>60	---	---	---
521B---------- Pence	B	None--------	---	---	6.0-10	Apparent	Nov-Mar	>60	---	Low------	Moderate.
522D:											
Entic Fragiorthods----	B	None--------	---	---	1.0-2.0	Perched	Nov-May	>60	---	Moderate	High.
Typic Dystrochrepts---	B	None--------	---	---	>6.0	---	---	40-80	---	---	---
523B:											
Entic Haplorthods	---	None--------	---	---	6.0-10	Apparent	Nov-Mar	>60	---	---	---
Typic Haplaquepts	---	None--------	---	---	+1-1.0	Apparent	Nov-May	>60	---	---	---
524D, 524F-------- Haplorthods	B	None--------	---	---	>6.0	---	---	40-60	Hard	---	---
525B, 525D, 525F-- Entic Haplorthods	A	None--------	---	---	>6.0	---	---	>60	---	Moderate	High.
527:											
Borohemists------	A/D	None--------	---	---	+1-1.0	Apparent	Sep-Jun	>60	---	Moderate	High.
Borosaprists-----	A/D	None--------	---	---	+1-1.0	Apparent	Sep-Jun	>60	---	Moderate	High.
528---------- Borohemists	A/D	None--------	---	---	+1-1.0	Apparent	Sep-Jun	>60	---	Moderate	High.
529---------- Borohemists	A/D	None--------	---	---	+1-1.0	Apparent	Sep-Jun	>60	---	Moderate	Moderate.
530:											
Borosaprists-----	A/D	None--------	---	---	+1-1.0	Apparent	Sep-Jun	>60	---	Moderate	Moderate.
Histic Humaquepts	D	None--------	---	---	+1-1.0	Apparent	Nov-May	>60	---	---	---

TABLE 19.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness	Uncoated steel	Concrete
					Ft			In			
531C---------- Champion	B	None--------	---	---	1.0-2.0	Perched	Nov-May	>60	---	Moderate	High.
532F:											
Champion---------	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	High.
Haplorthods------	B	None--------	---	---	>6.0	---	---	20-60	Hard	---	---
533B---------- Entic Fragiorthods	B	None--------	---	---	1.0-2.0	Perched	Nov-May	>60	---	Moderate	High.
534B, 534D-------- Entic Haplorthods	A	None--------	---	---	>6.0	---	---	>60	---	Low------	Moderate.
535B, 535D-------- Vilas	A	None--------	---	---	>6.0	---	---	>60	---	Low------	High.
536F---------- Entic Haplorthods	A	None--------	---	---	>6.0	---	---	>60	---	Moderate	High.
537B---------- Haplorthods	A	None--------	---	---	2.0-3.0	Apparent	Nov-May	>60	---	---	---
538B, 538D-------- Entic Haplorthods	---	None--------	---	---	>6.0	---	---	>60	---	---	---
539B---------- Karlin	A	None--------	---	---	6.0-10	Apparent	Nov-May	>60	---	Low------	Moderate.
540B:											
Entic Fragiorthods----	B	None--------	---	---	1.0-2.0	Perched	Nov-May	>60	---	---	---
Typic Fragiaquods	C	None--------	---	---	0.5-1.5	Perched	Nov-May	>60	---	---	---
Borosaprists-----	A/D	None--------	---	---	+1-1.0	Apparent	Sep-Jun	>60	---	Moderate	Moderate.
541---------- Fluvaquents	D	Frequent----	Brief-----	Nov-May	0-1.0	Apparent	Nov-May	>60	---	---	---
542B, 542D-------- Gogebic	B	None--------	---	---	1.0-2.0	Perched	Nov-May	>60	---	Moderate	High.
542F---------- Gogebic	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
543A---------- Haplaquods	---	None--------	---	---	1.0-2.0	Apparent	Nov-May	>60	---	---	---
544C, 544D, 544F, 545B, 545D, 545F, 546C, 546D, 546F- Haplorthods	---	None--------	---	---	>6.0	---	---	>60	---	---	---
547B---------- Haplorthods	B	None--------	---	---	6.0-10	Apparent	Nov-Mar	>60	---	---	---
548:											
Humaquepts-------	D	Frequent----	Brief-----	Nov-May	0-1.0	Apparent	Nov-May	>60	---	---	---

TABLE 19.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness	Uncoated steel	Concrete
					Ft			In			
548: Terric Borosaprists	D	Frequent	Brief	Nov-May	0-1.0	Apparent	Nov-May	>60	---	Moderate	Moderate.
549B, 549D, 549F: Karlin	A	None	---	---	>6.0	---	---	>60	---	Low	High.
Pence	B	None	---	---	>6.0	---	---	>60	---	Low	Moderate.
550 Terric Borosaprists	D	Frequent	Brief	Nov-May	0-1.0	Apparent	Nov-May	>60	---	Moderate	Moderate.
551A Typic Fragiorthods	---	None	---	---	1.0-2.0	Perched	Nov-May	>60	---	---	---
552F, 553D Kalkaska	A	None	---	---	>6.0	---	---	>60	---	Low	High.
554B Alfic Fragiorthods	C	None	---	---	1.0-2.0	Perched	Oct-May	>60	---	Moderate	Moderate.
555B Entic Haplorthods	---	None	---	---	6.0-10	Apparent	Nov-Mar	>60	---	---	---
556 Haplaquods	---	None	---	---	+1-1.0	Apparent	Nov-May	>60	---	---	---

TABLE 20.--CLASSIFICATION OF THE SOILS

Soil name	Family or higher taxonomic class
Alfic Fragiorthods, coarse-loamy	Coarse-loamy, mixed, frigid Alfic Fragiorthods
Alstad	Fine-loamy, mixed Glossaquic Eutroboralfs
Aquents	Aquents
Au Gres	Sandy, mixed, frigid Entic Haplaquods
Beechwood	Coarse-loamy, mixed, frigid Aquic Dystrochrepts
Borohemists	Borohemists
Borosaprists	Borosaprists
Cathro	Loamy, mixed, euic Terric Borosaprists
Champion	Coarse-loamy, mixed, frigid Typic Fragiorthods
Channing	Coarse-loamy over sandy or sandy-skeletal, mixed, frigid Entic Haplaquods
Croswell	Sandy, mixed, frigid Entic Haplorthods
Ensley	Coarse-loamy, mixed, nonacid, frigid Aeric Haplaquepts
Entic Fragiorthods, coarse-loamy	Coarse-loamy, mixed, frigid Entic Fragiorthods
Entic Haplorthods	Entic Haplorthods
Entic Haplorthods, coarse-loamy	Coarse-loamy, mixed, frigid Entic Haplorthods
Entic Haplorthods, sandy	Sandy, mixed, frigid Entic Haplorthods
Entic Haplorthods, sandy-skeletal	Sandy-skeletal, mixed, frigid Entic Haplorthods
Escanaba	Loamy, mixed Arenic Eutroboralfs
Fence	Coarse-silty, mixed, frigid Alfic Haplorthods
Fluvaquents	Fluvaquents
Fragiorthods	Fragiorthods
Gaastra	Coarse-loamy, mixed, frigid Alfic Haplaquods
Gogebic	Coarse-loamy, mixed, frigid Alfic Fragiorthods
Goodman	Coarse-loamy, mixed, frigid Alfic Haplorthods
Greenwood	Dysic Typic Borohemists
Haplaquods	Haplaquods
Haplorthods	Haplorthods
Histic Humaquepts	Histic Humaquepts
Histosols	Histosols
Humaquepts	Humaquepts
Kalkaska	Sandy, mixed, frigid Typic Haplorthods
Karlin	Sandy, mixed, frigid Entic Haplorthods
Keweenaw	Sandy, mixed, frigid Alfic Haplorthods
Kinross	Sandy, mixed, frigid Typic Haplaquods
Lode	Coarse-loamy, mixed, frigid Entic Haplorthods
Lupton	Euic Typic Borosaprists
Manitowish	Sandy, mixed, frigid Entic Haplorthods
Merwin	Loamy, mixed, dysic Terric Borohemists
Minocqua	Coarse-loamy over sandy or sandy-skeletal, mixed, nonacid, frigid Typic Haplaquepts
Monico	Coarse-loamy, mixed, frigid Entic Haplaquods
Net	Coarse-loamy, mixed, frigid Typic Fragiaquods
Oconto	Coarse-loamy, mixed Typic Eutroboralfs
Ocqueoc	Sandy over loamy, mixed, frigid Entic Haplorthods
Padus	Coarse-loamy, mixed, frigid Alfic Haplorthods
Peavy	Coarse-loamy, mixed, frigid Alfic Haplorthods
Pence	Sandy, mixed, frigid Entic Haplorthods
Petticoat	Coarse-loamy over sandy or sandy-skeletal, mixed, frigid Alfic Haplorthods
Sagola	Coarse-loamy, mixed, frigid Alfic Haplorthods
Sarona	Coarse-loamy, mixed, frigid Alfic Haplorthods
Solona	Coarse-loamy, mixed Aquic Eutroboralfs
Soperton	Coarse-loamy, mixed, frigid Alfic Fragiorthods
Stambaugh	Coarse-silty over sandy or sandy-skeletal, mixed, frigid Alfic Haplorthods
Sundog	Coarse-loamy over sandy or sandy-skeletal, mixed, frigid Entic Haplorthods
Terric Borosaprists	Terric Borosaprists
Trenary	Coarse-loamy, mixed, frigid Alfic Haplorthods
Typic Dystrochrepts	Typic Dystrochrepts
Typic Dystrochrepts, coarse-loamy	Coarse-loamy, mixed, frigid Typic Dystrochrepts

TABLE 20.--CLASSIFICATION OF THE SOILS--Continued

Soil name	Family or higher taxonomic class
Typic Fragiaquods	Typic Fragiaquods
Typic Fragiaquods, coarse-loamy	Coarse-loamy, mixed, frigid Typic Fragiaquods
Typic Fragiorthods	Typic Fragiorthods
Typic Haplaquepts	Typic Haplaquepts
Udorthents	Udorthents
Vilas	Sandy, mixed, frigid Entic Haplorthods
Wabeno	Coarse-loamy, mixed, frigid Alfic Fragiorthods
Waucedah	Coarse-loamy, mixed, nonacid, frigid Histic Humaquepts
Witbeck	Coarse-loamy, mixed, nonacid, frigid Histic Humaquepts

Interpretive Groups

INTERPRETIVE GROUPS

(Dashes indicate that the soil is not placed in the interpretive group)

Soil name and map symbol	Land capability	Prime farmland	Habitat type		Woodland ordination symbol	Michigan soil management group
			Primary	Secondary		
50. Aquents and Histosols						
51----------	VIw	---	TTS	---		
Lupton----------					2W	Mc
Cathro----------					5W	M/3c
Humaquepts----------					---	---
52----------	VIIw	---	PCS	---		
Greenwood----------					2W	Mc-a
Merwin----------					2W	Mc-a
53----------	Vw	---	FMC	---		
Waucedah----------					3W	L-4c
Cathro----------					5W	M/3c
54. Pits						
55A----------	IIs	Yes	TM	ATD	3L	4a
Oconto						
55B----------	IIe	Yes	TM	ATD	3L	4a
Oconto						
55D----------	IVe	---	TM	ATD	3L	4a
Oconto						
56. Pits and dumps						
57A----------	IIs	Yes	TM	ATD	3L	3a-a
Padus						
57B----------	IIe	Yes	TM	ATD	3L	3a-a
Padus						
57D----------	VIe	---	TM	ATD	3L	3a-a
Padus						
57F----------	VIIe	---	TM	ATD	3R	3a-a
Padus						
58B----------	IIIs	---	AVO	---	3L	3a
Trenary						
58D----------	VIe	---	AVO	---	3L	3a
Trenary						
59A----------	IIIs	---	AVO-CI	TMC	3W	3b
Solona						
60D----------	VIe	---	TM	ATD		
Trenary----------					3L	3a
Rock outcrop.						
64A----------	IIIw	---	TMC-Vac	TMC	2W	3/5b
Channing						

INTERPRETIVE GROUPS--Continued

Soil name and map symbol	Land capability	Prime farmland	Habitat type		Woodland ordination symbol	Michigan soil management group
			Primary	Secondary		
65---------- Witbeck	Vw	---	FI	---	5W	3c
67B---------- Net	VIIs	---	TMC	---	3W	3b-af
68B----------	VIIs	---	TMC	FI		
Net----------					3W	3b-af
Witbeck----------					5W	3c
69A----------	IIIs	---	TMV	TMC		
Karlin----------					5A	4a
Croswell----------					5S	5a
70B----------	IIIs	---	TMV	TMC-Vac		
Sundog----------					2L	3/5a
Channing----------					2W	3/5b
71D----------	VIe	---	TM	TMV		
Karlin----------					3A	4a
Vilas----------					6A	5.3a
Rock outcrop.						
72B---------- Karlin	IIIs	---	TMV	AQV	3A	4a
72D---------- Karlin	IVe	---	TMV	AQV	3A	4a
72F---------- Karlin	VIIe	---	TMV	AQV	3R	4a
73A---------- Gaastra	IIIs	---	AVO-CI	TMC	3W	2.5b
74A---------- Au Gres	IVw	---	TMC-Vac	TMC	6W	5b
75---------- Kinross	VIw	---	FMC	---	2W	5c-a
76---------- Ensley	Vw	---	FI	TTS	2W	3c
77B---------- Vilas	IVs	---	AQV	---	6A	5.3a
77D---------- Vilas	VIIs		AQV	---	6A	5.3a
78B----------	IVs	---	AQV	TMV		
Vilas----------					6A	5.3a
Karlin----------					3A	4a
78D----------	VIIs	---	AQV	TMV		
Vilas----------					6A	5.3a
Karlin----------					3A	4a
78F----------	VIIs	---	AQV	TMV		
Vilas----------					6R	5.3a
Karlin----------					3R	4a

INTERPRETIVE GROUPS--Continued

Soil name and map symbol	Land capability	Prime farmland	Habitat type		Woodland ordination symbol	Michigan soil management group
			Primary	Secondary		
79A---------- Fence	I	Yes	AVO	AOC	3L	3a
79B---------- Fence	IIe	Yes	AVO	AOC	3L	3a
79D---------- Fence	IIIe	---	AVO	AOC	3L	3a
80B---------- Pence	IIIe	---	TMV	AQV	3A	4a-a
80D---------- Pence	VIe	---	TMV	AQV	3A	4a-a
80F---------- Pence	VIIe	---	TMV	AQV	3R	4a-a
82B---------- Keweenaw	IIIe	---	TM	---	3A	4a-a
82D---------- Keweenaw	IVe	---	TM	---	3A	4a-a
82F---------- Keweenaw	VIIe	---	TM	---	3R	4a-a
100B---------- Keweenaw---------- Karlin----------	IIIe	---	TM	TMV	 3A 3A	 4a-a 4a
100D---------- Keweenaw---------- Karlin----------	IVe	---	TM	TMV	 3A 3A	 4a-a 4a
101B---------- Trenary---------- Solona----------	IIIs	Yes	ATD	TMC	 3L 3W	 3a 3b
102B---------- Escanaba	IIIs	Yes	TM	---	3S	4/2a
103B---------- Wabeno---------- Sarona----------	IIIs	---	AVO	ATD	 3L 3L	 2a-af 3a
103D---------- Wabeno---------- Sarona----------	VIe	---	AVO	ATD	 3L 3L	 2a-af 3a
104A---------- Stambaugh	IIIs	---	AVO	---	3L	3/5a-a
104B---------- Stambaugh	IIIs	---	AVO	---	3L	3/5a-a
104D---------- Stambaugh	VIe	---	AVO	---	3L	3/5a-a
105D---------- Wabeno---------- Rock outcrop.	VIIe	---	TM	ATD	 3L	 2a-af

INTERPRETIVE GROUPS--Continued

Soil name and map symbol	Land capability	Prime farmland	Habitat type		Woodland ordination symbol	Michigan soil management group
			Primary	Secondary		
106D---------- Champion	VIIe	---	ATD	---	3W	3a-af
107B---------- Sarona	IIIs	---	ATD	TM	3L	3a
107D---------- Sarona	VIe	---	ATD	TM	3L	3a
107F---------- Sarona	VIIe	---	ATD	TM	3R	3a
108D---------- Sarona---------- Rock outcrop.	VIIe	---	TM	TMV	3L	3a
108F---------- Sarona---------- Rock outcrop.	VIIIs	---	TM	TMV	3R	3a
109D. Udorthents						
110B---------- Petticoat---------- Wabeno----------	VIs	---	AVO	ATD	3L 3L	3/5a 2a-af
110D---------- Petticoat---------- Wabeno----------	VIIe	---	AVO	ATD	3L 3L	3/5a 2a-af
111B---------- Champion---------- Net----------	IVs	---	ATD	TMC	3W 3W	3a-af 3b-af
112B---------- Sundog	IIe	Yes	TMV	TM	2L	3/5a
112D---------- Sundog	IVe	---	TMV	TM	2L	3/5a
112F---------- Sundog	VIIs	---	TMV	TM	2R	3/5a
113A---------- Sundog	IIIs	Yes	TMC-Vac	TMV	4L	3/5a
114A---------- Minocqua---------- Channing----------	VIw	---	TTS	PCS	7W 2W	4c 3/5b
115A---------- Manitowish	IIIs	---	TMV	TM	3S	4a
116B---------- Wabeno	IVs	---	AVO	AOC	3L	2a-af
116D---------- Wabeno	VIIe	---	AVO	AOC	3L	2a-af
121B---------- Peavy	IIIs	---	AVO	ATD	3W	3/2a-d

INTERPRETIVE GROUPS--Continued

Soil name and map symbol	Land capability	Prime farmland	Habitat type		Woodland ordination symbol	Michigan soil management group
			Primary	Secondary		
121D---------- Peavy	VIe	---	AVO	ATD	3D	3/2a-d
122B----------	IIIs	---	TM	TMV		
Sarona----------					3L	3a
Karlin----------					3A	4a
122D----------	VIe	---	TM	TMV		
Sarona----------					3L	3a
Karlin----------					3A	4a
123B---------- Ocqueoc	IIIs	---	TM	TMV	3A	4/2a
123D---------- Ocqueoc	IVe	---	TM	TMV	3A	4/2a
124B----------	IVs	---	ATD	TMC		
Wabeno----------					3L	2a-af
Net----------					3W	3b-af
125B----------	IVs	---	ATD	TMC		
Wabeno----------					3L	2a-af
Net----------					3W	3b-af
126B---------- Champion	IVs	---	ATD	---	3W	3a-af
126D---------- Champion	VIIe	---	ATD	---	3W	3a-af
126F---------- Champion	VIIe	---	ATD	---	3R	3a-af
127D---------- Goodman	VIIe	---	ATD	AVO	3L	2.5a
128B----------	IIIs	---	AVO	ATD		
Goodman----------					3L	2.5a
Wabeno----------					3L	2a-af
Sundog----------					2L	3/5a
128D----------	VIe	---	AVO	ATD		
Goodman----------					3L	2.5a
Wabeno----------					3L	2a-af
Sundog----------					2L	3/5a
128F----------	VIIe	---	ATD	AVO		
Goodman----------					3R	2.5a
Sundog----------					2R	3/5a
163B---------- Sagola	IIIs	---	TMV	ATD	4L	3a
163D---------- Sagola	IVe	---	TMV	ATD	4L	3a
163F---------- Sagola	VIIe	---	TMV	ATD	4R	3a
164B---------- Alstad	IIe	Yes*	TMC	---	3W	1.5b

See footnote at end of table.

INTERPRETIVE GROUPS--Continued

Soil name and map symbol	Land capability	Prime farmland	Habitat type		Woodland ordination symbol	Michigan soil management group
			Primary	Secondary		
165B Sundog Channing	IIe	Yes*	TMV	TMC	 2L 2W	 3/5a 3/5b
166F Soperton	VIIe	---	AVO	AOC	3R	2a-af
167A Monico	IIw	Yes*	ATD-CI	---	3W	3b-a
168F Soperton Rock outcrop.	VIIe	---	AVO	AOC	3R	2a-af
500B Wabeno	IVs	---	AVO	---	3L	2a-af
500D Wabeno	VIIe	---	AVO	---	3L	2a-af
501F Soperton	VIIe	---	AVO	---	3R	2a-af
502B Champion	IVs	---	ATD	---	3W	2a-af
502D Champion	VIIe	---	ATD	---	3W	2a-af
502F Champion	VIIe	---	ATD	---	3R	2a-af
503A Typic Fragiaquods	IIw	---	TMC	---	2W	---
504B Pence	IIIe	---	TMV	---	3A	4a-a
504D Pence	VIe	---	TMV	---	3A	4a-a
504F Pence	VIIe	---	TMV	---	3R	4a-a
505 Humaquepts	---	---	TTS	---	---	---
506 Humaquepts	---	---	FMC	FI	---	---
507A Monico	IIw	Yes*	ATD-CI	---	3W	3b-a
508A Beechwood	IIw	Yes*	TMC	---	2W	3b
509A Typic Dystrochrepts	IIs	---	AVO-CI	---	3L	---
510 Borosaprists	---	---	TTS	---	---	---

See footnote at end of table.

INTERPRETIVE GROUPS--Continued

Soil name and map symbol	Land capability	Prime farmland	Habitat type		Woodland ordination symbol	Michigan soil management group
			Primary	Secondary		
511B---------- Typic Dystrochrepts	IIe	---	TM	---	9L	---
511D---------- Typic Dystrochrepts	IVe	---	TM	---	9L	---
511F---------- Typic Dystrochrepts	VIIe	---	TM	---	9R	---
512---------- Borosaprists	---	---	PCS	---	---	---
513B---------- Entic Haplorthods	IIe	---	ATD	---	3L	---
514B---------- Stambaugh	IIIs	---	ATD	---	3L	3/5a
515---------- Borosaprists	---	---	FMC	---	---	---
516B---------- Fragiorthods	---	---	TMV	---	---	---
516D---------- Fragiorthods	---	---	TMV	---	---	---
517B---------- Lode	IIe	Yes	TM	---	7L	3/5a-a
517D---------- Lode	IVe	---	TM	---	7L	3/5a-a
517F---------- Lode	VIIe	---	TM	---	7R	3/5a-a
518---------- Humaquepts	---	---	TTS	---	---	---
519A---------- Monico	IIw	Yes*	TMC-Vac	---	5W	3b-a
520B---------- Haplorthods	---	---	TMC-Vac	---	---	---
521B---------- Pence	IIIe	---	TMV	---	9A	4a-a
522D----------	IIe	---				
Entic Fragiorthods------			ATD	---	8W	---
Typic Dystrochrepts-----			TMV	---	---	---
523B----------	---	---				
Entic Haplorthods-------			ATD	---	---	---
Typic Haplaquepts-------			TMC	---	---	---
524D---------- Haplorthods	---	---	ATD	---	---	---
524F---------- Haplorthods	---	---	ATD	---	---	---

See footnote at end of table.

INTERPRETIVE GROUPS--Continued

Soil name and map symbol	Land capability	Prime farmland	Habitat type		Woodland ordination symbol	Michigan soil management group
			Primary	Secondary		
525B Entic Haplorthods	VIs	---	ATD	---	3F	---
525D Entic Haplorthods	VIs	---	ATD	---	3R	---
525F Entic Haplorthods	VIs	---	ATD	---	3R	---
527	---	---	PCS	---		
Borohemists					---	---
Borosaprists					---	---
528 Borohemists	---	---	PCS	---	---	---
529 Borohemists	---	---	TTS	---	---	---
530	---	---	TTS	---		
Borosaprists					---	---
Histic Humaquepts					---	---
531C Champion	VIs	---	ATD	---	3W	3a-af
532F	VIIe	---	ATD	---		
Champion					3R	3a-af
Haplorthods					---	---
533B Entic Fragiorthods	IIe	---	TMC-D	---	8W	---
534B Entic Haplorthods	IVs	---	AQV	---	6A	---
534D Entic Haplorthods	VIs	---	AQV	---	6A	---
535B Vilas	IVs	---	AQV	---	6A	5.3a
535D Vilas	VIIs	---	AQV	---	6A	5.3a
536F Entic Haplorthods	VIs	---	ATD	---	3R	---
537B Haplorthods	---	---	TMV	---	---	---
538B Entic Haplorthods	---	---	TMV	---	---	---
538D Entic Haplorthods	---	---	TMV	---	---	---
539B Karlin	IVs	---	AQV	---	3A	4a

See footnote at end of table.

INTERPRETIVE GROUPS--Continued

Soil name and map symbol	Land capability	Prime farmland	Habitat type		Woodland ordination symbol	Michigan soil management group
			Primary	Secondary		
540B	---	---				
Entic Fragiorthods			TMC-D	---	---	---
Typic Fragiaquods			TMC	---	---	---
Borosaprists			TTS	---	---	---
541	---	---	FMC	---	---	---
Fluvaquents						
542B	IIe	---	ATD	---	3W	3a-af
Gogebic						
542D	IVe	---	ATD	---	3W	3a-af
Gogebic						
542F	VIIe	---	ATD	---	3R	3a-af
Gogebic						
543A	---	---	TMC	TTS	---	---
Haplaquods						
544C, 544D, 544F, 545B, 545D, 545F	---	---	ATD	---	---	---
Haplorthods						
546C, 546D, 546F	---	---	TM	---	---	---
Entic Haplorthods						
547B	---	---	TM	---	---	---
Haplorthods						
548	---	---	FMC	---		
Humaquepts					---	---
Terric Borosaprists					---	---
549B	IIIs	---	TM	---		
Karlin					3A	4a
Pence					3A	4a-a
549D	IVe	---	TM	---		
Karlin					3A	4a
Pence					3A	4a-a
549F	VIIe	---	TM	---		
Karlin					3R	4a
Pence					3R	4a-a
550	---	---	FMC	---	---	---
Terric Borosaprists						
551A	---	---	AVO	---	---	---
Typic Fragiorthods						
552F	VIIs	---	AQV	---	3R	5a
Kalkaska						
553D	VIs	---	ATD	---	3A	5a
Kalkaska						
554B	IIe	---	AVO	---	3W	---
Alfic Fragiorthods						

See footnote at end of table.

INTERPRETIVE GROUPS--Continued

Soil name and map symbol	Land capability	Prime farmland	Habitat type		Woodland ordination symbol	Michigan soil management group
			Primary	Secondary		
555B---------- Entic Haplorthods	---	---	TMV	---	---	---
556---------- Haplaquods	---	---	PCS	---	---	---

* Where drained.

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