

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories (14). 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 19 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Ten 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 Entisol.

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 Aquent (*Aqu*, meaning water, plus *ent*, from Entisol).

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 Haplaquents (*Hapl*, meaning minimal horizonation, plus *aquent*, the suborder of the Entisols that has an aquic moisture regime).

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

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Mostly 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 over loamy, mixed, acid, frigid Typic Haplaquents.

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 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* (12). Many of the technical terms used in the descriptions are defined in *Soil Taxonomy* (14). 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."

Alban Series

The Alban series consists of deep, well drained and moderately well drained, moderately permeable soils on glacial lake plains and terraces. These soils formed in loamy lacustrine deposits. Slope ranges from 2 to 12 percent.

Typical pedon of Alban fine sandy loam, 2 to 6 percent slopes, 1,950 feet south and 100 feet west of the center of sec. 2, T. 32 N., R. 6 W.

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) fine sandy loam, light brownish gray (10YR 6/2) dry; weak fine subangular blocky structure; friable; medium acid; abrupt smooth boundary.

- E—8 to 12 inches; brown (10YR 5/3) fine sandy loam, very pale brown (10YR 7/3) dry; weak medium platy structure; very friable; slightly acid; clear wavy boundary.
- E/B—12 to 18 inches; brown (10YR 5/3) fine sandy loam, very pale brown (10YR 7/3) dry (E); weak medium platy structure; E material makes up about 60 percent of the horizon; dark brown (7.5YR 4/4) fine sandy loam (Bt); weak thick platy structure parting to weak very fine subangular blocky; very friable; slightly acid; clear wavy boundary.
- B/E—18 to 24 inches; dark brown (7.5YR 4/4) fine sandy loam (Bt); weak fine subangular blocky structure; Bt material makes up about 70 percent of the horizon; brown (10YR 5/3) fine sandy loam, very pale brown (10YR 7/3) dry (E); weak thick platy structure; very friable; thin patchy clay films on faces of peds; slightly acid; clear wavy boundary.
- Bt—24 to 34 inches; dark brown (7.5YR 4/4) very fine sandy loam; common medium distinct strong brown (7.5YR 5/8) mottles; moderate medium subangular blocky structure; friable; few distinct patchy clay films on faces of peds; light gray (10YR 7/2) uncoated silt particles and very fine sand grains on vertical faces of peds; slightly acid; clear wavy boundary.
- BC—34 to 38 inches; dark brown (7.5YR 4/4) fine sandy loam; common medium distinct strong brown (7.5YR 4/6) mottles; weak very thick platy structure parting to weak medium subangular blocky; very friable; medium acid; clear smooth boundary.
- C—38 to 60 inches; brown (7.5YR 5/4) stratified silt, very fine sand, and fine sand; tends to part as weak very thick plates along textural strata; very friable; medium acid.

The thickness of the solum ranges from 25 to 54 inches. The Ap or A horizon has value of 2 to 4 and chroma of 1 to 3. The E horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 2 or 3. It is fine sandy loam, loam, or silt loam. The Bt and BC horizons have hue of 5YR, 7.5YR, or 10YR, value of 4 or 5, and chroma of 3 to 6. They are fine sandy loam, very fine sandy loam, loam, or silt loam. The C horizon has hue of 5YR, 7.5YR, or 10YR and value and chroma of 4 to 6. It is dominantly stratified fine sand, very fine sand, and silt, but some pedons have strata of loamy fine sand, fine sandy loam, or silt loam.

Almena Series

The Almena series consists of deep, somewhat poorly drained soils on ground moraines. These soils formed in silty deposits over gravelly sandy loam glacial till. Permeability is moderately slow or moderate in the subsoil and moderately slow in the substratum. Slope ranges from 1 to 6 percent.

Typical pedon of Almena silt loam, 1 to 6 percent slopes, 450 feet south and 1,100 feet east of the northwest corner of sec. 16, T. 29 N., R. 6 W.

- Ap—0 to 9 inches; dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; weak medium subangular blocky structure; friable; neutral; abrupt smooth boundary.
- E—9 to 14 inches; grayish brown (10YR 5/2) silt loam; common medium prominent dark brown (7.5YR 4/4) mottles; weak medium platy structure; friable; medium acid; clear irregular boundary.
- E/B—14 to 18 inches; grayish brown (10YR 5/2) silt loam (E); weak medium platy structure; E material makes up about 60 percent of the horizon; dark brown (7.5YR 4/4) silt loam (Bt); common medium distinct strong brown (7.5YR 5/6) and common medium prominent grayish brown (10YR 5/2) mottles; weak medium subangular blocky structure; friable; very strongly acid; clear irregular boundary.
- B/E—18 to 24 inches; dark brown (7.5YR 4/4) silt loam (Bt); common medium distinct strong brown (7.5YR 5/6) and common medium prominent grayish brown (10YR 5/2) mottles; weak medium subangular blocky structure; Bt material makes up about 80 percent of the horizon; grayish brown (10YR 5/2) silt loam (E); weak medium platy structure; friable; very strongly acid; clear irregular boundary.
- Bt1—24 to 36 inches; dark brown (7.5YR 4/4) silt loam; common medium prominent grayish brown (10YR 5/2) mottles; moderate medium subangular blocky structure; friable; light gray (10YR 7/2) uncoated silt particles on faces of peds and in root channels; common distinct continuous clay films on faces of peds; very strongly acid; clear smooth boundary.
- Bt2—36 to 42 inches; dark brown (7.5YR 4/4) silt loam; many medium prominent grayish brown (10YR 5/2) mottles; moderate medium subangular blocky structure; friable; light gray (10YR 7/2) uncoated silt particles on faces of peds and in root channels; few distinct patchy clay films on faces of peds; very strongly acid; clear smooth boundary.
- Bt3—42 to 48 inches; dark brown (7.5YR 4/4) silt loam; many medium prominent grayish brown (10YR 5/2) mottles; weak coarse subangular blocky structure; friable; few faint patchy clay films on faces of peds; very strongly acid; clear smooth boundary.
- 2C—48 to 60 inches; reddish brown (5YR 4/4) gravelly sandy loam; massive; friable; estimated 20 percent gravel; medium acid.

The thickness of the solum ranges from 30 to 48 inches. The thickness of the silty mantle ranges from 30 to 60 inches.

The Ap horizon has value of 4 or 5 and chroma of 2 or 3. Some pedons have an A horizon, which has value and chroma of 2 or 3. The E horizon has value of 4 to 6 and

chroma of 2 or 3. It is silt or silt loam. The Bt horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 2 to 4. It is silt loam or silty clay loam. The 2C horizon has value and chroma of 4 to 6. It is gravelly loam, gravelly sandy loam, or sandy loam. The content of gravel in this horizon is 15 to 20 percent.

Amery Series

The Amery series consists of deep, well drained soils on moraines. These soils formed in loamy deposits and in the underlying loamy sand or sandy loam glacial till (fig. 12). Permeability is moderately slow or moderate. Slope ranges from 2 to 45 percent.

The Amery soils in this county are taxadjuncts to the series because the increase in clay content between the surface soil and the subsoil is slightly less than is required for an argillic horizon. This difference, however, does not alter the usefulness or behavior of the soils.

Typical pedon of Amery sandy loam, 12 to 25 percent slopes, 800 feet west and 1,600 feet south of the northeast corner of sec. 36, T. 32 N., R. 9 W.

A—0 to 2 inches; very dark gray (10YR 3/1) sandy loam, gray (10YR 5/1) dry; weak fine granular structure; friable; estimated 5 percent pebbles; very strongly acid; clear smooth boundary.

E—2 to 11 inches; brown (7.5YR 5/4) sandy loam, pinkish gray (7.5YR 7/2) dry; weak thin platy structure; friable; estimated 5 percent gravel; medium acid; clear wavy boundary.

B/E—11 to 22 inches; reddish brown (5YR 4/4) sandy loam (Bt); weak fine subangular blocky structure; Bt material makes up about 60 percent of the horizon; dark brown (7.5YR 4/4) sandy loam (E); weak thin platy structure; friable; estimated 5 percent gravel; thin patchy clay films on faces of peds; medium acid; clear wavy boundary.

Bt1—22 to 29 inches; reddish brown (5YR 4/4) sandy loam; weak medium subangular blocky structure; friable; few faint patchy clay films on faces of peds; estimated 15 percent gravel; medium acid; clear wavy boundary.

Bt2—29 to 32 inches; reddish brown (5YR 4/4) sandy loam; weak coarse subangular blocky structure; friable; few faint patchy clay films on faces of peds; estimated 10 percent gravel and 5 percent cobbles; medium acid; clear wavy boundary.

C—32 to 60 inches; reddish brown (5YR 4/4) loamy sand; massive; friable; estimated 10 percent gravel and 5 percent cobbles; slightly acid.

The thickness of the solum ranges from 30 to 50 inches. The content of gravel and cobbles ranges from 8 to 15 percent throughout the profile.

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

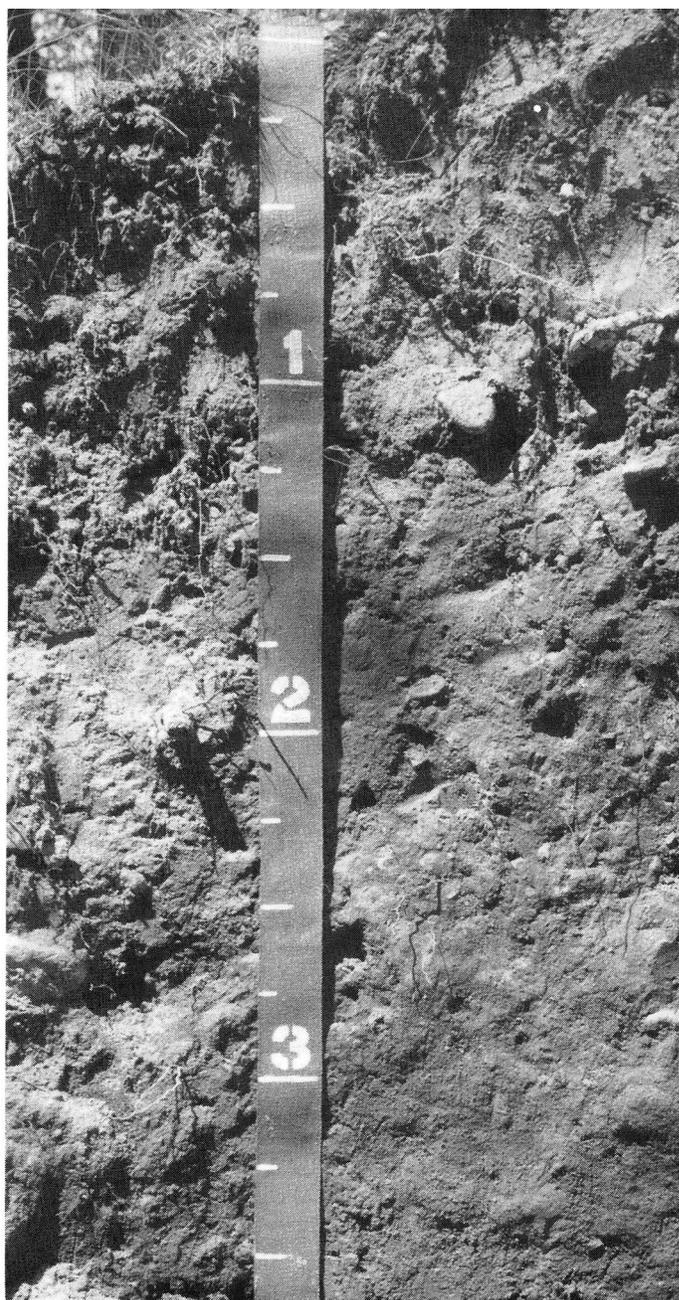


Figure 12.—Profile of an Amery soil. Sandy or loamy glacial till is at a depth of about 32 inches. Depth is marked in feet.

has hue of 2.5YR, 5YR, or 7.5YR and value and chroma of 3 to 5. It is loam, sandy loam, or gravelly sandy loam. The C horizon has hue of 2.5YR, 5YR, or 7.5YR and value and chroma of 3 to 6. It is sandy loam, gravelly sandy loam, loamy sand, or gravelly loamy sand.

Antigo Series

The Antigo series consists of deep, well drained soils on outwash plains and stream terraces. These soils formed in silty and loamy deposits underlain by stratified sand and gravel. Permeability is moderate in the subsoil and rapid or very rapid in the substratum. Slope ranges from 1 to 12 percent.

Typical pedon of Antigo silt loam, 1 to 6 percent slopes, 925 feet south and 400 feet west of the northeast corner of sec. 35, T. 29 N., R. 5 W.

- Ap—0 to 10 inches; very dark grayish brown (10YR 3/2) silt loam, light gray (10YR 7/2) dry; moderate medium and fine granular structure; friable; slightly acid; abrupt smooth boundary.
- E—10 to 13 inches; brown (10YR 5/3) silt loam, very pale brown (10YR 7/3) dry; moderate medium platy structure; friable; medium acid; clear smooth boundary.
- E/B—13 to 16 inches; brown (10YR 5/3) silt loam (E); moderate medium platy structure; E material makes up about 60 percent of the horizon; dark yellowish brown (10YR 4/4) silt loam (Bt); moderate medium subangular blocky structure; friable; very strongly acid; clear wavy boundary.
- B/E—16 to 20 inches; dark yellowish brown (10YR 4/4) silt loam (Bt); moderate medium subangular blocky structure; Bt material makes up about 70 percent of the horizon; brown (10YR 5/3) silt loam (E); weak medium platy structure; friable; thin patchy clay films on faces of peds; very strongly acid; clear wavy boundary.
- Bt1—20 to 25 inches, dark yellowish brown (10YR 4/4) silt loam; moderate medium subangular blocky structure; friable; common distinct clay films on faces of peds; light gray (10YR 7/2) uncoated silt particles on vertical faces of peds; very strongly acid; clear wavy boundary.
- Bt2—25 to 28 inches; dark brown (7.5YR 4/4) silt loam; moderate medium subangular blocky structure; friable; common distinct clay films on faces of peds; very strongly acid; clear wavy boundary.
- 2Bt3—28 to 32 inches; reddish brown (5YR 4/4) sandy loam; moderate medium subangular blocky structure; friable; few faint clay films on faces of peds; very strongly acid; abrupt smooth boundary.
- 2C—32 to 60 inches; brown (7.5YR 5/4) stratified sand and gravel; single grain; loose; strongly acid.

The thickness of the solum ranges from 22 to 40 inches. The thickness of the silty mantle ranges from 20 to 36 inches.

The Ap horizon has hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 2 or 3. The E horizon has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 2 or 3. The Bt horizon has hue of 7.5YR or 10YR and value and chroma of 4 or 5. The 2Bt and 2C horizons have hue of

5YR, 7.5YR, or 10YR and value and chroma of 4 to 6. The 2Bt horizon is gravelly loamy sand, gravelly sandy loam, sandy loam, or loam. The 2C horizon is stratified sand and gravel or is gravelly sand.

Arenzville Series

The Arenzville series consists of deep, moderately well drained, moderately permeable soils on flood plains. These soils formed in silty deposits. Slope ranges from 0 to 3 percent.

Typical pedon of Arenzville silt loam, 0 to 3 percent slopes, 1,150 feet south and 75 feet west of the northeast corner of sec. 12, T. 29 N., R. 10 W.

- Ap—0 to 8 inches; dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; moderate fine subangular blocky structure; friable; medium acid; abrupt smooth boundary.
- C—8 to 38 inches; stratified brown (10YR 5/3), dark grayish brown (10YR 4/2), and very dark grayish brown (10YR 3/2) silt loam; weak thin plates; friable; medium acid; abrupt smooth boundary.
- Ab—38 to 50 inches; very dark gray (10YR 3/1) silt loam; weak medium granular structure; friable; medium acid; clear smooth boundary.
- C'—50 to 60 inches; dark grayish brown (10YR 4/2) silt loam; common medium distinct dark brown (7.5YR 4/4) mottles; weak thick plates; friable; medium acid.

The depth to the Ab horizon ranges from 20 to 40 inches. The Ap horizon has value of 3 to 5 and chroma of 1 to 3. The C horizon has value of 3 to 5 and chroma of 2 or 3. The Ab horizon has value of 2 or 3 and chroma of 1 or 2. The C' horizon has value of 4 to 6 and chroma of 1 or 2. It is either silt loam or is silt loam that has thin strata of coarser textured material.

Arland Series

The Arland series consists of moderately deep, well drained soils on uplands. These soils formed in loamy glacial till underlain by sandy residuum and sandstone. Permeability is moderate in the upper part of the subsoil and moderately rapid in the substratum. Slope ranges from 2 to 20 percent.

Typical pedon of Arland sandy loam, 6 to 12 percent slopes, eroded, 1,200 feet south and 275 feet west of the northeast corner of sec. 3, T. 31 N., R. 10 W.

- Ap—0 to 7 inches; very dark grayish brown (10YR 3/2) sandy loam, light brownish gray (10YR 6/2) dry; weak medium subangular blocky structure; friable; slightly acid; abrupt smooth boundary.
- Bt1—7 to 11 inches; dark brown (7.5YR 4/4) sandy loam; weak medium subangular blocky structure;

- friable; few distinct discontinuous clay films on faces of peds; slightly acid; clear wavy boundary.
- Bt2—11 to 25 inches; dark brown (7.5YR 4/4) loam; moderate medium subangular blocky structure; friable; common distinct discontinuous clay films on faces of peds; slightly acid; clear smooth boundary.
- BC—25 to 29 inches; dark brown (7.5YR 4/4) sandy loam, weak medium subangular blocky structure; friable; slightly acid; clear smooth boundary.
- 2C—29 to 35 inches; reddish yellow (7.5YR 6/6) sand; single grain; loose; strongly acid; clear smooth boundary.
- 2Cr—35 to 60 inches; reddish yellow (7.5YR 6/6), poorly cemented sandstone.

The thickness of the solum ranges from 20 to 36 inches. The depth to sandstone ranges from 30 to 40 inches

The Ap or A horizon has value of 3 or 4 and chroma of 2 or 3. It is sandy loam or loam. The Bt horizon has hue of 5YR, 7.5YR, or 10YR, value of 4 or 5, and chroma of 3 or 4. It is sandy loam, fine sandy loam, or loam. The BC horizon has hue of 5YR, 7.5YR, or 10YR and value and chroma of 4 to 6. It is loamy sand, sandy loam, or fine sandy loam. The 2C horizon has value of 5 to 8 and chroma of 2 to 6. It is loamy sand, loamy fine sand, or sand

Auburndale Series

The Auburndale series consists of deep, poorly drained soils on ground moraines. These soils formed in silty deposits and in the underlying sandy loam glacial till. Permeability is moderately slow or moderate in the subsoil and moderate in the substratum. Slope ranges from 0 to 2 percent.

Typical pedon of Auburndale silt loam, 0 to 2 percent slopes, 350 feet north and 500 feet west of the southeast corner of sec. 3, T. 29 N., R. 6 W.

- Ap—0 to 6 inches; very dark gray (10YR 3/1) silt loam, light brownish gray (10YR 6/2) dry; weak medium subangular blocky structure; friable; strongly acid; abrupt smooth boundary.
- E1—6 to 11 inches; light brownish gray (10YR 6/2) silt loam; few fine prominent strong brown (7.5YR 5/6) mottles; weak thin platy structure; friable; strongly acid; clear wavy boundary.
- E2—11 to 16 inches; grayish brown (10YR 5/2) silt loam; common medium distinct dark brown (7.5YR 4/4) mottles; weak medium platy structure; friable; strongly acid; clear wavy boundary.
- B/E—16 to 22 inches; grayish brown (10YR 5/2) silt loam (Bt); common medium distinct brown (7.5YR 5/4) and dark brown (7.5YR 4/4) and many medium prominent strong brown (7.5YR 5/8) mottles; weak fine subangular blocky structure; Bt material makes up about 60 percent of the horizon; few faint patchy

- clay films on faces of peds; light brownish gray (10YR 6/2) silt loam (E); weak medium platy structure; friable; strongly acid; clear wavy boundary.
- Btg1—22 to 34 inches; gray (10YR 5/1) silt loam; common medium prominent strong brown (7.5YR 5/8) and yellowish red (5YR 5/8) mottles; moderate fine subangular blocky structure; friable; few faint discontinuous clay films on faces of peds; very strongly acid; clear wavy boundary.
- Btg2—34 to 38 inches; brown (7.5YR 5/2) silt loam; many coarse prominent strong brown (7.5YR 5/8) and yellowish red (5YR 5/8) mottles; moderate fine subangular blocky structure; friable; few faint discontinuous clay films on faces of peds; strongly acid; clear wavy boundary.
- 2BC—38 to 45 inches; dark reddish brown (5YR 3/4) loam; common coarse distinct brown (7.5YR 5/2) mottles; weak medium subangular blocky structure; friable; strongly acid; gradual smooth boundary.
- 2C—45 to 60 inches; reddish brown (5YR 4/4) sandy loam; massive, friable; estimated 5 percent gravel; strongly acid.

The thickness of the solum ranges from 30 to 48 inches. The thickness of the silty mantle ranges from 30 to 60 inches.

The Ap or A horizon has value of 3 to 5 and chroma of 1 or 2. The Btg horizon has hue of 7.5YR, 10YR, or 2.5Y or is neutral in hue. It has value of 4 to 6 and chroma of 0 to 2. The 2BC horizon is loam or sandy loam. The content of gravel in this horizon is as much as 15 percent. The 2C horizon has hue of 2.5YR or 5YR and value of 3 to 6. It is sandy loam, loam, or gravelly sandy loam. The content of gravel in this horizon ranges from 5 to 25 percent.

Barronett Series

The Barronett series consists of deep, poorly drained and very poorly drained soils on glacial lake plains. These soils formed in silty lacustrine deposits underlain by stratified silty and sandy deposits. Permeability is moderately slow or moderate. Slope ranges from 0 to 2 percent.

Typical pedon of Barronett silt loam, 0 to 2 percent slopes, 1,200 feet north and 520 feet west of the southeast corner of sec. 21, T. 31 N., R. 6 W.

- Ap—0 to 9 inches; very dark gray (10YR 3/1) silt loam, dark gray (10YR 4/1) dry; few fine prominent dark brown (7.5YR 4/4) and yellowish red (5YR 5/8) mottles; weak thick platy structure parting to weak fine subangular blocky; friable; medium acid; abrupt smooth boundary.
- E1—9 to 12 inches; dark gray (10YR 4/1) silt loam, gray (10YR 5/1) dry; few fine prominent dark brown (7.5YR 4/4) mottles; moderate medium and thick

- platy structure; friable; strongly acid; clear wavy boundary.
- E2—12 to 18 inches; grayish brown (10YR 5/2) silt loam; many medium prominent strong brown (7.5YR 5/8) mottles; moderate medium platy structure parting to weak very fine subangular blocky; friable; strongly acid; clear smooth boundary.
- Btg1—18 to 30 inches; gray (5Y 6/1) silt loam; many medium prominent strong brown (7.5YR 5/6) and yellowish red (5YR 5/6) mottles; weak thick platy structure parting to weak fine subangular blocky; friable; few distinct clay films in some pores; medium acid; clear smooth boundary.
- Btg2—30 to 40 inches; gray (5Y 6/1) and pinkish gray (5YR 6/2) silt loam; few medium prominent strong brown (7.5YR 5/6 and 5/8) mottles; weak very thick platy structure parting to weak medium subangular blocky; friable; strong brown (5/8) organic coatings and iron stains in root channels and on vertical faces of peds; medium acid; clear smooth boundary.
- Cg—40 to 60 inches; gray (10YR 6/1) silt loam that has thin strata of very fine sand; many coarse prominent strong brown (7.5YR 5/6 and 5/8) mottles; weak thick plates related to textural strata; friable; neutral.

The thickness of the solum ranges from 30 to 42 inches. The Ap or A horizon has hue of 10YR or 2.5Y, value of 2 or 3, and chroma of 1 or 2. It is silt loam or mucky silt loam. The E horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 1 or 2. The Btg horizon has hue of 10YR, 2.5Y, or 5Y value of 4 to 6, and chroma of 1 or 2. It is silt loam or silty clay loam. The Cg horizon has hue of 5YR, 7.5YR, 10YR, 2.5Y, or 5Y, value of 4 to 6, and chroma of 1 to 3. It occurs as strata of silt loam, loam, very fine sandy loam, fine sand, or very fine sand.

Beseman Series

The Beseman series consists of deep, very poorly drained soils in depressions on ground moraines. These soils formed in highly decomposed organic material underlain by silty or loamy deposits. Permeability is moderately rapid in the organic layers and moderately slow in the substratum. Slope is 0 to 1 percent.

Typical pedon of Beseman muck, 0 to 1 percent slopes, 1,150 feet north and 1,320 feet east of the southwest corner of sec. 7, T. 32 N., R. 8 W.

- Oe—0 to 2 inches; hemic material, brown (7.5YR 5/4) broken face, pressed, and rubbed; about 75 percent fiber, 35 percent rubbed; massive; nonsticky; primarily sphagnum moss; extremely acid (pH 4.3 in water); clear wavy boundary.
- Oa1—2 to 8 inches; sapric material, dark brown (7.5YR 3/2) broken face, pressed, and rubbed; about 15 percent fiber, 2 percent rubbed; massive; slightly sticky; less than 2 percent mineral material;

herbaceous fiber; extremely acid (pH 4.6 in water); clear smooth boundary.

- Oa2—8 to 20 inches; sapric material, black (10YR 2/1) broken face, pressed, and rubbed; about 10 percent fiber, a trace rubbed; massive; slightly sticky; about 5 percent silt; herbaceous fiber; extremely acid (pH 4.4 in water); abrupt smooth boundary.
- Cg—20 to 60 inches; gray (5Y 6/1) silt loam; massive; friable; strong brown (7.5YR 5/8) stains along root channels; very strongly acid.

The organic material ranges from 16 to 51 inches in thickness. It is dominantly sapric material, but some pedons have thin layers of hemic or fibric material. The sapric material has hue of 5YR, 7.5YR, or 10YR or is neutral in hue. It has value of 2 or 3 and chroma of 0 to 2. The Cg horizon is sandy loam, loam, or silt loam.

Billett Series

The Billett series consists of deep, well drained and moderately well drained soils on outwash plains. These soils formed in loamy deposits and in the underlying sandy deposits. Permeability is moderately rapid in the subsoil and rapid in the substratum. Slope ranges from 0 to 12 percent.

Typical pedon of Billett sandy loam, 2 to 6 percent slopes, 2,050 feet south and 150 feet east of the center of sec. 6, T. 30 N., R. 9 W.

- Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) sandy loam, brown (10YR 5/3) dry; weak medium subangular blocky structure; friable; medium acid; abrupt smooth boundary.
- E—9 to 11 inches; brown (10YR 5/3) sandy loam; weak medium platy structure; friable; slightly acid; clear wavy boundary.
- BE—11 to 20 inches; dark brown (10YR 4/3) sandy loam; weak fine subangular blocky structure; friable; strongly acid; clear smooth boundary.
- Bt—20 to 30 inches; dark brown (7.5YR 4/4) sandy loam; moderate medium subangular blocky structure; friable; common distinct clay films on faces of peds; very strongly acid; clear smooth boundary.
- BC—30 to 36 inches; dark brown (7.5YR 4/4) loamy sand; weak medium subangular blocky structure; very friable; very strongly acid; gradual smooth boundary.
- C1—36 to 40 inches; strong brown (7.5YR 5/6) stratified fine sand and sand; single grain; loose; strongly acid; gradual smooth boundary.
- C2—40 to 60 inches; yellowish brown (10YR 5/6) stratified fine sand and sand; single grain; loose; strongly acid.

The thickness of the solum ranges from 30 to 40 inches. The Ap horizon has hue of 7.5YR or 10YR, value of 2 or 3, and chroma of 1 to 3. Some pedons do not have an E horizon. The Bt horizon has hue of 7.5YR or 10YR and value and chroma of 4 to 6. It is sandy loam or fine sandy loam. The BC horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 6. It is loamy sand or sandy loam. The C horizon has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 3 to 6. It is fine sand or sand or is stratified with these textures.

Boone Series

The Boone series consists of moderately deep, excessively drained, rapidly permeable soils on ridgetops and valley slopes in the uplands. These soils formed in sandy residuum over sandstone. Slope ranges from 20 to 45 percent.

Typical pedon of Boone fine sand, 20 to 45 percent slopes, 1,440 feet south and 100 feet east of the center of sec. 35, T. 28 N., R. 8 W.

- A—0 to 2 inches; very dark gray (10YR 3/1) fine sand, very dark grayish brown (10YR 3/2) dry; weak fine granular structure; very friable; many uncoated quartz grains; strongly acid; abrupt smooth boundary.
- C1—2 to 4 inches; brown (7.5YR 5/2) fine sand; single grain; loose; very strongly acid; clear smooth boundary.
- C2—4 to 9 inches; brown (10YR 5/3) sand; single grain; loose, strongly acid; gradual wavy boundary.
- C3—9 to 22 inches; light yellowish brown (10YR 6/4) sand; single grain; loose; slightly acid; gradual smooth boundary.
- Cr—22 to 60 inches; very pale brown (10YR 8/3 and 7/3) and pale brown (10YR 6/3), poorly cemented sandstone.

The depth to sandstone ranges from 20 to 40 inches. The A horizon has value of 3 to 5 and chroma of 1 or 2. The C horizon has value of 5 to 8 and chroma of 2 to 4. It is sand or fine sand. In some pedons the underlying sandstone has strongly consolidated layers.

Brill Series

The Brill series consists of deep, moderately well drained soils on outwash plains and stream terraces. These soils formed in silty and loamy deposits underlain by stratified sand and gravel. Permeability is moderate in the upper part of the subsoil and rapid or very rapid in the substratum. Slope ranges from 0 to 3 percent.

The Brill soils in this county have a slightly lower content of clay in the subsoil than is defined as the range for the series. Also, the transitional layer between the contrasting particle-size classes is slightly thicker.

These differences, however, do not alter the usefulness or behavior of the soils.

Typical pedon of Brill silt loam, 0 to 3 percent slopes, 350 feet north and 425 feet east of the southwest corner of sec. 36, T. 29 N., R. 5 W.

- Ap—0 to 8 inches; dark brown (10YR 3/3) silt loam, light brownish gray (10YR 6/2) dry; moderate medium granular structure; friable; strongly acid; abrupt smooth boundary.
- E—8 to 11 inches; brown (10YR 5/3) silt loam, very pale brown (10YR 7/3) dry; moderate medium platy structure; friable; strongly acid; clear smooth boundary.
- E/B—11 to 13 inches; brown (10YR 5/3) silt loam, very pale brown (10YR 7/3) dry (E); weak medium platy structure; E material makes up about 60 percent of the horizon; dark yellowish brown (10YR 4/4) silt loam (Bt); weak medium subangular blocky structure; friable; very strongly acid; clear smooth boundary.
- B/E—13 to 17 inches; dark yellowish brown (10YR 4/4) silt loam (Bt); moderate medium subangular blocky structure; Bt material makes up about 60 percent of the horizon; brown (10YR 5/3) silt loam, very pale brown (10YR 7/3) dry (E); weak medium platy structure; friable; very strongly acid; clear smooth boundary.
- Bt—17 to 25 inches; dark yellowish brown (10YR 4/4) silt loam; few medium prominent yellowish red (5YR 5/6) mottles; moderate medium subangular blocky structure; friable; few distinct patchy clay films on faces of peds; very strongly acid; clear wavy boundary.
- BC—25 to 34 inches; brown (7.5YR 5/4) gravelly sandy loam; common medium faint strong brown (7.5YR 5/6) mottles; weak fine subangular blocky structure; very friable; few distinct patchy dark brown (7.5YR 3/2) clay films on faces of peds; light brownish gray (10YR 6/2) uncoated silt particles on faces of peds; very strongly acid; clear wavy boundary.
- 2C—34 to 60 inches; dark brown (7.5YR 4/4), stratified sand and gravel; single grain; loose; estimated 25 percent gravel; medium acid.

The thickness of the solum ranges from 30 to 40 inches. The thickness of the silty mantle ranges from 24 to 36 inches.

The Ap horizon has value of 3 or 4 and chroma of 2 or 3. The E horizon has value of 4 to 6 and chroma of 2 or 3. It is silt or silt loam. The Bt horizon has hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 4 or 5. It is silt loam or silty clay loam. The BC horizon has hue of 5YR or 7.5YR and value and chroma of 3 to 6. It is loam, sandy loam, gravelly sandy loam, or gravelly loamy sand. The 2C horizon has hue of 7.5YR or 10YR and value

and chroma of 3 to 6. The content of gravel in this horizon ranges from 10 to 30 percent.

Burkhardt Series

The Burkhardt series consists of deep, excessively drained and somewhat excessively drained soils on outwash plains and stream terraces. These soils formed in thin deposits of loamy material and are underlain by stratified sand and gravel. Permeability is moderately rapid in the subsoil and rapid or very rapid in the substratum. Slope ranges from 0 to 3 percent.

Typical pedon of Burkhardt sandy loam, 0 to 3 percent slopes, 2,340 feet west and 100 feet north of the southeast corner of sec. 34, T. 28 N., R. 9 W.

Ap—0 to 8 inches; very dark brown (10YR 2/2) sandy loam, dark grayish brown (10YR 4/2) dry; weak medium subangular blocky structure parting to weak fine granular; very friable, strongly acid; abrupt smooth boundary.

AB—8 to 11 inches; dark brown (7.5YR 3/2) coarse sandy loam, dark brown (7.5YR 4/2) dry; weak medium subangular blocky structure; very friable; strongly acid; clear smooth boundary.

Bt—11 to 17 inches; dark brown (7.5YR 3/2) coarse sandy loam, dark brown (7.5YR 4/4) dry; moderate fine subangular blocky structure; friable; few distinct clay films on faces of peds; neutral; clear smooth boundary.

BC—17 to 19 inches; dark brown (7.5YR 4/4) gravelly coarse sand; weak medium subangular blocky structure; very friable; some clay bridges between sand grains; estimated 25 percent gravel; slightly acid, clear smooth boundary.

2C—19 to 60 inches; dark brown (7.5YR 4/4) and strong brown (7.5YR 5/6) stratified coarse sand and gravel; single grain; loose; slightly acid.

The solum is 12 to 24 inches thick. The mollic epipedon is 10 to 14 inches thick.

The A horizon has hue of 7.5YR or 10YR, value of 2 or 3, and chroma of 1 to 3. The Bt horizon has hue of 7.5YR or 10YR, value of 3 or 4, and chroma of 2 to 4. It is coarse sandy loam, sandy loam, or loam. The BC horizon is gravelly sandy loam, gravelly loamy sand, or gravelly coarse sand. The content of gravel in the BC and 2C horizons ranges from 15 to 30 percent. The 2C horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 6.

Cable Series

The Cable series consists of deep, poorly drained and very poorly drained soils on ground moraines. These soils formed in silty deposits and in the underlying sandy loam glacial till. Permeability is moderately slow or

moderate in the subsoil and moderately slow in the substratum. Slope ranges from 0 to 2 percent.

Typical pedon of Cable silt loam, 0 to 2 percent slopes, 750 feet south and 75 feet east of the northwest corner of sec. 34, T. 32 N., R. 5 W.

O_i—2 inches to 0; very dark grayish brown (10YR 3/2), undecomposed sedges.

A—0 to 4 inches; very dark gray (10YR 3/1) silt loam, dark grayish brown (10YR 4/2) dry; weak fine granular structure; friable; strongly acid; abrupt smooth boundary.

Eg—4 to 6 inches; gray (10YR 5/1) silt loam; few fine prominent strong brown (7.5YR 5/6) mottles; weak medium platy structure; friable; very strongly acid; clear smooth boundary.

Bg₁—6 to 16 inches; grayish brown (10YR 5/2) silt loam; common medium prominent yellowish brown (10YR 5/6) mottles; weak fine subangular blocky structure, friable; medium acid; clear wavy boundary.

2Bg₂—16 to 26 inches; grayish brown (10YR 5/2) loam; many medium prominent strong brown (7.5YR 5/6 and 5/8) mottles; weak fine subangular blocky structure; friable; medium acid; clear wavy boundary.

2C₁—26 to 32 inches; dark brown (7.5YR 4/4) sandy loam; common medium distinct reddish gray (5YR 5/2) mottles; massive; friable; estimated 5 percent gravel and 5 percent cobbles; medium acid; clear smooth boundary.

2C₂—32 to 60 inches; reddish brown (5YR 4/4) sandy loam; massive; friable; estimated 5 percent gravel and 5 percent cobbles; neutral.

The thickness of the solum ranges from 20 to 40 inches. The thickness of the silty mantle ranges from 10 to 30 inches.

The A horizon has value of 2 or 3 and chroma of 1 or 2. The Eg horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 1 or 2. It is silt loam, loam, or fine sandy loam. The Bg horizon has hue of 10YR, 2.5Y, or 5Y, value of 4 to 6, and chroma of 1 or 2. It is silt loam, loam, or sandy loam. The 2C horizon has hue of 5YR or 7.5YR, value of 4 to 6, and chroma of 2 to 4. It is sandy loam or gravelly sandy loam. The content of gravel and cobbles is 0 to 5 percent in the A and Bg horizons and 5 to 20 percent in the 2C horizon.

Campia Series

The Campia series consists of deep, well drained, moderately permeable soils on glacial lake plains and terraces. These soils formed in silty lacustrine deposits and in the underlying stratified silty and sandy deposits. Slope ranges from 2 to 20 percent.

Typical pedon of Campia silt loam, 2 to 6 percent slopes, 600 feet north and 900 feet east of the southwest corner of sec. 30, T. 32 N., R. 8 W.

- Ap—0 to 8 inches; dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; weak fine subangular blocky structure; friable; slightly acid; abrupt smooth boundary.
- E—8 to 12 inches; brown (7.5YR 5/2) silt loam; weak thin platy structure; friable; medium acid; clear wavy boundary.
- E/B—12 to 19 inches; brown (7.5YR 5/2) silt loam (E); weak medium platy structure; E material makes up about 60 percent of the horizon; reddish brown (5YR 4/4) silt loam (Bt); moderate fine subangular blocky structure; friable; pinkish gray (7.5YR 7/2) uncoated silt particles on vertical faces of peds, medium acid; clear wavy boundary.
- B/E—19 to 24 inches; reddish brown (5YR 4/4) silt loam (Bt); moderate medium subangular blocky structure; Bt material makes up about 80 percent of the horizon; brown (7.5YR 5/2) silt loam (E); weak medium platy structure; firm; thin patchy clay films on faces of peds; pinkish gray (7.5YR 7/2) uncoated silt particles on vertical faces of peds; medium acid; clear wavy boundary.
- Bt1—24 to 34 inches; reddish brown (5YR 4/4) silty clay loam; strong medium angular blocky structure; firm; common prominent continuous clay films on faces of peds; strongly acid; clear wavy boundary.
- Bt2—34 to 42 inches; reddish brown (5YR 4/4) silty clay loam; weak coarse prismatic structure parting to moderate coarse subangular blocky; firm; few distinct patchy clay films on faces of peds; few thin strata of dark brown (7.5YR 4/4) very fine sand; strongly acid; clear wavy boundary.
- C—42 to 60 inches; reddish brown (5YR 4/4) silt loam; moderate thick plates; firm; few thin strata of dark brown (7.5YR 4/4) very fine sand; medium acid.

The thickness of the solum ranges from 30 to 45 inches. The Ap horizon has value of 3 or 4. Some pedons have an A horizon, which has value of 2 or 3. The E horizon has value of 4 to 6 and chroma of 2 or 3. The Bt and C horizons have hue of 5YR or 7.5YR, value of 4 or 5, and chroma of 3 or 4. The Bt horizon is silt loam or silty clay loam. The C horizon is silt loam that has thin strata of silty clay loam, silt, or very fine sand.

Caryville Series

The Caryville series consists of deep, well drained soils on flood plains and stream terraces. These soils formed in loamy deposits underlain by sand. Permeability is moderately rapid in the upper loamy material and moderately rapid or rapid in the substratum. Slope ranges from 0 to 3 percent.

Typical pedon of Caryville sandy loam, 0 to 3 percent slopes, 1,660 feet south and 300 feet west of the northeast corner of sec. 10, T. 28 N., R. 9 W.

- Ap—0 to 9 inches; dark reddish brown (5YR 2/2) sandy loam, reddish gray (5YR 5/2) dry; weak medium subangular blocky structure; friable; slightly acid; abrupt smooth boundary.
- A—9 to 16 inches; dark reddish brown (5YR 3/2) sandy loam, reddish brown (5YR 5/3) dry; weak medium subangular blocky structure; friable; slightly acid; gradual smooth boundary.
- AC—16 to 20 inches; dark reddish brown (5YR 3/4) loamy sand; weak medium subangular blocky structure; very friable; slightly acid; gradual smooth boundary.
- 2C—20 to 60 inches, brown (7.5YR 5/4) sand; single grain; loose; slightly acid.

The A horizon ranges from 10 to 20 inches in thickness. It has hue of 5YR or 7.5YR and value and chroma of 2 or 3. The AC horizon has hue of 5YR or 7.5YR and value and chroma of 3 or 4. It is sandy loam or loamy sand. The 2C horizon has hue of 5YR or 7.5YR, value of 4 or 5, and chroma of 3 or 4. It is sand or loamy sand.

Chetek Series

The Chetek series consists of deep, somewhat excessively drained soils on outwash plains, stream terraces, and pitted moraines. These soils formed in thin deposits of loamy material and are underlain by stratified sand and gravel. Permeability is moderately rapid in the subsoil and rapid or very rapid in the substratum. Slope ranges from 0 to 40 percent.

Typical pedon of Chetek sandy loam, 2 to 6 percent slopes, 1,790 feet west and 200 feet south of the northeast corner of sec. 22, T. 29 N., R. 7 W

- Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) sandy loam, light brownish gray (10YR 6/2) dry; moderate fine granular structure, friable; medium acid; abrupt smooth boundary.
- E—8 to 13 inches; brown (10YR 5/3) sandy loam, very pale brown (10YR 7/3) dry; weak medium platy structure; friable; medium acid; clear wavy boundary.
- Bt1—13 to 17 inches; dark brown (7.5YR 4/4) sandy loam; moderate medium subangular blocky structure; friable; common distinct continuous clay films on faces of peds; estimated 15 percent gravel; strongly acid; clear smooth boundary.
- 2Bt2—17 to 20 inches; dark brown (7.5YR 4/4) gravelly loamy sand; weak medium subangular blocky structure; very friable; few faint clay bridges between sand grains; estimated 25 percent gravel; medium acid; abrupt smooth boundary.
- 2C—20 to 60 inches; strong brown (7.5YR 5/6) stratified sand and gravel; single grain; loose; estimated 25 percent gravel; medium acid.

The thickness of the solum and of the loamy deposits ranges from 16 to 24 inches. The Ap horizon has hue of 7.5YR or 10YR, value of 3 or 4, and chroma of 2 or 3. 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 and value and chroma of 3 or 4. It is loam or sandy loam. The 2Bt horizon has hue of 5YR or 7.5YR and value and chroma of 4 or 5. It is gravelly loamy sand or gravelly sandy loam. The content of gravel ranges from 15 to 35 percent in the 2Bt and 2C horizons. The 2C horizon has hue of 5YR or 7.5YR, value of 4 or 5, and chroma of 4 to 6.

Comstock Series

The Comstock series consists of deep, somewhat poorly drained soils on glacial lake plains. These soils formed in silty lacustrine deposits. Permeability is moderate in the subsoil and moderately slow in the substratum. Slope ranges from 0 to 2 percent.

Typical pedon of Comstock silt loam, 0 to 2 percent slopes, 50 feet south and 750 feet east of the center of sec. 26, T. 29 N., R. 5 W.

- Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) silt loam, light brownish gray (10YR 6/2) dry; weak fine subangular blocky structure; friable; strongly acid; abrupt smooth boundary.
- E—8 to 12 inches; grayish brown (10YR 5/2) silt loam; few fine distinct yellowish brown (10YR 5/4) mottles; weak thin platy structure; friable; strongly acid; clear wavy boundary.
- B/E—12 to 22 inches; brown (10YR 5/3) silt loam (Bt); many medium distinct yellowish brown (10YR 5/6) mottles; weak very thick platy structure parting to moderate medium subangular blocky; firm; Bt material makes up about 60 percent of the horizon; grayish brown (10YR 5/2) silt loam (E); friable; thin discontinuous clay films and light brownish gray (10YR 6/2) uncoated silt particles on vertical faces of peds in the Bt part; very strongly acid; clear wavy boundary.
- Bt—22 to 38 inches; dark yellowish brown (10YR 4/4) silt loam; many coarse prominent strong brown (7.5YR 5/8) and common medium distinct grayish brown (10YR 5/2) mottles; weak very thick platy structure parting to moderate medium subangular blocky; firm; light brownish gray (10YR 6/2) uncoated silt particles on vertical faces of peds; few distinct discontinuous clay films on faces of peds; very strongly acid; clear wavy boundary.
- BC—38 to 48 inches; yellowish brown (10YR 5/4) silt loam; many coarse prominent strong brown (7.5YR 5/8) and common medium faint grayish brown (10YR 5/2) mottles; weak very thick platy structure parting to weak medium subangular blocky; friable; strongly acid; gradual wavy boundary.

- C—48 to 60 inches; yellowish brown (10YR 5/4) silt loam; many coarse distinct strong brown (7.5YR 5/6) mottles; massive; friable; strongly acid.

The thickness of the solum ranges from 28 to 50 inches. The Ap horizon has value of 3 or 4 and chroma of 1 or 2. The E horizon has value of 4 to 6 and chroma of 2 or 3. The Bt horizon has hue of 5YR, 7.5YR, or 10YR, value of 4 or 5, and chroma of 3 or 4. It is silt loam or silty clay loam. The C horizon has colors similar to those of the Bt horizon.

Crystal Lake Series

The Crystal Lake series consists of deep, moderately well drained soils on glacial lake plains. These soils formed in silty lacustrine deposits underlain by stratified silty and sandy deposits. Permeability is moderate in the subsoil and moderately slow in the substratum. Slope ranges from 0 to 3 percent.

Typical pedon of Crystal Lake silt loam, 0 to 3 percent slopes, 2,120 feet south and 25 feet east of the northwest corner of sec. 15, T. 32 N., R. 7 W.

- Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) silt loam, light brownish gray (10YR 6/2) dry; weak fine subangular blocky structure; friable; strongly acid; abrupt smooth boundary.
- E—8 to 14 inches; grayish brown (10YR 5/2) silt loam; weak thin platy structure; friable; strongly acid; clear wavy boundary.
- E/B—14 to 24 inches; grayish brown (10YR 5/2) silt loam (E); common fine prominent strong brown (7.5YR 5/6) mottles; weak medium platy structure; E material makes up about 60 percent of the horizon; dark brown (7.5YR 4/4) silt loam (Bt); weak medium subangular blocky structure; friable; thin discontinuous clay films on faces of peds; strongly acid; clear wavy boundary.
- Bt1—24 to 34 inches; dark brown (7.5YR 4/4) silt loam; few medium faint strong brown (7.5YR 5/6) and few medium distinct strong brown (7.5YR 5/8) mottles; weak coarse prismatic structure parting to moderate medium subangular blocky; friable; common distinct discontinuous clay films on faces of peds; pinkish gray (7.5YR 6/2) uncoated silt particles on vertical faces of peds; very strongly acid; gradual wavy boundary.
- Bt2—34 to 44 inches; dark brown (7.5YR 4/4) silt loam; few medium prominent strong brown (7.5YR 5/8) mottles; weak very thick platy structure parting to weak medium subangular blocky; friable; few distinct patchy clay films on faces of peds; few thin strata of very fine sand; strongly acid; gradual smooth boundary.
- C—44 to 60 inches; brown (7.5YR 5/4) silt loam; few medium prominent yellowish red (5YR 4/8) and few

medium faint pinkish gray (7.5YR 6/2) mottles; weak thick plates; friable; few thin strata of very fine sand; very strongly acid.

The thickness of the solum ranges from 28 to 50 inches. The Ap horizon has value of 3 or 4. The E horizon has value of 4 to 6. The Bt horizon has hue of 5YR, 7.5YR, or 10YR, value of 4 or 5, and chroma of 3 or 4. The C horizon has colors similar to those of the Bt horizon. It is silt loam that has thin strata of silty clay loam, fine sandy loam, very fine sandy loam, fine sand, or very fine sand.

Eleva Series

The Eleva series consists of moderately deep, well drained and somewhat excessively drained soils on uplands. These soils formed in loamy deposits underlain by sandy residuum and sandstone. Permeability is moderate or moderately rapid in the subsoil and moderately rapid or rapid in the substratum. Slope ranges from 2 to 20 percent.

Typical pedon of Eleva sandy loam, 6 to 12 percent slopes, eroded, 700 feet east and 1,400 feet south of the center of sec. 33, T. 31 N., R. 9 W.

Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) sandy loam, light brownish gray (10YR 6/2) dry; moderate medium subangular blocky structure; friable; slightly acid; abrupt smooth boundary.

BA—9 to 14 inches; dark yellowish brown (10YR 4/4) loam; weak medium subangular blocky structure; friable; slightly acid; clear smooth boundary.

Bt1—14 to 28 inches; dark yellowish brown (10YR 4/4) loam; moderate medium subangular blocky structure; friable; few distinct clay films on faces of peds; medium acid; clear smooth boundary.

Bt2—28 to 36 inches; yellowish brown (10YR 5/4) sandy loam; weak medium subangular blocky structure; friable; few distinct clay films on faces of peds; estimated 2 percent sandstone channers 2 to 5 inches long; very strongly acid; clear smooth boundary.

C—36 to 40 inches; yellowish brown (10YR 5/6) sand; single grain; loose; medium acid; clear smooth boundary.

Cr—40 to 60 inches; brownish yellow (10YR 6/6), poorly cemented sandstone.

The thickness of the solum and the depth to sandstone range from 20 to 40 inches. The Ap or A horizon has value of 3 to 5 and chroma of 2 to 4. The Bt horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 to 5. The C horizon has hue of 7.5YR or 10YR, value of 5 to 7, and chroma of 4 to 6.

Elkmound Series

The Elkmound series consists of shallow, well drained soils on uplands. These soils formed in a thin layer of loamy deposits and are underlain by sandstone (fig. 13). Permeability is moderate or moderately rapid. Slope ranges from 2 to 45 percent.

Typical pedon of Elkmound loam, 12 to 20 percent slopes, eroded, 1,550 feet east and 250 feet south of the northwest corner of sec. 6, T. 30 N., R. 9 W.

Ap—0 to 7 inches; dark brown (10YR 3/3) loam, pale brown (10YR 6/3) dry; weak thick platy structure



Figure 13.—Profile of an Elkmound soil. Sandstone is at a depth of about 12 inches. Depth is marked in feet.

parting to weak fine subangular blocky; friable; neutral; abrupt smooth boundary.

BE—7 to 10 inches; yellowish brown (10YR 5/4) sandy loam; weak thick platy structure parting to weak fine subangular blocky; friable; slightly acid; clear wavy boundary.

Bw1—10 to 16 inches; dark yellowish brown (10YR 4/4) sandy loam; weak very thick platy structure parting to moderate medium subangular blocky; friable; strongly acid; clear smooth boundary.

Bw2—16 to 19 inches; yellowish brown (10YR 5/4 and 5/6) loamy fine sand; single grain; very friable; estimated 5 percent sandstone channers 3 to 6 inches long; strongly acid; clear smooth boundary.

R—19 inches; yellowish brown (10YR 5/4 and 5/6), partially weathered, platy sandstone.

The thickness of the solum and the depth to sandstone range from 10 to 20 inches. The content of sandstone channers ranges from 0 to 15 percent throughout the solum.

The Ap or A horizon has hue of 7.5YR or 10YR, value of 2 to 4, and chroma of 1 to 4. The Bw1 horizon has hue of 7.5YR or 10YR and value and chroma of 3 to 5. It is sandy loam or loam.

Elm Lake Series

The Elm Lake series consists of moderately deep or deep, poorly drained soils in drainageways on uplands. These soils formed in sandy deposits underlain by sandy, silty, and loamy material weathered from sandstone interbedded with shale. Permeability is rapid in the sandy mantle and very slow in the underlying silty or loamy residuum. Slope ranges from 0 to 2 percent.

Typical pedon of Elm Lake loamy sand, 0 to 2 percent slopes, 800 feet west and 100 feet north of the center of sec. 30, T. 28 N., R. 8 W.

A—0 to 4 inches; black (10YR 2/1) loamy sand, dark gray (10YR 4/1) dry; weak medium subangular blocky structure; very friable; very strongly acid; abrupt smooth boundary.

C1—4 to 9 inches; grayish brown (10YR 5/2) loamy sand; weak thick platy structure; friable; strongly acid; clear wavy boundary.

C2—9 to 14 inches; light brownish gray (10YR 6/2) sand; single grain; loose; medium acid; clear wavy boundary.

C3—14 to 23 inches; pale brown (10YR 6/3) sand; single grain; loose; medium acid; abrupt smooth boundary.

2C4—23 to 25 inches; gray (10YR 5/1) silty clay loam; few coarse prominent reddish yellow (7.5YR 6/8) mottles; massive; firm; dark gray (N 4/0) organic stains in root and worm channels; extremely acid; clear smooth boundary.

2C5—25 to 27 inches; gray (5Y 6/1) silty clay loam; massive; firm; very strongly acid; clear smooth boundary.

2C6—27 to 48 inches; olive gray (5Y 5/2) silty clay loam; common coarse prominent strong brown (7.5YR 5/8) mottles; massive; firm; estimated 10 percent sandstone channers 1 to 3 inches long; very strongly acid; clear smooth boundary.

3Cr—48 to 60 inches; very pale brown (10YR 7/3), poorly cemented sandstone interbedded with shale.

The depth to sandstone and shale residuum ranges from 20 to 30 inches. The depth to interbedded sandstone and shale ranges from 30 to 50 inches.

The A horizon has value of 2 or 3 and chroma of 1 or 2. The C horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 1 to 3. It is sand or loamy sand. The 2C horizon is dominantly clay loam or silty clay loam, but in many pedons it has thin strata of finer or coarser textured material. It has hue of 10YR, 2.5Y, or 5Y, value of 4 to 6, and chroma of 1 or 2.

Fallcreek Series

The Fallcreek series consists of deep, somewhat poorly drained, moderately slowly permeable soils on ground moraines. These soils formed in loamy glacial till. Slope ranges from 2 to 6 percent.

Typical pedon of Fallcreek sandy loam, 2 to 6 percent slopes, 1,100 feet south and 1,270 feet west of the northeast corner of sec. 35, T. 28 N., R. 5 W.

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) sandy loam, light brownish gray (10YR 6/2) dry; weak medium subangular blocky structure; friable; medium acid; abrupt smooth boundary.

E—8 to 14 inches; brown (10YR 5/3) sandy loam; common coarse prominent strong brown (7.5YR 5/6 and 5/8) and few medium faint light brownish gray (10YR 6/2) mottles; weak medium platy structure; friable; strongly acid; clear wavy boundary.

E/B—14 to 20 inches; brown (10YR 5/3) sandy loam (E); common medium prominent strong brown (7.5YR 5/6 and 5/8) and common medium faint light brownish gray (10YR 6/2) mottles; weak medium platy structure; E material makes up about 65 percent of the horizon; yellowish brown (10YR 5/4) sandy loam (Bt); weak fine subangular blocky structure; friable; estimated 2 percent gravel; strongly acid; clear wavy boundary.

B/E—20 to 24 inches; reddish brown (5YR 4/4) loam (Bt); many medium prominent yellowish red (5YR 5/8) and few medium faint reddish gray (5YR 5/2) mottles; weak very thick platy structure parting to moderate medium subangular blocky; Bt material makes up about 75 percent of the horizon; brown (7.5YR 5/3) loam (E); weak medium platy structure;

firm; estimated 5 percent gravel; very strongly acid; gradual wavy boundary.

- Bt1—24 to 34 inches; reddish brown (5YR 4/4) loam; many medium prominent yellowish red (5YR 5/8) and few medium faint reddish gray (5YR 5/2) mottles; weak coarse prismatic structure parting to strong medium subangular blocky; firm; many distinct continuous clay films on faces of peds; gray (5YR 6/1) uncoated silt particles and very fine sand grains on faces of prisms; estimated 10 percent gravel; very strongly acid; gradual smooth boundary
- Bt2—34 to 40 inches; reddish brown (5YR 4/4) loam; common medium distinct strong brown (7.5YR 5/6) mottles; weak coarse prismatic structure parting to moderate medium subangular blocky; firm; few distinct discontinuous clay films on faces of peds; pinkish gray (5YR 6/2) uncoated silt particles and very fine sand grains on faces of prisms; estimated 10 percent gravel; very strongly acid; gradual smooth boundary.
- C—40 to 60 inches; reddish brown (5YR 5/4) loam; weak thick plates in the upper part and massive in the lower part; firm; estimated 10 percent gravel; very strongly acid.

The thickness of the solum ranges from 24 to 48 inches. The content of cobbles and stones is 0 to 5 percent throughout the profile.

The Ap horizon has value of 3 or 4 and chroma of 1 or 2. The E horizon has value of 4 to 6 and chroma of 2 or 3. The Bt and C horizons are loam or sandy loam. The content of gravel in the B and C horizons is 5 to 10 percent. The Bt1 horizon has hue of 5YR or 7.5YR, value of 4 or 5, and chroma of 3 or 4. The C horizon has hue of 5YR or 7.5YR and value and chroma of 4 or 5

Flambeau Series

The Flambeau series consists of deep, moderately well drained soils on ground moraines. These soils formed in loamy glacial till (fig. 14). Permeability is moderate in the subsoil and moderately slow in the substratum. Slope ranges from 2 to 12 percent.

Typical pedon of Flambeau loam, 2 to 6 percent slopes, 400 feet north and 1,300 feet east of the center of sec. 6, T. 28 N., R. 6 W.

- Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) loam, light brownish gray (10YR 6/2) dry; weak fine subangular blocky structure; friable; estimated 2 percent cobbles; slightly acid; abrupt smooth boundary.
- E—8 to 12 inches; brown (10YR 5/3) loam, very pale brown (10YR 7/3) dry; weak medium platy structure; friable; estimated 2 percent cobbles; neutral; clear wavy boundary.
- E/B—12 to 17 inches; brown (10YR 5/3) sandy loam, very pale brown (10YR 7/3) dry (E); common fine

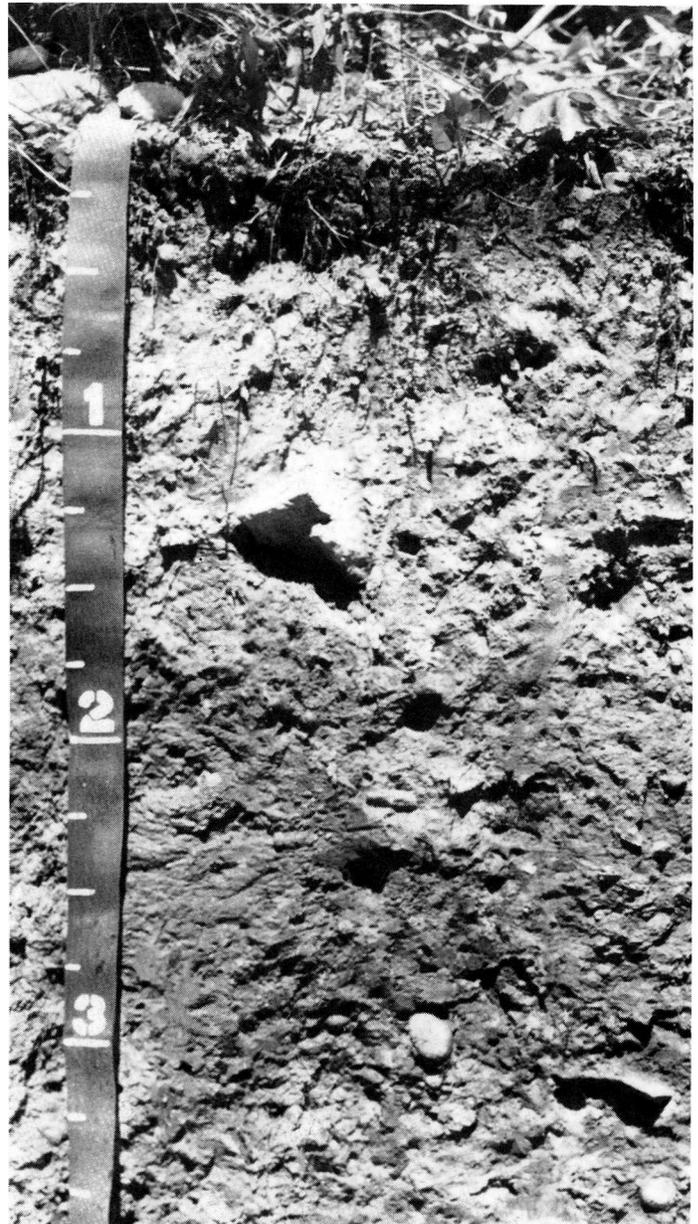


Figure 14.—Profile of a Flambeau soil. Loamy glacial till is at a depth of about 36 inches. Depth is marked in feet.

- prominent strong brown (7.5YR 5/6 and 5/8) mottles; weak medium platy structure; E material makes up about 65 percent of the horizon; brown (7.5YR 5/4) sandy loam (Bt); weak fine subangular blocky structure; friable; estimated 3 percent gravel; very strongly acid; clear wavy boundary.
- Bt1—17 to 23 inches; reddish brown (5YR 4/3) loam; common medium prominent yellowish red (5YR 4/8 and 5/8) mottles; strong fine and medium angular

blocky structure; firm; pinkish gray (7.5YR 6/2) uncoated silt particles and very fine sand grains on faces of peds and around pebbles; many distinct continuous clay films on faces of peds; estimated 7 percent gravel; very strongly acid; gradual wavy boundary.

- Bt2—23 to 36 inches; reddish brown (5YR 4/4) sandy clay loam; few fine faint yellowish red (5YR 5/6) mottles; moderate medium subangular blocky structure; firm; pinkish gray (7.5YR 6/2) uncoated silt particles and very fine sand grains on faces of peds; many distinct discontinuous clay films on faces of peds; estimated 5 percent gravel; very strongly acid; gradual smooth boundary.
- C—36 to 60 inches; reddish brown (5YR 4/4) loam; weak very thick plates in the upper part and massive in the lower part; firm; estimated 7 percent gravel; medium acid.

The thickness of the solum ranges from 30 to 50 inches. The content of cobbles and stones ranges from 0 to 10 percent throughout the profile. The content of gravel ranges from 0 to 10 percent in the Bt and C horizons.

The Ap horizon has value of 3 or 4 and chroma of 1 or 2. The E horizon has chroma of 2 or 3. The Bt horizon has value of 4 or 5 and chroma of 3 or 4. It is loam or sandy clay loam. The C horizon has hue of 5YR or 7.5YR and value and chroma of 4 or 5.

Fordum Series

The Fordum series consists of deep, poorly drained and very poorly drained soils on flood plains. These soils formed in loamy and sandy deposits. Permeability is moderate or moderately rapid in the loamy mantle and rapid or very rapid in the sandy substratum. Slope ranges from 0 to 2 percent.

The Fordum soils in this county are slightly shallower to coarse textured material than is defined as the range for the series. This difference, however, does not alter the usefulness or behavior of the soils.

Typical pedon of Fordum loam, 0 to 2 percent slopes, 200 feet north and 1,650 feet east of the southwest corner of sec. 33, T. 29 N., R. 9 W.

- A—0 to 9 inches; very dark grayish brown (10YR 3/2) loam, grayish brown (10YR 5/2) dry; few medium prominent yellowish brown (10YR 5/6 and 5/8) mottles; moderate medium granular structure; friable; slightly acid; abrupt smooth boundary.
- C1—9 to 21 inches; grayish brown (10YR 5/2) sandy loam; common medium prominent yellowish brown (10YR 5/6 and 5/8) mottles; weak medium subangular blocky structure; very friable; medium acid; abrupt smooth boundary.
- 2C2—21 to 32 inches; brown (10YR 5/3) loamy sand; common medium prominent yellowish brown (10YR

5/6 and 5/8) mottles; single grain; loose; strata of yellowish red (5YR 5/6) and very dark grayish brown (10YR 3/2) sandy loam; slightly acid; abrupt smooth boundary.

- 2C3—32 to 60 inches; pale brown (10YR 6/3) sand; single grain; loose; slightly acid.

The A horizon has hue of 7.5YR or 10YR, value of 2 or 3, and chroma of 1 to 3. The C horizon has hue of 7.5YR, 10YR, or 2 5Y, value of 3 to 5, and chroma of 1 to 3. It occurs as strata of silt loam, loam, sandy loam, or loamy sand. The 2C horizon has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 1 to 4. It is dominantly sand, loamy sand, or sand and gravel. In some pedons, however, it has strata of loam, silt loam, or sandy loam.

Freeon Series

The Freeon series consists of deep, moderately well drained soils on ground moraines and end moraines. These soils formed in silty deposits and in the underlying sandy loam glacial till. Permeability is moderately slow or moderate in the subsoil and moderately slow in the substratum. Slope ranges from 2 to 12 percent.

Typical pedon of Freeon silt loam, 2 to 6 percent slopes, 75 feet south and 1,840 feet west of the northeast corner of sec. 10, T. 29 N., R. 6 W.

- Ap—0 to 8 inches; dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; weak fine subangular blocky structure; friable; strongly acid; abrupt smooth boundary.
- E—8 to 13 inches; brown (10YR 5/3) silt loam, very pale brown (10YR 7/3) dry; few fine faint dark yellowish brown (10YR 4/4) mottles; weak medium platy structure; friable; light gray (10YR 7/2) uncoated silt particles on faces of peds; strongly acid; clear irregular boundary.
- E/B—13 to 19 inches; brown (10YR 5/3) silt loam, very pale brown (10YR 7/3) dry (E); few fine faint dark yellowish brown (10YR 4/4) and few medium prominent strong brown (7.5YR 5/8) mottles; weak medium platy structure; E material makes up about 60 percent of the horizon; dark brown (7.5YR 4/4) silt loam (Bt); moderate medium subangular blocky structure; friable; light gray (10YR 7/2) uncoated silt particles and very fine sand grains on faces of peds; thin continuous clay films on faces of peds; strongly acid; clear wavy boundary.
- Bt1—19 to 23 inches; dark brown (7.5YR 4/4) silt loam; common medium prominent strong brown (7.5YR 5/8) mottles; weak coarse prismatic structure parting to moderate medium subangular blocky; firm; light gray (10YR 7/2) uncoated silt particles on faces of peds; common distinct continuous clay films on faces of peds; strongly acid; clear smooth boundary.

- 2Bt2—23 to 30 inches; reddish brown (5YR 4/3) loam; common medium prominent strong brown (7.5YR 5/6) mottles; weak coarse prismatic structure parting to moderate medium subangular blocky; firm; light gray (10YR 7/2) uncoated silt particles on faces of peds; common distinct discontinuous clay films on faces of peds; estimated 10 percent gravel; very strongly acid; gradual wavy boundary.
- 2Bt3—30 to 38 inches; reddish brown (5YR 4/4) sandy loam; few fine distinct strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; firm; few faint patchy clay films on faces of peds; estimated 5 percent gravel; slightly acid; gradual wavy boundary.
- 2C—38 to 60 inches; reddish brown (5YR 4/4) sandy loam; massive; firm; estimated 5 percent gravel; slightly acid.

The thickness of the solum ranges from 30 to 50 inches. The thickness of the silty mantle ranges from 15 to 30 inches.

The Ap horizon has value of 4 or 5 and chroma of 1 to 3. The E horizon has value of 4 or 5 and chroma of 2 or 3. It is silt or silt loam. The Bt horizon has hue of 5YR, 7.5YR, or 10YR, value of 4 to 6, and chroma of 3 to 5. The 2Bt and 2C horizons have hue of 2.5YR or 5YR and value and chroma of 3 to 5. They are sandy loam or loam. The content of gravel in these horizons ranges from 5 to 15 percent.

Friendship Series

The Friendship series consists of deep, moderately well drained, rapidly permeable soils on outwash plains and stream terraces. These soils formed in sandy deposits. Slope ranges from 0 to 3 percent

Typical pedon of Friendship loamy sand, 0 to 3 percent slopes, 2,400 feet north and 150 feet west of the southeast corner of sec. 8, T. 28 N., R. 7 W.

- Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) loamy sand, light brownish gray (10YR 6/2) dry; weak medium subangular blocky structure; very friable; medium acid; abrupt smooth boundary.
- Bw—8 to 26 inches; dark brown (7.5YR 4/4) sand; weak medium subangular blocky structure; very friable; medium acid; clear wavy boundary.
- BC—26 to 36 inches; brown (7.5YR 5/4) sand; common medium faint reddish brown (5YR 4/4) and dark brown (7.5YR 4/4) mottles; single grain; loose; medium acid, gradual smooth boundary.
- C1—36 to 48 inches; strong brown (7.5YR 5/6) sand; common medium faint yellowish red (5YR 4/6) mottles; single grain; loose; medium acid; gradual smooth boundary.
- C2—48 to 60 inches; light yellowish brown (10YR 6/4) sand; few fine distinct dark yellowish brown (10YR 4/4) mottles; single grain; loose; medium acid.

The thickness of the solum ranges from 20 to 40 inches. The Ap or A horizon has value of 2 or 3 and chroma of 1 or 2. The Bw and BC horizons have hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 or 4. The C horizon has hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 2 to 6.

Gale Series

The Gale series consists of moderately deep, well drained soils on uplands. These soils formed in silty deposits and in a thin layer of sandy residuum over sandstone. Permeability is moderate in the upper part of the profile and rapid in the sandy residuum. Slope ranges from 2 to 20 percent.

Typical pedon of Gale silt loam, 6 to 12 percent slopes, eroded, 1,280 feet east and 1,200 feet south of the center of sec. 31, T. 28 N., R. 7 W.

- Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) silt loam, light brownish gray (10YR 6/2) dry; weak medium subangular blocky structure; friable; medium acid; abrupt smooth boundary.
- E—8 to 12 inches; brown (10YR 5/3) silt loam; weak medium platy structure; friable; slightly acid; clear wavy boundary
- BE—12 to 17 inches; dark brown (10YR 4/3) silt loam, very pale brown (10YR 7/3) dry; weak thick platy structure parting to weak fine subangular blocky; friable; very pale brown (10YR 7/3) uncoated silt particles and very fine sand grains on vertical faces of peds; slightly acid; clear wavy boundary.
- Bt—17 to 30 inches; dark yellowish brown (10YR 4/4) silt loam; moderate medium subangular blocky structure; friable; few distinct discontinuous clay films on faces of peds; very pale brown (10YR 7/3) uncoated silt particles and very fine sand grains on vertical faces of peds; strongly acid; clear smooth boundary.
- 2BC—30 to 36 inches; yellowish brown (10YR 5/4) loamy fine sand, weak medium subangular blocky structure; friable; strongly acid; gradual smooth boundary.
- 2Cr—36 to 55 inches; very pale brown (10YR 7/4) and light gray (10YR 7/2), weathered sandstone.
- 2R—55 inches; very pale brown (10YR 7/4) and light gray (10YR 7/2), platy sandstone.

The thickness of the solum ranges from 18 to 36 inches. The depth to sandstone ranges from 20 to 40 inches.

The A or Ap horizon has value of 3 to 5 and chroma of 2 or 3. The E horizon has value of 4 to 6 and chroma of 2 or 3. The BE horizon has value of 4 to 6 and chroma of 3 or 4. The Bt horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 or 4. The BE and Bt horizons are silt loam or silty clay loam. The 2BC

horizon has hue of 7.5YR or 10YR and value and chroma of 4 to 6. It is loam, sandy loam, or loamy fine sand.

Greenwood Series

The Greenwood series consists of deep, very poorly drained soils in depressions on ground moraines and end moraines. These soils formed in herbaceous organic material more than 51 inches thick. Permeability is moderately rapid. Slope is 0 to 1 percent.

Typical pedon of Greenwood peat, 0 to 1 percent slopes, 100 feet north and 1,700 feet west of the southeast corner of sec. 7, T. 32 N., R. 8 W.

Oi—0 to 4 inches; light gray (2.5Y 7/2) fibric material; about 95 percent fiber, 90 percent rubbed; massive; live roots and sphagnum moss; extremely acid (pH 4.3 in water); clear smooth boundary.

Oe1—4 to 12 inches; hemic and woody material, dark brown (7.5YR 3/2) broken face, pressed, and rubbed; about 70 percent fiber, 20 percent rubbed; weak thick platy structure; less than 5 percent mineral material; nonsticky; herbaceous fibers; extremely acid (pH 4.0 in water); clear smooth boundary.

Oe2—12 to 55 inches; hemic material, very dark grayish brown (10YR 3/2) broken face, pressed, and rubbed; about 70 percent fiber, 20 percent rubbed; weak thick platy structure; less than 5 percent mineral material; nonsticky; herbaceous fibers; extremely acid (pH 3.5 in water); clear smooth boundary.

Oa—55 to 60 inches; sapric material, very dark brown (10YR 2/2) broken face, pressed, and rubbed; about 60 percent fiber, 10 percent rubbed; weak thick platy structure; less than 10 percent mineral material; nonsticky; herbaceous fibers; extremely acid (pH 4.0 in water).

The organic material is more than 51 inches thick. It is dominantly hemic material, but some pedons have layers of fibric and sapric material. The combined thickness of these layers is less than 10 inches. The surface and subsurface tiers have hue of 5YR, 7.5YR, or 10YR and value and chroma of 2 to 4.

Halder Series

The Halder series consists of deep, somewhat poorly drained soils on stream terraces and outwash plains. These soils formed in loamy deposits over sand and gravel. Permeability is moderate in the upper part of the subsoil and rapid or very rapid in the substratum. Slope ranges from 0 to 2 percent.

Typical pedon of Halder loam, 0 to 2 percent slopes, 700 feet west and 100 feet south of the northeast corner of sec. 32, T. 29 N., R. 6 W.

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) loam, light brownish gray (10YR 6/2) dry; weak fine subangular blocky structure; friable; slightly acid; abrupt smooth boundary.

E—8 to 12 inches; grayish brown (10YR 5/2) loam; common medium distinct dark brown (7.5YR 4/4) and common medium prominent strong brown (7.5YR 5/6) mottles; weak medium platy structure; friable; estimated 4 percent gravel; slightly acid; clear wavy boundary.

B/E—12 to 16 inches; dark brown (7.5YR 4/4) loam (Bt); common medium faint strong brown (7.5YR 5/6) and common medium prominent gray (5YR 6/1) mottles; moderate medium subangular blocky structure; Bt material makes up about 75 percent of the horizon; grayish brown (10YR 5/2) loam (E); common medium prominent strong brown (7.5YR 5/6) mottles; weak medium platy structure; friable; light gray (10YR 7/2) uncoated silt particles and very fine sand grains on faces of peds; estimated 4 percent gravel; medium acid; clear wavy boundary.

Bt—16 to 28 inches; dark brown (7.5YR 4/4) loam; common coarse prominent light brownish gray (10YR 6/2) and common medium prominent strong brown (7.5YR 5/8) mottles; moderate medium subangular blocky structure; friable; light gray (10YR 7/2) uncoated silt particles and very fine sand grains on faces of peds; common distinct discontinuous clay films on faces of peds; estimated 7 percent gravel; strongly acid; gradual smooth boundary.

2BC—28 to 32 inches; dark brown (7.5YR 4/4) gravelly sandy loam; many fine faint strong brown (7.5YR 5/6) and few medium distinct grayish brown (10YR 5/2) mottles; weak medium subangular blocky structure; friable; estimated 20 percent gravel; strongly acid; gradual smooth boundary.

2C—32 to 60 inches; yellowish brown (10YR 5/4) and brown (7.5YR 5/4) stratified sand and gravel; single grain; loose; estimated 25 percent gravel; medium acid.

The thickness of the solum, or the depth to stratified sand and gravel, ranges from 24 to 36 inches. The A or Ap horizon has value of 2 to 4 and chroma of 2 or 3. The E horizon has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 2 or 3. The Bt horizon has hue of 5YR, 7.5YR, 10YR, or 2.5Y, value of 3 to 6, and chroma of 2 to 8. The 2C horizon is sand or gravelly or very gravelly sand. The content of gravel in this horizon ranges from 5 to 50 percent.

Hiles Series

The Hiles series consists of moderately deep, moderately well drained, moderately permeable soils on uplands. These soils formed in silty deposits and in the underlying material weathered from sandstone

interbedded with shale. Slope ranges from 2 to 6 percent.

Typical pedon of Hiles silt loam, 2 to 6 percent slopes, 200 feet south and 1,200 feet west of the northeast corner of sec. 30, T. 28 N., R. 7 W.

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

E—8 to 11 inches; brown (10YR 5/3) silt loam, very pale brown (10YR 7/3) dry; weak medium platy structure; very friable; slightly acid; clear wavy boundary.

B/E—11 to 22 inches; yellowish brown (10YR 5/4) silt loam (Bt); moderate fine subangular blocky structure; Bt material makes up about 70 percent of the horizon; brown (10YR 5/3) silt loam, very pale brown (10YR 7/3) dry (E); weak medium platy structure; friable; thin discontinuous clay films on faces of peds; slightly acid; clear smooth boundary.

2Bt1—22 to 26 inches; olive (5Y 5/3) silty clay loam; few medium prominent strong brown (7.5YR 5/8) mottles; strong fine angular blocky structure; firm; common distinct discontinuous clay films on faces of peds; very strongly acid; clear smooth boundary.

2Bt2—26 to 30 inches; light olive gray (5Y 6/2) loam; common medium prominent strong brown (7.5YR 5/6 and 5/8) mottles; moderate medium subangular blocky structure, friable; common distinct discontinuous clay films on faces of peds; extremely acid; abrupt smooth boundary.

2Cr—30 to 60 inches; pale yellow (2.5Y 8/4) and yellow (2/5Y 8/6), weathered sandstone that has strata of olive (5Y 4/3 and 5/6) shale.

The thickness of the solum and the depth to sandstone and shale range from 22 to 40 inches. The thickness of the silty mantle ranges from 15 to 30 inches.

The A or Ap horizon has value of 2 to 4 and chroma of 1 or 2. The E horizon has value of 4 to 6 and chroma of 2 or 3. The 2Bt horizon has hue of 10YR, 2.5Y, or 5Y, value of 4 to 6, and chroma of 2 to 4. It is loam, silt loam, or silty clay loam.

Hiles Variant

The Hiles Variant consists of deep, moderately well drained soils on uplands. These soils formed in loamy and clayey material weathered from sandstone and shale. Permeability is very slow in the subsoil and moderate in the substratum. Slope ranges from 2 to 8 percent.

Typical pedon of Hiles Variant loam, 2 to 8 percent slopes, 300 feet north and 200 feet west of the southeast corner of sec. 30, T. 29 N., R. 8 W.

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

E/B—8 to 14 inches; brown (7.5YR 5/2) loam (E); weak thin platy structure; E material makes up about 60 percent of the horizon; dark brown (7.5YR 4/4) loam (Bt); moderate fine subangular blocky structure; friable; estimated 2 percent hard sandstone channers 2 to 4 inches long; very strongly acid; clear wavy boundary.

2Bt1—14 to 26 inches; dusky red (10R 3/4) clay; few fine prominent reddish brown (5YR 4/4) mottles; weak thick platy structure parting to strong fine angular blocky; firm; common prominent continuous clay films on faces of peds; very strongly acid; clear smooth boundary.

2Bt2—26 to 40 inches; dusky red (10R 3/4) clay; few fine prominent reddish brown (5YR 4/4) mottles; strong medium angular blocky structure; firm; few distinct discontinuous clay films on faces of peds; few strata of olive gray (5Y 5/2) shale less than 1 inch thick; extremely acid; clear smooth boundary.

3C—40 to 48 inches; pale olive (5Y 6/3) and pale yellow (5Y 7/3) loam; massive; friable; few strata of dusky red (10R 3/4) clay less than 1 inch thick; estimated 15 percent sandstone channers 1 to 3 inches long; very strongly acid; clear smooth boundary

3Cr—48 to 54 inches; stratified olive gray (5Y 5/2) shale and yellowish brown (10YR 5/6), partially weathered sandstone.

3R—54 inches; light gray (10YR 7/2) sandstone.

The thickness of the solum ranges from 30 to 50 inches. The depth to sandstone and shale ranges from 40 to 60 inches.

The Ap horizon has value of 3 or 4 and chroma of 1 or 2. The content of sandstone channers in this horizon is 1 to 10 percent. The 2Bt horizon has hue of 10R, 2.5YR, or 5Y and value and chroma of 3 to 5. It is silty clay loam, silty clay, or clay. The 3C horizon has hue of 10R, 10YR, 2.5Y, or 5Y, value of 4 to 8, and chroma of 2 to 6. It is loam or clay loam that has strata of silty clay or clay.

Hixton Series

The Hixton series consists of moderately deep, well drained soils on uplands. These soils formed in loamy deposits underlain by sandy residuum and sandstone. Permeability is moderate in the subsoil and rapid in the substratum. Slope ranges from 2 to 12 percent.

Typical pedon of Hixton loam, 6 to 12 percent slopes, eroded, 2,490 feet south and 10 feet west of the center of sec. 10, T. 29 N., R. 9 W.

Ap—0 to 7 inches; very dark grayish brown (10YR 3/2) loam, light brownish gray (10YR 6/2) dry; weak

- medium subangular blocky structure; friable; slightly acid; abrupt smooth boundary.
- E—7 to 11 inches; dark grayish brown (10YR 4/2) loam; weak medium platy structure; friable; medium acid; clear wavy boundary.
- Bt—11 to 21 inches; dark yellowish brown (10YR 4/4) loam; moderate medium subangular blocky structure; friable; few distinct patchy clay films on faces of peds; light gray (10YR 7/2) uncoated silt particles on vertical faces of peds; strongly acid; clear wavy boundary.
- BC—21 to 24 inches; brown (7.5YR 5/4) sandy loam; weak medium subangular blocky structure; friable; few thin patchy clay films on faces of peds; strongly acid; clear wavy boundary.
- 2C—24 to 34 inches; brown (7.5YR 5/4) and strong brown (7.5YR 5/6) loamy sand; single grain; loose; strongly acid, clear smooth boundary.
- 2R—34 inches; white (10YR 8/2), poorly cemented sandstone.

The thickness of the solum ranges from 14 to 34 inches. The depth to sandstone ranges from 20 to 40 inches.

The Ap or A horizon has value of 3 or 4. The E horizon has value of 4 or 5 and chroma of 2 or 3. The Bt and BC horizons have hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 or 4. The Bt horizon is loam or sandy clay loam. The BC horizon is loam or sandy loam. The 2C horizon has hue of 7.5YR or 10YR, value of 5 to 7, and chroma of 4 to 6. It is sand or loamy sand.

Humbird Series

The Humbird series consists of moderately deep, moderately well drained soils on uplands. These soils formed in loamy deposits and in the underlying material weathered from sandstone interbedded with shale. Permeability is moderately rapid in the upper part of the subsoil and slow in the lower part. Slope ranges from 2 to 12 percent.

Typical pedon of Humbird sandy loam, 2 to 6 percent slopes, 1,840 feet south and 700 feet west of the northeast corner of sec. 21, T. 28 N., R. 8 W.

- Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) sandy loam, light brownish gray (10YR 6/2) dry; weak medium subangular blocky structure; very friable; neutral; abrupt smooth boundary.
- Bs—8 to 16 inches; dark brown (7.5YR 4/4) sandy loam; weak medium subangular blocky structure; friable; slightly acid; clear wavy boundary.
- 2E—16 to 20 inches; brown (10YR 5/3) loamy sand; few medium prominent strong brown (7.5YR 5/6) mottles; weak thick platy structure parting to weak fine subangular blocky; very friable; slightly acid; clear wavy boundary.

- 2Bt1—20 to 25 inches; yellowish brown (10YR 5/4) loam; few medium distinct strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; friable; light gray (10YR 7/2) uncoated silt particles and very fine sand grains on faces of peds; few distinct clay films on faces of peds; slightly acid; abrupt smooth boundary.
- 3Bt2—25 to 36 inches; light olive gray (5Y 6/2) silty clay loam; common coarse prominent strong brown (7.5YR 5/6) mottles; massive; firm; few faint clay films on faces of peds; extremely acid; abrupt smooth boundary.
- 3Cr—36 to 60 inches; yellow (10YR 7/6), weathered sandstone interbedded with shale.

The thickness of the solum and the depth to sandstone and shale range from 24 to 40 inches. The depth to material weathered from sandstone interbedded with shale ranges from 15 to 36 inches. The thickness and arrangement of the sandy, loamy, and clayey layers vary greatly.

The Ap or A horizon has value of 2 to 4 and chroma of 2 or 3. The Bs horizon has value and chroma of 3 or 4. It is loamy fine sand or sandy loam. The 2E horizon has value of 5 to 7 and chroma of 2 or 3. It is sandy loam, loamy sand, or loam. The 2Bt and 3Bt horizons have hue of 10YR, 2.5Y, or 5Y, value of 4 to 6, and chroma of 2 to 4. The 2Bt1 horizon is sandy loam or loam. The 3Bt2 horizon is silty clay loam or silty clay.

Kert Series

The Kert series consists of deep, somewhat poorly drained soils on uplands. These soils formed in silty and loamy deposits underlain by clayey, sandy, and silty material weathered from sandstone interbedded with shale. Permeability is moderate or moderately rapid in the silty mantle and slow in the subsoil and substratum. Slope ranges from 1 to 6 percent.

Typical pedon of Kert silt loam, 1 to 6 percent slopes, 1,470 feet north and 250 feet west of the center of sec. 7, T. 30 N., R. 9 W.

- Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) silt loam, light brownish gray (10YR 6/2) dry; weak fine subangular blocky structure; friable; strongly acid; abrupt smooth boundary.
- E—8 to 14 inches; brown (10YR 5/3) silt loam; common coarse prominent yellowish brown (10YR 5/6) mottles; weak thin platy structure; friable; strongly acid; clear wavy boundary.
- E/B—14 to 22 inches; grayish brown (10YR 5/2) silt loam (E); many medium distinct dark brown (7.5YR 4/4) and many medium prominent reddish brown (5YR 4/4) mottles; weak thick platy structure; E material makes up about 60 percent of the horizon; brown (10YR 5/3) silt loam (Bt); weak fine

subangular blocky structure; friable; strongly acid; clear wavy boundary.

- 2Bt1—22 to 28 inches; pale olive (5Y 6/3) loam; few coarse prominent light brownish gray (10YR 6/2) and many medium prominent strong brown (7.5YR 5/8) mottles; weak thick platy structure parting to moderate fine subangular blocky; friable; common distinct discontinuous clay films on faces of peds; light gray (10YR 7/2) uncoated silt particles on vertical faces of peds; very strongly acid; clear smooth boundary.
- 2Bt2—28 to 40 inches; dark brown (7.5YR 4/4) sandy loam; common medium distinct grayish brown (10YR 5/2) mottles; weak fine subangular blocky structure; friable; few faint clay films on faces of peds; strongly acid; clear wavy boundary.
- 3C1—40 to 44 inches; olive yellow (2.5Y 6/6) and pale yellow (2.5Y 7/4) stratified sand and silt; weak thick plates; friable; strongly acid; clear smooth boundary.
- 3C2—44 to 60 inches; reddish yellow (7.5YR 6/6) loam; massive; friable; estimated 10 percent sandstone channers 0.5 inch to 3.0 inches long; strongly acid.

The thickness of the solum ranges from 24 to 40 inches. The thickness of the silty mantle ranges from 12 to 30 inches.

The Ap horizon has value of 2 or 3. The E horizon has value of 4 to 6 and chroma of 2 or 3. The E/B horizon is loam, sandy loam, or silt loam. The Bt horizon has hue of 2.5YR, 5YR, 7.5YR, 10YR, 2.5Y, or 5Y, value of 4 to 6, and chroma of 2 to 6. It is clay, clay loam, loam, sandy loam, silt loam, silty clay, or silty clay loam. The 3C horizon has hue of 2.5YR, 5YR, 7.5YR, 10YR, 2.5Y, 5Y, or 5G, value of 3 to 7, and chroma of 2 to 6. It is stratified sand and silt, clay loam, sandy clay loam, silty clay, or loam.

Lows Series

The Lows series consists of deep, poorly drained soils on stream terraces and valley fills. These soils formed in loamy and silty deposits underlain by sand. Permeability is moderate in the subsoil and rapid in the substratum. Slope ranges from 0 to 2 percent.

Typical pedon of Lows loam, 0 to 2 percent slopes, 900 feet east and 600 feet south of the northwest corner of sec. 28, T. 28 N., R. 8 W.

- Ap—0 to 9 inches; very dark gray (10YR 3/1) loam, gray (10YR 5/1) dry; weak medium subangular blocky structure; friable; medium acid; abrupt smooth boundary.
- Eg—9 to 16 inches; gray (10YR 5/1) loam; common medium prominent dark brown (7.5YR 4/4) mottles; weak medium platy structure; friable; medium acid; clear wavy boundary.

- Bg1—16 to 22 inches; gray (10YR 5/1) loam; weak thick platy structure parting to weak fine subangular blocky; friable; slightly acid; clear wavy boundary.
- Bg2—22 to 28 inches; gray (10YR 6/1) loam; few medium prominent yellowish red (5YR 4/6) mottles; moderate medium subangular blocky structure; friable; slightly acid; gradual smooth boundary.
- Bg3—28 to 35 inches; gray (10YR 5/1) silt loam; common coarse prominent yellowish red (5YR 4/6) mottles; moderate medium subangular blocky structure; friable; slightly acid; gradual smooth boundary.
- BCg—35 to 39 inches; light brownish gray (2.5Y 6/2) sandy loam; common coarse prominent brown (7.5YR 5/4) and light reddish brown (5YR 6/3) mottles; weak medium subangular blocky structure; friable; slightly acid; clear smooth boundary.
- 2Cg—39 to 60 inches; gray (10YR 6/1) sand; single grain; loose; medium acid.

The thickness of the solum, or the depth to the underlying sand, ranges from 20 to 40 inches. The Ap or A horizon has value of 2 or 3 and chroma of 1 or 2. The E horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 1 or 2. The Bg horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 1 or 2. It is loam, sandy clay loam, or silt loam. The BCg horizon has colors similar to those of the Bg horizon. It is loamy sand, sandy loam, or loam. The 2Cg horizon has hue of 10YR or 2.5Y, value of 5 to 8, and chroma of 1 to 4.

Loyal Series

The Loyal series consists of deep, moderately well drained, moderately permeable soils on ground moraines. These soils formed in silty deposits and in the underlying loam glacial till. Slope ranges from 2 to 12 percent.

Typical pedon of Loyal silt loam, 2 to 6 percent slopes, 1,200 feet south and 500 feet west of the northeast corner of sec. 36, T. 29 N., R. 5 W.

- Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) silt loam, light brownish gray (10YR 6/2) dry; weak fine subangular blocky structure; friable; slightly acid; abrupt smooth boundary.
- E—8 to 11 inches; brown (10YR 5/3) silt loam, very pale brown (10YR 7/3) dry; weak thick platy structure; friable; slightly acid; clear wavy boundary.
- E/B—11 to 16 inches; pale brown (10YR 6/3) silt loam, very pale brown (10YR 8/3) dry (E); moderate thick platy structure; E material makes up about 70 percent of the horizon; brown (7.5YR 5/4) silt loam (Bt); common medium distinct yellowish red (5YR 5/6) and common medium prominent yellowish red (5YR 5/8) mottles; weak medium subangular blocky structure; friable; strongly acid; clear wavy boundary.

- B/E—16 to 22 inches; brown (7.5YR 5/4) silt loam (Bt); weak medium subangular blocky structure; Bt material makes up about 60 percent of the horizon; pale brown (10YR 6/3) silt loam (E); few medium prominent strong brown (7.5YR 5/8) mottles; moderate thick platy structure; friable; thin discontinuous clay films on faces of pedis; strongly acid; clear wavy boundary.
- 2Bt1—22 to 27 inches; reddish brown (5YR 4/3) loam; common medium prominent strong brown (7.5YR 5/8) mottles; moderate medium subangular blocky structure; firm; common prominent continuous clay films on faces of pedis; estimated 10 percent gravel; very strongly acid; gradual smooth boundary.
- 2Bt2—27 to 44 inches; reddish brown (5YR 4/4) loam; few fine distinct strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; firm; common distinct discontinuous clay films on faces of pedis; estimated 10 percent gravel; very strongly acid; gradual smooth boundary.
- 2C—44 to 60 inches; reddish brown (5YR 4/4) loam; few fine distinct strong brown (7.5YR 5/6) mottles; massive; firm; estimated 10 percent gravel; very strongly acid.

The thickness of the solum ranges from 24 to 50 inches. The thickness of the silty mantle ranges from 15 to 30 inches.

The Ap horizon has value of 2 to 4 and chroma of 1 to 3. The E horizon has value of 4 to 6 and chroma of 2 or 3. Some pedons have a Bt horizon, which has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 or 4. The 2Bt1 horizon has hue of 5YR or 7.5YR and value and chroma of 3 or 4. It is loam, sandy clay loam, or clay loam. The 2Bt2 horizon has colors similar to those of the 2Bt1 horizon. The 2Bt2 and 2C horizons are loam or sandy clay loam. The 2C horizon has hue of 5YR or 7.5YR and value and chroma of 4 or 5. The content of gravel in the 2Bt and 2C horizons ranges from 1 to 12 percent. In some pedons the content of cobbles is as much as 3 percent in the 2C horizon.

Lupton Series

The Lupton series consists of deep, very poorly drained, moderately rapidly permeable soils in depressions on ground moraines, outwash plains, and glacial lake plains. These soils formed in decomposed woody organic material more than 51 inches thick. Slope is 0 to 1 percent.

Typical pedon of Lupton muck, 0 to 1 percent slopes, 1,000 feet south and 700 feet west of the northeast corner of sec. 17, T. 32 N., R. 8 W.

- Oa1—0 to 12 inches; sapric material, very dark brown (10YR 2/2) broken face, black (10YR 2/1) pressed and rubbed; about 40 percent fiber, 8 percent rubbed; weak fine subangular blocky structure;

slightly sticky; about 30 percent woody fiber; neutral (pH 7.0 in water); gradual smooth boundary.

- Oa2—12 to 45 inches; sapric material, dark brown (7.5YR 3/2) broken face, black (N 2/0) pressed and rubbed about 45 percent fiber, 10 percent rubbed; weak fine subangular blocky structure; slightly sticky; about 30 percent woody fiber and 70 percent herbaceous fiber; neutral (pH 7.0 in water); gradual smooth boundary.

- Oa3—45 to 60 inches; sapric material, very dark brown (10YR 2/2) broken face, black (10YR 2/1) pressed and rubbed; about 35 percent fiber, 5 percent rubbed; weak medium granular structure; slightly sticky; about 25 percent woody fiber and 65 percent herbaceous fiber; neutral (pH 7.0 in water).

The organic material is more than 51 inches thick. It is typically woody sapric material, but some pedons have layers of hemic and fibric material. The combined thickness of these layers is less than 10 inches. The sapric material has hue of 5YR, 7.5YR, or 10YR or is neutral in hue. It has value of 2 or 3 and chroma of 0 to 3. The content of woody fragments is as much as 30 percent.

Magnor Series

The Magnor series consists of deep, somewhat poorly drained soils on ground moraines. These soils formed in silty deposits and in the underlying sandy loam glacial till. Permeability is moderately slow or moderate in the silty mantle and moderately slow in the lower part of the subsoil and in the substratum. Slope ranges from 1 to 6 percent.

Typical pedon of Magnor silt loam, 1 to 6 percent slopes, 250 feet east and 700 feet south of the northwest corner of sec. 16, T. 29 N., R. 6 W.

- Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) silt loam, light brownish gray (10YR 6/2) dry; weak fine subangular blocky structure; friable; slightly acid; abrupt smooth boundary.
- E—8 to 11 inches; grayish brown (10YR 5/2) silt loam; few medium distinct dark brown (7.5YR 4/4) mottles; weak medium platy structure; friable; slightly acid; clear wavy boundary.
- E/B—11 to 14 inches; grayish brown (10YR 5/2) silt loam (E); few medium faint light brownish gray (10YR 6/2) and common medium prominent strong brown (7.5YR 5/6) mottles; weak medium platy structure; E material makes up about 60 percent of the horizon; dark brown (7.5YR 4/4) silt loam (Bt); weak fine subangular blocky structure; friable; slightly acid; clear wavy boundary.
- B/E—14 to 18 inches; dark brown (7.5YR 4/4) silt loam (Bt); common medium faint strong brown (7.5YR 5/6) and common medium prominent light brownish

gray (10YR 6/2) mottles; weak fine subangular blocky structure; Bt material makes up about 60 percent of the horizon; grayish brown (10YR 5/2) silt loam (E); weak medium platy structure; friable; medium acid; clear wavy boundary.

2Bt1—18 to 24 inches; dark brown (7.5YR 4/4) sandy loam; common medium prominent light brownish gray (10YR 6/2) and yellowish red (5YR 4/6) mottles; weak very thick platy structure parting to moderate fine subangular blocky; friable; common distinct discontinuous clay films on faces of peds; light gray (10YR 7/2) uncoated silt particles and very fine sand grains on faces of peds and on vertical cleavage planes; estimated 5 percent gravel; medium acid; gradual wavy boundary.

2Bt2—24 to 32 inches; reddish brown (5YR 5/4) loam; common medium prominent light brownish gray (10YR 6/2) and common medium prominent yellowish red (5YR 5/8) and strong brown (7.5YR 5/8) mottles; moderate medium subangular blocky structure; friable; few distinct discontinuous clay films on faces of peds; light gray (10YR 7/2) uncoated silt particles and very fine sand grains on faces of peds and on vertical cleavage planes; estimated 5 percent gravel; strongly acid; gradual wavy boundary.

2C—32 to 60 inches; reddish brown (5YR 4/4) sandy loam; common fine prominent strong brown (7.5YR 5/6) mottles; massive; friable; estimated 10 percent gravel; slightly acid.

The thickness of the solum ranges from 30 to 50 inches. The thickness of the silty mantle ranges from 15 to 30 inches.

The Ap horizon has value of 3 or 4 and chroma of 2 or 3. The E horizon has value of 4 to 6 and chroma of 2 or 3. It is silt loam or silt. The 2Bt horizon has hue of 5YR or 7.5YR, value of 4 or 5, and chroma of 4 to 6. It is loam or sandy loam. The content of gravel and cobbles in the 2Bt and 2C horizons is 5 to 10 percent. The 2C horizon has value of 4 or 5 and chroma of 3 to 6.

Mahtomedi Series

The Mahtomedi series consists of deep, excessively drained, rapidly permeable soils on outwash plains and pitted moraines. These soils formed in sandy and gravelly deposits. Slope ranges from 2 to 40 percent.

Typical pedon of Mahtomedi loamy sand, 2 to 6 percent slopes, 2,190 feet north and 400 feet east of the center of sec. 17, T. 32 N., R. 9 W.

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) loamy sand, light brownish gray (10YR 6/2) dry; weak fine granular structure; very friable; neutral; abrupt smooth boundary.

Bw1—8 to 18 inches; reddish brown (5YR 4/4) loamy sand; weak medium subangular blocky structure; very friable; slightly acid; clear smooth boundary.

Bw2—18 to 24 inches; reddish brown (5YR 4/4) gravelly sand; weak medium subangular blocky structure; very friable; estimated 15 percent gravel; slightly acid; clear smooth boundary.

C—24 to 60 inches; dark brown (7.5YR 4/4) sand and gravel; single grain; loose; medium acid.

The thickness of the solum ranges from 20 to 36 inches. The content of gravel ranges from 0 to 10 percent in the upper part of the solum and from 0 to 35 percent in the lower part and in the substratum.

The Ap or A horizon has value of 3 or 4. The Bw horizon has hue of 5YR or 7.5YR, value of 4 or 5, and chroma of 4 to 6. It is loamy sand, sand, or gravelly sand. The C horizon has hue of 5YR or 7.5YR, value of 4 to 6, and chroma of 3 or 4.

Markey Series

The Markey series consists of deep, very poorly drained soils in depressions on outwash plains and ground moraines. These soils formed in decomposed organic material over sandy deposits. Permeability is moderately rapid in the organic layers and rapid in the substratum. Slope is 0 to 1 percent.

Typical pedon of Markey muck, 0 to 1 percent slopes, 150 feet south and 1,300 feet west of the northeast corner of sec. 21, T. 28 N., R. 8 W.

Oa1—0 to 8 inches; sapric material, dark brown (7.5YR 3/2) broken face and pressed, very dark brown (10YR 2/2) rubbed; about 65 percent fiber, less than 15 percent rubbed; weak thick platy structure; nonsticky; herbaceous fibers; strongly acid (pH 5.1 in water); clear smooth boundary.

Oa2—8 to 16 inches; sapric material, black (10YR 2/1) broken face, rubbed, and pressed; about 15 percent fiber, less than 5 percent rubbed; weak medium subangular blocky structure; estimated 8 percent mineral material; slightly sticky; herbaceous fibers; strongly acid (pH 5.5 in water); clear smooth boundary.

Oa3—16 to 36 inches; sapric material, black (N 2/0) broken face, rubbed, and pressed; less than 5 percent fiber, a trace rubbed; weak medium subangular blocky structure; estimated 15 percent mineral material; sticky; herbaceous fibers; strongly acid (pH 5.5 in water); gradual smooth boundary.

Cg—36 to 60 inches; gray (10YR 6/1) sand; single grain; loose; slightly acid.

The organic material ranges from 16 to 51 inches in thickness. It is dominantly sapric material, but some pedons have thin layers of hemic or fibric material. The

sapric material has hue of 5YR, 7.5YR, or 10YR or is neutral in hue. It has value of 2 or 3 and chroma of 0 to 3. The Cg horizon has hue of 10YR or 2.5Y or is neutral in hue. It has value of 5 or 6 and chroma of 0 to 2. It is sand or loamy sand.

Meehan Series

The Meehan series consists of deep, somewhat poorly drained, rapidly permeable soils on outwash plains. These soils formed in sandy deposits. Slope ranges from 0 to 2 percent.

Typical pedon of Meehan loamy sand, 0 to 2 percent slopes, 500 feet south and 925 feet west of the center of sec. 8, T. 29 N., R. 10 W.

- Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) loamy sand, dark grayish brown (10YR 4/2) dry; weak medium subangular blocky structure; very friable; medium acid; abrupt smooth boundary.
- Bw1—8 to 12 inches; brown (10YR 5/3) sand; weak fine subangular blocky structure; very friable; strongly acid; clear wavy boundary.
- Bw2—12 to 17 inches; pale brown (10YR 6/3) sand; few fine prominent strong brown (7.5YR 5/8) mottles; single grain; loose; slightly acid; gradual smooth boundary.
- BC—17 to 30 inches; light brownish gray (10YR 6/2) sand; few fine prominent strong brown (7.5YR 5/8) mottles; single grain; loose; medium acid; gradual smooth boundary.
- C—30 to 60 inches; light brownish gray (10YR 6/2) sand; single grain; loose; slightly acid.

The thickness of the solum ranges from 24 to 48 inches. The Ap or A horizon has value of 2 or 3 and chroma of 1 or 2. The Bw and BC horizons have hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 2 to 8. They are loamy sand or sand. The C horizon has hue of 7.5YR or 10YR, value of 4 to 7, and chroma of 2 to 4.

Menahga Series

The Menahga series consists of deep, excessively drained, rapidly permeable soils on outwash plains. These soils formed in sandy deposits. Slope ranges from 0 to 12 percent.

Typical pedon of Menahga loamy sand, 0 to 6 percent slopes, 1,300 feet south and 475 feet west of the northeast corner of sec. 17, T. 28 N., R. 10 W.

- Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) loamy sand, light brownish gray (10YR 6/2) dry; weak medium granular structure; very friable; slightly acid; abrupt smooth boundary.
- Bw1—8 to 15 inches; dark yellowish brown (10YR 4/4) sand; weak medium subangular blocky structure; very friable; medium acid; abrupt wavy boundary.

Bw2—15 to 28 inches; strong brown (7.5YR 5/6) sand; single grain; loose; medium acid; clear smooth boundary.

Bw3—28 to 40 inches; yellowish brown (10YR 5/6) sand; single grain; loose; medium acid; clear smooth boundary.

C—40 to 60 inches; brownish yellow (10YR 6/6) sand; single grain; loose; strongly acid.

The thickness of the solum ranges from 20 to 46 inches. The Ap horizon has value of 2 or 3 and chroma of 1 or 2. The Bw horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 to 6. The C horizon has hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 3 to 6.

Meridian Series

The Meridian series consists of deep, well drained and moderately well drained soils on stream terraces and valley fills. These soils formed in loamy deposits underlain by sandy material. Permeability is moderate or moderately rapid in the subsoil and rapid in the substratum. Slope ranges from 0 to 6 percent.

Typical pedon of Meridian loam, 2 to 6 percent slopes, 500 feet north and 400 feet east of the southwest corner of sec. 26, T. 28 N., R. 10 W.

- Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) loam, brown (10YR 5/3) dry; moderate medium subangular blocky structure; friable; slightly acid; abrupt smooth boundary.
- E—9 to 11 inches; brown (10YR 5/3) sandy loam; weak medium platy structure; friable; strongly acid; abrupt wavy boundary.
- Bt1—11 to 32 inches; dark brown (7.5YR 4/4) loam; moderate medium subangular blocky structure; friable; common distinct discontinuous clay films on faces of peds; strongly acid; gradual smooth boundary.
- Bt2—32 to 37 inches; brown (7.5YR 5/4) loam; weak medium subangular blocky structure; friable; few distinct discontinuous clay films on faces of peds; strongly acid; clear smooth boundary.
- 2C—37 to 60 inches; yellowish brown (10YR 5/4) sand; single grain; loose; strongly acid.

The thickness of the solum ranges from 25 to 37 inches. The Ap or A horizon has hue of 7.5YR or 10YR and value and chroma of 2 or 3. The E horizon has hue of 7.5YR or 10YR and value of 4 or 5. It is loam or sandy loam. The Bt horizon has hue of 7.5YR or 10YR, value of 3 or 4, and chroma of 3 to 6. It is loam or sandy clay loam. Some pedons have a BC horizon. This horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 6. It is loamy sand or sandy loam. The

2C horizon has hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 4 to 6. It is loamy sand or sand.

Merrillan Series

The Merrillan series consists of moderately deep, somewhat poorly drained soils on uplands. These soils formed in loamy deposits and in the underlying material weathered from sandstone interbedded with shale. Permeability is moderate in the upper part of the subsoil and slow in the lower part and in the substratum. Slope ranges from 1 to 6 percent.

The Merrillan soils in this county are taxadjuncts to the series because the E and Bs horizons are mottled. This difference, however, does not alter the usefulness or behavior of the soils.

Typical pedon of Merrillan sandy loam, 1 to 6 percent slopes, 200 feet north and 2,000 feet east of the center of sec. 21, T. 28 N., R. 8 W.

- Ap—0 to 7 inches; very dark grayish brown (10YR 3/2) sandy loam, light brownish gray (10YR 6/2) dry; weak fine subangular blocky structure; friable; neutral; abrupt smooth boundary.
- E—7 to 11 inches; brown (10YR 5/3) sandy loam; many coarse distinct dark brown (7.5YR 4/4) and many coarse prominent yellowish red (5YR 4/6) mottles; weak medium platy structure; friable; slightly acid; clear wavy boundary.
- Bs—11 to 17 inches; dark brown (7.5YR 4/4) sandy loam; few coarse faint brown (7.5YR 5/2), common medium distinct yellowish red (5YR 4/6), and common medium prominent yellowish red (5YR 4/8) mottles; weak medium subangular blocky structure; friable; medium acid; clear wavy boundary.
- E'—17 to 19 inches; grayish brown (10YR 5/2) sandy loam; common medium distinct dark brown (7.5YR 4/4) and common medium prominent strong brown (7.5YR 5/8) mottles; weak medium platy structure; friable; medium acid; clear smooth boundary.
- 2Bt1—19 to 25 inches; grayish brown (10YR 5/2) loam; many fine distinct dark brown (7.5YR 4/4) and many fine prominent strong brown (7.5YR 5/8) mottles; weak very thick platy structure parting to moderate medium subangular blocky; friable; common distinct patchy clay films on faces of ped; light gray (10YR 7/2) uncoated silt particles on faces of ped; very strongly acid; clear wavy boundary.
- 3Bt2—25 to 28 inches; gray (10YR 5/1) clay loam; many medium prominent strong brown (7.5YR 5/8) mottles; moderate medium subangular blocky structure; firm; few distinct patchy clay films on faces of ped; very strongly acid; abrupt smooth boundary.
- 3C—28 to 48 inches; stratified greenish gray (5GY 6/1) and reddish brown (5YR 4/4) silty clay; massive; firm; very strongly acid; abrupt smooth boundary.

4Cr—48 to 60 inches; light gray (5Y 7/1) and light olive brown (2.5Y 5/4), poorly cemented sandstone interbedded with shale that has thin layers of well cemented sandstone.

The thickness of the solum ranges from 24 to 36 inches. The depth to material weathered from sandstone interbedded with shale ranges from 15 to 36 inches. The depth to sandstone and shale ranges from 24 to 40 inches.

The A or Ap horizon has value of 2 or 3 and chroma of 1 or 2. The Bs horizon has hue of 7.5YR or 10YR and value and chroma of 3 or 4. The E' horizon has value of 5 to 7 and chroma of 2 to 4. It is sandy loam or loamy sand. The 2Bt horizon has hue of 10YR, 2.5Y, or 5Y, value of 4 to 6, and chroma of 2 to 4. It is silty clay loam, clay loam, silt clay, or loam. The 3C horizon has hue of 5YR, 7.5YR, 10YR, 2.5Y, 5Y, or 5GY, value of 4 to 7, and chroma of 1 to 4. The texture of the residuum varies, depending on the nature of the interbedded sandstone and shale.

Minocqua Series

The Minocqua series consists of deep, poorly drained and very poorly drained soils on outwash plains. These soils formed in loamy deposits underlain by sand and gravel. Permeability is moderate in the subsoil and rapid or very rapid in the substratum. Slope ranges from 0 to 2 percent.

In the Minocqua soils in this county, the content of sand coarser than loamy fine sand is slightly higher than is definitive for the series. This difference, however, does not alter the usefulness or behavior of the soils.

Typical pedon of Minocqua loam, 0 to 2 percent slopes, 400 feet north and 2,140 feet east of the southwest corner of sec. 15, T. 28 N., R. 8 W.

- A—0 to 9 inches; black (10YR 2/1) loam, dark gray (10YR 4/1) dry; weak fine granular structure; very friable; very strongly acid; clear wavy boundary.
- Bg1—9 to 23 inches; grayish brown (10YR 5/2) sandy loam; many coarse prominent yellowish red (5YR 4/8) mottles; weak fine subangular blocky structure; very friable; strongly acid; clear wavy boundary.
- Bg2—23 to 38 inches; gray (10YR 5/1) loam; weak medium subangular blocky structure; friable; slightly acid; clear wavy boundary.
- 2C—38 to 60 inches; dark brown (7.5YR 4/4) sand and gravel; single grain; loose; slightly acid.

The thickness of the solum and the depth to sand and gravel range from 20 to 40 inches. The content of gravel in the solum ranges from 0 to 10 percent.

The A horizon has value of 2 or 3. The Bg1 horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 1 or 2. The Bg2 horizon has hue of 5YR, 7.5YR, or

10YR, value of 4 to 6, and chroma of 1 or 2. It is loam, sandy loam, or silt loam. The 2C horizon has hue of 5YR or 7.5YR, value of 3 to 6, and chroma of 3 or 4.

Moundville Series

The Moundville series consists of deep, moderately well drained, rapidly permeable soils on stream terraces and outwash plains. These soils formed in sandy deposits. Slope ranges from 0 to 3 percent.

Typical pedon of Moundville loamy sand, 0 to 3 percent slopes, 920 feet north and 90 feet east of the center of sec. 36, T. 28 N., R. 9 W.

- Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) loamy sand, grayish brown (10YR 5/2) dry; weak medium subangular blocky structure; very friable; slightly acid; abrupt smooth boundary
- BE—9 to 18 inches; brown (7.5YR 5/4) loamy sand; weak medium subangular blocky structure; very friable; medium acid; clear wavy boundary.
- Bt—18 to 24 inches; strong brown (7.5YR 5/6) loamy sand, few fine faint strong brown (7.5YR 5/8) mottles; weak medium subangular blocky structure; very friable; few distinct clay bridges between sand grains; strongly acid; clear wavy boundary.
- BC—24 to 34 inches; dark yellowish brown (10YR 4/4) sand; common medium prominent strong brown (7.5YR 5/6) mottles; single grain; loose; strongly acid; clear smooth boundary.
- C1—34 to 48 inches; brown (7.5YR 5/4) loamy sand; common medium prominent strong brown (7.5YR 5/8) and yellowish red (5YR 5/8) mottles; single grain; loose; slightly acid; gradual smooth boundary.
- C2—48 to 53 inches; yellowish brown (10YR 5/6) sand; single grain; loose; slightly acid; gradual smooth boundary.
- C3—53 to 60 inches; brown (7.5YR 5/4) sand; few fine faint brown (7.5YR 5/2) and strong brown (7.5YR 5/6) mottles; single grain; loose; slightly acid.

The thickness of the solum ranges from 26 to 40 inches. The Ap horizon has hue of 7.5YR or 10YR and value 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. It is loamy sand or loamy fine sand. The BC and C horizons have hue of 7.5YR or 10YR and value and chroma of 4 to 6. The BC horizon is loamy sand or sand.

Newson Series

The Newson series consists of deep, poorly drained and very poorly drained, rapidly permeable soils on outwash plains and low stream terraces. These soils formed in sandy alluvial material. Slope ranges from 0 to 2 percent.

Typical pedon of Newson loamy sand, 0 to 2 percent slopes, 300 feet north and 250 feet west of the southeast corner of sec. 8, T. 28 N., R. 7 W.

- A1—0 to 9 inches; black (10YR 2/1) loamy sand, very dark gray (10YR 3/1) dry; weak medium subangular blocky structure; very friable; very strongly acid; clear smooth boundary.
- A2—9 to 14 inches; very dark gray (10YR 3/1) sand, dark grayish brown (10YR 4/2) dry; single grain; loose; very strongly acid; clear wavy boundary.
- Bg—14 to 36 inches; grayish brown (10YR 5/2) sand; single grain; loose; strongly acid; gradual smooth boundary.
- BCg—36 to 44 inches; pale brown (10YR 6/3) sand; few medium prominent dark brown (7.5YR 4/4) and many medium faint grayish brown (10YR 5/2) mottles; single grain; loose; strongly acid; gradual smooth boundary.
- Cg—44 to 60 inches; light brownish gray (10YR 6/2) and pale brown (10YR 6/3) sand; single grain; loose; slightly acid.

The thickness of the solum ranges from 20 to 50 inches. The A horizon has value of 2 or 3 and chroma of 1 or 2. The Bg horizon has hue of 10YR, 2.5Y, or 5Y, value of 4 or 5, and chroma of 1 or 2. The BCg and Cg horizons have value of 5 to 7 and chroma of 1 to 4.

Northfield Series

The Northfield series consists of shallow, well drained, moderately permeable soils on uplands. These soils formed in thin deposits of silty material and are underlain by sandy residuum and sandstone. Slope ranges from 2 to 20 percent.

Typical pedon of Northfield silt loam, 6 to 12 percent slopes, eroded, 1,890 feet east and 30 feet north of the southwest corner of sec. 23, T. 28 N., R. 10 W.

- Ap—0 to 8 inches, dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; weak fine subangular blocky structure; friable; medium acid; abrupt smooth boundary.
- E—8 to 10 inches; brown (10YR 5/3) silt loam, very pale brown (10YR 7/3) dry; weak thin platy structure; friable; strongly acid; clear wavy boundary.
- Bt1—10 to 15 inches; dark brown (7.5YR 4/4) silt loam; moderate fine subangular blocky structure; friable; few distinct discontinuous clay films on faces of peds; light gray (10YR 7/2) uncoated silt particles on faces of peds; very strongly acid; clear smooth boundary.
- Bt2—15 to 18 inches; dark brown (7.5YR 4/4) silt loam; weak fine subangular blocky structure; friable; few distinct discontinuous clay films on faces of peds; estimated 10 percent sandstone channers 3 to 6

inches long; very strongly acid; gradual smooth boundary.

2R—18 inches; very pale brown (10YR 7/3), partially weathered, platy sandstone.

The thickness of the solum and the depth to sandstone range from 12 to 20 inches. The content of sandstone channers ranges from 0 to 10 percent throughout the solum.

The Ap or A horizon has value and chroma of 2 to 4. The E horizon has value of 4 or 5 and chroma of 2 or 3. The Bt horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 or 4. It is loam or silt loam. Some pedons have a BC horizon, which is loamy sand or sandy loam.

Oesterle Series

The Oesterle series consists of deep, somewhat poorly drained soils on stream terraces and outwash plains. These soils formed in loamy deposits underlain by sand or by sand and gravel. Permeability is moderate in the upper part of the subsoil and rapid or very rapid in the substratum. Slope ranges from 0 to 2 percent.

Typical pedon of Oesterle sandy loam, 0 to 2 percent slopes, 1,100 feet south and 240 feet east of the center of sec. 34, T. 32 N., R. 9 W.

Ap—0 to 7 inches; very dark brown (10YR 2/2) sandy loam, grayish brown (10YR 5/2) dry; moderate medium granular structure; friable; medium acid; abrupt smooth boundary.

E—7 to 10 inches; dark grayish brown (10YR 4/2) sandy loam; moderate thick platy structure; friable; medium acid; clear smooth boundary

E/B—10 to 17 inches; dark grayish brown (10YR 4/2) sandy loam (E); moderate medium platy structure; E material makes up about 70 percent of the horizon; dark yellowish brown (10YR 4/4) sandy loam (Bt); few medium faint grayish brown (10YR 5/2) mottles, moderate medium subangular blocky structure, friable; medium acid; clear wavy boundary.

Bt—17 to 25 inches; dark brown (7.5YR 4/4) sandy loam; common coarse distinct grayish brown (10YR 5/2) and common medium faint strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; friable; few distinct discontinuous clay films on faces of peds; estimated 10 percent gravel; strongly acid; clear wavy boundary.

BC—25 to 34 inches; dark yellowish brown (10YR 4/4) gravelly loamy sand; many medium prominent strong brown (7.5YR 5/6) and few medium distinct light brownish gray (10YR 6/2) mottles; weak medium subangular blocky structure; very friable; estimated 20 percent gravel; strongly acid; abrupt smooth boundary.

2C—34 to 60 inches; yellowish brown (10YR 5/4) sand and gravel; single grain; loose; medium acid.

The thickness of the solum ranges from 20 to 40 inches. The A or Ap horizon has value of 2 or 3 and chroma of 1 or 2. The E horizon has value of 4 to 6 and chroma of 2 or 3. The Bt horizon has hue of 7.5YR or 10YR and value and chroma of 4 to 6. It is loam or sandy loam. The BC horizon has hue of 5YR, 7.5YR, or 10YR, value of 4 to 6, and chroma of 2 to 6. It is gravelly loamy sand, gravelly sandy loam, loamy sand, or sandy loam. The content of gravel in the BC and 2C horizons ranges from 10 to 35 percent. The 2C horizon has colors similar to those of the BC horizon.

Orion Series

The Orion series consists of deep, somewhat poorly drained, moderately permeable soils on flood plains. These soils formed in silty deposits. Slope ranges from 0 to 2 percent.

Typical pedon of Orion silt loam, 0 to 2 percent slopes, 2,240 feet north and 200 feet east of the southwest corner of sec. 17, T. 29 N., R. 9 W.

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

C1—7 to 20 inches; brown (10YR 5/3) silt loam; common medium distinct dark brown (7.5YR 4/4) and common medium prominent strong brown (7.5YR 5/6 and 5/8) mottles; weak thin plates between textural strata; friable; few thin strata of very pale brown (10YR 7/4) silt and very fine sand; medium acid; gradual smooth boundary.

C2—20 to 32 inches; dark grayish brown (10YR 4/2) silt loam; common fine prominent strong brown (7.5YR 5/8) and yellowish red (5YR 4/6) and few coarse distinct brown (7.5YR 5/2) mottles; weak medium plates between textural strata, friable; few thin strata of very pale brown (10YR 7/3) silt and very fine sand; strongly acid; abrupt smooth boundary.

Ab—32 to 43 inches; black (10YR 2/1) silt loam; few fine prominent red (2.5YR 4/6) mottles; weak thick platy structure parting to weak fine subangular blocky; friable, strongly acid; clear smooth boundary.

C'1—43 to 51 inches; dark gray (10YR 4/1) silt loam; few fine prominent dark brown (7.5YR 4/4) mottles; weak medium platy structure; friable; strongly acid; clear smooth boundary.

C'2—51 to 60 inches; grayish brown (10YR 5/2) silt loam; many fine distinct dark brown (7.5YR 4/4) and many fine prominent strong brown (7.5YR 5/6) mottles; moderate fine subangular blocky structure; friable; strongly acid.

The depth to the Ab horizon ranges from 20 to 40 inches. The Ap or A horizon has value of 4 or 5 and chroma of 2 or 3. The C1 and C2 horizons have value of

4 or 5 and chroma of 2 or 3. The Ab horizon has hue of 10YR or 2.5Y, value of 2 to 4, and chroma of 1 or 2. The C' horizon has value of 4 to 6 and chroma of 1 or 2.

Otterholt Series

The Otterholt series consists of deep, well drained soils on ground moraines. These soils formed in silty deposits over loamy glacial till. Permeability is moderate in the upper part of the profile and moderately slow in the lower part of the substratum. Slope ranges from 6 to 12 percent.

Typical pedon of Otterholt silt loam, 6 to 12 percent slopes, eroded, 2,240 feet north and 225 feet east of the southwest corner of sec. 21, T. 31 N., R. 6 W.

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

E—8 to 10 inches; grayish brown (10YR 5/2) silt loam; weak thin platy structure; friable; slightly acid; clear wavy boundary.

E/B—10 to 16 inches; grayish brown (10YR 5/2) silt loam (E); weak medium platy structure; E material makes up about 70 percent of the horizon; dark brown (10YR 4/3) silt loam (Bt); moderate fine subangular blocky structure; friable; light gray (10YR 7/2) uncoated silt particles on faces of peds; medium acid; clear wavy boundary.

B/E—16 to 24 inches; dark yellowish brown (10YR 4/4) silt loam (Bt); moderate fine subangular blocky structure; Bt material makes up about 70 percent of the horizon; pale brown (10YR 6/3) silt loam (E); weak medium platy structure; friable; light gray (10YR 7/2) uncoated silt particles on faces of peds; very strongly acid; clear wavy boundary.

Bt1—24 to 32 inches; dark yellowish brown (10YR 4/4) silt loam; moderate medium subangular blocky structure; friable; few distinct discontinuous clay films on faces of peds; light gray (10YR 7/2) uncoated silt particles on faces of peds; very strongly acid; gradual smooth boundary.

Bt2—32 to 36 inches; yellowish brown (10YR 5/4) silt loam; moderate medium subangular blocky structure; friable; few distinct discontinuous clay films on faces of peds; light gray (10YR 7/2) uncoated silt particles on faces of peds; very strongly acid; gradual smooth boundary.

C1—36 to 43 inches; yellowish brown (10YR 5/4) silt loam; massive; friable; very strongly acid; clear smooth boundary.

2C2—43 to 60 inches; reddish brown (5YR 4/4) sandy loam; massive; friable; estimated 10 percent gravel; strongly acid.

The thickness of the solum ranges from 30 to 40 inches. The thickness of the silty mantle ranges from 30 to 48 inches.

The Ap horizon has value of 4 or 5 and chroma of 2 or 3. The Bt horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 or 4. The C1 horizon has hue of 7.5YR or 10YR and value of 4 or 5. The 2C horizon has hue of 2.5YR, 5YR, or 7.5YR and value and chroma of 4 to 6. It is sandy loam or loam.

Plainbo Series

The Plainbo series consists of moderately deep, excessively drained, rapidly permeable soils on outwash plains, stream terraces, and uplands. These soils formed in sandy deposits over sandstone. Slope ranges from 2 to 20 percent.

Typical pedon of Plainbo loamy sand, 12 to 20 percent slopes, 150 feet south and 370 feet west of the center of sec. 30, T. 28 N., R. 8 W

Ap—0 to 6 inches; dark grayish brown (10YR 4/2) loamy sand, pale brown (10YR 6/3) dry; weak fine granular structure; very friable; slightly acid; abrupt smooth boundary.

Bw—6 to 13 inches; yellowish brown (10YR 5/4) sand; weak medium subangular blocky structure; very friable; medium acid; clear wavy boundary.

BC—13 to 20 inches; yellowish brown (10YR 5/6) sand; single grain; loose; medium acid; clear wavy boundary.

C—20 to 28 inches, brownish yellow (10YR 6/6) channery sand; single grain; loose; estimated 30 percent sandstone channers 1 to 4 inches long, slightly acid; clear wavy boundary.

2Cr—28 to 60 inches; very pale brown (10YR 7/3) and yellowish brown, (10YR 5/6) poorly cemented sandstone.

The thickness of the solum ranges from 20 to 36 inches. The depth to sandstone ranges from 20 to 40 inches.

The Ap horizon has value of 3 or 4 and chroma of 2 or 3. The Bw horizon has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 3 to 6. It is sand or loamy sand. In some pedons the content of sandstone channers in this horizon is as much as 5 percent. The BC and C horizons have hue of 7.5YR or 10YR, value of 5 to 7, and chroma of 4 to 6. The content of sandstone channers in the C horizon ranges from 10 to 40 percent.

Plover Series

The Plover series consists of deep, somewhat poorly drained, moderately permeable soils on glacial lake plains. These soils formed in silty and loamy lacustrine deposits. Slope ranges from 0 to 2 percent.

Typical pedon of Plover silt loam, 0 to 2 percent slopes, 800 feet north and 900 feet east of the center of sec. 24, T. 32 N., R. 8 W.

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

E—8 to 14 inches; brown (10YR 5/3) silt loam, very pale brown (10YR 7/3) dry; few medium faint grayish brown (10YR 5/2) and common medium distinct dark brown (7.5YR 4/4) mottles; weak thin platy structure; friable; slightly acid; clear wavy boundary.

E/B—14 to 20 inches; brown (10YR 5/3) very fine sandy loam, very pale brown (10YR 7/3) dry (E); common medium faint grayish brown (10YR 5/2) and common medium prominent strong brown (7.5YR 5/6) mottles; weak medium platy structure; E material makes up about 60 percent of the horizon; dark brown (7.5YR 4/4) very fine sandy loam (Bt); weak thick platy structure parting to weak fine subangular blocky; friable; medium acid; clear wavy boundary.

B/E—20 to 24 inches; reddish brown (5YR 4/4) very fine sandy loam (Bt); common medium prominent grayish brown (10YR 5/2) and strong brown (7.5YR 5/6) mottles; weak thick platy structure parting to weak fine subangular blocky; Bt material makes up about 70 percent of the horizon; dark brown (7.5YR 4/2) very fine sandy loam (E); weak medium platy structure; friable; thin discontinuous clay films on faces of peds; strongly acid; clear wavy boundary.

Bt1—24 to 29 inches; reddish brown (5YR 4/4) silt loam; common medium prominent light brownish gray (10YR 6/2) mottles; weak thick platy structure parting to moderate fine subangular blocky; friable; common distinct discontinuous clay films on faces of peds; light gray (10YR 7/2) uncoated silt particles on vertical faces of peds; strongly acid; clear smooth boundary.

Bt2—29 to 38 inches; reddish brown (5YR 4/4) very fine sandy loam; common medium faint yellowish red (5YR 5/6) and common medium prominent yellowish red (5YR 5/8) mottles; weak thick platy structure parting to weak fine subangular blocky; friable; few faint discontinuous clay films on faces of peds; medium acid; clear smooth boundary.

C—38 to 60 inches; dark brown (7.5YR 4/4) stratified fine sand, very fine sand, and silt; massive; very friable; medium acid.

The thickness of the solum ranges from 24 to 40 inches. The Ap or A horizon has value of 2 to 4 and chroma of 1 to 3. The E horizon has value of 4 to 6 and chroma of 2 or 3. It is fine sandy loam, very fine sandy loam, or silt loam. The Bt horizon has hue of 5YR, 7.5YR, or 10YR and value and chroma of 4 or 5. It is dominantly fine sandy loam, silt loam, or very fine sandy

loam. In some pedons, however, it has thin strata of loamy fine sand. The C horizon has hue of 5YR, 7.5YR, or 10YR and value and chroma of 4 to 6. It is dominantly stratified sand, very fine sand, and silt, but in many pedons it has thin strata of loamy sand, sandy loam, or loam.

Poskin Series

The Poskin series consists of deep, somewhat poorly drained soils on outwash plains and stream terraces. These soils formed in silty and loamy deposits underlain by sand and gravel. Permeability is moderate in the silty part of the subsoil and rapid or very rapid in the substratum. Slope ranges from 0 to 2 percent.

The Poskin soils in this county have a slightly lower content of clay in the subsoil than is defined as the range for the series. Also, they have a slightly thicker transitional layer between the contrasting particle-size classes. These differences, however, do not alter the usefulness or behavior of the soils.

Typical pedon of Poskin silt loam, 0 to 2 percent slopes, 100 feet north and 100 feet east of the southwest corner of sec. 26, T. 29 N., R. 5 W.

Ap—0 to 10 inches; dark brown (10YR 3/3) silt loam, light brownish gray (10YR 6/2) dry; moderate medium granular structure; friable; strongly acid; abrupt smooth boundary.

E—10 to 14 inches; brown (10YR 5/3) silt loam, very pale brown (10YR 7/3) dry; moderate medium platy structure; friable; strongly acid; clear smooth boundary.

E/B—14 to 19 inches; brown (10YR 5/3) silt, very pale brown (10YR 7/3) dry (E); common medium faint light brownish gray (10YR 6/2) and common medium prominent yellowish red (5YR 5/6) mottles; moderate medium platy structure; E material makes up about 60 percent of the horizon; dark yellowish brown (10YR 4/4) silt loam (Bt); moderate medium subangular structure; friable; very strongly acid; gradual smooth boundary.

B/E—19 to 23 inches; dark yellowish brown (10YR 4/4) silt loam (Bt); common medium distinct light brownish gray (10YR 6/2) and many medium prominent yellowish red (5YR 5/6) mottles; moderate medium subangular blocky structure; Bt material makes up about 60 percent of the horizon; brown (10YR 5/3) silt loam, very pale brown (10YR 7/3) dry (E); moderate medium platy structure; friable; very strongly acid; gradual smooth boundary.

Bt1—23 to 29 inches; dark yellowish brown (10YR 4/4) silt loam; common medium distinct light brownish gray (10YR 6/2) and strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; friable; few faint patchy clay films on faces of peds; strongly acid; abrupt smooth boundary.

2Bt2—29 to 38 inches; dark brown (7.5YR 4/4) sandy loam; common medium faint brown (7.5YR 5/2) and common medium distinct yellowish red (5YR 5/6) mottles; weak medium subangular blocky structure; friable; few faint discontinuous clay films on faces of peds; strongly acid; abrupt smooth boundary.

2C—38 to 60 inches; dark brown (7.5YR 4/4) sand and gravel; single grain; loose; medium acid.

The thickness of the solum ranges from 24 to 40 inches. The thickness of the silty mantle ranges from 24 to 36 inches.

The Ap horizon has value of 3 or 4. The E horizon has value of 4 to 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 3 or 4. The 2Bt horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 6. It is sandy loam or loam. The 2C horizon has hue of 5YR, 7.5YR, or 10YR and value and chroma of 4 to 6. The content of gravel in this horizon ranges from 15 to 35 percent. Also, some pedons have a few cobbles.

Rib Series

The Rib series consists of deep, poorly drained soils on outwash plains and stream terraces. These soils formed in silty and loamy deposits underlain by stratified sand and gravel. Permeability is moderate in the subsoil and very rapid in the substratum. Slope ranges from 0 to 2 percent.

Typical pedon of Rib silt loam, 0 to 2 percent slopes, 150 feet south and 1,600 feet west of the northeast corner of sec. 2, T. 28 N., R. 5 W.

Ap—0 to 8 inches; black (10YR 2/1) silt loam, dark gray (10YR 4/1) dry; weak medium subangular blocky structure; friable; medium acid; abrupt smooth boundary.

Bg1—8 to 12 inches; gray (10YR 5/1) silt loam; common medium prominent yellowish brown (10YR 5/4) mottles; moderate medium platy structure; friable; medium acid; clear wavy boundary.

Bg2—12 to 19 inches; gray (10YR 5/1) silt loam; common fine prominent yellowish red (5YR 5/6) and common fine prominent light yellowish brown (2.5Y 6/4) mottles; weak thick platy structure parting to moderate fine subangular blocky; friable; slightly acid; clear wavy boundary.

Bg3—19 to 28 inches; gray (10YR 6/1) silt loam; many medium prominent yellowish red (5YR 5/6) and light yellowish brown (2.5Y 6/4) mottles; moderate medium subangular blocky structure; friable; slightly acid; clear wavy boundary.

2Bg4—28 to 33 inches; gray (10YR 6/1) loam; common medium prominent yellowish red (5YR 5/6) mottles; weak coarse subangular blocky structure; friable; estimated 7 percent gravel; slightly acid; clear smooth boundary.

2C—33 to 60 inches; yellowish brown (10YR 5/4) stratified sand and gravel; single grain; loose; slightly acid.

The thickness of the solum ranges from 24 to 40 inches. The thickness of the silty mantle ranges from 20 to 36 inches.

The Ap or A horizon has value of 2 or 3 and chroma of 1 or 2. It is silt loam or mucky silt loam. The Bg horizon has hue of 10YR, 2.5Y, or 5Y, value of 4 to 6, and chroma of 1 or 2. It is silt loam or silty clay loam. The 2Bg horizon has hue of 7.5YR, 10YR, or 2.5Y, value of 4 to 6, and chroma of 1 or 2. It is sandy loam or loam. The content of gravel in this horizon is 2 to 10 percent. The 2C horizon has hue of 7.5YR, 10YR, or 2.5Y, value of 5 to 8, and chroma of 1 to 6. The content of gravel in this horizon ranges from 10 to 35 percent.

Richford Series

The Richford series consists of deep, well drained and somewhat excessively drained soils on stream terraces and outwash plains. These soils formed in sandy and loamy deposits underlain by coarse sand and gravel. Permeability is moderately rapid in the upper part of the subsoil and rapid in the lower part and in the substratum. Slope ranges from 0 to 3 percent.

Typical pedon of Richford loamy sand, 0 to 3 percent slopes, 700 feet south and 740 feet east of the center of sec. 21, T. 32 N., R. 9 W.

Ap—0 to 8 inches; dark brown (10YR 3/3) loamy sand, pale brown (10YR 6/3) dry; weak fine subangular blocky structure; very friable; neutral; abrupt smooth boundary.

E1—8 to 14 inches; dark brown (7.5YR 4/4) loamy sand; weak medium subangular blocky structure; very friable; slightly acid; clear wavy boundary.

E2—14 to 22 inches; yellowish brown (10YR 5/4) loamy sand; weak thick platy structure parting to weak fine subangular blocky; very friable; estimated 10 percent gravel; slightly acid; clear wavy boundary.

Bt1—22 to 30 inches; dark brown (7.5YR 4/4) sandy loam; moderate medium subangular blocky structure; friable; estimated 10 percent gravel; common distinct continuous clay films on vertical faces of peds; medium acid; clear wavy boundary.

Bt2—30 to 36 inches; dark brown (7.5YR 4/4) loamy sand; weak coarse subangular blocky structure; very friable; estimated 10 percent gravel; few distinct clay bridges between sand grains; medium acid; clear wavy boundary.

C—36 to 60 inches; yellowish brown (10YR 5/4) coarse sand and gravel; single grain; loose; estimated 10 percent gravel; slightly acid.

The thickness of the solum ranges from 30 to 45 inches. The Ap horizon has value and chroma of 2 or 3. The E horizon has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 3 or 4. It is sand or loamy sand. The Bt horizon has value of 4 or 5 and chroma of 4 to 6. It is sandy loam or loamy sand. The C horizon has hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 3 to 6. The content of gravel in this horizon ranges from 10 to 30 percent.

Rosholt Series

The Rosholt series consists of deep, well drained soils on stream terraces and outwash plains. These soils formed in loamy deposits and in the underlying stratified sand and gravel (fig. 15). Permeability is moderate or moderately rapid in the subsoil and rapid or very rapid in the substratum. Slope ranges from 0 to 12 percent.

Typical pedon of Rosholt sandy loam, 2 to 6 percent slopes, 40 feet north and 1,940 feet west of the center of sec. 35, T. 32 N., R. 9 W.

Ap—0 to 8 inches; dark brown (10YR 3/3) sandy loam, pale brown (10YR 6/3) dry; moderate medium granular structure; very friable; strongly acid; abrupt smooth boundary.

E—8 to 10 inches; brown (10YR 5/3) sandy loam, very pale brown (10YR 7/3) dry; weak thin platy structure; very friable; medium acid; clear smooth boundary.

B/E—10 to 14 inches; dark brown (7.5YR 4/4) sandy loam (Bt); moderate medium subangular blocky structure; Bt material makes up about 70 percent of the horizon; brown (10YR 5/3) sandy loam, very pale brown (10YR 7/3) dry (E); weak thin platy structure; friable; medium acid; clear smooth boundary.

Bt1—14 to 20 inches; dark brown (7.5YR 4/4) sandy loam; moderate medium subangular blocky structure; friable; estimated 10 percent gravel; few distinct dark reddish brown (5YR 3/3) clay films on faces of peds; medium acid; clear smooth boundary.

Bt2—20 to 28 inches; dark brown (7.5YR 4/4) sandy loam; moderate medium subangular blocky structure; friable; estimated 10 percent gravel; few distinct reddish brown (5YR 4/4) clay films on faces of peds; strongly acid; clear smooth boundary.

2Bt3—28 to 34 inches; dark brown (7.5YR 4/4) gravelly sandy loam; weak medium subangular blocky structure; very friable; estimated 30 percent gravel; few faint clay films on faces of peds; strongly acid; clear smooth boundary.

2C—34 to 60 inches; reddish brown (5YR 4/4) stratified sand and gravel; single grain; loose; estimated 40 percent gravel; medium acid.

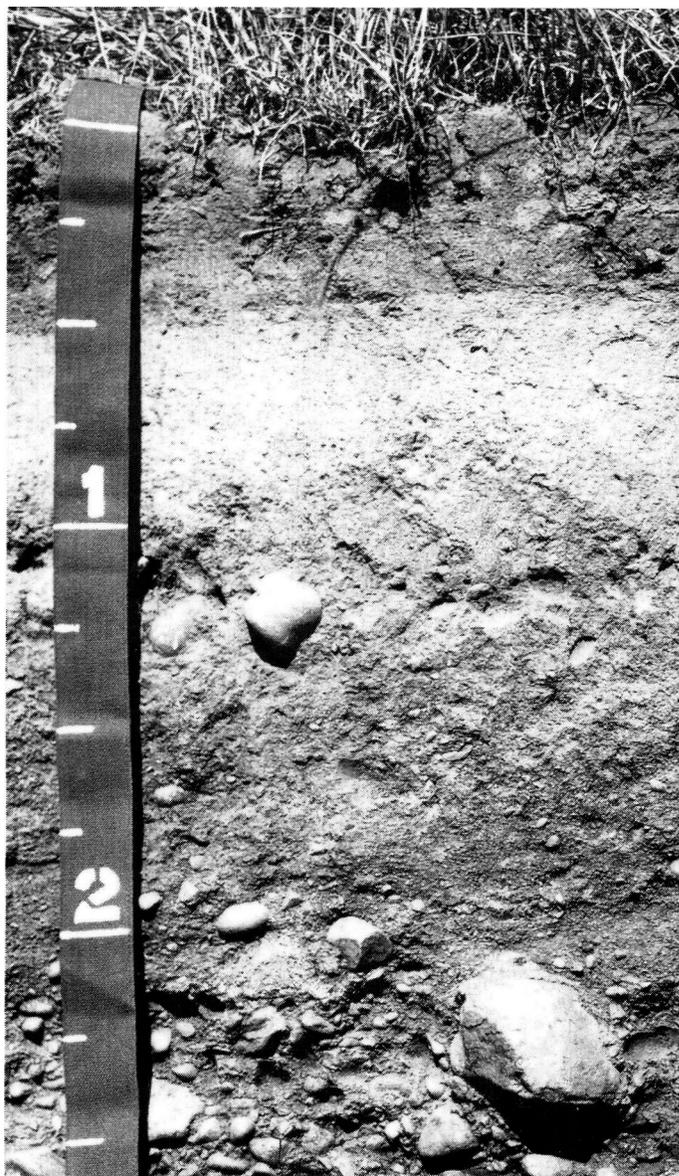


Figure 15.—Profile of a Rosholt soil. Sand and gravel are at a depth of about 24 inches. Depth is marked in feet.

The thickness of the solum ranges from 20 to 40 inches. The depth to stratified sand and gravel ranges from 20 to 36 inches.

The A or Ap horizon and the E horizon are loam or sandy loam. The Ap horizon has value of 3 or 4 and chroma of 2 or 3. The A horizon has 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 Bt horizon has hue of 5YR, 7.5YR, or 10YR and value and chroma of 3 to 5. It is sandy loam or loam. The content

of gravel in this horizon ranges from 5 to 15 percent. The 2Bt horizon has hue of 5YR, 7.5YR, or 10YR, value of 3 to 5, and chroma of 3 to 6. It is gravelly sandy loam or gravelly loamy sand. The content of gravel and cobbles in the 2Bt and 2C horizons ranges from 15 to 40 percent. The 2C horizon has hue of 5YR or 7.5YR and value and chroma of 3 to 6.

Santiago Series

The Santiago series consists of deep, well drained, moderately permeable soils on ground moraines. These soils formed in silty deposits and in the underlying loamy glacial till. Slope ranges from 2 to 20 percent.

Typical pedon of Santiago silt loam, 6 to 12 percent slopes, eroded, 50 feet west and 1,200 feet north of the southeast corner of sec. 10, T. 29 N., R. 6 W.

Ap—0 to 7 inches; dark brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; moderate medium granular structure; friable; neutral; abrupt smooth boundary.

E—7 to 9 inches; brown (10YR 5/3) silt loam, very pale brown (10YR 7/3) dry; moderate medium platy structure; friable; neutral; clear smooth boundary.

E/B—9 to 13 inches; brown (10YR 5/3) silt loam (E); moderate medium platy structure; E material makes up about 60 percent of the horizon; dark yellowish brown (10YR 4/4) silt loam (Bt); moderate medium subangular blocky structure; friable; estimated 3 percent gravel; slightly acid; clear smooth boundary.

B/E—13 to 16 inches; dark yellowish brown (10YR 4/4) silt loam (Bt); moderate medium subangular blocky structure; Bt material makes up about 70 percent of the horizon; brown (10YR 5/3) silt loam (E); moderate medium platy structure; friable; estimated 3 percent gravel; slightly acid; clear smooth boundary.

Bt1—16 to 19 inches; dark brown (7.5YR 4/4) silt loam; moderate medium subangular blocky structure; friable; few faint clay films on faces of peds; estimated 3 percent gravel; slightly acid; clear smooth boundary.

2Bt2—19 to 24 inches; dark brown (7.5YR 4/4) loam; moderate medium subangular blocky structure; friable; few faint clay films on faces of peds; estimated 5 percent gravel and 5 percent cobbles; slightly acid; clear smooth boundary.

2BC—24 to 30 inches; reddish brown (5YR 4/4) sandy loam; moderate coarse subangular blocky structure; friable; estimated 5 percent gravel and 5 percent cobbles; medium acid; clear smooth boundary.

2C—30 to 60 inches; dark reddish brown (2.5YR 3/4) sandy loam; massive; firm; estimated 5 percent gravel and 5 percent cobbles; medium acid.

The thickness of the solum ranges from 20 to 36 inches. The thickness of the silty mantle ranges from 15 to 30 inches.

The Ap horizon has value of 3 to 5 and chroma of 1 to 3. The Bt horizon has hue of 7.5YR or 10YR and value and chroma of 4 or 5. The 2Bt horizon has hue of 5YR or 7.5YR and value and chroma of 3 to 5. It is loam, fine sandy loam, or sandy loam. The 2C horizon has hue of 2.5YR or 5YR and value and chroma of 3 to 5. It is sandy loam or loam. The content of gravel and cobbles in this horizon ranges from 10 to 20 percent.

Sattre Series

The Sattre series consists of deep, well drained soils on outwash plains and stream terraces. These soils formed in loamy deposits over sand and gravel.

Permeability is moderate or moderately rapid in the subsoil and very rapid in the substratum. Slope ranges from 0 to 3 percent.

Typical pedon of Sattre loam, 0 to 3 percent slopes, 100 feet north and 1,250 feet east of the center of sec. 12, T. 31 N., R. 9 W.

Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) loam, grayish brown (10YR 5/2) dry; weak fine subangular blocky structure, friable; slightly acid; abrupt smooth boundary.

E—9 to 12 inches; brown (10YR 5/3) loam; moderate medium platy structure; friable; estimated 2 percent gravel; medium acid; clear wavy boundary.

Bt1—12 to 24 inches; dark brown (7.5YR 4/4) loam; moderate medium subangular blocky structure; friable; few distinct continuous dark brown (7.5YR 3/2) clay films on faces of peds; estimated 5 percent gravel; strongly acid; clear smooth boundary.

Bt2—24 to 30 inches; dark brown (7.5YR 4/4) loam; weak medium subangular blocky structure; friable; common faint continuous dark brown (7.5YR 4/4) clay films on faces of peds; estimated 5 percent gravel; strongly acid; clear smooth boundary.

Bt3—30 to 35 inches; dark brown (7.5YR 4/4) gravelly sandy loam; weak medium subangular blocky structure; friable, few faint discontinuous clay films on faces of peds; some clay flows around pebbles; estimated 35 percent gravel; strongly acid; gradual smooth boundary.

2C—35 to 60 inches; strong brown (7.5YR 5/6) sand and gravel; single grain; loose; medium acid.

The thickness of the solum ranges from 23 to 40 inches. The depth to sand and gravel ranges from 30 to 40 inches.

The A or Ap horizon has value of 2 or 3. The Bt1 and Bt2 horizons have hue of 7.5YR or 10YR and chroma of 3 or 4. They are loam or sandy clay loam. The content of gravel in these horizons is 2 to 10 percent. The Bt3 horizon is sandy loam or gravelly sandy loam. The 2C

horizon has chroma of 4 to 6. The content of gravel in this horizon ranges from 20 to 35 percent.

Scott Lake Series

The Scott Lake series consists of deep, moderately well drained soils on outwash plains and stream terraces. These soils formed in loamy deposits underlain by sand and gravel. Permeability is moderate or moderately rapid in the subsoil and rapid or very rapid in the substratum. Slope ranges from 0 to 6 percent.

Typical pedon of Scott Lake loam, 0 to 3 percent slopes, 300 feet north and 2,190 feet east of the southwest corner of sec. 10, T. 30 N., R. 9 W.

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) loam, light brownish gray (10YR 6/2) dry; weak fine subangular blocky structure; friable; slightly acid; abrupt smooth boundary.

B/E—8 to 14 inches; dark brown (10YR 4/3) loam (Bt); moderate fine subangular blocky structure; Bt material makes up about 60 percent of the horizon, brown (10YR 5/3) loam, very pale brown (10YR 7/3) dry (E); weak medium platy structure; friable; slightly acid; clear wavy boundary.

Bt1—14 to 26 inches; dark yellowish brown (10YR 4/4) loam; common medium faint dark brown (7.5YR 4/4), common coarse faint brown (10YR 5/3), and few medium prominent strong brown (7.5YR 5/8) mottles; moderate medium subangular blocky structure; friable; light gray (10YR 7/2) uncoated silt particles and very fine sand grains on vertical faces of peds; estimated 6 percent gravel; common distinct discontinuous clay films on faces of peds, strongly acid; clear wavy boundary.

2Bt2—26 to 36 inches; dark brown (7.5YR 4/4) sandy loam; common medium distinct strong brown (7.5YR 5/8) and few medium distinct grayish brown (10YR 5/2) mottles; weak medium subangular blocky structure; friable; estimated 10 percent gravel; few distinct discontinuous clay films on faces of peds; strongly acid; gradual smooth boundary.

2C—36 to 60 inches; dark brown (7.5YR 4/4) and dark yellowish brown (10YR 4/4) stratified sand and gravel; single grain; loose; slightly acid

The thickness of the solum ranges from 24 to 40 inches. The depth to stratified sand and gravel ranges from 20 to 36 inches.

The Ap, E, and Bt horizons are sandy loam or loam. The Ap horizon has value of 3 or 4 and chroma of 2 or 3. The E horizon, if it occurs, has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 2 or 3. The Bt horizon has hue of 5YR, 7.5YR, or 10YR, value of 4 or 5, and chroma of 3 or 4. The content of gravel in this horizon is 2 to 10 percent. The 2Bt horizon has hue of 5YR or 7.5YR, value of 4 or 5, and chroma of 3 to 6. It is gravelly loamy sand, sandy loam, or gravelly sandy loam.

The content of gravel in this horizon ranges from 5 to 25 percent. The 2C horizon has hue of 5YR, 7.5YR, or 10YR and value and chroma of 4 to 6. The content of gravel in this horizon ranges from 20 to 60 percent.

Seaton Series

The Seaton series consists of deep, well drained and moderately well drained soils on uplands and valley fills. These soils formed in silty deposits. Permeability generally is moderate. The substratum is rapidly permeable, however, in areas where it is sandy. Slope ranges from 0 to 25 percent.

Typical pedon of Seaton silt loam, 6 to 12 percent slopes, eroded, 700 feet south and 50 feet east of the northwest corner of sec. 36, T. 28 N., R. 8 W.

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

E—7 to 10 inches; brown (10YR 5/3) silt loam, very pale brown (10YR 7/3) dry; moderate thin platy structure; friable; medium acid; clear wavy boundary.

Bt1—10 to 14 inches; yellowish brown (10YR 5/4) silt loam; moderate fine subangular blocky structure; friable; few distinct clay films on faces of peds; few light gray (10YR 7/2) uncoated silt particles on vertical faces of peds; strongly acid; clear wavy boundary.

Bt2—14 to 36 inches; dark yellowish brown (10YR 4/4) silt loam; moderate medium subangular blocky structure; friable; common distinct discontinuous clay films on faces of peds; few light gray (10YR 7/2) uncoated silt particles on vertical faces of peds; medium acid; clear wavy boundary.

Bt3—36 to 42 inches; yellowish brown (10YR 5/4) silt loam; moderate medium subangular blocky structure; friable; few distinct discontinuous clay films on faces of peds; few light gray (10YR 7/2) uncoated silt particles on vertical faces of peds; medium acid; gradual wavy boundary.

C—42 to 60 inches; yellowish brown (10YR 5/4) silt loam; massive; friable; slightly acid.

The thickness of the solum ranges from 36 to 45 inches. The Ap horizon has value of 4 or 5. The E horizon has value of 4 or 5 and chroma of 2 or 3. The Bt and C horizons have value of 4 or 5 and chroma of 3 or 4. The C horizon typically is silt loam, but in some pedons it is loamy sand or sand.

Seelyeville Series

The Seelyeville series consists of deep, very poorly drained, moderately rapidly permeable soils in depressions on outwash plains and ground moraines.

These soils formed in herbaceous organic material more than 51 inches thick. Slope is 0 to 1 percent.

Typical pedon of Seelyeville muck, 0 to 1 percent slopes, 400 feet north and 150 feet west of the southeast corner of sec. 16, T. 28 N., R. 8 W.

- Oe—0 to 4 inches; hemic material, dark brown (7.5YR 3/2) broken face, pressed, and rubbed; about 75 percent fiber, 28 percent rubbed (mainly grasses, sedges, and sphagnum moss); nonsticky; very strongly acid (pH 4.5 in water); clear smooth boundary.
- Oa1—4 to 14 inches; sapric material, black (10YR 2/1) broken face, pressed, and rubbed; about 10 percent fiber, 8 percent rubbed; weak very thick platy structure parting to weak medium subangular blocky; slightly sticky; herbaceous fibers; strongly acid (pH 5.5 in water); clear smooth boundary.
- Oa2—14 to 38 inches; stratified sapric material, very dark gray (10YR 3/1) and dark brown (7.5YR 3/2) broken face and pressed, very dark brown (10YR 2/2) rubbed; about 15 percent fiber, 10 percent rubbed; weak very thick platy structure; slightly sticky; herbaceous fibers; strongly acid (pH 5.5 in water); clear smooth boundary.
- Oa3—38 to 60 inches; sapric material, dark brown (7.5YR 3/2) broken face, pressed, and rubbed; about 25 percent fiber, 10 percent rubbed; massive; slightly sticky; herbaceous fibers; strongly acid (pH 5.5 in water).

The organic material is more than 51 inches thick. It is typically sapric material, but some pedons have layers of hemic and fibric material. The combined thickness of these layers is less than 10 inches. The sapric material has hue of 7.5YR or 10YR, value of 2 or 3, and chroma of 1 or 2.

Shiffer Series

The Shiffer series consists of deep, somewhat poorly drained soils on stream terraces and valley fills. These soils formed in loamy deposits and in the underlying sandy deposits. Permeability is moderate in the upper part of the subsoil and rapid in the substratum. Slope ranges from 0 to 2 percent.

Typical pedon of Shiffer loam, 0 to 2 percent slopes, 1,750 feet west and 500 feet south of the center of sec. 10, T. 30 N., R. 9 W.

- Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) loam, brown (10YR 5/3) dry; weak medium subangular blocky structure; friable; slightly acid; abrupt smooth boundary.
- Bt1—9 to 20 inches; brown (10YR 5/3) loam; common medium distinct dark brown (7.5YR 4/4) and common medium faint grayish brown (10YR 5/2) mottles; weak fine subangular blocky structure;

friable; common distinct clay films on faces of peds; medium acid; clear wavy boundary.

- Bt2—20 to 27 inches; brown (7.5YR 5/4) loam; common medium faint strong brown (7.5YR 5/6), common medium prominent strong brown (7.5YR 5/8), and common medium distinct light brownish gray (10YR 6/2) mottles; moderate fine subangular blocky structure; friable; common distinct clay films on faces of peds; light gray (10YR 7/2) uncoated silt particles on faces of peds; strongly acid; clear smooth boundary.
- 2BC—27 to 31 inches; brown (7.5YR 5/4) loamy sand; common medium faint dark brown (7.5YR 4/4) and common medium distinct grayish brown (10YR 5/2) mottles; weak medium subangular blocky structure; very friable; strongly acid; gradual smooth boundary.
- 2C—31 to 60 inches; yellowish brown (10YR 5/4) sand; common coarse distinct dark brown (7.5YR 4/4) and few coarse faint grayish brown (10YR 5/2) mottles, single grain; loose; medium acid.

The thickness of the solum ranges from 20 to 40 inches. The Ap or A horizon has value of 2 or 3 and chroma of 1 or 2. The Bt1 horizon has value of 4 to 6 and chroma of 3 or 4. The Bt2 horizon has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 4 or 5. It is loam or sandy clay loam. The 2BC horizon has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 3 to 6. It is loamy sand or sandy loam. The 2C horizon has hue of 7.5YR or 10YR, value of 5 to 8, and chroma of 2 to 6. It is loamy sand or sand.

Spencer Series

The Spencer series consists of deep, moderately well drained soils on ground moraines and terminal moraines. These soils formed in silty deposits underlain by sandy loam glacial till. Permeability is moderate in the subsoil. It generally is moderately slow in the substratum. In the gravelly substratum phases, however, it is rapid or very rapid in the lower part of the substratum. Slope ranges from 0 to 12 percent.

Typical pedon of Spencer silt loam, 2 to 6 percent slopes, 100 feet north and 2,200 feet west of the center of sec. 31, T. 31 N., R. 6 W.

- Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) silt loam, pale brown (10YR 6/3) dry; moderate medium granular structure, friable; neutral; abrupt smooth boundary.
- E—9 to 12 inches; brown (10YR 5/3) silt loam, very pale brown (10YR 7/3) dry; weak medium platy structure; friable; slightly acid; gradual smooth boundary.
- E/B—12 to 15 inches; brown (10YR 5/3) silt loam (E); weak medium platy structure; E material makes up about 60 percent of the horizon; dark yellowish brown (10YR 4/4) silt loam (Bt); weak medium

- subangular blocky structure; friable; medium acid; clear wavy boundary.
- B/E—15 to 20 inches; dark yellowish brown (10YR 4/4) silt loam (Bt), common medium distinct strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; Bt material makes up about 70 percent of the horizon; brown (10YR 5/3) silt loam (E); moderate medium platy structure; friable; strongly acid; clear smooth boundary.
- Bt1—20 to 29 inches, dark yellowish brown (10YR 4/4) silt loam; few fine distinct strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; friable; few distinct dark reddish brown (5YR 3/4) clay films on faces of peds; strongly acid; clear smooth boundary.
- Bt2—29 to 37 inches; dark brown (7.5YR 4/4) silt loam; common medium faint strong brown (7.5YR 5/6) and common medium distinct strong brown (7.5YR 5/8) mottles; moderate medium subangular blocky structure; friable; few distinct clay films on faces of peds; very strongly acid; clear smooth boundary.
- C1—37 to 42 inches; dark yellowish brown (10YR 4/4) silt loam; common medium prominent strong brown (7.5YR 5/8) mottles; massive; friable; medium acid; clear wavy boundary.
- 2C2—42 to 60 inches; yellowish red (5YR 4/6) sandy loam; massive; friable; estimated 10 percent gravel; medium acid.

The thickness of the solum ranges from 30 to 40 inches. The thickness of the silty mantle ranges from 30 to 48 inches.

The Ap horizon has value of 3 to 5 and chroma of 2 or 3. The E horizon has value of 4 to 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 3 or 4. The 2C horizon has hue of 2.5YR or 5YR and value and chroma of 4 to 6. It typically is sandy loam, but in some pedons it is sand and gravel below a depth of 40 inches.

Tell Series

The Tell series consists of deep, well drained soils on stream terraces and outwash plains. These soils formed in silty and loamy deposits underlain by sandy material. Permeability is moderate in the subsoil and rapid in the substratum. Slope ranges from 1 to 6 percent.

Typical pedon of Tell silt loam, 1 to 6 percent slopes, 200 feet south and 100 feet west of the northeast corner of sec. 18, T. 29 N., R. 9 W.

- Ap—0 to 9 inches; dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; weak fine subangular blocky structure; friable; neutral; abrupt smooth boundary.
- E—9 to 11 inches; brown (10YR 5/3) silt loam, pale brown (10YR 6/3) dry; weak thin platy structure; friable; slightly acid; clear wavy boundary.

- BE—11 to 18 inches; dark yellowish brown (10YR 4/4) silt loam; moderate fine subangular blocky structure; friable; slightly acid; clear smooth boundary.
- Bt—18 to 30 inches; dark yellowish brown (10YR 4/4) silt loam; moderate medium subangular blocky structure; friable; common distinct discontinuous clay films on faces of peds; strongly acid; clear smooth boundary.
- 2BC—30 to 35 inches; yellowish brown (10YR 5/4) sandy loam; weak medium subangular blocky structure; friable; strongly acid; clear smooth boundary.
- 2C—35 to 60 inches, yellowish brown (10YR 5/6) sand; single grain; loose; strongly acid.

The thickness of the solum ranges from 24 to 40 inches. The thickness of the silty mantle ranges from 20 to 36 inches.

The Ap horizon has value of 3 or 4 and chroma of 2 or 3. The E horizon has value of 4 or 5 and chroma of 2 or 3. The Bt horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 or 4. The 2BC horizon has hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 3 to 6. It is loam, sandy clay loam, or sandy loam. The 2C horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 8. It is sand or loamy sand.

Vesper Series

The Vesper series consists of deep, poorly drained soils on uplands. These soils formed in thin deposits of silty material and in the underlying material weathered from sandstone interbedded with shale. Permeability is moderately slow in the subsoil and slow in the substratum. Slope ranges from 0 to 2 percent.

Typical pedon of Vesper silt loam, 0 to 2 percent slopes, 1,500 feet south and 100 feet west of the northeast corner of sec. 35, T. 28 N., R. 7 W.

- Ap—0 to 7 inches; very dark gray (10YR 3/1) silt loam, gray (10YR 5/1) dry; strong medium granular structure; friable; medium acid; abrupt smooth boundary.
- E—7 to 12 inches; dark grayish brown (2.5Y 4/2) silt loam; moderate medium platy structure; friable; strongly acid; clear smooth boundary.
- 2Bg1—12 to 23 inches; dark grayish brown (10YR 4/2) loam; common medium prominent strong brown (7.5YR 5/8) mottles; moderate medium subangular blocky structure; friable; very strongly acid; clear smooth boundary.
- 3Bg2—23 to 38 inches; olive gray (5Y 4/2) clay loam; common medium prominent strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; firm; very strongly acid; clear smooth boundary.

4Cg—38 to 60 inches; grayish brown (10YR 5/2), stratified sand and loam; many coarse prominent strong brown (7.5YR 5/6) mottles; single grain and massive; friable; estimated 5 percent sandstone channers 0.5 inch to 3.0 inches long; very strongly acid.

The thickness of the solum ranges from 24 to 40 inches. The thickness of the silty mantle ranges from 10 to 24 inches. The depth to sandstone interbedded with shale ranges from 42 to more than 60 inches.

The Ap horizon has value of 2 or 3 and chroma of 1 or 2. The E horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 1 or 2. The 2Bg, 3Bg, and 4Cg horizons have hue of 10YR, 2.5Y, or 5Y, value of 4 to 6, and chroma of 1 or 2. They are dominantly loam or clay loam but have strata of sand, sandy clay loam, silty clay, or clay.

Warman Variant

The Warman Variant consists of deep, somewhat poorly drained soils on outwash plains and stream terraces. These soils formed in loamy and sandy deposits underlain by sand and gravel. Permeability is moderately rapid in the subsoil and rapid in the substratum. Slope ranges from 0 to 2 percent.

Typical pedon of Warman Variant sandy loam, 0 to 2 percent slopes, 450 feet east and 1,600 feet south of the northwest corner of sec. 20, T. 28 N., R. 8 W.

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

A—8 to 12 inches; very dark brown (10YR 2/2) sandy loam, dark grayish brown (10YR 4/2) dry; weak medium granular structure; friable; neutral; abrupt smooth boundary.

Bw1—12 to 15 inches; dark reddish brown (5YR 3/4) sandy loam; common medium faint yellowish red (5YR 4/6) and common medium prominent strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; friable; medium acid; clear smooth boundary.

Bw2—15 to 19 inches; dark brown (7.5YR 4/4) sandy loam; common fine distinct brown (7.5YR 5/2) and common medium distinct yellowish red (5YR 5/6) mottles; weak medium subangular blocky structure; friable; estimated 7 percent gravel; medium acid; clear smooth boundary.

Bw3—19 to 24 inches, dark brown (7.5YR 4/4) loamy sand; common medium distinct yellowish red (5YR 5/6) mottles; weak fine subangular blocky structure; friable; estimated 7 percent gravel; medium acid; gradual smooth boundary.

C—24 to 60 inches; yellowish brown (10YR 5/4) and dark yellowish brown (10YR 4/4) sand and gravel; single grain; loose; medium acid.

The thickness of the solum ranges from 20 to 36 inches. The Ap and A horizons have value of 2 or 3 and chroma of 1 or 2. The Bw horizon has hue of 5YR, 7.5YR, or 10YR, value of 3 to 5, and chroma of 4 or 5. It is sandy loam or loamy sand. The content of gravel in this horizon ranges from 5 to 15 percent. The C horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 6.

Withee Series

The Withee series consists of deep, somewhat poorly drained, moderately slowly permeable soils on ground moraines. These soils formed in a thin mantle of silty material and in the underlying loamy glacial till. Slope ranges from 1 to 6 percent.

Typical pedon of Withee silt loam, 1 to 6 percent slopes, 2,040 feet south and 300 feet east of the northwest corner of sec. 1, T. 28 N., R. 5 W.

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

E—8 to 12 inches; pale brown (10YR 6/3) silt loam, very pale brown (10YR 7/3) dry; common medium prominent dark brown (7.5YR 4/4) and yellowish red (5YR 5/8) and few coarse faint light brownish gray (10YR 6/2) mottles; weak medium platy structure; friable; slightly acid; clear wavy boundary.

E/B—12 to 18 inches; pale brown (10YR 6/3) silt loam (E); weak medium platy structure; E material makes up about 60 percent of the horizon; brown (10YR 5/3) silt loam (Bt); few coarse faint light brownish gray (10YR 6/2) and common medium prominent yellowish red (5YR 5/6) and dark brown (7.5YR 4/4) mottles; weak very thick platy structure parting to moderate fine subangular blocky; friable; thin discontinuous clay films on faces of peds; very strongly acid; clear wavy boundary.

B/E—18 to 23 inches; brown (10YR 5/3) silt loam (Bt); common medium prominent yellowish red (5YR 5/6), common medium distinct dark brown (7.5YR 4/4), and few coarse faint light brownish gray (10YR 6/2) mottles; weak thick platy structure parting to moderate fine subangular blocky; Bt material makes up about 70 percent of the horizon; pale brown (10YR 6/3) silt loam (E); weak medium platy structure; friable; common distinct continuous clay films on faces of peds; very strongly acid; clear wavy boundary.

2Bt1—23 to 34 inches; reddish brown (5YR 4/4) loam; few medium distinct brown (7.5YR 5/2) and

common medium distinct strong brown (7.5YR 5/6) mottles; weak coarse prismatic structure parting to strong medium subangular blocky; firm; common distinct continuous clay films on faces of peds; light gray (10YR 7/2) uncoated silt particles and very fine sand grains on faces of peds; estimated 10 percent gravel and 1 percent cobbles; very strongly acid; gradual smooth boundary.

2Bt2—34 to 42 inches; reddish brown (5YR 4/4) loam; few medium distinct strong brown (7.5YR 5/6) and brown (7.5YR 5/2) mottles; moderate medium subangular blocky structure; firm; few distinct discontinuous clay films on faces of peds; estimated

10 percent gravel; very strongly acid; gradual smooth boundary.

2C—42 to 60 inches; reddish brown (5YR 4/4) loam; massive; firm; strongly acid.

The thickness of the solum ranges from 24 to 48 inches. The thickness of the silty mantle ranges from 15 to 36 inches.

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

Formation of the Soils

This section describes the geology and underlying material in Chippewa County, relates the factors of soil formation to the soils in the county, and explains the processes of soil formation.

Geology and Underlying Material

Robert N. Cheetham, Jr., geologist, Soil Conservation Service, helped prepare this section.

Chippewa County is almost equally divided between two Wisconsin geomorphic provinces—the Northern Highland and the Central Plain. The Northern Highland is an ancient peneplain of complexly folded and faulted igneous and metamorphic rocks (granite, rhyolite, chloritic schist, and granodiorite) of Precambrian age. The Central Plain is a dissected landscape of Upper Cambrian age. It overlaps the Precambrian rocks to the north and west. This bedrock is mostly sandstone but includes some siltstone and shale.

A bedrock geology map of Wisconsin shows the rock types in the county and their distribution (8). This information is based on previously published and unpublished geologic reports, well logs from a geologic survey, and a limited field check of the outcrops by a Soil Conservation Service geologist.

The bedrock terrain has been modified by continental glaciation. It is covered by Pleistocene deposits, windblown silty deposits, and soils.

The main mineral resources in the county are outwash deposits of sand and gravel. Other mineral resources are peat, glacial clay, and crushed Precambrian igneous or metamorphic rocks, such as traprock and quartzite. Some Upper Cambrian sandstone can be used locally for roadfill. Metallic sulfides, particularly copper and iron, are disseminated in the Precambrian rocks. Bodies of ore could be in the rocks.

Factors of Soil Formation

Soil forms through processes that act on deposited or accumulated geologic material. The characteristics of the soil at any given point are determined by the physical and mineral composition of the parent material, the climate under which the soil material has been accumulated and existed since accumulation, the plant and animal life on and in the soil, the relief and drainage, and the length of time that the forces of soil formation have acted on the soil material (10).

Climate and vegetation are active factors of soil formation. They act on the parent material that has accumulated through the weathering or physical disintegration of rocks and slowly change it into a natural body that has genetically related horizons. The effects of climate and of plant and animal life are conditioned by relief. The parent material affects the kind of soil profile that forms and, in some areas, determines it almost 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. Usually, a long time is needed for the development of distinct horizons.

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

Parent Material

Parent material is the unconsolidated mass in which a soil forms. It largely determines the chemical and mineralogical composition of the soil. Silty deposits or loess, glacial till, and outwash are the dominant kinds of parent material in the county. Lacustrine deposits, organic material, and material weathered from sandstone or interbedded sandstone and shale also are common. Some soils formed in more than one kind of parent material.

Glacial till is unstratified, unsorted glacial debris made up mainly of clay, silt, and sand. It may contain gravel, cobbles, stones, or boulders. Two distinctly different kinds of till are separated by the Cary Moraine in the county. The Cary-age till is dominantly sandy loam, but in some areas it is loamy sand. Amery is an example of a soil that formed in loamy deposits and in the underlying sandy loam or loamy sand till. Freeon, Magnor, and Santiago are examples of soils that formed in silty deposits and in the underlying sandy loam till. The ground moraine southeast of the Cary Moraine is loam till. Loyal and Withee are examples of soils that formed in silty deposits and in the underlying loam till.

Glacial outwash is sand, sand and gravel, or stratified sand and gravel deposited by water flowing from a melting glacier. Antigo, Brill, and Poskin are examples of soils that formed in silty and loamy deposits over stratified or unstratified sand and gravel. Billett, Burkhardt, Rosholt, and Sattre are examples of soils that

formed mostly in loamy deposits over sand or stratified or unstratified sand and gravel. Soils that formed in sandy outwash do not have a layer of clay accumulation and show little evidence of subsoil development. Friendship, Meehan, and Menahga are examples.

Lacustrine deposits are mainly silty or loamy but have thin strata of sandy material in some areas. These sediments were deposited in the still water of glacial lakes. Campia, Comstock, and Crystal Lake are examples of soils that formed in silty lacustrine deposits. Plover soils formed in silty and loamy lacustrine deposits. Alban soils formed in loamy lacustrine deposits.

Some of the soils in the county formed in bedrock residuum. Boone soils, for example, formed in sandstone residuum. Eleva and Hixton soils formed in loamy deposits over sandstone residuum. Gale and Northfield soils formed in silty or silty and loamy deposits over sandstone residuum. Humbird and Merrilan are examples of soils that formed in loamy deposits and the underlying silty, loamy, or clayey material weathered from stratified sandstone and shale.

Organic material consists of reeds, sedges, grasses, or woody fragments in various stages of decomposition. Baseman and Markey soils formed in organic material 16 to 51 inches deep over mineral deposits. Greenwood, Lupton, and Seelyeville soils formed in organic material more than 51 inches thick.

Alluvial deposits are of recent origin. The soils that formed in these deposits do not have distinct horizons. Alluvial material is deposited on flood plains or is washed in locally from the higher positions on the landscape. Arenzville and Orion are examples of soils that formed in silty alluvial deposits. Fordum soils formed in loamy and sandy alluvial deposits.

Climate

Climate affects soil formation through its effect on the moisture supply in the soil and on soil temperature. It affects the weathering of rocks and the alteration of the parent material through the mechanical action of freezing and thawing and the chemical action generated by the leaching of water.

Climate indirectly affects soil formation through its effect on plant and animal life. Climatic factors influence the rate of plant growth and thus also influence the accumulation of organic matter in the soil and the level of soil fertility.

Chippewa County has a cool, subhumid continental climate characteristic of the north-central part of the United States. Climatic differences within the county are too small to have resulted in major differences among the soils.

Plant and Animal Life

Living organisms affect soil formation mainly through the effect of vegetation on the accumulation of organic matter in the soil. Bacteria, fungi, and earthworms also

affect soil formation. Plant and animal life add organic matter to the soil and translocate plant nutrients from lower to upper layers.

When the first settlers arrived in the survey area, the native vegetation was mixed conifers and hardwoods on the ground and end moraines in the northeastern part of the county, oaks and grasses in the southwestern part, and pine and grasses on the outwash plains along the Chippewa River. The surface layer of the soils that formed under conifers and hardwoods is lighter colored or thinner than that of the other soils in the county. Amery and Withee are examples of soils that formed under hardwoods. Billett and Sattre are examples of soils that formed under oaks and grasses or pine and grasses.

Relief and Drainage

Relief in Chippewa County is affected by geologic and hydrographic factors. Hills, valleys, terraces, and outwash plains formed as a result of rain, wind, rivers, glacial meltwater, and glacial deposition. Where sandstone or shale is the controlling factor of the topography, the resistance of the underlying rocks to weathering has determined the relief.

Drainage characteristics generally are reflected in the color, degree and kind of mottling, or gleying in the soil horizons. Well drained to excessively drained soils have no mottles. Examples are Menahga, Otterholt, and Sattre soils. Moderately well drained soils, such as Loyal and Spencer, have bright colored mottles in the B horizon. Comstock, Magnor, Withee, and other somewhat poorly drained soils have grayish mottles in the B horizon. Cable, Newson, Rib, and other poorly drained or very poorly drained soils are gleyed in the B horizon.

Time

The length of time required for the formation of a given soil depends on the other factors of soil formation. Most of the soils in Chippewa County formed in material deposited at about the time of the last glaciation. They are about 10,000 years old.

Processes of Soil Formation

A combination of basic processes is responsible for horizon differentiation. The main processes are gains, losses, transfers, and transformations. These processes can be active in all soils. Some changes promote horizon differentiation, and others retard it. The nature of the soil at any given point is the net result of all the changes.

The interaction among these soil-forming processes is evident in Antigo soils. These soils formed in silty and loamy deposits over acid, stratified sand and gravel. The silty material was probably deposited during or shortly after the last glaciation. Because these soils are rather

high on the landscape and are underlain by porous sand and gravel, they are well drained. The climate favored the growth of trees. Plant and animals contributed to the accumulation of organic matter and organic acids and darkened the surface layer.

As rainwater moved downward through these soils, suspended particles of clay were translocated from the surface soil to the subsoil. This clay occurs as clay films on the faces of peds. As a result of this transfer, the soils have more clay in the lower part of the subsoil than in other horizons.

While these changes occurred in the silty part of the profile, chemical weathering of minerals in the underlying sand and gravel and mixing with the silty deposits gradually changed the lower part of the subsoil to sandy loam. Because of oxidized iron, this layer is darker than the underlying unweathered sand and gravel.

As a result of the soil-formation processes, the Antigo soils have a very dark grayish brown surface layer, tongues of the subsurface layer that extend into the upper part of the subsoil, and clay films and dark brown and reddish brown colors in the middle and lower parts of the subsoil. The underlying sand and gravel is unweathered and has changed little since it was deposited. The processes that were active in the formation of these soils were gains in organic matter in the surface layer, the loss of clay from the upper part of the profile and the subsequent transfer of it to the lower part, and the transformation of iron compounds in the lower part of the subsoil. All of these processes are active in the soils of the county. In some soils certain processes are more active than others. The kinds of parent material and the relief to a great extent have determined the kinds of processes that are dominant in the formation of the soils.

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Glossary

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.

Argillic horizon. A subsoil horizon characterized by an accumulation of illuvial clay.

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—

	<i>Inches</i>
Very low	0 to 3
Low	3 to 6
Moderate	6 to 9
High	9 to 12
Very high	more than 12

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

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

Channery soil. A soil that is, by volume, more than 15 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches along the longest axis. A single piece is called a channer.

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.

Clayey. Clay, silty clay, or sandy clay.

Coarse fragments. If round, mineral or rock particles 2 millimeters to 25 centimeters (10 inches) in diameter; if flat, mineral or rock particles (flagstone) 15 to 38 centimeters (6 to 15 inches) long.

Cobblestone (or cobble). A rounded or partly rounded fragment of rock 3 to 10 inches (7.5 to 25 centimeters) in diameter.

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.

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.

Corrosive. High risk of corrosion to uncoated steel or deterioration of concrete.

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.

Depth, soil. The thickness of the soil over bedrock. In this survey the depth classes are *deep*, more than 40 inches; *moderately deep*, 20 to 40 inches; and *shallow*, 10 to 20 inches.

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.

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 the activities of man or other animals or of a catastrophe in nature, for example, fire, that exposes the surface.

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

Fast intake (in tables). The rapid movement of water into the soil.

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 oven-dry 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*.

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

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

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

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.

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 50 percent, by volume, rounded or angular rock fragments, not prominently flattened, up to 3 inches (7.6 centimeters) in diameter.

Ground water (geology). Water filling all the unblocked pores of underlying material below the water table.

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.

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.

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.

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are—*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. *Basin.*—Water is applied rapidly to nearly level plains surrounded by levees or dikes.

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.

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

Large stones (in tables). Rock fragments 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.

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.

Loamy. Clay loam, sandy clay loam, loam, very fine sandy loam, fine sandy loam, or sandy loam.

Loess. Fine grained material, dominantly of silt-sized particles, deposited by wind.

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

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

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

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 colored, finely divided, well decomposed organic soil material. (See Sapric soil material.)

Munsell notation. A designation of color by degrees of the three simple variables—hue, value, and chroma.

For example, a notation of 10YR 6/4 is a color of 10YR hue, value of 6, and chroma of 4.

Organic matter. Plant and animal residue in the soil in various stages of decomposition. The content of organic matter is expressed as—

	<i>Percent</i>
Very low	less than 0.5
Low	0.5 to 1.0
Moderately low	1.0 to 2.0
Moderate	2.0 to 4.0
High	4.0 to 8.0
Very high	more than 8.0

Organic soil. A soil that contains 12 to 18 or more percent organic carbon, depending on the content of mineral material, and is more than 16 inches thick.

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.

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 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Phase, soil. A subdivision of a soil series based on features that affect its use and management. For example, 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 pipe-like cavities by water moving through the soil.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

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.

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 degree of acidity or alkalinity is expressed as—

	<i>pH</i>
Extremely acid	below 4.5
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Medium acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Mildly 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

Residuum (residual soil material). Unconsolidated, weathered, or partly weathered mineral material that accumulated as consolidated rock disintegrated in place.

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

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

Sandy. Loamy very fine sand, loamy fine sand, loamy sand, loamy coarse sand, very fine sand, fine sand, sand, or coarse sand.

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.

Seepage (in tables). The movement of water through the soil. Seepage adversely affects the specified use.

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer or of the substratum. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Shale. Sedimentary rock formed by the hardening of a clay deposit.

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.

Silty. Silt, silt loam, or silty clay loam.

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. The slope classes in this county are—

	<i>Percent</i>
Nearly level	0 to 2
Gently sloping	2 to 6
Sloping	6 to 12
Moderately steep	12 to 20
Steep	20 to 30
Very steep	.. more than 30

Slope (in tables). Slope is great enough that special practices are required to ensure satisfactory performance of the soil for a specific use.

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 of separates recognized in the United States are as follows:

	<i>Millime- ters</i>
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 underlying material. 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.

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).

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."

Taxadjuncts. Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series

because they differ in ways too small to be of consequence in interpreting their use and behavior.

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). Otherwise suitable soil material too thin for the specified use.

Tiers. Layers in the control section of organic soils. The organic material is divided into three tiers. The surface tier is the upper 12 inches, the subsurface tier is the next 24 inches, and the bottom tier is the lower 16 inches.

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.

Upland (geology). Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Valley fill. In glaciated regions, material deposited in stream valleys by glacial meltwater. In nonglaciated regions, alluvium deposited by heavily loaded streams.

Variant, soil. A soil having properties sufficiently different from those of other known soils to justify a new series name, but occurring in such a limited geographic area that creation of a new series is not justified.

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.

Tables

TABLE 1.--TEMPERATURE AND PRECIPITATION
(Recorded in the period 1951-81 at Holcombe, Wisconsin)

Month	Temperature						Precipitation				
	Average daily maximum	Average daily minimum	Average	2 years in 10 will have--		Average number of growing degree days*	Average	2 years in 10 will have--		Average number of days with 0.10 inch or more	Average snowfall
				Maximum temperature higher than--	Minimum temperature lower than--			Less than--	More than--		
	<u>°F</u>	<u>°F</u>	<u>°F</u>	<u>°F</u>	<u>°F</u>	<u>Units</u>	<u>In</u>	<u>In</u>	<u>In</u>		<u>In</u>
January-----	21.6	0.1	10.9	44	-36	0	0.92	0.28	1.44	3	11.5
February-----	28.2	4.2	16.2	49	-32	0	.80	.20	1.28	3	7.5
March-----	39.1	17.1	28.1	66	-21	0	1.56	.67	2.31	4	8.5
April-----	56.3	32.8	44.6	84	13	33	2.97	1.75	4.05	6	1.6
May-----	69.7	43.7	56.7	88	26	244	4.06	2.47	5.48	8	.0
June-----	77.8	53.0	65.4	93	35	462	4.83	3.21	6.30	9	.0
July-----	82.3	57.6	70.0	94	43	620	4.15	2.68	5.48	7	.0
August-----	79.7	55.4	67.6	93	37	546	4.61	2.49	6.47	8	.0
September---	70.7	47.0	58.9	90	28	272	4.23	1.78	6.30	7	.0
October-----	59.8	37.4	48.6	82	16	100	2.45	.99	3.67	5	.0
November-----	41.5	24.1	32.8	64	-6	0	1.63	.56	2.51	4	4.2
December-----	27.2	9.6	18.4	48	-25	0	1.12	.48	1.66	3	9.7
Yearly:											
Average---	54.5	31.8	43.2	---	---	---	---	---	---	---	---
Extreme---	---	---	---	95	-37	---	---	---	---	---	---
Total-----	---	---	---	---	---	2,277	33.33	27.49	38.93	67	43.0

* 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 1951-81 at Holcombe, Wisconsin)

Probability	Temperature		
	24° F or lower	28° F or lower	32° F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	May 1	May 14	June 2
2 years in 10 later than--	Apr. 27	May 9	May 28
5 years in 10 later than--	Apr. 18	Apr. 30	May 17
First freezing temperature in fall:			
1 year in 10 earlier than--	Oct. 7	Sept. 23	Sept. 11
2 years in 10 earlier than--	Oct. 12	Sept. 28	Sept. 15
5 years in 10 earlier than--	Oct. 22	Oct. 9	Sept. 23

TABLE 3.--GROWING SEASON
(Recorded in the period 1951-81 at Holcombe, Wisconsin)

Probability	Daily minimum temperature during growing season		
	Higher than 24° F	Higher than 28° F	Higher than 32° F
	Days	Days	Days
9 years in 10	163	140	106
8 years in 10	171	147	113
5 years in 10	186	161	128
2 years in 10	201	174	143
1 year in 10	209	181	151

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Acres	Percent
AfB	Alban fine sandy loam, 2 to 6 percent slopes-----	4,955	0.7
AfC	Alban fine sandy loam, 6 to 12 percent slopes-----	1,650	0.2
AgB	Almena silt loam, 1 to 6 percent slopes-----	25,170	3.8
AlB	Amery sandy loam, 2 to 6 percent slopes-----	4,855	0.7
AlC	Amery sandy loam, 6 to 12 percent slopes-----	26,015	4.0
AlD	Amery sandy loam, 12 to 25 percent slopes-----	39,090	5.9
AlF	Amery sandy loam, 25 to 45 percent slopes-----	1,840	0.3
AnB	Antigo silt loam, 1 to 6 percent slopes-----	1,675	0.3
AnC2	Antigo silt loam, 6 to 12 percent slopes, eroded-----	1,090	0.2
AoA	Arenzville silt loam, 0 to 3 percent slopes-----	1,185	0.2
ApB	Arland sandy loam, 2 to 6 percent slopes-----	3,080	0.5
ApC2	Arland sandy loam, 6 to 12 percent slopes, eroded-----	5,210	0.8
ApD2	Arland sandy loam, 12 to 20 percent slopes, eroded-----	1,525	0.2
AsB	Arland loam, 2 to 6 percent slopes-----	2,995	0.4
AsC2	Arland loam, 6 to 12 percent slopes, eroded-----	3,140	0.5
AsD2	Arland loam, 12 to 20 percent slopes, eroded-----	790	0.1
Au	Auburndale silt loam, 0 to 2 percent slopes-----	10,860	1.6
Ba	Barronett silt loam, 0 to 2 percent slopes-----	7,150	1.1
Bb	Barronett mucky silt loam, ponded, 0 to 2 percent slopes-----	3,870	0.6
Be	Beseman muck, 0 to 1 percent slopes-----	9,640	1.4
BlA	Billett sandy loam, 0 to 2 percent slopes-----	2,890	0.4
BlB	Billett sandy loam, 2 to 6 percent slopes-----	13,420	2.0
BlC2	Billett sandy loam, 6 to 12 percent slopes, eroded-----	1,235	0.2
BmA	Billett sandy loam, moderately well drained, 0 to 3 percent slopes-----	2,755	0.4
BoE	Boone fine sand, 20 to 45 percent slopes-----	4,610	0.7
BpA	Brill silt loam, 0 to 3 percent slopes-----	1,595	0.2
BuA	Burkhardt sandy loam, 0 to 3 percent slopes-----	9,380	1.4
Cb	Cable silt loam, 0 to 2 percent slopes-----	10,850	1.6
CdB	Campia silt loam, 2 to 6 percent slopes-----	1,380	0.2
CdC2	Campia silt loam, 6 to 12 percent slopes, eroded-----	905	0.1
CdD2	Campia silt loam, 12 to 20 percent slopes, eroded-----	370	0.1
CeA	Caryville sandy loam, 0 to 3 percent slopes-----	1,895	0.3
CkA	Chetek sandy loam, 0 to 2 percent slopes-----	4,160	0.6
CkB	Chetek sandy loam, 2 to 6 percent slopes-----	6,515	1.0
CkC2	Chetek sandy loam, 6 to 12 percent slopes, eroded-----	5,375	0.8
CkD2	Chetek-Mahtomedi complex, 12 to 25 percent slopes, eroded-----	7,485	1.1
CkE	Chetek-Mahtomedi complex, 25 to 40 percent slopes-----	2,360	0.4
Cm	Comstock silt loam, 0 to 2 percent slopes-----	6,210	0.9
CuA	Crystal Lake silt loam, 0 to 3 percent slopes-----	2,500	0.4
ElB	Eleva sandy loam, 2 to 6 percent slopes-----	3,480	0.5
ElC2	Eleva sandy loam, 6 to 12 percent slopes, eroded-----	4,815	0.7
ElD2	Eleva sandy loam, 12 to 20 percent slopes, eroded-----	1,025	0.2
EmB	Elkmound loam, 2 to 6 percent slopes-----	1,095	0.2
EmC2	Elkmound loam, 6 to 12 percent slopes, eroded-----	4,260	0.6
EmD2	Elkmound loam, 12 to 20 percent slopes, eroded-----	4,220	0.6
EmE	Elkmound loam, 20 to 45 percent slopes-----	4,040	0.6
Eo	Elm Lake loamy sand, 0 to 2 percent slopes-----	3,540	0.5
FaB	Fallcreek sandy loam, 2 to 6 percent slopes-----	8,295	1.2
FbB	Flambeau loam, 2 to 6 percent slopes-----	7,635	1.1
FbC2	Flambeau loam, 6 to 12 percent slopes, eroded-----	1,195	0.2
Fm	Fordum loam, 0 to 2 percent slopes-----	11,825	1.8
FnB	Freeon silt loam, 2 to 6 percent slopes-----	25,550	3.9
FnC2	Freeon silt loam, 6 to 12 percent slopes, eroded-----	4,650	0.7
FrA	Friendship loamy sand, 0 to 3 percent slopes-----	4,625	0.7
GaB	Gale silt loam, 2 to 6 percent slopes-----	965	0.1
GaC2	Gale silt loam, 6 to 12 percent slopes, eroded-----	3,455	0.5
GaD2	Gale silt loam, 12 to 20 percent slopes, eroded-----	2,135	0.3
Gr	Greenwood peat, 0 to 1 percent slopes-----	13,345	2.0
Ha	Halder loam, 0 to 2 percent slopes-----	3,335	0.5
HeB	Hiles silt loam, 2 to 6 percent slopes-----	1,280	0.2
HfB	Hiles Variant loam, 2 to 8 percent slopes-----	345	0.1
HnB	Hixton loam, 2 to 6 percent slopes-----	2,860	0.4
HnC2	Hixton loam, 6 to 12 percent slopes, eroded-----	1,455	0.2
HuB	Humbird sandy loam, 2 to 6 percent slopes-----	4,990	0.7
HuC2	Humbird sandy loam, 6 to 12 percent slopes, eroded-----	715	0.1

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS--Continued

Map symbol	Soil name	Acres	Percent
KeB	Kert silt loam, 1 to 6 percent slopes-----	5,050	0.8
La	Lows loam, 0 to 2 percent slopes-----	1,960	0.3
LoB	Loyal silt loam, 2 to 6 percent slopes-----	3,495	0.5
LoC2	Loyal silt loam, 6 to 12 percent slopes, eroded-----	1,615	0.2
Lp	Lupton muck, 0 to 1 percent slopes-----	17,360	2.6
MbB	Magnor silt loam, 1 to 6 percent slopes-----	26,470	4.1
McB	Magnor silt loam, 1 to 6 percent slopes, stony-----	785	0.1
MdB	Mahtomedi loamy sand, 2 to 6 percent slopes-----	3,470	0.5
MdC	Mahtomedi loamy sand, 6 to 12 percent slopes-----	2,330	0.3
Me	Markey muck, 0 to 1 percent slopes-----	6,360	1.0
Mh	Meehan loamy sand, 0 to 2 percent slopes-----	3,360	0.5
MkB	Menahga loamy sand, 0 to 6 percent slopes-----	28,020	4.2
MkC	Menahga loamy sand, 6 to 12 percent slopes-----	3,605	0.5
MlA	Meridian loam, 0 to 2 percent slopes-----	1,800	0.3
MLB	Meridian loam, 2 to 6 percent slopes-----	3,870	0.6
MmA	Meridian loam, moderately well drained, 0 to 3 percent slopes-----	2,080	0.3
MrB	Merrillan sandy loam, 1 to 6 percent slopes-----	6,395	1.0
Mu	Minocqua loam, 0 to 2 percent slopes-----	4,955	0.7
MvA	Moundville loamy sand, 0 to 3 percent slopes-----	1,290	0.2
Na	Newson loamy sand, 0 to 2 percent slopes-----	2,950	0.4
NtB	Northfield silt loam, 2 to 6 percent slopes-----	1,505	0.2
NtC2	Northfield silt loam, 6 to 12 percent slopes, eroded-----	1,950	0.3
NtD2	Northfield silt loam, 12 to 20 percent slopes, eroded-----	1,205	0.2
Oe	Oesterle sandy loam, 0 to 2 percent slopes-----	5,010	0.8
Or	Orion silt loam, 0 to 2 percent slopes-----	2,145	0.3
OsC2	Otterholt silt loam, 6 to 12 percent slopes, eroded-----	1,745	0.3
Pc	Pits, gravel-----	1,285	0.2
PdB	Plainbo loamy sand, 2 to 6 percent slopes-----	1,205	0.2
PdC	Plainbo loamy sand, 6 to 12 percent slopes-----	2,950	0.4
PdD	Plainbo loamy sand, 12 to 20 percent slopes-----	2,840	0.4
Pv	Plover silt loam, 0 to 2 percent slopes-----	1,690	0.3
Px	Poskin silt loam, 0 to 2 percent slopes-----	3,475	0.5
Rb	Rib silt loam, 0 to 2 percent slopes-----	3,335	0.5
Rc	Rib mucky silt loam, ponded, 0 to 2 percent slopes-----	1,325	0.2
RfA	Richford loamy sand, 0 to 3 percent slopes-----	1,080	0.2
RoA	Rosholt sandy loam, 0 to 2 percent slopes-----	5,135	0.8
RoB	Rosholt sandy loam, 2 to 6 percent slopes-----	5,590	0.8
RoC2	Rosholt sandy loam, 6 to 12 percent slopes, eroded-----	3,560	0.5
RpA	Rosholt loam, 0 to 2 percent slopes-----	2,155	0.3
RpB	Rosholt loam, 2 to 6 percent slopes-----	3,635	0.5
RpC2	Rosholt loam, 6 to 12 percent slopes, eroded-----	520	0.1
SaB	Santiago silt loam, 2 to 6 percent slopes-----	2,665	0.4
SaC2	Santiago silt loam, 6 to 12 percent slopes, eroded-----	7,520	1.1
SaD2	Santiago silt loam, 12 to 20 percent slopes, eroded-----	2,195	0.3
SbA	Sattre loam, 0 to 3 percent slopes-----	5,980	0.9
ScB	Scott Lake sandy loam, 1 to 6 percent slopes-----	4,030	0.6
SdA	Scott Lake loam, 0 to 3 percent slopes-----	3,055	0.5
SeB	Seaton silt loam, 2 to 6 percent slopes-----	3,400	0.5
SeC2	Seaton silt loam, 6 to 12 percent slopes, eroded-----	7,970	1.2
SeD2	Seaton silt loam, 12 to 25 percent slopes, eroded-----	2,630	0.4
SfA	Seaton silt loam, moderately well drained, 0 to 3 percent slopes-----	785	0.1
SgA	Seaton silt loam, sandy substratum, 0 to 2 percent slopes-----	1,250	0.2
SgB	Seaton silt loam, sandy substratum, 2 to 6 percent slopes-----	3,445	0.5
Sm	Seelyville muck, 0 to 1 percent slopes-----	6,555	1.0
So	Shiffer loam, 0 to 2 percent slopes-----	3,965	0.6
SrB	Spencer silt loam, 2 to 6 percent slopes-----	27,180	4.2
SrC2	Spencer silt loam, 6 to 12 percent slopes, eroded-----	3,645	0.5
SsA	Spencer silt loam, gravelly substratum, 0 to 2 percent slopes-----	430	0.1
SsB	Spencer silt loam, gravelly substratum, 2 to 6 percent slopes-----	2,090	0.3
TeB	Tell silt loam, 1 to 6 percent slopes-----	600	0.1
Ud	Udfluvents, loamy, nearly level-----	1,190	0.2
Ve	Vesper silt loam, 0 to 2 percent slopes-----	4,420	0.7
Wb	Warman Variant sandy loam, 0 to 2 percent slopes-----	685	0.1
WeB	Withee silt loam, 1 to 6 percent slopes-----	7,785	1.2
	Water-----	15,629	2.3
	Total-----	666,464	100.0

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
AfB	Alban fine sandy loam, 2 to 6 percent slopes
AgB	Almena silt loam, 1 to 6 percent slopes (where drained)
AlB	Amery sandy loam, 2 to 6 percent slopes
AnB	Antigo silt loam, 1 to 6 percent slopes
AoA	Arenzville silt loam, 0 to 3 percent slopes
ApB	Arland sandy loam, 2 to 6 percent slopes
AsB	Arland loam, 2 to 6 percent slopes
Ba	Barronett silt loam, 0 to 2 percent slopes (where drained)
BlA	Billett sandy loam, 0 to 2 percent slopes
BlB	Billett sandy loam, 2 to 6 percent slopes
BmA	Billett sandy loam, moderately well drained, 0 to 3 percent slopes
BpA	Brill silt loam, 0 to 3 percent slopes
CdB	Campia silt loam, 2 to 6 percent slopes
Cm	Comstock silt loam, 0 to 2 percent slopes (where drained)
CuA	Crystal Lake silt loam, 0 to 3 percent slopes
ElB	Eleva sandy loam, 2 to 6 percent slopes
FaB	Fallcreek sandy loam, 2 to 6 percent slopes
FbB	Flambeau loam, 2 to 6 percent slopes
FnB	Freeon silt loam, 2 to 6 percent slopes
GaB	Gale silt loam, 2 to 6 percent slopes
Ha	Halder loam, 0 to 2 percent slopes (where drained)
HeB	Hiles silt loam, 2 to 6 percent slopes
HnB	Hixton loam, 2 to 6 percent slopes
KeB	Kert silt loam, 1 to 6 percent slopes
La	Lows loam, 0 to 2 percent slopes (where drained)
LoB	Loyal silt loam, 2 to 6 percent slopes
MbB	Magnor silt loam, 1 to 6 percent slopes
MlA	Meridian loam, 0 to 2 percent slopes
MlB	Meridian loam, 2 to 6 percent slopes
MmA	Meridian loam, moderately well drained, 0 to 3 percent slopes
MrB	Merrillan sandy loam, 1 to 6 percent slopes
Oe	Oesterle sandy loam, 0 to 2 percent slopes (where drained)
Or	Orion silt loam, 0 to 2 percent slopes (where protected from flooding or not frequently flooded during the growing season)
Pv	Plover silt loam, 0 to 2 percent slopes (where drained)
Px	Poskin silt loam, 0 to 2 percent slopes (where drained)
Rb	Rib silt loam, 0 to 2 percent slopes (where drained)
RoA	Rosholt sandy loam, 0 to 2 percent slopes
RoB	Rosholt sandy loam, 2 to 6 percent slopes
RpA	Rosholt loam, 0 to 2 percent slopes
RpB	Rosholt loam, 2 to 6 percent slopes
SaB	Santiago silt loam, 2 to 6 percent slopes
SbA	Sattre loam, 0 to 3 percent slopes
ScB	Scott Lake sandy loam, 1 to 6 percent slopes
SdA	Scott Lake loam, 0 to 3 percent slopes
SeB	Seaton silt loam, 2 to 6 percent slopes
SfA	Seaton silt loam, moderately well drained, 0 to 3 percent slopes
SgA	Seaton silt loam, sandy substratum, 0 to 2 percent slopes
SgB	Seaton silt loam, sandy substratum, 2 to 6 percent slopes
So	Shiffer loam, 0 to 2 percent slopes (where drained)
SrB	Spencer silt loam, 2 to 6 percent slopes
SsA	Spencer silt loam, gravelly substratum, 0 to 2 percent slopes
SsB	Spencer silt loam, gravelly substratum, 2 to 6 percent slopes
TeB	Tell silt loam, 1 to 6 percent slopes
WeB	Withee silt loam, 1 to 6 percent slopes

TABLE 6.--LAND CAPABILITY CLASSES AND YIELDS PER ACRE OF CROPS AND PASTURE

(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)

Soil name and map symbol	Land capability	Corn	Corn silage	Oats	Brome-grass-alfalfa hay	Timothy-red clover hay	Kentucky bluegrass	Soybeans
		Bu	Tons	Bu	Tons	Tons	AUM*	Bu
AfB----- Alban	Iie	85	13	70	3.5	---	2.1	28
AfC----- Alban	IIIe	80	12	65	3.0	---	1.7	24
AgB----- Almena	Iie	85	13	75	---	4.5	3.5	30
AlB----- Amery	Iie	80	12	75	4.0	---	2.4	28
AlC----- Amery	IIIe	75	11	70	4.0	---	2.1	24
AlD----- Amery	IVe	70	10	60	3.5	---	1.7	---
AlF----- Amery	VIIe	---	---	---	---	---	1.0	---
AnB----- Antigo	Iie	90	14	80	4.3	---	3.5	32
AnC2----- Antigo	IIIe	80	13	70	4.0	---	3.0	28
AoA----- Arenzville	IIw	115	19	80	5.0	---	4.7	38
ApB----- Arland	Iie	80	12	70	4.0	---	2.5	28
ApC2----- Arland	IIIe	70	10	60	3.5	---	2.1	24
ApD2----- Arland	IVe	60	9	50	2.7	---	1.6	---
AsB----- Arland	Iie	90	13	75	4.0	---	2.5	32
AsC2----- Arland	IIIe	80	12	70	3.5	---	2.1	28
AsD2----- Arland	IVe	70	11	60	2.7	---	1.6	---
Au----- Auburndale	VIw	---	---	---	---	---	---	---
Ba----- Barronett	IIIw	80	13	70	---	3.5	2.6	28
Bb----- Barronett	VIw	---	---	---	---	---	---	---

See footnotes at end of table.

TABLE 6.--LAND CAPABILITY CLASSES AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability	Corn	Corn silage	Oats	Bromegrass- alfalfa hay	Timothy- red clover hay	Kentucky bluegrass	Soybeans
		<u>Bu</u>	<u>Tons</u>	<u>Bu</u>	<u>Tons</u>	<u>Tons</u>	<u>AUM*</u>	<u>Bu</u>
Be----- Beseman	VIIw	---	---	---	---	---	---	---
B1A, B1B----- Billett	IIIs	75	11	60	3.5	---	2.1	28
B1C2----- Billett	IIIe	70	10	55	3.0	---	2.0	24
BmA----- Billett	IIIs	80	12	65	3.5	---	2.1	28
BoE----- Boone	VIIIs	---	---	---	---	---	1.0	---
BpA----- Brill	IIs	90	14	80	4.3	---	3.6	30
BuA----- Burkhardt	IIIs	70	11	60	3.0	---	1.8	26
Cb----- Cable	VIw	---	---	---	---	---	1.6	---
CdB----- Campia	IIe	95	15	80	5.0	---	4.0	32
CdC2----- Campia	IIIe	85	13	65	4.3	---	3.7	26
CdD2----- Campia	IVe	75	11	60	4.0	---	3.6	---
CeA----- Caryville	IIIw	65	10	60	3.0	---	1.8	26
CkA----- Chetek	IIIs	70	11	60	3.2	---	2.0	28
CkB----- Chetek	IIIe	70	11	60	3.0	---	1.8	26
CkC2----- Chetek	IVe	62	10	55	2.3	---	1.2	20
CkD2----- Chetek- Mahtomedi	VIe	---	---	45	2.0	---	0.9	---
CkE----- Chetek- Mahtomedi	VIIe	---	---	---	---	---	0.8	---
Cm----- Comstock	IIw	85	13	75	---	4.5	3.7	30
CuA----- Crystal Lake	I	110	18	80	5.0	---	4.0	32
E1B----- Eleva	IIIs	75	12	65	4.0	---	2.6	28

See footnotes at end of table.

TABLE 6.--LAND CAPABILITY CLASSES AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability	Corn	Corn silage	Oats	Bromegrass- alfalfa hay	Timothy- red clover hay	Kentucky bluegrass	Soybeans
		<u>Bu</u>	<u>Tons</u>	<u>Bu</u>	<u>Tons</u>	<u>Tons</u>	<u>AUM*</u>	<u>Bu</u>
ElC2----- Eleva	IIIe	70	11	60	3.5	---	2.4	27
ElD2----- Eleva	IVe	60	10	55	3.0	---	2.0	---
EmB----- Elkmound	IIIe	60	10	55	3.0	---	1.8	22
EmC2----- Elkmound	IVe	50	8	50	2.5	---	1.4	22
EmD2----- Elkmound	VIe	---	---	50	2.5	---	1.0	---
EmE----- Elkmound	VIIe	---	---	---	---	---	---	---
Eo----- Elm Lake	VIw	---	---	---	---	---	0.7	---
FaB----- Fallcreek	IIe	75	12	65	4.0	3.5	3.3	27
FbB----- Flambeau	IIe	80	13	70	4.0	---	3.5	28
FbC2----- Flambeau	IIIe	75	12	65	4.0	---	3.0	26
Fm----- Fordum	VIw	---	---	---	---	---	3.0	---
FnB----- Freeon	IIe	80	12	80	4.3	---	3.3	28
FnC2----- Freeon	IIIe	75	11	66	4.0	---	2.6	21
FrA----- Friendship	IVs	50	8	55	2.5	---	1.3	22
GaB----- Gale	IIe	90	14	75	4.5	---	3.3	32
GaC2----- Gale	IIIe	85	13	65	4.3	---	2.8	26
GaD2----- Gale	IVe	70	11	55	3.8	---	2.4	---
Gr----- Greenwood	VIIw	---	---	---	---	---	---	---
Ha----- Halder	IIw	80	12	70	---	4.0	3.3	28
HeB----- Hiles	IIe	80	12	70	4.0	---	2.5	26

See footnotes at end of table.

TABLE 6.--LAND CAPABILITY CLASSES AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability	Corn	Corn silage	Oats	Bromegrass- alfalfa hay	Timothy- red clover hay	Kentucky bluegrass	Soybeans
		<u>Bu</u>	<u>Tons</u>	<u>Bu</u>	<u>Tons</u>	<u>Tons</u>	<u>AUM*</u>	<u>Bu</u>
HfB----- Hiles Variant	IIE	80	13	70	4.0	---	3.0	25
HnB----- Hixton	IIE	90	13	75	4.0	---	3.0	28
HnC2----- Hixton	IIIe	80	12	70	4.0	---	2.8	22
HuB----- Humbird	IIIe	60	10	60	3.5	---	2.0	23
HuC2----- Humbird	IVe	45	7	45	2.9	---	2.0	20
KeB----- Kert	IIE	75	12	65	---	4.0	3.3	26
La----- Lows	IIw	75	11	65	---	3.0	2.5	28
LoB----- Loyal	IIE	90	14	75	4.5	---	3.5	30
LoC2----- Loyal	IIIe	85	13	70	4.2	---	3.2	26
Lp----- Lupton	VIw	---	---	---	---	---	---	---
MbB----- Magnor	IIE	80	12	75	---	4.5	3.2	28
McB----- Magnor	VI s	---	---	---	---	---	3.0	---
MdB, MdC----- Mahtomedi	IV s	50	7	40	2.1	---	1.2	18
Me----- Markey	VIw	---	---	---	---	---	---	---
Mh----- Meehan	IVw	50	8	50	---	2.5	1.3	20
MkB, MkC----- Menahga	IV s	45	7	40	2.2	---	1.0	18
M1A----- Meridian	II s	90	15	70	4.0	---	3.0	32
M1B----- Meridian	IIE	85	13	70	4.0	---	2.8	30
MmA----- Meridian	II s	90	15	70	4.0	---	3.0	32
MrB----- Merrillan	IIIe	65	11	60	---	3.2	1.8	24

See footnotes at end of table.

TABLE 6.--LAND CAPABILITY CLASSES AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability	Corn	Corn silage	Oats	Brome-grass- alfalfa hay	Timothy- red clover hay	Kentucky bluegrass	Soybeans
		<u>Bu</u>	<u>Tons</u>	<u>Bu</u>	<u>Tons</u>	<u>Tons</u>	<u>AUM*</u>	<u>Bu</u>
Mu----- Minocqua	VIw	---	---	---	---	---	2.5	---
MvA----- Moundville	IVs	55	9	60	2.5	---	1.5	24
Na----- Newson	VIw	---	---	---	---	---	1.0	---
NtB----- Northfield	IIIe	65	11	60	3.0	---	1.8	25
NtC2----- Northfield	IVe	55	8	52	2.7	---	1.2	---
NtD2----- Northfield	VIe	---	---	50	2.5	---	1.0	---
Oe----- Oesterle	IIw	70	11	65	---	3.3	2.5	24
Or----- Orion	IIIw	80	12	60	---	3.2	3.4	26
OsC2----- Otterholt	IIIe	85	13	80	4.5	---	3.8	28
Pc**. Pits								
PdB----- Plainbo	IVs	45	7	40	2.2	---	1.2	18
PdC----- Plainbo	VIs	45	7	40	2.2	---	1.1	16
PdD----- Plainbo	VIIIs	---	---	---	---	---	0.7	---
Pv----- Plover	IIw	80	12	70	---	3.5	3.0	28
Px----- Poskin	IIw	85	13	80	---	4.0	3.5	30
Rb----- Rib	IIw	85	13	75	---	3.0	3.5	28
Rc----- Rib	VIw	---	---	---	---	---	---	---
RfA----- Richford	IIIIs	55	9	55	3.0	---	1.7	22
RoA----- Rosholt	IIIs	75	12	70	3.5	---	2.7	30
RoB----- Rosholt	IIe	75	12	70	3.5	---	2.5	28

See footnotes at end of table.

TABLE 6.--LAND CAPABILITY CLASSES AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability	Corn	Corn silage	Oats	Bromegrass- alfalfa hay	Timothy- red clover hay	Kentucky bluegrass	Soybeans
		<u>Bu</u>	<u>Tons</u>	<u>Bu</u>	<u>Tons</u>	<u>Tons</u>	<u>AUM*</u>	<u>Bu</u>
RoC2----- Rosholt	IIIe	62	11	55	3.2	---	2.0	24
RpA----- Rosholt	IIs	85	13	75	4.0	---	3.0	32
RpB----- Rosholt	IIe	80	12	70	4.0	---	3.0	30
RpC2----- Rosholt	IIIe	75	11	60	3.5	---	2.8	26
SaB----- Santiago	IIe	85	13	80	4.5	---	4.0	30
SaC2----- Santiago	IIIe	80	12	75	4.0	---	3.7	24
SaD2----- Santiago	IVe	70	10	60	3.5	---	3.3	---
SbA----- Sattre	IIs	85	13	74	4.0	---	3.7	32
ScB----- Scott Lake	IIe	75	11	70	3.5	---	3.0	26
SdA----- Scott Lake	IIs	80	12	75	4.0	---	3.5	28
SeB----- Seaton	IIe	115	19	80	5.0	---	4.1	35
SeC2----- Seaton	IIIe	110	18	75	4.5	---	4.0	33
SeD2----- Seaton	IVe	100	16	65	4.2	---	3.7	29
SfA, SgA----- Seaton	I	120	20	80	5.0	---	4.5	35
SgB----- Seaton	IIe	110	18	75	5.0	---	4.5	35
Sm----- Seelyeville	VIw	---	---	---	---	---	---	---
So----- Shiffer	IIw	80	12	75	---	4.0	3.3	28
SrB----- Spencer	IIe	85	13	75	4.5	---	4.0	30
SrC2----- Spencer	IIIe	73	9	68	4.2	---	3.4	26
SsA----- Spencer	I	100	18	85	4.5	---	4.3	32

See footnotes at end of table.

TABLE 6.--LAND CAPABILITY CLASSES AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability	Corn	Corn silage	Oats	Bromegrass- alfalfa hay	Timothy- red clover hay	Kentucky bluegrass	Soybeans
		<u>Bu</u>	<u>Tons</u>	<u>Bu</u>	<u>Tons</u>	<u>Tons</u>	<u>AUM*</u>	<u>Bu</u>
SsB----- Spencer	IIe	90	15	80	4.5	---	4.0	30
TeB----- Tell	IIe	90	15	75	4.5	---	3.6	30
Ud----- Udifluvents	VI s	---	---	---	---	---	---	---
Ve----- Vesper	VI w	---	---	---	---	---	2.0	---
Wb----- Warman Variant	III w	70	11	60	3.5	---	3.0	26
WeB----- Withee	IIe	85	13	75	---	4.5	3.7	28

* Animal-unit-month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

** See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 7.--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	Wind-throw hazard	Common trees	Site index	Volume*	
AfB, AfC----- Alban	3A	Slight	Slight	Slight	Slight	Sugar maple----- American basswood--- Yellow birch-----	60 --- ---	38 --- ---	Red pine, eastern white pine, white spruce.
AgB----- Almena	3W	Slight	Moderate	Slight	Moderate	Sugar maple----- American basswood--- Red maple----- Quaking aspen-----	64 68 63 ---	40 63 39 ---	White spruce, red pine, eastern white pine, red maple, black spruce.
AlB----- Amery	4A	Slight	Slight	Slight	Slight	Northern red oak--- Red maple----- White oak----- White ash----- American basswood--- Sugar maple----- Quaking aspen-----	65 --- --- --- --- --- ---	59 --- --- --- --- --- ---	Red pine, eastern white pine, white spruce, jack pine.
AlC----- Amery	4A	Slight	Slight	Slight	Slight	Northern red oak--- Quaking aspen----- White oak----- White ash----- American basswood--- Red maple----- Sugar maple-----	64 --- --- --- --- --- ---	57 --- --- --- --- --- ---	Red pine, eastern white pine, white spruce, jack pine.
AlD, AlF----- Amery	4R	Moderate	Moderate	Slight	Slight	Northern red oak--- Quaking aspen----- White oak----- White ash----- American basswood--- Red maple----- Sugar maple-----	64 --- --- --- --- --- ---	57 --- --- --- --- --- ---	Red pine, eastern white pine, white spruce, jack pine.
AnB, AnC2----- Antigo	3A	Slight	Slight	Slight	Slight	Sugar maple----- American basswood--- Northern red oak--- Eastern white pine-- Yellow birch----- White ash----- Bigtooth aspen----- Quaking aspen-----	66 69 --- --- 71 74 --- ---	41 64 --- --- 44 72 --- ---	Eastern white pine, red pine, white spruce.
AoA----- Arenzville	4A	Slight	Slight	Slight	Slight	Northern red oak--- Bur oak----- Silver maple-----	65 --- ---	59 --- ---	Red pine, eastern white pine, white spruce, northern red oak, black walnut.

See footnotes at end of table.

TABLE 7.--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	Wind-throw hazard	Common trees	Site index	Volume*	
ApB, ApC2----- Arland	4A	Slight	Slight	Slight	Slight	Northern red oak----	65	59	Red pine, eastern white pine, white spruce.
						White oak-----	---	---	
						Red maple-----	---	---	
ApD2----- Arland	4R	Moderate	Moderate	Slight	Slight	Northern red oak----	65	59	Red pine, eastern white pine, white spruce.
						White oak-----	---	---	
						Red maple-----	---	---	
AsB, AsC2----- Arland	4A	Slight	Slight	Slight	Slight	Northern red oak----	65	59	Red pine, eastern white pine, white spruce.
						White oak-----	---	---	
						Red maple-----	---	---	
AsD2----- Arland	4R	Moderate	Moderate	Slight	Slight	Northern red oak----	65	59	Red pine, eastern white pine, white spruce.
						White oak-----	---	---	
						Red maple-----	---	---	
Au----- Auburndale	2W	Slight	Severe	Moderate	Moderate	Red maple-----	55	35	White spruce, black spruce, cottonwood.
						American basswood---	---	---	
						American elm-----	---	---	
						Balsam fir-----	54	105	
Ba, Eb----- Barronett	2W	Slight	Severe	Severe	Severe	Black ash-----	45	30	White spruce, black spruce.
						Tamarack-----	40	27	
						Quaking aspen-----	---	---	
						Black spruce-----	---	---	
Be----- Beseman	2W	Slight	Severe	Severe	Slight	Tamarack-----	34	22	Black spruce.
						Black spruce-----	23	32	
BlA, BlB, BlC2-- Billett	4A	Slight	Slight	Slight	Slight	Northern red oak----	60	51	Red pine, eastern white pine, white spruce, Norway spruce.
						Black oak-----	---	---	
						White oak-----	---	---	
						Shagbark hickory-----	---	---	
BmA----- Billett	4A	Slight	Slight	Slight	Slight	Northern red oak----	60	51	Red pine, eastern white pine, white spruce, Norway spruce.
						White oak-----	---	---	
						Black oak-----	---	---	
						Northern pin oak-----	---	---	
BoE----- Boone	2R	Moderate	Severe	Severe	Slight	Black oak-----	44	29	Red pine, jack pine.
						Northern red oak----	---	---	
						Jack pine-----	49	65	
BpA----- Brill	3A	Slight	Slight	Slight	Slight	Sugar maple-----	62	39	White spruce, eastern white pine, red pine.
						Yellow birch-----	71	44	
						American basswood---	69	64	
						White ash-----	74	72	
						Northern red oak----	---	---	
						Eastern white pine---	---	---	
Bigtooth aspen-----	---	---							

See footnotes at end of table.

TABLE 7.--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	Wind-throw hazard	Common trees	Site index	Volume*	
BuA----- Burkhardt	2A	Slight	Slight	Slight	Slight	Northern pin oak---- Black oak----- Jack pine-----	52 --- ---	36 --- ---	Eastern white pine, red pine, jack pine, Norway spruce.
Cb----- Cable	2W	Slight	Severe	Severe	Severe	Red maple----- Black ash----- White ash----- Balsam fir----- Black spruce----- Quaking aspen----- White spruce-----	56 48 --- --- --- --- ---	36 31 --- --- --- --- ---	White spruce, red maple, balsam fir, black spruce.
CdB, CdC2----- Campia	3A	Slight	Slight	Slight	Slight	Sugar maple----- Northern red oak---- White ash----- American basswood---	62 65 --- 71	39 59 --- 67	Eastern white pine, red pine, white spruce.
CdD2----- Campia	3R	Moderate	Moderate	Slight	Slight	Sugar maple----- Northern red oak---- White ash----- American basswood---	62 65 --- 71	39 59 --- 67	Eastern white pine, red pine, white spruce.
CeA----- Caryville	3A	Slight	Slight	Slight	Slight	Northern red oak---- White oak----- Red maple-----	55 --- ---	42 --- ---	Eastern white pine, white ash, silver maple.
CkA, CkB, CkC2-- Chetek	6S	Slight	Slight	Moderate	Slight	Jack pine----- Northern pin oak---- Black oak----- Eastern white pine--	57 53 --- ---	80 36 --- ---	Red pine, jack pine, eastern white pine.
CkD2**, CkE**: Chetek	6R	Moderate	Moderate	Moderate	Slight	Jack pine----- Northern pin oak---- Black oak----- Eastern white pine--	57 53 --- ---	80 36 --- ---	Red pine, jack pine, eastern white pine.
Mahtomedi-----	6R	Moderate	Moderate	Moderate	Slight	Red pine----- White spruce----- Jack pine----- Eastern white pine--	55 55 60 50	88 107 85 90	Red pine, jack pine, eastern white pine, white spruce.
Cm----- Comstock	3W	Slight	Moderate	Slight	Moderate	Sugar maple----- Red maple----- Balsam fir----- Quaking aspen----- White ash----- Paper birch-----	61 65 --- --- --- ---	38 40 --- --- --- ---	Eastern white pine, white spruce, red pine.
CuA----- Crystal Lake	3A	Slight	Slight	Slight	Slight	Sugar maple----- American basswood--- Yellow birch----- Quaking aspen----- Bigtooth aspen----- American elm----- White ash-----	61 69 --- --- --- --- 71	38 64 --- --- --- --- 67	Eastern white pine, red pine, white spruce.

See footnotes at end of table.

TABLE 7.--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	Wind-throw hazard	Common trees	Site index	Volume*	
E1B, E1C2----- Eleva	2A	Slight	Slight	Slight	Slight	Black oak----- Jack pine----- Northern pin oak----- Northern red oak-----	45 --- --- ---	30 --- --- ---	Jack pine, red pine.
E1D2----- Eleva	2R	Moderate	Moderate	Slight	Slight	Black oak----- Jack pine----- Northern pin oak----- Northern red oak-----	45 --- --- ---	30 --- --- ---	Jack pine, red pine.
EmB, EmC2----- Elkmound	2D	Slight	Slight	Moderate	Moderate	Northern red oak----- Black oak----- White oak----- Northern pin oak----- Quaking aspen-----	46 --- --- --- ---	29 --- --- --- ---	Red pine, jack pine, eastern redcedar.
EmD2----- Elkmound	2R	Severe	Moderate	Severe	Moderate	Northern red oak----- Black oak----- White oak----- Northern pin oak----- Quaking aspen-----	46 --- --- --- ---	29 --- --- --- ---	Red pine, jack pine, eastern redcedar.
EmE----- Elkmound	2R	Severe	Severe	Severe	Moderate	Northern red oak----- Black oak----- White oak----- Northern pin oak----- Quaking aspen-----	46 --- --- --- ---	29 --- --- --- ---	Red pine, jack pine, eastern redcedar.
Eo----- Elm Lake	3W	Slight	Severe	Severe	Moderate	Red maple----- White ash----- Bur oak-----	60 --- ---	38 --- ---	White spruce, red maple, white ash.
FaB----- Fallcreek	4W	Slight	Moderate	Slight	Moderate	Northern red oak----- Sugar maple----- White ash----- American basswood----- Red maple-----	68 --- --- --- ---	63 --- --- --- ---	Red pine, white spruce, eastern white pine.
FbB, FbC2----- Flambeau	4A	Slight	Slight	Slight	Slight	Northern red oak----- Northern pin oak----- White oak----- White ash----- American basswood----- Bur oak-----	65 --- --- --- --- ---	59 --- --- --- --- ---	Red pine, eastern white pine, white spruce, jack pine.
Fm----- Fordum	2W	Slight	Severe	Severe	Severe	Silver maple----- Red maple----- White ash----- Northern white-cedar----- Tamarack----- Black spruce----- Balsam fir----- White spruce-----	80 --- --- --- --- --- --- ---	34 --- --- --- --- --- --- ---	Silver maple, red maple, white ash.
FnB, FnC2----- Freeon	4A	Slight	Slight	Slight	Slight	Northern red oak----- American basswood----- Red maple----- White oak----- Sugar maple----- Quaking aspen----- Bigtooth aspen----- White ash-----	63 --- --- --- 62 --- --- ---	56 --- --- --- 39 --- --- ---	Red pine, eastern white pine, white spruce.

See footnotes at end of table.

TABLE 7.--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	Wind-throw hazard	Common trees	Site index	Volume*	
FrA----- Friendship	6S	Slight	Slight	Moderate	Slight	Jack pine-----	56	78	Red pine, eastern white pine, jack pine.
						Red pine-----	52	80	
						Eastern white pine--	---	---	
						Northern pin oak----	---	---	
GaB, GaC2----- Gale	5A	Slight	Slight	Slight	Slight	Northern red oak----	74	72	Red pine, eastern white pine, white spruce.
						Sugar maple-----	---	---	
						White oak-----	---	---	
GaD2----- Gale	5R	Moderate	Moderate	Slight	Slight	Northern red oak----	74	72	Red pine, eastern white pine, white spruce.
						Sugar maple-----	---	---	
						White oak-----	---	---	
Gr----- Greenwood	3W	Slight	Severe	Severe	Severe	Tamarack-----	53	47	
						Black spruce-----	15	23	
						Balsam fir-----	39	69	
						Red maple-----	---	---	
Ha----- Halder	4W	Slight	Moderate	Slight	Moderate	White ash-----	65	59	White ash, silver maple, white spruce.
						Red maple-----	---	---	
						Northern red oak----	---	---	
HeB----- Hiles	4A	Slight	Slight	Slight	Slight	Northern red oak----	65	59	Red pine, eastern white pine, white spruce.
						Black oak-----	---	---	
						White oak-----	---	---	
HfB----- Hiles Variant	4C	Slight	Slight	Moderate	Moderate	Northern red oak----	65	59	Red pine, eastern white pine, white spruce.
						American basswood----	---	---	
						White ash-----	---	---	
HnB, HnC2----- Hixton	4A	Slight	Slight	Slight	Slight	Northern red oak----	65	59	Northern white- cedar, red pine, white spruce.
						White oak-----	---	---	
						Black oak-----	---	---	
						Quaking aspen-----	78	91	
HuB, HuC2----- Humbird	4A	Slight	Slight	Slight	Slight	Northern red oak----	65	59	Red pine, eastern white pine, white spruce, red maple.
						Northern pin oak----	55	38	
						Red maple-----	---	---	
						Quaking aspen-----	---	---	
						Jack pine-----	63	91	
KeB----- Kert	4W	Slight	Moderate	Slight	Moderate	Northern red oak----	65	59	White spruce, eastern white pine, red pine.
						Sugar maple-----	---	---	
						Swamp white oak----	---	---	
						Red maple-----	---	---	
La----- Lows	2W	Slight	Severe	Moderate	Moderate	Silver maple-----	80	34	Silver maple, red maple, green ash, white ash, white spruce.
						White ash-----	---	---	
						Green ash-----	---	---	
						Red maple-----	---	---	
LoB, LoC2----- Loyal	3A	Slight	Slight	Slight	Slight	Sugar maple-----	60	38	Red pine, eastern white pine, white spruce.
						Northern red oak----	---	---	
						American basswood----	---	---	
						White ash-----	---	---	

See footnotes at end of table.

TABLE 7.--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	Wind-throw hazard	Common trees	Site index	Volume*	
Lp----- Lupton	3W	Slight	Severe	Severe	Severe	Northern white-cedar	33	48	
						Black spruce-----	20	29	
						Balsam fir-----	46	86	
						Black ash-----	---	---	
						Paper birch-----	---	---	
						Tamarack-----	---	---	
						Red maple-----	---	---	
						Quaking aspen-----	---	---	
White spruce-----	---	---							
MbB----- Magnor	3W	Slight	Moderate	Slight	Moderate	Sugar maple-----	61	38	Eastern white pine, white spruce, red pine.
						Northern red oak---	67	61	
						Red maple-----	65	40	
						American basswood---	67	61	
						Yellow birch-----	---	---	
						White ash-----	68	63	
						Quaking aspen-----	---	---	
						Bigtooth aspen-----	---	---	
McB----- Magnor	3X	Slight	Moderate	Slight	Moderate	Sugar maple-----	61	38	Eastern white pine, white spruce, red pine.
						Northern red oak---	67	61	
						Red maple-----	65	40	
						American basswood---	67	61	
						Yellow birch-----	65	40	
						White ash-----	68	63	
						Quaking aspen-----	---	---	
						Bigtooth aspen-----	---	---	
MdB, MdC----- Mahtomedi	6S	Slight	Moderate	Moderate	Slight	Red pine-----	55	88	Red pine, jack pine, eastern white pine, white spruce.
						White spruce-----	55	107	
						Jack pine-----	60	85	
						Eastern white pine--	50	90	
Me----- Markey	4W	Slight	Severe	Severe	Severe	Northern white-cedar	41	61	
						Quaking aspen-----	45	32	
						Balsam fir-----	---	---	
						Black spruce-----	---	---	
						Tamarack-----	---	---	
						Black ash-----	---	---	
						Paper birch-----	---	---	
						Red maple-----	---	---	
White spruce-----	---	---							
Mh----- Meehan	5W	Slight	Moderate	Moderate	Moderate	Jack pine-----	55	77	Eastern white pine, jack pine, white spruce, balsam fir, red pine, red maple.
						Northern pin oak---	60	43	
						Red pine-----	50	75	
						Paper birch-----	---	---	
						Eastern white pine--	50	90	
						Quaking aspen-----	---	---	
						Balsam fir-----	---	---	
						White spruce-----	---	---	
Black spruce-----	---	---							
MkB, MkC----- Menahga	6S	Slight	Moderate	Moderate	Slight	Jack pine-----	59	84	Red pine, white spruce, eastern white pine, jack pine.
						Red pine-----	60	101	
						Eastern white pine--	55	106	
						Quaking aspen-----	65	73	
						Paper birch-----	60	65	
M1A, M1B, MmA--- Meridian	4A	Slight	Slight	Slight	Slight	Northern red oak---	68	63	Red pine, eastern white pine, white spruce.
						Sugar maple-----	---	---	
						American basswood---	---	---	
						White ash-----	---	---	
						White oak-----	---	---	

See footnotes at end of table.

TABLE 7.--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	Wind-throw hazard	Common trees	Site index	Volume*	
MrB----- Merrillan	4W	Slight	Moderate	Slight	Moderate	Northern red oak---- Northern pin oak---- Red maple----- Quaking aspen-----	60 --- --- ---	51 --- --- ---	Red pine, eastern white pine, white spruce, red maple.
Mu----- Minocqua	7W	Slight	Severe	Severe	Severe	Balsam fir----- Red maple----- White ash----- Black ash----- Tamarack----- Northern white-cedar Quaking aspen-----	54 55 --- --- 55 --- ---	105 35 --- --- 50 --- ---	Red maple, white ash, white spruce, black spruce.
MvA----- Moundville	6S	Slight	Slight	Moderate	Slight	Red pine----- Jack pine----- Northern pin oak----	53 --- ---	82 --- ---	Red pine, jack pine.
Na----- Newson	6W	Slight	Severe	Severe	Slight	Jack pine----- Quaking aspen----- Paper birch----- Eastern white pine--	59 50 --- ---	84 43 --- ---	Eastern white pine, white spruce.
NtB, NtC2----- Northfield	3D	Slight	Slight	Moderate	Moderate	Northern red oak---- Northern pin oak---- Black oak----- White oak----- Red maple----- Quaking aspen----- Paper birch-----	53 --- --- --- --- --- ---	39 --- --- --- --- --- ---	Red pine, jack pine, eastern redcedar.
NtD2----- Northfield	3R	Moderate	Moderate	Moderate	Moderate	Northern red oak---- Northern pin oak---- Black oak----- White oak----- Red maple----- Quaking aspen----- Paper birch-----	53 --- --- --- --- --- ---	39 --- --- --- --- --- ---	Red pine, jack pine, eastern redcedar.
Oe----- Oesterle	3W	Slight	Moderate	Slight	Moderate	Red maple----- Northern red oak---- Quaking aspen----- Balsam fir----- Paper birch----- Yellow birch-----	66 72 78 --- --- ---	41 69 91 --- --- ---	Red maple, white ash, white spruce.
Or----- Orion	2W	Slight	Moderate	Slight	Slight	Silver maple----- Red maple----- White ash-----	80 --- ---	34 --- ---	White spruce, silver maple, white ash, eastern cottonwood.
OsC2----- Otterholt	5A	Slight	Slight	Slight	Slight	Northern red oak---- Sugar maple----- American basswood---	72 --- ---	69 --- ---	Eastern white pine, red pine, white spruce.
PdB, PdC----- Plainbo	5S	Slight	Moderate	Moderate	Slight	Jack pine----- Northern pin oak---- Black oak-----	55 47 ---	77 32 ---	Jack pine, eastern white pine.
PdD----- Plainbo	5R	Moderate	Moderate	Moderate	Slight	Jack pine----- Northern pin oak---- Black oak-----	55 47 ---	77 32 ---	Jack pine, eastern white pine.

See footnotes at end of table.

TABLE 7.--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	Wind-throw hazard	Common trees	Site index	Volume*	
Pv----- Plover	3W	Slight	Moderate	Slight	Moderate	Red maple----- American basswood--- American elm----- Yellow birch-----	65 --- --- ---	40 --- --- ---	Eastern white pine, white spruce, black spruce.
Px----- Poskin	3W	Slight	Moderate	Slight	Moderate	Red maple----- White ash----- Eastern hemlock----	65 --- ---	40 --- ---	White spruce, red maple, white ash, black spruce.
Rb, Rc----- Rib	2W	Slight	Severe	Severe	Severe	Red maple----- Black ash-----	55 ---	35 ---	Red maple, white spruce.
RfA----- Richford	4S	Slight	Slight	Moderate	Slight	Northern red oak--- Red pine----- Eastern white pine--	61 49 61	53 73 124	Eastern white pine, red pine, jack pine, eastern redcedar.
RoA, RoB, RoC2, RpA, RpB, RpC2- Rosholt	3A	Slight	Slight	Slight	Slight	Sugar maple----- White ash----- American basswood--- Northern red oak----	65 77 --- 69	40 76 --- 64	Red pine, eastern white pine.
SaB, SaC2----- Santiago	4A	Slight	Slight	Slight	Slight	Northern red oak--- Sugar maple----- American basswood--- White ash----- Red maple----- Red pine----- Quaking aspen-----	64 61 --- --- --- --- ---	57 38 --- --- --- --- ---	Red pine, eastern white pine, white spruce.
SaD2----- Santiago	4R	Moderate	Moderate	Slight	Slight	Northern red oak--- Sugar maple----- American basswood--- White ash----- Red maple----- Red pine----- Quaking aspen-----	64 61 --- --- --- --- ---	57 38 --- --- --- --- ---	Red pine, eastern white pine, white spruce.
SbA----- Sattre	4A	Slight	Slight	Slight	Slight	Northern red oak--- White oak-----	65 65	59 59	Eastern white pine, red pine, black walnut, sugar maple.
ScB, SdA----- Scott Lake	4A	Slight	Slight	Slight	Slight	Northern red oak--- Sugar maple----- Yellow birch----- American basswood--- Red maple----- Quaking aspen----- Bigtooth aspen----- White ash-----	65 61 --- --- --- --- --- ---	59 38 --- --- --- --- --- ---	Eastern white pine, red pine, white spruce, black spruce.
SeB, SeC2----- Seaton	5A	Slight	Slight	Slight	Slight	Northern red oak--- Sugar maple----- American basswood---	70 --- ---	66 --- ---	Red pine, white spruce, northern white-cedar.

See footnotes at end of table.

TABLE 7.--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	Wind-throw hazard	Common trees	Site index	Volume*	
SeD2----- Seaton	5R	Moderate	Moderate	Slight	Slight	Northern red oak---- Sugar maple----- American basswood---	70 --- ---	66 --- ---	Red pine, white spruce, northern white-cedar.
SfA, SgA, SgB--- Seaton	5A	Slight	Slight	Slight	Slight	Northern red oak---- Red maple----- Black cherry----- White oak----- American basswood--- White ash-----	70 --- --- --- --- ---	66 --- --- --- --- ---	Red pine, white spruce, eastern white pine.
Sm----- Seelyville	8W	Slight	Severe	Severe	Severe	Balsam fir----- Tamarack----- Northern white-cedar	57 --- 33	111 --- 48	
So----- Shiffer	2A	Slight	Slight	Slight	Slight	Silver maple----- Green ash----- Red maple----- Northern red oak----	80 --- --- ---	34 --- --- ---	Silver maple, red maple, white ash, green ash, white spruce.
SrB, SrC2----- Spencer	3A	Slight	Slight	Slight	Slight	Sugar maple----- Northern red oak---- American basswood---	63 70 67	39 66 61	Eastern white pine, red pine, white spruce.
SsA, SsB----- Spencer	3A	Slight	Slight	Slight	Slight	Sugar maple----- Northern red oak---- American basswood---	63 70 ---	39 66 ---	Eastern white pine, red pine, white spruce.
TeB----- Tell	4A	Slight	Slight	Slight	Slight	Northern red oak---- Sugar maple----- White oak-----	65 --- ---	59 --- ---	Red pine, eastern white pine, white spruce.
Ve----- Vesper	1W	Slight	Severe	Severe	Severe	White ash----- Red maple----- Quaking aspen-----	39 --- ---	24 --- ---	
Wb----- Warman Variant	2W	Slight	Moderate	Slight	Slight	Red maple----- White ash-----	45 ---	30 ---	White spruce, eastern white pine, red maple, white ash.
WeB----- Withee	4W	Slight	Moderate	Slight	Moderate	Northern red oak---- Sugar maple----- American basswood--- Yellow birch----- White ash----- Red maple-----	69 64 --- --- 69 ---	64 40 --- --- 64 ---	White spruce, eastern white pine, white spruce, red pine, white ash, red maple.

* Volume is the yield in cubic feet per acre per year calculated at the age of culmination of mean annual increment for fully stocked natural stands.

** See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 8.--WINDBREAKS AND ENVIRONMENTAL PLANTINGS

(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	8-15	16-25	26-35	>35
AfB----- Alban	---	Northern white-cedar, lilac, American cranberrybush, Amur maple, gray dogwood.	White spruce, Norway spruce, Black Hills spruce.	Eastern white pine, red maple, red pine, white ash.	---
AfC----- Alban	---	Lilac, Amur maple, American cranberrybush, northern white-cedar, gray dogwood.	White spruce, Norway spruce, Black Hills spruce.	Eastern white pine, red pine, white ash, red maple.	---
AgB----- Almena	---	Nannyberry viburnum, redosier dogwood, silky dogwood, American cranberrybush, lilac, northern white-cedar.	White spruce-----	Silver maple, eastern white pine, red pine, white ash, red maple.	---
A1B----- Amery	Manyflower cotoneaster.	Eastern redcedar, Siberian peashrub, silky dogwood, lilac, American cranberrybush, Amur maple, gray dogwood.	Norway spruce-----	Eastern white pine, red pine, jack pine.	---
A1C, A1D, A1F----- Amery	---	Lilac, American cranberrybush, Amur maple, northern white-cedar, gray dogwood.	White spruce, Norway spruce, Black Hills spruce.	Eastern white pine, red pine, white ash, red maple.	---
AnB, AnC2----- Antigo	Manyflower cotoneaster.	Gray dogwood, American cranberrybush, Amur maple, lilac, eastern redcedar, Siberian peashrub, silky dogwood.	Norway spruce-----	Jack pine, red pine, eastern white pine.	---
AoA----- Arenzville	---	Northern white-cedar, lilac, American cranberrybush, nannyberry viburnum, silky dogwood, redosier dogwood.	White spruce-----	Eastern white pine, red pine, white ash, red maple.	Silver maple.

TABLE 8.--WINDBREAKS AND ENVIRONMENTAL PLANTINGS--Continued

Soil name and map symbol	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
ApB, ApC2, ApD2, AsB, AsC2, AsD2-- Arland	Manyflower cotoneaster.	Eastern redcedar, Amur maple, American cranberrybush, lilac, Siberian peashrub, silky dogwood, gray dogwood.	Norway spruce-----	Eastern white pine, red pine, jack pine.	---
Au. Auburndale					
Ba----- Barronett	---	Northern white- cedar, American cranberrybush, nannyberry viburnum, silky dogwood, redosier dogwood, common ninebark.	White spruce, balsam fir.	Silver maple, red maple, green ash, white ash.	---
Bb. Barronett					
Be. Beseman					
B1A, B1B, B1C2, BmA----- Billett	Manyflower cotoneaster.	Gray dogwood, silky dogwood, Siberian peashrub, American cranberrybush, Amur maple, lilac, eastern redcedar.	Norway spruce-----	Jack pine, red pine, eastern white pine.	---
BoE----- Boone	Manyflower cotoneaster.	Siberian peashrub, eastern redcedar, lilac, silky dogwood, gray dogwood, Amur maple, American cranberrybush.	Norway spruce-----	Eastern white pine, red pine, jack pine.	---
BpA----- Brill	Manyflower cotoneaster.	Silky dogwood, eastern redcedar, Amur maple, lilac, gray dogwood, Siberian peashrub, American cranberrybush.	Norway spruce-----	Eastern white pine, red pine, jack pine.	---

TABLE 8.--WINDBREAKS AND ENVIRONMENTAL PLANTINGS--Continued

Soil name and map symbol	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
BuA----- Burkhardt	Manyflower cotoneaster.	Eastern redcedar, lilac, Amur maple, American cranberrybush, Siberian peashrub, silky dogwood, gray dogwood.	Norway spruce-----	Eastern white pine, red pine, jack pine.	---
Cb. Cable					
CdB, CdC2, CdD2--- Campia	---	Gray dogwood, lilac, Amur maple, northern white-cedar, redosier dogwood.	Norway spruce, white spruce, Black Hills spruce.	White ash, red maple, red pine, eastern white pine.	---
CeA----- Caryville	---	Northern white-cedar, lilac, American cranberrybush, nannyberry viburnum, silky dogwood, gray dogwood.	White spruce-----	Eastern white pine, red pine, white ash, red maple, silver maple.	---
CkA, CkB, CkC2---- Chetek	Manyflower cotoneaster.	Eastern redcedar, lilac, Amur maple, American cranberrybush, Siberian peashrub, gray dogwood, silky dogwood.	Norway spruce-----	Eastern white pine, red pine, jack pine.	---
CkD2*, CkE*: Chetek-----	Manyflower cotoneaster.	Eastern redcedar, lilac, Amur maple, American cranberrybush, Siberian peashrub, gray dogwood, silky dogwood.	Norway spruce-----	Eastern white pine, red pine, jack pine.	---
Mahtomedi-----	Manyflower cotoneaster.	Gray dogwood, silky dogwood, Siberian peashrub, American cranberrybush, Amur maple, lilac, eastern redcedar.	Norway spruce-----	Jack pine, red pine, eastern white pine.	---

See footnote at end of table.

TABLE 8.--WINDBREAKS AND ENVIRONMENTAL PLANTINGS--Continued

Soil name and map symbol	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
Cm----- Comstock	---	Nannyberry viburnum, northern white-cedar, lilac, American cranberrybush, silky dogwood, redosier dogwood.	White spruce-----	Eastern white pine, red pine, white ash, red maple, silver maple.	---
CuA----- Crystal Lake	---	Gray dogwood, Amur maple, American cranberrybush, lilac, northern white-cedar.	Black Hills spruce, Norway spruce, white spruce.	Eastern white pine, red pine, white ash, red maple.	---
E1B, E1C2, E1D2--- Eleva	Manyflower cotoneaster.	Siberian peashrub, eastern redcedar, lilac, American cranberrybush, Amur maple, gray dogwood, silky dogwood.	Norway spruce-----	Eastern white pine, red pine, jack pine.	---
EmB, EmC2, EmD2, EmE. Elkmound					
Eo. Elm Lake					
FaB----- Fallcreek	---	Northern white-cedar, lilac, American cranberrybush, nannyberry viburnum, silky dogwood, redosier dogwood.	White spruce-----	Eastern white pine, red pine, white ash, red maple, silver maple.	---
FbB, FbC2----- Flambeau	Manyflower cotoneaster.	Eastern redcedar, Siberian peashrub, silky dogwood, lilac, American cranberrybush, Amur maple, gray dogwood.	Norway spruce-----	Eastern white pine, red pine, jack pine.	---
Fm. Fordum					
FnB, FnC2----- Freeon	---	Amur maple, lilac, American cranberrybush, northern white-cedar, gray dogwood.	White spruce, Norway spruce, Black Hills spruce.	Eastern white pine, red pine, white ash, red maple.	---

See footnote at end of table.

TABLE 8.--WINDBREAKS AND ENVIRONMENTAL PLANTINGS--Continued

Soil name and map symbol	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
FrA----- Friendship	Manyflower cotoneaster.	Eastern redcedar, lilac, Amur maple, American cranberrybush, Siberian peashrub, silky dogwood, gray dogwood.	Norway spruce-----	Eastern white pine, red pine, jack pine.	---
GaB, GaC2, GaD2--- Gale	Manyflower cotoneaster.	Siberian peashrub, silky dogwood, eastern redcedar, American cranberrybush, Amur maple, lilac, gray dogwood.	Norway spruce-----	Eastern white pine, red pine, jack pine.	---
Gr. Greenwood					
Ha----- Halder	---	Redosier dogwood, silky dogwood, nannyberry viburnum, American cranberrybush, lilac, northern white-cedar.	White spruce-----	Silver maple, eastern white pine, red pine, white ash, red maple.	---
HeB----- Hiles	Manyflower cotoneaster.	Eastern redcedar, lilac, American cranberrybush, Amur maple, silky dogwood, gray dogwood.	Siberian peashrub, Norway spruce.	Eastern white pine, red pine, jack pine.	---
HfB----- Hiles Variant	---	Alternateleaf dogwood, northern white-cedar, lilac, American cranberrybush, Amur maple, silky dogwood, gray dogwood.	White spruce-----	Eastern white pine, red pine, white ash, red maple.	---
HnB, HnC2----- Hixton	Manyflower cotoneaster.	Gray dogwood, silky dogwood, Siberian peashrub, American cranberrybush, Amur maple, lilac, eastern redcedar.	Norway spruce-----	Eastern white pine, red pine, jack pine.	---

See footnote at end of table.

TABLE 8.--WINDBREAKS AND ENVIRONMENTAL PLANTINGS--Continued

Soil name and map symbol	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
HuB, HuC2----- Humbird	Manyflower cotoneaster.	Eastern redcedar, Siberian peashrub, lilac, American cranberrybush, Amur maple, silky dogwood, gray dogwood.	Norway spruce-----	Eastern white pine, red pine, jack pine.	---
KeB----- Kert	---	Northern white- cedar, lilac, American cranberrybush, nannyberry viburnum, silky dogwood, redosier dogwood.	White spruce-----	Eastern white pine, red pine, white ash, red maple, silver maple.	---
La----- Lows	---	Northern white- cedar, American cranberrybush, nannyberry viburnum, silky dogwood, redosier dogwood, common ninebark.	White spruce, balsam fir.	Silver maple, white ash, green ash, red maple.	---
LoB, LoC2----- Loyal	---	Northern white- cedar, lilac, American cranberrybush, Amur maple, gray dogwood.	White spruce, Norway spruce, Black Hills spruce.	Eastern white pine, red pine, white ash, red maple.	---
Lp. Lupton					
MbB----- Magnor	---	Northern white- cedar, lilac, American cranberrybush, nannyberry viburnum, silky dogwood, redosier dogwood.	White spruce-----	Eastern white pine, red pine, white ash, red maple, silver maple.	---
McB. Magnor					
MdB, MdC----- Mahtomedi	Manyflower cotoneaster.	Gray dogwood, silky dogwood, Siberian peashrub, American cranberrybush, Amur maple, lilac, eastern redcedar.	Norway spruce-----	Jack pine, red pine, eastern white pine.	---
Me. Markey					

See footnote at end of table.

TABLE 8.--WINDBREAKS AND ENVIRONMENTAL PLANTINGS--Continued

Soil name and map symbol	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
Mh----- Meehan	---	Redosier dogwood, silky dogwood, nannyberry viburnum, American cranberrybush, lilac, northern white-cedar.	White spruce-----	Red maple, white ash, silver maple, red pine, eastern white pine.	---
MkB, MkC----- Menahga	Manyflower cotoneaster.	Gray dogwood, silky dogwood, Siberian peashrub, American cranberrybush, Amur maple, lilac, eastern redcedar.	Norway spruce-----	Jack pine, red pine, eastern white pine.	---
M1A, M1B----- Meridian	Manyflower cotoneaster.	Gray dogwood, silky dogwood, Siberian peashrub, American cranberrybush, Amur maple, lilac, eastern redcedar.	Norway spruce-----	Jack pine, red pine, eastern white pine.	---
MmA----- Meridian	Manyflower cotoneaster.	Gray dogwood, Amur maple, American cranberrybush, lilac, eastern redcedar, Siberian peashrub, silky dogwood.	Norway spruce-----	Eastern white pine, red pine, jack pine.	---
MrB----- Merrillan	---	Nannyberry viburnum, northern white-cedar, lilac, American cranberrybush, silky dogwood, redosier dogwood.	White spruce-----	Eastern white pine, red pine, white ash, red maple, silver maple.	---
Mu. Minocqua					
MvA----- Moundville	---	Redosier dogwood, nannyberry viburnum, silky dogwood, American cranberrybush, lilac, northern white-cedar.	White spruce-----	Silver maple, red maple, white ash, red pine, eastern white pine.	---
Na. Newson					

See footnote at end of table.

TABLE 8.--WINDBREAKS AND ENVIRONMENTAL PLANTINGS--Continued

Soil name and map symbol	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
NtB, NtC2, NtD2. Northfield					
Oe----- Oesterle	---	Nannyberry viburnum, American cranberrybush, redosier dogwood, lilac, northern white-cedar, silky dogwood.	White spruce-----	Red maple, silver maple, white ash, red pine, eastern white pine.	---
Or----- Orion	---	Common ninebark, nannyberry viburnum, northern white-cedar, lilac, American cranberrybush, silky dogwood, redosier dogwood.	White spruce-----	Eastern white pine, white ash, red maple, silver maple.	---
OsC2----- Otterholt	---	Gray dogwood, Amur maple, American cranberrybush, lilac, northern white-cedar.	Black Hills spruce, white spruce, Norway spruce.	Eastern white pine, red pine, white ash, red maple.	---
Pc*. Pits					
PdB, PdC, PdD----- Plainbo	Manyflower cotoneaster.	Eastern redcedar, lilac, Amur maple, American cranberrybush, Siberian peashrub, silky dogwood, gray dogwood.	Norway spruce-----	Eastern white pine, red pine, jack pine.	---
Pv----- Plover	---	Northern white-cedar, nannyberry viburnum, silky dogwood, American cranberrybush, redosier dogwood, lilac.	White spruce-----	Eastern white pine, red maple, white ash, red pine, silver maple.	---
Px----- Poskin	---	Common ninebark, northern white-cedar, lilac, American cranberrybush, silky dogwood, redosier dogwood, nannyberry viburnum.	White spruce-----	Eastern white pine, white ash, red maple, silver maple.	---

See footnote at end of table.

TABLE 8.--WINDBREAKS AND ENVIRONMENTAL PLANTINGS--Continued

Soil name and map symbol	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
Rb----- Rib	---	Northern white-cedar, redosier dogwood, American cranberrybush, silky dogwood, common ninebark, nannyberry viburnum.	White spruce, balsam fir.	Red maple, white ash, green ash.	Silver maple.
Rc. Rib					
RfA----- Richford	Manyflower cotoneaster.	Eastern redcedar, lilac, Amur maple, American cranberrybush, Siberian peashrub, silky dogwood, gray dogwood.	Norway spruce-----	Eastern white pine, red pine, jack pine.	---
RoA, RoB, RoC2, RpA, RpB, RpC2--- Rosholt	Manyflower cotoneaster.	Lilac, American cranberrybush, Amur maple, eastern redcedar, Siberian peashrub, gray dogwood, silky dogwood.	Norway spruce-----	Red pine, jack pine, eastern white pine.	---
SaB, SaC2, SaD2--- Santiago	---	Gray dogwood, northern white-cedar, Amur maple, American cranberrybush, lilac.	Black Hills spruce, white spruce, Norway spruce.	Eastern white pine, red pine, white spruce, red maple.	---
SbA----- Sattre	Lilac, Siberian peashrub.	Hackberry, eastern redcedar, Manchurian crabapple.	Eastern white pine, Russian-olive, green ash, jack pine, honeylocust.	---	---
ScB, SdA----- Scott Lake	Manyflower cotoneaster.	American cranberrybush, eastern redcedar, Siberian peashrub, lilac, gray dogwood, American cranberrybush, Amur maple.	Norway spruce-----	Eastern white pine, red pine, jack pine.	---
SeB, SeC2, SeD2--- Seaton	---	Gray dogwood, redosier dogwood, lilac, Siberian peashrub.	Hackberry, northern white-cedar, Russian-olive, eastern redcedar, Amur maple.	Eastern white pine, green ash.	---

See footnote at end of table.

TABLE 8.--WINDBREAKS AND ENVIRONMENTAL PLANTINGS--Continued

Soil name and map symbol	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
SfA----- Seaton	---	Gray dogwood, lilac, redosier dogwood, Siberian peashrub.	Northern white-cedar, Russian-olive, hackberry, eastern redcedar, Amur maple.	Eastern white pine, green ash.	---
SgA, SgB----- Seaton	---	Gray dogwood, northern white-cedar, lilac, redosier dogwood, Siberian peashrub.	Russian-olive, hackberry, eastern redcedar, Amur maple.	Eastern white pine, green ash, red pine.	---
Sm. Seelyville					
So----- Shiffer	---	Northern white-cedar, lilac, American cranberrybush, nannyberry viburnum, silky dogwood, gray dogwood.	White spruce-----	Eastern white pine, red pine, white ash, red maple, silver maple.	---
SrB, SrC2----- Spencer	---	Gray dogwood, Amur maple, American cranberrybush, lilac, northern white-cedar.	Norway spruce, Black Hills spruce, white spruce.	Eastern white pine, red pine, red maple, white ash.	---
SsA, SsB----- Spencer	---	Northern white-cedar, lilac, American cranberrybush, Amur maple, gray dogwood.	White spruce, Black Hills spruce, Norway spruce.	Eastern white pine, red pine, white ash, red maple.	---
TeB----- Tell	Manyflower cotoneaster.	Siberian peashrub, eastern redcedar, lilac, American cranberrybush, Amur maple, silky dogwood, gray dogwood.	Norway spruce-----	Eastern white pine, red pine, jack pine.	---
Ud. Udfluents					
Ve. Vesper					
Wb----- Warman Variant	---	Northern white-cedar, lilac, silver maple, American cranberrybush, nannyberry viburnum, silky dogwood, redosier dogwood.	White spruce-----	Eastern white pine, red pine, red maple, white ash.	---

See footnote at end of table.

TABLE 8.--WINDBREAKS AND ENVIRONMENTAL PLANTINGS--Continued

Soil name and map symbol	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
WeB----- Withee	---	Northern white- cedar, lilac, American cranberrybush, nannyberry viburnum, silky dogwood, redosier dogwood.	White spruce, silver maple.	Eastern white pine, red pine, white ash, red maple.	---

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 9.--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
AfB----- Alban	Slight-----	Slight-----	Moderate: slope.	Slight-----	Slight.
AfC----- Alban	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight-----	Moderate: slope.
AgB----- Almena	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
AlB----- Amery	Slight-----	Slight-----	Moderate: slope, small stones.	Slight-----	Moderate: droughty.
AlC----- Amery	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight-----	Moderate: droughty, slope.
AlD----- Amery	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
AlF----- Amery	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
AnB----- Antigo	Slight-----	Slight-----	Moderate: slope.	Slight-----	Slight.
AnC2----- Antigo	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
AoA----- Arenzville	Severe: flooding.	Slight-----	Moderate: flooding.	Slight-----	Moderate: flooding.
ApB----- Arland	Slight-----	Slight-----	Moderate: slope, depth to rock, small stones.	Slight-----	Moderate: depth to rock.
ApC2----- Arland	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight-----	Moderate: slope, depth to rock.
ApD2----- Arland	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
AsB----- Arland	Slight-----	Slight-----	Moderate: slope, depth to rock, small stones.	Slight-----	Moderate: depth to rock.
AsC2----- Arland	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight-----	Moderate: slope, depth to rock.
AsD2----- Arland	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
Au----- Auburndale	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.

TABLE 9.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
Ba, Bb----- Barronett	Severe: ponding, flooding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
Be----- Beseman	Severe: flooding, ponding, excess humus.	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding.
B1A----- Billett	Slight-----	Slight-----	Slight-----	Slight-----	Moderate: droughty.
B1B----- Billett	Slight-----	Slight-----	Moderate: slope.	Slight-----	Moderate: droughty.
B1C2----- Billett	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight-----	Moderate: droughty, slope.
BmA----- Billett	Slight-----	Slight-----	Slight-----	Slight-----	Moderate: droughty.
BoE----- Boone	Severe: slope, too sandy.	Severe: slope, too sandy.	Severe: slope, too sandy.	Severe: too sandy, slope.	Severe: droughty, slope.
BpA----- Brill	Slight-----	Slight-----	Slight-----	Slight-----	Slight.
BuA----- Burkhardt	Slight-----	Slight-----	Slight-----	Slight-----	Moderate: droughty.
Cb----- Cable	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
CdE----- Campia	Slight-----	Slight-----	Moderate: slope.	Slight-----	Slight.
CdC2----- Campia	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
CdD2----- Campia	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
CeA----- Caryville	Severe: flooding.	Slight-----	Slight-----	Slight-----	Moderate: droughty.
CkA----- Chetek	Slight-----	Slight-----	Moderate: small stones.	Slight-----	Moderate: large stones, droughty.
CkB----- Chetek	Slight-----	Slight-----	Moderate: slope, small stones.	Slight-----	Moderate: large stones, droughty.
CkC2----- Chetek	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight-----	Moderate: large stones, droughty, slope.

See footnote at end of table.

TABLE 9.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
CkD2*: Chetek-----	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
Mahtomedi-----	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: too sandy, slope.	Severe: slope.
CkE*: Chetek-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Mahtomedi-----	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.	Severe: slope.
Cm----- Comstock	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
CuA----- Crystal Lake	Slight-----	Slight-----	Slight-----	Slight-----	Slight.
E1B----- Eleva	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Slight-----	Moderate: small stones, droughty.
E1C2----- Eleva	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.	Slight-----	Moderate: small stones, droughty, slope.
E1D2----- Eleva	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.	Severe: slope.
EmB----- Elkmound	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock, small stones.	Slight-----	Severe: depth to rock.
EmC2----- Elkmound	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock, small stones.	Slight-----	Severe: depth to rock.
EmD2----- Elkmound	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock, small stones.	Moderate: slope.	Severe: slope, depth to rock.
EmE----- Elkmound	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock, small stones.	Severe: slope.	Severe: slope, depth to rock.
Eo----- Elm Lake	Severe: ponding, percs slowly.	Severe: ponding, percs slowly.	Severe: ponding, percs slowly.	Severe: ponding.	Severe: ponding.
FaB----- Fallcreek	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: large stones, wetness.

See footnote at end of table.

TABLE 9.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
FbB----- Flambeau	Slight-----	Slight-----	Moderate: slope.	Slight-----	Moderate: large stones.
FbC2----- Flambeau	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight-----	Moderate: large stones, slope.
Fm----- Fordum	Severe: flooding, ponding.	Severe: ponding.	Severe-----	Severe: ponding.	Severe.
FnB----- Freeon	Moderate: wetness.	Moderate: wetness.	Moderate: slope, wetness.	Slight-----	Slight.
FnC2----- Freeon	Moderate: slope, wetness.	Moderate: slope, wetness.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
FrA----- Friendship	Moderate: too sandy.	Moderate: too sandy.	Moderate: small stones, too sandy.	Moderate: too sandy.	Moderate: droughty.
GaB----- Gale	Slight-----	Slight-----	Moderate: slope, depth to rock.	Slight-----	Moderate: depth to rock.
GaC2----- Gale	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope, depth to rock.
GaD2----- Gale	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
Gr----- Greenwood	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding, excess humus.
Ha----- Halder	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
HeB----- Hiles	Moderate: wetness.	Moderate: wetness.	Moderate: slope, wetness, depth to rock.	Slight-----	Moderate: depth to rock.
HfB----- Hiles Variant	Severe: percs slowly.	Severe: percs slowly.	Severe: percs slowly.	Slight-----	Moderate: large stones.
HnB----- Hixton	Slight-----	Slight-----	Moderate: slope, depth to rock.	Slight-----	Moderate: depth to rock.
HnC2----- Hixton	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight-----	Moderate: slope, depth to rock.
HuB----- Humbird	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, depth to rock, percs slowly.	Slight-----	Moderate: droughty, depth to rock.

See footnote at end of table.

TABLE 9.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
HuC2----- Humbird	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Slight-----	Moderate: droughty, slope, depth to rock.
KeB----- Kert	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
La----- Lows	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
LoB----- Loyal	Slight-----	Slight-----	Moderate: slope.	Slight-----	Slight.
LoC2----- Loyal	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
Lp----- Lupton	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding, excess humus.
MbB, McB----- Magnor	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
MdB----- Mahtomedi	Moderate: small stones.	Moderate: too sandy.	Severe: small stones.	Moderate: too sandy.	Moderate: small stones.
MdC----- Mahtomedi	Moderate: slope, small stones.	Moderate: slope, too sandy.	Severe: slope, small stones.	Moderate: too sandy.	Moderate: small stones.
Me----- Markey	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding, excess humus.
Mh----- Meehan	Severe: wetness.	Moderate: wetness, too sandy.	Severe: wetness.	Moderate: wetness, too sandy.	Moderate: wetness, droughty.
MkB----- Menahga	Moderate: too sandy.	Moderate: too sandy.	Moderate: slope, too sandy.	Moderate: too sandy.	Moderate: droughty.
MkC----- Menahga	Moderate: slope, too sandy.	Moderate: slope, too sandy.	Severe: slope.	Moderate: too sandy.	Moderate: slope, droughty.
MlA----- Meridian	Slight-----	Slight-----	Slight-----	Slight-----	Slight.
MlB----- Meridian	Slight-----	Slight-----	Moderate: slope.	Slight-----	Slight.
MmA----- Meridian	Slight-----	Slight-----	Slight-----	Slight-----	Slight.
MrB----- Merrillan	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness, depth to rock.

See footnote at end of table.

TABLE 9.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
Mu----- Minocqua	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
MvA----- Moundville	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Slight-----	Moderate: droughty.
Na----- Newson	Severe: flooding, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
NtB----- Northfield	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Slight-----	Severe: depth to rock.
NtC2----- Northfield	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Slight-----	Severe: depth to rock.
NtD2----- Northfield	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Moderate: slope.	Severe: slope, depth to rock.
Oe----- Oesterle	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: large stones, wetness, droughty.
Or----- Orion	Severe: flooding, wetness.	Moderate: flooding, wetness.	Severe: wetness, flooding.	Moderate: wetness, flooding.	Severe: flooding.
OsC2----- Otterholt	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
Pc*. Pits					
PdB----- Plainbo	Moderate: too sandy.	Moderate: too sandy.	Moderate: slope, too sandy.	Moderate: too sandy.	Moderate: droughty, depth to rock.
PdC----- Plainbo	Moderate: slope, too sandy.	Moderate: slope, too sandy.	Severe: slope.	Moderate: too sandy.	Moderate: droughty, slope, depth to rock.
PdD----- Plainbo	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope, too sandy.	Severe: slope.
Pv----- Plover	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
Px----- Poskin	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
Rb, Rc----- Rib	Severe: flooding, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
RfA----- Richford	Slight-----	Slight-----	Moderate: small stones.	Slight-----	Moderate: droughty.

See footnote at end of table.

TABLE 9.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
RoA, RoB----- Rosholt	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Slight-----	Moderate: small stones, droughty.
RoC2----- Rosholt	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.	Slight-----	Moderate: small stones, droughty, slope.
RpA, RpB----- Rosholt	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Slight-----	Moderate: small stones, droughty.
RpC2----- Rosholt	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.	Slight-----	Moderate: small stones, droughty, slope.
SaB----- Santiago	Slight-----	Slight-----	Moderate: slope.	Slight-----	Moderate: large stones.
SaC2----- Santiago	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: large stones, slope.
SaD2----- Santiago	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
SbA----- Sattre	Slight-----	Slight-----	Slight-----	Slight-----	Slight.
ScB----- Scott Lake	Slight-----	Slight-----	Moderate: slope, small stones.	Slight-----	Moderate: large stones, droughty.
SdA----- Scott Lake	Slight-----	Slight-----	Moderate: small stones.	Slight-----	Moderate: large stones, droughty.
SeB----- Seaton	Slight-----	Slight-----	Moderate: slope.	Slight-----	Slight.
SeC2----- Seaton	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
SeD2----- Seaton	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
SfA, SgA----- Seaton	Slight-----	Slight-----	Slight-----	Slight-----	Slight.
SgB----- Seaton	Slight-----	Slight-----	Moderate: slope.	Slight-----	Slight.
Sm----- Seelyeville	Severe: flooding, ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding, excess humus.
So----- Shiffer	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.

See footnote at end of table.

TABLE 9.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
SrB----- Spencer	Slight-----	Slight-----	Moderate: slope.	Slight-----	Slight.
SrC2----- Spencer	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
SsA----- Spencer	Slight-----	Slight-----	Slight-----	Slight-----	Slight.
SsB----- Spencer	Slight-----	Slight-----	Moderate: slope.	Slight-----	Slight.
TeB----- Tell	Slight-----	Slight-----	Moderate: slope.	Slight-----	Slight.
Ud. Udifluvents					
Ve----- Vesper	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
Wb----- Warman Variant	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness, droughty.
WeB----- Withee	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 10.--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 herba- ceous plants	Hardwood trees	Conif- erous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
AfB----- Alban	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
AfC----- Alban	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
AgB----- Almena	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
AlB----- Amery	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
AlC----- Amery	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
AlD----- Amery	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
AlF----- Amery	Very poor.	Very poor.	Good	Good	Good	Very poor.	Very poor.	Poor	Fair	Very poor.
AnB----- Antigo	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
AnC2----- Antigo	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
AoA----- Arenzville	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
ApB----- Arland	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
ApC2----- Arland	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
ApD2----- Arland	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
AsB----- Arland	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
AsC2----- Arland	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
AsD2----- Arland	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Au----- Auburndale	Very poor.	Poor	Poor	Fair	Good	Good	Good	Poor	Fair	Good.
Ba----- Barronett	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good.
Eb----- Barronett	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Very poor.	Very poor.	Good.
Be----- Beseman	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Very poor.	Very poor.	Good.

TABLE 10.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hardwood trees	Conif- erous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
B1A, B1B----- Billett	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
B1C2----- Billett	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
BmA----- Billett	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
BoE----- Boone	Very poor.	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
BpA----- Brill	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
BuA----- Burkhardt	Fair	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Cb----- Cable	Very poor.	Poor	Poor	Fair	Fair	Good	Good	Poor	Fair	Good.
CdB----- Campia	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
CdC2----- Campia	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
CdD2----- Campia	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
CeA----- Caryville	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
CkA, CkB, CkC2----- Chetek	Fair	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
CkD2*: Chetek-----	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Mahtomedi-----	Very poor.	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
CkE*: Chetek-----	Very poor.	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
Mahtomedi-----	Very poor.	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Cm----- Comstock	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
CuA----- Crystal Lake	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
E1B, E1C2----- Eleva	Good	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Fair	Very poor.
E1D2----- Eleva	Fair	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.

See footnote at end of table.

TABLE 10.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hardwood trees	Conif- erous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
EmB----- Elkmound	Fair	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Poor	Very poor.
EmC2, EmD2----- Elkmound	Poor	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
EmE----- Elkmound	Very poor.	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Eo----- Elm Lake	Very poor.	Poor	Poor	Fair	Fair	Good	Good	Poor	Fair	Good.
FaB----- Fallcreek	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
FbB----- Flambeau	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
FbC2----- Flambeau	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Fm----- Fordum	Very poor.	Very poor.	Poor	Fair	Fair	Good	Good	Very poor.	Fair	Good.
FnB----- Freeon	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
FnC2----- Freeon	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
FrA----- Friendship	Poor	Fair	Good	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.
GaB----- Gale	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
GaC2----- Gale	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
GaD2----- Gale	Poor	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Gr----- Greenwood	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Ha----- Halder	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
HeB----- Hiles	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
HfB----- Hiles Variant	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
HnB----- Hixton	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
HnC2----- Hixton	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.

See footnote at end of table.

TABLE 10.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hardwood trees	Conif- erous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
HuB, HuC2----- Humbird	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Poor.
KeB----- Kert	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
La----- Lows	Fair	Good	Good	Good	Fair	Good	Good	Good	Good	Good.
LoB----- Loyal	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
LoC2----- Loyal	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Lp----- Lupton	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
MbB----- Magnor	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
McB----- Magnor	Very poor.	Fair	Good	Good	Good	Poor	Poor	Fair	Good	Poor.
MdB, MdC----- Mahtomedi	Poor	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Poor	Very poor.
Me----- Markey	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Mh----- Meehan	Poor	Fair	Good	Fair	Fair	Fair	Poor	Poor	Fair	Poor.
MkB, MkC----- Menahga	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
MLA, MLB----- Meridian	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
MmA----- Meridian	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
MrB----- Merrillan	Fair	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
Mu----- Minocqua	Very poor.	Poor	Poor	Fair	Fair	Good	Good	Poor	Fair	Good.
MvA----- Moundville	Fair	Good	Good	Fair	Fair	Very poor.	Very poor.	Good	Fair	Very poor.
Na----- Newson	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
NtB, NtC2----- Northfield	Poor	Poor	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
NtD2----- Northfield	Very poor.	Poor	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.

See footnote at end of table.

TABLE 10.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hardwood trees	Conif- erous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
Oe----- Oesterle	Fair	Good	Good	Fair	Fair	Poor	Poor	Good	Fair	Poor.
Or----- Orion	Good	Good	Good	Good	Good	Good	Fair	Good	Good	Good.
OsC2----- Otterholt	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Pc*. Pits										
PdB----- Plainbo	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
PdC, PdD----- Plainbo	Very poor.	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Pv----- Plover	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
Px----- Poskin	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
Rb----- Rib	Good	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
Rc----- Rib	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Very poor.	Very poor.	Good.
RfA----- Richford	Fair	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
RoA, RoB----- Rosholt	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
RoC2----- Rosholt	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
RpA, RpB----- Rosholt	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
RpC2----- Rosholt	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
SaB----- Santiago	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
SaC2, SaD2----- Santiago	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
SbA----- Sattre	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
ScB, SdA----- Scott Lake	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
SeB, SeC2----- Seaton	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
SeD2----- Seaton	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.

See footnote at end of table.

TABLE 10.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hardwood trees	Conif- erous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
SfA, SgA, SgB----- Seaton	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Sm----- Seelyeville	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Very poor.	Poor	Good.
So----- Shiffer	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
SrB----- Spencer	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
SrC2----- Spencer	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
SsA, SsB----- Spencer	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
TeB----- Tell	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Ud. Udifluvents										
Ve----- Vesper	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Wb----- Warman Variant	Fair	Good	Good	Fair	Fair	Fair	Fair	Good	Good	Fair.
WeB----- Withee	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 11.--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
AfB----- Alban	Severe: cutbanks cave.	Slight-----	Moderate: wetness.	Moderate: slope.	Moderate: frost action.	Slight.
AfC----- Alban	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: slope.
AgB----- Almena	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, frost action.	Moderate: wetness.
AlB----- Amery	Moderate: dense layer.	Slight-----	Slight-----	Moderate: slope.	Moderate: frost action.	Moderate: droughty.
AlC----- Amery	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: droughty, slope.
AlD, AlF----- Amery	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
AnB----- Antigo	Severe: cutbanks cave.	Slight-----	Slight-----	Slight-----	Severe: low strength, frost action.	Slight.
AnC2----- Antigo	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: low strength, frost action.	Moderate: slope.
AoA----- Arenzville	Moderate: wetness, flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding, frost action.	Moderate: flooding.
ApB----- Arland	Severe: cutbanks cave.	Slight-----	Moderate: depth to rock.	Moderate: slope.	Slight-----	Moderate: depth to rock.
ApC2----- Arland	Severe: cutbanks cave.	Moderate: slope.	Moderate: depth to rock, slope.	Severe: slope.	Moderate: slope.	Moderate: slope, depth to rock.
ApD2----- Arland	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
AsB----- Arland	Severe: cutbanks cave.	Slight-----	Moderate: depth to rock.	Moderate: slope.	Slight-----	Moderate: depth to rock.
AsC2----- Arland	Severe: cutbanks cave.	Moderate: slope.	Moderate: depth to rock, slope.	Severe: slope.	Moderate: slope.	Moderate: slope, depth to rock.
AsD2----- Arland	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.

TABLE 11.--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
Au----- Auburndale	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: low strength, ponding, frost action.	Severe: ponding.
Ba----- Barronett	Severe: cutbanks cave, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: low strength, ponding.	Severe: ponding.
Bb----- Barronett	Severe: cutbanks cave, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: low strength, ponding, flooding.	Severe: ponding.
Be----- Beseman	Severe: excess humus, ponding.	Severe: flooding, ponding, low strength.	Severe: flooding, ponding.	Severe: flooding, ponding, low strength.	Severe: ponding, frost action, low strength.	Severe: excess humus, ponding.
B1A----- Billett	Severe: cutbanks cave.	Slight-----	Slight-----	Slight-----	Moderate: frost action.	Moderate: droughty.
B1B----- Billett	Severe: cutbanks cave.	Slight-----	Slight-----	Moderate: slope.	Moderate: frost action.	Moderate: droughty.
B1C2----- Billett	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: droughty, slope.
BmA----- Billett	Severe: cutbanks cave.	Slight-----	Moderate: wetness.	Slight-----	Moderate: frost action.	Moderate: droughty.
BoE----- Boone	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: droughty, slope.
BpA----- Brill	Severe: cutbanks cave.	Moderate: shrink-swell.	Moderate: wetness.	Moderate: shrink-swell.	Severe: low strength, frost action.	Slight.
BuA----- Burkhardt	Severe: cutbanks cave.	Slight-----	Slight-----	Slight-----	Slight-----	Moderate: droughty.
Cb----- Cable	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding, frost action.	Severe: ponding.
CdB----- Campia	Moderate: cutbanks cave.	Slight-----	Slight-----	Moderate: slope.	Severe: low strength, frost action.	Slight.
CdC2----- Campia	Moderate: cutbanks cave, slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: low strength, frost action.	Moderate: slope.
CdD2----- Campia	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope, frost action.	Severe: slope.
CeA----- Caryville	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding.	Moderate: droughty.

TABLE 11.--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
CkA----- Chetek	Severe: cutbanks cave.	Slight-----	Slight-----	Slight-----	Slight-----	Moderate: large stones, droughty.
CkB----- Chetek	Severe: cutbanks cave.	Slight-----	Slight-----	Moderate: slope.	Slight-----	Moderate: large stones, droughty.
CkC2----- Chetek	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: large stones, droughty, slope.
CkD2*, CkE*: Chetek-----	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Mahtomedi-----	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Cm----- Comstock	Severe: wetness, cutbanks cave.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, frost action.	Moderate: wetness.
CuA----- Crystal Lake	Moderate: cutbanks cave, wetness.	Moderate: shrink-swell.	Moderate: wetness.	Moderate: shrink-swell.	Severe: low strength, frost action.	Slight.
ElB----- Eleva	Severe: cutbanks cave.	Slight-----	Moderate: depth to rock.	Moderate: slope.	Moderate: frost action.	Moderate: small stones, droughty.
ElC2----- Eleva	Severe: cutbanks cave.	Moderate: slope.	Moderate: depth to rock, slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: small stones, droughty, slope.
ElD2----- Eleva	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
EmB----- Elkmound	Severe: depth to rock.	Moderate: depth to rock.	Severe: depth to rock.	Moderate: slope, depth to rock.	Moderate: depth to rock, frost action.	Severe: depth to rock.
EmC2----- Elkmound	Severe: depth to rock.	Moderate: slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Moderate: depth to rock, slope, frost action.	Severe: depth to rock.
EmD2, EmE----- Elkmound	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.
Eo----- Elm Lake	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.

See footnote at end of table.

TABLE 11.--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
FaB----- Fallcreek	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: frost action.	Moderate: large stones, wetness.
FbB----- Flambeau	Moderate: wetness.	Slight-----	Moderate: wetness.	Moderate: slope.	Moderate: low strength, frost action.	Moderate: large stones.
FbC2----- Flambeau	Moderate: wetness, slope.	Moderate: slope.	Moderate: wetness, slope.	Severe: slope.	Moderate: low strength, slope, frost action.	Moderate: large stones, slope.
Fm----- Fordum	Severe: cutbanks cave, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: ponding, flooding, frost action.	Severe.
FnB----- Freeon	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Moderate: wetness, frost action.	Slight.
FnC2----- Freeon	Severe: wetness.	Moderate: wetness, slope.	Severe: wetness.	Severe: slope.	Moderate: wetness, slope, frost action.	Moderate: slope.
FrA----- Friendship	Severe: cutbanks cave.	Slight-----	Moderate: wetness.	Slight-----	Slight-----	Moderate: droughty.
GaB----- Gale	Severe: cutbanks cave.	Moderate: shrink-swell.	Moderate: depth to rock, shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength, frost action.	Moderate: depth to rock.
GaC2----- Gale	Severe: cutbanks cave.	Moderate: shrink-swell, slope.	Moderate: depth to rock, slope, shrink-swell.	Severe: slope.	Severe: low strength, frost action.	Moderate: slope, depth to rock.
GaD2----- Gale	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope, frost action.	Severe: slope.
Gr----- Greenwood	Severe: excess humus, ponding.	Severe: ponding, low strength.	Severe: ponding, low strength.	Severe: ponding, low strength.	Severe: ponding, frost action, subsides.	Severe: ponding, excess humus.
Ha----- Halder	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: frost action.	Moderate: wetness.
HeB----- Hiles	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Severe: frost action.	Moderate: depth to rock.
HfB----- Hiles Variant	Moderate: too clayey, wetness.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Moderate: large stones.

See footnote at end of table.

TABLE 11.--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
HnB----- Hixton	Severe: cutbanks cave.	Slight-----	Moderate: depth to rock.	Moderate: slope.	Moderate: frost action.	Moderate: depth to rock.
HnC2----- Hixton	Severe: cutbanks cave.	Moderate: slope.	Moderate: depth to rock, slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: slope, depth to rock.
HuB----- Humbird	Severe: cutbanks cave.	Slight-----	Moderate: wetness, depth to rock.	Moderate: slope.	Moderate: frost action.	Moderate: droughty, depth to rock.
HuC2----- Humbird	Severe: cutbanks cave.	Moderate: slope.	Moderate: wetness, depth to rock, slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: droughty, slope, depth to rock.
KeB----- Kert	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: frost action.	Moderate: wetness.
La----- Lows	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding, frost action.	Severe: ponding.
LoB----- Loyal	Moderate: dense layer, wetness.	Slight-----	Moderate: wetness.	Moderate: slope.	Moderate: frost action.	Slight.
LoC2----- Loyal	Moderate: dense layer, wetness, slope.	Moderate: slope.	Moderate: wetness, slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: slope.
Lp----- Lupton	Severe: excess humus, ponding.	Severe: ponding, low strength.	Severe: ponding, low strength.	Severe: ponding, low strength.	Severe: ponding, frost action, subsides.	Severe: ponding, excess humus.
MbB, McB----- Magnor	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness.
MdB----- Mahtomedi	Severe: cutbanks cave.	Slight-----	Slight-----	Moderate: slope.	Slight-----	Moderate: small stones.
MdC----- Mahtomedi	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: small stones.
Me----- Markey	Severe: cutbanks cave, excess humus, ponding.	Severe: ponding, low strength.	Severe: ponding.	Severe: ponding, low strength.	Severe: ponding, frost action, subsides.	Severe: ponding, excess humus.
Mh----- Meehan	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Moderate: wetness, frost action.	Moderate: wetness, droughty.
MkB----- Menahga	Severe: cutbanks cave.	Slight-----	Slight-----	Slight-----	Slight-----	Moderate: droughty.

See footnote at end of table.

TABLE 11.--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
MkC----- Menahga	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope, droughty.
MLA----- Meridian	Severe: cutbanks cave.	Slight-----	Slight-----	Slight-----	Moderate: frost action.	Slight.
MLB----- Meridian	Severe: cutbanks cave.	Slight-----	Slight-----	Moderate: slope.	Moderate: frost action.	Slight.
MmA----- Meridian	Severe: cutbanks cave.	Slight-----	Moderate: wetness.	Slight-----	Moderate: frost action.	Slight.
MrB----- Merrillan	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, frost action.	Moderate: wetness, depth to rock.
Mu----- Minocqua	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding, frost action.	Severe: ponding.
MvA----- Moundville	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: droughty.
Na----- Newson	Severe: cutbanks cave, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: ponding.	Severe: ponding.
NtB----- Northfield	Severe: depth to rock.	Moderate: depth to rock.	Severe: depth to rock.	Moderate: slope, depth to rock.	Moderate: depth to rock.	Severe: depth to rock.
NtC2----- Northfield	Severe: depth to rock.	Moderate: slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Moderate: depth to rock, slope.	Severe: depth to rock.
NtD2----- Northfield	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.
Oe----- Oesterle	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: frost action.	Moderate: large stones, wetness, droughty.
Or----- Orion	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, flooding, frost action.	Severe: flooding.
OsC2----- Otterholt	Moderate: dense layer, slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength, frost action.	Moderate: slope.
Pc*. Pits						
PdB----- Plainbo	Severe: cutbanks cave.	Slight-----	Moderate: depth to rock.	Moderate: slope.	Slight-----	Moderate: droughty, depth to rock.

See footnote at end of table.

TABLE 11.--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
PdC----- Plainbo	Severe: cutbanks cave.	Moderate: slope.	Moderate: depth to rock, slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope, depth to rock.
PdD----- Plainbo	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Pv----- Plover	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: frost action.	Moderate: wetness.
Px----- Poskin	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, frost action.	Moderate: wetness.
Rb, Rc----- Rib	Severe: cutbanks cave, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: ponding, flooding, frost action.	Severe: ponding.
RfA----- Richford	Severe: cutbanks cave.	Slight-----	Slight-----	Slight-----	Slight-----	Moderate: droughty.
RoA----- Rosholt	Severe: cutbanks cave.	Slight-----	Slight-----	Slight-----	Moderate: frost action.	Moderate: small stones, droughty.
RoB----- Rosholt	Severe: cutbanks cave.	Slight-----	Slight-----	Moderate: slope.	Moderate: frost action.	Moderate: small stones, droughty.
RoC2----- Rosholt	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: small stones, droughty, slope.
RpA----- Rosholt	Severe: cutbanks cave.	Slight-----	Slight-----	Slight-----	Moderate: frost action.	Moderate: small stones, droughty.
RpB----- Rosholt	Severe: cutbanks cave.	Slight-----	Slight-----	Moderate: slope.	Moderate: frost action.	Moderate: small stones, droughty.
RpC2----- Rosholt	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: small stones, droughty, slope.
SaB----- Santiago	Slight-----	Slight-----	Slight-----	Moderate: slope.	Moderate: frost action.	Moderate: large stones.
SaC2----- Santiago	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: large stones, slope.
SaD2----- Santiago	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.

See footnote at end of table.

TABLE 11.--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
SbA----- Sattre	Severe: cutbanks cave.	Slight-----	Slight-----	Slight-----	Slight-----	Slight.
ScB, SdA----- Scott Lake	Severe: cutbanks cave.	Slight-----	Moderate: wetness.	Slight-----	Moderate: frost action.	Moderate: large stones, droughty.
SeB----- Seaton	Slight-----	Slight-----	Slight-----	Moderate: slope.	Severe: low strength, frost action.	Slight.
SeC2----- Seaton	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: low strength, frost action.	Moderate: slope.
SeD2----- Seaton	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope, frost action.	Severe: slope.
SfA----- Seaton	Moderate: cutbanks cave, wetness.	Slight-----	Moderate: wetness.	Slight-----	Severe: low strength, frost action.	Slight.
SgA----- Seaton	Severe: cutbanks cave.	Slight-----	Slight-----	Slight-----	Severe: low strength, frost action.	Slight.
SgB----- Seaton	Severe: cutbanks cave.	Slight-----	Slight-----	Moderate: slope.	Severe: low strength, frost action.	Slight.
Sm----- Seelyeville	Severe: excess humus, ponding.	Severe: flooding, ponding, subsides.	Severe: flooding, ponding, subsides.	Severe: flooding, ponding, subsides.	Severe: ponding, subsides.	Severe: ponding, excess humus.
So----- Shiffer	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: frost action.	Moderate: wetness.
SrB----- Spencer	Moderate: dense layer, wetness.	Moderate: shrink-swell.	Moderate: wetness, shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength, frost action.	Slight.
SrC2----- Spencer	Moderate: dense layer, wetness, slope.	Moderate: shrink-swell, slope.	Moderate: wetness, slope, shrink-swell.	Severe: slope.	Severe: low strength, frost action.	Moderate: slope.
SsA----- Spencer	Severe: cutbanks cave.	Slight-----	Moderate: wetness.	Slight-----	Severe: low strength, frost action.	Slight.
SsB----- Spencer	Severe: cutbanks cave.	Slight-----	Moderate: wetness.	Moderate: slope.	Severe: low strength, frost action.	Slight.
TeB----- Tell	Severe: cutbanks cave.	Moderate: shrink-swell.	Slight-----	Moderate: shrink-swell.	Severe: low strength, frost action.	Slight.

See footnote at end of table.

TABLE 11.--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
Ud. Udifluvents						
Ve----- Vesper	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: low strength, ponding, frost action.	Severe: ponding.
Wb----- Warman Variant	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Moderate: wetness, frost action.	Moderate: wetness, droughty.
WeB----- Withee	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 12.--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
AfB----- Alban	Severe: wetness.	Severe: wetness.	Moderate: wetness, too sandy.	Slight-----	Fair: too sandy, wetness, thin layer.
AfC----- Alban	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope, too sandy.	Moderate: slope.	Fair: too sandy, slope, thin layer.
AgB----- Almena	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: small stones, wetness.
AlB----- Amery	Severe: percs slowly.	Moderate: seepage, slope.	Slight-----	Slight-----	Poor: small stones.
AlC----- Amery	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Poor: small stones.
AlD, AlF----- Amery	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope, small stones.
AnB----- Antigo	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
AnC2----- Antigo	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
AoA----- Arenzville	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Fair: wetness.
ApB----- Arland	Severe: depth to rock.	Severe: seepage, depth to rock.	Severe: depth to rock, seepage.	Severe: depth to rock, seepage.	Poor: depth to rock.
ApC2----- Arland	Severe: depth to rock.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage.	Severe: depth to rock, seepage.	Poor: depth to rock.
ApD2----- Arland	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, seepage, slope.	Poor: depth to rock, slope.
AsB----- Arland	Severe: depth to rock.	Severe: seepage, depth to rock.	Severe: depth to rock, seepage.	Severe: depth to rock, seepage.	Poor: depth to rock.

TABLE 12.--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
AsC2----- Arland	Severe: depth to rock.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage.	Severe: depth to rock, seepage.	Poor: depth to rock.
AsD2----- Arland	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, seepage, slope.	Poor: depth to rock, slope.
Au----- Auburndale	Severe: ponding, percs slowly.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Poor: ponding.
Ba----- Barronett	Severe: ponding, percs slowly.	Severe: ponding.	Severe: ponding, too sandy.	Severe: ponding.	Poor: ponding.
Eb----- Barronett	Severe: flooding, ponding, percs slowly.	Severe: flooding, ponding.	Severe: flooding, ponding, too sandy.	Severe: flooding, ponding.	Poor: ponding.
Be----- Beseman	Severe: ponding, percs slowly.	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: ponding, seepage.	Poor: ponding, excess humus.
B1A, B1B----- Billett	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
B1C2----- Billett	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
BmA----- Billett	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy.
BoE----- Boone	Severe: depth to rock, poor filter, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, seepage, slope.	Poor: depth to rock, seepage, too sandy.
BpA----- Brill	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, small stones.
BuA----- Burkhardt	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, small stones.
Cb----- Cable	Severe: ponding, percs slowly.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Poor: small stones, ponding.
CdB----- Campia	Moderate: percs slowly.	Moderate: seepage, slope.	Slight-----	Slight-----	Good.

TABLE 12.--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
CdC2----- Campia	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: slope.
CdD2----- Campia	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
CeA----- Caryville	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
CkA, CkB----- Chetek	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
CkC2----- Chetek	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
CkD2*, CkE*: Chetek-----	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: seepage, slope, too sandy.	Severe: seepage, slope.	Poor: seepage, too sandy, small stones.
Mahtomedi-----	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: seepage, slope, too sandy.	Severe: seepage, slope.	Poor: seepage, too sandy, small stones.
Cm----- 'Comstock	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
CuA----- Crystal Lake	Severe: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Fair: wetness.
E1B----- Eleva	Severe: depth to rock, poor filter.	Severe: seepage, depth to rock.	Severe: depth to rock, seepage.	Severe: depth to rock, seepage.	Poor: depth to rock.
E1C2----- Eleva	Severe: depth to rock, poor filter.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage.	Severe: depth to rock, seepage.	Poor: depth to rock.
E1D2----- Eleva	Severe: depth to rock, poor filter, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, seepage, slope.	Poor: depth to rock, slope.
EmB----- Elkmound	Severe: depth to rock.	Severe: seepage, depth to rock.	Severe: depth to rock, seepage.	Severe: depth to rock, seepage.	Poor: depth to rock.

See footnote at end of table.

TABLE 12.--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
EmC2----- Elkmound	Severe: depth to rock.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage.	Severe: depth to rock, seepage.	Poor: depth to rock.
EmD2, EmE----- Elkmound	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, seepage, slope.	Poor: depth to rock, slope.
Eo----- Elm Lake	Severe: depth to rock, ponding, percs slowly.	Severe: seepage, depth to rock, ponding.	Severe: depth to rock, ponding, too sandy.	Severe: depth to rock, seepage, ponding.	Poor: depth to rock, seepage, too sandy.
FaB----- Fallcreek	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
FbB----- Flambeau	Severe: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Fair: large stones, wetness.
FbC2----- Flambeau	Severe: wetness, percs slowly.	Severe: slope, wetness.	Moderate: wetness, slope.	Moderate: wetness, slope.	Fair: large stones, slope, wetness.
Fm----- Fordum	Severe: flooding, ponding, poor filter.	Severe: seepage, flooding.	Severe: flooding, seepage, ponding.	Severe: flooding, seepage, ponding.	Poor: seepage, too sandy, ponding.
FnB----- Freeon	Severe: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Fair: small stones, wetness.
FnC2----- Freeon	Severe: wetness, percs slowly.	Severe: slope, wetness.	Moderate: wetness, slope.	Moderate: wetness, slope.	Fair: wetness, small stones, slope.
FrA----- Friendship	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy.
GaB----- Gale	Severe: depth to rock, poor filter.	Severe: seepage, depth to rock.	Severe: depth to rock, seepage.	Severe: depth to rock, seepage.	Poor: depth to rock.
GaC2----- Gale	Severe: depth to rock, poor filter.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage.	Severe: depth to rock, seepage.	Poor: depth to rock.
GaD2----- Gale	Severe: depth to rock, slope, poor filter.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, seepage, slope.	Poor: depth to rock, slope.

See footnote at end of table.

TABLE 12.--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
Gr----- Greenwood	Severe: ponding.	Severe: seepage, excess humus, ponding.	Severe: seepage, ponding, excess humus.	Severe: seepage, ponding.	Poor: ponding, excess humus.
Ha----- Halder	Severe: wetness, poor filter.	Severe: wetness, seepage.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, small stones.
HeB----- Hiles	Severe: depth to rock, wetness.	Severe: depth to rock, wetness.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock.
HfB----- Hiles Variant	Severe: wetness, percs slowly.	Moderate: seepage, depth to rock, slope.	Severe: depth to rock, too clayey.	Moderate: depth to rock, wetness.	Poor: too clayey, hard to pack.
HnB----- Hixton	Severe: depth to rock, poor filter.	Severe: seepage, depth to rock.	Severe: depth to rock, seepage.	Severe: depth to rock, seepage.	Poor: depth to rock.
HnC2----- Hixton	Severe: depth to rock, poor filter.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage.	Severe: depth to rock, seepage.	Poor: depth to rock.
HuB----- Humbird	Severe: depth to rock, wetness, percs slowly.	Severe: seepage, depth to rock.	Severe: depth to rock, too sandy.	Severe: depth to rock, seepage.	Poor: depth to rock, too sandy.
HuC2----- Humbird	Severe: depth to rock, wetness, percs slowly.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, too sandy.	Severe: depth to rock, seepage.	Poor: depth to rock, too sandy.
KeB----- Kert	Severe: wetness, percs slowly.	Severe: seepage.	Severe: wetness.	Severe: seepage, wetness.	Poor: hard to pack, wetness.
La----- Lows	Severe: ponding, poor filter.	Severe: seepage, ponding.	Severe: seepage, ponding.	Severe: seepage, ponding.	Poor: seepage, too sandy, ponding.
LoB----- Loyal	Severe: wetness.	Severe: wetness.	Moderate: wetness, too clayey.	Moderate: wetness.	Fair: too clayey, wetness.
LoC2----- Loyal	Severe: wetness.	Severe: slope, wetness.	Moderate: wetness, slope, too clayey.	Moderate: wetness, slope.	Fair: too clayey, slope, wetness.
Lp----- Lupton	Severe: ponding.	Severe: seepage, excess humus, ponding.	Severe: ponding, excess humus.	Severe: seepage, ponding.	Poor: ponding, excess humus.

See footnote at end of table.

TABLE 12.--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
MbB, McB----- Magnor	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
MdB----- Mahtomedi	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
MdC----- Mahtomedi	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
Me----- Markey	Severe: ponding, poor filter.	Severe: seepage, excess humus, ponding.	Severe: seepage, ponding, too sandy.	Severe: seepage, ponding.	Poor: seepage, too sandy, ponding.
Mh----- Meehan	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, wetness.
MkB----- Menahga	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
MkC----- Menahga	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
M1A, M1B----- Meridian	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
MmA----- Meridian	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy.
MrB----- Merrillan	Severe: depth to rock, wetness, percs slowly.	Severe: depth to rock, wetness.	Severe: depth to rock, wetness.	Severe: depth to rock, wetness.	Poor: depth to rock, hard to pack, wetness.
Mu----- Minocqua	Severe: ponding, poor filter.	Severe: seepage, ponding.	Severe: seepage, ponding, too sandy.	Severe: seepage, ponding.	Poor: seepage, too sandy, small stones.
MvA----- Moundville	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy.
Na----- Newson	Severe: ponding, poor filter.	Severe: seepage, ponding.	Severe: seepage, ponding.	Severe: seepage, ponding.	Poor: seepage, too sandy, ponding.

See footnote at end of table.

TABLE 12.--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
NtB----- Northfield	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock.
NtC2----- Northfield	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock.
NtD2----- Northfield	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.
Oe----- Oesterle	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, small stones.
Or----- Orion	Severe: flooding, wetness.	Severe: wetness, flooding.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
OsC2----- Otterholt	Severe: percs slowly.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: slope.
Pc*. Pits					
PdB----- Plainbo	Severe: depth to rock, poor filter.	Severe: seepage, depth to rock.	Severe: depth to rock, seepage.	Severe: depth to rock, seepage.	Poor: depth to rock, seepage, too sandy.
PdC----- Plainbo	Severe: depth to rock, poor filter.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage.	Severe: depth to rock, seepage.	Poor: depth to rock, seepage, too sandy.
PdD----- Plainbo	Severe: depth to rock, poor filter, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, seepage, slope.	Poor: depth to rock, seepage, too sandy.
Pv----- Plover	Severe: wetness.	Severe: wetness.	Severe: wetness, too sandy.	Severe: wetness.	Poor: too sandy, wetness.
Px----- Poskin	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Poor: wetness, thin layer.
Rb, Rc----- Rib	Severe: flooding, ponding, poor filter.	Severe: seepage, flooding, ponding.	Severe: flooding, seepage, ponding.	Severe: flooding, seepage, ponding.	Poor: seepage, too sandy, small stones.
RfA----- Richford	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.

See footnote at end of table.

TABLE 12.--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
RoA, RoB----- Rosholt	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
RoC2----- Rosholt	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
RpA, RpB----- Rosholt	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
RpC2----- Rosholt	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
SaB----- Santiago	Moderate: percs slowly.	Moderate: seepage, slope.	Slight-----	Slight-----	Fair: small stones.
SaC2----- Santiago	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: small stones, slope.
SaD2----- Santiago	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
SbA----- Sattre	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
ScB, SdA----- Scott Lake	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, small stones.
SeB----- Seaton	Slight-----	Moderate: seepage, slope.	Slight-----	Slight-----	Good.
SeC2----- Seaton	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: slope.
SeD2----- Seaton	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
SfA----- Seaton	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Fair: wetness.
SgA, SgB----- Seaton	Slight-----	Severe: seepage.	Severe: seepage.	Slight-----	Fair: thin layer.
Sm----- Seelyville	Severe: ponding, subsides.	Severe: seepage, excess humus, ponding.	Severe: seepage, ponding.	Severe: seepage, ponding.	Poor: ponding, excess humus.

See footnote at end of table.

TABLE 12.--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
So----- Shiffer	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, wetness.
SrB----- Spencer	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Fair: wetness.
SrC2----- Spencer	Severe: wetness, percs slowly.	Severe: slope, wetness.	Severe: wetness.	Severe: wetness.	Fair: slope, wetness.
SsA, SsB----- Spencer	Severe: wetness.	Severe: seepage, wetness.	Severe: seepage.	Slight-----	Fair: wetness, thin layer.
TeB----- Tell	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
Ud. Udifluvents					
Ve----- Vesper	Severe: ponding, percs slowly.	Severe: ponding.	Severe: depth to rock, ponding, too clayey.	Severe: ponding.	Poor: too clayey, too sandy, ponding.
Wb----- Warman Variant	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, small stones.
WeB----- Withee	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 13.--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
AfB----- Alban	Good-----	Probable-----	Improbable: too sandy.	Good.
AfC----- Alban	Good-----	Probable-----	Improbable: too sandy.	Fair: slope.
AgB----- Almena	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim.
AlB----- Amery	Good-----	Probable-----	Probable-----	Poor: area reclaim, small stones.
AlC----- Amery	Good-----	Probable-----	Probable-----	Poor: small stones, area reclaim.
AlD----- Amery	Fair: slope.	Probable-----	Probable-----	Poor: small stones, slope, area reclaim.
AlF----- Amery	Poor: slope.	Probable-----	Probable-----	Poor: small stones, slope, area reclaim.
AnB, AnC2----- Antigo	Good-----	Probable-----	Probable-----	Poor: area reclaim.
AoA----- Arenzville	Good-----	Improbable: excess fines.	Improbable: excess fines.	Good.
ApB----- Arland	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Fair: depth to rock, small stones.
ApC2----- Arland	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Fair: depth to rock, small stones, slope.
ApD2----- Arland	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
AsB----- Arland	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Fair: depth to rock, small stones.
AsC2----- Arland	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Fair: depth to rock, small stones, slope.
AsD2----- Arland	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
Au----- Auburndale	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Ba, Bb----- Barronett	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Be----- Beseman	Poor: wetness.	Improbable: excess humus.	Improbable: excess humus.	Poor: excess humus, wetness.
B1A, B1B----- Billett	Good-----	Probable-----	Probable-----	Fair: small stones, area reclaim.
B1C2----- Billett	Good-----	Probable-----	Probable-----	Fair: small stones, area reclaim, slope.
BmA----- Billett	Good-----	Probable-----	Probable-----	Fair: small stones, area reclaim.
BoE----- Boone	Poor: depth to rock, slope.	Improbable: thin layer.	Improbable: too sandy.	Poor: too sandy, slope.
BpA----- Brill	Fair: wetness.	Probable-----	Probable-----	Poor: small stones, area reclaim.
BuA----- Burkhardt	Good-----	Probable-----	Probable-----	Poor: small stones, area reclaim.
Cb----- Cable	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones, wetness.
CdB----- Campia	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
CdC2----- Campia	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope.
CdD2----- Campia	Fair: slope, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
CeA----- Caryville	Good-----	Probable-----	Improbable: too sandy.	Poor: thin layer.
CkA, CkB, CkC2----- Chetek	Good-----	Probable-----	Probable-----	Poor: too sandy, small stones, area reclaim.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
CkD2*: Chetek-----	Fair: slope.	Probable-----	Probable-----	Poor: too sandy, small stones, area reclaim.
Mahtomedi-----	Fair: slope.	Probable-----	Probable-----	Poor: too sandy, small stones, area reclaim.
CkE*: Chetek-----	Poor: slope.	Probable-----	Probable-----	Poor: too sandy, small stones, area reclaim.
Mahtomedi-----	Poor: slope.	Probable-----	Probable-----	Poor: too sandy, small stones, area reclaim.
Cm----- Comstock	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
CuA----- Crystal Lake	Fair: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
E1B, E1C2----- Eleva	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
E1D2----- Eleva	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
EmB, EmC2----- Elkmound	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones.
EmD2----- Elkmound	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
EmE----- Elkmound	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Eo----- Elm Lake	Poor: depth to rock, wetness.	Improbable: thin layer.	Improbable: too sandy.	Poor: wetness.
FaB----- Fallcreek	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
FbB, FbC2----- Flambeau	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: large stones.

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
Fm----- Fordum	Poor: wetness.	Probable-----	Improbable: too sandy.	Poor: small stones, wetness.
FnB, FnC2----- Freeon	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
FrA----- Friendship	Fair: wetness.	Probable-----	Improbable: too sandy.	Poor: too sandy.
GaB----- Gale	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: depth to rock, thin layer.
GaC2----- Gale	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: depth to rock, thin layer, slope.
GaD2----- Gale	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Gr----- Greenwood	Poor: wetness, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess humus, wetness.
Ha----- Halder	Fair: wetness.	Probable-----	Probable-----	Poor: small stones, area reclaim.
HeB----- Hiles	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Fair: depth to rock, thin layer.
HfB----- Hiles Variant	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
HnB----- Hixton	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Fair: depth to rock.
HnC2----- Hixton	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Fair: depth to rock, slope.
HuB, HuC2----- Humbird	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
KeB----- Kert	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy, small stones.
La----- Lows	Poor: wetness.	Probable-----	Improbable: too sandy.	Poor: wetness.
LoB----- Loyal	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: area reclaim, small stones.

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
LoC2----- Loyal	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: area reclaim, small stones, slope.
Lp----- Lupton	Poor: wetness, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess humus, wetness.
MbB, McB----- Magnor	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, wetness.
MdB, MdC----- Mahtomedi	Good-----	Probable-----	Probable-----	Poor: too sandy, small stones, area reclaim.
Me----- Markey	Poor: wetness.	Probable-----	Improbable: too sandy.	Poor: excess humus, wetness.
Mh----- Meehan	Fair: wetness.	Probable-----	Improbable: too sandy.	Poor: too sandy.
MkB, MkC----- Menahga	Good-----	Probable-----	Improbable: too sandy.	Poor: too sandy.
MlA, MlB, MmA----- Meridian	Good-----	Probable-----	Improbable: too sandy.	Fair: thin layer.
MrB----- Merrillan	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
Mu----- Minocqua	Poor: wetness.	Probable-----	Probable-----	Poor: small stones, area reclaim.
MvA----- Moundville	Fair: wetness.	Probable-----	Improbable: too sandy.	Fair: too sandy, thin layer.
Na----- Newson	Poor: wetness.	Probable-----	Improbable: too sandy.	Poor: wetness, too sandy.
NtB, NtC2----- Northfield	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones.
NtD2----- Northfield	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Oe----- Oesterle	Fair: wetness.	Probable-----	Probable-----	Poor: small stones, area reclaim.

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
Or----- Orion	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
OsC2----- Otterholt	Good-----	Improbable: excess fines.	Improbable: excess fines.	Fair: area reclaim, slope.
Pc*. Pits				
PdB, PdC----- Plainbo	Poor: depth to rock.	Improbable: thin layer.	Improbable: too sandy.	Poor: too sandy.
PdD----- Plainbo	Poor: depth to rock.	Improbable: thin layer.	Improbable: too sandy.	Poor: too sandy, slope.
Pv----- Plover	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: thin layer.
Px----- Poskin	Fair: wetness.	Probable-----	Probable-----	Poor: area reclaim.
Rb, Rc----- Rib	Poor: wetness.	Probable-----	Probable-----	Poor: area reclaim, wetness.
RfA----- Richford	Good-----	Probable-----	Probable-----	Fair: too sandy.
RoA, RoB, RoC2, RpA, RpB, RpC2----- Rosholt	Good-----	Probable-----	Probable-----	Poor: small stones, area reclaim.
SaB, SaC2----- Santiago	Good-----	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
SaD2----- Santiago	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
SbA----- Sattre	Good-----	Probable-----	Improbable: too sandy.	Poor: small stones, area reclaim.
ScB, SdA----- Scott Lake	Fair: wetness.	Probable-----	Probable-----	Poor: small stones, area reclaim.
SeB----- Seaton	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
SeC2----- Seaton	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope.
SeD2----- Seaton	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
SfA----- Seaton	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
SgA, SgB----- Seaton	Good-----	Probable-----	Improbable: too sandy.	Good.
Sm----- Seelyville	Poor: wetness, low strength.	Improbable: excess humus.	Improbable: excess humus.	Poor: excess humus, wetness.
So----- Shiffer	Fair: wetness.	Probable-----	Improbable: too sandy.	Fair: thin layer.
SrB----- Spencer	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: area reclaim.
SrC2----- Spencer	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: area reclaim, slope.
SsA, SsB----- Spencer	Good-----	Probable-----	Probable-----	Fair: area reclaim.
TeB----- Tell	Good-----	Probable-----	Improbable: too sandy.	Fair: thin layer.
Ud. Udifluvents				
Ve----- Vesper	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer, wetness.
Wb----- Warman Variant	Fair: wetness.	Probable-----	Probable-----	Poor: small stones, area reclaim.
WeB----- Withee	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 14.--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	Drainage	Irrigation	Terraces and diversions	Grassed waterways
AfB----- Alban	Moderate: seepage, slope.	Severe: seepage, piping.	Deep to water	Soil blowing, rooting depth, slope.	Too sandy-----	Rooting depth.
AfC----- Alban	Severe: slope.	Severe: seepage, piping.	Deep to water	Soil blowing, rooting depth, slope.	Slope, too sandy.	Slope, rooting depth.
AgB----- Almena	Moderate: seepage, slope.	Severe: seepage, piping, wetness.	Frost action, slope.	Wetness, slope, erodes easily.	Erodes easily, wetness.	Wetness, erodes easily.
AlB----- Amery	Moderate: slope.	Severe: seepage, piping.	Deep to water	Droughty, soil blowing, rooting depth.	Soil blowing---	Rooting depth, droughty.
AlC, AlD, AlF----- Amery	Severe: slope.	Severe: seepage, piping.	Deep to water	Slope, droughty, soil blowing.	Slope, soil blowing.	Slope, droughty.
AnB----- Antigo	Severe: seepage.	Severe: seepage, piping.	Deep to water	Slope, erodes easily.	Erodes easily, too sandy.	Erodes easily.
AnC2----- Antigo	Severe: seepage, slope.	Severe: seepage, piping.	Deep to water	Slope, erodes easily.	Slope, erodes easily, too sandy.	Slope, erodes easily.
AoA----- Arenzville	Moderate: seepage.	Severe: piping.	Deep to water	Erodes easily, flooding.	Erodes easily	Erodes easily.
ApB----- Arland	Severe: seepage.	Severe: piping.	Deep to water	Soil blowing, depth to rock, slope.	Depth to rock, soil blowing.	Depth to rock.
ApC2, ApD2----- Arland	Severe: seepage, slope.	Severe: piping.	Deep to water	Soil blowing, depth to rock, slope.	Slope, depth to rock, soil blowing.	Slope, depth to rock.
AsB----- Arland	Severe: seepage.	Severe: piping.	Deep to water	Depth to rock, slope.	Depth to rock	Depth to rock.
AsC2, AsD2----- Arland	Severe: seepage, slope.	Severe: piping.	Deep to water	Depth to rock, slope.	Slope, depth to rock.	Slope, depth to rock.
Au----- Auburndale	Moderate: seepage.	Severe: thin layer, ponding.	Ponding, frost action.	Ponding, erodes easily.	Erodes easily, ponding.	Wetness, erodes easily.
Ba----- Barronett	Moderate: seepage.	Severe: ponding.	Ponding, frost action.	Ponding-----	Ponding-----	Wetness.
Eb----- Barronett	Moderate: seepage.	Severe: ponding.	Ponding, flooding, frost action.	Ponding, flooding.	Ponding-----	Wetness.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
Be----- Beseman	Severe: seepage.	Severe: excess humus, ponding.	Ponding, subsides, frost action.	Ponding, soil blowing, rooting depth.	Ponding, soil blowing.	Wetness, rooting depth.
BlA----- Billett	Severe: seepage.	Severe: seepage, piping.	Deep to water	Droughty, soil blowing.	Too sandy, soil blowing.	Droughty.
BlB----- Billett	Severe: seepage.	Severe: seepage, piping.	Deep to water	Slope, droughty, soil blowing.	Too sandy, soil blowing.	Droughty.
BlC2----- Billett	Severe: seepage, slope.	Severe: seepage, piping.	Deep to water	Slope, droughty, soil blowing.	Slope, too sandy, soil blowing.	Slope, droughty.
BmA----- Billett	Severe: seepage.	Severe: seepage, piping.	Deep to water	Droughty, soil blowing.	Too sandy, soil blowing.	Droughty, rooting depth.
BoE----- Boone	Severe: seepage, slope.	Severe: seepage, piping.	Deep to water	Slope, droughty, fast intake.	Slope, depth to rock, too sandy.	Slope, droughty, depth to rock.
BpA----- Brill	Severe: seepage.	Severe: seepage, piping.	Cutbanks cave, frost action.	Wetness-----	Erodes easily, wetness, too sandy.	Erodes easily.
BuA----- Burkhardt	Severe: seepage.	Severe: seepage.	Deep to water	Droughty, soil blowing.	Soil blowing, too sandy.	Droughty.
Cb----- Cable	Slight-----	Severe: piping, ponding.	Ponding, frost action.	Ponding, droughty, rooting depth.	Large stones, erodes easily, ponding.	Large stones, wetness, erodes easily.
CdB----- Campia	Moderate: seepage, slope.	Moderate: piping.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.
CdC2, CdD2----- Campia	Severe: slope.	Moderate: piping.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
CeA----- Caryville	Severe: seepage.	Severe: seepage, piping.	Deep to water	Droughty, soil blowing.	Too sandy, soil blowing.	Droughty.
CkA----- Chetek	Severe: seepage.	Severe: seepage.	Deep to water	Droughty, soil blowing.	Too sandy, soil blowing.	Droughty, rooting depth.
CkB----- Chetek	Severe: seepage.	Severe: seepage.	Deep to water	Slope, droughty, soil blowing.	Too sandy, soil blowing.	Droughty, rooting depth.
CkC2----- Chetek	Severe: seepage, slope.	Severe: seepage.	Deep to water	Slope, droughty, soil blowing.	Slope, too sandy, soil blowing.	Slope, droughty, rooting depth.
CKD2*, CkE*: Chetek-----	Severe: seepage, slope.	Severe: seepage.	Deep to water	Slope, droughty, soil blowing.	Slope, too sandy, soil blowing.	Slope, droughty, rooting depth.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
CkD2*, CkE*: Mahtomedi-----	Severe: seepage, slope.	Severe: seepage.	Deep to water	Slope, droughty, fast intake.	Slope, too sandy, soil blowing.	Slope, droughty, rooting depth.
Cm----- Comstock	Moderate: seepage.	Severe: piping, wetness.	Frost action, cutbanks cave.	Wetness, erodes easily.	Erodes easily, wetness.	Wetness, erodes easily.
CuA----- Crystal Lake	Moderate: seepage.	Severe: piping.	Frost action---	Wetness, erodes easily.	Erodes easily, wetness.	Erodes easily.
E1B----- Eleva	Severe: seepage.	Severe: piping.	Deep to water	Slope, droughty, soil blowing.	Depth to rock, soil blowing.	Droughty, depth to rock.
ELC2, E1D2----- Eleva	Severe: seepage, slope.	Severe: piping.	Deep to water	Slope, droughty, soil blowing.	Slope, depth to rock, soil blowing.	Slope, droughty, depth to rock.
EmB----- Elkmound	Severe: depth to rock.	Severe: piping.	Deep to water	Depth to rock, slope.	Depth to rock	Depth to rock.
EmC2, EmD2, EmE--- Elkmound	Severe: depth to rock, slope.	Severe: piping.	Deep to water	Depth to rock, slope.	Slope, depth to rock.	Slope, depth to rock.
Eo----- Elm Lake	Severe: seepage.	Severe: seepage, piping, ponding.	Ponding, percs slowly, depth to rock.	Ponding, droughty, fast intake.	Depth to rock, erodes easily, ponding.	Wetness, erodes easily, droughty.
FaB----- Fallcreek	Moderate: slope.	Severe: piping.	Frost action, slope.	Wetness, soil blowing, slope.	Wetness, soil blowing.	Wetness.
FbB----- Flambeau	Moderate: seepage, slope.	Moderate: piping, wetness.	Slope-----	Slope, wetness, rooting depth.	Wetness-----	Rooting depth.
FbC2----- Flambeau	Severe: slope.	Moderate: piping, wetness.	Slope-----	Slope, wetness, rooting depth.	Slope, wetness.	Slope, rooting depth.
Fm----- Fordum	Severe: seepage.	Severe: seepage, piping, ponding.	Ponding, flooding, frost action.	Ponding, droughty, flooding.	Ponding, too sandy.	Wetness, droughty.
FnB----- Freeon	Moderate: seepage, slope.	Severe: seepage, piping.	Slope, percs slowly.	Wetness, slope.	Erodes easily, wetness.	Erodes easily, rooting depth.
FnC2----- Freeon	Severe: slope.	Severe: seepage, piping.	Slope, percs slowly.	Wetness, slope.	Slope, erodes easily, wetness.	Slope, erodes easily, rooting depth.
FrA----- Friendship	Severe: seepage.	Severe: seepage, piping.	Cutbanks cave	Wetness, droughty, fast intake.	Wetness, too sandy, soil blowing.	Droughty.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
GaB----- Gale	Severe: seepage.	Severe: thin layer.	Deep to water	Depth to rock, slope, erodes easily.	Depth to rock, erodes easily.	Erodes easily, depth to rock.
GaC2, GaD2----- Gale	Severe: seepage, slope.	Severe: thin layer.	Deep to water	Depth to rock, slope, erodes easily.	Slope, depth to rock, erodes easily.	Slope, erodes easily, depth to rock.
Gr----- Greenwood	Severe: seepage.	Severe: excess humus, ponding.	Ponding, frost action.	Ponding-----	Ponding-----	Wetness.
Ha----- Halder	Severe: seepage.	Severe: seepage, wetness.	Frost action, cutbanks cave.	Wetness, rooting depth.	Wetness, too sandy.	Wetness, rooting depth.
HeB----- Hiles	Moderate: seepage, depth to rock, slope.	Severe: piping.	Depth to rock, frost action, slope.	Wetness, depth to rock, slope.	Depth to rock, erodes easily.	Erodes easily, depth to rock.
HfB----- Hiles Variant	Moderate: seepage, depth to rock, slope.	Moderate: thin layer, hard to pack, wetness.	Percs slowly, slope.	Slope, wetness, percs slowly.	Wetness, percs slowly.	Percs slowly.
HnB----- Hixton	Severe: seepage.	Severe: thin layer.	Deep to water	Depth to rock	Depth to rock	Depth to rock.
HnC2----- Hixton	Severe: seepage, slope.	Severe: thin layer.	Deep to water	Depth to rock	Slope, depth to rock.	Slope, depth to rock.
HuB----- Humbird	Severe: seepage.	Severe: seepage, piping.	Percs slowly, depth to rock, slope.	Wetness, droughty.	Depth to rock, wetness.	Droughty, depth to rock.
HuC2----- Humbird	Severe: seepage, slope.	Severe: seepage, piping.	Percs slowly, depth to rock, slope.	Wetness, droughty.	Slope, depth to rock, wetness.	Slope, droughty, depth to rock.
KeB----- Kert	Severe: seepage.	Moderate: piping, hard to pack, wetness.	Percs slowly, frost action, slope.	Slope, wetness, percs slowly.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.
La----- Lows	Severe: seepage.	Severe: seepage, piping, ponding.	Ponding, frost action.	Ponding, rooting depth.	Ponding, too sandy.	Wetness, rooting depth.
LoB----- Loyal	Moderate: seepage, slope.	Severe: thin layer.	Slope-----	Wetness, rooting depth, slope.	Erodes easily, wetness.	Erodes easily, rooting depth.
LoC2----- Loyal	Severe: slope.	Severe: thin layer.	Slope-----	Wetness, rooting depth, slope.	Slope, erodes easily, wetness.	Slope, erodes easily, rooting depth.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
Ip----- Lupton	Severe: seepage.	Severe: excess humus, ponding.	Ponding, subsides, frost action.	Ponding, soil blowing.	Ponding, soil blowing.	Wetness.
MbB----- Magnor	Moderate: seepage, slope.	Severe: piping, wetness.	Frost action, slope.	Wetness, rooting depth, slope.	Erodes easily, wetness.	Wetness, erodes easily, rooting depth.
McB----- Magnor	Moderate: seepage, slope.	Severe: piping, wetness.	Frost action, slope.	Wetness, rooting depth, slope.	Large stones, erodes easily, wetness.	Large stones, wetness, erodes easily.
MdB----- Mahtomedi	Severe: seepage.	Severe: seepage.	Deep to water	Slope, droughty, fast intake.	Too sandy, soil blowing.	Droughty, rooting depth.
MdC----- Mahtomedi	Severe: seepage, slope.	Severe: seepage.	Deep to water	Slope, droughty, fast intake.	Slope, too sandy, soil blowing.	Slope, droughty, rooting depth.
Me----- Markey	Severe: seepage.	Severe: seepage, piping, ponding.	Ponding, subsides, frost action.	Ponding, soil blowing.	Ponding, too sandy, soil blowing.	Wetness.
Mh----- Meehan	Severe: seepage.	Severe: seepage, piping, wetness.	Cutbanks cave	Wetness, droughty, fast intake.	Wetness, too sandy, soil blowing.	Wetness, droughty.
MkB----- Menahga	Severe: seepage.	Severe: seepage, piping.	Deep to water	Slope, droughty, fast intake.	Too sandy, soil blowing.	Droughty.
MkC----- Menahga	Severe: seepage, slope.	Severe: seepage, piping.	Deep to water	Slope, droughty, fast intake.	Slope, too sandy, soil blowing.	Slope, droughty.
M1A----- Meridian	Severe: seepage.	Severe: seepage, piping.	Deep to water	Favorable-----	Too sandy-----	Favorable.
M1B----- Meridian	Severe: seepage.	Severe: seepage, piping.	Deep to water	Slope-----	Too sandy-----	Favorable.
MmA----- Meridian	Severe: seepage.	Severe: seepage, piping.	Deep to water	Favorable-----	Too sandy-----	Favorable.
MrB----- Merrillan	Moderate: depth to rock, slope.	Severe: thin layer, wetness.	Percs slowly, depth to rock, frost action.	Wetness, percs slowly.	Depth to rock, wetness, soil blowing.	Wetness, depth to rock, rooting depth.
Mu----- Minocqua	Severe: seepage.	Severe: seepage, piping, ponding.	Ponding, frost action.	Ponding, droughty.	Erodes easily, ponding, too sandy.	Wetness, erodes easily, droughty.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
MvA----- Moundville	Severe: seepage.	Severe: seepage, piping.	Cutbanks cave	Wetness, droughty, fast intake.	Wetness, too sandy, soil blowing.	Droughty.
Na----- Newson	Severe: seepage.	Severe: seepage, piping, ponding.	Ponding, cutbanks cave.	Ponding, droughty, fast intake.	Ponding, too sandy, soil blowing.	Wetness, droughty, rooting depth.
NtB----- Northfield	Severe: depth to rock.	Severe: thin layer.	Deep to water	Depth to rock, slope.	Depth to rock	Depth to rock.
NtC2, NtD2----- Northfield	Severe: depth to rock, slope.	Severe: thin layer.	Deep to water	Depth to rock, slope.	Slope, depth to rock.	Slope, depth to rock.
Oe----- Oesterle	Severe: seepage.	Severe: seepage, piping, wetness.	Frost action, cutbanks cave.	Wetness, droughty, soil blowing.	Wetness, too sandy, soil blowing.	Wetness, droughty.
Or----- Orion	Moderate: seepage.	Severe: piping, wetness.	Flooding, frost action.	Wetness, erodes easily.	Erodes easily, wetness.	Wetness, erodes easily.
Osc2----- Otterholt	Severe: slope.	Severe: piping.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
Pc*. Pits						
PdB----- Plainbo	Severe: seepage.	Severe: seepage, piping.	Deep to water	Slope, droughty, fast intake.	Depth to rock, too sandy.	Droughty, depth to rock.
PdC, PdD----- Plainbo	Severe: seepage, slope.	Severe: seepage, piping.	Deep to water	Slope, droughty, fast intake.	Slope, depth to rock, too sandy.	Slope, droughty, depth to rock.
Pv----- Plover	Moderate: seepage.	Severe: piping, wetness.	Frost action, cutbanks cave.	Wetness-----	Erodes easily, wetness, too sandy.	Wetness, erodes easily.
Px----- Poskin	Severe: seepage.	Severe: thin layer, wetness.	Frost action---	Wetness, rooting depth.	Erodes easily, wetness.	Wetness, erodes easily, rooting depth.
Rb, Rc----- Rib	Severe: seepage.	Severe: seepage, ponding.	Ponding, flooding, frost action.	Ponding, flooding.	Ponding, too sandy.	Wetness, rooting depth.
RfA----- Richford	Severe: seepage.	Severe: seepage, piping.	Deep to water	Droughty, fast intake, soil blowing.	Too sandy, soil blowing.	Droughty.
RoA----- Rosholt	Severe: seepage.	Severe: seepage, piping.	Deep to water	Droughty, soil blowing.	Too sandy, soil blowing.	Droughty.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
RoB----- Rosholt	Severe: seepage.	Severe: seepage, piping.	Deep to water	Droughty, soil blowing, slope.	Too sandy, soil blowing.	Droughty.
RoC2----- Rosholt	Severe: seepage, slope.	Severe: seepage, piping.	Deep to water	Droughty, soil blowing, slope.	Slope, too sandy, soil blowing.	Slope, droughty.
RpA----- Rosholt	Severe: seepage.	Severe: seepage, piping.	Deep to water	Droughty-----	Too sandy-----	Droughty.
RpB----- Rosholt	Severe: seepage.	Severe: seepage, piping.	Deep to water	Droughty, slope.	Too sandy-----	Droughty.
RpC2----- Rosholt	Severe: seepage, slope.	Severe: seepage, piping.	Deep to water	Droughty, slope.	Slope, too sandy.	Slope, droughty.
SaB----- Santiago	Moderate: seepage, slope.	Severe: piping.	Deep to water	Rooting depth, slope, erodes easily.	Erodes easily	Erodes easily, rooting depth.
SaC2, SaD2----- Santiago	Severe: slope.	Severe: piping.	Deep to water	Rooting depth, slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily, rooting depth.
SbA----- Sattre	Severe: seepage.	Severe: seepage.	Deep to water	Favorable-----	Too sandy-----	Favorable.
ScB----- Scott Lake	Severe: seepage.	Severe: seepage, piping.	Large stones, slope, cutbanks cave.	Slope, wetness, droughty.	Large stones, wetness, too sandy.	Large stones, droughty, rooting depth.
SdA----- Scott Lake	Severe: seepage.	Severe: seepage, piping.	Large stones, cutbanks cave.	Wetness, droughty.	Large stones, wetness, too sandy.	Large stones, droughty, rooting depth.
SeB----- Seaton	Moderate: seepage, slope.	Severe: piping.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.
SeC2, SeD2----- Seaton	Severe: slope.	Severe: piping.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
SfA----- Seaton	Moderate: seepage.	Moderate: piping, wetness.	Deep to water	Erodes easily	Erodes easily	Erodes easily.
SgA----- Seaton	Severe: seepage.	Severe: thin layer.	Deep to water	Erodes easily	Erodes easily	Erodes easily.
SgB----- Seaton	Severe: seepage.	Severe: thin layer.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.
Sm----- Seelyville	Severe: seepage.	Severe: excess humus, ponding.	Ponding, subsides.	Ponding-----	Ponding-----	Wetness.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
So----- Shiffer	Severe: seepage.	Severe: seepage, piping, wetness.	Frost action, cutbanks cave.	Wetness-----	Wetness, too sandy.	Wetness.
SrB----- Spencer	Moderate: seepage, slope.	Severe: piping.	Frost action, slope.	Wetness, slope, erodes easily.	Erodes easily, wetness.	Erodes easily.
SrC2----- Spencer	Severe: slope.	Severe: piping.	Frost action, slope.	Wetness, slope, erodes easily.	Slope, erodes easily, wetness.	Slope, erodes easily.
SsA----- Spencer	Severe: seepage.	Severe: piping.	Deep to water	Erodes easily	Erodes easily	Erodes easily.
SsB----- Spencer	Severe: seepage.	Severe: piping.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.
TeB----- Tell	Severe: seepage.	Severe: seepage, piping.	Deep to water	Slope, erodes easily.	Erodes easily, too sandy.	Erodes easily.
Ud. Udifluents						
Ve----- Vesper	Moderate: depth to rock.	Severe: seepage, piping, ponding.	Ponding, percs slowly, frost action.	Ponding, percs slowly, erodes easily.	Erodes easily, ponding, too sandy.	Wetness, erodes easily, percs slowly.
Wb----- Warman Variant	Severe: seepage.	Severe: seepage, wetness.	Cutbanks cave	Wetness, droughty, soil blowing.	Wetness, too sandy, soil blowing.	Wetness, droughty.
WeB----- Withee	Moderate: slope.	Severe: wetness.	Frost action, slope.	Wetness, rooting depth, slope.	Erodes easily, wetness.	Wetness, erodes easily, rooting depth.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 15.--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 > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
AfB----- Alban	0-8	Fine sandy loam	ML, SM	A-2, A-4	0	100	100	65-85	30-55	<20	1-4
	8-24	Loamy sand, fine sandy loam, silt loam.	SM, ML, CL-ML, SM-SC	A-2, A-4	0	100	100	50-100	15-90	<25	NP-7
	24-38	Fine sandy loam, very fine sandy loam, sandy loam.	SM, SM-SC, ML, CL-ML	A-2, A-4	0	100	100	60-100	30-75	<25	NP-7
	38-60	Stratified silt to fine sand.	SM, ML, CL-ML, SP-SM	A-4, A-2, A-3	0	100	100	70-100	5-100	<25	NP-6
AfC----- Alban	0-8	Fine sandy loam	ML, SM	A-2, A-4	0	100	100	60-85	30-55	<20	1-4
	8-24	Loamy sand, fine sandy loam, silt loam.	SM, ML, CL-ML, SM-SC	A-2, A-4	0	100	100	50-100	15-90	<25	NP-7
	24-38	Fine sandy loam, very fine sandy loam, sandy loam.	SM, SM-SC, ML, CL-ML	A-2, A-4	0	100	100	60-100	30-75	<25	NP-7
	38-60	Stratified silt to fine sand.	SM, ML, SM-SC, SP-SM	A-4, A-2, A-3	0	100	100	70-100	5-100	<25	NP-6
AgB----- Almena	0-9	Silt loam-----	CL	A-4, A-6	0	100	100	90-100	85-100	25-32	7-13
	9-24	Silt loam, silt	CL, CL-ML	A-4, A-6	0	100	100	90-100	85-100	19-34	4-14
	24-42	Silt loam, silty clay loam.	CL	A-6, A-4	0	100	100	90-100	85-100	28-37	9-16
	42-48	Silt loam-----	CL	A-4, A-6	0	100	100	90-100	80-100	28-35	9-15
	48-60	Gravelly sandy loam, gravelly loam, sandy loam.	SM, SC, ML, CL	A-2, A-4, A-1, A-6	0-5	70-100	50-95	30-90	15-70	<30	NP-15
AlB, AlC, AlD, AlF----- Amery	0-2	Sandy loam-----	SM, ML, SM-SC, CL-ML	A-4, A-2, A-1	0-5	80-100	75-100	45-85	15-55	<23	NP-6
	2-32	Sandy loam, fine sandy loam, gravelly loam.	SM, SC, CL, ML	A-4, A-2, A-1	3-15	50-100	50-95	30-95	15-75	<28	NP-9
	32-60	Loamy sand, fine sandy loam, gravelly sandy loam.	SM, SC, SP-SM, SP-SC	A-4, A-2, A-1	3-15	50-100	50-95	25-85	10-50	<28	NP-9
AnB, AnC2----- Antigo	0-10	Silt loam-----	ML, CL-ML	A-4	0-3	95-100	90-100	90-100	85-95	<25	2-7
	10-28	Silt loam-----	CL	A-6, A-4	0-3	95-100	90-100	90-100	85-95	25-35	9-15
	28-32	Sandy loam, loam, gravelly loamy sand.	SM, GM, ML, GM-GC	A-2, A-4, A-1, A-3	0-9	50-100	45-100	25-95	7-75	<35	NP-15
	32-60	Stratified sand to gravel.	SP, SP-SM, GP, GP-GM	A-2, A-3, A-1	0-9	30-100	25-100	10-70	1-12	---	NP
AoA----- Arenzville	0-8	Silt loam-----	ML, CL-ML, CL	A-4	0	100	100	95-100	80-95	20-30	4-10
	8-50	Silt loam, silty clay loam.	CL	A-6, A-7	0	100	100	90-100	85-95	30-45	10-20
	50-60	Silt loam-----	CL, CL-ML	A-4	0	75-100	75-100	75-100	70-95	20-30	5-10

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
ApB, ApC2, ApD2-- Arland	0-7	Sandy loam-----	SM, SM-SC, ML, CL-ML	A-2, A-4, A-1	0	80-100	75-100	45-85	20-55	<25	1-6
	7-25	Sandy loam, fine sandy loam, loam.	CL, SC, CL-ML, SM-SC	A-4, A-2	0	80-100	75-100	45-95	25-75	20-30	4-10
	25-29	Sandy loam, fine sandy loam, loamy sand.	SM, SM-SC, ML, CL-ML	A-2, A-4, A-1	0	80-100	75-100	35-85	10-75	<25	NP-6
	29-35	Loamy sand, sand, loamy fine sand.	SM, SP-SM	A-2, A-3, A-1, A-4	0	80-100	75-100	35-85	5-45	---	NP
	35	Weathered bedrock	---	---	---	---	---	---	---	---	---
AsB, AsC2, AsD2-- Arland	0-7	Loam-----	CL-ML, SM-SC	A-4	0	80-100	75-100	65-100	45-100	20-25	4-7
	7-25	Sandy loam, fine sandy loam, loam.	CL, SC, CL-ML, SM-SC	A-4, A-2	0	80-100	75-100	45-95	25-75	20-30	4-10
	25-29	Sandy loam, fine sandy loam, loamy sand.	SM, SM-SC, ML, CL-ML	A-2, A-4, A-1	0	80-100	75-100	35-85	10-75	<25	NP-6
	29-35	Loamy sand, sand, loamy fine sand.	SM, SP-SM	A-2, A-3, A-1, A-4	0	80-100	75-100	35-85	5-45	---	NP
	35	Weathered bedrock	---	---	---	---	---	---	---	---	---
Au----- Auburndale	0-6	Silt loam-----	CL, ML, CL-ML	A-4, A-6	0	100	95-100	90-100	90-100	<35	2-15
	6-38	Silt loam-----	CL	A-6	0	100	95-100	90-100	85-100	25-35	10-17
	38-45	Loam, silt loam, sandy loam.	CL, CL-ML, SC, SM-SC	A-4, A-6, A-2, A-1	0-5	75-100	65-100	40-100	20-90	20-30	4-11
	45-60	Sandy loam, gravelly sandy loam, loam.	SM, ML, CL-ML, SM-SC	A-4, A-2, A-1	0-5	75-95	65-95	40-90	20-70	<25	NP-7
Ba----- Barronett	0-9	Silt loam-----	ML, CL, CL-ML	A-4	0	100	100	90-100	75-95	15-26	1-8
	9-18	Silt loam, loam, very fine sandy loam.	ML, CL, CL-ML	A-4, A-6	0	100	100	85-100	50-95	<35	NP-11
	18-40	Silt loam, silty clay loam, loam.	CL	A-6, A-7, A-4	0	100	100	90-100	85-100	25-45	7-25
	40-60	Stratified silt loam to very fine sand.	CL	A-4, A-6	0	100	100	80-100	70-95	25-35	7-15
Bb----- Barronett	0-8	Mucky silt loam	ML, CL, CL-ML	A-4	0	100	100	90-100	75-95	15-26	1-8
	8-30	Silt loam, silty clay loam, loam.	CL	A-6, A-7, A-4	0	100	100	90-100	85-100	25-45	7-25
	30-60	Stratified silt loam to very fine sand.	CL	A-4, A-6	0	100	100	80-100	70-95	25-35	7-15
Be----- Beseman	0-20	Sapric material	PT	---	0	---	---	---	---	---	---
	20-60	Loam, sandy loam, silt loam.	CL, ML, SM, SC	A-2, A-4, A-6	0-2	75-100	65-100	40-95	25-75	15-30	NP-12

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
B1A, B1B, B1C2--- Billett	0-9	Sandy loam-----	SM, SM-SC, SC	A-2, A-4	0	100	95-100	60-100	25-50	<26	NP-8
	9-30	Sandy loam, fine sandy loam.	SM, SM-SC, SC	A-2, A-4	0-10	90-100	90-100	60-100	25-50	<28	NP-9
	30-36	Loamy sand, sandy loam, fine sandy loam.	SM	A-2, A-4	0-10	75-100	75-100	75-90	20-45	<21	NP-4
	36-60	Stratified fine sand to sand.	SM, SP-SM	A-2, A-4, A-1	0-10	80-100	75-100	40-95	10-40	---	NP
BmA----- Billett	0-8	Sandy loam-----	SM, SC, SM-SC	A-4, A-2	0	100	95-100	60-100	25-50	<26	NP-8
	8-37	Fine sandy loam, sandy loam.	SM, SC, SM-SC	A-4, A-2	0-10	90-100	90-100	60-100	25-50	<28	NP-9
	37-60	Fine sand, sand	SM, SP-SM	A-2, A-4, A-1	0-10	80-100	75-100	40-95	10-40	---	NP
BoE----- Boone	0-2	Fine sand-----	SM, SP-SM	A-2, A-3, A-1	0	75-100	75-100	40-80	5-35	---	NP
	2-22	Fine sand, sand, loamy sand.	SM, SP-SM, SP	A-2, A-3, A-1	0	75-100	75-100	30-75	2-35	---	NP
	22	Weathered bedrock	---	---	---	---	---	---	---	---	---
BpA----- Brill	0-8	Silt loam-----	ML, CL-ML	A-4	0-2	95-100	90-100	90-100	85-90	<25	2-7
	8-13	Silt loam, silt	ML, CL-ML	A-4	0-2	95-100	90-100	90-100	85-100	<23	2-6
	13-25	Silt loam, silty clay loam.	CL	A-6, A-7	0-2	95-100	90-100	85-100	85-95	25-45	10-23
	25-34	Loam, gravelly sandy loam, gravelly loamy sand.	ML, CL-ML, GM, GM-GC	A-4, A-2, A-1	0-6	50-100	45-100	30-95	15-75	<25	NP-7
	34-60	Stratified sand to gravel.	SP, SP-SM, GP, GP-GM	A-2, A-3, A-1	0-7	30-100	25-100	10-70	1-12	---	NP
BuA----- Burkhardt	0-11	Sandy loam-----	SM, SM-SC	A-2, A-4	0	95-100	90-100	55-70	25-40	<26	2-7
	11-17	Sandy loam, loam, coarse sandy loam.	SM, ML, SC, CL	A-2, A-4	0	95-100	85-100	50-95	25-75	15-30	2-10
	17-60	Stratified coarse sand to gravel.	SP, SP-SM, GP, GP-GM	A-1	0	50-85	45-85	20-35	1-5	---	NP
Cb----- Cable	0-4	Silt loam-----	CL, CL-ML, SC, SM-SC	A-4	0-25	75-100	75-100	60-100	35-90	<26	5-10
	4-16	Silt loam, loam, fine sandy loam.	SM, SC, ML, CL	A-2, A-4	0-25	75-100	75-100	50-100	30-90	<33	NP-10
	16-26	Loam, silt loam, gravelly sandy loam.	SM, SC, ML, CL	A-2, A-4, A-1	0-25	65-100	60-100	35-95	20-75	<27	NP-8
	26-60	Sandy loam, gravelly sandy loam.	SM, GM, ML, CL-ML	A-2, A-1, A-4	0-25	65-100	60-100	40-90	20-70	<23	NP-6
CdB, CdC2, CdD2-- Campia	0-8	Silt loam-----	CL-ML, CL, ML	A-4, A-6	0	100	100	90-100	85-100	19-32	3-13
	8-42	Silt loam, silty clay loam.	CL	A-6, A-4	0	100	100	90-100	85-100	25-40	9-20
	42-60	Silt loam, silt	CL, CL-ML, ML	A-4, A-6	0	100	100	85-100	65-100	19-38	3-19

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
CeA----- Caryville	0-16	Sandy loam-----	SM, ML, SM-SC, CL-ML	A-2, A-4	0	90-100	90-100	55-85	25-55	<25	1-4
	16-60	Sand, loamy sand	SP, SM, SP-SM	A-2, A-3, A-4	0	75-100	70-100	65-90	1-50	---	NP
CkA, CkB, CkC2--- Chetek	0-8	Sandy loam-----	SM, SM-SC	A-2, A-4	0-15	80-100	75-100	45-70	25-40	<23	NP-6
	8-17	Sandy loam, loam	ML, CL, SM, SC	A-2, A-4, A-6, A-1	0-15	80-100	75-100	45-70	10-75	<31	NP-13
	17-60	Stratified sand to gravel.	SP, SP-SM	A-1	0-15	55-95	45-75	15-50	1-5	---	NP
CkD2*, CkE*: Chetek-----	0-8	Sandy loam-----	SM, SM-SC	A-2, A-4	0-15	80-100	75-100	45-70	25-40	<23	NP-6
	8-17	Sandy loam, loam	ML, CL, SM, SC	A-2, A-4, A-6, A-1	0-15	80-100	75-100	45-95	10-75	<31	NP-13
	17-60	Stratified sand to gravel.	SP, SP-SM	A-1	0-15	55-95	45-75	15-50	1-5	---	NP
Mahtomedi-----	0-8	Loamy sand-----	SM, SM-SC	A-2, A-1	0-2	95-100	60-90	40-86	15-30	<20	NP-4
	8-24	Sand, loamy sand, gravelly coarse sand.	SP-SM, SM	A-2, A-3, A-1	0-15	70-95	50-90	30-75	5-15	<20	NP
	24-60	Gravelly sand, sand and gravel.	SP, SM, SP-SM	A-2, A-3, A-1	0-15	55-95	50-90	30-70	2-15	<20	NP
Cm----- Comstock	0-8	Silt loam-----	CL-ML, CL, ML	A-4, A-6	0	100	100	85-100	65-100	15-35	3-15
	8-48	Silt loam, silty clay loam.	CL	A-6, A-4	0	100	100	90-100	85-100	25-40	9-20
	48-60	Silt loam-----	CL, ML, CL-ML	A-4, A-6	0	100	100	85-100	65-95	<35	NP-15
CuA----- Crystal Lake	0-8	Silt loam-----	CL-ML, CL, ML	A-4, A-6	0	100	100	85-100	70-100	19-32	3-13
	8-44	Silt loam, silty clay loam.	CL	A-6, A-4	0	100	100	90-100	85-100	25-40	9-18
	44-60	Silt loam, silt	CL, CL-ML, ML	A-4, A-6	0	100	100	85-100	75-100	19-32	3-13
E1B, E1C2, E1D2-- Eleva	0-9	Sandy loam-----	SM, SM-SC, ML, CL-ML	A-2, A-4	0	75-100	70-100	40-90	20-55	<25	NP-7
	9-36	Sandy loam, fine sandy loam, loam.	CL, SC, ML, SM	A-2, A-4	0-2	75-100	70-100	40-95	20-75	<30	3-9
	36-40	Sand, fine sand, loamy sand.	SM, SP-SM	A-2, A-3, A-1	0-15	75-100	70-100	35-85	5-35	<20	NP-4
	40	Weathered bedrock	---	---	---	---	---	---	---	---	---
EmB, EmC2, EmD2, EmE----- Elkmound	0-7	Loam-----	SM, SM-SC, ML, CL-ML	A-4	0-7	70-100	70-100	60-100	45-80	<23	NP-6
	7-16	Sandy loam, loam	SM, SC, ML, CL	A-2, A-4, A-6, A-1	0-7	70-100	70-100	45-100	20-80	<30	NP-11
	16-19 19	Loamy fine sand Weathered bedrock, unweathered bedrock.	SM, SP-SM	A-2, A-1	0-7	70-100	70-100	35-75	10-30	---	NP

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
Eo----- Elm Lake	0-4	Loamy sand-----	SM	A-2, A-4	0	100	100	50-90	15-40	---	NP
	4-23	Sand, loamy sand, fine sand.	SP-SM, SM	A-2, A-3	0	100	100	50-80	5-35	---	NP
	23-48	Silty clay loam, silty clay, clay loam.	CL	A-6, A-7	0	80-100	70-95	65-95	60-90	35-50	15-28
	48	Weathered bedrock	---	---	---	---	---	---	---	---	---
FaB----- Fallcreek	0-8	Sandy loam-----	SM, SM-SC	A-4, A-2	0-7	95-100	95-100	55-70	30-40	<23	NP-6
	8-40	Sandy loam, loam	CL, SC, ML, SM	A-4, A-2	0-7	90-100	85-100	50-95	25-75	<28	NP-9
	40-60	Loam, sandy loam	CL, SC, SM-SC, CL-ML	A-2, A-4, A-6, A-1	0-7	80-100	75-100	45-95	20-75	20-35	4-15
FbB, FbC2----- Flambeau	0-8	Loam-----	CL-ML, ML	A-4	0-15	95-100	95-100	80-100	55-90	<25	2-7
	8-17	Sandy loam, loam, silt loam.	SM, SM-SC, ML, CL-ML	A-4, A-2	0-15	95-100	95-100	55-100	25-90	<25	NP-7
	17-36	Loam, sandy clay loam, clay loam.	CL, SC	A-4, A-6	0-15	85-100	85-100	75-100	35-80	28-40	9-18
	36-60	Loam-----	CL, ML, CL-ML	A-4	0-15	85-100	85-100	75-100	50-80	<30	NP-10
Fm----- Fordum	0-9	Loam-----	ML, CL, SM, SC	A-4, A-6	0-15	80-100	75-100	65-100	45-95	20-35	3-15
	9-21	Silt loam, sandy loam, loamy sand.	SM, SC, ML, CL	A-2, A-4, A-1	0-15	80-100	75-100	45-95	20-75	<30	3-10
	21-60	Sand, loamy sand, sand and gravel.	SP, SM	A-3, A-2, A-1, A-4	0-15	80-100	75-100	35-80	2-45	---	NP
FnB, FnC2----- Freeon	0-8	Silt loam-----	ML, CL, CL-ML	A-4	0-5	90-100	90-100	85-100	85-100	<30	1-10
	8-23	Silt loam-----	ML, CL, CL-ML	A-4	0-5	90-100	90-100	85-100	85-100	<30	1-10
	23-38	Loam, sandy loam, gravelly sandy loam.	SM, SC, ML, CL	A-4, A-6, A-2, A-1	0-15	65-100	65-95	35-90	10-70	<35	NP-15
	38-60	Sandy loam, loam, gravelly sandy loam.	SM, SC, ML, CL	A-4, A-2, A-6, A-1	0-15	65-95	65-95	35-90	10-70	<35	NP-15
FrA----- Friendship	0-8	Loamy sand-----	SM, SP-SM	A-1, A-2	0	75-100	75-100	40-75	12-30	---	NP
	8-36	Sand, loamy sand	SP-SM, SM, SP	A-1, A-2, A-3	0	75-100	75-100	40-75	3-30	---	NP
	36-60	Sand-----	SP-SM, SM, SP	A-1, A-3, A-2	0	75-100	75-100	40-70	3-15	---	NP
GaB, GaC2, GaD2-- Gale	0-8	Silt loam-----	CL-ML, CL	A-4, A-6	0	100	100	90-100	85-95	20-30	5-11
	8-30	Silt loam, silty clay loam.	CL	A-6, A-4, A-7	0	100	100	90-100	85-95	25-45	9-20
	30-36	Sand, loamy fine sand.	SM, SP-SM, SM-SC	A-3, A-2, A-1, A-4	0	85-100	85-100	45-75	5-40	<25	NP-7
	36	Weathered bedrock, unweathered bedrock.	---	---	---	---	---	---	---	---	---
Gr----- Greenwood	0-4	Fibric material	PT	A-8	0	---	---	---	---	---	---
	4-60	Hemic material---	PT	A-8	0	---	---	---	---	---	---

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
Ha----- Halder	0-8	Loam-----	CL, ML, SM, SC	A-4	0-3	80-100	75-100	65-100	45-95	15-30	NP-10
	8-28	Sandy clay loam, silt loam, loam.	CL, SC, SM, ML	A-6, A-4, A-2	0-3	80-100	75-100	60-100	25-95	<30	NP-11
	28-32	Sandy loam, gravelly sandy loam, loamy sand.	SM, SM-SC, SP-SM, GM	A-2, A-4, A-1	0-8	50-95	50-95	40-70	12-40	<25	NP-7
	32-60	Stratified sand to gravel.	SP, SM, GP, GM	A-1, A-2, A-3	0-10	30-90	30-90	15-70	1-25	---	NP
HeB----- Hiles	0-8	Silt loam-----	ML, CL, CL-ML	A-4	0	100	100	90-100	70-90	20-30	3-10
	8-22	Silt loam, silt	CL, ML, CL-ML	A-4	0	100	100	90-100	70-100	20-30	3-10
	22-26	Silt loam, silty clay loam.	CL	A-6	0	100	100	90-100	70-95	25-40	10-20
	26-30	Loam, clay loam, sandy clay loam.	CL, SC	A-6, A-4	0	95-100	85-100	70-95	35-75	25-40	8-20
	30	Weathered bedrock	---	---	---	---	---	---	---	---	---
HfB----- Hiles Variant	0-14	Loam-----	CL, CL-ML	A-4, A-6	1-15	95-100	95-100	80-95	50-85	20-30	4-11
	14-40	Clay, silty clay loam, silty clay.	CH, CL	A-7	0	85-100	85-100	80-95	75-90	45-65	20-35
	40-48	Loam, clay loam	CL, SC	A-4, A-6, A-7	0	80-95	70-90	60-90	45-90	25-50	9-25
	48	Weathered bedrock	---	---	---	---	---	---	---	---	---
HnB, HnC2----- Hixton	0-7	Loam-----	CL, CL-ML	A-4	0	100	100	85-95	60-75	20-30	5-10
	7-24	Loam, sandy loam, sandy clay loam.	CL, SC	A-4, A-6, A-2	0	85-100	85-100	55-95	25-75	25-35	9-15
	24-34	Sand, loamy sand	SM, SP-SM, SP	A-1, A-3, A-2	0	85-100	85-100	45-80	4-30	---	NP
	34	Weathered bedrock, unweathered bedrock.	---	---	---	---	---	---	---	---	---
HuB, HuC2----- Humbird	0-8	Sandy loam-----	SM, SM-SC, ML, CL-ML	A-2, A-4	0	90-100	90-100	55-85	25-55	<20	2-7
	8-25	Sandy loam, loamy sand, loam.	SM, SC, ML, CL	A-2, A-4	0	90-100	90-100	60-85	15-55	<28	NP-9
	25-36	Silty clay, clay, silty clay loam.	CL, CH, SC	A-7	0	90-100	90-100	80-100	40-95	43-66	21-39
	36	Weathered bedrock, unweathered bedrock.	---	---	---	---	---	---	---	---	---
KeB----- Kert	0-8	Silt loam-----	ML, CL-ML, CL	A-4	0	100	100	85-100	60-90	20-30	3-10
	8-22	Loam, sandy loam, silt loam.	ML, CL, SM, SC	A-2, A-4	0	100	100	60-100	30-90	<30	NP-10
	22-28	Loam, sandy loam, silty clay loam.	CL, SC, CH	A-6, A-7, A-2	0	85-100	85-100	70-100	30-95	30-55	15-30
	28-60	Stratified sand to silt.	CL, SC, CH	A-6, A-7, A-4, A-2	0	85-100	85-100	75-100	30-90	25-55	7-30

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
La----- Lows	0-9	Loam-----	ML, CL, CL-ML	A-4	0	100	95-100	85-95	60-75	<25	2-10
	9-16	Loam, sandy loam	ML, CL, SM, SM-SC	A-4, A-2	0	100	95-100	60-95	30-75	<25	2-10
	16-39	Loam, silt loam, sandy loam.	CL, SC	A-6	0	100	95-100	80-95	35-75	20-35	10-20
	39-60	Sand, loamy sand, fine sand.	SM, SP, SP-SM	A-2, A-3	0	100	95-100	50-90	3-30	---	NP
LoB, LoC2----- Loyal	0-8	Silt loam-----	ML, CL, CL-ML	A-4	0	100	100	90-100	70-100	<25	3-10
	8-16	Silt loam, silt	ML, CL, CL-ML	A-4	0	100	100	90-100	70-100	20-30	3-10
	16-22	Silt loam-----	CL, ML, CL-ML	A-4, A-6	0	100	100	90-100	70-100	25-36	3-13
	22-44	Loam, sandy clay loam, clay loam.	SC, CL	A-4, A-6	0	80-100	80-100	70-95	35-90	25-40	9-20
	44-60	Loam, sandy clay loam, sandy loam.	SC, SM-SC, CL, CL-ML	A-2, A-4, A-6	0-5	80-100	80-100	55-85	25-60	20-35	5-15
Lp----- Lupton	0-60	Sapric material	PT	A-8	---	---	---	---	---	---	---
MbB----- Magnor	0-8	Silt loam-----	CL, CL-ML, ML	A-4	0-15	95-100	90-100	85-100	65-100	<28	2-10
	8-18	Silt loam, silt	CL, CL-ML, ML	A-4	0-15	95-100	90-100	85-100	65-100	<35	NP-10
	18-32	Loam, sandy loam, gravelly sandy loam.	ML, CL-ML, SM, SM-SC	A-2, A-4, A-1	0-15	75-100	70-100	40-90	20-70	<25	NP-7
	32-60	Sandy loam, loam, gravelly sandy loam.	ML, CL-ML, SM, SM-SC	A-2, A-4, A-1	0-15	75-100	70-100	40-90	20-70	<25	NP-6
McB----- Magnor	0-4	Stony silt loam	CL, CL-ML, ML	A-4	15-25	95-100	90-100	85-100	65-100	<28	2-10
	4-18	Silt loam, silt	CL, CL-ML, ML	A-4	0-15	95-100	90-100	85-100	65-100	<35	NP-10
	18-32	Loam, sandy loam, gravelly sandy loam.	ML, CL-ML, SM, SM-SC	A-2, A-4, A-1	0-15	75-100	70-95	40-90	20-70	<25	NP-7
	32-60	Sandy loam, loam, gravelly sandy loam.	ML, CL-ML, SM, SM-SC	A-2, A-4, A-1	0-15	75-100	70-95	40-90	20-70	<25	NP-6
MdB, MdC----- Mahtomedi	0-8	Loamy sand-----	SM, SM-SC	A-2, A-1	0-2	95-100	60-100	40-86	15-30	<20	NP-4
	8-24	Sand, loamy sand, gravelly sand.	SP-SM, SM	A-2, A-3, A-1	0-15	70-95	50-100	30-75	5-15	<20	NP
	24-60	Gravelly sand, sand and gravel.	SP, SM, SP-SM	A-2, A-3, A-1	0-15	55-95	50-90	30-70	2-15	<20	NP
Me----- Markey	0-36	Sapric material	PT	A-8	---	---	---	---	---	---	---
	36-60	Sand, loamy sand, fine sand.	SP, SM, SP-SM	A-2, A-3	0	100	75-100	60-75	0-20	---	NP

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
Mh----- Meehan	0-8	Loamy sand-----	SM	A-2, A-1	0	90-100	75-100	40-90	15-30	---	NP
	8-30	Sand, loamy sand, loamy coarse sand.	SM, SP-SM, SP	A-1, A-2, A-3	0	90-100	75-100	40-90	3-30	---	NP
	30-60	Sand, coarse sand	SP, SP-SM	A-1, A-3, A-2	0	90-100	75-100	40-90	0-5	---	NP
MkB, MkC----- Menahga	0-8	Loamy sand-----	SM, SP-SM	A-2	0	100	85-100	60-80	10-30	---	NP
	8-40	Sand-----	SP, SP-SM	A-3, A-2, A-1	0	100	80-100	30-75	0-10	---	NP
	40-60	Sand-----	SP, SP-SM	A-3, A-2, A-1	0	100	80-100	30-75	0-10	---	NP
MlA, MlB----- Meridian	0-9	Loam-----	ML, CL, CL-ML	A-4	0	100	100	85-95	60-75	19-30	2-10
	9-37	Loam, sandy loam, sandy clay loam.	CL, SC, SM-SC, CL-ML	A-4, A-6	0	100	100	80-95	35-75	20-35	4-15
	37-60	Sand, loamy sand	SM, SP, SP-SM	A-2, A-3	0	100	100	50-90	0-30	---	NP
MmA----- Meridian	0-9	Loam-----	ML, CL, CL-ML	A-4	0	100	100	85-95	60-75	19-30	2-10
	9-26	Loam, sandy clay loam.	CL, SC, SM-SC, CL-ML	A-4, A-6	0	100	100	80-95	35-75	20-35	4-15
	26-32	Sandy loam, loamy sand.	SM, SM-SC, SC	A-4, A-2	0	100	100	50-90	15-45	<26	NP-8
	32-60	Sand, loamy sand	SM, SP, SP-SM	A-2, A-3	0	100	100	50-90	0-30	---	NP
MrB----- Merrillan	0-7	Sandy loam-----	SM, SM-SC, ML, CL-ML	A-2, A-4	0	100	100	60-85	30-55	<25	1-6
	7-19	Sandy loam, loamy sand, sand.	SM, SM-SC, SP-SM	A-2, A-4	0	100	100	50-75	5-50	20-30	2-7
	19-48	Loam, clay loam, silty clay.	CL, CH, SC	A-6, A-7, A-2	0	90-100	85-100	70-100	30-95	35-70	15-40
	48	Weathered bedrock, unweathered bedrock.	---	---	---	---	---	---	---	---	---
Mu----- Minocqua	0-9	Loam-----	CL, CL-ML, SC, SM-SC	A-4	0-7	80-100	75-100	60-100	45-90	20-30	5-10
	9-38	Silt loam, loam, sandy loam.	SC, SM-SC, CL, CL-ML	A-2, A-4, A-6	0-7	80-100	75-100	45-100	25-90	20-35	4-13
	38-60	Gravelly coarse sand, sand, sand and gravel.	SP, SM, GP, GM	A-1, A-3, A-2	0-7	35-100	30-100	5-70	0-30	---	NP
MvA----- Moundville	0-9	Loamy sand-----	SM	A-2, A-4	0	100	100	50-85	15-40	---	NP
	9-24	Loamy fine sand, loamy sand.	SM	A-2, A-4	0	100	100	50-85	15-40	---	NP
	24-60	Loamy fine sand, loamy sand, sand.	SM, SP-SM	A-2, A-3, A-4	0	95-100	95-100	50-85	5-40	---	NP

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
Na----- Newson	0-9	Loamy sand-----	SM, SP-SM	A-2, A-1	0	80-100	75-100	40-85	12-35	---	NP
	9-44	Loamy sand, sand	SM, SP-SM, SP	A-2, A-3, A-1	0	80-100	75-100	45-75	3-30	---	NP
	44-60	Sand, loamy sand	SM, SP-SM, SP	A-2, A-3, A-1	0	80-100	75-100	45-75	3-30	---	NP
NtB, NtC2, NtD2-- Northfield	0-8	Silt loam-----	ML, CL, SM, SC	A-4	0	80-100	75-100	65-100	45-90	20-30	3-10
	8-18	Loam, silt loam	CL, SC, CL-ML, SM-SC	A-4, A-6	0-15	80-100	70-100	60-100	40-85	20-35	5-15
	18	Weathered bedrock, unweathered bedrock.	---	---	---	---	---	---	---	---	---
Oe----- Oesterle	0-7	Sandy loam-----	SM, SC, ML, CL	A-2, A-4, A-1	0-7	80-100	75-100	45-95	20-65	<26	3-8
	7-25	Sandy loam, loam, fine sandy loam.	CL-ML, CL, SM-SC, SC	A-2, A-4, A-1	0-7	75-100	70-100	40-95	20-75	20-30	4-10
	25-34	Sandy loam, loamy sand, gravelly loamy sand.	SM, SP-SM, SM-SC, GM	A-2, A-1	0-7	55-95	55-95	25-75	10-35	<23	NP-6
	34-60	Gravelly sand, sand, sand and gravel.	SW, SP, GW, GP	A-1, A-3, A-2	0-7	35-95	35-95	15-70	0-30	---	NP
Or----- Orion	0-7	Silt loam-----	CL, CL-ML	A-4	0	100	100	85-100	80-100	20-30	4-10
	7-32	Stratified silt loam to very fine sand.	CL, CL-ML	A-4	0	100	100	90-100	70-80	20-30	4-10
	32-51	Silt loam, silty clay loam.	CL, CL-ML	A-6, A-4	0	100	100	85-100	85-100	20-40	4-18
	51-60	Silt loam-----	CL, CL-ML	A-4	0	80-100	80-100	80-100	80-100	20-30	4-10
OsC2----- Otterholt	0-8	Silt loam-----	ML, CL-ML, CL	A-4	0	100	100	90-100	85-100	20-30	3-10
	8-43	Silt loam-----	CL, CL-ML, ML	A-6, A-4	0	100	100	90-100	85-100	25-40	4-20
	43-60	Sandy loam, loam, gravelly sandy loam.	ML, CL, SM, SC	A-2, A-4, A-6, A-1	0-4	60-100	55-90	30-85	15-65	<30	NP-14
Pc*. Pits											
PdB, PdC, PdD---- Plainbo	0-6	Loamy sand-----	SM	A-2	0	90-100	85-100	50-85	15-35	---	NP
	6-28	Sand, loamy sand, channery sand.	SP-SM, SM	A-2, A-3	0-15	60-100	55-100	50-75	5-35	---	NP
	28	Weathered bedrock	---	---	---	---	---	---	---	---	---
Pv----- Plover	0-14	Silt loam-----	ML, CL, CL-ML	A-4	0	100	100	85-100	60-80	20-30	3-10
	14-38	Fine sandy loam, very fine sandy loam, silt loam.	SM, ML, SM-SC, CL-ML	A-4	0	100	100	70-100	40-75	<20	1-5
	38-60	Stratified silt to fine sand.	SM, ML, CL-ML, SM-SC	A-4	0	100	100	65-100	40-70	<25	2-7

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
Px----- Poskin	0-10	Silt loam-----	CL, CL-ML	A-4	0-3	95-100	90-100	90-100	85-90	20-30	5-10
	10-29	Silt loam, silt	CL	A-6, A-4	0-4	95-100	90-100	90-100	85-95	25-35	9-15
	29-38	Sandy loam, loam, gravelly loamy sand.	SM, SM-SC, ML, CL-ML	A-2, A-4, A-1	0-7	50-100	45-100	30-100	10-90	<25	NP-7
	38-60	Gravelly sand, coarse sand, sand and gravel.	SP, SP-SM, GP, GP-GM	A-1, A-2, A-3	0-7	30-100	25-100	10-90	1-15	---	NP
Rb----- Rib	0-8	Silt loam-----	CL, CL-ML	A-4, A-6	0	100	100	90-100	85-100	20-30	4-11
	8-12	Silt loam-----	CL	A-4, A-6	0	100	100	90-100	85-100	25-30	8-11
	12-28	Silt loam, silty clay loam.	CL	A-6	0	100	90-100	90-100	85-100	30-40	10-20
	28-33	Loam, sandy loam, sandy clay loam.	CL, ML, SC, SM	A-2, A-4, A-6, A-1	0	75-100	70-100	45-90	20-75	17-40	1-20
	33-60	Stratified sand to gravel.	SP, SP-SM, GP, GP-GM	A-2, A-3, A-1	0-3	50-90	40-85	25-55	2-10	---	NP
Rc----- Rib	0-15	Mucky silt loam	CL, CL-ML	A-4, A-6	0	100	100	90-100	85-100	20-30	4-11
	15-44	Silt loam, silty clay loam.	CL	A-6	0	100	90-100	90-100	85-100	30-40	10-20
	44-60	Stratified sand to gravel.	SP, SP-SM, GP, GP-GM	A-2, A-3, A-1	0-3	50-90	40-85	25-55	2-10	---	NP
RfA----- Richford	0-8	Loamy sand-----	SM	A-2, A-4, A-1	0-5	75-100	75-100	40-90	12-40	---	NP
	8-22	Loamy sand, sand	SM, SP-SM, SP	A-1, A-2, A-3	0-5	75-100	75-100	40-90	3-30	---	NP
	22-30	Sandy loam, fine sandy loam.	SM, SM-SC, ML, CL-ML	A-2, A-4	0-10	75-100	75-100	50-90	15-55	<25	2-6
	30-36	Loamy sand-----	SM	A-1, A-2	0-10	75-100	75-100	40-90	12-30	---	NP
	36-60	Sand, gravelly coarse sand.	SP, SP-SM, SM	A-1, A-2, A-3	0-10	55-100	55-100	30-95	1-15	---	NP
RoA, RoB, RoC2--- Rosholt	0-8	Sandy loam-----	SM, SM-SC	A-2, A-1, A-4	0-8	75-100	70-100	45-70	20-40	<25	NP-4
	8-20	Sandy loam, loam, silt loam.	SM, ML, SM-SC, CL-ML	A-2, A-4, A-1	0-8	75-100	70-100	35-95	12-90	<25	NP-6
	20-28	Sandy loam, loam	SC, SM, CL, ML	A-2, A-4, A-1, A-6	0-8	75-100	70-100	35-95	12-75	<30	NP-13
	28-34	Gravelly loamy sand, sandy loam, gravelly sandy loam.	SM, GM, SP-SM, GP-GM	A-1, A-2, A-4	0-10	50-100	45-100	25-80	10-50	<25	NP-7
	34-60	Stratified sand to gravel.	GP, SP, SP-SM, GP-GM	A-1, A-2, A-3	0-25	20-100	20-100	10-65	0-10	---	NP
RpA, RpB, RpC2--- Rosholt	0-8	Loam-----	SM-SC, CL-ML, SM, ML	A-4	0-8	75-100	70-100	60-95	45-90	<25	3-7
	8-15	Sandy loam, loam, silt loam.	SM, ML, SM-SC, CL-ML	A-2, A-4, A-1	0-8	75-100	70-100	35-95	12-90	<25	NP-6
	15-28	Sandy loam, loam	SC, SM, CL, ML	A-2, A-4, A-1, A-6	0-8	75-100	70-100	35-95	12-75	<30	NP-13
	28-34	Gravelly loamy sand, loamy sand, gravelly sandy loam.	SM, GM, SP-SM, GP-GM	A-1, A-2, A-4	0-10	50-100	45-100	25-80	10-50	<25	NP-7
	34-60	Stratified sand to gravel.	GP, SP, SP-SM, GP-GM	A-1, A-2, A-3	0-25	20-100	20-100	10-65	0-10	---	NP

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
SaB, SaC2, SaD2-- Santiago	0-7	Silt loam-----	ML, CL, CL-ML	A-4	0-7	95-100	90-100	85-100	85-100	<26	2-8
	7-13	Silt loam, silt	ML, CL-ML	A-4	0-7	95-100	90-100	85-100	85-100	<25	2-7
	13-19	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6	0-7	95-100	90-100	85-100	85-100	25-40	4-18
	19-30	Loam, sandy loam, gravelly fine sandy loam.	CL, SC	A-2, A-4, A-6	0-7	70-95	70-95	40-90	25-70	23-35	8-15
	30-60	Sandy loam, fine sandy loam, gravelly sandy loam.	SM, SC, ML, CL	A-2, A-4, A-6, A-1	0-7	70-95	70-95	30-90	20-70	<26	NP-13
SbA----- Sattre	0-9	Loam-----	CL, CL-ML, ML	A-4	0	100	90-100	70-90	50-75	25-35	5-10
	9-30	Loam, sandy clay loam, clay loam.	CL, SC, CL-ML, SM-SC	A-4, A-6	0-5	85-100	80-100	70-95	40-60	20-35	5-15
	30-60	Gravelly sandy loam, gravelly sand, sand and gravel.	SW, SM, SP, SP-SM	A-1	2-10	80-90	50-85	20-40	3-25	---	NP
ScB----- Scott Lake	0-8	Sandy loam-----	SM, SM-SC, ML, CL-ML	A-2, A-4, A-1-b	0-7	85-100	75-100	45-95	20-65	<25	2-7
	8-36	Loam, sandy loam, fine sandy loam.	SC, CL, SM, ML	A-2, A-4, A-6	0-7	85-100	75-100	45-100	25-95	20-35	3-13
	36-60	Stratified sand to gravel.	SP, SM, GP, GM	A-1, A-2, A-3	0-35	30-95	30-95	20-95	3-25	---	NP
SdA----- Scott Lake	0-8	Loam-----	ML, CL-ML, SM, SM-SC	A-4	0-7	85-100	75-100	65-100	45-95	<25	3-7
	8-26	Loam, sandy loam, fine sandy loam.	SC, CL, SM, ML	A-2, A-4, A-6	0-7	85-100	75-100	45-100	25-95	20-35	3-13
	26-36	Sandy loam, gravelly sandy loam, gravelly loamy sand.	SM, SW-SM, SP-SM, SM-SC	A-1, A-2, A-3, A-4	0-35	70-100	50-95	20-80	7-50	<25	NP-6
	36-60	Stratified sand to gravel.	SP, SM, GP, GM	A-1, A-2, A-3	0-35	30-95	30-95	20-95	3-25	---	NP
SeB, SeC2, SeD2-- Seaton	0-7	Silt loam-----	CL, CL-ML	A-4, A-6	0	100	100	100	95-100	20-35	5-15
	7-42	Silt loam-----	CL, CL-ML	A-6, A-4	0	100	100	100	90-100	25-40	5-20
	42-60	Silt loam, silt	CL, CL-ML	A-4, A-6	0	100	100	100	90-100	25-40	5-20
SfA----- Seaton	0-9	Silt loam-----	CL, CL-ML	A-4, A-6	0	100	100	100	95-100	20-35	6-16
	9-42	Silt loam-----	CL	A-6, A-4	0	100	100	100	90-100	28-40	9-21
	42-60	Silt loam, silt	CL	A-4, A-6	0	100	100	100	90-100	25-40	7-17
SgA, SgB----- Seaton	0-8	Silt loam-----	CL, CL-ML	A-4, A-6	0	100	100	100	95-100	24-33	6-13
	8-38	Silt loam-----	CL	A-4, A-6	0	100	100	95-100	90-100	28-38	9-18
	38-48	Silt loam, silt	CL-ML, ML	A-4	0	100	100	95-100	85-100	<25	NP-7
	48-60	Sand, loamy sand	SM, SP-SM, SP	A-2, A-3	0	100	100	50-75	0-30	---	NP
Sm----- Seelyeville	0-4	Hemic material---	PT	A-8	0	---	---	---	---	---	---
	4-60	Sapric material	PT	A-8	0	---	---	---	---	---	---

See footnote at end of table.

TABLE 16.--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
AfB----- Alban	0-8	3-8	1.35-1.65	0.6-2.0	0.13-0.18	5.1-7.3	Low-----	0.24	5	3	.5-2
	8-24	3-15	1.60-1.75	0.6-2.0	0.09-0.22	5.1-7.3	Low-----	0.17			
	24-38	8-15	1.55-1.65	0.6-2.0	0.12-0.20	5.1-7.3	Low-----	0.24			
	38-60	1-12	1.50-1.70	0.6-2.0	0.05-0.22	5.1-7.3	Low-----	0.24			
AfC----- Alban	0-8	3-8	1.35-1.65	0.6-2.0	0.13-0.18	5.1-7.3	Low-----	0.24	5	3	.5-2
	8-24	3-15	1.60-1.75	0.6-2.0	0.09-0.22	5.1-7.3	Low-----	0.17			
	24-38	8-18	1.55-1.65	0.6-2.0	0.12-0.20	5.1-7.3	Low-----	0.24			
	38-60	1-12	1.50-1.70	0.6-2.0	0.05-0.22	5.1-7.3	Low-----	0.24			
AgB----- Almena	0-9	14-23	1.20-1.55	0.6-2.0	0.22-0.24	4.5-7.3	Low-----	0.37	5	5	2-4
	9-24	8-24	1.30-1.60	0.6-2.0	0.20-0.24	4.5-6.0	Low-----	0.37			
	24-42	18-30	1.50-1.65	0.2-2.0	0.18-0.22	4.5-5.5	Moderate----	0.37			
	42-48	18-25	1.50-1.65	0.2-2.0	0.20-0.22	4.5-6.0	Low-----	0.37			
	48-60	10-20	1.75-1.90	0.2-0.6	0.07-0.16	5.1-6.0	Low-----	0.20			
AlB----- Amery	0-2	4-12	1.25-1.80	0.6-2.0	0.10-0.18	4.5-7.3	Low-----	0.24	5	3	1-3
	2-32	6-18	1.70-1.85	0.2-0.6	0.04-0.12	4.5-7.3	Low-----	0.24			
	32-60	4-18	1.80-1.90	0.2-0.6	0.02-0.08	5.1-6.5	Low-----	0.17			
AlC, AlD, AlF---- Amery	0-2	4-12	1.25-1.80	0.6-2.0	0.10-0.18	4.5-7.3	Low-----	0.24	5	3	1-3
	2-32	6-18	1.70-1.80	0.6-2.0	0.04-0.18	4.5-7.3	Low-----	0.24			
	32-60	4-18	1.65-1.80	0.6-2.0	0.04-0.15	5.1-6.5	Low-----	0.17			
AnB, AnC2----- Antigo	0-10	8-15	1.25-1.55	0.6-2.0	0.20-0.24	4.5-6.5	Low-----	0.37	4	5	1-3
	10-28	18-24	1.55-1.65	0.6-2.0	0.16-0.22	4.5-6.5	Low-----	0.37			
	28-32	2-22	1.55-1.80	0.6-2.0	0.05-0.19	4.5-6.5	Low-----	0.24			
	32-60	1-6	1.50-1.80	>6.0	0.02-0.06	5.1-6.5	Low-----	0.10			
AoA----- Arenzville	0-8	10-18	1.20-1.55	0.6-2.0	0.20-0.24	5.6-7.8	Low-----	0.37	5	5	1-3
	8-50	10-30	1.25-1.45	0.6-2.0	0.18-0.22	5.6-7.8	Moderate----	0.37			
	50-60	10-20	1.20-1.40	0.6-2.0	0.20-0.22	5.6-7.8	Low-----	0.37			
ApB, ApC2, ApD2-- Arland	0-7	6-12	1.20-1.70	0.6-2.0	0.10-0.18	4.5-6.5	Low-----	0.24	4	3	1-3
	7-25	10-18	1.55-1.65	0.6-2.0	0.13-0.19	4.5-6.5	Low-----	0.24			
	25-29	5-12	1.40-1.70	0.6-6.0	0.08-0.17	4.5-6.5	Low-----	0.24			
	29-35	2-7	1.55-1.70	2.0-6.0	0.04-0.11	5.1-6.5	Low-----	0.15			
	35	---	---	---	---	---	-----	---			
AsB, AsC2, AsD2-- Arland	0-7	10-15	1.20-1.55	0.6-2.0	0.14-0.24	4.5-6.5	Low-----	0.32	4	5	1-3
	7-25	10-18	1.55-1.65	0.6-2.0	0.13-0.19	4.5-6.5	Low-----	0.24			
	25-29	5-12	1.40-1.70	0.6-6.0	0.08-0.17	4.5-6.5	Low-----	0.24			
	29-35	2-7	1.55-1.70	2.0-6.0	0.04-0.11	5.1-6.5	Low-----	0.15			
	35	---	---	---	---	---	-----	---			
Au----- Auburndale	0-6	6-25	1.35-1.55	0.6-2.0	0.22-0.24	4.5-6.0	Low-----	0.37	5	5	4-12
	6-38	18-22	1.50-1.65	0.2-2.0	0.20-0.22	4.5-6.0	Moderate----	0.37			
	38-45	8-20	1.50-1.70	0.2-2.0	0.08-0.22	4.5-6.0	Low-----	0.37			
	45-60	5-15	1.75-1.85	0.6-2.0	0.08-0.19	5.1-6.5	Low-----	0.28			
Ba----- Barronett	0-9	5-15	1.25-1.45	0.6-2.0	0.22-0.35	4.5-7.3	Low-----	0.28	5	5	3-7
	9-18	4-15	1.45-1.50	0.2-2.0	0.20-0.26	4.5-6.0	Low-----	0.28			
	18-40	18-25	1.35-1.55	0.2-2.0	0.18-0.22	4.5-6.0	Low-----	0.28			
	40-60	10-18	1.35-1.55	0.2-2.0	0.17-0.22	4.5-7.8	Low-----	0.28			
Eb----- Barronett	0-8	5-15	1.25-1.45	0.6-2.0	0.22-0.35	4.5-7.3	Low-----	0.28	5	5	4-16
	8-30	18-25	1.35-1.55	0.2-2.0	0.18-0.22	4.5-6.0	Low-----	0.28			
	30-60	10-18	1.35-1.55	0.2-2.0	0.17-0.22	4.5-7.8	Low-----	0.28			

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
So----- Shiffer	0-9	Loam-----	CL, CL-ML	A-4, A-6	0	95-100	95-100	80-95	55-75	20-35	6-15
	9-27	Loam, sandy clay loam, clay loam.	CL, SC	A-6, A-4, A-2	0	95-100	95-100	75-95	30-80	25-35	7-15
	27-31	Sandy loam, loamy sand.	SM, SM-SC	A-2, A-4, A-1	0	95-100	95-100	45-75	12-40	17-27	1-7
	31-60	Sand, coarse sand, loamy sand.	SM, SP-SM, SP	A-2, A-3, A-1	0	95-100	95-100	45-95	3-30	---	NP
SrB, SrC2----- Spencer	0-9	Silt loam-----	ML, CL, CL-ML	A-4	0	100	100	90-100	85-100	20-30	3-10
	9-42	Silt loam-----	CL, ML, CL-ML	A-6, A-4	0	100	100	90-100	85-100	25-40	4-19
	42-60	Sandy loam, loam, gravelly sandy loam.	SM, SC, ML, CL	A-2, A-4, A-1, A-6	0-4	60-100	55-90	30-85	15-65	<30	NP-15
SsA, SsB----- Spencer	0-8	Silt loam-----	ML, CL, CL-ML	A-4	0	100	100	90-100	85-100	20-30	3-10
	8-50	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	100	100	90-100	85-100	25-40	4-19
	50-60	Sand and gravel, sand.	SP, SP-SM, GP, GP-GM	A-2, A-3, A-1	0-6	45-90	40-85	25-55	2-10	---	NP
TeB----- Tell	0-9	Silt loam-----	CL	A-4	0	100	100	90-100	85-95	25-30	7-10
	9-30	Silty clay loam, silt loam.	CL	A-6	0	100	100	90-100	85-95	30-40	10-16
	30-35	Loam, sandy loam, sandy clay loam.	CL, CL-ML, SC, SM-SC	A-4, A-6, A-2	0	100	90-100	55-95	25-75	20-35	4-14
	35-60	Sand, loamy sand	SM, SP-SM, SP	A-2, A-3, A-1	0	100	90-100	45-75	0-30	---	NP
Ud. Udifuvents											
Ve----- Vesper	0-12	Silt loam-----	CL-ML, CL	A-4, A-6	0	100	100	85-100	60-100	20-30	4-11
	12-38	Loam, clay loam	SC, CL	A-4, A-6, A-7	0	100	100	80-100	40-100	20-44	7-24
	38-60	Stratified sand to clay.	SM, SC, ML, CL	A-2, A-4, A-6, A-7	0	90-100	90-100	70-95	10-75	<50	NP-31
Wb----- Warman Variant	0-8	Sandy loam-----	SM, SM, SM-SC	A-2, A-4	0	95-100	95-100	60-70	25-40	<23	1-6
	8-24	Sandy loam, loamy sand.	SM, SM-SC	A-1, A-2	0	80-100	75-90	35-70	12-35	<23	NP-6
	24-60	Sand and gravel	SP, SW, GP, GP-GM	A-1	0	50-75	45-75	20-35	1-5	---	NP
WeB----- Withee	0-8	Silt loam-----	CL, CL-ML	A-4	0-15	100	100	90-100	85-100	20-30	5-10
	8-23	Silt loam-----	CL, CL-ML	A-4, A-6	0-15	100	100	90-100	85-100	20-35	5-15
	23-42	Loam, clay loam, sandy clay loam.	CL, SC	A-6, A-7, A-2	0-15	75-100	75-100	60-100	25-80	25-45	10-25
	42-60	Loam, fine sandy loam, sandy clay loam.	CL, SC	A-6, A-7, A-2, A-4	0-15	75-100	75-100	50-100	30-80	20-45	7-25

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 16.--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
Be----- Beseman	0-20	---	0.10-0.25	2.0-6.0	0.55-0.65	3.6-4.4	-----	---	2	3	>25
	20-60	10-28	1.55-1.95	0.2-0.6	0.11-0.18	3.6-7.3	Moderate-----	---			
BlA, BlB, BlC2--- Billett	0-9	5-15	1.40-1.70	2.0-6.0	0.13-0.18	4.5-7.8	Low-----	0.20	4	3	1-2
	9-30	6-18	1.40-1.70	2.0-6.0	0.10-0.17	4.5-7.3	Low-----	0.20			
	30-36	3-18	1.50-1.80	2.0-6.0	0.07-0.14	4.5-7.3	Low-----	0.20			
	36-60	1-10	1.60-1.90	6.0-20	0.03-0.10	5.1-7.8	Low-----	0.10			
BmA----- Billett	0-8	5-15	1.40-1.70	2.0-6.0	0.13-0.18	4.5-7.8	Low-----	0.20	4	3	1-2
	8-37	6-18	1.40-1.70	2.0-6.0	0.10-0.17	4.5-7.3	Low-----	0.20			
	37-60	1-10	1.60-1.90	6.0-20	0.03-0.10	5.1-7.8	Low-----	0.10			
BoE----- Boone	0-2	2-3	1.55-1.65	6.0-20	0.07-0.10	4.5-6.5	Low-----	0.15	4	1	<1
	2-22	0-3	1.55-1.70	6.0-20	0.04-0.11	4.5-7.3	Low-----	0.15			
	22	---	---	---	---	---	-----	---			
BpA----- Brill	0-8	8-15	1.25-1.35	0.6-2.0	0.22-0.28	4.5-6.5	Low-----	0.37	4	5	2-4
	8-13	8-13	1.40-1.50	0.6-2.0	0.20-0.26	4.5-6.5	Low-----	0.37			
	13-25	18-30	1.45-1.55	0.6-2.0	0.18-0.22	4.5-6.5	Moderate-----	0.37			
	25-34	2-15	1.45-1.75	0.6-6.0	0.10-0.22	4.5-6.5	Low-----	0.37			
	34-60	1-6	1.75-2.00	>6.0	0.02-0.04	5.1-7.3	Low-----	0.10			
BuA----- Burkhardt	0-11	5-13	1.35-1.55	2.0-6.0	0.11-0.15	5.1-6.5	Low-----	0.20	3	3	3-10
	11-17	8-18	1.55-1.65	2.0-6.0	0.10-0.19	5.1-7.3	Low-----	0.24			
	17-60	1-6	1.50-1.80	>6.0	0.02-0.04	5.6-6.5	Low-----	0.10			
Cb----- Cable	0-4	12-16	1.10-1.35	0.2-2.0	0.15-0.24	4.5-7.3	Low-----	0.37	5	5	2-4
	4-16	8-18	1.35-1.45	0.2-2.0	0.10-0.22	4.5-7.3	Low-----	0.37			
	16-26	8-16	1.40-1.90	0.2-2.0	0.03-0.18	4.5-7.3	Low-----	0.37			
	26-60	5-10	1.70-1.90	0.2-0.6	0.03-0.13	5.1-7.8	Low-----	0.28			
CdB, CdC2, CdD2-- Campia	0-8	8-22	1.35-1.65	0.6-2.0	0.22-0.27	4.5-7.3	Low-----	0.37	5	5	1-4
	8-42	18-30	1.50-1.60	0.6-2.0	0.18-0.22	4.5-6.0	Low-----	0.37			
	42-60	8-27	1.45-1.55	0.6-2.0	0.20-0.22	5.1-7.8	Low-----	0.37			
CeA----- Caryville	0-16	5-15	1.35-1.55	2.0-6.0	0.12-0.18	5.6-7.3	Low-----	0.20	5	3	1-4
	16-60	2-10	1.55-1.70	2.0-20	0.04-0.10	5.1-7.3	Low-----	0.20			
CkA, CkB, CkC2--- Chetek	0-8	4-12	1.35-1.70	2.0-6.0	0.10-0.15	5.1-6.5	Low-----	0.24	3	3	1-3
	8-17	10-18	1.65-1.75	2.0-6.0	0.09-0.19	5.1-6.5	Low-----	0.24			
	17-60	1-6	1.50-1.60	>6.0	0.02-0.04	5.1-6.5	Low-----	0.10			
CkD2*, CkE*: Chetek-----	0-8	4-12	1.35-1.70	2.0-6.0	0.10-0.15	5.1-6.5	Low-----	0.24	3	3	1-3
	8-17	10-18	1.65-1.75	2.0-6.0	0.09-0.19	5.1-6.5	Low-----	0.24			
	17-60	1-6	1.50-1.60	>6.0	0.02-0.04	5.1-6.5	Low-----	0.10			
Mahtomedi-----	0-8	2-15	1.40-1.60	6.0-20	0.10-0.12	5.1-6.5	Low-----	0.15	5	2	<1
	8-24	0-10	1.45-1.70	6.0-20	0.05-0.07	5.1-6.5	Low-----	0.10			
	24-60	0-10	1.45-1.75	6.0-20	0.04-0.09	5.1-7.8	Low-----	0.10			
Cm----- Comstock	0-8	8-22	1.35-1.65	0.6-2.0	0.20-0.24	5.1-7.3	Low-----	0.37	5	5	2-4
	8-48	18-30	1.50-1.60	0.6-2.0	0.18-0.22	4.5-6.0	Moderate-----	0.37			
	48-60	8-20	1.45-1.55	0.2-0.6	0.12-0.22	5.1-7.3	Low-----	0.37			
CuA----- Crystal Lake	0-8	8-20	1.35-1.55	0.6-2.0	0.20-0.24	4.5-6.5	Low-----	0.37	5	5	2-4
	8-44	18-30	1.50-1.60	0.6-2.0	0.18-0.22	4.5-6.0	Moderate-----	0.37			
	44-60	8-20	1.45-1.55	0.2-0.6	0.20-0.22	4.5-7.3	Low-----	0.37			

See footnote at end of table.

TABLE 16.--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
ElB, ElC2, ElD2-- Eleva	0-9	5-15	1.40-1.60	2.0-6.0	0.10-0.18	3.6-7.3	Low-----	0.24	4	3	1-3
	9-36	10-18	1.50-1.60	0.6-6.0	0.09-0.19	3.6-6.5	Low-----	0.24			
	36-40	1-8	1.50-1.70	2.0-20	0.04-0.10	3.6-6.5	Low-----	0.15			
	40	---	---	---	---	---	---	---			
EmB, EmC2, EmD2, EmE----- Elkmound	0-7	5-12	1.20-1.55	0.6-6.0	0.15-0.22	4.5-7.3	Low-----	0.32	2	5	1-2
	7-16	10-20	1.55-1.65	0.6-6.0	0.09-0.20	4.5-6.5	Low-----	0.24			
	16-19	2-6	1.55-1.70	2.0-6.0	0.06-0.11	4.5-6.5	Low-----	0.17			
	19	---	---	---	---	---	---	---			
Eo----- Elm Lake	0-4	3-8	1.35-1.65	2.0-6.0	0.10-0.13	3.6-6.0	Low-----	0.17	4	2	1-2
	4-23	2-8	1.55-1.70	6.0-20	0.06-0.12	3.6-6.0	Low-----	0.15			
	23-48	27-45	1.50-1.75	<0.06	0.09-0.19	3.6-6.0	Moderate----	0.43			
	48	---	---	---	---	---	---	---			
FaB----- Fallcreek	0-8	4-12	1.35-1.65	0.6-2.0	0.12-0.15	4.5-6.5	Low-----	0.24	5	3	1-3
	8-40	9-18	1.55-1.65	0.2-0.6	0.10-0.19	3.6-6.5	Low-----	0.24			
	40-60	10-25	1.55-1.85	0.2-0.6	0.09-0.19	4.5-6.5	Low-----	0.24			
FbB, FbC2----- Flambeau	0-8	8-14	1.35-1.55	0.6-2.0	0.17-0.24	5.6-7.3	Low-----	0.32	5	5	2-3
	8-17	5-14	1.35-1.70	0.6-2.0	0.10-0.22	4.5-7.3	Low-----	0.32			
	17-36	18-30	1.55-1.65	0.6-2.0	0.12-0.19	4.5-6.5	Low-----	0.32			
	36-60	6-20	1.65-1.75	0.2-0.6	0.13-0.19	4.5-6.5	Low-----	0.32			
Fm----- Fordum	0-9	10-23	1.35-1.45	0.6-2.0	0.17-0.24	4.5-8.4	Low-----	0.24	4	8	4-12
	9-21	8-18	1.40-1.50	0.6-6.0	0.10-0.19	4.5-8.4	Low-----	0.32			
	21-60	2-5	1.55-1.70	>6.0	0.04-0.13	4.5-8.4	Low-----	0.15			
FnB, FnC2----- Freeon	0-8	5-18	1.25-1.55	0.6-2.0	0.20-0.24	4.5-7.3	Low-----	0.37	5	5	1-3
	8-23	5-18	1.35-1.65	0.6-2.0	0.18-0.22	4.5-6.5	Low-----	0.37			
	23-38	5-18	1.70-1.80	0.2-2.0	0.08-0.18	4.5-6.5	Low-----	0.37			
	38-60	3-27	1.80-1.95	0.06-0.6	0.02-0.06	5.1-7.8	Low-----	0.28			
FrA----- Friendship	0-8	3-8	1.50-1.65	6.0-20	0.08-0.12	5.1-6.5	Low-----	0.17	5	2	.5-2
	8-36	2-7	1.35-1.65	6.0-20	0.05-0.11	5.1-6.5	Low-----	0.15			
	36-60	0-4	1.50-1.70	6.0-20	0.04-0.07	5.6-7.8	Low-----	0.15			
GaB, GaC2, GaD2-- Gale	0-8	12-20	1.35-1.45	0.6-2.0	0.22-0.24	4.5-7.3	Low-----	0.37	4	5	1-3
	8-30	20-32	1.45-1.55	0.6-2.0	0.18-0.22	4.5-6.5	Moderate----	0.37			
	30-36	1-14	1.30-1.50	6.0-20	0.05-0.14	4.5-6.5	Low-----	0.15			
	36	---	---	---	---	---	---	---			
Gr----- Greenwood	0-4	---	0.30-0.40	>6.0	0.55-0.65	3.6-4.4	-----	---	2	5	55-75
	4-60	---	0.10-0.25	2.0-6.0	0.45-0.55	3.6-4.4	-----	---			
Ha----- Halder	0-8	7-15	1.35-1.55	0.6-2.0	0.17-0.24	4.5-7.3	Low-----	0.32	4	5	2-4
	8-28	6-18	1.65-1.75	0.6-2.0	0.13-0.22	4.5-6.5	Low-----	0.32			
	28-32	5-15	1.55-1.70	0.6-6.0	0.05-0.13	4.5-6.5	Low-----	0.24			
	32-60	1-5	1.55-1.80	>6.0	0.02-0.04	5.6-6.5	Low-----	0.10			
HeB----- Hiles	0-8	10-20	1.35-1.55	0.6-2.0	0.22-0.24	4.5-7.3	Low-----	0.37	4	5	1-3
	8-22	10-20	1.55-1.65	0.6-2.0	0.18-0.22	4.5-6.5	Low-----	0.37			
	22-26	20-35	1.55-1.65	0.6-2.0	0.18-0.22	4.5-6.0	Moderate----	0.37			
	26-30	20-35	1.55-1.65	0.6-2.0	0.13-0.18	3.6-5.5	Moderate----	0.37			
30	---	---	---	---	---	---	---				
HfB----- Hiles Variant	0-14	11-19	1.35-1.55	0.6-2.0	0.20-0.22	4.5-5.5	Low-----	0.32	3	5	2-3
	14-40	35-54	1.35-1.70	<0.06	0.08-0.11	3.6-5.5	High-----	0.32			
	40-48	18-40	1.45-1.70	0.6-2.0	0.11-0.18	4.5-5.5	Moderate----	0.32			
	48	---	---	---	---	---	---	---			

See footnote at end of table.

TABLE 16.--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
HnB, HnC2----- Hixton	0-7	12-16	1.35-1.55	0.6-2.0	0.20-0.22	5.1-6.5	Low-----	0.32	4	5	1-2
	7-24	18-27	1.55-1.65	0.6-2.0	0.12-0.19	5.1-6.5	Low-----	0.32			
	24-34	2-6	1.55-1.70	6.0-20	0.05-0.10	5.1-6.5	Low-----	0.15			
	34	---	---	---	---	---	---	---			
HuB, HuC2----- Humbird	0-8	6-13	1.35-1.70	0.6-2.0	0.12-0.18	4.5-7.3	Low-----	0.24	3	3	1-2
	8-25	10-18	1.40-1.70	2.0-6.0	0.06-0.14	3.6-6.5	Low-----	0.15			
	25-36	35-60	1.50-1.75	0.06-0.2	0.08-0.13	3.6-5.5	High-----	0.32			
	36	---	---	---	---	---	---	---			
KeB----- Kert	0-8	10-20	1.40-1.55	0.6-2.0	0.20-0.24	5.1-7.3	Low-----	0.37	3	5	2-4
	8-22	6-18	1.60-1.70	0.6-6.0	0.09-0.22	3.6-5.5	Low-----	0.37			
	22-28	20-35	1.60-1.70	0.06-0.2	0.12-0.20	3.6-5.5	Moderate----	0.37			
	28-60	15-45	1.60-1.70	0.06-0.2	0.12-0.19	3.6-5.5	Moderate----	0.37			
La----- Lows	0-9	12-22	1.20-1.55	0.6-2.0	0.20-0.22	5.1-6.5	Low-----	0.24	4	5	3-5
	9-16	10-22	1.20-1.55	0.6-2.0	0.12-0.19	5.1-6.5	Low-----	0.24			
	16-39	18-27	1.55-1.65	0.6-2.0	0.16-0.19	5.1-6.5	Moderate----	0.32			
	39-60	2-8	1.75-1.85	6.0-20	0.05-0.11	5.1-6.5	Low-----	0.15			
LoB, LoC2----- Loyal	0-8	10-14	1.35-1.55	0.6-2.0	0.22-0.24	4.5-7.3	Low-----	0.37	5	5	1-3
	8-16	10-16	1.55-1.65	0.6-2.0	0.20-0.22	4.5-5.5	Low-----	0.37			
	16-22	12-25	1.55-1.65	0.6-2.0	0.20-0.22	4.5-5.5	Low-----	0.37			
	22-44	18-25	1.80-1.90	0.6-2.0	0.15-0.19	4.5-5.5	Low-----	0.37			
	44-60	15-22	1.80-1.90	0.6-2.0	0.11-0.19	4.5-5.5	Low-----	0.37			
Lp----- Lupton	0-60	---	0.10-0.35	2.0-6.0	0.35-0.45	5.6-7.8	-----	---	2	2	70-90
MbB----- Magnor	0-8	5-18	1.35-1.55	0.6-2.0	0.18-0.24	4.5-6.5	Low-----	0.37	5	5	1-3
	8-18	5-18	1.60-1.70	0.6-2.0	0.17-0.22	4.5-6.5	Low-----	0.37			
	18-32	3-12	1.40-1.70	0.2-2.0	0.08-0.18	4.5-6.0	Low-----	0.37			
	32-60	3-12	1.80-1.95	0.2-0.6	0.02-0.06	4.5-6.5	Low-----	0.24			
McB----- Magnor	0-4	5-18	1.35-1.55	0.6-2.0	0.12-0.21	4.5-6.5	Low-----	0.28	5	8	3-7
	4-18	5-18	1.60-1.70	0.6-2.0	0.17-0.22	4.5-6.5	Low-----	0.37			
	18-32	3-12	1.40-1.70	0.2-2.0	0.08-0.18	4.5-6.0	Low-----	0.37			
	32-60	3-12	1.80-1.95	0.2-0.6	0.07-0.18	4.5-6.5	Low-----	0.24			
MdB, MdC----- Mahtomedi	0-8	2-15	1.40-1.60	6.0-20	0.10-0.12	5.1-7.3	Low-----	0.15	5	2	<1
	8-24	0-10	1.45-1.70	6.0-20	0.05-0.07	5.1-6.5	Low-----	0.10			
	24-60	0-10	1.45-1.75	6.0-20	0.04-0.09	5.1-7.8	Low-----	0.10			
Me----- Markey	0-36	---	0.15-0.45	2.0-6.0	0.35-0.45	4.5-7.8	-----	---	2	2	55-85
	36-60	0-10	1.40-1.65	6.0-20	0.03-0.08	4.5-8.4	Low-----	---			
Mh----- Meehan	0-8	4-10	1.35-1.65	6.0-20	0.10-0.12	3.6-6.0	Low-----	0.17	5	2	.5-3
	8-30	4-9	1.60-1.70	6.0-20	0.06-0.11	5.1-6.5	Low-----	0.17			
	30-60	1-4	1.60-1.70	6.0-20	0.02-0.07	5.1-6.5	Low-----	0.17			
MkB, MkC----- Menahga	0-8	2-10	1.20-1.50	6.0-20	0.10-0.12	4.5-6.5	Low-----	0.15	5	2	.5-2
	8-40	0-5	1.50-1.65	6.0-20	0.05-0.07	4.5-6.5	Low-----	0.15			
	40-60	0-5	1.50-1.65	6.0-20	0.05-0.07	4.5-7.3	Low-----	0.15			
M1A, M1B----- Meridian	0-9	8-20	1.35-1.55	0.6-2.0	0.20-0.22	6.1-7.8	Low-----	0.32	4	5	2-3
	9-37	18-22	1.55-1.65	0.6-2.0	0.16-0.19	5.1-6.5	Low-----	0.32			
	37-60	1-6	1.75-1.85	6.0-20	0.05-0.10	5.1-6.5	Low-----	0.15			

See footnote at end of table.

TABLE 16.--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
MmA----- Meridian	0-9	8-20	1.35-1.55	0.6-2.0	0.20-0.22	6.1-7.8	Low-----	0.32	4	5	2-3
	9-26	18-22	1.55-1.65	0.6-2.0	0.16-0.19	5.1-6.5	Low-----	0.32			
	26-32	3-15	1.55-1.65	0.6-6.0	0.09-0.14	5.1-6.5	Low-----	0.24			
	32-60	1-6	1.75-1.85	6.0-20	0.05-0.10	5.1-6.5	Low-----	0.15			
MrB----- Merrillan	0-7	6-13	1.35-1.70	0.6-2.0	0.13-0.15	4.5-7.3	Low-----	0.24	3	3	1-2
	7-19	10-18	1.40-1.70	0.6-2.0	0.06-0.14	4.5-6.5	Low-----	0.24			
	19-48	30-60	1.50-1.75	0.06-0.2	0.13-0.20	3.6-5.5	Moderate----	0.32			
	48	---	---	---	---	---	---	---			
Mu----- Minocqua	0-9	8-12	1.20-1.55	0.6-2.0	0.19-0.24	4.5-7.8	Low-----	0.37	4	5	4-10
	9-38	10-18	1.50-1.60	0.6-2.0	0.11-0.19	4.5-7.8	Low-----	0.37			
	38-60	0-3	1.75-1.85	>6.0	0.02-0.04	4.5-7.8	Low-----	0.10			
MvA----- Moundville	0-9	2-4	1.35-1.55	6.0-20	0.10-0.12	5.1-6.5	Low-----	0.17	5	2	.5-2
	9-24	5-8	1.40-1.60	6.0-20	0.09-0.11	5.1-6.5	Low-----	0.17			
	24-60	1-3	1.50-1.70	6.0-20	0.06-0.11	5.1-7.3	Low-----	0.17			
Na----- Newson	0-9	4-12	1.35-1.65	2.0-6.0	0.08-0.13	3.6-6.0	Low-----	0.17	5	2	4-15
	9-44	1-4	1.70-1.80	6.0-20	0.05-0.11	3.6-5.5	Low-----	0.17			
	44-60	1-4	1.70-1.80	6.0-20	0.04-0.11	4.5-6.5	Low-----	0.17			
NtB, NtC2, NtD2-- Northfield	0-8	10-20	1.35-1.55	0.6-2.0	0.17-0.24	5.6-7.3	Low-----	0.32	2	5	1-2
	8-18	15-27	1.55-1.65	0.6-2.0	0.14-0.22	4.5-6.5	Low-----	0.32			
	18	---	---	---	---	---	---	---			
Oe----- Oesterle	0-7	8-15	1.40-1.70	0.6-2.0	0.10-0.15	4.5-6.5	Low-----	0.24	4	3	2-3
	7-25	10-18	1.55-1.65	0.6-2.0	0.09-0.19	4.5-6.5	Low-----	0.24			
	25-34	6-12	1.55-1.70	0.6-6.0	0.05-0.13	4.5-6.5	Low-----	0.24			
	34-60	1-6	1.55-1.70	>6.0	0.02-0.09	5.1-6.5	Low-----	0.10			
Or----- Orion	0-7	10-18	1.20-1.30	0.6-2.0	0.22-0.24	5.1-7.8	Low-----	0.37	5	5	1-3
	7-32	10-18	1.20-1.30	0.6-2.0	0.20-0.22	5.1-7.8	Low-----	0.37			
	32-51	10-30	1.25-1.45	0.6-2.0	0.18-0.22	5.1-7.8	Low-----	0.37			
	51-60	10-18	1.20-1.40	0.6-2.0	0.18-0.22	5.1-7.8	Low-----	0.37			
OsC2----- Otterholt	0-8	9-19	1.40-1.55	0.6-2.0	0.22-0.24	5.1-7.3	Low-----	0.37	5	5	2-4
	8-43	18-25	1.50-1.65	0.6-2.0	0.20-0.22	4.5-6.5	Moderate----	0.37			
	43-60	10-20	1.75-1.90	0.2-0.6	0.08-0.18	4.5-6.5	Low-----	0.28			
Pc*. Pits											
PdB, PdC, PdD---- Plainbo	0-6	5-15	1.35-1.65	2.0-6.0	0.10-0.13	3.6-6.5	Low-----	0.17	4	2	<1
	6-28	1-10	1.50-1.65	6.0-20	0.06-0.11	3.6-6.5	Low-----	0.10			
	28	---	---	---	---	---	---	---			
Pv----- Plover	0-14	5-12	1.35-1.65	0.6-2.0	0.20-0.24	4.5-7.3	Low-----	0.37	5	5	2-4
	14-38	5-18	1.40-1.70	0.6-2.0	0.15-0.19	4.5-7.3	Low-----	0.24			
	38-60	1-12	1.50-1.70	0.6-2.0	0.11-0.22	5.6-7.3	Low-----	0.24			
Px----- Poskin	0-10	13-17	1.35-1.55	0.6-2.0	0.21-0.24	4.5-6.5	Low-----	0.37	4	5	1-3
	10-29	18-25	1.55-1.65	0.6-2.0	0.17-0.22	4.5-6.5	Low-----	0.37			
	29-38	2-15	1.40-1.65	0.6-6.0	0.05-0.22	4.5-6.5	Low-----	0.24			
	38-60	0-3	1.75-1.85	>6.0	0.02-0.07	5.1-7.3	Low-----	0.10			

See footnote at end of table.

TABLE 16.--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
Rb----- Rib	0-8	10-20	1.25-1.35	0.6-2.0	0.22-0.28	5.1-7.3	Low-----	0.32	4	5	3-10
	8-12	15-20	1.40-1.50	0.6-2.0	0.20-0.26	5.1-7.3	Low-----	0.32			
	12-28	18-30	1.45-1.55	0.6-2.0	0.18-0.22	5.1-7.3	Moderate----	0.32			
	28-33	5-25	1.45-1.75	0.6-2.0	0.10-0.19	5.1-7.3	Low-----	0.32			
	33-60	1-6	1.75-1.85	>20	0.02-0.06	5.6-7.8	Low-----	0.10			
Rc----- Rib	0-15	10-20	1.25-1.35	0.6-2.0	0.22-0.28	5.1-7.3	Low-----	0.32	4	5	4-16
	15-44	18-30	1.45-1.55	0.6-2.0	0.18-0.22	5.1-7.3	Moderate----	0.32			
	44-60	1-6	1.75-1.85	>20	0.02-0.06	5.6-7.8	Low-----	0.10			
RfA----- Richford	0-8	4-10	1.35-1.65	2.0-6.0	0.09-0.13	5.6-7.3	Low-----	0.17	5	2	<1
	8-22	2-12	1.50-1.70	2.0-20	0.05-0.11	5.6-7.3	Low-----	0.17			
	22-30	6-12	1.55-1.70	2.0-6.0	0.10-0.17	5.1-7.3	Low-----	0.17			
	30-36	2-12	1.55-1.70	6.0-20	0.07-0.10	5.1-7.3	Low-----	0.17			
	36-60	1-5	1.65-1.80	6.0-20	0.03-0.07	6.1-7.3	Low-----	0.17			
RoA, RoB, RoC2--- Rosholt	0-8	4-10	1.50-1.60	0.6-6.0	0.10-0.18	4.5-7.3	Low-----	0.24	4	3	1-3
	8-20	3-12	1.70-1.80	0.6-6.0	0.10-0.22	4.5-7.3	Low-----	0.24			
	20-28	6-15	1.65-1.75	0.6-6.0	0.09-0.19	4.5-7.3	Low-----	0.24			
	28-34	4-15	1.55-1.65	0.6-6.0	0.04-0.16	4.5-7.3	Low-----	0.10			
	34-60	0-5	1.50-1.80	>6.0	0.02-0.04	5.1-6.5	Low-----	0.10			
RpA, RpB, RpC2--- Rosholt	0-8	7-13	1.50-1.60	0.6-6.0	0.16-0.24	4.5-7.3	Low-----	0.32	4	5	1-3
	8-15	3-12	1.70-1.80	0.6-6.0	0.10-0.22	4.5-7.3	Low-----	0.24			
	15-28	6-15	1.65-1.75	0.6-6.0	0.09-0.19	4.5-7.3	Low-----	0.24			
	28-34	4-15	1.55-1.65	0.6-6.0	0.04-0.16	4.5-7.3	Low-----	0.10			
	34-60	0-5	1.50-1.80	>6.0	0.02-0.04	5.1-6.5	Low-----	0.10			
SaB, SaC2, SaD2-- Santiago	0-7	5-15	1.20-1.55	0.6-2.0	0.20-0.24	4.5-7.3	Low-----	0.37	5	5	2-4
	7-13	5-14	1.40-1.50	0.6-2.0	0.20-0.23	4.5-6.5	Low-----	0.37			
	13-19	15-30	1.45-1.65	0.6-2.0	0.17-0.22	4.5-6.5	Moderate----	0.37			
	19-30	18-25	1.65-1.75	0.6-2.0	0.09-0.18	4.5-6.5	Low-----	0.28			
	30-60	3-15	1.65-1.75	0.6-2.0	0.08-0.18	5.1-7.3	Low-----	0.28			
SbA----- Sattre	0-9	18-24	1.40-1.45	0.6-2.0	0.18-0.20	6.1-6.5	Low-----	0.28	4	6	2-3
	9-30	18-28	1.40-1.50	0.6-6.0	0.15-0.17	5.1-5.5	Low-----	0.28			
	30-60	2-8	1.50-1.75	>20	0.02-0.06	5.1-6.0	Low-----	0.15			
ScB----- Scott Lake	0-8	6-15	1.35-1.50	0.6-6.0	0.10-0.22	4.5-6.5	Low-----	0.24	4	3	1-3
	8-36	8-18	1.55-1.70	0.6-6.0	0.09-0.19	4.5-6.5	Low-----	0.32			
	36-60	1-6	1.55-1.80	>6.0	0.01-0.07	4.5-7.3	Low-----	0.10			
SdA----- Scott Lake	0-8	10-15	1.35-1.50	0.6-2.0	0.16-0.24	4.5-6.5	Low-----	0.32	4	5	2-3
	8-26	8-18	1.55-1.70	0.6-6.0	0.09-0.19	4.5-6.5	Low-----	0.32			
	26-36	5-12	1.55-1.80	0.6-6.0	0.05-0.13	4.5-6.5	Low-----	0.24			
	36-60	1-6	1.55-1.80	>6.0	0.01-0.07	4.5-7.3	Low-----	0.10			
SeB----- Seaton	0-7	15-22	1.10-1.20	0.6-2.0	0.22-0.24	5.6-7.3	Low-----	0.37	5	6	1-3
	7-42	18-27	1.15-1.30	0.6-2.0	0.20-0.22	5.1-7.3	Low-----	0.37			
	42-60	15-25	1.20-1.40	0.6-2.0	0.20-0.22	5.6-8.4	Low-----	0.37			
SeC2, SeD2----- Seaton	0-7	15-22	1.10-1.20	0.6-2.0	0.22-0.24	5.6-7.3	Low-----	0.37	5-4	6	1-3
	7-42	18-27	1.15-1.30	0.6-2.0	0.20-0.22	5.1-7.3	Low-----	0.37			
	42-60	15-25	1.20-1.40	0.6-2.0	0.20-0.22	5.6-8.4	Low-----	0.37			
SfA----- Seaton	0-9	10-14	1.35-1.55	0.6-2.0	0.22-0.24	6.1-6.5	Low-----	0.37	5	5	2-3
	9-42	15-24	1.55-1.65	0.6-2.0	0.20-0.22	5.1-6.0	Low-----	0.37			
	42-60	10-14	1.45-1.70	0.6-2.0	0.20-0.22	5.1-5.5	Low-----	0.37			

See footnote at end of table.

TABLE 16.--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
SgA, SgB Seaton	0-8	10-14	1.35-1.55	0.6-2.0	0.22-0.24	5.6-7.3	Low	0.37	5	5	2-3
	8-38	15-25	1.55-1.65	0.6-2.0	0.20-0.22	5.1-6.5	Low	0.37			
	38-48	10-14	1.45-1.70	0.6-2.0	0.20-0.22	5.6-8.4	Low	0.37			
	48-60	1-6	1.55-1.70	6.0-20	0.05-0.07	5.6-6.0	Low	0.15			
Sm Seelyeville	0-4	---	0.10-0.25	2.0-6.0	0.35-0.45	4.5-8.4			2	5	>25
	4-60	---	0.10-0.25	2.0-6.0	0.35-0.45	4.5-8.4					
So Shiffer	0-9	12-22	1.20-1.55	0.6-2.0	0.19-0.22	6.1-7.8	Low	0.32	4	5	2-4
	9-27	18-27	1.55-1.65	0.6-2.0	0.14-0.19	4.5-6.5	Moderate	0.32			
	27-31	6-15	1.55-1.65	0.6-6.0	0.08-0.14	4.5-6.5	Low	0.24			
	31-60	2-8	1.60-1.70	6.0-20	0.04-0.10	4.5-6.5	Low	0.15			
SrB, SrC2 Spencer	0-9	9-17	1.40-1.55	0.6-2.0	0.22-0.24	5.1-7.3	Low	0.37	5	5	2-4
	9-42	18-25	1.50-1.65	0.6-2.0	0.18-0.22	4.5-6.5	Moderate	0.37			
	42-60	10-20	1.75-1.90	0.2-0.6	0.08-0.18	4.5-6.5	Low	0.28			
SsA, SsB Spencer	0-8	9-17	1.40-1.55	0.6-2.0	0.22-0.24	5.6-6.5	Low	0.37	5	5	2-4
	8-50	18-25	1.50-1.65	0.6-2.0	0.20-0.22	4.5-6.0	Low	0.37			
	50-60	1-6	1.50-1.80	>6.0	0.02-0.04	5.1-5.5	Low	0.10			
TeB Tell	0-9	14-18	1.35-1.45	0.6-2.0	0.22-0.24	5.1-7.3	Low	0.37	4	5	1-3
	9-30	20-28	1.50-1.60	0.6-2.0	0.18-0.22	5.1-6.5	Moderate	0.37			
	30-35	10-25	1.50-1.60	0.6-2.0	0.11-0.19	5.1-6.5	Low	0.37			
	35-60	2-8	1.55-1.70	6.0-20	0.04-0.07	5.1-6.5	Low	0.15			
Ud. Udifluvents											
Ve Vesper	0-12	10-20	1.35-1.55	0.6-2.0	0.20-0.24	4.5-6.0	Low	0.37	4	5	4-6
	12-38	18-30	1.55-1.70	0.2-0.6	0.06-0.19	4.5-6.0	Moderate	0.37			
	38-60	2-45	1.55-1.70	0.06-0.2	0.06-0.17	4.5-6.5	Moderate	0.15			
Wb Warman Variant	0-8	5-12	1.35-1.70	2.0-6.0	0.13-0.15	6.6-7.3	Low	0.20	4	3	2-4
	8-24	5-12	1.40-1.70	2.0-6.0	0.07-0.14	5.6-6.0	Low	0.20			
	24-60	1-6	1.50-1.60	6.0-20	0.02-0.04	5.6-6.0	Low	0.10			
WeB Withee	0-8	12-18	1.20-1.45	0.6-2.0	0.19-0.24	4.5-7.3	Low	0.37	5	5	3-4
	8-23	12-22	1.55-1.65	0.2-2.0	0.18-0.22	4.5-5.5	Low	0.37			
	23-42	18-25	1.80-1.90	0.2-0.6	0.11-0.19	4.5-5.5	Moderate	0.37			
	42-60	12-22	1.80-1.95	0.2-0.6	0.11-0.19	4.5-5.5	Low	0.37			

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 17.--SOIL AND WATER FEATURES

("Flooding" and "water table" and terms such as "rare," "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	Hydro-logic group	Flooding			High water table			Bedrock		Total subsidence	Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness			Uncoated steel	Concrete
					<u>Ft</u>			<u>In</u>			<u>In</u>		
AfB----- Alban	B	None-----	---	---	3.0-6.0	Perched	Nov-Apr	>60	---	---	Moderate	Low-----	Moderate.
AfC----- Alban	B	None-----	---	---	>6.0	---	---	>60	---	---	Moderate	Low-----	Moderate.
AgB----- Almena	C	None-----	---	---	1.0-2.5	Apparent	Nov-May	>60	---	---	High-----	Low-----	Moderate.
AlB, AlC, AlD, AlF----- Amery	B	None-----	---	---	>6.0	---	---	>60	---	---	Moderate	Low-----	High.
AnB, AnC2----- Antigo	B	None-----	---	---	>6.0	---	---	>60	---	---	High-----	Moderate	High.
AoA----- Arenzville	B	Occasional	Brief-----	Apr-Oct	3.0-6.0	Apparent	Nov-May	>60	---	---	High-----	Moderate	Moderate.
ApB, ApC2, ApD2, AsB, AsC2, AsD2----- Arland	B	None-----	---	---	>6.0	---	---	30-40	Soft	---	Low-----	Moderate	Moderate.
Au----- Auburndale	B/D	None-----	---	---	+1-1.0	Apparent	Nov-May	>60	---	---	High-----	High-----	Moderate.
Ba----- Barronett	B/D	Rare-----	---	---	+1-1.0	Apparent	Sep-Jun	>60	---	---	High-----	Moderate	High.
Bb----- Barronett	B/D	Frequent---	Brief to long.	Nov-Jun	+1-1.0	Apparent	Sep-Jun	>60	---	---	High-----	Moderate	High.
Be----- Beseman	A/D	Rare-----	---	---	+1-1.0	Apparent	Jan-Dec	>60	---	>12	High-----	High-----	High.
B1A, B1B, B1C2-- Billett	B	None-----	---	---	>6.0	---	---	>60	---	---	Moderate	Low-----	Moderate.
BmA----- Billett	B	None-----	---	---	3.0-6.0	Apparent	Nov-Apr	>60	---	---	Moderate	Low-----	Moderate.
BoE----- Boone	A	None-----	---	---	>6.0	---	---	20-40	Soft	---	Low-----	Low-----	Moderate.

TABLE 17.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydro-logic group	Flooding			High water table			Bedrock		Total subsidence	Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness			Uncoated steel	Concrete
					Ft			In		In			
BpA----- Brill	B	None-----	---	---	2.5-3.5	Apparent	Sep-May	>60	---	---	High-----	Moderate	Moderate.
BuA----- Burkhardt	B	None-----	---	---	>6.0	---	---	>60	---	---	Low-----	Low-----	High.
Cb----- Cable	B/D	None-----	---	---	+1-1.0	Apparent	Nov-May	>60	---	---	High-----	High-----	High.
CdB, CdC2, CdD2- Campia	B	None-----	---	---	>6.0	---	---	>60	---	---	High-----	Moderate	Moderate.
CeA----- Caryville	B	Rare-----	---	---	>6.0	---	---	>60	---	---	Low-----	Moderate	Moderate.
CkA, CkB, CkC2-- Chetek	B	None-----	---	---	>6.0	---	---	>60	---	---	Low-----	Low-----	High.
CkD2*, CkE*: Chetek-----	B	None-----	---	---	>6.0	---	---	>60	---	---	Low-----	Low-----	High.
Mahtomedi-----	A	None-----	---	---	>6.0	---	---	>60	---	---	Low-----	Low-----	High.
Cm----- Comstock	C	None-----	---	---	1.0-3.0	Apparent	Sep-May	>60	---	---	High-----	Moderate	High.
CuA----- Crystal Lake	B	None-----	---	---	2.5-6.0	Perched	Sep-May	>60	---	---	High-----	Low-----	High.
E1B, E1C2, E1D2- Eleva	B	None-----	---	---	>6.0	---	---	20-40	Soft	---	Moderate	Low-----	Moderate.
EmB, EmC2, EmD2, EmE----- Elkmound	D	None-----	---	---	>6.0	---	---	10-20	Soft	---	Moderate	Low-----	Moderate.
Eo----- Elm Lake	A/D	None-----	---	---	+1-1.0	Apparent	Nov-May	30-50	Soft	---	Moderate	High-----	High.
FaB----- Fallcreek	C	None-----	---	---	1.0-3.0	Perched	Nov-May	>60	---	---	High-----	Low-----	High.
FbB, FbC2----- Flambeau	B	None-----	---	---	2.5-3.5	Perched	Nov-May	>60	---	---	Moderate	Low-----	High.
Fm----- Fordum	D	Frequent---	Brief to long.	Mar-Jun	+1-1.0	Apparent	Jan-Dec	>60	---	---	High-----	High-----	High.

See footnote at end of table.

TABLE 17.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydro-logic group	Flooding			High water table			Bedrock		Total subsidence	Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness			Uncoated steel	Concrete
					<u>Ft</u>			<u>In</u>		<u>In</u>			
FnB, FnC2----- Freeon	B	None-----	---	---	2.0-3.0	Perched	Nov-May	>60	---	---	Moderate	Low-----	Moderate.
FrA----- Friendship	A	None-----	---	---	2.5-6.0	Apparent	Nov-May	>60	---	---	Low-----	Low-----	High.
GaB, GaC2, GaD2----- Gale	B	None-----	---	---	>6.0	---	---	20-40	Soft	---	High-----	Moderate	Moderate.
Gr----- Greenwood	A/D	None-----	---	---	+1-1.0	Apparent	Jan-Dec	>60	---	---	High-----	High-----	High.
Ha----- Halder	C	None-----	---	---	1.0-2.5	Apparent	Nov-May	>60	---	---	High-----	Moderate	Moderate.
HeB----- Hiles	B	None-----	---	---	2.0-4.0	Perched	Nov-May	20-40	Soft	---	High-----	Moderate	High.
HfB----- Hiles Variant	D	None-----	---	---	2.5-3.5	Perched	Nov-Jun	40-60	Soft	---	Moderate	Moderate	High.
HnB, HnC2----- Hixton	B	None-----	---	---	>6.0	---	---	20-40	Soft	---	Moderate	Low-----	Moderate.
HuB, HuC2----- Humbird	B	None-----	---	---	2.5-6.0	Perched	Nov-May	24-40	Soft	---	Moderate	High-----	High.
KeB----- Kert	C	None-----	---	---	1.0-3.0	Perched	Nov-May	>60	---	---	High-----	High-----	High.
La----- Lows	B/D	None-----	---	---	+1-1.0	Apparent	Nov-May	>60	---	---	High-----	High-----	Moderate.
LoB, LoC2----- Loyal	B	None-----	---	---	2.5-6.0	Perched	Nov-May	>60	---	---	Moderate	Moderate	High.
Lp----- Lupton	A/D	None-----	---	---	+1-1.0	Apparent	Jan-Dec	>60	---	50-55	High-----	High-----	Low.
MbB, McB----- Magnor	C	None-----	---	---	0.5-3.0	Perched	Nov-Jun	>60	---	---	High-----	Low-----	Moderate.
MdB, MdC----- Mahtomedi	A	None-----	---	---	>6.0	---	---	>60	---	---	Low-----	Low-----	High.
Me----- Markey	A/D	None-----	---	---	+1-1.0	Apparent	Jan-Dec	>60	---	25-30	High-----	High-----	Low.

See footnote at end of table.

TABLE 17.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydro-logic group	Flooding			High water table			Bedrock		Total subsidence	Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness			Uncoated steel	Concrete
					<u>Ft</u>			<u>In</u>		<u>In</u>			
Mh----- Meehan	B	None-----	---	---	1.0-3.0	Apparent	Oct-May	>60	---	---	Moderate	Low-----	Moderate.
MkB, MkC----- Menahga	A	None-----	---	---	>6.0	---	---	>60	---	---	Low-----	Low-----	Moderate.
M1A, M1B----- Meridian	B	None-----	---	---	>6.0	---	---	>60	---	---	Moderate	Low-----	Moderate.
MmA----- Meridian	B	None-----	---	---	3.0-6.0	Apparent	Nov-Apr	>60	---	---	Moderate	Low-----	Moderate.
MrB----- Merrillan	C	None-----	---	---	1.0-3.0	Apparent	Nov-May	24-40	Soft	---	High-----	High-----	High.
Mu----- Minocqua	B/D	None-----	---	---	+1-1.0	Apparent	Nov-Jun	>60	---	---	High-----	High-----	High.
MvA----- Moundville	A	None-----	---	---	2.0-3.5	Apparent	Mar-May	>60	---	---	Low-----	Low-----	Moderate.
Na----- Newson	A/D	Rare-----	---	---	+1-1.0	Apparent	Nov-Jun	>60	---	---	Moderate	Low-----	High.
NtB, NtC2, NtD2----- Northfield	D	None-----	---	---	>6.0	---	---	10-20	Soft	---	Low-----	Low-----	Moderate.
Oe----- Oesterle	C	None-----	---	---	1.0-3.0	Apparent	Oct-May	>60	---	---	High-----	Low-----	Moderate.
Or----- Orion	C	Frequent-----	Brief-----	Mar-Nov	1.0-3.0	Apparent	Nov-May	>60	---	---	High-----	High-----	Low.
OsC2----- Otterholt	B	None-----	---	---	>6.0	---	---	>60	---	---	High-----	Low-----	High.
Pc*. Pits													
PdB, PdC, PdD----- Plainbo	A	None-----	---	---	>6.0	---	---	20-40	Soft	---	Low-----	Low-----	Moderate.
Pv----- Plover	C	None-----	---	---	1.0-3.0	Apparent	Nov-May	>60	---	---	High-----	Moderate	High.
Px----- Poskin	C	None-----	---	---	1.0-3.0	Apparent	Oct-May	>60	---	---	High-----	Low-----	Moderate.

See footnote at end of table.

TABLE 17.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydro-logic group	Flooding			High water table			Bedrock		Total subsidence	Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness			Uncoated steel	Concrete
Rb, Rc----- Rib	B/D	Occasional	Brief to long.	Nov-Jun	<u>Ft</u> +1-1.0	Apparent	Sep-May	>60	---	---	High-----	High-----	High.
RfA----- Richford	A	None-----	---	---	>6.0	---	---	>60	---	---	Low-----	Low-----	Moderate.
RoA, RoB, RoC2, RpA, RpB, RpC2- Rosholt	B	None-----	---	---	>6.0	---	---	>60	---	---	Moderate	Low-----	Moderate.
SaB, SaC2, SaD2- Santiago	B	None-----	---	---	>6.0	---	---	>60	---	---	Moderate	Low-----	High.
SbA----- Sattre	B	None-----	---	---	>6.0	---	---	>60	---	---	Low-----	Low-----	High.
ScB, SdA----- Scott Lake	B	None-----	---	---	2.5-6.0	Apparent	Nov-May	>60	---	---	Moderate	Low-----	High.
SeB, SeC2, SeD2- Seaton	B	None-----	---	---	>6.0	---	---	>60	---	---	High-----	Low-----	Moderate.
SfA----- Seaton	B	None-----	---	---	3.0-6.0	Apparent	Nov-Apr	>60	---	---	High-----	Low-----	Moderate.
SgA, SgB----- Seaton	B	None-----	---	---	>6.0	---	---	>60	---	---	High-----	Low-----	Moderate.
Sm----- Seelyeville	A/D	Rare-----	---	---	+1-1.0	Apparent	Jan-Dec	>60	---	50-55	High-----	High-----	Moderate.
So----- Shiffer	C	None-----	---	---	1.0-3.0	Apparent	Nov-May	>60	---	---	High-----	Moderate	Moderate.
SrB, SrC2----- Spencer	B	None-----	---	---	2.5-6.0	Apparent	Nov-May	>60	---	---	High-----	Low-----	High.
SsA, SsB----- Spencer	B	None-----	---	---	3.0-6.0	Perched	Nov-May	>60	---	---	High-----	Low-----	High.
TeB----- Tell	B	None-----	---	---	>6.0	---	---	>60	---	---	High-----	Moderate	Moderate.
Ud. Udfluvents													
Ve----- Vesper	D	None-----	---	---	+1-1.0	Perched	Nov-Jun	42-60	Soft	---	High-----	High-----	Moderate.

See footnote at end of table.

TABLE 17.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydro-logic group	Flooding			High water table			Bedrock		Total subsidence	Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness			Uncoated steel	Concrete
					<u>Ft</u>			<u>In</u>		<u>In</u>			
Wb----- Warman Variant	B	None-----	---	---	1.0-3.0	Apparent	Nov-May	>60	---	---	Moderate	High-----	Moderate.
WeB----- Withee	C	None-----	---	---	0.5-2.0	Perched	Nov-May	>60	---	---	High-----	Low-----	High.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 18.--ENGINEERING INDEX TEST DATA

(Dashes indicate that data were not available. MAX means maximum dry density; OPT, optimum moisture; LL, liquid limit; PI, plasticity index; UN, Unified; and NP, nonplastic)

Soil name and location	Parent material	Report number	Depth	Moisture density		Percentage passing sieve*--				Percentage smaller than*--				LL	PI	Classification	
				MAX	OPT	No. 4	No. 10	No. 40	No. 200	0.05 mm	0.02 mm	0.005 mm	0.002 mm			AASHTO	UN
			In	Lb/cf	Pct								Pct				
Alban fine sandy loam: SE1/4SW1/4 sec. 2, T. 32 N., R. 6 W.	Loamy lacustrine deposits.	S75WI-017-2-1	24-34	---	---	100	100	99	71	50	18	12	10	---	NP	A-4(7)	ML
		2-2	38-60	112.1	12.7	100	100	95	42	22	7	4	2	---	NP	A-4(1)	SM
Almena silt loam: NW1/4NW1/4 sec. 16, T. 29 N., R. 6 W.	Silty deposits over gravelly sandy loam glacial till.	S82WI-017-14-1	18-24	---	---	100	100	100	98	92	60	28	22	34	10	A-4(8)	CL
		14-2	24-36	---	---	100	100	100	97	88	49	24	20	33	11	A-4(8)	CL
		14-3	48-60	---	---	96	93	82	48	42	24	11	8	20	4	A-4(3)	SM
Amery sandy loam**: SE1/4NE1/4 sec. 36, T. 32 N., R. 9 W.	Loamy deposits underlain by loamy sand or sandy loam glacial till.	S79WI-017-15-1	11-22	---	---	95	92	78	40	35	24	10	5	---	NP	A-4(1)	SM
		15-2	32-60	131.0	7.2	79	74	56	18	14	7	3	1	12	NP	A-2-4(0)	SM
Arland sandy loam: NE1/4NW1/4 sec. 36, T. 29 N., R. 10 W.	Loamy glacial till underlain by sandy residuum and sandstone.	S79WI-017-12-1	12-25	---	---	95	94	86	54	49	35	19	15	26	9	A-4(4)	CL
		12-2	28-36	---	---	90	87	67	19	16	13	8	7	---	NP	A-2-4(0)	SM
Barronett silt loam: SW1/4SW1/4 sec. 22, T. 31 N., R. 6 W.	Silty lacustrine deposits underlain by silty and sandy deposits.	S81WI-017-2-1	13-23	---	---	100	100	99	95	83	44	19	14	33	9	A-4(8)	ML
		2-2	23-34	---	---	100	100	99	95	89	44	18	13	30	7	A-4(8)	CL
		2-3	34-60	---	---	100	100	99	94	88	45	18	12	30	7	A-4(8)	CL

See footnotes at end of table.

TABLE 18.--ENGINEERING INDEX TEST DATA--Continued

Soil name and location	Parent material	Report number	Depth	Moisture density		Percentage passing sieve*--				Percentage smaller than*--				LL	PI	Classi- fication				
				MAX	OPT	No. 4	No. 10	No. 40	No. 200	0.05 mm	0.02 mm	0.005 mm	0.002 mm			AASHTO	UN			
			In	Lb/ cf	Pct													Pct		
Campia silt loam: SW1/4SW1/4 sec. 30, T. 32 N., R. 8 W.	Silty lacustrine deposits underlain by silty and sandy deposits.	S76WI-017- 3-1	24-34	---	---	100	100	100	97	95	74	45	33	37	19	A-6(11)	CL			
		3-2	42-60	105.4	17.2	100	100	100	99	96	79	46	33	38	19	A-6(11)	CL			
Chetek sandy loam: NW1/4NE1/4 sec. 22, T. 29 N., R. 7 W.	Loamy deposits over strati- fied sand and gravel.	S75WI-017- 4-1	13-17	---	---	81	75	54	23	22	17	11	9	22	8	A-2-4 (0)	SC			
		4-2	17-20	---	---	83	75	50	11	10	7	4	3	---	NP	A-2-4 (0)	SP-SM			
		4-3	20-60	---	---	61	49	15	2	2	2	1	1	---	NP	A-1-a (0)	SP			
Comstock silt loam: NE1/4SW1/4 sec. 27, T. 31 N., R. 6 W.	Silty lacustrine deposits.	S77WI-017- 1-1	24-30	---	---	100	100	100	99	92	56	29	23	36	15	A-6(10)	CL			
		1-2	40-60	---	---	100	100	99	90	76	37	17	11	26	NP	A-4(8)	ML			
Elk mound loam: SE1/4SW1/4 sec. 1, T. 28 N., R. 10 W.	Loamy deposits over sandstone.	S79WI-017- 11-1	9-14	---	---	96	95	84	47	41	25	9	5	---	NP	A-4(2)	SM			
Fallcreek sandy loam: NW1/4NE1/4 sec. 23, T. 28 N., R. 6 W.	Loamy glacial till.	S81WI-017- 7-1	12-20	---	---	100	100	94	70	63	39	14	9	---	NP	A-4(7)	ML			
		7-2	20-28	---	---	93	89	76	35	29	20	10	7	---	NP	A-4(0)	SM			
		7-3	28-42	---	---	93	89	75	31	26	18	11	9	21	5	A-2-4 (0)	SM-SC			
		7-4	42-60	---	---	93	79	67	28	23	15	10	8	21	6	A-2-4 (0)	SM-SC			

See footnotes at end of table.

TABLE 18.--ENGINEERING INDEX TEST DATA--Continued

Soil name and location	Parent material	Report number	Depth	Moisture density		Percentage passing sieve*--				Percentage smaller than*--				LL	PI	Classification	
				MAX	OPT	No. 4	No. 10	No. 40	No. 200	0.05 mm	0.02 mm	0.005 mm	0.002 mm			AASHTO	UN
				In	Lb/cf	Pct										Pct	
Halder loam: SE1/4SE1/4 sec. 2, T. 31 N., R. 9 W.	Loamy deposits over sand and gravel.	S79WI-017- 13-1	16-30	---	---	100	100	93	64	59	47	22	16	28	10	A-6(6)	CL
Hiles silt loam: NE1/4NE1/4 sec. 30, T. 28 N., R. 7 W.	Silty deposits and material weathered from sand- stone inter- bedded with shale.	S83WI-017- 3-1	22-26	---	---	100	100	95	74	70	54	32	27	38	17	A-6(11)	CL
		3-2	26-30	---	---	100	100	92	65	59	42	24	20	29	11	A-6(6)	CL
Loyal silt loam: SE1/4SW1/4 sec. 9, T. 28 N., R. 5 W.	Silty deposits and loamy glacial till.	S83WI-017- 5-1	15-21	---	---	100	100	100	99	90	48	21	17	28	5	A-4(8)	ML
		5-2	21-32	---	---	100	100	100	98	90	50	24	19	36	11	A-6(8)	ML
		5-3	32-60	121.6	10.6	92	90	82	57	49	31	18	13	24	8	A-4(4)	CL
Magnor silt loam: SE1/4SW1/4 sec. 15, T. 32 N., R. 5 W.	Silty deposits and sandy loam glacial till.	S80WI-017- 2-1	15-19	---	---	98	96	90	79	73	46	15	9	20	NP	A-4(8)	ML
		2-2	19-25	---	---	88	85	72	41	37	27	14	10	23	7	A-4(1)	SM-SC
		2-3	29-60	130.3	9.1	86	81	67	33	28	19	11	8	19	4	A-2-4 (0)	SM-SC
Meridian loam: SW1/4SW1/4 sec. 26, T. 28 N., R. 10 W.	Loamy deposits underlain by sand.	S77WI-017- 1-3	11-32	---	---	100	100	91	59	54	33	18	15	21	5	A-4(5)	CL-ML
Northfield silt loam: SE1/4SW1/4 sec. 23, T. 28 N., R. 10 W.	Silty deposits underlain by sandstone.	S75WI-017- 1-1	10-15	---	---	96	96	93	70	64	44	22	15	23	5	A-4(7)	CL-ML

See footnotes at end of table.

TABLE 18.--ENGINEERING INDEX TEST DATA--Continued

Soil name and location	Parent material	Report number	Depth	Moisture density		Percentage passing sieve*--				Percentage smaller than*--				LL	PI	Classi- fication	
				MAX	OPT	No. 4	No. 10	No. 40	No. 200	0.05 mm	0.02 mm	0.005 mm	0.002 mm			AASHTO	UN
				<u>In</u>	<u>Lb/ cf</u>	<u>Pct</u>											
Otterholt silt loam: SW1/4SW1/4 sec. 14, T. 29 N., R. 6 W.	Silty deposits over sandy loam glacial till.	S80WI-017-3-1	21-28	---	---	100	100	100	97	89	41	19	15	28	4	A-4(8)	ML
		3-2	34-40	---	---	100	100	99	94	83	36	16	13	29	7	A-4(8)	CL
		3-3	40-60	---	---	81	77	67	38	31	13	4	2	---	NP	A-4(1)	SM
Rosholt sandy loam: SE1/4SE1/4 sec. 25, T. 29 N., R. 7 W.	Loamy deposits underlain by stratified sand and gravel.	S61WI-017-1-1	19-26	134.0	8.0	94	92	73	26	23	17	9	7	---	NP	A-2-4(0)	SM
		1-2	40-60	142.0	6.0	40	30	14	4	4	2	1	1	---	NP	A-1-a(0)	GP
Rosholt sandy loam: NE1/4NE1/4 sec. 30, T. 30 N., R. 8 W.	Loamy deposits underlain by stratified sand and gravel.	S80WI-017-2-1	19-27	---	---	100	100	78	36	34	27	15	13	21	7	A-4(0)	SM-SC
		2-2	30-60	---	---	42	36	11	2	2	1	1	1	---	NP	A-1-a(0)	GP
Rosholt loam: SW1/4SW1/4 sec. 5, T. 31 N., R. 8 W.	Loamy deposits underlain by stratified sand and gravel.	S62WI-017-3-1	16-22	---	---	81	81	70	46	45	34	20	16	30	13	A-6(3)	SC
		3-2	29-42	---	---	45	32	13	4	3	2	1	1	---	NP	A-1-a(0)	GP
Santiago silt loam: SE1/4SE1/4 sec. 10, T. 29 N., R. 6 W.	Silty deposits and under-lying sandy loam glacial till.	S82WI-017-13-1	13-16	---	---	98	96	95	93	86	46	21	14	25	5	A-4(8)	CL-ML
		13-2	19-24	---	---	88	84	74	46	40	27	13	9	25	9	A-4(2)	SC
		13-3	30-60	---	---	82	77	63	30	26	19	10	6	17	3	A-2-4(0)	SM
Sattre loam: SW1/4NW1/4 sec. 18, T. 29 N., R. 8 W.	Loamy deposits over sand and gravel.	S74WI-017-1-1	18-28	---	---	100	100	92	54	50	37	22	18	26	10	A-4(4)	CL
		1-2	34-60	---	---	90	83	29	4	3	3	2	2	---	NP	A-1-6(0)	SW

See footnotes at end of table.

TABLE 18.--ENGINEERING INDEX TEST DATA--Continued

Soil name and location	Parent material	Report number	Depth	Moisture density		Percentage passing sieve*--				Percentage smaller than*--				LL	PI	Classification	
				MAX	OPT	No. 4	No. 10	No. 40	No. 200	0.05 mm	0.02 mm	0.005 mm	0.002 mm			AASHTO	UN
			In	Lb/cf	Pct									Pct			
Seaton silt loam: NE1/4 NW1/4 sec. 5, T. 28 N., R. 9 W.	Silty deposits.	S79WI-017- 10-1 10-2	16-34	---	---	100	100	100	92	84	42	23	19	34	13	A-6(9)	CL
			41-60	---	---	100	100	100	97	93	46	21	16	32	8	A-4(8)	CL
Spencer silt loam: SW1/4SW1/4 sec. 21, T. 31 N., R. 6 W.	Silty deposits underlain by sandy loam glacial till.	S83WI-017- 11-1 11-2	20-32	---	---	100	100	99	96	87	44	24	19	32	8	A-4(8)	ML
			34-60	129.8	9.2	90	85	73	42	35	24	12	7	17	4	A-4(1)	ML
Withee silt loam: SW1/4NW1/4 sec. 1, T. 28 N., R. 5 W.	Silty deposits and loamy glacial till.	S82WI-017- 17-1 17-2 17-3	12-18	---	---	100	100	100	98	91	53	20	14	28	6	A-4(8)	CL-ML
			23-34	---	---	85	83	69	39	35	25	17	13	36	12	A-6(1)	SC
			42-60	---	---	93	91	76	40	35	25	15	12	22	8	A-4(1)	SC

* Mechanical analysis according to the AASHTO Designation T88-57 (1). Results from this procedure can differ somewhat from the results obtained by the soil survey procedure of the Soil Conservation Service (SCS). In the AASHTO procedure, the fine material is analyzed by hydrometer method and the various grain-size fractions are calculated on the basis of all material up to and including that 3 inches in diameter. In the SCS soil survey procedure, the fine material is analyzed by the pipette method and the material coarser than 2 millimeters in diameter is excluded from the calculation of grain-size fractions. The mechanical analysis data given in this table are not suitable for use in naming textural classes of soils.

** The soil is a taxadjunct. See the series description for an explanation.

TABLE 19.--CLASSIFICATION OF THE SOILS

(An asterisk in the first column indicates that the soil is a taxadjunct to the series. See text for a description of those characteristics of the soil that are outside the range of the series)

Soil name	Family or higher taxonomic class
Alban-----	Coarse-loamy, mixed Typic Glossoboralfs
Almena-----	Fine-silty, mixed, frigid Aeric Glossaqualfs
*Amery-----	Coarse-loamy, mixed Typic Glossoboralfs
Antigo-----	Fine-silty over sandy or sandy-skeletal, mixed Typic Glossoboralfs
Arenzville-----	Coarse-silty, mixed, nonacid, mesic Typic Udifluvents
Arland-----	Coarse-loamy, mixed Eutric Glossoboralfs
Auburndale-----	Fine-silty, mixed, frigid Typic Glossaqualfs
Barronett-----	Fine-silty, mixed, frigid Mollic Ochraqualfs
Beseman-----	Loamy, mixed, dysic Terric Borosaprists
Billett-----	Coarse-loamy, mixed, mesic Mollic Hapludalfs
Boone-----	Mesic, uncoated Typic Quartzipsamments
*Brill-----	Fine-silty over sandy or sandy-skeletal, mixed Typic Glossoboralfs
Burkhardt-----	Sandy, mixed, mesic Typic Hapludolls
Cable-----	Coarse-loamy, mixed, nonacid, frigid Typic Haplaquepts
Campia-----	Fine-silty, mixed Typic Glossoboralfs
Caryville-----	Sandy, mixed Fluventic Haploborolls
Chetek-----	Coarse-loamy, mixed Eutric Glossoboralfs
Comstock-----	Fine-silty, mixed Aquic Glossoboralfs
Crystal Lake-----	Fine-silty, mixed Typic Glossoboralfs
Eleva-----	Coarse-loamy, mixed, mesic Typic Hapludalfs
Elkmound-----	Loamy, mixed, mesic Lithic Dystrochrepts
Elm Lake-----	Sandy over loamy, mixed, acid, frigid Typic Haplaquents
Fallcreek-----	Coarse-loamy, mixed Aquic Glossoboralfs
Flambeau-----	Fine-loamy, mixed Typic Glossoboralfs
*Fordum-----	Coarse-loamy, mixed, nonacid, frigid Mollic Fluvaquents
Freeon-----	Coarse-loamy, mixed Typic Glossoboralfs
Friendship-----	Mixed, frigid Typic Udipsamments
Gale-----	Fine-silty over sandy or sandy-skeletal, mixed, mesic Typic Hapludalfs
Greenwood-----	Dysic Typic Borohemists
Halder-----	Fine-loamy over sandy or sandy-skeletal, mixed Aquic Glossoboralfs
Hiles-----	Fine-loamy, mixed Typic Glossoboralfs
Hiles Variant-----	Fine, mixed Typic Glossoboralfs
Hixton-----	Fine-loamy over sandy or sandy-skeletal, mixed, mesic Typic Hapludalfs
Humbird-----	Coarse-loamy over clayey, mixed, frigid Alfic Haplorthods
Kert-----	Fine-loamy, mixed Aquic Glossoboralfs
Lows-----	Fine-loamy over sandy or sandy-skeletal, mixed, nonacid, frigid Mollic Haplaquepts
Loyal-----	Fine-loamy, mixed Typic Glossoboralfs
Lupton-----	Eucic Typic Borosaprists
Magnor-----	Coarse-loamy, mixed Aquic Glossoboralfs
Mahtomedi-----	Mixed, frigid Typic Udipsamments
Markey-----	Sandy or sandy-skeletal, mixed, eucic Terric Borosaprists
Meehan-----	Mixed, frigid Aquic Udipsamments
Menahga-----	Mixed, frigid Typic Udipsamments
Meridian-----	Fine-loamy over sandy or sandy-skeletal, mixed, mesic Mollic Hapludalfs
*Merrillan-----	Coarse-loamy over clayey, mixed, frigid Aqualfic Haplorthods
*Minocqua-----	Coarse-loamy over sandy or sandy-skeletal, mixed, nonacid, frigid Typic Haplaquepts
Moundville-----	Sandy, mixed, mesic Psammentic Hapludalfs
Newson-----	Mixed, frigid Humaqueptic Psammaquents
Northfield-----	Loamy, mixed, mesic Lithic Hapludalfs
Oesterle-----	Coarse-loamy, mixed Aquic Glossoboralfs
Orion-----	Coarse-silty, mixed, nonacid, mesic Aquic Udifluvents
Otterholt-----	Fine-silty, mixed Typic Glossoboralfs
Plainbo-----	Mixed, frigid Typic Udipsamments
Plover-----	Coarse-loamy, mixed Aquic Glossoboralfs
*Poskin-----	Fine-silty over sandy or sandy-skeletal, mixed Aquic Glossoboralfs
Rib-----	Fine-silty over sandy or sandy-skeletal, mixed, nonacid, frigid Mollic Haplaquepts
Richford-----	Sandy, mixed, mesic Psammentic Hapludalfs
Rosholt-----	Coarse-loamy, mixed Typic Glossoboralfs

TABLE 19.--CLASSIFICATION OF THE SOILS--Continued

Soil name	Family or higher taxonomic class
Santiago-----	Fine-loamy, mixed Typic Glossoboralfs
Sattre-----	Fine-loamy over sandy or sandy-skeletal, mixed, mesic Mollic Hapludalfs
Scott Lake-----	Coarse-loamy, mixed Typic Glossoboralfs
Seaton-----	Fine-silty, mixed, mesic Typic Hapludalfs
Seelyeville-----	Euic Typic Borosaprists
Shiffer-----	Fine-loamy over sandy or sandy-skeletal, mixed, mesic Aquollic Hapludalfs
Spencer-----	Fine-silty, mixed Typic Glossoboralfs
Tell-----	Fine-silty over sandy or sandy-skeletal, mixed, mesic Typic Hapludalfs
Udifluvents-----	Loamy, mixed, nonacid, frigid Aquic Udifluvents
Vesper-----	Fine-loamy over sandy or sandy-skeletal, mixed, acid, frigid Humic Haplaquepts
Warman Variant-----	Sandy, mixed Aquic Haploborolls
Withee-----	Fine-loamy, mixed Aquic Glossoboralfs

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