

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories (17). 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 18 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 Mollisol.

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Aquoll (*Aqu*, meaning water, plus *oll*, from Mollisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Haplaquolls (*Hapl*, meaning minimal horization, plus *aquoll*, the suborder of the Mollisols that have an aquic moisture regime).

SUBGROUP. Each great group has a typical subgroup. Other subgroups are intergrades or extragrades. The typical 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 Haplaquolls.

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 fine-loamy, mixed, mesic Typic Haplaquolls.

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 underlying material 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. The soil is compared with similar soils and with nearby soils of other 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* (15). Many of the technical terms used in the descriptions are defined in *Soil Taxonomy* (17). 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."

Abscota Series

The Abscota series consists of moderately well drained, rapidly permeable soils on flood plains along streams and rivers. These soils formed in sandy alluvial deposits. Slope ranges from 0 to 3 percent.

Abscota soils are similar to Algansee and Oakville soils and are commonly adjacent to Algansee, Ceresco, and Shoals soils. Algansee, Ceresco, and Shoals soils are somewhat poorly drained and are in the lower landscape positions. Also, Ceresco and Shoals soils are finer textured in the solum than the Abscota soils.

Oakville soils do not irregularly decrease in content of organic carbon with increasing depth.

Typical pedon of Abscota loamy sand, 0 to 3 percent slopes, 1,600 feet south and 2,500 feet east of the northwest corner of sec. 12, T. 5 N., R. 12 W., Byron Township:

- Ap—0 to 5 inches; very dark grayish brown (10YR 3/2) loamy sand, light brownish gray (10YR 6/2) dry; weak fine granular structure; very friable; many roots; slightly acid; abrupt smooth boundary.
- Bw1—5 to 11 inches; yellowish brown (10YR 5/4) loamy sand; weak coarse subangular blocky structure; very friable; common fine roots; slightly acid; clear smooth boundary.
- Bw2—11 to 14 inches; light yellowish brown (10YR 6/4) loamy sand; weak medium subangular blocky structure; very friable; common fine roots; slightly acid; clear smooth boundary.
- C1—14 to 28 inches; light yellowish brown (10YR 6/4) sand; single grain; loose; few fine roots; slightly acid; clear smooth boundary.
- C2—28 to 38 inches; pale brown (10YR 6/3) sand; common coarse faint yellowish brown (10YR 5/4) mottles; single grain; loose; few fine roots; slightly acid; clear smooth boundary.
- C3—38 to 48 inches; light yellowish brown (10YR 6/4) sand; single grain; loose; many coarse very dark grayish brown (10YR 3/2) organic stains; slightly acid; clear smooth boundary.
- C4—48 to 52 inches; yellowish brown (10YR 5/6) sand; common coarse distinct brown (10YR 5/3) mottles; single grain; loose; mildly alkaline; abrupt smooth boundary.
- C5—52 to 66 inches; dark grayish brown (10YR 4/2) sand; few medium distinct yellowish brown (10YR 5/8) mottles; single grain; loose; mildly alkaline.

The solum ranges from 10 to 20 inches in thickness. It is slightly acid to mildly alkaline. The content of pebbles and cobbles is 0 to 3 percent in the solum.

The A horizon has value of 3 or 4 and chroma of 1 or 2. It is dominantly loamy sand, but the range includes sand. The B horizon has value of 4 to 6 and chroma of 2 to 6. It is sand or loamy sand. The C horizon has value of 4 to 6 and chroma of 2 to 6. It is sand or coarse sand. It is mildly alkaline or moderately alkaline.

Adrian Series

The Adrian series consists of very poorly drained soils in bogs on outwash plains, till plains, terraces, and moraines. These soils formed in 16 to 50 inches of herbaceous organic material overlying sand. Permeability is moderately slow to moderately rapid in the organic material and rapid in the sand. Slope is 0 to 2 percent.

Adrian soils are similar to Houghton and Palms soils and are commonly adjacent to Edwards, Houghton, and

Palms soils. Houghton soils formed in organic material more than 50 inches thick. Palms soils formed in 16 to 50 inches of organic material overlying loamy material. Edwards soils formed in 16 to 50 inches of organic material overlying marl. They are in positions on the landscape similar to those of the Adrian soils.

Typical pedon of Adrian muck, 50 feet north and 900 feet west of the southeast corner of sec. 25, T. 9 N., R. 11 W., Algoma Township:

- Oa1—0 to 7 inches; sapric material, black (N 2/0) broken face, black (10YR 2/1) rubbed; about 5 percent fibers, none rubbed; mainly herbaceous fibers; weak medium angular blocky structure; neutral; gradual smooth boundary.
- Oa2—7 to 12 inches; sapric material, black (N 2/0) broken face and rubbed; about 2 percent fibers, none rubbed; mainly herbaceous fibers; massive thin bands of light brownish gray (10YR 6/2) silt loam; neutral; abrupt smooth boundary.
- Oa3—12 to 24 inches; sapric material, dark reddish brown (5YR 2/2) broken face and rubbed; about 20 percent fibers, less than 5 percent rubbed; mainly herbaceous fibers; massive; strongly acid; abrupt smooth boundary.
- Oa4—24 to 27 inches; sapric material, black (10YR 2/1) broken face, black (N 2/0) rubbed; about 10 percent fibers, less than 5 percent rubbed; mainly herbaceous fibers; massive; about 15 percent mineral material; medium acid; abrupt smooth boundary.
- Cg—27 to 60 inches; light brownish gray (10YR 6/2) sand; single grain; loose; slightly acid.

The organic material ranges from 16 to 50 inches in thickness and from strongly acid to neutral. The surface tier has hue of 10YR or 7.5YR or is neutral in hue. It has chroma of 0 to 3. The subsurface tiers have hue of 10YR, 7.5YR, or 5YR or are neutral in hue. They have value of 2 or 3 and chroma of 0 to 3.

The C horizon has hue of 10YR, 2.5Y, or 5Y, value of 2 to 6, and chroma of 1 to 3. It is sand, fine sand, loamy sand, or the gravelly analogs of these textures. It ranges from slightly acid to moderately alkaline.

Alganssee Series

The Alganssee series consists of somewhat poorly drained, rapidly permeable soils on flood plains along streams and rivers. These soils formed in sandy alluvial deposits. Slope is 0 to 2 percent.

Alganssee soils are similar to Abscota and Tedrow soils and are commonly adjacent to Abscota and Glendora soils. Abscota soils are moderately well drained. Glendora soils are poorly drained and are in the lowest landscape positions, generally next to drainageways and in meander scars. Tedrow soils do not irregularly

decrease in content of organic carbon with increasing depth.

Typical pedon of Algansee loamy fine sand, 1,860 feet south and 1,450 feet east of the northwest corner of sec. 12, T. 6 N., R. 12 W., in the city of Wyoming:

- Ap—0 to 8 inches; dark grayish brown (10YR 4/2) loamy fine sand, light brownish gray (10YR 6/2) dry; few fine faint brown (10YR 5/3) mottles; weak fine granular structure; very friable; neutral; clear smooth boundary.
- C1—8 to 26 inches; pale brown (10YR 6/3) fine sand; few medium distinct very dark grayish brown (10YR 3/2) mottles; single grain; loose; mildly alkaline; clear smooth boundary.
- C2—26 to 40 inches; very dark grayish brown (10YR 3/2) loamy fine sand; common coarse faint very dark brown (10YR 2/2) organic stains; weak coarse subangular blocky structure; friable; mildly alkaline; clear wavy boundary.
- C3—40 to 46 inches; light yellowish brown (10YR 6/4) very fine sandy loam; few medium faint dark yellowish brown (10YR 4/4) mottles; fine medium distinct very dark brown (10YR 2/2) organic stains; weak medium subangular blocky structure; friable; mildly alkaline; clear wavy boundary.
- Cg—46 to 60 inches; light brownish gray (10YR 6/2) fine sand; few medium distinct dark brown (7.5YR 4/4) mottles; single grain; loose; mildly alkaline.

Reaction ranges from medium acid to moderately alkaline throughout the profile. The A horizon has value of 2 to 4 and chroma of 1 or 2. It is dominantly loamy fine sand, but the range includes loamy sand, fine sand, and sand. The C horizon has value of 3 to 6 and chroma of 2 to 4. It is sand, fine sand, loamy sand, or loamy fine sand. Thin strata of loam, sandy loam, or very fine sandy loam are below a depth of 40 inches in some pedons.

Arkport Series

The Arkport series consists of well drained, moderately rapidly permeable soils on glacial outwash deltas and deltas associated with moraines. These soils formed in sandy and loamy water-laid deposits. Slope ranges from 1 to 12 percent.

Arkport soils are similar to Boyer, Oshtemo, and Spinks soils and are commonly adjacent to Chelsea, Dixboro, and Marlette soils. Boyer and Oshtemo soils have gravel in the lower part of the subsoil and in the substratum. Spinks soils have less clay in the lamellae than the Arkport soils. Chelsea soils are sandier than the Arkport soils. They are in landscape position similar to those of the Arkport soils. Dixboro soils are somewhat poorly drained and are in the lower landscape positions. Marlette soils are loamy throughout. They are in the higher landscape positions.

Typical pedon of Arkport loamy very fine sand, 6 to 12 percent slopes, 3,550 feet south and 2,200 feet east of the northwest corner of sec. 30, T. 8 N., R. 10 W., Cannon Township:

- Ap—0 to 8 inches; dark brown (7.5YR 4/2) loamy very fine sand, pinkish gray (7.5YR 6/2) dry; weak fine granular structure; very friable; many fine roots; medium acid; abrupt smooth boundary.
- E—8 to 16 inches; yellowish brown (10YR 5/6) loamy very fine sand; weak fine subangular blocky structure; very friable; medium acid; abrupt wavy boundary.
- E&Bt—16 to 60 inches; pale brown (10YR 6/3) and very pale brown (10YR 7/3) loamy very fine sand (E); weak thick platy structure parting to weak fine angular blocky; very friable; lamellae of yellowish brown (10YR 5/6) very fine sandy loam (Bt); weak medium subangular blocky structure in the thicker lamellae; very friable; wavy and discontinuous, 1/2- to 2-inch lamellae with a total thickness of about 18 inches; yellowish red (5YR 5/8) iron stains in the E material below a depth of 27 inches; medium acid.

The solum ranges from 40 to more than 60 inches in thickness and from very strongly acid to neutral. The depth to carbonates ranges from 50 to more than 60 inches. The depth to the uppermost lamellae ranges from 15 to 30 inches. The content of pebbles ranges from 0 to 5 percent throughout the profile.

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 5 or 6, and chroma of 3 to 6. It is very fine sand, fine sand, loamy fine sand, or loamy very fine sand. The E part of the E&Bt horizon has hue of 7.5YR or 10YR, value of 5 to 7, and chroma of 2 to 4. It is very fine sand, fine sand, loamy fine sand, or loamy very fine sand. The Bt part has hue of 10YR or 7.5YR, value of 3 to 5, and chroma of 3 to 6. It is loamy fine sand, loamy very fine sand, fine sandy loam, or very fine sandy loam.

Belleville Series

The Belleville series consists of poorly drained soils on till plains and lake plains. These soils formed in sandy deposits overlying loamy glacial till or loamy lacustrine deposits. Permeability is rapid in the upper part of the pedon and moderately slow in the lower part. Slope is 0 to 2 percent.

Belleville soils are similar to Granby and Selfridge soils and are commonly adjacent to Capac, Parkhill, and Selfridge soils. Granby soils are sandy throughout. Capac and Selfridge soils are somewhat poorly drained and are higher on the landscape than the Belleville soils. Parkhill soils are in positions on the landscape similar to

those of the Belleville soils. Capac and Parkhill soils do not have sandy material.

Typical pedon of Belleville loamy sand, 1,840 feet north and 700 feet east of the southwest corner of sec. 16, T. 10 N., R. 9 W., Spencer Township:

- Ap—0 to 12 inches; black (10YR 2/1) loamy sand, very dark grayish brown (10YR 3/2) dry; weak medium granular structure; friable; many fine and common medium roots; neutral; abrupt smooth boundary.
- Bg—12 to 25 inches; grayish brown (2.5Y 5/2) loamy fine sand; few fine faint light gray (10YR 6/1) mottles; single grain; very friable; mildly alkaline; abrupt wavy boundary.
- 2Cg1—25 to 31 inches; grayish brown (2.5Y 5/2) loam; common medium prominent strong brown (7.5YR 5/6) mottles; massive; firm; about 5 percent pebbles; mildly alkaline; clear wavy boundary.
- 2Cg2—31 to 60 inches; light olive gray (5Y 6/2) clay loam; common medium faint pinkish gray (5YR 6/2) and common medium prominent pale olive (5Y 6/4) and yellowish brown (10YR 5/6) mottles; massive; firm; about 5 percent pebbles; slight effervescence; mildly alkaline.

The thickness of the solum and the depth to free carbonates range from 20 to 40 inches. The mollic epipedon is 11 to 15 inches thick. The content of pebbles ranges from 0 to 5 percent in the solum and from 1 to 5 percent in the 2C horizon. The solum is slightly acid to mildly alkaline.

The A horizon has value of 2 or 3 and chroma of 1 or 2. The B horizon has value of 4 to 6 and chroma of 1 or 2. It is loamy fine sand, fine sand, or sand. The 2C horizon has hue of 10YR, 2.5Y, or 5Y, value of 4 to 6, and chroma of 1 to 6. It is clay loam, loam, silt loam, or silty clay loam. It is mildly alkaline or moderately alkaline.

Blount Series

The Blount series consists of somewhat poorly drained, slowly permeable or moderately slowly permeable soils on moraines and till plains. These soils formed in loamy and clayey deposits. Slope ranges from 0 to 6 percent.

Blount soils are similar to Capac, Glynwood, and Ithaca soils and are commonly adjacent to Glynwood, Perrinton, Pewamo, and Rimer soils. Capac soils are coarser textured in the subsoil than the Blount soils. Glynwood soils are moderately well drained. Ithaca soils have a subsurface layer that interfingers into the next layer. Perrinton soils are well drained and are in the higher landscape positions. Pewamo soils are poorly drained and nearly level and are in drainageways and the lower landscape positions. Rimer soils are in landscape positions similar to those of the Blount soils. They have sandy material 20 to 40 inches deep over loamy material.

Typical pedon of Blount loam, 2 to 6 percent slopes, 264 feet west and 154 feet south of the northeast corner of sec. 13, T. 5 N., R. 11 W., Gaines Township:

- Ap—0 to 7 inches; dark grayish brown (10YR 4/2) loam, light brownish gray (10YR 6/2) dry; moderate fine subangular blocky structure; friable; many fine roots; about 3 percent pebbles; slightly acid; abrupt smooth boundary.
- Bt—7 to 13 inches thick; yellowish brown (10YR 5/4) silty clay loam; many medium faint yellowish brown (10YR 5/6) and few fine distinct dark grayish brown (10YR 4/2) mottles; moderate medium subangular blocky structure; very firm; gray (10YR 5/1) clay films on faces of peds; few fine roots; about 3 percent pebbles; mildly alkaline; gradual smooth boundary.
- Btg—13 to 23 inches; dark grayish brown (10YR 4/2) silty clay; many medium distinct yellowish brown (10YR 5/6) and few fine distinct brown (10YR 5/3) mottles; moderate medium angular blocky structure; very firm; continuous gray (10YR 5/1) clay films on faces of peds; about 3 percent pebbles; mildly alkaline; gradual smooth boundary.
- Cg—23 to 60 inches; grayish brown (10YR 5/2) silty clay loam; common medium faint dark gray (10YR 4/1) and many medium distinct yellowish brown (10YR 5/6) mottles; massive; very firm; common white (10YR 8/1) lime streaks; about 5 percent pebbles; strong effervescence; moderately alkaline.

The thickness of the solum is commonly 22 to 30 inches but ranges from 20 to 45 inches. The content of pebbles and cobbles ranges from 2 to 10 percent in the solum.

The Ap horizon has value of 3 or 4 (6 or more dry) and chroma of 1 to 3. Some pedons have an E horizon. The B horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 1 to 4. It is silty clay loam, clay loam, clay, or silty clay. It ranges from medium acid to mildly alkaline in the upper part and from slightly acid to mildly alkaline in the lower part. In some pedons it has free carbonates. The C horizon has value of 5 or 6 and chroma of 2 to 6. It is silty clay loam or clay loam. It is slightly effervescent to strongly effervescent and is mildly alkaline or moderately alkaline.

Boyer Series

The Boyer series consists of well drained soils on outwash plains, eskers, terraces, and moraines. These soils formed in stratified gravelly loam and gravelly sand. Permeability is moderately rapid in the upper part of the pedon and very rapid in the lower part. Slope ranges from 0 to 40 percent.

These soils have a thicker dark surface layer than is definitive for the Boyer series. This difference, however, does not alter the usefulness or behavior of the soils.

Boyer soils are similar to Arkport, Kalamazoo, Oshtemo, and Perrin soils and are commonly adjacent to Marlette, Perrin, Spinks, and Wasepi soils. Arkport soils do not have gravel in the subsoil. Kalamazoo soils have more clay in the subsoil than the Boyer soils. Oshtemo soils have a subsoil that is thicker than that of the Boyer soils. Perrin soils are moderately well drained. The loamy Marlette and sandy Spinks soils have lamellae. They are in landscape positions similar to those of the Boyer soils. Wasepi soils are somewhat poorly drained and are in the lower landscape positions.

Typical pedon of Boyer loamy sand, 0 to 6 percent slopes, 400 feet south and 1,000 feet east of the northwest corner of sec. 2, T. 9 N., R. 11 W., Algoma Township:

- Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) loamy sand, grayish brown (10YR 5/2) dry; moderate medium angular blocky structure; friable; about 10 percent pebbles; medium acid; abrupt smooth boundary.
- BA—9 to 15 inches; strong brown (7.5YR 4/6) gravelly loamy sand; moderate medium subangular blocky structure; friable; about 25 percent pebbles; medium acid; clear wavy boundary.
- Bt1—15 to 20 inches; strong brown (7.5YR 4/6) gravelly sandy loam; moderate medium subangular blocky structure; friable; about 25 percent pebbles; slightly acid; clear wavy boundary.
- Bt2—20 to 25 inches; strong brown (7.5YR 4/6) gravelly sandy clay loam; moderate medium subangular blocky structure; friable; about 25 percent pebbles; mildly alkaline; clear irregular boundary.
- 2C1—25 to 35 inches; yellowish brown (10YR 5/6) gravelly sand; single grain; loose; about 20 percent pebbles; slight effervescence; mildly alkaline; gradual wavy boundary.
- 2C2—35 to 60 inches; light yellowish brown (10YR 6/4) gravelly coarse sand; single grain; loose; about 25 percent pebbles; strong effervescence; moderately alkaline.

The thickness of the solum ranges from 20 to 40 inches and corresponds to the depth to calcareous sand or gravelly sand. The content of pebbles ranges from 5 to 35 percent throughout the solum. The solum is medium acid to mildly alkaline.

The Ap horizon has chroma of 2 or 3. The Bt horizon has hue of 10YR or 7.5YR and value and chroma of 4 to 6. It is sandy loam, sandy clay loam, or the gravelly analogs of these textures. The 2C horizon has value of 5 or 6 and chroma of 3 to 6. It is sand, coarse sand, the gravelly analogs of these textures, or stratified sand and gravel.

Capac Series

The Capac series consists of somewhat poorly drained, moderately slowly permeable soils on till plains and moraines. These soils formed in loamy deposits. Slope ranges from 0 to 4 percent.

These soils are taxadjuncts to the Capac series because they have tongues of albic material penetrating the B horizon. This difference, however, does not affect the usefulness or behavior of the soils.

Capac soils are similar to Blount, Matherton, and Metamora soils and are commonly adjacent to Marlette, Metamora, Parkhill, and Selfridge soils. Blount soils contain more clay in the subsoil than the Capac soils. Matherton and Metamora soils have a surface layer that is darker than that of the Capac soils. Marlette soils are well drained or moderately well drained and are on the higher, more sloping parts of the landscape. Parkhill soils are poorly drained and nearly level and are in low areas. Selfridge soils have 20 to 40 inches of sandy material in the upper part of the solum. They are in positions on the landscape similar to those of the Capac soils.

Typical pedon of Capac loam, 0 to 4 percent slopes, 180 feet north and 2,460 feet east of the southwest corner of sec. 22, T. 5 N., R. 9 W., Bowne Township:

- Ap—0 to 10 inches; dark grayish brown (10YR 4/2) loam, light brownish gray (10YR 6/2) dry; weak fine angular blocky structure; friable; many fine roots; about 3 percent pebbles and cobbles; slightly acid; abrupt smooth boundary.
- E/B—10 to 13 inches; tongues of pale brown (10YR 6/3) fine sandy loam (E); common medium prominent strong brown (7.5YR 5/8) mottles; weak medium platy structure; friable; separate or surrounding peds of dark yellowish brown (10YR 4/4) loam (Bt); few fine distinct grayish brown (10YR 5/2) mottles in the interior of peds; weak medium subangular blocky structure; friable; thin discontinuous clay films in root channels and adjacent to pebbles; few fine roots; common medium dark brown (10YR 3/3) fillings in worm channels; about 3 percent pebbles and cobbles; medium acid; clear broken boundary.
- B/E—13 to 27 inches; brown (7.5YR 4/4) loam (Bt); common fine distinct grayish brown (10YR 5/2) and common medium distinct strong brown (7.5YR 5/6) mottles in the interior of peds; moderate fine angular blocky structure; friable; few fine roots; many very thin continuous random tubular pores; thin dark grayish brown (10YR 4/2) clay films in root channels and adjacent to pebbles; pale brown (10YR 6/3) loam coatings, 1 to 15 millimeters thick, on vertical faces of peds and horizontally interconnected in a veined pattern (E); common fine faint light brownish gray (10YR 6/2) mottles; about 3 percent pebbles and cobbles; strongly acid; clear wavy boundary.

Bt—27 to 38 inches; brown (7.5YR 4/4) clay loam; many medium distinct grayish brown (10YR 5/2) and strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; friable; few fine roots; thin discontinuous dark grayish brown (10YR 4/2) clay films; about 3 percent pebbles and cobbles; slightly acid; gradual wavy boundary.

C—38 to 60 inches; brown (7.5YR 5/4) loam; common medium distinct light brownish gray (10YR 6/2) and yellowish brown (10YR 5/6) mottles; massive; friable; slight effervescence; about 5 percent pebbles and cobbles; moderately alkaline.

The thickness of the solum ranges from 26 to 40 inches and corresponds to the depth to free carbonates. The content of pebbles ranges from 0 to 10 percent throughout the solum. The solum is strongly acid to neutral.

The Ap horizon has value of 3 or 4 and chroma of 1 or 2. Some pedons have an E horizon, which has value of 5 or 6 and chroma of 2 or 3. The Bt horizon has hue of 10YR, 7.5YR, or 2.5Y, value of 4 to 6, and chroma of 2 to 6. It is clay loam, sandy clay loam, silty clay loam, or loam.

The C horizon has value of 5 or 6 and chroma of 2 to 6. It is calcareous loamy or clay loam. It is mildly alkaline or moderately alkaline.

Ceresco Series

The Ceresco series consists of somewhat poorly drained soils on flood plains. These soils formed in loamy alluvial deposits. Permeability is moderate or moderately rapid. Slope is 0 to 2 percent.

Ceresco soils are similar to Cohoctah and Landes soils and are commonly adjacent to Abscota, Cohoctah, Landes, and Sloan soils. Cohoctah and Sloan soils are poorly drained and are in the lowest landscape positions, generally next to drainageways and in meander scars. Landes soils are moderately well drained and are in the slightly higher landscape positions. Abscota soils are moderately well drained and are in the higher landscape positions.

Typical pedon of Ceresco loam, 2,000 feet north and 600 feet west of the southeast corner of sec. 35, T. 5 N., R. 12 W., Byron Township:

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

AB—10 to 15 inches; dark brown (10YR 4/3) fine sandy loam; many medium faint dark grayish brown (10YR 4/2) mottles; weak medium subangular blocky structure; friable; neutral; clear wavy boundary.

Bw—15 to 21 inches; brown (10YR 5/3) fine sandy loam; common medium distinct yellowish brown (10YR 5/6) mottles; weak medium subangular

blocky structure; friable; neutral; clear wavy boundary.

Ab—21 to 34 inches; very dark grayish brown (10YR 3/2) fine sandy loam; common medium prominent olive brown (2.5Y 4/4) mottles; weak medium subangular blocky structure; friable; thin layers of strong thin platy black (10YR 2/1) organic material; neutral; clear wavy boundary.

Cg1—34 to 44 inches; dark grayish brown (2.5Y 4/2) gravelly sand; single grain; loose; about 30 percent pebbles; slight effervescence; mildly alkaline; abrupt wavy boundary.

Cg2—44 to 60 inches; grayish brown (10YR 5/2) stratified fine sand, very fine sand, and silt loam; loose; strong effervescence; moderately alkaline.

The solum is 24 to 30 inches thick. It ranges from slightly acid to mildly alkaline.

The A horizon has value of 2 or 3 and chroma of 1 or 2. It is dominantly loam, but the range includes fine sandy loam. The B horizon has value of 4 or 5 and chroma of 2 to 4. It is sandy loam, fine sandy loam, or silt loam and has thin strata of loamy fine sand in some pedons. The C horizon has value of 4 to 6 and chroma of 1 to 3. It ranges from neutral to moderately alkaline. It is stratified gravelly sand, fine sand, sandy loam, loamy fine sand, very fine sand, silt, fine sandy loam, or silt loam. The content of pebbles in this horizon ranges from 0 to 35 percent.

Chelsea Series

The Chelsea series consists of somewhat excessively drained, rapidly permeable soils on moraines, till plains, outwash plains, and terraces. These soils formed in sandy deposits. Slope ranges from 0 to 45 percent.

Chelsea soils are similar to Oakville and Spinks soils and are commonly adjacent to Boyer, Metea, Oakville, and Thetford soils. Oakville soils are well drained and do not have lamellae. Spinks soils have lamellae that are thicker than those in the Chelsea soils. Boyer soils are well drained and are in landscape positions similar to those of the Chelsea soils. Their subsoil is at least 8 inches thick, and their underlying material is gravelly sand. Metea soils are well drained and are in landscape positions similar to those of the Chelsea soils. They are underlain at 20 to 40 inches by loamy glacial till. Thetford soils are somewhat poorly drained and nearly level and are in the lower landscape positions and in drainageways.

Typical pedon of Chelsea loamy fine sand, 6 to 12 percent slopes, 1,100 feet north and 150 feet west of the southeast corner of sec. 17, T. 9 N., R. 9 W., Oakfield Township:

Ap—0 to 9 inches; dark grayish brown (10YR 4/2) loamy fine sand, light yellowish brown (10YR 6/4) dry;

weak medium granular structure; very friable; few fine roots; about 2 percent pebbles; neutral; abrupt smooth boundary.

- E1—9 to 24 inches; yellowish brown (10YR 5/6) loamy fine sand; weak medium subangular blocky structure; very friable; about 2 percent pebbles; neutral; clear wavy boundary.
- E2—24 to 32 inches; yellowish brown (10YR 5/4) fine sand; single grain; very friable; about 1 percent pebbles; slightly acid; abrupt wavy boundary.
- E&Bt—32 to 60 inches; light yellowish brown (10YR 6/4) fine sand (E); single grain; loose; lamellae of strong brown (7.5YR 4/6) loamy fine sand (Bt); weak fine subangular blocky structure; very friable; about 1 percent pebbles; medium acid.

The solum ranges from 4 to many feet in thickness. It is strongly acid to neutral. The depth to free carbonates is more than 60 inches. The content of pebbles ranges from 0 to 15 percent in the solum.

The Ap horizon has value of 3 to 5 and chroma of 2 to 4. The E horizon has value of 4 to 6 and chroma of 3 to 6. It is fine sand, loamy fine sand, or loamy sand. The B part of the E&Bt horizon occurs as lamellae 1/16 inch to 2 inches thick. It has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 6. It is loamy sand, loamy fine sand, fine sandy loam, or sandy loam.

Cohoctah Series

The Cohoctah series consists of poorly drained, moderately rapidly permeable soils on flood plains. These soils formed in loamy alluvial deposits. Slope is 0 to 2 percent.

Cohoctah soils are similar to Ceresco, Gilford, and Sloan soils and are commonly adjacent to Ceresco, Glendora, and Houghton soils. Ceresco soils are somewhat poorly drained. Gilford soils have a content of organic matter that decreases regularly with increasing depth. Sloan soils contain more clay throughout than the Cohoctah soils. Glendora soils formed in sandy alluvial deposits and are in positions on the landscape similar to those of the Cohoctah soils. Houghton soils are very poorly drained and are in positions on the landscape similar to those of the Cohoctah soils. They formed in organic material more than 51 inches thick.

Typical pedon of Cohoctah loam, 3,360 feet south and 1,220 feet west of the northeast corner of sec. 16, T. 6 N., R. 11 W., in the city of Kentwood:

- A—0 to 10 inches; very dark grayish brown (10YR 3/2) loam, grayish brown (10YR 5/2) dry; weak medium granular structure; friable; many fine roots; neutral; abrupt wavy boundary.
- Cg1—10 to 24 inches; dark gray (10YR 4/1) sandy loam; many fine distinct dark yellowish brown (10YR 4/4) mottles; weak medium subangular blocky structure;

friable; very dark brown (10YR 2/2) organic stains; neutral; clear wavy boundary.

- Cg2—24 to 31 inches; dark gray (10YR 4/1) loam; common medium distinct yellowish brown (10YR 5/4) mottles; weak medium subangular blocky structure; friable; very dark brown (10YR 2/2) organic stains; mildly alkaline; clear wavy boundary.
- Cg3—31 to 60 inches; grayish brown (10YR 5/2) fine sandy loam; many fine distinct dark yellowish brown (10YR 4/4) mottles; weak medium subangular blocky structure; friable; mildly alkaline.

Reaction ranges from slightly acid to mildly alkaline in the upper 20 inches of the pedon and from neutral to moderately alkaline below a depth of 20 inches.

The A horizon has value of 2 or 3 and chroma of 1 or 2. It is dominantly loam, but the range includes fine sandy loam. The Cg horizon has hue of 10YR, 7.5YR, or 2.5Y, value of 3 to 6, and chroma of 1 to 3. It has organic stains with value of 2 or 3. This horizon is dominantly sandy loam, fine sandy loam, or loam, but in some pedons it has thin layers of silt loam or sand. Gravelly sand or gravel is below a depth of 40 inches in some pedons.

Colwood Series

The Colwood series consists of poorly drained, moderately permeable soils on low flats and in drainageways. These soils formed in stratified loamy and silty deposits. Slope is 0 to 2 percent.

Colwood soils are similar to Belleville, Parkhill, and Sloan soils and are commonly adjacent to Capac and Kibbie soils. Belleville soils have 20 to 40 inches of sandy material in the upper part. Parkhill soils have a dark surface layer that is thinner than that of the Colwood soils. Sloan soils irregularly decrease in content of organic matter with increasing depth. Capac and Kibbie soils are somewhat poorly drained and are in the higher positions on the landscape.

Typical pedon of Colwood silt loam, 830 feet north and 380 feet west of the southeast corner of sec. 32, T. 9 N., R. 12 W., Sparta Township:

- Ap—0 to 9 inches; very dark gray (10YR 3/1) silt loam, gray (10YR 5/1) dry; weak medium subangular blocky structure; friable; common fine roots; neutral; abrupt smooth boundary.
- A—9 to 16 inches; very dark gray (10YR 3/1) silt loam, gray (10YR 5/1) dry; weak fine subangular blocky structure; friable; common fine roots; neutral; gradual wavy boundary.
- B_{Ag}—16 to 22 inches; dark gray (10YR 4/1) silty clay loam; common fine distinct dark yellowish brown (10YR 4/6) mottles; weak medium subangular blocky structure; firm; few fine roots; mildly alkaline; gradual wavy boundary.

Bg—22 to 36 inches; greenish gray (5GY 6/1) silty clay loam stratified with thin layers of loam and silt loam; common medium distinct gray (N 5/0) and strong brown (7.5YR 4/6) mottles; weak coarse subangular blocky structure; very firm; few fine roots; mildly alkaline; gradual wavy boundary.

Cg—36 to 60 inches; dark gray (5Y 4/1) silty clay loam stratified with thin layers of silt loam, silty clay, and fine sand; few coarse distinct yellowish brown (10YR 5/6) mottles; massive; firm; about 2 percent pebbles; strong effervescence; moderately alkaline.

The thickness of the solum and the depth to free carbonates range from 24 to 40 inches. The mollic epipedon is 10 to 18 inches thick. The solum ranges from slightly acid to mildly alkaline.

The A horizon has value of 2 or 3 and chroma of 1 or 2. The B horizon has hue of 7.5YR, 10YR, 2.5Y, 5Y, or 5GY, value of 4 to 6, and chroma of 1 or 2. It is silty clay loam, clay loam or loam and has strata of fine sand, very fine sand, silt, silt loam, and silty clay. The C 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 and has strata of fine sand, very fine sand, and silty clay. The content of pebbles in this horizon ranges from 0 to 5 percent.

Covert Series

The Covert series consists of moderately well drained, rapidly permeable soils on outwash plains, till plains, and terraces. These soils formed in sandy deposits. Slope ranges from 0 to 4 percent.

Covert soils are commonly adjacent to Grattan and Pipestone soils. Grattan soils are excessively drained and are higher on the landscape than the Covert soils. Pipestone soils are somewhat poorly drained and are lower on the landscape than the Covert soils.

Typical pedon of Covert sand, 0 to 4 percent slopes, 660 feet south and 1,320 feet west of the northeast corner of sec. 1, T. 9 N., R. 12 W., Sparta Township:

Oi—2 inches to 0; black (N 2/0) decomposed leaf litter, dark brown (7.5YR 3/2) dry; many fine roots; extremely acid; abrupt smooth boundary.

E—0 to 6 inches; brown (7.5YR 5/2) sand; single grain; loose; many coarse and fine roots; very strongly acid; abrupt wavy boundary.

Bhs—6 to 10 inches; dark reddish brown (5YR 3/4) sand; single grain; loose; many fine roots; about 5 percent ortstein; very strongly acid; abrupt irregular boundary.

Bs—10 to 25 inches; strong brown (7.5YR 5/6) sand; common fine faint strong brown (7.5YR 4/6) and common fine distinct yellowish brown (10YR 5/4) mottles; single grain; loose; few fine roots; very strongly acid; abrupt smooth boundary.

C—25 to 60 inches; brownish yellow (10YR 6/8) sand; common fine distinct light brown (7.5YR 6/4) and

common fine prominent red (2.5YR 4/8) mottles; single grain; loose; strongly acid.

The solum ranges from 24 to 40 inches in thickness and from very strongly acid to neutral. The content of pebbles is 0 to 5 percent throughout the solum.

Cultivated areas have an Ap horizon that has hue of 10YR or 7.5YR, value of 2 to 4, and chroma of 1 to 3. Some pedons have an A1 horizon. The E horizon has hue of 7.5YR or 10YR, value of 4 to 7, and chroma of 1 to 3. It is dominantly sand, but the range includes loamy sand. The B horizon has hue of 5YR, 7.5YR, or 10YR and value and chroma of 3 to 6. The amount of ortstein ranges from 0 to 30 percent. The C horizon has hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 6 to 8.

Dixboro Series

The Dixboro series consists of somewhat poorly drained, moderately permeable soils on glacial deltas and outwash plains. These soils formed in stratified loamy and sandy sediments. Slope ranges from 0 to 4 percent.

These soils have thicker sandy upper layers than is definitive for the Dixboro series. This difference, however, does not alter the usefulness or behavior of the soils.

Dixboro soils are similar to Kibbie and Wasepi soils and are commonly adjacent to Arkport, Colwood, Kibbie, and Lamson soils. Kibbie soils are finer textured in the subsoil than the Dixboro soils. Wasepi soils have underlying layers of sandy material. Arkport soils are well drained and are in the higher landscape positions. Colwood and Lamson soils are poorly drained and are in the lower landscape positions.

Typical pedon of Dixboro loamy fine sand, 0 to 4 percent slopes, 1,050 feet south and 495 feet west of the northeast corner of sec. 30, T. 8 N., R. 10 W., Cannon Township:

Ap—0 to 9 inches; dark brown (10YR 3/3) loamy fine sand, grayish brown (10YR 5/2) dry; weak fine subangular blocky structure; very friable; many roots; about 5 percent pebbles; neutral; abrupt smooth boundary.

E—9 to 16 inches; brown (10YR 5/3) loamy fine sand; few fine prominent strong brown (7.5YR 5/6) mottles; moderate fine subangular blocky structure; very friable; few fine roots; about 5 percent pebbles; slightly acid; abrupt smooth boundary.

BE—16 to 22 inches; yellowish brown (10YR 5/4) loamy fine sand; common medium distinct yellowish brown (10YR 5/8) mottles; weak fine subangular blocky structure; very friable; dark brown (10YR 3/3) loamy fine sand in worm channels; few fine roots; neutral; abrupt wavy boundary.

- Bt1—22 to 26 inches; yellowish brown (10YR 5/4) fine sandy loam; common fine prominent yellowish red (5YR 5/8) mottles; moderate very fine angular blocky structure; friable; neutral; clear wavy boundary.
- Bt2—26 to 31 inches; dark yellowish brown (10YR 4/4) fine sandy loam; common medium prominent strong brown (7.5YR 5/8) and few fine distinct grayish brown (10YR 5/2) mottles; moderate medium angular blocky structure; friable; neutral; abrupt smooth boundary.
- C—31 to 60 inches; brown (10YR 5/3) loamy fine sand stratified with light gray (N 6/0) sandy clay loam and sandy clay; common medium prominent pinkish gray (7.5YR 6/2) mottles; many medium brown (7.5YR 5/4) mottles in the loamy and clayey strata; massive; firm; slight effervescence; mildly alkaline.

The solum ranges from 24 to 44 inches in thickness. It is medium acid to neutral in the upper part and slightly acid to mildly alkaline in the lower part. The depth of free carbonates ranges from 20 to 40 inches. The content of pebbles is 0 to 5 percent throughout the solum.

The Ap horizon has value of 2 or 3 and chroma of 1 to 3. The E horizon has value of 5 or 6 and chroma of 2 or 3. Some pedons do not have an E horizon. The B horizon has hue of 10YR or 7.5YR and value and chroma of 4 to 6. It is fine sandy loam, loamy very fine sand, loam, or very fine sandy loam. The C horizon has value of 5 or 6 and chroma of 1 to 4. It is stratified silty clay to fine sand. It is mildly alkaline or moderately alkaline.

Edwards Series

The Edwards series consists of very poorly drained soils in bogs on outwash plains, till plains, terraces, and moraines. These soils formed in herbaceous organic material 16 to 50 inches deep over marl. Permeability is moderately slow to moderately rapid in the organic material. Slope is 0 to 2 percent.

Edwards soils are similar to Houghton soils and are commonly adjacent to Adrian, Houghton, and Palms soils. All of the adjacent soils are in positions on the landscape similar to those of the Edwards soils. Adrian soils are underlain by sandy material at a depth of 16 to 50 inches. Houghton soils formed in organic material more than 51 inches thick. Palms soils are underlain by loamy material at a depth of 16 to 50 inches.

Typical pedon of Edwards muck, 2,340 feet north and 500 feet west of the southeast corner of sec. 14, T. 8 N., R. 9 W., Grattan Township:

- Oa1—0 to 13 inches; sapric material, black (N 2/0) broken face and rubbed; about 2 percent fibers, none rubbed; mainly herbaceous fibers; weak medium angular blocky structure; mildly alkaline; abrupt smooth boundary.

- Oa2—13 to 17 inches; sapric material, very dark grayish brown (10YR 3/2) broken face, black (10YR 2/1) rubbed; about 20 percent fibers, none rubbed; mainly herbaceous fibers; moderate coarse subangular blocky structure; mildly alkaline; clear smooth boundary.
- Oa3—17 to 30 inches; sapric material, very dark grayish brown (10YR 3/2) broken face, very dark gray (10YR 3/1) rubbed; about 50 percent fiber, less than 5 percent rubbed; mainly herbaceous fibers; massive; mildly alkaline; abrupt smooth boundary.
- C—30 to 60 inches; white (10YR 8/1) marl; massive; strong effervescence; moderately alkaline.

The sapric material ranges from 16 to 50 inches in thickness and from medium acid to mildly alkaline. The surface tier has hue of 10YR or is neutral in hue. It has value of 2 or 3 and chroma of 0 to 2. The subsurface tiers have hue of 10YR or 7.5YR, value of 2 or 3, and chroma of 1 to 3. The C horizon has hue of 10YR or 2.5Y, value of 5 to 8, and chroma of 1 or 2.

Gilford Series

The Gilford series consists of very poorly drained soils in depressions and drainageways on outwash plains and in small outwash areas on till plains. These soils formed in loamy and sandy deposits. Permeability is moderately rapid in the upper part of the pedon and very rapid in the lower part. Slope is 0 to 2 percent.

Gilford soils are similar to Belleville, Cohoctah, Colwood, and Granby soils and are commonly adjacent to Belleville, Granby, Houghton, and Sebewa soils. The poorly drained Belleville soils have a sandy subsoil that is underlain by loamy material. Cohoctah soils irregularly decrease in organic carbon content with increasing depth. The poorly drained Colwood soils have more clay in the subsoil than the Gilford soils. The poorly drained Granby soils have less clay in the subsoil than the Gilford soils. Houghton soils consist of deep organic material in the lower landscape positions. Sebewa soils have more clay in the subsoil than the Gilford soils. They are in landscape positions similar to those of the Gilford soils.

Typical pedon of Gilford fine sandy loam, 1,100 feet north and 2,450 feet west of the southeast corner of sec. 23, T. 5 N., R. 12 W., Byron Township:

- Ap—0 to 11 inches; black (10YR 2/1) fine sandy loam, dark gray (10YR 4/1) dry; weak medium granular structure; very friable; neutral; abrupt smooth boundary.
- Bg1—11 to 14 inches; dark grayish brown (2.5Y 4/2) sandy loam; many coarse distinct very dark grayish brown (10YR 3/2) and few fine faint yellowish brown (10YR 5/4) mottles; weak medium subangular

- blocky structure; very friable; neutral; clear wavy boundary.
- Bg2—14 to 21 inches; grayish brown (2.5Y 5/2) sandy loam; many medium faint very dark grayish brown (2.5Y 3/2) and few fine faint yellowish brown (10YR 5/4) mottles; weak fine subangular blocky structure; friable; slightly acid; gradual wavy boundary.
- Bg3—21 to 28 inches; dark grayish brown (2.5Y 4/2) sandy loam; few fine distinct light olive brown (2.5Y 5/6) mottles; weak medium subangular blocky structure; friable; slightly acid; gradual wavy boundary.
- 2Cg1—28 to 36 inches; grayish brown (2.5Y 5/2) loamy sand; common fine distinct light olive brown (2.5Y 5/6) mottles; weak coarse subangular blocky structure; very friable; about 15 percent pebbles; neutral; clear smooth boundary.
- 2Cg2—36 to 60 inches; grayish brown (2.5Y 5/2) gravelly sand; many fine distinct dark greenish gray (5GY 4/1) mottles; single grain; loose; about 20 percent pebbles; strong effervescence; moderately alkaline.

The thickness of the solum and the depth to free carbonates range from 20 to 40 inches. The mollic epipedon is 10 to 15 inches thick. The content of pebbles ranges from 0 to 5 percent in the A and B horizons and from 10 to 40 percent in the 2C horizon. The solum is medium acid to neutral.

The Ap horizon has value of 2 or 3 and chroma of 1 or 2. It is dominantly fine sandy loam, but the range includes sandy loam. The Bg horizon has hue of 2.5Y or 10YR, value of 4 to 6, and chroma of 1 or 2. It is dominantly sandy loam or fine sandy loam, but in some pedons it has layers of sandy clay loam, loam, or loamy sand. The 2C horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 1 or 2. It is loamy sand, gravelly sand, sand, coarse sand, or gravelly coarse sand. It ranges from neutral to moderately alkaline.

Glendora Series

The Glendora series consists of poorly drained, rapidly permeable soils on flood plains. These soils formed in sandy alluvial deposits. Slope is 0 to 2 percent.

Glendora soils are similar to Granby soils and are commonly adjacent to Abscota and Algansee soils. Granby soils do not irregularly decrease in content of organic carbon with increasing depth. Abscota soils are moderately well drained and are in the higher landscape positions, such as slight ridges and terraces. Algansee soils are somewhat poorly drained and are slightly higher on the landscape than the Glendora soils.

Typical pedon of Glendora loamy sand, 400 feet north and 140 feet west of the southeast corner of sec. 27, T. 10 N., R. 9 W., Spencer Township:

- A—0 to 7 inches; very dark brown (10YR 2/2) loamy sand, dark gray (10YR 4/1) dry; weak thick platy structure; friable; many fine roots; neutral; clear wavy boundary.
- Cg1—7 to 20 inches; light brownish gray (10YR 6/2) sand; single grain; loose; common fine roots; common very dark brown (10YR 2/2) organic stains occurring as thin bands; neutral; gradual wavy boundary.
- Cg2—20 to 31 inches; grayish brown (10YR 5/2) sand; single grain; loose; few fine roots; common very dark brown (10YR 2/2) organic stains occurring as thin bands; neutral; gradual wavy boundary.
- Cg3—31 to 43 inches; grayish brown (10YR 5/2) sand; few fine prominent dark yellowish brown (10YR 4/6) mottles; single grain; loose; common very dark brown (10YR 2/2) organic stains occurring as thin bands; neutral; clear smooth boundary.
- Cg4—43 to 56 inches; grayish brown (10YR 5/2) gravelly sand; single grain; loose; common very dark gray (10YR 3/1) organic stains occurring as thin bands; about 35 percent pebbles; mildly alkaline; clear smooth boundary.
- C—56 to 60 inches; pale brown (10YR 6/3) sand; single grain; loose common dark gray (10YR 4/1) organic stains occurring as thin bands; slight effervescence; moderately alkaline.

The upper 40 inches ranges from slightly acid to mildly alkaline. The A horizon has value of 2 or 3 and chroma of 1 or 2. It is dominantly loamy sand, but the range includes sand, loam, sandy loam, and fine sandy loam. The C horizon has value of 2 to 6 and chroma of 1 to 4. It is sand, fine sand, loamy sand, loamy fine sand, or gravelly sand.

Glynwood Series

The Glynwood series consists of moderately well drained, slowly permeable soils on till plains and moraines. These soils formed in loamy and silty deposits. Slope ranges from 2 to 12 percent.

Glynwood soils are similar to Blount, Ithaca, and Tuscola soils and are commonly adjacent to Blount, Tustin, and Woodbeck soils. Blount and Ithaca soils are somewhat poorly drained. Tuscola soils have less clay throughout than the Glynwood soils. Tustin and Woodbeck soils are well drained and are in the higher positions on ridges and on side slopes along drainageways. Tustin soils have sandy material over clayey material, and Woodbeck soils have sandy material below loamy material.

Typical pedon of Glynwood loam, 2 to 6 percent slopes, 2,600 feet north and 450 feet west of the southeast corner of sec. 35, T. 5 N., R. 12 W., Byron Township:

- Ap—0 to 9 inches; dark brown (10YR 3/3) loam, pale brown (10YR 6/3) dry; moderate very fine granular structure; friable; many fine roots; about 2 percent pebbles; slightly acid; abrupt smooth boundary.
- E—9 to 11 inches; brown (10YR 5/3) loam; few fine distinct dark yellowish brown (10YR 4/6) mottles; weak thick platy structure parting to moderate fine subangular blocky; friable; common fine roots; about 2 percent pebbles; neutral; abrupt wavy boundary.
- Bt1—11 to 16 inches; dark yellowish brown (10YR 4/4) silty clay loam; few medium distinct grayish brown (10YR 5/2) and common medium distinct strong brown (7.5YR 5/6) mottles; moderate fine subangular blocky structure; firm; common fine roots; thin discontinuous brown (7.5YR 5/4) clay films on faces of some peds; about 2 percent pebbles; medium acid; gradual wavy boundary.
- Bt2—16 to 21 inches; dark yellowish brown (10YR 4/4) silty clay loam; common fine distinct grayish brown (10YR 5/2) and few fine distinct yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; very firm; dark brown (10YR 3/3) clay films on faces of most peds; common fine roots; about 2 percent pebbles; medium acid; gradual wavy boundary.
- Bt3—21 to 29 inches; brown (10YR 4/3) silty clay; few fine faint grayish brown (10YR 5/2) and few fine distinct yellowish brown (10YR 5/6) mottles; moderate medium angular blocky structure; very firm; dark grayish brown (10YR 4/2) clay films on faces of most peds; common fine roots; about 2 percent pebbles; slightly acid; clear wavy boundary.
- BC—29 to 35 inches; dark yellowish brown (10YR 4/4) silty clay loam; few fine distinct grayish brown (10YR 5/2) and few fine distinct yellowish brown (10YR 5/6) mottles; weak coarse prismatic structure parting to weak coarse subangular blocky; very firm; discontinuous dark brown (10YR 3/3) clay films on faces of peds; common fine roots; about 2 percent pebbles; slight effervescence; mildly alkaline; clear wavy boundary.
- C—35 to 60 inches; brown (10YR 5/3) silty clay loam; few fine faint gray (10YR 5/1) and few fine distinct yellowish brown (10YR 5/6) mottles; massive; very firm; common white (10YR 8/1) lime streaks; about 2 percent pebbles; strong effervescence; moderately alkaline.

The thickness of the solum ranges from 20 to 40 inches and corresponds to the depth to free carbonates. The content of pebbles is 0 to 5 percent throughout the solum and 1 to 15 percent in the C horizon. The solum ranges from medium acid to mildly alkaline.

The Ap horizon has value of 3 or 4 and chroma of 2 to 4. The A horizon is dominantly loam, but the range includes silt loam. The E horizon has value of 4 to 6 and chroma of 2 to 4. The Bt horizon has value of 4 or 5 and

chroma of 2 to 4. It is clay loam, silty clay loam, or silty clay. The C horizon has value of 4 to 6 and chroma of 2 to 4. It is silty clay loam or clay loam. It is mildly alkaline or moderately alkaline.

Granby Series

The Granby series consists of poorly drained, rapidly permeable soils on outwash plains and in glacial drainageways. These soils formed in sandy deposits. Slope is 0 to 2 percent.

Granby soils are similar to Belleville, Gilford, and Glendora soils and are commonly adjacent to Adrian, Belleville, Pipestone, and Tedrow soils. Adrian soils are very poorly drained. They formed in organic material 16 to 50 inches deep over sand. Belleville soils are underlain by loamy material. Adrian and Belleville soils are in positions on the landscape similar to those of the Granby soils. Gilford soils are very poorly drained. They have more clay in the subsoil than the Granby soils. Glendora soils irregularly decrease in content of organic carbon with increasing depth. Pipestone and Tedrow soils are somewhat poorly drained and are in the slightly higher positions on the landscape.

Typical pedon of Granby loamy fine sand, 760 feet north and 2,130 feet west of the center of sec. 13, T. 9 N., R. 12 W., Sparta Township:

- Ap—0 to 11 inches; black (10YR 2/1) loamy fine sand, very dark grayish brown (10YR 3/2) dry; moderate medium granular structure; very friable; slightly acid; abrupt smooth boundary.
- Bg1—11 to 21 inches; grayish brown (2.5Y 5/2) loamy fine sand; few fine distinct light yellowish brown (10YR 6/4) and few medium faint dark grayish brown (2.5Y 4/2) mottles; moderate medium subangular blocky structure; very friable; medium acid; clear wavy boundary.
- Bg2—21 to 28 inches; light brownish gray (2.5Y 6/2) fine sand; few fine distinct light yellowish brown (10YR 6/4) mottles; weak fine subangular blocky structure; very friable; medium acid; clear wavy boundary.
- BC—28 to 42 inches; pale brown (10YR 6/3) sand; common fine distinct yellowish brown (10YR 5/6) and few fine faint grayish brown (10YR 5/2) mottles; weak medium subangular blocky structure; loose; slightly acid; clear wavy boundary.
- C—42 to 60 inches; yellowish brown (10YR 5/4) sand; common fine distinct grayish brown (10YR 5/2) mottles; single grain; loose; about 5 percent pebbles; neutral.

The solum ranges from 30 to 48 inches in thickness. It is medium acid to neutral. The mollic epipedon is 11 to 15 inches thick.

The Ap horizon has chroma of 1 or 2. It is dominantly loamy fine sand, but the range includes sand. The B

horizon has hue of 2.5Y or 10YR, value of 4 to 6, and chroma of 1 to 3. It is loamy fine sand, fine sand, loamy sand, or sand. The C horizon has value of 5 or 6 and chroma of 1 to 4. It is dominantly sand, fine sand, or loamy sand, but in some pedons it has layers of gravelly sand. It is neutral to moderately alkaline.

Grattan Series

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

Grattan soils are similar to Covert and Pipestone soils and are commonly adjacent to Chelsea and Covert soils. Covert soils are moderately well drained and are in the lower positions on the landscape. Pipestone soils are somewhat poorly drained. Chelsea soils have bands of loamy sand below a depth of 40 inches. They are in positions on the landscape similar to those of the Grattan soils.

Typical pedon of Grattan sand, 6 to 12 percent slopes, 1,500 feet north and 30 feet west of the southeast corner of sec. 15, T. 10 N., R. 12 W., Tyrone Township:

- A—0 to 5 inches; very dark gray (10YR 3/1) sand, gray (10YR 5/1) dry; flecked with light gray (10YR 7/1) uncoated sand; weak coarse granular structure; very friable; many roots; very strongly acid; abrupt irregular boundary.
- E—5 to 12 inches; pinkish gray (7.5YR 6/2) sand; single grain; loose; few roots; very strongly acid; clear irregular boundary.
- Bhs—12 to 15 inches; dark reddish brown (5YR 3/2) sand; very weak medium granular structure; very friable; many roots; very strongly acid; clear wavy boundary.
- Bs1—15 to 23 inches; yellowish red (5YR 4/6) sand; weak coarse granular structure; loose; few roots; chunks of ortstein 4 to 8 inches in diameter making up about 10 percent of the surface area of the horizon exposed; yellowish red (5YR 4/6) color in 70 percent of the ortstein material and dark reddish brown (5YR 3/3) and strong brown (7.5YR 5/8) in 30 percent; strongly acid; clear wavy boundary.
- Bs2—23 to 27 inches; strong brown (7.5YR 5/6) sand; weak coarse subangular blocky structure; slightly brittle; medium acid; clear wavy boundary.
- BC—27 to 32 inches; reddish yellow (7.5YR 6/6) sand; single grain; loose; few fine faint strong brown (7.5YR 5/6) iron stains; medium acid; gradual wavy boundary.
- C—32 to 60 inches; light brown (7.5YR 6/4) sand; single grain; loose; neutral.

The solum ranges from 20 to 45 inches in thickness. It is strongly acid or medium acid. The content of pebbles in the solum is 0 to 5 percent.

The A horizon has hue of 7.5YR or 10YR, value of 2 or 3, and chroma of 1 or 2. The E horizon has hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 1 or 2. The B horizon has hue of 5YR or 7.5YR, value of 3 to 6, and chroma of 2 to 6. The amount of ortstein in the Bs horizon ranges from 0 to 10 percent. The C horizon has hue of 7.5YR or 10YR and chroma of 4 to 6. It ranges from medium acid to neutral.

Houghton Series

The Houghton series consists of very poorly drained soils in bogs on outwash plains, till plains, terraces, and moraines. These soils formed in herbaceous organic material. Permeability is moderately slow to moderately rapid. Slope is 0 to 2 percent.

Houghton soils are similar to Palms soils and are commonly adjacent to Adrian, Edwards, and Palms soils. All of the adjacent soils are in landscape positions similar to those of the Houghton soils. Palms soils are underlain by loamy material at a depth of 16 to 50 inches. Adrian soils are underlain by sandy material at a depth of 16 to 50 inches. Edwards soils are underlain by marl at a depth of 16 to 50 inches.

Typical pedon of Houghton muck, 2,310 feet north and 990 feet west of the southeast corner of sec. 29, T. 9 N., R. 9 W., Oakfield Township:

- Oa1—0 to 7 inches; sapric material, black (N 2/0) broken face and rubbed; about 5 percent fibers, a trace rubbed; mainly herbaceous fibers; moderate medium granular structure parting to weak fine subangular blocky; many fine roots; slightly acid; abrupt smooth boundary.
- Oa2—7 to 14 inches; sapric material, very dark brown (10YR 2/2) broken face and rubbed; about 50 percent fibers, less than 5 percent rubbed; mainly herbaceous fibers; massive; common roots; slightly acid; abrupt smooth boundary.
- Oa3—14 to 28 inches; sapric material, dark brown (7.5YR 3/2) broken face, black (10YR 2/1) rubbed; about 70 percent fibers, less than 5 percent rubbed; mainly herbaceous fibers; massive; slightly acid; clear wavy boundary.
- Oa4—28 to 34 inches; sapric material, very dark grayish brown (10YR 3/2) broken face, very dark brown (10YR 2/2) rubbed; about 80 percent fibers, less than 5 percent rubbed; mainly herbaceous fibers; massive; mildly alkaline; clear wavy boundary.
- Oa5—34 to 40 inches; sapric material, very dark grayish brown (10YR 3/2) broken face and rubbed; about 90 percent fibers, about 7 percent rubbed; mainly herbaceous fibers; massive; mildly alkaline; abrupt smooth boundary.
- Oa6—40 to 60 inches; sapric material, very dark brown (10YR 2/2) broken face and rubbed; about 70 percent fibers, less than 5 percent rubbed; mainly

herbaceous fibers; massive; mildly alkaline; abrupt smooth boundary.

The organic material is more than 51 inches thick. It ranges from slightly acid to mildly alkaline. It has hue of 7.5YR or 10YR or is neutral in hue. It has value of 2 or 3 and chroma of 0 to 2.

Ithaca Series

The Ithaca series consists of somewhat poorly drained, moderately slowly permeable soils on till plains and moraines. These soils formed in loamy deposits. Slope ranges from 1 to 6 percent.

Ithaca soils are similar to Blount and Glynwood soils and are commonly adjacent to Perrinton, Pewamo, and Rimer soils. Blount and Glynwood soils do not have a subsurface layer that interfingers into the underlying layer. Perrinton soils are well drained and are in the higher landscape positions. Pewamo soils are poorly drained and are in the lower landscape positions. Rimer soils have a sandy surface layer. They are in landscape positions similar to those of the Ithaca soils.

Typical pedon of Ithaca loam, 1 to 6 percent slopes, 50 feet north and 1,200 feet east of the center of sec. 26, T. 8 N., R. 12 W., Alpine Township:

- Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) loam, light brownish gray (10YR 6/2) dry; weak medium granular structure; friable; many fine roots; about 2 percent pebbles; neutral; abrupt smooth boundary.
- B/E—9 to 17 inches; yellowish brown (10YR 5/4) clay loam (Bt); common fine and medium prominent strong brown (7.5YR 5/6) and few fine prominent light gray (2.5Y 7/2) mottles; pale brown (10YR 6/3) silt loam (E) that interfingers into and surrounds some peds of Bt material; moderate medium subangular blocky structure; firm; common fine roots; thin continuous clay films on faces of peds; about 2 percent pebbles; common very dark grayish brown (10YR 3/2) worm casts; slightly acid; clear wavy boundary.
- Bt—17 to 26 inches; yellowish brown (10YR 5/4) clay loam; few fine prominent light gray (5Y 7/1) and common fine distinct strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; firm; few fine roots; thin continuous clay films on faces of peds; common fine black (10YR 2/1) manganese accumulations; about 5 percent pebbles; neutral; gradual wavy boundary.
- BC—26 to 32 inches; yellowish brown (10YR 5/4) clay loam; few fine prominent greenish gray (5GY 6/1) and common fine and medium distinct strong brown (7.5YR 5/6) mottles; massive; firm; common fine black (10YR 2/1) manganese accumulations; about 5 percent pebbles; mildly alkaline; gradual wavy boundary.

- C—32 to 60 inches; brown (10YR 5/3) clay loam; common fine and medium distinct strong brown (7.5YR 5/6) and common fine prominent greenish gray (5GY 6/1) mottles; massive; firm; common fine white (10YR 8/1) lime streaks; about 5 percent pebbles; strong effervescence; moderately alkaline.

The solum ranges from 20 to 40 inches in thickness. It is medium acid to mildly alkaline. The content of pebbles and cobbles ranges from 2 to 10 percent in the solum.

The Ap horizon has value of 3 or 4 and chroma of 1 or 2. Some pedons have an E horizon. This horizon has hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 2 or 3. It is silt loam, sandy loam, or loam. The B/E horizon has the colors and textures of the overlying E horizon and the underlying Bt horizon. Thin fingers of the E horizon penetrate the Bt horizon. They are 2 to 5 millimeters wide. Some pedons have an E/B horizon, which is less than 2 inches thick. The Bt horizon has hue of 10YR, 7.5YR, or 5YR, value of 4 or 5, and chroma of 3 or 4. The B horizon is clay loam, silty clay loam, or clay.

The C horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 2 to 4. It is clay loam or silty clay loam. It is mildly alkaline or moderately alkaline.

Kalamazoo Series

The Kalamazoo series consists of well drained soils on outwash plains and moraines. These soils formed in loamy and sandy deposits. Permeability is moderate in the upper part of the pedon and rapid in the lower part. Slope ranges from 1 to 18 percent.

Kalamazoo soils are similar to Boyer, Marlette, Oshtemo, and Tuscola soils and are commonly adjacent to Marlette, Matherton, Oshtemo, and Spinks soils. Boyer and Oshtemo soils have less clay in the subsoil than the Kalamazoo soils. Marlette and Tuscola soils are not underlain by sand and gravel. Matherton soils are somewhat poorly drained and are in drainageways on the lower parts of the landscape. Spinks soils are sandier throughout than the Kalamazoo soils. They are in positions on the landscape similar to those of the Kalamazoo soils.

Typical pedon of Kalamazoo loam, 1 to 6 percent slopes, 2,905 feet south and 2,115 feet west of the northeast corner of sec. 32, T. 5 N., R. 11 W., Gaines Township:

- Ap—0 to 10 inches; very dark grayish brown (10YR 3/2) loam, pale brown (10YR 6/3) dry; moderate fine subangular blocky structure; friable; about 5 percent pebbles and cobbles; many fine roots; slightly acid; abrupt smooth boundary.
- Bt1—10 to 26 inches; dark yellowish brown (10YR 3/4) clay loam; moderate medium subangular blocky structure; firm; about 7 percent pebbles and

cobbles; few fine roots; thin discontinuous dark brown (10YR 3/3) clay films on faces of peds; slightly acid; gradual wavy boundary.

Bt2—26 to 32 inches; dark yellowish brown (10YR 3/4) gravelly sandy clay loam; moderate fine subangular blocky structure; firm; about 20 percent pebbles and cobbles; few fine roots; thin discontinuous dark brown (10YR 3/3) clay films on faces of peds; slightly acid; gradual wavy boundary.

Bt3—32 to 38 inches; dark yellowish brown (10YR 3/4) gravelly sandy loam; weak medium subangular blocky structure; friable; about 30 percent pebbles and cobbles; clay bridging between sand grains; neutral; clear wavy boundary.

2BC—38 to 43 inches; dark yellowish brown (10YR 3/6) very gravelly loamy sand; massive; friable; about 50 percent pebbles; neutral; clear wavy boundary.

2C1—43 to 50 inches; dark yellowish brown (10YR 4/4) very gravelly sand; single grain; loose; about 55 percent pebbles; strong effervescence; moderately alkaline; abrupt wavy boundary.

2C2—50 to 60 inches; yellowish brown (10YR 5/4) gravelly sand; single grain; loose; about 20 percent pebbles; strong effervescence; moderately alkaline.

The thickness of the solum ranges from 40 to 60 inches and corresponds to the depth to free carbonates. The content of pebbles and cobbles ranges from 0 to 30 percent in the upper part of the solum and is as much as 50 percent in the 2BC horizon. The solum ranges from strongly acid to neutral.

The Ap horizon has value of 3 to 5 and chroma of 2 or 3. The B horizon has hue of 5YR, 7.5YR, or 10YR and value and chroma of 3 to 5. It is clay loam, sandy clay loam, loam, sandy loam, or the gravelly or very gravelly analogs of these textures. The C horizon has value of 4 to 6 and chroma of 3 to 6. It is sand, very gravelly sand, or gravelly sand. The content of pebbles and cobbles in this horizon ranges from 15 to 60 percent.

Kibbie Series

The Kibbie series consists of somewhat poorly drained, moderately permeable soils on lake plains, some of which are in areas of moraines. These soils formed in stratified silty and loamy water-worked sediments. Slope ranges from 0 to 4 percent.

Kibbie soils are similar to Dixboro and Wasepi soils and are commonly adjacent to Blount, Capac, Colwood, and Tuscola soils. Dixboro and Wasepi soils have less clay in the subsoil than the Kibbie soils. Blount and Capac soils are in landscape positions similar to or slightly higher than those of the Kibbie soils. They are not stratified in the subsoil or underlying material. Colwood soils are poorly drained and are in the lower landscape positions. Tuscola soils are moderately well drained and are in the slightly higher landscape positions.

Typical pedon of Kibbie loam, 0 to 4 percent slopes, 700 feet south and 700 feet east of the center of sec. 17, T. 5 N., R. 12 W., Byron Township:

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) loam, grayish brown (10YR 5/2) dry; weak medium subangular blocky structure parting to weak fine granular; friable; neutral; abrupt smooth boundary.

E—8 to 12 inches; grayish brown (10YR 5/2) loam; common medium faint dark gray (10YR 4/1) and many fine distinct yellowish brown (10YR 5/8) mottles; weak medium subangular blocky structure; friable; slightly acid; clear smooth boundary.

Bt1—12 to 21 inches; brown (10YR 5/3) silt loam; common fine distinct gray (10YR 5/1) and common medium distinct yellowish brown (10YR 5/8) mottles; weak medium subangular blocky structure; friable; thin clay films on faces of some peds; thin strata of silt and very fine sand; slightly acid; gradual wavy boundary.

Bt2—21 to 34 inches; brown (10YR 5/3) silty clay loam; common medium distinct gray (10YR 5/1) and many medium distinct strong brown (7.5YR 5/8) mottles; moderate medium subangular blocky structure; friable; thin clay films on faces of some peds; slightly acid; clear wavy boundary.

C—34 to 60 inches; brown (10YR 5/3) stratified silt loam, silty clay loam, fine sandy loam, and very fine sand; many medium distinct yellowish brown (10YR 5/8) and common fine distinct light brownish gray (10YR 6/2) mottles; massive; friable; strong effervescence; moderately alkaline.

The thickness of the solum is typically 32 to 44 inches but ranges from 24 to 48 inches. It corresponds to the depth to free carbonates. The solum ranges from medium acid to neutral.

The Ap horizon has value of 2 or 3 and chroma of 1 or 2. It is dominantly loam, but the range includes fine sandy loam. The E horizon has value of 4 to 6 and chroma of 2 or 3. It is loam, silt loam, fine sandy loam, sandy loam, or loamy fine sand. The Bt horizon has value of 4 or 5 and chroma of 3 to 6. It is loam, clay loam, silt loam, or silty clay loam. The sequence of strata of silt, fine sand, and very fine sand in this horizon varies in many areas within short horizontal distances.

The C horizon has value of 5 or 6 and chroma of 2 to 4. The thickness and sequence of layers of different textures in this horizon vary within short horizontal distances. The strata range from 0.25 inch to more than 15 inches in thickness and from fine sand to silty clay loam.

Lamson Series

The Lamson series consists of poorly drained, moderately permeable soils on lake plains, some of

which are in areas of moraines. These soils formed in stratified loamy and sandy deposits. Slope is 0 to 2 percent.

These soils have lower chroma throughout the upper 30 inches than is definitive for the Lamson series. This difference, however, does not affect the usefulness or behavior of the soils.

The Lamson soils are commonly adjacent to Dixboro, Granby, Metamora, Teasdale, and Thetford soils. Dixboro, Metamora, Teasdale, and Thetford soils are somewhat poorly drained and are slightly higher on the landscape than the Lamson soils. Granby soils are sandier throughout than the Lamson soils. They are in positions on the landscape similar to those of the Lamson soils.

Typical pedon of Lamson fine sandy loam, 1,650 feet north and 300 feet east of the southwest corner of sec. 2, T. 5 N., R. 12 W., Byron Township:

- Ap—0 to 11 inches; very dark grayish brown (10YR 3/2) fine sandy loam, light brownish gray (10YR 6/2) dry; weak medium subangular blocky structure; friable; few fine roots; slightly acid; abrupt smooth boundary.
- Eg1—11 to 15 inches; grayish brown (2.5Y 5/2) fine sandy loam; moderate medium subangular blocky structure; friable; dark gray (10YR 4/1) faces of peds; few fine roots; slightly acid; clear wavy boundary.
- Eg2—15 to 20 inches; grayish brown (10YR 5/2) fine sandy loam; many medium distinct olive brown (2.5Y 3/4) mottles; moderate medium angular blocky structure; friable; few fine roots; slightly acid; clear irregular boundary.
- Bg1—20 to 35 inches; dark grayish brown (10YR 4/2) and brown (10YR 5/3) fine sandy loam; many medium prominent olive brown (2.5Y 3/4) and yellowish red (5YR 5/6) mottles; massive; friable; grayish brown (10YR 5/2) streaks and worm casts; slightly brittle; slightly acid; gradual wavy boundary.
- Bg2—35 to 50 inches; light brownish gray (2.5Y 6/2) fine sandy loam stratified with loam, loamy sand, and fine sand bands 1 to 4 inches thick; many medium prominent yellowish red (5YR 4/6) and many coarse distinct grayish brown (10YR 5/2) mottles; massive; friable; slightly acid; gradual wavy boundary.
- C—50 to 60 inches; brown (10YR 5/3) fine sand; single grain; loose; about 1 percent pebbles; slightly acid.

The thickness of the solum ranges from 30 to 50 inches. The depth to free carbonates ranges from 24 to more than 60 inches. The soils generally have no pebbles. In subhorizons of some pedons, however, the content of pebbles is 0 to 15 percent. Reaction ranges from medium acid to mildly alkaline in the upper part of the solum and from slightly acid to moderately alkaline in the lower part of the solum and in the underlying material.

The Ap horizon has hue of 10YR, 7.5YR, or 2.5Y or is neutral in hue. It has chroma of 0 to 3. The Eg horizon has hue of 7.5YR to 2.5Y, value of 5 or 6, and chroma of 1 to 3. It ranges from very fine sandy loam to loamy fine sand. The Bg horizon has hue of 5YR to 5Y, value of 4 to 6, and chroma of 1 to 3. It is dominantly very fine sandy loam or fine sandy loam but has strata ranging from fine sand to sandy clay loam and silty clay loam. The C horizon has hue of 5YR to 5Y or is neutral in hue. It has value of 4 to 7 and chroma of 0 to 3. The strata in this horizon ranges from fine sand to silt.

Landes Series

The Landes series consists of moderately well drained soils on flood plains. These soils formed in loamy and sandy alluvial deposits. Permeability is moderately slow in the upper part of the pedon and rapid in the lower part. Slope is 0 to 2 percent.

Landes soils are similar to Ceresco soils and are commonly adjacent to Ceresco and Cohoctah soils. Both of the adjacent soils are lower on the landscape than the Landes soils. Ceresco soils are somewhat poorly drained, and Cohoctah soils are poorly drained.

Typical pedon of Landes loam, 1,320 feet south and 25 feet east of the northwest corner of sec. 9, T. 6 N., R. 9 W., Lowell Township:

- Ap—0 to 7 inches; very dark grayish brown (10YR 3/2) loam, dark grayish brown (10YR 4/2) dry; weak medium granular structure; friable; common fine roots; about 1 percent pebbles; neutral; abrupt smooth boundary.
- A—7 to 13 inches; very dark grayish brown (10YR 3/2) loam, dark grayish brown (10YR 4/2) dry; weak medium granular structure; friable; common fine faint black (10YR 2/1) organic stains; common fine roots; about 1 percent pebbles; neutral; abrupt smooth boundary.
- Bw1—13 to 20 inches; dark brown (10YR 3/3) loam, brown (10YR 4/3) dry; weak fine subangular blocky structure; friable; few fine roots; about 1 percent pebbles; mildly alkaline; clear wavy boundary.
- Bw2—20 to 25 inches; dark brown (7.5YR 3/4) loam; weak medium subangular blocky structure; friable; few fine roots; about 5 percent pebbles; mildly alkaline; clear wavy boundary.
- 2BC—25 to 30 inches; dark yellowish brown (10YR 4/6) sand; many medium distinct yellowish red (5YR 5/8) and strong brown (7.5YR 5/8) mottles; single grain; loose; few medium distinct dark brown (7.5YR 3/2) organic stains; few fine roots; about 5 percent pebbles; mildly alkaline; clear wavy boundary.
- 2C1—30 to 40 inches; yellowish brown (10YR 5/6) gravelly sand; many medium distinct yellowish red (5YR 5/8) and strong brown (7.5YR 5/8) and few coarse distinct dark brown (7.5YR 3/4) mottles;

single grain; loose; about 20 percent pebbles; mildly alkaline; clear wavy boundary.

2C2—40 to 60 inches; yellowish brown (10YR 5/4) sand; few fine distinct yellowish red (5YR 5/8) mottles; single grain; loose; few medium distinct dark brown (7.5YR 3/2) organic stains; about 5 percent pebbles; mildly alkaline.

The solum ranges from 20 to 40 inches in thickness. It is slightly acid to moderately alkaline. The content of pebbles ranges from 0 to 5 percent in the solum and from 0 to 35 percent in the 2C horizon.

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

Marlette Series

The Marlette series consists of well drained or moderately well drained, moderately slowly permeable soils on till plains and moraines. These soils formed in loamy deposits. Slope ranges from 1 to 45 percent.

Marlette soils are similar to Kalamazoo, Scalley, and Tekenink soils and are commonly adjacent to Capac, Metea, Owosso, Scalley, and Spinks soils. Kalamazoo soils are underlain by sand and gravel. Scalley soils are sandy in the lower part. Tekenink soils are coarser textured throughout than the Marlette soils. Capac soils are somewhat poorly drained and are in the lower positions on the landscape. Metea and Spinks soils are in positions on the landscape similar to those of the Marlette soils. Metea soils are sandy in the upper part, and Spinks soils are sandy throughout. Owosso soils are coarser textured in the upper part than the Marlette soils. They are in the lower positions on the landscape.

Typical pedon of Marlette loam, 2 to 6 percent slopes, 1,350 feet south and 2,000 feet east of the northwest corner of sec. 14, T. 8 N., R. 12 W., Alpine Township:

Ap—0 to 9 inches; dark brown (10YR 3/3) loam, pale brown (10YR 6/3) dry; weak medium granular structure; friable; about 3 percent pebbles; many very fine roots; medium acid; abrupt smooth boundary.

B/E—9 to 19 inches; dark yellowish brown (10YR 4/4) clay loam (Bt); firm; light brownish gray (10YR 6/2) loam (E) coatings, about 4 millimeters thick, on faces of peds; moderate medium subangular blocky structure; about 3 percent pebbles; few very fine roots; medium acid; clear irregular boundary.

Bt1—19 to 36 inches; dark yellowish brown (10YR 4/4) clay loam; moderate coarse subangular blocky structure; firm; thin discontinuous clay films on faces of peds; about 3 percent pebbles; common very fine

roots between peds; slightly acid; gradual wavy boundary.

Bt2—36 to 40 inches; yellowish brown (10YR 5/4) clay loam; moderate medium subangular blocky structure; firm; thin discontinuous clay films on faces of peds; about 3 percent pebbles; common very fine roots; slightly acid; clear wavy boundary.

C—40 to 60 inches; brown (10YR 5/3) loam; weak fine subangular blocky structure; friable; about 7 percent pebbles and cobbles; strong effervescence; moderately alkaline.

The thickness of the solum ranges from 25 to 50 inches and corresponds to the depth to free carbonates. The content of pebbles and cobbles in the solum ranges from 2 to 10 percent. The solum is medium acid or slightly acid.

The Ap horizon has value of 3 or 4 and chroma of 2 or 3. It is dominantly loam, but the range includes sandy loam. The E part of the B/E horizon has value of 5 to 7 and chroma of 1 to 3. It is loam or sandy loam. The B horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 6. It is loam or clay loam. The C horizon also is loam or clay loam. It has value of 5 or 6 and chroma of 2 or 3.

Matherton Series

The Matherton series consists of somewhat poorly drained soils on outwash plains, valley trains, and terraces. These soils formed in loamy and sandy deposits. Permeability is moderate in the upper part of the pedon and very rapid in the lower part. Slope ranges from 0 to 4 percent.

These soils are taxadjuncts to the Matherton series because they do not have a low chroma in the argillic horizon or a strongly contrasting particle-size class. These differences, however, do not alter usefulness or behavior of the soils.

Matherton soils are similar to Capac and Metamora soils and are commonly adjacent to Capac, Kalamazoo, Oshtemo, and Sebewa soils. Capac soils have a surface layer that is lighter colored than that of the Matherton soils. Metamora soils are loamy throughout. Kalamazoo and Oshtemo soils are well drained and are in the higher landscape positions. Sebewa soils are poorly drained and nearly level and are in the lower landscape positions and in drainageways.

Typical pedon of Matherton loam, 0 to 4 percent slopes, 700 feet north and 860 feet east of the southwest corner of sec. 10, T. 9 N., R. 12 W., Sparta Township:

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) loam, grayish brown (10YR 5/2) dry; weak medium granular structure; friable; about 1 percent pebbles; neutral; abrupt smooth boundary.

- E—8 to 12 inches; grayish brown (10YR 5/2) loam; few medium distinct yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; friable; about 1 percent pebbles; neutral; clear wavy boundary.
- Bt1—12 to 18 inches; brown (10YR 4/3) clay loam; common fine distinct dark gray (10YR 4/1) and many fine distinct yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; firm; common thin clay films on faces of peds; about 1 percent pebbles; neutral; clear wavy boundary.
- Bt2—18 to 22 inches; dark yellowish brown (10YR 4/4) sandy clay loam; many fine distinct strong brown (7.5YR 5/8) and few fine distinct dark grayish brown (10YR 4/2) mottles; moderate medium subangular blocky structure; friable; few discontinuous clay films on faces of peds; common manganese stains; about 3 percent pebbles; neutral; clear wavy boundary.
- BC—22 to 30 inches; dark yellowish brown (10YR 4/4) sandy loam; many fine distinct strong brown (7.5YR 5/8) and few fine distinct dark grayish brown (10YR 4/2) mottles; weak medium subangular blocky structure; friable; about 10 percent pebbles; neutral; abrupt irregular boundary.
- 2C—30 to 60 inches; light yellowish brown (10YR 6/4) gravelly sand; many medium distinct yellow (10YR 7/8) and common medium faint light brownish gray (10YR 6/2) mottles; single grain; loose; about 15 percent pebbles; strong effervescence; moderately alkaline.

The solum ranges from 24 to 40 inches in thickness. It is medium acid to neutral.

The Ap horizon has value of 2 or 3 and chroma of 1 or 2. Some pedons have an A1 horizon, which is 1 to 4 inches thick. The A horizon is dominantly loam, but the range includes fine sandy loam and sandy loam. The E horizon has value of 5 or 6. The B horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 2 to 4. It is sandy clay loam, clay loam, loam, or the gravelly analogs of these textures. The 2C horizon has value of 5 to 7 and chroma of 1 to 4. It is gravelly sand or stratified sand and gravelly sand.

Metamora Series

The Metamora series consists of somewhat poorly drained soils on till plains and moraines. These soils formed in loamy deposits. Permeability is moderately rapid in the upper part of the pedon and moderately slow in the lower part. Slope ranges from 0 to 3 percent.

These soils have brighter colors in the argillic horizon than is definitive for the Metamora series. This difference, however, does not alter the usefulness or behavior of the soils.

Metamora soils are similar to Capac and Matherton soils and are commonly adjacent to Capac, Marlette,

Owosso, and Parkhill soils. Capac soils are finer textured in the upper part of the solum than the Metamora soils. Matherton soils have sand in the lower part. Marlette and Owosso soils are well drained and are in the higher landscape positions. Parkhill soils are poorly drained and are in the lower landscape positions.

Typical pedon of Metamora sandy loam, 0 to 3 percent slopes, 2,260 feet south and 300 feet west of the northeast corner of sec. 10, T. 9 N., R. 12 W., Sparta Township:

- Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) sandy loam, grayish brown (10YR 5/2) dry; weak fine granular structure; friable; many fine roots; about 3 percent pebbles; slightly acid; abrupt smooth boundary.
- E—9 to 16 inches; grayish brown (10YR 5/2) loamy sand; common medium faint gray (10YR 5/1) and few fine faint yellowish brown (10YR 5/4) mottles; weak coarse granular structure; friable; common fine roots; about 3 percent pebbles; slightly acid; clear wavy boundary.
- BE—16 to 24 inches; brown (10YR 5/3) sandy loam; common medium faint grayish brown (10YR 5/2), common medium distinct yellowish brown (10YR 5/6), and few medium distinct reddish brown (5YR 5/4) mottles; weak medium subangular blocky structure; friable; common fine roots; about 3 percent pebbles; medium acid; clear wavy boundary.
- Bt1—24 to 30 inches; brown (7.5YR 4/4) clay loam; common medium distinct strong brown (7.5YR 5/8) and reddish brown (5YR 4/4) and few fine distinct grayish brown (10YR 5/2) mottles; moderate medium subangular blocky structure; firm; pale brown (10YR 6/3) silt coatings on faces of peds; few fine roots; about 5 percent pebbles; medium acid; gradual wavy boundary.
- 2Bt2—30 to 38 inches; dark yellowish brown (10YR 4/4) clay loam; common medium distinct strong brown (7.5YR 5/6) and common fine faint dark grayish brown (10YR 4/2) mottles; moderate medium subangular blocky structure; firm; few fine roots; reddish brown (5YR 4/3) clay films on faces of peds; about 5 percent pebbles; slightly acid; clear wavy boundary.
- 2C—38 to 60 inches; yellowish brown (10YR 5/4) loam; common medium distinct reddish brown (5YR 5/4) and common fine distinct gray (10YR 5/1) and strong brown (7.5YR 5/6) mottles; massive; firm; white (10YR 8/2) lime streaks; about 5 percent pebbles; strong effervescence; moderately alkaline.

The thickness of the solum and the depth to free carbonates range from 20 to 40 inches. The content of pebbles in the solum ranges from 1 to 10 percent. The solum is strongly acid to neutral.

The Ap horizon has chroma of 1 or 2. The E horizon has value of 5 or 6 and chroma of 2 or 3. It is loamy sand or sandy loam. The Bt horizon is sandy loam or loam. The 2Bt horizon has hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 1 to 4. It is clay loam, loam, or silty clay loam. The 2C horizon has value of 5 or 6 and chroma of 2 to 4. It is loam or clay loam. It is mildly alkaline or moderately alkaline.

Metea Series

The Metea series consists of well drained soils on moraines and till plains. These soils formed in sandy and loamy deposits. Permeability is rapid in the upper part of the pedon and moderately slow in the lower part. Slope ranges from 2 to 18 percent.

Metea soils are similar to Okee, Selfridge, and Tustin soils and are commonly adjacent to Capac, Chelsea, Marlette, and Selfridge soils. Okee soils have less clay in the lower part than the Metea soils. Selfridge soils are somewhat poorly drained. Tustin soils have more clay in the lower part than the Metea soils. Capac soils are somewhat poorly drained and are in the lower positions on the landscape. They are loamy throughout. Chelsea soils are sandy throughout. They are in positions on the landscape similar to those of the Metea soils. Marlette soils are loamy throughout. They are in positions on the landscape similar to or higher than those of the Metea soils.

Typical pedon of Metea loamy sand, 2 to 6 percent slopes, 2,150 feet south and 2,500 feet west of the northeast corner of sec. 11, T. 7 N., R. 11 W., Grand Rapids Township:

- Ap—0 to 9 inches; dark brown (10YR 3/3) loamy sand, pale brown (10YR 6/3) dry; weak medium granular structure; very friable; common fine and medium roots; strongly acid; abrupt smooth boundary.
- Bw1—9 to 16 inches; yellowish brown (10YR 5/6) sand; weak fine and medium subangular blocky structure; loose; common fine roots; medium acid; gradual wavy boundary.
- Bw2—16 to 29 inches; brownish yellow (10YR 6/6) sand; weak fine and medium subangular blocky structure; loose; common fine roots; medium acid; clear wavy boundary.
- 2Bt—29 to 35 inches; brown (7.5YR 4/4) clay loam; moderate medium subangular blocky structure; friable; many fine roots on faces of peds; thin discontinuous clay films on faces of peds; about 8 percent pebbles and 2 percent cobbles; mildly alkaline; gradual wavy boundary.
- 2C—35 to 60 inches; brown (7.5YR 5/4) loam; weak medium subangular blocky structure; friable; few fine roots; about 8 percent pebbles and 2 percent cobbles; strong effervescence; moderately alkaline.

The thickness of the solum and the depth to free carbonates range from 32 to 50 inches. The thickness of the sandy upper material ranges from 20 to 40 inches. The content of pebbles and cobbles in the solum is 1 to 10 percent. The solum ranges from strongly acid to mildly alkaline.

The Ap horizon has value of 3 to 5 and chroma of 2 to 4. Some pedons have an A1 horizon. The B horizon has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 3 to 6. It is loamy sand or sand. The 2Bt horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 or 4. It is silty clay loam, sandy clay loam, or clay loam. The 2C horizon has hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 3 to 8. It is silty clay loam, clay loam, or loam. It is mildly alkaline or moderately alkaline.

Napoleon Series

The Napoleon series consists of very poorly drained soils in bogs on outwash plains. These soils formed in herbaceous organic material. Permeability is moderately slow to moderately rapid. Slope is 0 to 2 percent.

Napoleon soils are commonly adjacent to Adrian, Plainfield, and Tedrow soils. Adrian soils are underlain by sandy material at a depth of 16 to 50 inches. The well drained Plainfield and somewhat poorly drained Tedrow soils are in the higher positions on the landscape. They are sandy throughout.

Typical pedon of Napoleon muck, 175 feet north and 2,400 feet east of the southwest corner of sec. 9, T. 9 N., R. 9 W., Oakfield Township:

- Oi—0 to 4 inches; fibric material, dark yellowish brown (10YR 4/6) broken face, dark yellowish brown (10YR 3/6) rubbed; about 95 percent fibers, about 80 percent rubbed; mainly live roots and sphagnum moss; massive; very strongly acid; abrupt smooth boundary.
- Oa1—4 to 8 inches; sapric material; dark reddish brown (5YR 3/2) broken face and rubbed; about 2 percent fibers, none rubbed; mainly herbaceous fibers; weak fine granular structure; very strongly acid; clear smooth boundary.
- Oa2—8 to 12 inches; sapric material, dark reddish gray (10R 3/1) broken face, reddish black (10R 2/1) rubbed; about 5 percent fibers, none rubbed; mainly herbaceous fibers; weak medium granular structure; very strongly acid; gradual smooth boundary.
- Oa3—12 to 24 inches; sapric material, dusky red (10R 3/2) broken face, reddish black (10R 2/1) rubbed; about 60 percent fibers, less than 5 percent rubbed; mainly herbaceous fibers; moderate very thick platy structure; very strongly acid; gradual smooth boundary.
- Oe—24 to 60 inches; hemic material, dark reddish brown (2.5YR 3/4) broken face, very dusky red (2.5YR 2/2) rubbed; about 85 percent fibers, 20 percent

rubbed; mainly herbaceous fibers; moderate very thick platy structure; very strongly acid.

The organic material is more than 51 inches thick. It is extremely acid or very strongly acid. The lower part of the surface tier is hemic or sapric material. The subsurface tiers have hue of 2.5YR, 5YR, 7.5YR, 10YR, or 10R, value of 2 to 4, and chroma of 1 to 4. These colors darken upon exposure to air.

Oakville Series

The Oakville series consists of well drained or moderately well drained soils on outwash plains, till plains, moraines, and terraces. These soils formed in sandy material. Permeability generally is rapid throughout the pedon. In the loamy substratum phases, however, it is rapid in the upper part of the pedon and moderately slow in the lower part. Slope ranges from 0 to 60 percent.

Oakville soils are similar to Abscota, Chelsea, Plainfield, and Tedrow soils and are commonly adjacent to Boyer, Marlette, Spinks, and Tedrow soils. Abscota soils formed in stratified alluvium. Chelsea soils have thin lamellae in the underlying layers. Plainfield soils are sand throughout and are more acid than the Oakville soils. Tedrow soils are somewhat poorly drained. Boyer soils have a loamy subsoil. They are in positions on the landscape similar to those of the Oakville soils. Marlette soils are loamy throughout. They are in positions on the landscape higher than or similar to those of the Oakville soils. Spinks soils have more clay in the underlying layers than the Oakville soils. They are in positions on the landscape similar to those of the Oakville soils.

Typical pedon of Oakville fine sand, 6 to 12 percent slopes, 1,580 feet south and 140 feet west of the center of sec. 31, T. 7 N., R. 10 W., Ada Township:

- Ap—0 to 6 inches; dark grayish brown (10YR 4/2) fine sand, pale brown (10YR 6/3) dry; weak medium granular structure; very friable; common fine roots; medium acid; abrupt smooth boundary.
- Bw—6 to 18 inches; yellowish brown (10YR 5/4) fine sand; single grain; loose; medium acid; clear wavy boundary.
- BC—18 to 40 inches; brownish yellow (10YR 6/6) fine sand; single grain; loose; medium acid; clear wavy boundary.
- C—40 to 60 inches; light yellowish brown (10YR 6/4) fine sand; single grain; loose; medium acid.

The solum ranges from 20 to 40 inches in thickness. It commonly is medium acid to neutral but in some pedons is strongly acid. The content of pebbles is 0 to 3 percent in the solum.

The Ap horizon has value of 3 or 4 and chroma of 2 or 3. Uncultivated areas have an A1 horizon. This horizon is 1 to 4 inches thick. It has hue of 10YR, value of 2 or 3,

and chroma of 1 or 2. The Bw horizon has hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 4 to 8. The C horizon has value of 5 to 7 and chroma of 3 to 6. It is medium acid to neutral. Some pedons have a loamy substratum below a depth of 40 inches.

Okee Series

The Okee series consists of well drained soils on moraines and till plains. These soils formed in sandy and loamy deposits. Permeability is moderately rapid in the upper part of the pedon and moderate or moderately rapid in the lower part. Slope ranges from 1 to 18 percent.

Okee soils are similar to Metea soils and are commonly adjacent to Plainfield, Spinks, Teasdale, and Tekenink soils. Metea, Plainfield, and Spinks soils are in positions on the landscape similar to those of the Okee soils. Metea soils are finer textured in the underlying material than the Okee soils. Plainfield and Spinks soils do not have loamy underlying material. Tekenink soils are finer textured in the upper part of the solum than the Okee soils. Teasdale soils are somewhat poorly drained and in narrow drainageways and in nearly level areas on the lower parts of the landscape.

Typical pedon of Okee loamy fine sand, 1 to 6 percent slopes, 1,600 feet north and 198 feet east of the southwest corner of sec. 14, T. 10 N., R. 9 W., Spencer Township:

- A—0 to 2 inches; black (10YR 2/1) loamy fine sand, dark gray (10YR 4/1) dry; weak fine granular structure; very friable; many fine roots; about 3 percent pebbles; medium acid; abrupt smooth boundary.
- E—2 to 3 inches; dark grayish brown (10YR 4/2) loamy fine sand; single grain; loose; many fine roots; about 3 percent pebbles; medium acid; abrupt wavy boundary.
- Bw1—3 to 5 inches; dark yellowish brown (10YR 3/4) loamy fine sand; weak medium subangular blocky structure; very friable; few medium roots; about 3 percent pebbles; medium acid; abrupt irregular boundary.
- Bw2—5 to 8 inches; dark yellowish brown (10YR 4/6) loamy fine sand; weak medium subangular blocky structure; very friable; few fine roots; about 3 percent pebbles; medium acid; clear wavy boundary.
- Bw3—8 to 16 inches; yellowish brown (10YR 5/6) loamy fine sand; weak medium subangular blocky structure; very friable; few fine roots; about 3 percent pebbles; medium acid; clear wavy boundary.
- BC—16 to 20 inches; yellowish brown (10YR 5/4) loamy fine sand; weak medium subangular blocky structure; very friable; about 3 percent pebbles; medium acid; abrupt wavy boundary.

- E'—20 to 27 inches; light yellowish brown (10YR 6/4) loamy fine sand; weak fine subangular blocky structure; friable; about 3 percent pebbles and cobbles; slightly acid; abrupt irregular boundary.
- 2B/E—27 to 36 inches; dark yellowish brown (10YR 4/6) loam (Bt); moderate coarse subangular blocky structure; friable; pale brown (10YR 6/3) fine sandy loam coatings, 1 to 5 millimeters thick, on faces of peds (E); about 7 percent pebbles and cobbles; common very fine roots; slightly acid; abrupt wavy boundary.
- 2C—36 to 60 inches; brown (10YR 5/3) fine sandy loam; moderate coarse subangular blocky structure; friable; about 7 percent pebbles and cobbles; strong effervescence; moderately alkaline.

The solum ranges from 30 to 60 inches in thickness. It is medium acid to mildly alkaline. The thickness of the upper sandy material ranges from 20 to 40 inches. The content of pebbles is 0 to 5 percent in the upper part of the pedon and 3 to 15 percent in the underlying material.

The A 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 Bw horizon has value and chroma of 3 to 6. The E' horizon has value of 6 or 7 and chroma of 3 or 4. The Bt part of the 2B/E horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 8. It is loam or sandy loam. The 2C horizon has hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 3 to 6. It is sandy loam or loamy sand.

Oshtemo Series

The Oshtemo series consists of well drained soils on outwash plains and moraines. These soils formed in loamy and sandy material. Permeability is moderately rapid in the upper part of the pedon and very rapid in the lower part. Slope ranges from 0 to 12 percent.

These soils have a thicker dark surface layer than is definitive for Oshtemo series. This difference, however, does not alter usefulness or behavior of the soils.

Oshtemo soils are similar to Arkport, Boyer, Kalamazoo, and Owosso soils and are commonly adjacent to Marlette, Plainfield, Spinks, Tekenink, and Wasepi soils. Arkport and Spinks soils have lamellae in the subsoil. Boyer soils have a solum that is thinner than that of the Oshtemo soils. Kalamazoo soils are finer textured in the subsoil than the Oshtemo soils. Owosso soils are loamy throughout. Marlette and Tekenink soils are higher on the landscape than the Oshtemo soils. Marlette soils are fine-loamy. Plainfield and Spinks soils have less clay in the subsoil than the Oshtemo soils. They are in positions on the landscape similar to those of the Oshtemo soils. Wasepi soils are somewhat poorly drained and are in drainageways and in nearly level areas on the lower parts of the landscape.

Typical pedon of Oshtemo sandy loam, 0 to 6 percent slopes, 2,680 feet north and 3,630 feet west of the

southeast corner of sec. 32, T. 8 N., R. 11 W., Plainfield Township:

- Ap—0 to 9 inches; dark brown (10YR 3/3) sandy loam, grayish brown (10YR 5/2) dry; moderate fine granular structure; friable; common fine roots; about 5 percent pebbles; neutral; abrupt smooth boundary.
- E—9 to 15 inches; yellowish brown (10YR 5/6) sandy loam; moderate fine subangular blocky structure; friable; few fine roots; about 5 percent pebbles; slightly acid; clear wavy boundary.
- Bt1—15 to 22 inches; dark yellowish brown (10YR 4/6) sandy loam; moderate fine and medium subangular blocky structure; friable; few fine roots; clay bridging between sand grains; about 5 percent pebbles; slightly acid; clear wavy boundary.
- Bt2—22 to 26 inches; strong brown (7.5YR 4/6) sandy clay loam; moderate coarse subangular blocky structure; friable; thin clay films on faces of peds; about 5 percent pebbles; slightly acid; clear wavy boundary.
- Bt3—26 to 32 inches; strong brown (7.5YR 4/6) gravelly sandy loam; weak medium subangular blocky structure; friable; clay bridging between sand grains; about 15 percent pebbles; slightly acid; clear wavy boundary.
- BC—32 to 55 inches; strong brown (7.5YR 5/6) coarse sand; single grain; loose; about 5 percent pebbles; neutral; clear wavy boundary.
- 2C—55 to 60 inches; yellowish brown (10YR 5/4) gravelly coarse sand; single grain; loose; about 30 percent pebbles; strong effervescence; moderately alkaline.

The solum is commonly 55 to 65 inches thick but ranges from 40 to 66 inches. It is strongly acid to neutral. The content of pebbles ranges from 1 to 30 percent throughout the profile.

The A horizon has value of 3 to 5 and chroma of 2 or 3. It is dominantly sandy loam, but the range includes loamy sand. The E horizon has value of 5 or 6 and chroma of 3 to 6. The Bt horizon has hue of 10YR, 7.5YR, or 5YR, value of 3 to 5, and chroma of 3 to 6. It is sandy loam, sandy clay loam, loam, or the gravelly analogs of these textures. In some pedons the lower part of this horizon occurs as bands of sandy loam separated by loamy sand. The bands are 1/8 inch to 5 inches thick. The C horizon has value of 5 or 6 and chroma of 2 to 4. It is coarse sand, gravelly sand, or gravelly coarse sand.

Owosso Series

The Owosso series consists of well drained soils on till plains and moraines. These soils formed in loamy material. Permeability is moderately rapid in the upper

part of the pedon and moderately slow in the lower part. Slope ranges from 2 to 12 percent.

These soils are taxadjuncts to the Owosso series because the albic material interfingers into the argillic horizon. This difference, however, does not alter the usefulness or behavior of the soils.

Owosso soils are similar to Kalamazoo, Metea, and Oshtemo soils and are commonly adjacent to Marlette, Metamora, and Metea soils. Kalamazoo soils are sandy in the lower part. Metea soils are sandy in the upper part. Oshtemo soils have less clay in the subsoil than the Owosso soils and are sandy in the lower part. Marlette soils are finer textured in the upper part than the Owosso soils. Also, they are in higher positions on the landscape. Metamora soils are somewhat poorly drained and are in the lower positions on the landscape.

Typical pedon of Owosso sandy loam, in an area of Owosso-Marlette sandy loams, 2 to 6 percent slopes, 3,460 feet south and 1,900 feet west of the northeast corner of sec. 8, T. 8 N., R. 11 W., Plainfield Township:

- Ap—0 to 10 inches; dark brown (10YR 3/3) sandy loam, pale brown (10YR 6/3) dry; weak fine granular structure; friable; common fine roots; about 2 percent pebbles; neutral; abrupt smooth boundary.
- E1—10 to 15 inches; yellowish brown (10YR 5/4) sandy loam; weak fine granular structure; friable; common fine roots; about 2 percent pebbles; medium acid; clear smooth boundary.
- E2—15 to 22 inches; yellowish brown (10YR 5/6) sandy loam; moderate fine subangular blocky structure; friable; few fine roots; about 2 percent pebbles; medium acid; clear smooth boundary.
- 2B/E—22 to 36 inches; strong brown (7.5YR 5/6) sandy clay loam (Bt); weak medium subangular blocky structure; firm; pale brown (10YR 6/3) sandy loam coatings, 2 to 5 millimeters thick, on faces of peds (E); about 3 percent pebbles; medium acid; clear wavy boundary.
- 2Bt—36 to 42 inches; brown (7.5YR 4/4) clay loam; weak coarse subangular blocky structure parting to weak fine subangular blocky; firm; thin clay films on faces of peds and along root channels; few fine roots; about 5 percent pebbles; slightly acid; clear smooth boundary.
- 2C—42 to 60 inches; brown (7.5YR 5/4) clay loam; weak fine subangular blocky structure; very firm; about 5 percent pebbles; strong effervescence; moderately alkaline.

The thickness of the solum ranges from 24 to 50 inches and corresponds to the depth to free carbonates. The content of pebbles is 2 to 5 percent throughout the profile. The solum ranges from strongly acid to neutral.

The Ap horizon has value of 3 to 5 and chroma of 3 or 4. It is dominantly sandy loam, but the range includes fine sandy loam. The E horizon has value of 5 or 6 and chroma of 3 to 6. Some pedons do not have a 2B/E

horizon. The E part of this horizon has properties similar to those of the overlying E horizon. The B part has properties similar to those of the 2Bt horizon. The 2Bt horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 3 to 6. It is loam, clay loam, or silty clay loam. The 2C horizon has hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 3 or 4. It is loam, clay loam, or silty clay loam.

Palms Series

The Palms series consists of very poorly drained soils in bogs on outwash plains, till plains, terraces, and moraines. These soils formed in herbaceous organic material 16 to 50 inches deep over silty material. Permeability is moderately slow to moderately rapid in the organic material and moderate or moderately slow in the silty material. Slope is 0 to 2 percent.

Palms soils are similar to Adrian, Edwards, and Houghton soils and are commonly adjacent to Edwards and Houghton soils. Adrian soils are underlain by sandy material at a depth of 16 to 50 inches. Edwards soils are underlain by marl at a depth of 16 to 50 inches. Houghton soils formed in organic material more than 50 inches thick.

Typical pedon of Palms muck, 1,250 feet north and 2,475 feet east of the southwest corner of sec. 33, T. 5 N., R. 12 W., Byron Township:

- Oa1—0 to 9 inches; sapric material, black (10YR 2/1) broken face and rubbed; less than 5 percent fibers, a trace rubbed; mainly herbaceous fibers; moderate fine granular structure; about 5 percent mineral material; neutral; abrupt smooth boundary.
- Oa2—9 to 23 inches; sapric material, dark reddish brown (5YR 2/2) broken face, black (5YR 2/1) rubbed; about 5 percent fibers, less than 5 percent rubbed; mainly herbaceous fibers; weak very thick platy structure parting to weak coarse subangular blocky; neutral; abrupt smooth boundary.
- Oa3—23 to 42 inches; sapric material, black (10YR 2/1) broken face and rubbed; about 5 percent fibers, less than 5 percent rubbed; mainly herbaceous fibers; weak very thick platy structure parting to weak medium subangular blocky; mildly alkaline; abrupt smooth boundary.
- Cg—42 to 60 inches; gray (10YR 5/1) silty clay loam; massive; firm; strong effervescence; moderately alkaline.

The organic material ranges from 16 to 50 inches in thickness. It is medium acid to mildly alkaline. The surface tier has hue of 10YR, 7.5YR, or 5YR or is neutral in hue. It has value of 2 or 3 and chroma of 0 to 2. The subsurface and bottom tiers have hue of 10YR, 7.5YR, or 5YR or are neutral in hue. They have value of 2 to 4 and chroma of 0 to 3.

The C horizon has hue of 10YR, 2.5Y, or 5Y, value of 3 to 6, and chroma of 1 or 2. It is loam, silt loam, or silty clay loam. It ranges from neutral to moderately alkaline.

Parkhill Series

The Parkhill series consists of poorly drained, moderately slowly permeable soils on till plains and moraines. These soils formed in loamy and silty deposits. Slope is 0 to 2 percent.

These soils have a thicker dark surface layer than is definitive for the Parkhill series and are shallower to free carbonates. These differences, however, do not alter the usefulness or behavior of the soils.

Parkhill soils are similar to Colwood soils and are commonly adjacent to Capac and Metamora soils. Colwood soils are more stratified than the Parkhill soils. Capac and Metamora soils are somewhat poorly drained and are in the slightly higher landscape positions.

Typical pedon of Parkhill loam, 120 feet north and 2,310 feet west of the southeast corner of sec. 7, T. 9 N., R. 12 W., Sparta Township:

- Ap—0 to 8 inches; very dark gray (10YR 3/1) loam, dark gray (10YR 4/1) dry; few fine faint gray (10YR 5/1) mottles; moderate medium subangular blocky structure parting to weak medium granular; friable; many fine roots; about 1 percent pebbles; neutral; abrupt smooth boundary.
- Bg—8 to 13 inches; gray (10YR 5/1) silt loam; common medium distinct grayish brown (2.5Y 5/2) and common fine prominent yellowish brown (10YR 5/6) mottles; weak fine subangular blocky structure; friable; few fine roots; about 1 percent pebbles; neutral; abrupt smooth boundary.
- Cg1—13 to 18 inches; gray (5Y 5/1) silt loam; common fine prominent yellowish brown (10YR 5/6) mottles; weak fine subangular blocky structure; friable; few fine roots; about 3 percent pebbles; few fine filaments of lime; strong effervescence; mildly alkaline; abrupt smooth boundary.
- Cg2—18 to 25 inches; gray (5Y 5/1) silt loam; common fine prominent yellowish brown (10YR 5/6) mottles; weak fine subangular blocky structure; friable; few fine roots; about 3 percent pebbles; common fine filaments of lime; strong effervescence; mildly alkaline; abrupt smooth boundary.
- Cg3—25 to 60 inches; light olive gray (5Y 6/2) silt loam; massive; friable; light olive brown (2.5Y 5/4) stains along root channels; about 3 percent pebbles; common fine filaments of lime; strong effervescence; moderately alkaline.

The content of pebbles ranges from 0 to 10 percent throughout the profile. The solum is slightly acid to mildly alkaline.

The Ap horizon has value of 2 or 3 and chroma of 1 or 2. It is dominantly loam, but the range includes silt loam

and sandy loam. The C horizon has hue of 10YR, 2.5Y, or 5Y, value of 4 to 6, and chroma of 1 to 4. It is silt loam or loam.

Perrin Series

The Perrin series consists of moderately well drained soils on valley trains and terraces. These soils formed in stratified sandy and loamy material. Permeability is moderately rapid in the upper part of the pedon and very rapid in the lower part. Slope ranges from 0 to 4 percent.

These soils have a thicker dark surface layer than is definitive for the Perrin series. This difference, however, does not alter the use or behavior of the soils.

Perrin soils are similar to Boyer, Kalamazoo, Oshtemo, and Owosso soils and are commonly adjacent to Boyer and Wasepi soils. Boyer soils are well drained. Kalamazoo and Oshtemo soils also are well drained. They have more clay in the subsoil than the Perrin soils. Owosso soils are loamy throughout. Wasepi soils are somewhat poorly drained and are in the lower positions on the landscape.

Typical pedon of Perrin gravelly loamy sand, 0 to 4 percent slopes, 1,460 feet south and 2,200 feet west of the northeast corner of sec. 30, T. 6 N., R. 12 W., in the city of Grandville:

- Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) gravelly loamy sand, grayish brown (10YR 5/2) dry; weak medium granular structure; friable; about 25 percent pebbles; few fine roots; neutral; abrupt smooth boundary.
- BE—9 to 19 inches; brown (7.5YR 5/4) gravelly loamy sand; weak medium subangular blocky structure; very friable; about 25 percent pebbles; few fine roots; neutral; gradual wavy boundary.
- Bt1—19 to 30 inches; strong brown (7.5YR 4/6) gravelly sandy loam; weak fine subangular blocky structure; friable; about 25 percent pebbles; clay bridging and coating sand grains; neutral; gradual wavy boundary.
- Bt2—30 to 38 inches; dark brown (7.5YR 4/4) gravelly sandy loam; few fine distinct dark grayish brown (10YR 4/2) mottles; weak fine subangular blocky structure; friable; about 25 percent pebbles; clay bridging and coating sand grains; neutral; clear wavy boundary.
- 2C1—38 to 42 inches; light yellowish brown (10YR 6/4) gravelly sand; common medium faint brownish yellow (10YR 6/6) and few fine distinct dark grayish brown (10YR 4/2) mottles; single grain; loose; about 35 percent pebbles; slight effervescence; mildly alkaline; gradual wavy boundary.
- 2C2—42 to 60 inches; grayish brown (10YR 5/2) gravelly sand; few fine prominent brownish yellow (10YR 6/8) mottles; single grain; loose; about 35 percent pebbles; strong effervescence; moderately alkaline.

The thickness of the solum and the depth to free carbonates range from 24 to 40 inches. The content of pebbles in the solum ranges from 10 to 25 percent. The solum is slightly acid to mildly alkaline.

The Ap horizon has hue of 7.5YR or 10YR, value of 3 to 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 4 to 6. It is sandy loam or gravelly sandy loam. The 2C horizon has value of 5 or 6 and chroma of 2 to 4. It is gravelly sand or very gravelly sand. The content of pebbles in this horizon ranges from 25 to 50 percent.

Perrinton Series

The Perrinton series consists of well drained, moderately slowly permeable soils on till plains and moraines. These soils formed in loamy and silty deposits. Slope ranges from 0 to 40 percent.

Perrinton soils are similar to Ithaca, Marlette, and Woodbeck soils and are commonly adjacent to Ithaca, Rimer, Tustin, and Woodbeck soils. Ithaca and Rimer soils are somewhat poorly drained and are in the lower drainageways and shallow depressions. Marlette soils have less clay in the subsoil than the Perrinton soils. Woodbeck soils have sandy textures in the lower part. Tustin soils have 20 to 40 inches of sand in the upper part. They are in the lower landscape positions.

Typical pedon of Perrinton loam, 6 to 12 percent slopes, 130 feet north and 800 feet west of the southeast corner of sec. 12, T. 8 N., R. 12 W., Alpine Township:

- A—0 to 5 inches; very dark grayish brown (10YR 3/2) loam, grayish brown (10YR 5/2) dry; moderate coarse granular structure; friable; many fine and medium roots; about 2 percent pebbles; slightly acid; abrupt wavy boundary.
- E—5 to 8 inches; pale brown (10YR 6/3) loam; moderate coarse subangular blocky structure; friable; common fine roots; about 2 percent pebbles; medium acid; abrupt irregular boundary.
- E/B—8 to 10 inches; pale brown (10YR 6/3) loam (E); moderate medium subangular blocky structure; friable; about 30 percent reddish brown (5YR 4/4) clay loam (Bt), by volume; firm; E material occurring as thick coatings on peds of the Bt material; many fine roots; about 2 percent pebbles; medium acid; clear irregular boundary.
- B/E—10 to 20 inches; reddish brown (5YR 4/4) clay loam (Bt1); strong medium angular blocky structure; firm; brown (10YR 5/3) loam coatings, 2 to 4 millimeters thick on faces of peds (E); common fine roots; about 2 percent pebbles; medium acid; gradual wavy boundary.
- Bt1—20 to 29 inches; reddish brown (5YR 4/3) clay loam; strong medium angular blocky structure; firm; common fine roots; brown (10YR 5/3) clay films on

faces of peds; about 2 percent pebbles; medium acid; gradual wavy boundary.

Bt2—29 to 39 inches; reddish brown (5YR 4/4) silty clay loam; strong medium angular blocky structure; firm; common fine roots; reddish brown (5YR 5/3) clay films on faces of peds; about 3 percent pebbles; neutral; clear wavy boundary.

C—39 to 60 inches; brown (7.5YR 5/4) silty clay loam; moderate fine angular blocky structure; firm; few fine roots; about 5 percent pebbles; strong effervescence; moderately alkaline.

The thickness of the solum ranges from 20 to 40 inches and corresponds to the depth to free carbonates. The content of pebbles is 2 to 5 percent throughout the profile. The solum is medium acid to mildly alkaline.

The A horizon has value of 2 or 3 and chroma of 1 to 3. Cultivated areas have an Ap horizon, which has value of 3 or 4 and chroma of 1 to 3. The E horizon has value of 5 or 6 and chroma of 2 or 3. In some pedons it occurs only as thin fingers in the upper part of the B horizon. The E/B and B/E horizons have properties of both the E and Bt horizons. The Bt horizon has hue of 10YR, 7.5YR, or 5YR, value of 4 or 5, and chroma of 3 or 4. It is clay loam, silty clay loam, or silty clay. The C horizon has value of 4 to 6. It is silty clay loam or clay loam.

Pewamo Series

The Pewamo series consists of poorly drained, moderately slowly permeable soils on till plains and in depressional areas on moraines. These soils formed in loamy and silty deposits. Slope is 0 to 2 percent.

Pewamo soils are similar to Sebewa soils and are commonly adjacent to Blount, Glynwood, Ithaca, and Perrinton soils. Sebewa soils are sandy in the lower part. The somewhat poorly drained Blount and Ithaca soils are in the slightly higher positions on the landscape. The moderately well drained Glynwood and well drained Perrinton soils are in the higher positions on the landscape.

Typical pedon of Pewamo loam, 800 feet north and 2,200 feet east of the southwest corner of sec. 22, T. 5 N., R. 11 W., Gaines Township:

- Ap—0 to 10 inches; very dark grayish brown (10YR 3/2) loam, grayish brown (10YR 5/2) dry; few fine distinct dark yellowish brown (10YR 3/6) mottles; moderate medium angular blocky structure; friable; many fine and medium roots; about 2 percent pebbles; slightly acid; abrupt smooth boundary.
- A—10 to 16 inches; very dark gray (10YR 3/1) silty clay loam, grayish brown (10YR 5/2) dry; common fine faint dark gray (10YR 4/1) and black (N 2/0) and few fine distinct dark yellowish brown (10YR 4/6) mottles; weak fine angular blocky structure; friable;

common fine and medium roots; about 2 percent pebbles; slightly acid; abrupt wavy boundary.

Bg—16 to 19 inches; gray (5Y 6/1) silty clay loam; common medium prominent dark yellowish brown (10YR 4/6) and common medium prominent very dark gray (10YR 3/1) mottles; weak medium subangular blocky structure parting to weak very fine angular blocky; friable; few fine roots; very dark gray (10YR 3/1) root channels; about 2 percent pebbles; mildly alkaline; clear wavy boundary.

Btg—19 to 36 inches; gray (10YR 6/1) silty clay; common medium prominent yellowish brown (10YR 5/6) mottles; strong coarse subangular blocky structure parting to moderate fine angular blocky; firm; thin gray (5Y 6/1) clay films on faces of large peds; about 1 percent pebbles; mildly alkaline; clear smooth boundary.

Cg—36 to 60 inches; gray (5Y 6/1) silty clay loam; common medium and coarse prominent yellowish brown (10YR 5/6) mottles; massive; firm; about 1 percent pebbles; slight effervescence; moderately alkaline.

The thickness of the solum and the depth to free carbonates range from 28 to 40 inches. The content of pebbles is 0 to 5 percent throughout the profile. The solum is slightly acid to mildly alkaline. The thickness of the mollic epipedon ranges from 10 to 20 inches.

The A horizon has value of 2 or 3 and chroma of 1 or 2. It is dominantly loam, but the range includes silt loam, silty clay loam, and clay loam. The B horizon has hue of 10YR or 5Y, value of 4 to 6, and chroma of 1 or 2. It is silty clay, clay loam, or silty clay loam. The Cg horizon has hue of 10YR, 2.5Y, or 5Y, value of 4 to 7, and chroma of 1 or 2. It is silty clay loam or clay loam. It is mildly alkaline or moderately alkaline.

Pipestone Series

The Pipestone series consists of somewhat poorly drained, rapidly permeable soils on outwash plains, till plains, and sandy lake plains. These soils formed in sandy deposits. Slope ranges from 0 to 4 percent.

Pipestone soils are similar to Covert soils and are commonly adjacent to Covert, Granby, and Oakville soils. Covert soils are moderately well drained. Granby soils are poorly drained and are in the lower landscape positions. Oakville soils are well drained and are on the higher knolls and ridges.

Typical pedon of Pipestone sand, 0 to 4 percent slopes, 500 feet north and 1,850 feet west of the center of sec. 13, T. 9 N., R. 12 W., Sparta Township:

Ap—0 to 8 inches; black (10YR 2/1) sand, dark grayish brown (10YR 4/2) dry; weak fine granular structure; very friable; many fine roots; about 1 percent pebbles; strongly acid; abrupt smooth boundary.

E—8 to 11 inches; grayish brown (10YR 5/2) sand; common medium distinct dark gray (10YR 4/1) mottles; single grain; loose; about 1 percent pebbles; medium acid; abrupt broken boundary.

Bh1—11 to 14 inches; dark reddish brown (5YR 3/2) sand; common medium distinct dark brown (7.5YR 4/4) mottles; single grain; very friable; about 25 percent chunks of dark reddish brown (5YR 3/3) ortstein; about 1 percent pebbles; medium acid; clear wavy boundary.

Bh2—14 to 17 inches; dark reddish brown (5YR 2/2) sand; weak medium subangular blocky structure; very friable; about 25 percent chunks of dark reddish brown (5YR 3/3) ortstein; about 1 percent pebbles; strongly acid; clear wavy boundary.

Bh3—17 to 21 inches; dark reddish brown (5YR 3/3) sand; weak medium subangular blocky structure; very friable; about 1 percent pebbles; strongly acid; abrupt broken boundary.

Bs—21 to 24 inches; strong brown (7.5YR 4/6) sand; common medium distinct grayish brown (10YR 5/2) and strong brown (7.5YR 5/8) mottles; single grain; loose; medium acid; clear wavy boundary.

BC—24 to 48 inches; yellowish brown (10YR 5/4) sand; few medium distinct grayish brown (10YR 5/2) and common fine distinct yellowish brown (10YR 5/8) mottles; single grain; loose; medium acid; clear wavy boundary.

C—48 to 60 inches; brown (10YR 5/3) sand; common fine distinct strong brown (7.5YR 5/6) and light brownish gray (10YR 6/2) mottles; single grain; loose; thin stratum of yellowish brown (10YR 5/4) very fine sand at a depth of about 58 inches; about 10 percent pebbles; medium acid.

The solum ranges from 20 to 50 inches in thickness. The content of pebbles is 0 to 10 percent throughout the profile. Reaction ranges from very strongly acid to neutral throughout the profile.

The Ap horizon has hue of 10YR or 7.5YR, value of 2 to 4, and chroma of 1 or 2. The E horizon has hue of 10YR or 7.5YR, value of 5 to 7, and chroma of 1 to 3. The A and E horizons are dominantly sand, but the range includes fine sand. The B horizon has hue of 5YR, 7.5YR, or 10YR, value of 2 to 5, and chroma of 2 to 6. It is sand, fine sand, or loamy sand. The amount of ortstein commonly ranges from 0 to 30 percent of the surface area exposed in a vertical cut through this horizon. The BC horizon has hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 2 to 6. It is sand or fine sand. The C horizon also is sand or fine sand. It has hue of 10YR or 7.5YR, value of 5 to 7, and chroma of 2 to 6.

Plainfield Series

The Plainfield series consists of excessively drained, rapidly permeable soils on outwash plains, till plains,

moraines, and terraces. These soils formed in sandy deposits. Slope ranges from 0 to 45 percent.

Plainfield soils are similar to Chelsea and Oakville soils and are commonly adjacent to Chelsea, Marlette, Oshtemo, Tekenink, and Tedrow soils. Chelsea soils have thin bands of loamy sand in the lower part. Oakville soils are fine sand throughout. Marlette, Oshtemo, and Tekenink soils have more clay in the subsoil than the Plainfield soils. Tedrow soils are somewhat poorly drained and are in drainageways and in nearly level areas on the lower parts of the landscape.

Typical pedon of Plainfield sand, 6 to 12 percent slopes, 2,640 feet north and 400 feet west of the southeast corner of sec. 33, T. 8 N., R. 10 W., Cannon Township:

- Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) sand, brown (10YR 5/3) dry; weak medium granular structure; very friable; few fine roots; very strongly acid; abrupt smooth boundary.
- Bw—9 to 24 inches; strong brown (7.5YR 4/6) sand; weak medium subangular blocky structure; loose; about 2 percent pebbles; strongly acid; clear wavy boundary.
- BC—24 to 29 inches; strong brown (7.5YR 5/6) sand; single grain; loose; strongly acid; clear wavy boundary.
- C—29 to 60 inches; dark yellowish brown (10YR 5/6) sand; single grain; loose; strongly acid.

The solum ranges from 18 to 34 inches in thickness and from very strongly acid to neutral. The content of pebbles ranges from 0 to 15 percent throughout the profile.

The Ap or A horizon has value of 2 to 4 and chroma of 1 to 3. The B horizon has hue of 10YR or 7.5YR, value of 4 to 7, and chroma of 4 to 6. The C horizon has hue of 10YR or 7.5YR, value of 5 to 7, and chroma of 4 to 8. It ranges from very strongly acid to slightly acid.

Rimer Series

The Rimer series consists of somewhat poorly drained soils on till plains and outwash plains and in glacial drainageways. These soils formed in sandy and clayey deposits. Permeability is rapid in the upper part of the pedon and very slow in the lower part. Slope ranges from 0 to 4 percent.

Rimer soils are similar to Selfridge soils and are commonly adjacent to Blount, Oakville, and Tustin soils. Selfridge soils have less clay in the lower part than the Rimer soils. Blount soils do not have sand in the upper horizons. They are in positions on the landscape similar to those of the Rimer soils. Oakville and Tustin soils are in the higher positions on the landscape. Oakville soils are well drained and moderately well drained. They are sandy throughout. Tustin soils are well drained.

Typical pedon of Rimer loamy fine sand, 0 to 4 percent slopes, 1,782 feet south and 225 feet west of the northeast corner of sec. 13, T. 5 N., R. 11 W., Gaines Township:

- Ap—0 to 9 inches; very dark gray (10YR 3/1) loamy fine sand, light brownish gray (10YR 6/2) dry; weak fine subangular blocky structure; friable; many fine roots; about 2 percent pebbles; neutral; abrupt smooth boundary.
- E1—9 to 17 inches; brown (10YR 5/3) loamy fine sand; many medium distinct dark grayish brown (10YR 4/2) and few medium distinct strong brown (7.5YR 4/6) mottles; weak medium subangular blocky structure; very friable; few fine roots; about 3 percent pebbles; neutral; clear wavy boundary.
- E2—17 to 22 inches; dark brown (10YR 4/3) loamy fine sand; many coarse faint dark grayish brown (10YR 4/2) and few medium distinct strong brown (7.5YR 4/6) mottles; weak medium subangular blocky structure; very friable; about 3 percent pebbles; neutral; abrupt wavy boundary.
- Bt—22 to 32 inches; dark yellowish brown (10YR 4/4) sandy loam; common medium distinct strong brown (7.5YR 4/6) and dark grayish brown (10YR 4/2) mottles; moderate medium subangular blocky structure; friable; few iron and manganese stains; few thin patchy clay films on faces of peds and along root channels; about 2 percent pebbles; slightly acid; abrupt wavy boundary.
- 2Btg—32 to 43 inches; dark grayish brown (10YR 4/2) silty clay; common fine distinct greenish gray (5GY 6/1) and common medium prominent strong brown (7.5YR 5/6) mottles; moderate medium prismatic structure parting to weak medium subangular blocky; very firm; few iron and manganese stains; continuous dark gray (10YR 4/1) clay films on faces of peds; about 2 percent pebbles; neutral; diffuse wavy boundary.
- 2Cg—43 to 60 inches; grayish brown (10YR 5/2) silty clay; common medium distinct greenish gray (5GY 6/1) and many medium distinct yellowish brown (10YR 5/6) mottles; massive; very firm; few iron and manganese stains; few white (5Y 8/1) lime streaks; about 2 percent pebbles; strong effervescence; moderately alkaline.

The thickness of the solum and the depth to free carbonates range from 24 to 48 inches. The depth to the 2B horizon ranges from 20 to 32 inches. The content of pebbles is 0 to 3 percent throughout the profile. The solum is slightly acid to mildly alkaline.

The Ap horizon has value of 3 to 5 and chroma of 1 to 3. It is dominantly loamy fine sand, but the range includes fine sand. The E horizon has value of 4 or 5 and chroma of 3 or 4. It is loamy fine sand or fine sand. The Bt horizon has hue of 10YR or 7.5YR, value of 4 to

6, and chroma of 3 to 6. It is fine sandy loam or sandy loam. The 2Bt and 2C horizons are clay loam, silty clay loam, clay, or silty clay. The 2Bt horizon has value of 3 to 5 and chroma of 2 or 3. The 2C horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 2 or 3. It is mildly alkaline or moderately alkaline.

Saylesville Series

The Saylesville series consists of well drained, moderately permeable soils in old glacial lakebeds and on terraces. These soils formed in stratified silty, loamy, and clayey deposits. Slope ranges from 2 to 12 percent.

Saylesville soils are similar to Perrinton and Tustin soils and are commonly adjacent to Blount and Tustin soils. The subsurface layer of Perrinton soils interfingers into the next layer. Tustin soils are sandy in the upper part. Blount soils are somewhat poorly drained and are in the lower positions on the landscape.

Typical pedon of Saylesville silt loam, 6 to 12 percent slopes, 725 feet north and 1,000 feet west of the southeast corner of sec. 32, T. 7 N., R. 10 W., Ada Township:

- 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; many fine roots; medium acid; abrupt smooth boundary.
- Bt1—9 to 11 inches; dark brown (7.5YR 4/4) silty clay loam; weak medium platy structure parting to moderate fine angular blocky; firm; common fine roots; yellowish brown (10YR 5/6) silt coatings on faces of peds; medium acid; clear smooth boundary.
- Bt2—11 to 15 inches; dark brown (7.5YR 4/4) silty clay loam; weak very thick platy structure parting to moderate fine angular blocky; firm; common fine roots; thin continuous brown (7.5YR 5/4) clay films on faces of peds; soft manganese accumulations; medium acid; clear smooth boundary.
- Bt3—15 to 20 inches; dark brown (7.5YR 4/4) silty clay; moderate fine angular blocky structure; firm; few fine roots; thin continuous brown (7.5YR 5/4) clay films on faces of peds; medium acid; clear smooth boundary.
- BC—20 to 30 inches; dark brown (7.5YR 4/4) silty clay loam; weak medium subangular blocky structure; firm; few fine roots; dark yellowish brown silt coatings on faces of peds; slightly acid; clear smooth boundary.
- C—30 to 60 inches; dark yellowish brown (10YR 4/4) silty clay loam; massive; firm; 1/2- to 2-inch strata of yellowish brown (10YR 5/4) silt loam making about 40 percent of the horizon; white (N 8/0) lime streaks; strong brown (7.5YR 5/8) iron stains below a depth of 48 inches; strong effervescence; moderately alkaline.

The solum ranges from 20 to 40 inches in thickness. It is medium acid to mildly alkaline. In some pedons it has thin strata of silty or loamy material. Free carbonates typically are only in the C horizon, but in some pedons they are also in the lower part of the B horizon.

The Ap horizon has value of 4 or 5. Some pedons have an E horizon. The Bt and C horizons have hue of 10YR or 7.5YR, value of 3 to 5, and chroma of 3 or 4. The Bt horizon is silty clay loam or silty clay. The C horizon is silty clay loam or silty clay that has thin layers of silt loam or very fine sandy loam.

Scalley Series

The Scalley series consists of well drained soils on moraines and till plains. These soils formed in loamy deposits over sandy deposits. Permeability is moderate in the upper part of the pedon and rapid in the lower part. Slope ranges from 2 to 18 percent.

Scalley soils are similar to Marlette, Tekenink, and Woodbeck soils and are commonly adjacent to Marlette, Oshtemo, and Spinks soils. Marlette soils are loamy throughout. Tekenink soils have less clay in the subsoil than the Scalley soils. Woodbeck soils have more clay in the upper part than the Scalley soils. Oshtemo and Spinks soils have less clay throughout than the Scalley soils. They are in landscape positions similar to or lower than those of the Scalley soils.

Typical pedon of Scalley sandy loam, 2 to 6 percent slopes, 200 feet south and 50 feet west of the northeast corner of sec. 16, T. 10 N., R. 9 W., Spencer Township:

- Ap—0 to 8 inches; dark grayish brown (10YR 4/2) sandy loam, light brownish gray (10YR 6/2) dry; weak fine granular structure; friable; many fine roots; about 5 percent pebbles; slightly acid; abrupt smooth boundary.
- E1—8 to 12 inches; yellowish brown (10YR 5/6) sandy loam; weak medium subangular blocky structure; friable; few fine and medium roots; about 5 percent pebbles; slightly acid; gradual wavy boundary.
- E2—12 to 18 inches; brown (10YR 5/3) sandy loam; moderate coarse subangular blocky structure; friable; common fine and medium roots; about 5 percent pebbles; slightly acid; clear wavy boundary.
- B/E—18 to 25 inches; dark brown (7.5YR 4/4) loam (Bt); moderate fine angular blocky structure; friable; yellowish brown (10YR 5/4) sandy loam coatings (E), more than 2 millimeters thick, on faces of peds and along root and worm channels, light gray (10YR 7/1) dry; few fine roots; thin discontinuous clay films on faces of peds and in pores and channels; about 5 percent pebbles; slightly acid; gradual wavy boundary.
- Bt—25 to 38 inches; strong brown (7.5YR 4/6) clay loam; moderate medium angular blocky structure; firm; few fine roots; thin continuous dark brown

(7.5YR 4/4) clay films on faces of peds; about 3 percent pebbles; medium acid; abrupt wavy boundary.

2C—38 to 60 inches; light yellowish brown (10YR 6/4), stratified fine sand; single grain; loose; bands of strong brown (7.5YR 5/6) loamy fine sand; massive; very friable; medium acid.

The depth to the sandy 2C horizon ranges from 22 to 40 inches. The content of pebbles ranges from 0 to 10 percent in the A and Bt horizons and from 0 to 35 percent in the 2C horizon. The solum is medium acid to neutral.

The Ap horizon has hue of 10YR or 7.5YR, value of 3 or 4 (6 dry), and chroma of 2 to 4. It is dominantly sandy loam, but the range includes fine sandy loam and loam. The E horizon has hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 2 to 6. It is sandy loam, fine sandy loam, or loam. The E part of the E/B or B/E horizon has the colors and textures characteristic of the E horizon. The Bt horizon has hue of 10YR, 7.5YR, 5YR, value of 4 or 5, and chroma of 3 to 6. It is loam, clay loam, or silty clay loam.

Some pedons have a thin C horizon of loam or clay loam above the sandy 2C horizon. The 2C horizon has hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 2 to 6. It is sand, fine sand, loamy sand, loamy fine sand, or stratified sand and loamy sand. It ranges from medium acid to mildly alkaline.

Sebewa Series

The Sebewa series consists of poorly drained soils on outwash plains, terraces, and valley trains. These soils formed in loamy and sandy deposits. Permeability is moderate in the upper part of the pedon and rapid in the lower part. Slope is 0 to 2 percent.

Sebewa soils are similar to Colwood and Pewamo soils and are commonly adjacent to Matherton soils. Colwood soils do not have an argillic horizon. Pewamo soils contain more clay than the Sebewa soils. Matherton soils are somewhat poorly drained and are in the higher landscape positions.

Typical pedon of Sebewa loam, 600 feet north and 2,350 feet west of the southeast corner of sec. 4, T. 9 N., R. 12 W., Sparta Township:

Ap—0 to 10 inches; very dark gray (10YR 3/1) loam, dark grayish brown (10YR 4/2) dry; moderate medium granular structure; friable; many fine roots; mildly alkaline; abrupt smooth boundary.

Btg1—10 to 16 inches; gray (10YR 5/1) clay loam; many fine prominent strong brown (7.5YR 4/6) and common fine faint dark gray (10YR 4/1) mottles; moderate medium subangular blocky structure; firm; common fine roots; thin clay films on faces of peds; about 1 percent pebbles; mildly alkaline; clear wavy boundary.

Btg2—16 to 24 inches; dark gray (10YR 4/1) clay loam; few fine prominent brownish yellow (10YR 6/6) mottles; moderate medium subangular blocky structure; firm; few fine roots; thin clay films on faces of peds; about 1 percent pebbles; mildly alkaline; clear wavy boundary.

Btg3—24 to 38 inches; dark gray (10YR 4/1) sandy clay loam; weak medium subangular blocky structure; firm; about 7 percent pebbles; slight effervescence; mildly alkaline; gradual wavy boundary.

2Cg—38 to 60 inches; grayish brown (10YR 5/2) gravelly sand; few medium distinct light yellowish brown (10YR 6/4) mottles; single grain; loose; about 15 percent pebbles; thin strata of dark gray (10YR 4/1) silt loam and very fine sand; strong effervescence; moderately alkaline.

The solum ranges from 20 to 40 inches in thickness. It is slightly acid to mildly alkaline. The depth to free carbonates ranges from 18 to 36 inches. The content of pebbles ranges from 0 to 10 percent in the A horizon and from 5 to 25 percent in the B horizon. The mollic epipedon is 10 to 14 inches thick.

The A horizon has value of 2 or 3 and chroma of 1 or 2. It is dominantly loam, but the range includes fine sandy loam. The B horizon has hue of 10YR, 2.5Y, or 5Y, value of 4 to 6, and chroma of 1 or 2. It is gravelly clay loam, loam, sandy clay loam, or clay loam. The 2C horizon has hue of 10YR, 2.5Y, or 5Y, value of 5 or 6, and chroma of 1 or 2. It is mildly alkaline or moderately alkaline. It is gravelly sand or very gravelly sand. The content of pebbles and cobbles in this horizon ranges from 15 to 60 percent.

Selfridge Series

The Selfridge series consists of somewhat poorly drained soils on till plains and moraines. These soils formed in sandy and loamy deposits. Permeability is rapid in the upper part of the pedon and moderately slow in the lower part. Slope ranges from 0 to 4 percent.

Selfridge soils are similar to Belleville, Metea, Okee, and Rimer soils and are commonly adjacent to Belleville, Capac, and Metea soils. Belleville soils are poorly drained and are in the lower positions on the landscape. Metea and Okee soils are well drained. Also, Okee soils have less clay in the lower part than the Selfridge soils. Rimer soils are finer textured in the lower part than the Selfridge soils. Capac soils do not have sandy material in the upper part of the solum. They are in positions on the landscape similar to those of the Selfridge soils.

Typical pedon of Selfridge loamy sand, 0 to 4 percent slopes, 465 feet south and 125 feet west of the northeast corner of sec. 25, T. 8 N., R. 10 W., Cannon Township:

- Ap—0 to 12 inches; dark brown (10YR 3/3) loamy sand, pale brown (10YR 6/3) dry; few fine distinct strong brown (7.5YR 5/6) mottles; moderate fine granular structure; very friable; many fine roots; about 2 percent pebbles; neutral; abrupt smooth boundary.
- BE—12 to 22 inches; yellowish brown (10YR 5/4) loamy sand; common fine prominent light gray (2.5Y 7/2) and common fine distinct strong brown (7.5YR 5/6) mottles; weak fine subangular blocky structure; very friable; few fine roots; about 2 percent pebbles; neutral; gradual wavy boundary.
- Bt1—22 to 30 inches; dark yellowish brown (10YR 4/4) sandy loam; common fine distinct light brownish gray (10YR 6/2) and strong brown (7.5YR 5/8) mottles; moderate fine subangular blocky structure; friable; few fine roots; clay coating and bridging sand grains; about 5 percent pebbles; mildly alkaline; clear wavy boundary.
- 2Bt2—30 to 40 inches; brown (10YR 5/3) clay loam; common medium distinct yellowish brown (10YR 5/6) and common fine prominent light gray (5Y 7/1) mottles; weak medium subangular blocky structure parting to strong fine angular blocky; firm; thin discontinuous clay films on faces of peds; common fine distinct very dark grayish brown (10YR 3/2) manganese accumulations; about 3 percent pebbles; mildly alkaline; gradual wavy boundary.
- 2C—40 to 60 inches; pinkish gray (7.5YR 6/2) loam; common fine distinct yellowish brown (10YR 5/6) and gray (5Y 6/1) mottles; massive; firm; about 2 percent pebbles; strong effervescence; moderately alkaline.

The thickness of the solum and the depth to free carbonates range from 24 to 40 inches. The content of pebbles in the solum ranges from 0 to 10 percent. The solum is medium acid to mildly alkaline.

The Ap horizon has value of 2 or 3 and chroma of 1 to 3. It is loamy sand or sand. The Bt horizon has hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 3 or 4. It is sandy loam or loam. The 2Bt and 2C horizons are loam, clay loam, or silty clay loam. The 2Bt horizon has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 1 to 3. The 2C horizon has hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 1 to 3. It is mildly alkaline or moderately alkaline.

Shoals Series

The Shoals series consists of somewhat poorly drained, moderately permeable soils on flood plains. These soils formed in loamy alluvial deposits. Slope is 0 to 2 percent.

Shoals soils are similar to Walkkill soils and are commonly adjacent to Abscota, Landes, and Sloan soils. Walkkill soils are very poorly drained. They have organic horizons in the lower part. Abscota soils are well drained and are in the highest positions on the flood plains.

Landes soils are moderately well drained and are in the slightly higher positions on the flood plains. Sloan soils are very poorly drained and are in the lowest positions, generally next to waterways.

Typical pedon of Shoals loam, 1,790 feet west of the southeast corner of sec. 15, T. 6 N., R. 11 W., in the city of Kentwood:

- Ap—0 to 8 inches; dark grayish brown (10YR 4/2) loam, light brownish gray (10YR 6/2) dry; moderate medium granular structure; friable; few fine roots; neutral; abrupt smooth boundary.
- C—8 to 16 inches; brown (10YR 5/3) loam; common coarse faint light brownish gray (10YR 6/2) mottles; weak medium subangular blocky structure; friable; slightly acid; clear wavy boundary.
- Cg1—16 to 30 inches; grayish brown (10YR 5/2) loam; common medium distinct dark brown (7.5YR 4/4) mottles; moderate medium subangular blocky structure; friable; neutral; clear wavy boundary.
- Cg2—30 to 60 inches; light brownish gray (10YR 6/2) loam; many medium distinct dark gray (10YR 4/1) and few medium prominent brownish yellow (10YR 6/8) mottles; weak coarse subangular blocky structure; friable; very dark grayish brown (10YR 3/2) organic stains; mildly alkaline.

The control section is slightly acid to mildly alkaline. Below a depth of 40 inches, reaction ranges to moderately alkaline.

The Ap horizon has value of 4 or 5. It is dominantly loam, but the range includes silt loam. The C horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 2 or 3. It is loam, silt loam, or sandy loam.

Sloan Series

The Sloan series consists of very poorly drained, moderately permeable or moderately slowly permeable soils on flood plains. These soils formed in loamy alluvial deposits. Slope is 0 to 2 percent.

Sloan soils are similar to Cohoctah and Colwood soils and are commonly adjacent to Landes and Shoal soils. Cohoctah soils are coarser textured throughout than the Sloan soils. Colwood soils do not irregularly decrease in content of organic matter with increasing depth. Landes and Shoals soils are in the slightly higher landscape positions. Landes soils are moderately well drained, and Shoals soils are somewhat poorly drained.

Typical pedon of Sloan loam, 594 feet south and 2,150 feet east of the northwest corner of sec. 7, T. 7 N., R. 10 W., Ada Township:

- A1—0 to 10 inches; very dark gray (10YR 3/1) loam, grayish brown (10YR 5/2) dry; weak medium granular structure; friable; common fine roots; neutral; gradual wavy boundary.

A2—10 to 16 inches; very dark grayish brown (10YR 3/2) loam; grayish brown (10YR 5/2) dry; common medium faint dark gray (10YR 4/1) mottles; weak medium subangular blocky structure; friable; common fine roots; neutral; gradual wavy boundary.

Cg1—16 to 40 inches; gray (5Y 5/1) stratified loam and silty clay loam; common medium prominent yellowish brown (10YR 5/8) mottles; massive; firm; common medium distinct very dark gray (10YR 3/1) organic stains; few very thin strata of sand; neutral; gradual wavy boundary.

Cg2—40 to 60 inches; gray (5Y 5/1) stratified loam and silty clay loam; many coarse prominent yellowish brown (10YR 5/8) mottles; massive; firm; common medium distinct very dark gray (10YR 3/1) organic stains; few thin strata of fine sandy loam; neutral.

The control section ranges from slightly acid to moderately alkaline. The mollic epipedon is 10 to 16 inches thick.

The A horizon has hue of 10YR or 2.5Y or is neutral in hue. It has value of 2 or 3 and chroma of 0 to 2. The C horizon has value of 4 or 5 and chroma of 1 or 2. It is stratified loam, silt loam, sandy loam, clay loam, or silty clay loam.

Spinks Series

The Spinks series consists of well drained, moderately rapidly permeable soils on moraines, till plains, outwash plains, and terraces. These soils formed in sandy deposits. Slope ranges from 0 to 25 percent.

Spinks soils are similar to Arkport, Chelsea, and Thetford soils and are commonly adjacent to Metea, Oshtemo, Plainfield, and Thetford soils. Arkport and Oshtemo soils have more clay in the subsoil than the Spinks soils. Chelsea soils have fewer loamy sand bands than the Spinks soils. Thetford soils are somewhat poorly drained and nearly level and are in the lower landscape positions and in drainageways. Metea soils are commonly in the higher or lower landscape positions. They have loamy underlying material. Plainfield soils do not have bands of finer textured material. They are in landscape positions similar to those of the Spinks soils.

Typical pedon of Spinks loamy sand, 0 to 6 percent slopes, 880 feet south and 260 feet west of the northeast corner of sec. 23, T. 5 N., R. 10 W., Caledonia Township:

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

E—10 to 16 inches; yellowish brown (10YR 5/6) loamy sand; weak medium subangular blocky structure; very friable common fine roots; neutral; abrupt wavy boundary.

E&Bt—16 to 60 inches; yellowish brown (10YR 5/4) sand (E); very weak medium subangular blocky structure; loose; few fine roots; lamellae of dark brown (7.5YR 4/4) loamy sand (Bt); moderate medium subangular blocky structure; friable; common fine roots; clay bridging and coating sand grains; slightly acid.

The solum ranges from 36 to more than 60 inches in thickness and from strongly acid to neutral. The content of pebbles and cobbles ranges from 0 to 15 percent in the solum.

The Ap horizon has value of 3 to 5 and chroma of 2 to 4. The E horizon has value of 4 to 6 and chroma of 3 to 6. The A and E horizons are dominantly loamy sand, but the range includes fine sand and sand. The B horizon occurs as lamellae 1/16 inch to 5 inches thick and 5 to 10 inches apart. The depth to the first lamellae ranges from 15 to 36 inches. The lamellae have hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 6. They are loamy sand, loamy fine sand, or sandy loam.

Teasdale Series

The Teasdale series consists of somewhat poorly drained, moderately permeable soils on till plains and moraines. These soils formed in loamy and sandy deposits. Slope ranges from 0 to 4 percent.

Teasdale soils are similar to Tekenink soils and are commonly adjacent to Lamson and Tekenink soils. Tekenink soils are well drained. Lamson soils are poorly drained and are in the lower landscape positions or on broad flats.

Typical pedon of Teasdale fine sandy loam, 0 to 4 percent slopes, 2,380 feet north and 600 feet west of the center of sec. 10, T. 9 N., R. 10 W., Courtland Township:

Ap—0 to 9 inches; dark brown (10YR 3/3) fine sandy loam, brown (10YR 5/3) dry; moderate medium granular structure; friable; slightly acid; abrupt smooth boundary.

E1—9 to 16 inches; yellowish brown (10YR 5/4) fine sandy loam; common medium distinct yellowish red (5YR 5/8) and few fine faint light yellowish brown (10YR 6/4) mottles; moderate fine subangular blocky structure; friable; about 3 percent pebbles; slightly acid; clear wavy boundary.

E2—16 to 21 inches; light yellowish brown (10YR 6/4) loamy fine sand, very pale brown (10YR 7/3) dry; few medium distinct strong brown (7.5YR 5/6) mottles; moderate medium platy structure; very friable; about 3 percent pebbles; slightly acid; clear wavy boundary.

B/E—21 to 26 inches; strong brown (7.5YR 4/6) loam (Bt); common medium distinct light brown (7.5YR 6/4) mottles; moderate coarse subangular blocky

structure; friable; light yellowish brown (10YR 6/4) loamy fine sand coatings (E), 2 to 5 millimeters thick, on faces of peds, light gray (10YR 7/2) dry; about 3 percent pebbles; neutral; clear wavy boundary.

Bt—26 to 31 inches; strong brown (7.5YR 4/6) loam; common medium distinct brown (7.5YR 5/2) mottles; moderate medium subangular blocky structure; friable; thin discontinuous clay films on faces of peds; about 3 percent pebbles; neutral; clear smooth boundary.

BC—31 to 56 inches; yellowish brown (10YR 5/4) fine sandy loam; few medium faint yellowish brown (10YR 5/6) mottles; massive; friable; about 3 percent pebbles; neutral; gradual wavy boundary.

C—56 to 60 inches; yellowish brown (10YR 5/4) fine sandy loam; massive; friable; about 3 percent pebbles; slight effervescence; mildly alkaline.

The solum ranges from 40 to 60 inches in thickness. It is medium acid to neutral. The content of pebbles ranges from 2 to 8 percent throughout the profile.

The Ap horizon has value of 3 or 4 and chroma of 2 or 3. Some pedons have an E horizon. The B/E horizon has properties of both the E and Bt horizons. The Bt horizon has value of 4 or 5 and chroma of 4 to 6. It is fine sandy loam, sandy loam, or loam. The C horizon has value of 4 or 5 and chroma of 4 to 6. It is sandy loam or fine sandy loam. It is neutral or mildly alkaline.

Tedrow Series

The Tedrow series consists of somewhat poorly drained, rapidly permeable soils on outwash plains, in glacial drainageways, and on till plains. These soils formed in sandy deposits. Slope ranges from 0 to 4 percent.

Tedrow soils are similar to Alganssee, Oakville, and Plainfield soils and are commonly adjacent to Granby and Oakville soils. Alganssee soils formed in stratified alluvium. Oakville soils are well drained or moderately well drained. Plainfield soils are excessively drained. Granby soils are poorly drained and are in the lower landscape positions.

Typical pedon of Tedrow loamy fine sand, 0 to 4 percent slopes, 1,500 feet south and 100 feet west of the northeast corner of sec. 9, T. 5 N., R. 12 W., Byron Township:

Ap—0 to 7 inches; very dark grayish brown (10YR 3/2) loamy fine sand, brown (10YR 5/3) dry; weak medium granular structure; very friable; many fine roots; medium acid; abrupt smooth boundary.

Bw1—7 to 13 inches; yellowish brown (10YR 5/6) loamy fine sand; weak fine subangular blocky structure; very friable; few fine roots; medium acid; clear wavy boundary.

Bw2—13 to 30 inches; yellowish brown (10YR 5/6) fine sand; few fine distinct strong brown (7.5YR 5/8) and common medium prominent grayish brown (10YR 5/2) mottles; single grain; loose; medium acid; clear wavy boundary.

C1—30 to 51 inches; pale brown (10YR 6/3) fine sand; common medium distinct grayish brown (10YR 5/2) and few medium distinct brownish yellow (10YR 6/6) mottles; single grain; loose; medium acid; clear wavy boundary.

C2—51 to 60 inches; light yellowish brown (10YR 6/4) fine sand; common medium distinct yellowish brown (10YR 5/6), common medium distinct light brownish gray (10YR 6/2), and few fine prominent strong brown (7.5YR 5/8) mottles; single grain; loose; slightly acid.

The solum ranges from 24 to 40 inches in thickness. Reaction is medium acid to neutral throughout the profile.

The Ap horizon has chroma of 1 to 3. It is dominantly loamy fine sand, but the range includes fine sand and loamy sand. The B horizon has value of 4 to 6 and chroma of 3 to 6. It is loamy fine sand, fine sand, loamy sand, or sand. The C horizon has value of 4 to 6 and chroma of 1 to 4. It is sand or fine sand.

Tekenink Series

The Tekenink series consists of well drained, moderately permeable soils on till plains and moraines. These soils formed in loamy material. Slope ranges from 0 to 40 percent.

These soils are taxadjuncts to the Tekenink series because they have tongues of albic material penetrating the B horizon. This difference, however, does not alter the usefulness or behavior of the soils.

Tekenink soils are similar to Marlette, Scalley, and Teasdale soils and are commonly adjacent to Okee and Teasdale soils. Marlette and Scalley soils have more clay in the subsoil than the Tekenink soils. Teasdale soils are somewhat poorly drained. Okee soils are sandy in the upper part. They are in positions on the landscape similar to or lower than those of the Tekenink soils.

Typical pedon of Tekenink fine sandy loam, 2 to 6 percent slopes, 1,815 feet north and 339 feet west of the southeast corner of sec. 26, T. 8 N., R. 10 W., Cannon Township:

Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) fine sandy loam, light brownish gray (10YR 6/2) dry; weak fine granular structure; very friable; many fine roots; about 3 percent pebbles and 3 percent cobblestones; slightly acid; abrupt smooth boundary.

E—9 to 12 inches; yellowish brown (10YR 5/4) fine sandy loam; moderate medium subangular blocky structure; very friable; many fine and medium roots;

about 3 percent pebbles and 3 percent cobblestones; slightly acid; abrupt wavy boundary.

E/B—12 to 16 inches; pale brown (10YR 6/3) fine sandy loam (E); strong brown (7.5YR 5/6) fine sandy loam (Bt); weak thick platy structure parting to moderate medium subangular blocky; friable; common fine roots; about 3 percent pebbles and 3 percent cobblestones; slightly acid; clear wavy boundary.

B/E—16 to 30 inches; strong brown (7.5YR 5/6) fine sandy loam (Bt); pale brown (10YR 6/3) loamy fine sand (E) interfingering between the faces of peds; weak medium subangular blocky structure; firm; common fine roots; about 3 percent pebbles and 3 percent cobblestones; strongly acid; clear wavy boundary.

Bt1—30 to 41 inches; brown (7.5YR 4/4) fine sandy loam; moderate medium subangular blocky structure; friable; few fine roots; about 3 percent pebbles and 3 percent cobblestones; thin discontinuous clay films on faces of peds; pale brown (10YR 6/3) silt and very fine sand coatings on faces of some peds; strongly acid; gradual wavy boundary.

Bt2—41 to 54 inches; brown (7.5YR 4/4) fine sandy loam; moderate coarse subangular blocky structure; friable; few fine roots; about 3 percent pebbles and 3 percent cobblestones; thin dark yellowish brown (10YR 4/4) clay films on faces of peds; medium acid; gradual wavy boundary.

BC—54 to 59 inches; brown (7.5YR 4/4) fine sandy loam; weak medium subangular blocky structure; friable; few fine roots; about 3 percent pebbles and 3 percent cobblestones; neutral; abrupt wavy boundary.

C—59 to 60 inches; yellowish brown (10YR 5/4) fine sandy loam; weak coarse subangular blocky structure; friable; about 3 percent pebbles and 3 percent cobblestones; strong effervescence; moderately alkaline.

The thickness of the solum ranges from 35 to more than 60 inches and corresponds to the depth to free carbonates. The content of pebbles ranges from 2 to 15 percent throughout the profile. The solum is strongly acid to slightly acid.

The Ap horizon has value of 3 or 4 and chroma of 2 to 4. The E horizon has value of 4 to 7 and chroma of 2 to 4. The A and E horizons are fine sandy loam, loamy fine sand, or sandy loam. The E/B and B/E horizons have the colors and textures characteristic of the E and B horizons. The Bt horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 3 to 6. It is fine sandy loam, sandy loam, or sandy clay loam. The C horizon has value of 4 to 6 and chroma of 2 to 4. It is sandy loam, fine sandy loam, loamy fine sand, or loamy sand.

Thetford Series

The Thetford series consists of somewhat poorly drained, moderately rapidly permeable soils on outwash plains, in glacial drainageways, and on terraces. These soils formed in sandy material. Slope ranges from 0 to 3 percent.

Thetford soils are similar to Spinks soils and are commonly adjacent to Granby, Selfridge, Spinks, and Wasepi series. Spinks soils are well drained. Granby soils are poorly drained and are in drainageways and the lower landscape positions. They have a dark surface layer. Selfridge and Wasepi soils are in positions on the landscape similar to those of Thetford soils. Selfridge soils are underlain by loamy material at a depth of 20 to 40 inches. Wasepi soils do not have lamellae.

Typical pedon of Thetford loamy sand, 0 to 3 percent slopes, 1,100 feet north and 700 feet west of the southeast corner of sec. 3, T. 5 N., R. 12 W., Byron Township:

Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) loamy sand, dark grayish brown (10YR 4/2) dry; weak fine granular structure; very friable; many fine roots; slightly acid; abrupt smooth boundary.

E1—9 to 16 inches; yellowish brown (10YR 5/4) sand; common medium faint grayish brown (10YR 5/2) mottles; single grain; loose; few fine roots; medium acid; clear wavy boundary.

E2—16 to 22 inches; light yellowish brown (10YR 6/4) sand; common fine distinct yellowish brown (10YR 5/8) and common medium distinct grayish brown (10YR 5/2) mottles; single grain; loose; medium acid; clear wavy boundary.

E&Bt—22 to 60 inches; pale brown (10YR 6/3) sand (E); common medium faint gray (10YR 5/1) and few medium distinct yellowish brown (10YR 5/6) mottles; single grain; loose; lamellae of dark yellowish brown (10YR 4/4) and brown (7.5YR 5/4) loamy sand (Bt); few fine distinct gray (10YR 6/1) and common medium faint dark grayish brown (10YR 4/2) mottles; weak coarse subangular blocky structure in the thicker lamellae; very friable; slightly acid.

The solum ranges from 35 to more than 60 inches in thickness. It is medium acid to neutral. The content of pebbles is 0 to 5 percent in the solum.

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 3 to 6. It is sand, loamy sand, fine sand, or loamy fine sand. The E part of the E&Bt horizon also is sand, loamy sand, fine sand, or loamy fine sand. It has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 3 or 4. The Bt part has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 to 6. It is loamy sand, loamy fine sand, or sandy loam. The C horizon, if it occurs, has hue of 10YR, value of 5 or 6, and chroma of 2 to 4. It is sand or fine sand.

Tuscola Series

The Tuscola series consists of moderately well drained, moderately permeable soils in dissected glacial lake basins and on deltas on moraines. These soils formed in silty deposits. Slope ranges from 2 to 12 percent.

These soils contain more silt and less sand than is definitive for the Tuscola series. This difference, however, does not alter the usefulness or behavior of the soils.

Tuscola soils are similar to Glynwood and Kalamazoo soils and are commonly adjacent to Kibbie and Marlette soils. Glynwood and Marlette soils have more clay in the subsoil than the Tuscola soils. Also, Marlette soils are in higher landscape positions. Kalamazoo soils are well drained. They are coarser textured in the lower part than the Tuscola soils. Kibbie soils are somewhat poorly drained and are in the lower landscape positions and in drainageways.

Typical pedon of Tuscola silt loam, 6 to 12 percent slopes, 2,440 feet north and 2,500 feet east of the southwest corner of sec. 1, T. 7 N., R. 11 W., Grand Rapids Township:

- Ap—0 to 7 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; weak very thick platy structure parting to moderate medium granular; friable; many fine and medium roots; medium acid; abrupt smooth boundary.
- Bt1—7 to 11 inches; strong brown (7.5YR 5/6) silty clay loam; strong medium angular blocky structure; friable; common very fine roots; many very fine continuous vertical tubular pores; thin discontinuous brown (7.5YR 5/4) clay films on faces of peds; very thin pale brown (10YR 6/3) silt coatings on faces of peds; common dark yellowish brown (10YR 4/4) worm casts; medium acid; clear smooth boundary.
- Bt2—11 to 21 inches; strong brown (7.5YR 5/6) silty clay loam; common fine faint strong brown (7.5YR 5/8) and few fine distinct dark grayish brown (10YR 4/2) mottles; strong medium angular blocky structure; friable; common very fine roots; many very fine continuous vertical tubular pores; thin continuous brown (7.5YR 5/4) clay films on faces of peds; common fine black (N 2/0) manganese accumulations; common dark yellowish brown (10YR 4/4) worm casts; strongly acid; clear wavy boundary.
- Bt3—21 to 31 inches; strong brown (7.5YR 5/6) silt loam; few fine faint yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; friable; common very fine roots; many very fine continuous vertical tubular pores; thin continuous brown (7.5YR 5/4) clay films on faces of peds; common fine black (N 2/0) manganese accumulations; common dark yellowish brown (10YR 4/4) worm casts; medium acid; clear wavy boundary.

- BC—31 to 38 inches; light yellowish brown (10YR 6/4) silt loam; few fine faint yellowish brown (10YR 5/6) and few fine distinct grayish brown (10YR 5/2) mottles; moderate medium subangular blocky structure; friable; common very fine roots; many very fine continuous vertical tubular pores; thin discontinuous brown (7.5YR 5/4) clay films on faces of peds; common fine black (N 2/0) manganese accumulations; neutral; gradual wavy boundary.
- C—38 to 60 inches; brown (7.5YR 5/4) silt loam stratified with thin layers of yellowish brown (10YR 5/4) silt; few fine distinct grayish brown (10YR 5/2) and few fine faint yellowish brown (10YR 5/6) mottles; massive; friable; strong effervescence; mildly alkaline.

The thickness of the solum and the depth to free carbonates range from 30 to 50 inches. The solum ranges from strongly acid to mildly alkaline.

The Ap horizon has value of 3 or 4 and chroma of 2 or 3. A and E horizons generally occur in wooded areas. The A horizon has value of 2 or 3 and chroma of 1 or 2. The E horizon has value of 5 or 6 and chroma of 3 or 4. The Bt horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 3 to 6. It is silty clay loam or silt loam. The C horizon has hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 1 to 4. It is stratified silt loam, silty clay loam, silt, loam, fine sandy loam, very fine sand, and fine sand.

Tustin Series

The Tustin series consists of well drained soils on till plains and lake plains. These soils formed in sandy, silty, and loamy deposits. Permeability is rapid in the upper part of the pedon and slow in the lower part. Slope ranges from 2 to 12 percent.

Tustin soils are similar to Metea and Saylesville soils and are commonly adjacent to Blount and Rimer soils. Metea soils have less clay in the subsoil than the Tustin soils. Blount and Saylesville soils do not have sandy material in the solum. Blount and Rimer soils are somewhat poorly drained and are in the lower landscape positions.

Typical pedon of Tustin loamy fine sand, 2 to 6 percent slopes, 160 feet south and 1,440 feet west of the northeast corner of sec. 35, T. 5 N., R. 12 W., Byron Township:

- Ap—0 to 8 inches; dark grayish brown (10YR 4/2) loamy fine sand, light brownish gray (10YR 6/2) dry; weak medium granular structure; very friable; many fine roots; slightly acid; abrupt smooth boundary.
- Bw—8 to 22 inches; yellowish brown (10YR 5/4) loamy fine sand; weak coarse subangular blocky structure; very friable; medium acid; clear wavy boundary.

2Bt1—22 to 31 inches; strong brown (7.5YR 4/6) clay loam; strong medium subangular blocky structure; firm; thin continuous light brownish gray (10YR 6/2) silt coatings on faces of peds; slightly acid; clear wavy boundary.

2Bt2—31 to 43 inches; brown (7.5YR 4/4) silty clay loam; thin discontinuous grayish brown (10YR 5/2) silt coatings on faces of peds; strong medium angular blocky structure; very firm; thin continuous clay films on faces of peds; neutral; clear wavy boundary.

2C—43 to 60 inches; brown (7.5YR 5/4) silty clay loam; few fine distinct grayish brown (10YR 5/2) mottles; weak medium angular blocky structure; firm; strong effervescence; mildly alkaline.

The thickness of the solum and the depth to free carbonates range from 30 to 50 inches. The thickness of the sandy upper part of the solum ranges from 20 to 36 inches. The content of pebbles is 0 to 5 percent throughout the profile. The solum is medium acid to neutral.

The Ap horizon has value of 3 or 4 and chroma of 2 or 3. The A horizon is dominantly loamy fine sand, but the range includes loamy sand and fine sand. The 2Bt horizon has value of 4 or 5 and chroma of 3 to 6. It is clay loam, silty clay loam, or clay. The 2C horizon has value and chroma of 4 or 5. It is silty clay loam, silty clay, or clay. It is mildly alkaline or moderately alkaline.

Walkkill Series

The Walkkill series consists of very poorly drained soils in upland depressions, on flood plains, and around the margins of organic areas adjacent to uplands. These soils formed in silty, loamy, and organic material. Permeability is moderate in the upper part of the pedon and moderately slow to moderately rapid in the lower part.

Walkkill soils are similar to Shoals soils and are commonly adjacent to Capac, Houghton, Marlette, and Sloan soils. Shoals and Sloan soils formed in alluvial deposits. They are in positions on the landscape similar to those of the Walkkill soils. Capac soils are somewhat poorly drained and are in the higher positions on the landscape. Houghton soils do not have mineral horizons. They are in positions on the landscape similar to those of the Walkkill soils. Marlette soils are well drained or moderately well drained and are in the higher positions on the landscape.

Typical pedon of Walkkill silt loam, 1,280 feet north and 1,370 feet east of the southwest corner of sec. 10, T. 9 N., R. 12 W., Sparta Township:

Ap—0 to 12 inches; very dark brown (10YR 2/2) silt loam, grayish brown (10YR 5/2) dry; moderate coarse granular structure; friable; mildly alkaline; abrupt smooth boundary.

Cg1—12 to 15 inches; dark grayish brown (10YR 4/2) silt loam; many fine prominent yellowish red (5YR 5/8) mottles; moderate medium granular structure; friable; very thin strata of grayish brown (10YR 5/2) sand; mildly alkaline; clear wavy boundary.

Cg2—15 to 26 inches; very dark grayish brown (10YR 3/2) silt loam; moderate medium subangular blocky structure; friable; thin strata of strong brown (7.5YR 4/6) woody fragments; mildly alkaline; clear wavy boundary.

Cg3—26 to 35 inches; very dark grayish brown (10YR 3/2) loam; few fine prominent strong brown (7.5YR 5/8) mottles; massive; firm; thin strata of strong brown (7.5YR 4/6) woody fragments; thin strata of black (10YR 2/1) buried A material; mildly alkaline; abrupt wavy boundary.

Oa1—35 to 42 inches; sapric material, black (10YR 2/1) broken face and rubbed; about 5 percent fibers, less than 5 percent rubbed; mainly herbaceous fibers; weak fine granular structure; friable; few fine distinct strong brown (7.5YR 5/6) stains along root channels; mildly alkaline; gradual wavy boundary.

Oa2—42 to 47 inches; sapric material, very dark brown (10YR 2/2) broken face, very dark grayish brown (10YR 3/2) rubbed; about 10 percent fibers, less than 5 percent rubbed; mainly herbaceous fibers; dark reddish brown (5YR 3/4) woody fibers and fragments; weak medium platy structure; friable; neutral; abrupt wavy boundary.

C'g—47 to 60 inches; dark grayish brown (2.5Y 4/2) silt loam (65 percent mineral material); few fine distinct light olive brown (2.5Y 5/6) mottles; massive; friable; many fine distinct white (N 8/0) shells and fragments; strong effervescence; moderately alkaline.

The upper mineral material is 16 to 40 inches deep over the organic material. Reaction ranges from medium acid to mildly alkaline in the upper mineral material and from slightly acid to moderately alkaline in the underlying horizons.

The Ap horizon has value of 2 or 3 and chroma of 1 or 2. The Cg horizon has hue of 10YR, 2.5Y, or 5Y, value of 3 to 5, and chroma of 1 or 2. It is loam or silt loam. The Oa horizon has hue of 10YR or 2.5Y, value of 2 or 3, and chroma of 1 or 2. The C' horizon has hue of 10YR to 5Y, value of 3 or 4, and chroma of 1 to 3.

Wasepi Series

The Wasepi series consists of somewhat poorly drained soils on outwash plains, on terraces, and in glacial drainageways. These soils formed in sandy and loamy material. Permeability is moderately rapid in the upper part of the pedon and very rapid in the lower part. Slope ranges from 0 to 4 percent.

Wasepi soils are similar to Boyer, Dixboro, Kibbie, and Perrin soils and are commonly adjacent to Boyer, Gilford, Oshtemo, and Thetford soils. Boyer and Oshtemo soils are well drained and are in the higher positions on the landscape. Dixboro soils are finer textured in the underlying material than the Wasepi soils. Kibbie soils have more clay in the solum than the Wasepi soils. Perrin soils are moderately well drained. Gilford soils are very poorly drained and are in the lower positions on the landscape. Thetford soils are somewhat poorly drained and are in positions on the landscape similar to those of the Wasepi soils. They have less clay in the subsoil than the Wasepi soils.

Typical pedon of Wasepi loamy sand, 0 to 4 percent slopes, 2,376 feet north and 1,914 feet west of the southeast corner of sec. 20, T. 6 N., R. 12 W., in the city of Grandville:

- Ap—0 to 8 inches; very dark brown (10YR 2/2) loamy sand, dark grayish brown (10YR 4/2) dry; moderate medium granular structure; friable; many fine roots; about 10 percent pebbles; medium acid; abrupt smooth boundary.
- BE—8 to 14 inches; yellowish brown (10YR 5/4) gravelly loamy sand; common medium distinct dark grayish brown (10YR 4/2) pockets of loamy sand; few fine distinct dark yellowish brown (10YR 4/6) mottles; weak fine subangular blocky structure; friable; common fine roots; about 18 percent pebbles; slightly brittle; slightly acid; clear wavy boundary.
- Bt1—14 to 18 inches; yellowish brown (10YR 5/4) gravelly sandy clay loam; common fine faint yellowish brown (10YR 5/6) and few fine distinct grayish brown (10YR 5/2) mottles; weak medium subangular blocky structure; friable; common fine roots; thin dark yellowish brown (10YR 4/4) clay films on faces of peds; about 25 percent pebbles; slightly acid; clear wavy boundary.
- Bt2—18 to 25 inches; yellowish brown (10YR 5/4) gravelly sandy loam; common fine distinct grayish brown (10YR 5/2) and common medium distinct strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; friable; few fine roots; clay bridging sand grains; about 25 percent pebbles; neutral; clear wavy boundary.
- 2Cg—25 to 60 inches; light brownish gray (10YR 6/2) gravelly coarse sand; few medium prominent yellowish brown (10YR 5/6) mottles; single grain; loose; about 35 percent pebbles; slight effervescence; moderately alkaline.

The solum ranges from 20 to 40 inches in thickness. It is medium acid to neutral. The content of pebbles ranges from 3 to 25 percent in the solum.

The Ap horizon has value of 2 or 3 and chroma of 1 to 3. Some pedons have an E horizon, which has value of 4 to 6 and chroma of 2 or 3. The B horizon has hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 3 to 6. It

is loamy sand, sandy loam, loam, sandy clay loam, or the gravelly analogs of these textures. The 2C horizon has value of 5 or 6 and chroma of 1 to 3. It is sand, gravelly sand, or gravelly coarse sand. It is neutral to moderately alkaline.

Woodbeck Series

The Woodbeck series consists of well drained soils on till plains, moraines, and lake plains. These soils formed in silty, clayey, and sandy deposits. Permeability is moderately slow in the upper part of the pedon and rapid in the lower part. Slope ranges from 2 to 18 percent.

Woodbeck soils are similar to Scalley soils and are commonly adjacent to Oakville, Oshtemo, Perrinton, and Spinks soils. Scalley soils are coarser textured in the upper part than the Woodbeck soils. Oakville, Oshtemo, and Spinks soils contain more sand in the upper part than the Woodbeck soils. Also, they are higher on the landscape. Perrinton soils are in the slightly higher positions on the landscape. They do not have sand in the lower part of the solum or in the underlying material.

Typical pedon of Woodbeck silt loam, 6 to 12 percent slopes, 50 feet north and 1,290 feet west of the center of sec. 33, T. 7 N., R. 10 W., Ada Township:

- Ap—0 to 8 inches; dark brown (10YR 3/3) silt loam, pale brown (10YR 6/3) dry; moderate medium granular structure; friable; many fine roots; slightly acid; abrupt smooth boundary.
- E—8 to 12 inches; yellowish brown (10YR 5/4) silt loam, very pale brown (10YR 7/3) dry; weak medium subangular blocky structure; friable; common fine roots; slightly acid; clear irregular boundary.
- B/E—12 to 18 inches; dark brown (7.5YR 4/4) silty clay loam (Bt); moderate medium angular blocky structure; friable; brown (10YR 5/3) silt loam (E) interfingering on the faces of peds, very pale brown (10YR 7/3) dry; common fine roots; neutral; clear irregular boundary.
- Bt1—18 to 27 inches; dark brown (7.5YR 4/4) silty clay loam; moderate medium angular blocky structure; friable; few fine roots; neutral; abrupt wavy boundary.
- Bt2—27 to 31 inches; strong brown (7.5YR 4/6) silty clay; moderate medium angular blocky structure; firm; few fine roots; thin dark brown (7.5YR 4/4) clay films on faces of peds; medium acid; gradual wavy boundary.
- Bt3—31 to 36 inches; dark brown (7.5YR 4/4) silty clay; strong medium angular blocky structure; firm; few fine roots; brown (7.5YR 5/4) clay films on faces of peds; thin lenses of yellowish brown (10YR 5/6) silt; slightly acid; abrupt wavy boundary.
- 2E'—36 to 53 inches; yellowish brown (10YR 5/4) sand; single grain; loose; neutral; abrupt smooth boundary.

2B't—53 to 57 inches; dark yellowish brown (10YR 4/6) sandy loam; weak coarse subangular blocky structure; friable; mildly alkaline; abrupt smooth boundary.

2C—57 to 60 inches; light yellowish brown (10YR 6/4) sand; single grain; loose; slight effervescence; mildly alkaline.

The thickness of the solum ranges from 20 to 60 inches, and the thickness of the upper loamy and clayey material ranges from 20 to 40 inches. The content of pebbles ranges from 0 to 5 percent in the A and B horizon and from 0 to 30 percent in the 2E, 2B, and 2C horizons. The solum is medium acid to mildly alkaline.

The Ap horizon has value of 3 or 4 and chroma of 2 or 3. The E horizon has hue of 10YR or 7.5YR, value of 5

or 6, and chroma of 2 to 4. The B/E horizon has the colors and textures characteristic of the overlying E horizon and the underlying Bt horizon. The E horizon extends into the Bt horizon as fingers, 2 to 15 millimeters thick, that make up more than 15 percent of the volume. The B horizon has hue of 5YR, 7.5YR, or 10YR, value of 4 or 5, and chroma of 4 to 6. It is silty clay loam, silty clay, clay loam, or clay. In some pedons it has lenses of silt or silt loam.

The 2E horizon has value and chroma of 4 to 6. The 2B't horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 to 6. It is loamy sand, sandy loam, or the gravelly analogs of these textures. The 2C horizon has value of 5 to 8 and chroma of 3 to 6. It is fine sand, coarse sand, sand, or gravelly sand. It is neutral to moderately alkaline.

Formation of the Soils

The paragraphs that follow relate the factors of soil formation to the soils in Kent County and explain the processes of soil formation.

Factors of Soil Formation

Soil forms through the interaction of five major factors—the physical, chemical, and mineralogical composition of the parent material; the climate under which the soil material has accumulated and existed since accumulation; the plant and animal life on and in the soil; the relief, or lay of the land; and the length of time that the processes of soil formation have acted on the parent material (6).

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

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

Parent Material

Parent material, the unconsolidated mass in which a soil forms, determines the limits of the chemical and mineralogical composition of the soil. The parent materials of the soils of Kent County were deposited by glaciers or by glacial meltwater. The glaciers covered the county 10,000 to 12,000 years ago. Some of these materials have been reworked and redeposited by the subsequent action of water and wind. Although the parent materials are of common glacial origin, their properties vary greatly, sometimes within small areas, depending on how the materials were deposited. The dominant parent materials in Kent County were deposited as glacial till, outwash deposits, lacustrine deposits, alluvium, and organic material.

Glacial till was deposited directly by glaciers with a minimum of water action. It is a mixture of particles of different sizes. The small pebbles in glacial till have

sharp corners, indicating that they have not been worn by water. The glacial till in Kent County is calcareous loam, clay loam, or fine sandy loam. Marlette soils are an example of soils that formed in glacial till. They typically are moderately fine textured and have a well developed subsoil.

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

Lacustrine material was deposited from still, or ponded, glacial meltwater. Because the coarser fragments dropped out of the moving water as outwash, only the finer particles, such as very fine sand, silt, and clay, remained to settle out in still water. In Kent County, the soils that formed in lacustrine deposits typically are medium textured, moderately fine textured, and fine textured. Colwood soils are an example.

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

Organic material occurs as deposits of plant remains. After the glaciers receded, water was left standing in depressions in the outwash plains, flood plains, moraines, and till plains. Because of the wetness, the grasses, sedges, and water-tolerant plants that grew around the edges of these depressions did not decompose quickly after they died. Eventually, the plant residue filled the depressions and decomposed to form muck. Houghton soils are an example of soils that formed in organic material.

Plant and Animal Life

Green plants are the principal organisms that have influenced soil formation in Kent County. Bacteria, fungi, earthworms, and human activities also have been important. The chief contribution of plant and animal life is the addition of organic matter and nitrogen to the soil. The kind of organic material in the soil depends on the

kinds of plants that grew on the soil in the past. The remains of these plants accumulated on the surface, decayed, and eventually became organic matter. The roots of the plants provided channels for the downward movement of water through the soil and added organic matter as they decayed. Bacteria in the soil help to break down the organic matter into plant nutrients.

The native vegetation in Kent County was mainly deciduous trees, but coniferous trees grew on the sandy soils. Differences in natural soil drainage and minor variations in the parent material affected the composition of the forest species. The well drained upland soils, such as Perrinton, Marlette, and Oshtemo soils were mainly covered by sugar maple, oak, and beech. The poorly drained and very poorly drained soils were covered by soft maple, elm, and ash. Examples are Parkhill and Pewamo soils, which contain a considerable amount of organic matter.

Climate

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

The climate in Kent County, which presumably is similar to that under which the soils formed, is cool and humid. It generally is uniform throughout the county, but its effect is modified locally, depending on the proximity to large lakes. Differences in climate account for only minor differences among the soils in the county.

Relief

Relief affects the natural drainage of soils, the rate of erosion, the kind of plant cover, and the soil temperature. Slopes range from 0 to 60 percent in Kent County. Runoff is most rapid on the steeper slopes. In low areas water is temporarily ponded.

The soils in the county range from excessively drained on the ridgetops to very poorly drained in the depressions. Through its effect on the soil aeration, drainage partly determines the color of the soil. Water and air move freely through well drained soils and slowly through very poorly drained soils. In Marlette and other well aerated soils, the iron and aluminum compounds are brightly colored and oxidized. Parkhill and other poorly aerated soils are dull gray and mottled. The Marlette and Parkhill soils formed in similar kinds of parent material.

Time

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

The soils in Kent County range from young to mature. The glacial deposits in which many of the soils formed have been exposed to the soil-forming factors long enough for the development of distinct horizons. The soils that formed in recent alluvial sediments, however, have not been in place long enough for the development of distinct horizons. Cohoctah soils are an example of young alluvial soils. Marlette soils are an example of mature soils. Their horizons are distinct, and lime has been leached from their solum.

Processes of Soil Formation

The processes responsible for the development of soil horizons in the unconsolidated parent material are referred to as soil genesis. The physical, chemical, and biological properties of the horizons are referred to as soil morphology.

Several processes were involved in the development of horizons in the soils of Kent County—the accumulation of organic matter, the leaching of lime (calcium carbonate) and other bases, the reduction and transfer of iron, and the formation and translocation of silicate clay minerals. In most of the soils, more than one of these processes have been active in the development of horizons.

As organic matter accumulates at the surface of a soil, an A horizon forms. If the soil is plowed, this horizon is mixed into the plow layer, or Ap horizon. In the soils in Kent County, the surface layer ranges from high to low in content of organic matter. Parkhill soils are an example of soils that have a high content of organic matter in the surface layer. Spinks soils are an example of soils that have a low content of organic matter.

The leaching of carbonates and other bases has occurred in most of the soils. The leaching of bases generally precedes the translocation of silicate clay minerals. Many of the soils in Kent County are moderately leached or strongly leached. For example, Tekenink soils are leached of carbonates to a depth of 59 inches, and Marlette soils are leached to a depth of 40 inches. The difference in the depth of leaching is a result of time, relief, and parent material.

Gleying, or the reduction and transfer of iron, is evident in somewhat poorly drained, poorly drained, and very poorly drained soils. The gray subsoil of these soils indicates the reduction and loss of iron. Parkhill soils are an example of strongly gleyed soils.

The translocation of clay minerals contributes to horizon development. An eluviated, or leached, E horizon typically has platy structure, is lower in content of clay than the illuviated B horizon, and typically is lighter in color. The B horizon typically has an accumulation of clay, or clay films, in pores and on the faces of peds. Soils at this stage of formation probably were leached of carbonates and soluble salts to a considerable extent

before the silicate clays were translocated. Marlette soils are an example.

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Glossary

ABC soil. A soil having an A, a B, and a C horizon.

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

AC soil. A soil having only an A and a C horizon. Commonly such soil formed in recent alluvium or on steep rocky slopes.

Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

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

Association, soil. A group of soils geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as—

	<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

Basal till. Compact glacial till deposited beneath the ice.

Base saturation. The degree to which material having cation exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, K), expressed as a percentage of the total cation exchange capacity.

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

Bench terrace. A raised, level or nearly level strip of earth constructed on or nearly on the contour, supported by a barrier of rocks or similar material, and designed to make the soil suitable for tillage and to prevent accelerated erosion.

Blowout. A shallow depression from which all or most of the soil material has been removed by wind. A blowout has a flat or irregular floor formed by a resistant layer or by an accumulation of pebbles or cobbles. In some blowouts the water table is exposed.

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

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

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

Catena. A sequence, or “chain,” of soils on a landscape that formed in similar kinds of parent material but have different characteristics as a result of differences in relief and drainage.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity, but is more precise in meaning.

Chiseling. Tillage with an implement having one or more soil-penetrating points that shatter or loosen hard compacted layers to a depth below normal plow depth.

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

Clay 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.

Climax vegetation. The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.

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

Coarse textured soil. Sand or loamy sand.

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

Colluvium. Soil material, rock fragments, or both moved by creep, slide, or local wash and deposited at the base of steep slopes.

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

Complex, soil. A map unit of two or more kinds of soil in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils are somewhat similar in all areas.

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

Conservation tillage. A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

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

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

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

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

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

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

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

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

Cemented.—Hard; little affected by moistening.

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

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

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.

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.

Eluviation. The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Eolian soil material. Earthy parent material accumulated through wind action; commonly refers to sandy material in dunes or to loess in blankets on the surface.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of the activities of man or other animals or of a catastrophe in nature, for example, fire, that exposes the surface.

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

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

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*.

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

First bottom. The normal flood plain of a stream, subject to frequent or occasional flooding.

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

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

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

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

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

Glacial drift (geology). Pulverized and other rock material transported by glacial ice and then deposited. Also the sorted and unsorted material deposited by streams flowing from glaciers.

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

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

Glaciofluvial deposits (geology). Material moved by glaciers and subsequently sorted and deposited by streams flowing from the melting ice. The deposits are stratified and occur as kames, eskers, deltas, and outwash plains.

Glaciolacustrine deposits. Material ranging from fine clay to sand derived from glaciers and deposited in

glacial lakes mainly by glacial meltwater. Many deposits are interbedded or laminated.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors and mottles.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock up to 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material that is 15 to 50 percent, by volume, rounded or angular rock fragments, not prominently flattened, up to 3 inches (7.6 centimeters) in diameter.

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

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

Gully. A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

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

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. The major horizons are as follows:

O horizon.—An organic layer of fresh and decaying plant residue.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, any plowed or disturbed surface layer.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an O, A, or E horizon. The B horizon is in part a layer of transition from the overlying horizon to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) granular, prismatic, or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying horizon. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

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

R layer.—Hard, consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon but can be directly below an A or a B horizon.

Humus. The well decomposed, more or less stable part of the organic matter in mineral soils.

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

Illuviation. The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

Impervious soil. A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration capacity. The maximum rate at which water can infiltrate into a soil under a given set of conditions.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

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

application. The rate of water intake in inches per hour is expressed as follows:

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

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.

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

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

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

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

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

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

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

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

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

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

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

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

Moraine (geology). An accumulation of earth, stones, and other debris deposited by a glacier. Some types are terminal, lateral, medial, and ground.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Mottling generally indicates poor aeration and impeded drainage. Descriptive terms are as follows: abundance—*few*, *common*, and *many*; size—*fine*, *medium*, and *coarse*; and contrast—*faint*, *distinct*, and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium*, from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse*, more than 15 millimeters (about 0.6 inch).

Muck. Dark 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.

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

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter. Plant and animal residue in the soil in various stages of decomposition.

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

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

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

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

Pedon. The smallest volume that can be called “a soil.”

A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The downward movement of water through the soil.

Percolates 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.)

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

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

Plowpan. A compacted layer formed in the soil directly below the plowed layer.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

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

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

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degree of acidity or alkalinity is expressed as—

	pH
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

Regolith. The unconsolidated mantle of weathered rock and soil material on the earth's surface; the loose earth material above the solid rock.

Relief. The elevations or inequalities of a land surface, considered collectively.

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

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

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

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

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

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

Sapric soil material (muck). The most highly decomposed of all organic soil material. Much 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 underlying material. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Shrink-swell. The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002

millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Similar soils. Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75 feet.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance.

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

Slow refill (in tables). The slow filling of ponds, resulting from restricted permeability in the soil.

Small stones (in tables). Rock fragments less than 3 inches (7.6 centimeters) in diameter. Small stones adversely affect the specified use of the soil.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes 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.

Stony. Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Stripcropping. Growing crops in a systematic arrangement of strips or bands which provide vegetative barriers to wind and water erosion.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grain* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Stubble mulch. Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from soil blowing and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsurface layer. Any surface soil horizon (A, E, AB, or EB) below the surface layer.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from about 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

Surface soil. The A, E, AB, and EB horizons. It includes all subdivisions of these horizons.

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.

Till plain. An extensive flat to undulating area underlain by glacial till.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toe slope. The outermost inclined surface at the base of a hill; part of a foot slope.

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.

Variegation. Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.

Varve. A sedimentary layer of a lamina or sequence of laminae deposited in a body of still water within a year. Specifically, a thin pair of graded glaciolacustrine layers seasonally deposited, usually by meltwater streams, in glacial lake or other body of still water in front of a glacier.

Weathering. All physical and chemical changes produced in rocks or other deposits at or near the earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

Well graded. Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wilting point (or permanent wilting point). The moisture content of soil, on an oven-dry basis, at which a plant (specifically sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Tables

TABLE 1.--TEMPERATURE AND PRECIPITATION

[Recorded in the periods 1964-80 at Grand Rapids and 1951-80 at Greenville]

Month	Temperature						Precipitation					
	Average daily maximum	Average daily minimum	Average daily	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>	
GRAND RAPIDS:												
January-----	28.8	14.4	21.6	55	-15	0	2.03	1.3	2.7	6	22.8	
February-----	30.7	14.3	22.5	53	-14	0	1.39	.7	2.0	4	10.9	
March-----	41.8	24.7	33.3	74	-2	12	2.79	1.8	3.7	7	12.0	
April-----	56.5	35.3	45.9	83	15	73	3.68	2.9	4.4	8	3.4	
May-----	69.3	45.3	57.3	89	25	268	2.86	1.7	3.9	6	T**	
June-----	78.5	55.1	66.8	93	37	512	4.33	3.1	5.5	7	.0	
July-----	82.8	59.8	71.3	95	45	669	3.11	1.7	4.4	6	.0	
August-----	80.6	57.7	69.2	94	42	602	3.49	1.5	5.2	6	.0	
September----	72.7	50.8	61.8	90	32	367	3.46	1.7	5.1	7	.0	
October-----	60.0	39.8	49.9	84	20	116	2.75	1.6	3.8	6	.7	
November-----	45.6	30.9	38.3	73	9	23	3.26	2.1	4.4	8	8.8	
December-----	33.5	20.4	26.9	60	-7	0	3.12	1.8	4.3	7	17.6	
Year-----	56.8	37.4	47.1	96	-17	2,642	36.37	33.4	39.3	78	76.0	
GREENVILLE:												
January-----	28.9	13.6	21.2	51	-14	0	1.87	1.1	2.6	5	15.7	
February-----	32.1	14.4	23.2	51	-13	0	1.57	.8	2.3	5	9.8	
March-----	42.3	23.3	32.8	72	-2	8	2.53	1.3	3.6	6	8.9	
April-----	58.2	34.9	46.5	83	15	79	3.29	2.3	4.2	7	2.4	
May-----	70.4	45.1	57.7	89	26	276	2.88	1.6	4.0	6	T**	
June-----	79.9	54.4	67.1	95	36	522	3.43	2.3	4.5	6	.0	
July-----	83.8	58.3	71.1	95	43	661	2.50	1.5	3.4	5	.0	
August-----	81.8	56.8	69.3	95	41	606	3.84	2.1	5.4	7	.0	
September----	73.8	49.5	61.7	92	30	364	3.12	1.2	4.7	6	.0	
October-----	62.0	39.7	50.8	83	20	130	2.74	1.3	4.0	6	.2	
November-----	46.3	29.7	38.0	70	7	5	2.80	1.8	3.7	6	4.9	
December-----	33.6	19.3	26.4	58	-5	0	2.54	1.3	3.6	6	13.4	
Year-----	57.7	36.6	47.2	98	-16	2,646	33.11	29.1	37.0	72	55.3	

* 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).

** T means trace.

TABLE 2.--FREEZE DATES IN SPRING AND FALL
 [Recorded in the periods 1964-80 at Grand Rapids and
 1951-80 at Greenville]

Probability	Temperature		
	24° F or lower	28° F or lower	32° F or lower
GRAND RAPIDS:			
Last freezing temperature in spring:			
1 year in 10 later than--	April 24	May 10	May 20
2 years in 10 later than--	April 19	May 6	May 16
5 years in 10 later than--	April 11	April 26	May 7
First freezing temperature in fall:			
1 year in 10 earlier than--	October 17	October 10	September 24
2 years in 10 earlier than--	October 23	October 15	September 28
5 years in 10 earlier than--	November 3	October 24	October 8
GREENVILLE:			
Last freezing temperature in spring:			
1 year in 10 later than--	April 28	May 10	May 25
2 years in 10 later than--	April 23	May 5	May 19
5 years in 10 later than--	April 13	April 27	May 9
First freezing temperature in fall:			
1 year in 10 earlier than--	October 18	October 2	September 21
2 years in 10 earlier than--	October 23	October 8	September 25
5 years in 10 earlier than--	November 2	October 19	October 3

TABLE 3.--GROWING SEASON

[Recorded in the periods 1964-80 at Grand Rapids
and 1951-80 at Greenville]

Probability	Daily minimum temperature during growing season		
	Higher than 24° F	Higher than 28° F	Higher than 32° F
	<u>Days</u>	<u>Days</u>	<u>Days</u>
GRAND RAPIDS:			
9 years in 10	181	161	138
8 years in 10	189	168	144
5 years in 10	205	181	154
2 years in 10	221	194	164
1 year in 10	230	200	169
GREENVILLE:			
9 years in 10	179	152	126
8 years in 10	188	160	133
5 years in 10	203	174	146
2 years in 10	218	188	159
1 year in 10	226	196	165

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

Map symbol	Soil name	Acres	Percent
2B	Oakville fine sand, moderately wet, 0 to 4 percent slopes-----	7,585	1.4
3B	Covert sand, 0 to 4 percent slopes-----	1,245	0.2
4B	Perrin gravelly loamy sand, 0 to 4 percent slopes-----	1,540	0.3
5	Alganssee loamy fine sand-----	3,695	0.7
6	Glendora loamy sand-----	9,375	1.7
7	Cohoctah loam-----	12,485	2.2
9B	Rimer loamy fine sand, 0 to 4 percent slopes-----	3,680	0.7
10	Landes loam-----	440	0.1
11B	Owosso-Marlette sandy loams, 2 to 6 percent slopes-----	10,710	1.9
11C	Owosso-Marlette sandy loams, 6 to 12 percent slopes-----	4,010	0.7
12B	Tustin loamy fine sand, 2 to 6 percent slopes-----	1,555	0.3
12C	Tustin loamy fine sand, 6 to 12 percent slopes-----	710	0.1
13A	Metamora sandy loam, 0 to 3 percent slopes-----	5,235	0.9
14	Shoals loam-----	985	0.2
15	Sloan loam-----	3,985	0.7
16	Ceresco loam-----	3,740	0.7
17B	Chelsea loamy fine sand, 0 to 6 percent slopes-----	16,765	3.0
17C	Chelsea loamy fine sand, 6 to 12 percent slopes-----	12,760	2.3
17D	Chelsea loamy fine sand, 12 to 18 percent slopes-----	5,040	0.9
17E	Chelsea loamy fine sand, 18 to 45 percent slopes-----	2,630	0.5
18B	Glynwood loam, 2 to 6 percent slopes-----	7,465	1.3
18C	Glynwood loam, 6 to 12 percent slopes-----	4,735	0.8
19A	Blount loam, 0 to 2 percent slopes-----	880	0.2
19B	Blount loam, 2 to 6 percent slopes-----	11,490	2.1
20	Houghton muck-----	20,010	3.5
22B	Oshtemo sandy loam, 0 to 6 percent slopes-----	8,205	1.5
22C	Oshtemo sandy loam, 6 to 12 percent slopes-----	4,265	0.8
23A	Thetford loamy sand, 0 to 3 percent slopes-----	5,605	1.0
24A	Abscota loamy sand, 0 to 3 percent slopes-----	1,675	0.3
25B	Oakville fine sand, 0 to 6 percent slopes-----	7,125	1.3
25C	Oakville fine sand, 6 to 12 percent slopes-----	7,880	1.4
25D	Oakville fine sand, 12 to 18 percent slopes-----	2,795	0.5
25E	Oakville fine sand, 18 to 45 percent slopes-----	2,010	0.4
26	Adrian muck-----	5,870	1.1
27B	Wasepi loamy sand, 0 to 4 percent slopes-----	5,175	0.9
28	Gilford fine sandy loam-----	1,960	0.4
29B	Plainfield sand, 0 to 6 percent slopes-----	9,970	1.8
29C	Plainfield sand, 6 to 12 percent slopes-----	10,070	1.8
29D	Plainfield sand, 12 to 18 percent slopes-----	5,300	0.9
29E	Plainfield sand, 18 to 45 percent slopes-----	3,085	0.6
30B	Spinks loamy sand, 0 to 6 percent slopes-----	13,775	2.5
30C	Spinks loamy sand, 6 to 12 percent slopes-----	12,420	2.2
30D	Spinks loamy sand, 12 to 18 percent slopes-----	3,375	0.6
31	Wallkill silt loam-----	685	0.1
32	Palms muck-----	3,495	0.6
36B	Marlette loam, 2 to 6 percent slopes-----	20,965	3.8
36C	Marlette loam, 6 to 12 percent slopes-----	22,635	4.0
36D	Marlette loam, 12 to 18 percent slopes-----	9,955	1.8
36E	Marlette loam, 18 to 25 percent slopes-----	2,465	0.4
36F	Marlette loam, 25 to 45 percent slopes-----	1,790	0.3
37B	Capac loam, 0 to 4 percent slopes-----	23,085	4.1
38	Parkhill loam-----	5,295	0.9
39B	Arkport loamy very fine sand, 1 to 6 percent slopes-----	775	0.1
39C	Arkport loamy very fine sand, 6 to 12 percent slopes-----	370	0.1
40B	Matherton loam, 0 to 4 percent slopes-----	1,165	0.2
41B	Kibbie loam, 0 to 4 percent slopes-----	1,425	0.3
42B	Tedrow loamy fine sand, 0 to 4 percent slopes-----	3,110	0.6
43	Granby loamy fine sand-----	4,130	0.7
44	Edwards muck-----	1,380	0.2
45B	Perrinton loam, 2 to 6 percent slopes-----	6,690	1.2
45C	Perrinton loam, 6 to 12 percent slopes-----	3,515	0.6
45D	Perrinton loam, 12 to 18 percent slopes-----	2,970	0.5
45E	Perrinton loam, 18 to 25 percent slopes-----	1,055	0.2
45F	Perrinton loam, 25 to 40 percent slopes-----	670	0.1
46B	Ithaca loam, 1 to 6 percent slopes-----	3,850	0.7
47	Pewamo loam-----	2,965	0.5

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

Map symbol	Soil name	Acres	Percent
48B	Metea loamy sand, 2 to 6 percent slopes-----	6,405	1.1
48C	Metea loamy sand, 6 to 12 percent slopes-----	3,400	0.6
48D	Metea loamy sand, 12 to 18 percent slopes-----	955	0.2
49B	Selfridge loamy sand, 0 to 4 percent slopes-----	4,265	0.8
50B	Woodbeck silt loam, 2 to 6 percent slopes-----	235	*
50C	Woodbeck silt loam, 6 to 12 percent slopes-----	255	*
50D	Woodbeck silt loam, 12 to 18 percent slopes-----	155	*
51B	Oakville fine sand, loamy substratum, 0 to 6 percent slopes-----	705	0.1
51C	Oakville fine sand, loamy substratum, 6 to 12 percent slopes-----	405	0.1
52	Belleville loamy sand-----	2,380	0.4
54B	Tuscola silt loam, 2 to 6 percent slopes-----	680	0.1
54C	Tuscola silt loam, 6 to 12 percent slopes-----	580	0.1
56B	Scalley sandy loam, 2 to 6 percent slopes-----	3,735	0.7
56C	Scalley sandy loam, 6 to 12 percent slopes-----	1,635	0.3
56D	Scalley sandy loam, 12 to 18 percent slopes-----	900	0.2
58	Napoleon muck-----	575	0.1
59B	Okee loamy fine sand, 1 to 6 percent slopes-----	2,390	0.4
59C	Okee loamy fine sand, 6 to 12 percent slopes-----	910	0.2
59D	Okee loamy fine sand, 12 to 18 percent slopes-----	225	*
62A	Tekenink fine sandy loam, 0 to 2 percent slopes-----	2,105	0.4
62B	Tekenink fine sandy loam, 2 to 6 percent slopes-----	10,785	1.9
62C	Tekenink fine sandy loam, 6 to 12 percent slopes-----	5,180	0.9
62D	Tekenink fine sandy loam, 12 to 18 percent slopes-----	1,260	0.2
62E	Tekenink fine sandy loam, 18 to 40 percent slopes-----	475	0.1
63	Urban land-Cohoctah complex-----	2,050	0.4
64B	Grattan sand, 0 to 6 percent slopes-----	1,570	0.3
64C	Grattan sand, 6 to 12 percent slopes-----	415	0.1
66B	Boyer loamy sand, 0 to 6 percent slopes-----	8,335	1.5
66C	Boyer loamy sand, 6 to 12 percent slopes-----	3,330	0.6
66D	Boyer loamy sand, 12 to 18 percent slopes-----	4,340	0.8
66E	Boyer loamy sand, 18 to 40 percent slopes-----	2,955	0.5
67B	Kalamazoo loam, 1 to 6 percent slopes-----	1,140	0.2
67C	Kalamazoo loam, 6 to 12 percent slopes-----	1,270	0.2
67D	Kalamazoo loam, 12 to 18 percent slopes-----	330	0.1
68B	Saylesville silt loam, 2 to 6 percent slopes-----	735	0.1
68C	Saylesville silt loam, 6 to 12 percent slopes-----	460	0.1
69	Colwood silt loam-----	915	0.2
73	Sebewa loam-----	605	0.1
74	Dumps-----	390	0.1
75	Udorthents, loamy-----	3,390	0.6
76	Udipsamments, nearly level to steep-----	3,810	0.7
77	Pits, gravel-----	1,880	0.3
78	Urban land-----	7,450	1.3
79	Houghton muck, ponded-----	5,165	0.9
80	Udorthents, nearly level to steep-----	510	0.1
81B	Urban land-Spinks complex, 0 to 8 percent slopes-----	21,675	3.9
81C	Urban land-Spinks complex, 8 to 15 percent slopes-----	2,125	0.4
81D	Urban land-Spinks complex, 15 to 25 percent slopes-----	255	*
82B	Urban land-Perrinton complex, 0 to 8 percent slopes-----	10,725	1.9
82C	Urban land-Perrinton complex, 8 to 15 percent slopes-----	1,020	0.2
82D	Urban land-Perrinton complex, 15 to 25 percent slopes-----	320	0.1
83B	Marlette loam, moderately wet, 1 to 5 percent slopes-----	12,800	2.3
84B	Dixboro loamy fine sand, 0 to 4 percent slopes-----	2,165	0.4
85	Lamson fine sandy loam-----	1,405	0.3
86B	Teasdale fine sandy loam, 0 to 4 percent slopes-----	2,380	0.4
87B	Pipestone sand, 0 to 4 percent slopes-----	480	0.1
89E	Marlette-Oakville-Boyer complex, 15 to 60 percent slopes-----	3,665	0.7
	Water, less than 40 acres in size-----	3,128	0.6
	Water, greater than 40 acres-----	6,975	1.2
	Total-----	558,508	100.0

* Less than 0.1 percent.

TABLE 5.--PRIME FARMLAND

[Only the soils considered prime farmland are listed. Urban or built-up areas of the soils listed are not considered prime farmland. If a soil is prime farmland only under certain conditions, the conditions are specified in parentheses after the soil name]

Map symbol	Soil name
10	Landes loam
11B	Owosso-Marlette sandy loams, 2 to 6 percent slopes
13A	Metamora sandy loam, 0 to 3 percent slopes (where drained)
14	Shoals loam (where drained)
16	Ceresco loam (where drained)
18B	Glynwood loam, 2 to 6 percent slopes
19A	Blount loam, 0 to 2 percent slopes (where drained)
19B	Blount loam, 2 to 6 percent slopes (where drained)
22B	Oshtemo sandy loam, 0 to 6 percent slopes
28	Gilford fine sandy loam (where drained)
36B	Marlette loam, 2 to 6 percent slopes
37B	Capac loam, 0 to 4 percent slopes (where drained)
38	Parkhill loam (where drained)
39B	Arkport loamy very fine sand, 1 to 6 percent slopes
40B	Matherton loam, 0 to 4 percent slopes (where drained)
41B	Kibbie loam, 0 to 4 percent slopes (where drained)
45B	Perrinton loam, 2 to 6 percent slopes
46B	Ithaca loam, 1 to 6 percent slopes (where drained)
47	Pewamo loam (where drained)
48B	Metea loamy sand, 2 to 6 percent slopes
49B	Selfridge loamy sand, 0 to 4 percent slopes
50B	Woodbeck silt loam, 2 to 6 percent slopes
54B	Tuscola silt loam, 2 to 6 percent slopes
56B	Scalley sandy loam, 2 to 6 percent slopes
59B	Okee loamy fine sand, 1 to 6 percent slopes
62A	Tekenink fine sandy loam, 0 to 2 percent slopes
62B	Tekenink fine sandy loam, 2 to 6 percent slopes
67B	Kalamazoo loam, 1 to 6 percent slopes
68B	Saylesville silt loam, 2 to 6 percent slopes
69	Colwood silt loam (where drained)
73	Sebewa loam (where drained)
83B	Marlette loam, moderately wet, 1 to 5 percent slopes
84B	Dixboro loamy fine sand, 0 to 4 percent slopes (where drained)
85	Lamson fine sandy loam (where drained)
86B	Teasdale fine sandy loam, 0 to 4 percent slopes (where drained)

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

[Yields are those that can be expected under a high level of management. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil]

Soil name and map symbol	Land capability	Corn	Corn silage	Winter wheat	Soybeans	Oats	Grass-legume hay
		Bu	Tons	Bu	Bu	Bu	Tons
2B----- Oakville	IVs	60	11	30	---	55	2.5
3B----- Covert	IVs	---	---	40	---	60	3.0
4B----- Perrin	IIIs	75	13	35	28	60	3.0
5----- Alganssee	IIIw	80	13	35	---	65	3.5
6----- Glendora	VIw	---	---	---	---	---	---
7----- Cohoctah	Vw	---	---	---	---	---	3.5
9B----- Rimer	IIE	100	20	44	36	70	3.8
10----- Landes	IIIw	69	11	32	24	43	2.6
11B----- Owosso-Marlette	IIE	120	18	57	---	78	4.3
11C----- Owosso-Marlette	IIIe	105	16	53	---	75	3.7
12B----- Tustin	IIIe	70	11	---	---	60	4.0
12C----- Tustin	IVe	60	10	---	---	50	3.5
13A----- Metamora	IIw	115	18	60	40	95	3.5
14----- Shoals	IIw	130	20	52	46	---	4.3
15----- Sloan	Vw	---	---	---	---	---	---
16----- Ceresco	IIIw	105	16	35	40	70	4.0
17B----- Chelsea	IVs	59	10	---	22	44	2.0
17C----- Chelsea	VIIs	---	---	---	---	35	1.5
17D----- Chelsea	VIIIs	---	---	---	---	---	1.3
17E----- Chelsea	VIIIs	---	---	---	---	---	1.0

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

Soil name and map symbol	Land capability	Corn	Corn silage	Winter wheat	Soybeans	Oats	Grass-legume hay
		Bu	Tons	Bu	Bu	Bu	Tons
18B----- Glynwood	IIe	125	19	40	35	75	4.5
18C----- Glynwood	IIIe	110	16	40	30	75	4.0
19A----- Blount	IIw	106	17	48	35	64	4.3
19B----- Blount	IIe	105	17	47	35	63	4.3
20----- Houghton	IIIw	115	20	---	34	---	---
22B----- Oshtemo	IIIs	95	16	45	30	80	2.5
22C----- Oshtemo	IIIe	90	15	40	26	75	2.5
23A----- Thetford	IIIw	80	12	35	30	60	3.0
24A----- Abscota	IVs	70	13	28	---	60	3.0
25B----- Oakville	IVs	50	8	24	---	48	2.0
25C, 25D----- Oakville	VIs	---	---	---	---	35	1.8
25E----- Oakville	VIIIs	---	---	---	---	---	---
26----- Adrian	IVw	75	10	---	23	---	---
27B----- Wasepi	IIIs	80	12	35	30	60	3.4
28----- Gilford	IIIw	90	16	45	30	55	3.8
29B----- Plainfield	IVs	43	5	---	16	42	2.3
29C----- Plainfield	VIs	---	---	---	---	---	---
29D----- Plainfield	VIIIs	---	---	---	---	---	---
29E----- Plainfield	VIIIs	---	---	---	---	---	---
30B----- Spinks	IIIs	75	13	30	27	60	3.0
30C----- Spinks	IIIe	68	12	30	23	55	2.4
30D----- Spinks	IVe	---	---	24	---	50	1.8

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

Soil name and map symbol	Land capability	Corn	Corn silage	Winter wheat	Soybeans	Oats	Grass-legume hay
		<u>Bu</u>	<u>Tons</u>	<u>Bu</u>	<u>Bu</u>	<u>Bu</u>	<u>Tons</u>
31----- Wallkill	IIIw	100	20	---	---	---	3.5
32----- Palms	IIIw	105	17	---	42	65	---
36B----- Marlette	IIE	130	20	60	---	75	4.0
36C----- Marlette	IIIe	115	18	56	---	75	3.5
36D----- Marlette	IVe	95	16	48	---	65	3.2
36E----- Marlette	VIe	---	---	---	---	---	3.2
36F----- Marlette	VIIe	---	---	---	---	---	---
37B----- Capac	IIw	130	20	65	40	100	4.5
38----- Parkhill	IIw	130	20	55	40	80	4.2
39B----- Arkport	IIE	90	18	45	---	70	3.5
39C----- Arkport	IIIe	70	14	40	---	55	3.0
40B----- Matherton	IIw	95	16	42	32	75	---
41B----- Kibbie	IIE	115	17	60	38	95	4.5
42B----- Tedrow	IIIs	85	---	35	30	---	3.2
43----- Granby	IVw	75	10	35	30	55	---
44----- Edwards	IVw	90	15	---	34	---	---
45B----- Perrinton	IIE	100	17	45	35	80	4.5
45C----- Perrinton	IIIe	110	17	42	30	75	4.2
45D----- Perrinton	IVe	100	17	38	24	70	3.4
45E----- Perrinton	VIe	---	---	---	---	---	2.8
45F----- Perrinton	VIIe	---	---	---	---	---	---
46B----- Ithaca	IIE	115	17	46	38	85	4.0

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

Soil name and map symbol	Land capability	Corn	Corn silage	Winter wheat	Soybeans	Oats	Grass-legume hay
		<u>Bu</u>	<u>Tons</u>	<u>Bu</u>	<u>Bu</u>	<u>Bu</u>	<u>Tons</u>
47----- Pewamo	IIw	125	19	60	42	100	5.0
48B----- Metea	IIIe	85	---	42	30	---	2.8
48C----- Metea	IIIe	75	---	38	26	---	2.5
48D----- Metea	IVe	60	---	30	21	---	2.0
49B----- Selfridge	IIIe	85	13	38	30	65	3.0
50B----- Woodbeck	IIe	110	17	60	---	90	4.5
50C----- Woodbeck	IIIe	100	16	55	---	85	4.3
50D----- Woodbeck	IVe	90	15	45	---	75	4.0
51B----- Oakville	IIIs	60	9	28	---	55	2.3
51C----- Oakville	VIs	---	---	---	---	35	2.0
52----- Belleville	IIIw	105	17	50	35	85	4.2
54B----- Tuscola	IIe	100	17	47	32	80	3.2
54C----- Tuscola	IIIe	90	16	44	29	75	3.2
56B----- Scalley	IIe	105	17	55	---	70	4.5
56C----- Scalley	IIIe	100	13	50	---	65	4.0
56D----- Scalley	IVe	80	12	42	---	60	4.0
58----- Napoleon	VIw	---	---	---	---	---	---
59B----- Okee	IIIs	85	15	---	---	65	3.5
59C----- Okee	IIIe	80	14	---	---	55	3.0
59D----- Okee	IVe	55	10	---	---	45	3.0
62A----- Tekonink	IIs	95	16	45	35	60	4.0

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

Soil name and map symbol	Land capability	Corn	Corn silage	Winter wheat	Soybeans	Oats	Grass-legume hay
		<u>Bu</u>	<u>Tons</u>	<u>Bu</u>	<u>Bu</u>	<u>Bu</u>	<u>Tons</u>
62B----- Tekonink	IIe	90	15	40	35	55	4.0
62C----- Tekonink	IIIe	80	14	35	32	45	3.6
62D----- Tekonink	IVe	70	13	32	30	40	3.2
62E----- Tekonink	VIIe	---	---	---	---	---	---
63*----- Urban land- Cohoctah	---	---	---	---	---	---	---
64B, 64C----- Grattan	VIIs	---	---	---	---	---	---
66B----- Boyer	IIIIs	70	12	30	28	50	2.6
66C----- Boyer	IIIe	70	11	30	24	50	2.6
66D----- Boyer	IVe	60	10	24	19	45	2.2
66E----- Boyer	VIIe	---	---	---	---	---	---
67B----- Kalamazoo	IIe	90	16	40	30	75	3.6
67C----- Kalamazoo	IIIe	85	15	38	27	70	3.2
67D----- Kalamazoo	IVe	75	14	36	24	65	3.0
68B----- Saylesville	IIe	110	18	---	35	75	4.5
68C----- Saylesville	IIIe	100	17	---	30	65	4.0
69----- Colwood	IIw	130	20	65	45	110	5.5
73----- Sebewa	IIw	105	17	50	36	90	4.6
74*. Dumps							
75. Udorthents							
76. Udipsamments							

See footnote at end of table.

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

Soil name and map symbol	Land capability	Corn	Corn silage	Winter wheat	Soybeans	Oats	Grass-legume hay
		<u>Bu</u>	<u>Tons</u>	<u>Bu</u>	<u>Bu</u>	<u>Bu</u>	<u>Tons</u>
77*. Pits							
78*. Urban land							
79----- Houghton	VIIIw	---	---	---	---	---	---
80. Udorthents							
81B*, 81C*, 81D* Urban land- Spinks	---	---	---	---	---	---	---
82B*, 82C*, 82D* Urban land- Perrinton	---	---	---	---	---	---	---
83B----- Marlette	IIe	110	18	60	---	75	4.0
84B----- Dixboro	IIw	100	16	45	35	60	4.0
85----- Lamson	IIIw	75	15	---	---	50	3.5
86B----- Teasdale	IIw	105	17	50	33	90	4.8
87B----- Pipestone	IVw	60	12	30	---	60	3.0
89E----- Marlette- Oakville-Boyer	VIIe	---	---	---	---	---	---

* 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	
2B----- Oakville	2s	Slight	Moderate	Severe	Slight	Red pine----- Northern red oak---- White oak----- Quaking aspen----- Black oak----- Eastern white pine--	62 --- --- --- --- 65	Red pine, eastern white pine.
3B----- Covert	2s	Slight	Slight	Severe	Slight	Northern red oak---- Red maple----- Black cherry----- Eastern cottonwood-- American basswood--- White oak----- Quaking aspen----- American beech----- Eastern white pine--	67 66 --- --- --- --- --- --- ---	Red pine, black walnut, eastern white pine.
4B----- Perrin	2s	Slight	Slight	Moderate	Slight	Northern red oak---- White oak----- Sugar maple----- American beech----- American basswood--- Shagbark hickory---	66 --- --- --- --- ---	Eastern white pine, red pine, Norway spruce, imperial Carolina poplar, black walnut.
5----- Alganssee	3w	Slight	Moderate	Slight	Slight	Quaking aspen----- Silver maple----- Swamp white oak---- White ash----- Red maple----- American sycamore--- Green ash-----	60 78 --- --- 56 --- ---	White spruce, imperial Carolina poplar, Norway spruce, eastern white pine.
6----- Glendora	3w	Slight	Severe	Moderate	Severe	Red maple----- Swamp white oak---- Quaking aspen----- Black ash----- Silver maple----- Eastern cottonwood--	55 --- --- --- 80 ---	Eastern white pine, white spruce, northern white-cedar, imperial Carolina poplar, Norway spruce.
7----- Cohoctah	3w	Slight	Severe	Severe	Severe	Red maple----- Eastern cottonwood-- Silver maple----- White ash----- Swamp white oak---- American sycamore--- Bitternut hickory---	56 --- --- --- --- --- ---	Eastern white pine, imperial Carolina poplar, northern white-cedar.
9B----- Rimer	2s	Slight	Moderate	Slight	Slight	Northern red oak---- White oak----- Red maple----- Silver maple----- White ash-----	65 --- --- --- ---	White spruce, eastern white pine, northern white-cedar.
10----- Landes	1a	Slight	Slight	Slight	Slight	Eastern cottonwood-- Yellow-poplar----- American sycamore--- Green ash-----	105 95 --- ---	Yellow-poplar, black walnut, eastern white pine.

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	
11B*, 11C*: Owosso-----	1a	Slight	Slight	Slight	Slight	Quaking aspen----- Northern red oak---- White ash----- Sugar maple----- American basswood--- Red maple----- Yellow-poplar-----	80 --- --- --- --- --- 65	Black walnut, yellow-poplar, eastern white pine, white ash.
Marlette-----	2a	Slight	Slight	Slight	Slight	Sugar maple----- Northern red oak---- White ash----- Black walnut----- American basswood--- Black cherry----- White oak-----	61 --- --- --- --- --- ---	Black walnut, eastern white pine, red pine.
12B, 12C----- Tustin	3s	Slight	Slight	Moderate	Slight	Black oak----- Red pine----- Eastern white pine-- Northern red oak----	55 --- --- ---	Red pine, eastern white pine, white spruce.
13A----- Metamora	2w	Slight	Moderate	Slight	Slight	Northern red oak---- White ash----- Bitternut hickory--- Green ash----- Shagbark hickory--- American basswood--- Sugar maple----- Red maple-----	66 --- --- --- --- --- --- ---	White spruce, eastern white pine, northern white-cedar.
14----- Shoals	2w	Slight	Moderate	Slight	Slight	Northern red oak---- White ash----- Red maple----- American basswood--- Eastern cottonwood--	65 --- --- --- ---	Eastern white pine, white spruce, yellow-poplar.
15----- Sloan	2w	Slight	Severe	Severe	Severe	Red maple----- Swamp white oak---- White ash----- Green ash----- Eastern cottonwood--	66 --- 66 66 89	Black spruce, northern white-cedar.
16----- Ceresco	2w	Slight	Moderate	Slight	Slight	Northern red oak---- White ash----- Red maple----- Silver maple----- Eastern cottonwood-- American sycamore--- Black walnut-----	66 --- --- --- --- --- ---	Eastern white pine, white spruce, black walnut, Norway spruce, imperial Carolina poplar.
17B, 17C, 17D----- Chelsea	2s	Slight	Slight	Moderate	Slight	White oak----- Red pine----- Eastern white pine-- Jack pine----- Quaking aspen----- Northern red oak----	65 62 62 65 70 65	Eastern white pine, red pine, jack pine.

See footnote 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	
17E----- Chelsea	2r	Moderate	Severe	Moderate	Slight	White oak----- Red pine----- Eastern white pine-- Jack pine----- Quaking aspen----- Northern red oak----	65 62 62 65 70 76	Eastern white pine, red pine, jack pine.
18B, 18C----- Glynwood	3c	Slight	Slight	Moderate	Moderate	Northern red oak---- Red maple----- White ash----- Swamp white oak---- American beech-----	55 55 55 --- ---	Eastern white pine, white ash, yellow- poplar.
19A, 19B----- Blount	3c	Slight	Moderate	Severe	Severe	Northern red oak---- White oak----- White ash----- Sugar maple-----	57 57 57 54	Eastern white pine, northern white-cedar, white spruce, Norway spruce.
20----- Houghton	3w	Slight	Severe	Severe	Severe	Red maple----- Silver maple----- White ash----- Quaking aspen----- Tamarack----- Green ash----- Northern white-cedar	56 82 56 60 45 --- 27	
22B, 22C----- Oshtemo	2a	Slight	Slight	Slight	Slight	Northern red oak---- White oak----- American basswood--- Sugar maple-----	66 --- 66 61	Eastern white pine, red pine, white spruce, Norway spruce, imperial Carolina poplar.
23A----- Thetford	2w	Slight	Moderate	Slight	Slight	Red maple----- White ash----- Quaking aspen----- Eastern cottonwood-- Northern red oak---- Swamp white oak---- Bitternut hickory---	61 --- --- --- --- --- ---	White spruce, Norway spruce, eastern white pine, imperial Carolina poplar.
24A----- Abscota	2s	Slight	Slight	Moderate	Slight	Northern red oak---- White ash----- Silver maple----- Eastern cottonwood-- American sycamore---	66 --- --- --- ---	Yellow-poplar, eastern white pine, imperial Carolina poplar.
25B, 25C, 25D----- Oakville	2s	Slight	Moderate	Severe	Slight	Red pine----- Northern red oak---- White oak----- Quaking aspen----- Black oak----- Eastern white pine--	62 --- --- --- --- ---	Red pine, eastern white pine, imperial Carolina poplar.
25E----- Oakville	2r	Moderate	Severe	Severe	Slight	Red pine----- Northern red oak---- White oak----- Quaking aspen----- Black oak----- Eastern white pine--	62 --- --- --- --- ---	Red pine, eastern white pine, imperial Carolina poplar.

See footnote 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	
26----- Adrian	3w	Slight	Severe	Severe	Severe	Red maple----- Silver maple----- White ash----- Quaking aspen----- Tamarack----- Green ash-----	56 82 56 60 45 56	
27B----- Wasepi	3w	Slight	Moderate	Slight	Slight	Quaking aspen----- Red maple----- Silver maple----- Paper birch-----	60 --- --- ---	White spruce, eastern white pine, Norway spruce, imperial Carolina poplar.
28----- Gilford	3w	Slight	Severe	Severe	Severe	Red maple----- Silver maple----- American basswood--- Bur oak----- White ash----- Swamp white oak-----	56 --- --- --- --- ---	Eastern white pine, white spruce.
29B, 29C, 29D----- Plainfield	2s	Slight	Moderate	Moderate	Slight	Red pine----- Eastern white pine-- Jack pine----- Northern pin oak--- Black oak----- White oak-----	62 62 65 65 --- ---	Red pine, eastern white pine, jack pine.
29E----- Plainfield	2r	Moderate	Severe	Moderate	Slight	Red pine----- Eastern white pine-- Jack pine----- Northern pin oak--- Black oak----- White oak-----	62 62 65 65 --- ---	Red pine, eastern white pine, jack pine.
30B, 30C, 30D----- Spinks	2s	Slight	Slight	Moderate	Slight	Northern red oak--- White oak----- Black oak----- Black cherry-----	66 --- --- ---	Red pine, eastern white pine, imperial Carolina poplar.
31----- Wallkill	3w	Slight	Severe	Severe	Severe	Red maple----- White ash----- Quaking aspen----- Silver maple----- Eastern cottonwood-- Swamp white oak-----	55 55 60 --- --- ---	Green ash, eastern white pine, white spruce.
32----- Palms	3w	Slight	Severe	Severe	Severe	Red maple----- Silver maple----- White ash----- Quaking aspen----- Northern white-cedar Tamarack----- Black ash-----	55 --- --- --- --- --- ---	
36B, 36C, 36D----- Marlette	2a	Slight	Slight	Slight	Slight	Sugar maple----- Northern red oak--- White ash----- Black walnut----- American basswood--- Black cherry----- White oak-----	61 --- --- --- --- --- ---	Black walnut, eastern white pine, red pine.

See footnote 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	
36E----- Marlette	2r	Moderate	Moderate	Slight	Slight	Sugar maple----- Northern red oak---- White ash----- Black walnut----- American basswood--- Black cherry----- White oak-----	61 --- --- --- --- --- ---	Black walnut, eastern white pine, red pine.
36F----- Marlette	2r	Severe	Severe	Slight	Slight	Sugar maple----- Northern red oak---- White ash----- Black walnut----- American basswood--- Black cherry----- White oak-----	61 --- --- --- --- --- ---	Black walnut, eastern white pine, red pine.
37B----- Capac	2w	Slight	Moderate	Slight	Slight	Northern red oak---- American basswood--- Northern pin oak---- White ash----- Red maple----- Bitternut hickory--- Sugar maple----- Black cherry----- American beech-----	65 --- --- --- --- --- --- --- ---	Eastern white pine, white spruce, Norway spruce, imperial Carolina poplar.
38----- Parkhill	2w	Slight	Severe	Moderate	Moderate	Red maple----- Silver maple----- White ash----- American basswood--- Swamp white oak-----	66 91 66 66 ---	
39B, 39C----- Arkport	2a	Slight	Slight	Moderate	Slight	Sugar maple----- Red pine----- Eastern white pine--	70 85 85	Norway spruce, red pine, eastern white pine.
40B----- Matherton	2w	Slight	Moderate	Slight	Slight	Northern red oak---- Swamp white oak----- White oak----- White ash----- American basswood--- Red maple-----	66 --- --- --- --- ---	White spruce, Norway spruce, eastern white pine.
41B----- Kibbie	2w	Slight	Moderate	Slight	Slight	Northern red oak---- Red maple----- White ash----- American basswood--- Quaking aspen-----	66 --- 66 66 70	Imperial Carolina poplar, eastern white pine, Norway spruce.
42B----- Tedrow	2w	Slight	Moderate	Slight	Slight	White ash----- Silver maple----- Eastern white pine-- Red maple-----	55 --- --- ---	Eastern white pine, Norway spruce, imperial Carolina poplar.
43----- Granby	3w	Slight	Severe	Severe	Severe	Red maple----- Silver maple----- American basswood--- White ash----- Quaking aspen----- Eastern cottonwood--	55 --- --- --- --- ---	Eastern white pine, Norway spruce, white spruce.

See footnote 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	
44----- Edwards	3w	Slight	Severe	Severe	Severe	Red maple----- White ash----- Green ash----- Tamarack----- Swamp white oak----- Silver maple-----	56	
45B, 45C, 45D----- Perrinton	2a	Slight	Slight	Slight	Slight	Northern red oak---- Sugar maple----- Red maple----- White ash----- American basswood---- Bitternut hickory---- Shagbark hickory----	65	White spruce, eastern white pine, northern white-cedar.
45E, 45F----- Perrinton	2r	Moderate	Moderate	Slight	Slight	Northern red oak---- Sugar maple----- Red maple----- White ash----- American basswood---- Bitternut hickory---- Shagbark hickory----	65	White spruce, eastern white pine, northern white-cedar.
46B----- Ithaca	2w	Slight	Moderate	Slight	Slight	Northern red oak---- Sugar maple----- American basswood---- White ash----- Northern pin oak---- Shagbark hickory---- Red maple----- Bitternut hickory----	65	White spruce, Norway spruce, eastern white pine, northern white-cedar, imperial Carolina poplar.
47----- Pewamo	2w	Slight	Severe	Moderate	Moderate	Red maple----- American basswood---- Silver maple----- White ash----- Black ash----- Eastern cottonwood--	66 66 91	Imperial Carolina poplar, eastern white pine, white spruce, Norway spruce.
48B, 48C, 48D----- Metea	2s	Slight	Slight	Moderate	Slight	Northern red oak---- White oak----- Sugar maple----- American basswood---- Black cherry----- Black walnut----- Shagbark hickory----	66	Eastern white pine, red pine, white spruce, black walnut, Norway spruce.
49B----- Selfridge	2w	Slight	Moderate	Slight	Moderate	Quaking aspen----- American beech----- Northern red oak---- Red maple----- Sugar maple----- Black cherry----- American basswood----	70	Eastern white pine, Norway spruce, imperial Carolina poplar.
50B, 50C, 50D----- Woodbeck	2a	Slight	Slight	Slight	Slight	Sugar maple----- American beech----- Eastern white pine-- Northern red oak---- Shagbark hickory---- Red maple-----	61	Eastern white pine, white spruce, imperial Carolina poplar.

See footnote 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	
51B, 51C----- Oakville	1s	Slight	Moderate	Severe	Slight	Red pine----- Northern red oak---- White oak----- Quaking aspen----- Black oak----- Eastern white pine--	66 --- --- --- --- ---	Red pine, eastern white pine.
52----- Belleville	5w	Slight	Severe	Moderate	Moderate	Silver maple----- Red maple----- White ash----- Swamp white oak----	64 --- --- ---	
54B, 54C----- Tuscola	1a	Slight	Slight	Slight	Slight	Northern red oak---- Yellow-poplar----- White ash----- American basswood--- White oak----- Sugar maple-----	70 --- --- --- --- ---	Black walnut, yellow-poplar, eastern white pine, Norway spruce, red pine.
56B, 56C, 56D----- Scalley	2a	Slight	Slight	Slight	Slight	Sugar maple----- Northern red oak---- Black walnut----- Black cherry----- White ash----- White oak-----	61 --- --- --- --- ---	White spruce, eastern white pine, red pine, black walnut.
58----- Napoleon	3w	Slight	Severe	Severe	Severe	Red maple----- Silver maple----- White ash----- Quaking aspen----- Tamarack----- Black ash-----	56 --- --- --- --- ---	
59B, 59C, 59D----- Okee	3s	Slight	Slight	Moderate	Slight	Northern pin oak---- Black oak-----	45 ---	Red pine, jack pine.
62A, 62B, 62C, 62D----- Tekonink	2a	Slight	Slight	Slight	Slight	Northern red oak---- Black cherry----- White ash----- American basswood--- American beech----- Sugar maple-----	66 --- --- --- --- ---	Black walnut, red pine, eastern white pine, yellow-poplar.
62E----- Tekonink	2r	Moderate	Moderate	Slight	Slight	Northern red oak---- Black cherry----- White ash----- American basswood--- American beech----- Sugar maple-----	66 --- --- --- --- ---	Black walnut, red pine, eastern white pine, yellow-poplar.
64B, 64C----- Grattan	2s	Slight	Moderate	Severe	Slight	Eastern white pine-- Quaking aspen----- White oak----- Black oak-----	62 --- --- ---	Red pine, eastern white pine.
66B, 66C, 66D----- Boyer	2s	Slight	Slight	Moderate	Slight	Northern red oak---- White oak----- American basswood--- Sugar maple----- Black oak-----	66 --- --- --- ---	Eastern white pine, red pine, Norway spruce, imperial Carolina poplar.

See footnote 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	
66E----- Boyer	2r	Moderate	Moderate	Moderate	Slight	Northern red oak---- White oak----- American basswood--- Sugar maple----- Black oak-----	66 --- --- --- ---	Eastern white pine, red pine, Norway spruce, imperial Carolina poplar.
67B, 67C, 67D----- Kalamazoo	2a	Slight	Slight	Slight	Slight	Northern red oak---- White ash----- Black walnut----- Yellow-poplar----- White oak----- Black cherry----- American basswood--- Sugar maple-----	65 65 65 65 --- --- 65 61	Black walnut, yellow- poplar, eastern white pine, white spruce, Norway spruce, red pine, imperial Carolina poplar.
68B, 68C----- Saylesville	2a	Slight	Slight	Slight	Slight	Northern red oak---- Sugar maple----- American basswood---	65 --- ---	Eastern white pine, red pine, white spruce.
69----- Colwood	3w	Slight	Severe	Severe	Severe	Red maple----- White ash----- Silver maple----- Green ash----- Swamp white oak----	56 56 82 56 56	Eastern white pine, white spruce.
73----- Sebewa	2w	Slight	Severe	Severe	Severe	Red maple----- White ash----- American basswood--- Swamp white oak---- Northern red oak----	66 66 --- --- ---	White spruce, eastern white pine, Norway spruce, white ash.
83B----- Marlette	2a	Slight	Slight	Slight	Slight	Sugar maple----- Northern red oak---- White ash----- Black walnut----- American basswood--- Black cherry----- White oak-----	61 --- --- --- --- --- ---	Black walnut, eastern white pine, red pine.
84B----- Dixboro	2w	Slight	Moderate	Moderate	Slight	Northern red oak---- White oak----- Northern pin oak---- Black oak----- Shagbark hickory--- Bitternut hickory--- American basswood--- Red maple-----	65 --- --- --- --- --- --- ---	Eastern white pine, white spruce, Norway spruce, imperial Carolina poplar.
85----- Lamson	3w	Slight	Severe	Severe	Severe	Eastern white pine-- Red maple----- Swamp white oak---- Eastern cottonwood--	55 55 --- ---	Northern white-cedar, eastern white pine, white spruce.
86B----- Teasdale	2w	Slight	Moderate	Slight	Slight	Northern red oak---- Red maple----- White ash----- Eastern cottonwood-- American basswood--- Northern pin oak----	66 66 66 101 --- ---	White spruce, eastern white pine, Norway spruce, imperial Carolina poplar.

See footnote 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	
87B----- Pipestone	2w	Slight	Moderate	Slight	Slight	Red maple----- White ash----- Eastern cottonwood-- Bitternut hickory--- Hackberry----- American basswood---	65 --- --- --- 56	White spruce, eastern white pine.
89E*: Marlette-----	2r	Moderate	Moderate	Slight	Slight	Sugar maple----- Northern red oak---- White ash----- Black walnut----- American basswood--- Black cherry----- White oak-----	61 --- --- --- --- ---	Black walnut, eastern white pine, red pine.
Oakville-----	2r	Severe	Severe	Severe	Slight	Red pine----- Northern red oak---- White oak----- Quaking aspen----- Black oak----- Eastern white pine--	62 --- --- --- ---	Red pine, eastern white pine.
Boyer-----	2r	Moderate	Moderate	Moderate	Slight	Northern red oak---- White oak----- American basswood--- Sugar maple----- Black oak-----	66 --- --- --- ---	Eastern white pine, red pine, Norway spruce, imperial Carolina poplar.

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

TABLE 8.--ENVIRONMENTAL PLANTINGS

[Absence of an entry indicates that the soil is not suited to the plants or the plants generally are not grown on the soil]

Soil name and map symbol	Street borders	Shade trees	Ornamentals	Screens	Plants for shaded areas, roadsides, and steep banks	Wildlife food and cover
2B----- Oakville	Green ash, thornless honeylocust, white oak.	Green ash, red maple, silver maple, sugar maple, thornless honeylocust, white oak.	Blue spruce, forsythia, lilac, Midwest flowering crabapple, red pine, Roselow sargent crabapple, Tatarian honeysuckle.	Austrian pine*, Douglas-fir, eastern white pine*, imperial Carolina poplar*, Norway spruce*, pin oak*, red pine*.	Acre stonecrop, bearberry, cotoneaster, creeping liriope, English ivy, lilyofthevalley, Waukegan juniper.	Amur privet*, bayberry, bearberry, blackberry, cardinal autumn-olive*, fragrant sumac, Roselow sargent crabapple*, Siberian crabapple*, Siberian peashrub*, Tatarian honeysuckle*.
3B----- Covert	Green ash, littleleaf linden, ruby red horsechestnut, thornless honeylocust, white oak.	American basswood, American beech, green ash, red maple, silver maple, sugar maple, thornless honeylocust, white oak.	Amur maple, forsythia, lilac, nannyberry viburnum, northern white-cedar, red maple, red mulberry, red pine, white spruce.	Austrian pine*, eastern white pine*, green ash*, imperial Carolina poplar*, Norway spruce*, red pine*.	Acre stonecrop, bearberry, cotoneaster, creeping liriope, English ivy, lilyofthevalley, Waukegan juniper.	Amur privet*, bayberry, bearberry, blackberry, cardinal autumn-olive*, fragrant sumac, Roselow sargent crabapple*, Siberian crabapple*, Siberian peashrub*, Tatarian honeysuckle*.
4B----- Perrin	Green ash, littleleaf linden, thornless honeylocust, white oak.	American basswood, American beech, green ash, sugar maple, thornless honeylocust, white oak.	American cranberrybush, Amur maple, lilac, nannyberry viburnum, northern white-cedar, red maple, red mulberry, Roselow sargent crabapple, white spruce.	Austrian pine*, eastern white pine*, green ash*, imperial Carolina poplar*, Norway spruce*.	Acre stonecrop, bugleweed, creeping thyme, epimedium, Hall honeysuckle, lilyofthevalley, moss pink, myrtle, Waukegan juniper.	American cranberry-bush*, bayberry, grape, gray dogwood*, silky dogwood*, nannyberry viburnum*, northern white-cedar*, redosier dogwood*, Siberian crabapple*, Tatarian honeysuckle*, Washington hawthorn*.
5----- Alganssee	Green ash, littleleaf linden, Norway maple, ruby red horsechestnut, thornless honeylocust, white oak.	American basswood, American beech, green ash, red maple, silver maple, sugar maple, thornless honeylocust.	American cranberrybush, Amur maple, blue spruce, forsythia, lilac, nannyberry viburnum, northern white-cedar, red maple, red mulberry, red pine, white spruce.	Austrian pine*, eastern white pine*, green ash*, imperial Carolina poplar*, Norway spruce*, red pine*.	Acre stonecrop, bearberry, cotoneaster, creeping liriope, English ivy, lilyofthevalley, Waukegan juniper.	American cranberry-bush*, bayberry, grape, gray dogwood*, silky dogwood*, nannyberry viburnum*, northern white-cedar*, redosier dogwood*, Siberian crabapple*, Tatarian honeysuckle*, Washington hawthorn*.

See footnotes at end of table.

TABLE 8.--ENVIRONMENTAL PLANTINGS--Continued

Soil name and map symbol	Street borders	Shade trees	Ornamentals	Screens	Plants for shaded areas, roadsides, and steep banks	Wildlife food and cover
6----- Glendora	Green ash-----	Green ash, red maple, silver maple, sugar maple, thornless honeylocust.	Amur maple, northern white-cedar, red maple, red mulberry, Roselow sargent crabapple, Siberian crabapple.	Eastern white pine*, imperial Carolina poplar*.	Baltic ivy, bigleaf winter-creeper, bugleweed, goutweed, mountain cranberry, purple-leaf wintercreeper, rockspray cotoneaster.	American cranberry-bush*, Amur privet*, gray dogwood*, silky dogwood*, nannyberry viburnum*, northern white-cedar*, redosier dogwood*.
7----- Cohoctah	---	American basswood, green ash, red maple, silver maple.	American cranberrybush, Amur maple, blue spruce, nannyberry viburnum, northern white-cedar, red maple, Roselow sargent crabapple, white spruce.	Eastern white pine*, green ash*, imperial Carolina poplar*.	Baltic ivy, bigleaf wintercreeper, bugleweed, goutweed, mountain cranberry, purple-leaf wintercreeper, rockspray cotoneaster.	American cranberry-bush*, bayberry, grape, gray dogwood*, silky dogwood*, nannyberry viburnum*, northern white-cedar*, redosier dogwood*.
9B----- Rimer	Green ash, littleleaf linden, Norway maple, ruby red horsechestnut, thornless honeylocust, white oak.	American basswood, American beech, green ash, red maple, silver maple, sugar maple, thornless honeylocust.	American cranberrybush, Amur maple, blue spruce, nannyberry viburnum, northern white-cedar, red maple, Roselow sargent crabapple, white spruce.	Austrian pine*, eastern white pine*, green ash*, imperial Carolina poplar*, Norway spruce*.	Baltic ivy, bugleweed, canby pachystima, goutweed, Japanese spurge, myrtle, purple-leaf wintercreeper, wintergreen.	American cranberry-bush*, bayberry, grape, gray dogwood*, silky dogwood*, nannyberry viburnum*, northern white-cedar*, redosier dogwood*, Siberian crabapple*, Tatarian honeysuckle*, Washington hawthorn*.
10----- Landes	Green ash, littleleaf linden, Norway maple, ruby red horsechestnut, thornless honeylocust, white oak.	American basswood, American beech, green ash, Norway maple, pin oak, ruby red horsechestnut, sugar maple, thornless honeylocust.	Amur maple, blue spruce, eastern redbud, European mountainash, flowering dogwood, forsythia, lilac, Roselow sargent crabapple, ruby red horsechestnut, winged euonymus.	Austrian pine*, Douglas-fir, eastern white pine*, imperial Carolina poplar*, Norway spruce*, red pine*.	Andorra juniper, bugleweed, creeping cotoneaster, epimedium, Hall honeysuckle, moss pink, myrtle, sargent juniper.	American cranberry-bush*, arrowwood*, cardinal autumn-olive*, European mountainash, fragrant sumac, gray dogwood*, silky dogwood*, Norway spruce*, Siberian crabapple*, Tatarian honeysuckle*.

See footnotes at end of table.

TABLE 8.--ENVIRONMENTAL PLANTINGS--Continued

Soil name and map symbol	Street borders	Shade trees	Ornamentals	Screens	Plants for shaded areas, roadsides, and steep banks	Wildlife food and cover
11B**, 11C**: Owosso-----	Green ash, littleleaf linden, Norway maple, ruby red horsechestnut, thornless honeylocust, white oak.	American basswood, American beech, green ash, Norway maple, pin oak, ruby red horsechestnut, sugar maple, thornless honeylocust.	Amur maple, blue spruce, eastern redbud, European mountainash, flowering dogwood, forsythia, green ash, lilac, Roselow sargent crabapple, ruby red horsechestnut, winged euonymus.	Austrian pine*, Douglas-fir, eastern white pine*, imperial Carolina poplar*, Norway spruce*, red pine*.	Andorra juniper, bugleweed, creeping cotoneaster, epimedium, Hall honeysuckle, moss pink, myrtle, sargent juniper.	American cranberry-bush*, arrowwood*, cardinal autumn-olive*, European mountainash, fragrant sumac, gray dogwood*, silky dogwood*, Norway spruce*, Siberian crabapple*, Tatarian honeysuckle*.
Marlette-----	Green ash, littleleaf linden, Norway maple, ruby red horsechestnut, thornless honeylocust.	American basswood, American beech, green ash, Norway maple, pin oak, red maple, ruby red horsechestnut, sugar maple, thornless honeylocust.	Amur maple, blue spruce, eastern redbud, European mountainash, flowering dogwood, forsythia, lilac, Roselow sargent crabapple, ruby red horsechestnut, winged euonymus.	Austrian pine*, Douglas-fir, eastern white pine*, imperial Carolina poplar*, Norway spruce*, red pine*.	Andorra juniper, bugleweed, creeping cotoneaster, epimedium, Hall honeysuckle, moss pink, myrtle, sargent juniper.	American cranberry-bush*, arrowwood*, cardinal autumn-olive*, European mountainash, gray dogwood*, silky dogwood*, Norway spruce*, Siberian crabapple*, Tatarian honeysuckle*.
12B, 12C----- Tustin	Green ash, littleleaf linden, Norway maple, ruby red horsechestnut, thornless honeylocust, white oak.	American basswood, American beech, green ash, Norway maple, pin oak, ruby red horsechestnut, sugar maple, thornless honeylocust.	Amur maple, blue spruce, eastern redbud, European mountainash, flowering dogwood, forsythia, lilac, Roselow sargent crabapple, ruby red horsechestnut, winged euonymus.	Austrian pine*, Douglas-fir, eastern white pine*, imperial Carolina poplar*, Norway spruce*, red pine*.	Andorra juniper, bugleweed, creeping cotoneaster, epimedium, Hall honeysuckle, moss pink, myrtle, sargent juniper.	American cranberry-bush*, arrowwood*, cardinal autumn-olive*, European mountainash, fragrant sumac, gray dogwood*, silky dogwood*, Norway spruce*, Siberian crabapple*, Tatarian honeysuckle*.
13A----- Metamora	Green ash, littleleaf linden, Norway maple, ruby red horsechestnut, thornless honeylocust, white oak.	American basswood, American beech, green ash, red maple, silver maple, sugar maple, thornless honeylocust.	American cranberry-bush, Amur maple, blue spruce, nannyberry viburnum, northern white-cedar, red maple, Roselow sargent crabapple, Siberian crabapple, white spruce.	Austrian pine*, eastern white pine*, green ash*, imperial Carolina poplar*, Norway spruce*.	Baltic ivy, bugleweed, goutweed, Japanese spurge, myrtle, purple-leaf wintercreeper, wintergreen.	American cranberry-bush*, bayberry, grape, gray dogwood*, silky dogwood*, nannyberry viburnum*, northern white-cedar*, redosier dogwood*, Siberian crabapple*, Tatarian honeysuckle*, Washington hawthorn*.

See footnotes at end of table.

TABLE 8.--ENVIRONMENTAL PLANTINGS--Continued

Soil name and map symbol	Street borders	Shade trees	Ornamentals	Screens	Plants for shaded areas, roadsides, and steep banks	Wildlife food and cover
14----- Shoals	Green ash, littleleaf linden, Norway maple, ruby red horsechestnut, thornless honeylocust, white oak.	American basswood, American beech, green ash, red maple, silver maple, sugar maple, thornless honeylocust.	American cranberrybush, Amur maple, blue spruce, nannyberry viburnum, northern white-cedar, red maple, Roselow sargent crabapple, white spruce.	Austrian pine*, eastern white pine*, green ash*, imperial Carolina poplar*, Norway spruce*.	Baltic ivy, bugleweed, canby pachystima, goutweed, Japanese spurge, myrtle, purple-leaf wintercreeper, wintergreen.	American cranberry-bush*, bayberry, grape, gray dogwood*, silky dogwood*, nannyberry viburnum*, northern white-cedar*, redosier dogwood*, Siberian crabapple*, Tatarian honeysuckle*, Washington hawthorn*.
15----- Sloan	---	American basswood, green ash.	American cranberrybush, Amur maple, nannyberry viburnum, northern white-cedar.	Eastern white pine*, green ash*, imperial Carolina poplar*.	Baltic ivy, bigleaf wintercreeper, bugleweed, creeping liriope, goutweed, purple-leaf wintercreeper, rockspray cotoneaster.	American cranberry-bush*, bayberry*, grape, gray dogwood*, silky dogwood*, nannyberry viburnum*, northern white-cedar*, redosier dogwood*.
16----- Ceresco	Green ash, littleleaf linden, Norway maple, ruby red horsechestnut, thornless honeylocust, white oak.	American basswood, American beech, green ash, red maple, silver maple, sugar maple, thornless honeylocust.	American cranberry-bush, Amur maple, nannyberry viburnum, northern white-cedar, red maple, Roselow sargent crabapple, Siberian crabapple, white spruce.	Austrian pine*, eastern white pine*, green ash*, imperial Carolina poplar*, Norway spruce*.	Baltic ivy, bugleweed, goutweed, Japanese spurge, myrtle, purple-leaf wintercreeper, wintergreen.	American cranberry-bush*, bayberry, grape, gray dogwood*, silky dogwood*, nannyberry viburnum*, northern white-cedar*, redosier dogwood*, Siberian crabapple*, Tatarian honeysuckle*, Washington hawthorn*.
17B, 17C, 17D, 17E- Chelsea	Green ash, thornless honeylocust, white oak.	Green ash, red maple, silver maple, sugar maple, thornless honeylocust, white oak.	Blue spruce, forsythia, lilac, Midwest flowering crabapple, red pine, Roselow sargent crabapple, Tatarian honeysuckle.	Austrian pine*, Douglas-fir, eastern white pine*, imperial Carolina poplar*, Norway spruce*, pin oak*, red pine*.	Acre stonecrop, bearberry, cotoneaster, creeping liriope, lilyofthevalley, Waukegan juniper.	Amur privet*, bayberry, bearberry, blackberry, cardinal autumn-olive*, fragrant sumac, Siberian crabapple*, Siberian peashrub*, Tatarian honeysuckle*.

See footnotes at end of table.

TABLE 8.--ENVIRONMENTAL PLANTINGS--Continued

Soil name and map symbol	Street borders	Shade trees	Ornamentals	Screens	Plants for shaded areas, roadsides, and steep banks	Wildlife food and cover
18B, 18C----- Glynwood	Green ash, littleleaf linden, Norway maple, ruby red horsechestnut, thornless honeylocust.	American basswood, American beech, green ash, Norway maple, pin oak, red maple, ruby red horsechestnut, silver maple, sugar maple, thornless honeylocust.	Amur maple, blue spruce, eastern redbud, European mountainash, flowering dogwood, forsythia, lilac, ruby red horsechestnut, winged euonymus.	Austrian pine*, Douglas-fir, eastern white pine*, green ash*, imperial Carolina poplar*, Norway spruce*, red pine*.	Andorra juniper, bugleweed, creeping cotoneaster, epimedium, moss pink, myrtle, sargent juniper.	American cranberry-bush*, arrowwood*, cardinal autumn-olive*, European mountainash, fragrant sumac, gray dogwood*, silky dogwood*, Norway spruce*, Siberian crabapple*, Tatarian honeysuckle*.
19A, 19B----- Blount	Green ash, littleleaf linden, Norway maple, ruby red horsechestnut, thornless honeylocust.	American basswood, American beech, green ash, Norway maple, pin oak, red maple, ruby red horsechestnut, silver maple, sugar maple, thornless honeylocust.	American cranberrybush, Amur maple, nannyberry viburnum, northern white-cedar, red maple, white spruce.	Austrian pine*, Douglas-fir, eastern white pine*, green ash*, imperial Carolina poplar*, Norway spruce*, red pine*.	Baltic ivy, bugleweed, canby pachystima, goutweed, Japanese spurge, myrtle, purple-leaf wintercreeper, wintergreen.	American cranberry-bush*, bayberry, grape, gray dogwood*, silky dogwood*, nannyberry viburnum*, northern white-cedar*, redosier dogwood*, Siberian crabapple*, Tatarian honeysuckle*, Washington hawthorn*.
20----- Houghton	---	---	---	---	---	American cranberry-bush*, gray dogwood*, silky dogwood*, nannyberry viburnum*, northern white-cedar*, redosier dogwood*.
22B, 22C----- Oshtemo	Green ash, littleleaf linden, thornless honeylocust, white oak.	American basswood, American beech, green ash, Norway maple, pin oak, ruby red horsechestnut, sugar maple, thornless honeylocust, white oak.	Amur maple, blue spruce, flowering dogwood, forsythia, lilac, red pine, Roselow sargent crabapple, white spruce.	Austrian pine*, Douglas-fir, eastern white pine*, green ash*, imperial Carolina poplar*, Norway spruce*, red pine*.	Acre stonecrop, bugleweed, creeping thyme, epimedium, Hall honeysuckle, lilyofthevalley, moss pink, myrtle, Waukegan juniper.	Amur privet*, bayberry, bearberry, blackberry, cardinal autumn-olive*, fragrant sumac, grape, gray dogwood*, silky dogwood*, Siberian crabapple*, Siberian peashrub*, Tatarian honeysuckle*.

See footnotes at end of table.

TABLE 8.--ENVIRONMENTAL PLANTINGS--Continued

Soil name and map symbol	Street borders	Shade trees	Ornamentals	Screens	Plants for shaded areas, roadsides, and steep banks	Wildlife food and cover
23A----- Thetford	Green ash, littleleaf linden, Norway maple, ruby red horsechestnut, thornless honeylocust, white oak.	American basswood, American beech, green ash, red maple, silver maple, sugar maple, thornless honeylocust, white oak.	Amur maple, blue spruce, forsythia, lilac, northern white-cedar, red maple, red mulberry, red pine, Roselow sargent crabapple, Siberian crabapple, white spruce.	Austrian pine*, eastern white pine*, green ash*, imperial Carolina poplar*, Norway spruce*.	Acre stonecrop, bearberry, cotoneaster, creeping liriopoe, English ivy, lilyofthevalley, Waukegan juniper.	American cranberry-bush*, bayberry, grape, gray dogwood*, silky dogwood*, nannyberry viburnum*, northern white-cedar*, redosier dogwood*, Siberian crabapple*, Tatarian honeysuckle*, Washington hawthorn*.
24A----- Abscota	Green ash, littleleaf linden, Norway maple, ruby red horsechestnut, thornless honeylocust, white oak.	American basswood, American beech, green ash, red maple, sugar maple, thornless honeylocust, white oak.	Amur maple, forsythia, lilac, northern white-cedar, red maple, red mulberry, red pine, Roselow sargent crabapple, Siberian crabapple, white spruce.	Austrian pine*, eastern white pine*, green ash*, imperial Carolina poplar*, Norway spruce*.	Acre stonecrop, bearberry, cotoneaster, creeping liriopoe, English ivy, lilyofthevalley, Waukegan juniper.	Amur privet*, bayberry, bearberry, blackberry, cardinal autumn-olive*, fragrant sumac, Siberian crabapple*, Siberian peashrub*, Tatarian honeysuckle*.
25B, 25C, 25D, 25E- Oakville	Green ash, thornless honeylocust, white oak.	Green ash, red maple, silver maple, sugar maple, thornless honeylocust, white oak.	Blue spruce, forsythia, lilac, Midwest flowering crabapple, Roselow sargent crabapple, Tatarian honeysuckle.	Austrian pine*, Douglas-fir, eastern white pine*, imperial Carolina poplar*, Norway spruce*, pin oak*, red pine*.	Acre stonecrop, bearberry, cotoneaster, creeping liriopoe, English ivy, lilyofthevalley, Waukegan juniper.	Amur privet*, bayberry, bearberry, blackberry, cardinal autumn-olive*, fragrant sumac, Siberian crabapple*, Siberian peashrub*, Tatarian honeysuckle*.
26----- Adrian	---	---	---	---	---	American cranberry-bush*, gray dogwood*, silky dogwood*, nannyberry viburnum*, northern white-cedar*, redosier dogwood*.

See footnotes at end of table.

TABLE 8.--ENVIRONMENTAL PLANTINGS--Continued

Soil name and map symbol	Street borders	Shade trees	Ornamentals	Screens	Plants for shaded areas, roadsides, and steep banks	Wildlife food and cover
27B----- Wasepi	Green ash, littleleaf linden, Norway maple, ruby red horsechestnut, thornless honeylocust, white oak.	American basswood, American beech, green ash, red maple, silver maple, sugar maple, thornless honeylocust, white oak.	American cranberry-bush, Amur maple, blue spruce, forsythia, lilac, nannyberry viburnum, northern white-cedar, red maple, red mulberry, Roselow sargent crabapple, white spruce.	Austrian pine*, eastern white pine*, green ash*, imperial Carolina poplar*, Norway spruce*.	Baltic ivy, bugleweed, canby pachystima, goutweed, Japanese spurge, myrtle, purple-leaf, wintercreeper, wintergreen.	American cranberry-bush*, bayberry, grape, gray dogwood*, silky dogwood*, nannyberry viburnum*, northern white-cedar*, redosier dogwood*, Siberian crabapple*, Tatarian honeysuckle*, Washington hawthorn*.
28----- Gilford	Green ash-----	American basswood, green ash, red maple, silver maple.	American cranberrybush, Amur maple, nannyberry viburnum, northern white-cedar, red maple, red mulberry.	Eastern white pine*, green ash*, imperial Carolina poplar*.	Baltic ivy, bigleaf wintercreeper, bugleweed, goutweed, mountain cranberry, purple-leaf wintercreeper, rockspray cotoneaster.	American cranberry-bush*, bayberry, grape, gray dogwood*, silky dogwood*, nannyberry viburnum*, northern white-cedar*, redosier dogwood*.
29B, 29C, 29D, 29E- Plainfield	Green ash, thornless honeylocust, white oak.	Green ash, red maple, silver maple, sugar maple, thornless honeylocust, white oak.	Blue spruce, forsythia, lilac, Midwest flowering crabapple, red pine, Roselow sargent crabapple, Tatarian honeysuckle.	Austrian pine*, Douglas-fir, eastern white pine*, imperial Carolina poplar*, Norway spruce*, pin oak*, red pine*.	Acre stonecrop, Bearberry, cotoneaster, creeping liriopse, lilyofthevalley, Waukegan juniper.	Amur privet*, bayberry, bearberry, blackberry, cardinal autumn-olive*, fragrant sumac, Siberian crabapple*, Siberian peashrub*, Tatarian honeysuckle*.
30B, 30C, 30D----- Spinks	Green ash, littleleaf linden, Norway maple, ruby red horsechestnut, thornless honeylocust, white oak.	American basswood, American beech, green ash, Norway maple, pin oak, red maple, sugar maple, thornless honeylocust, white oak.	Forsythia, lilac, red pine, Roselow sargent crabapple.	Austrian pine*, Douglas-fir, eastern white pine*, imperial Carolina poplar*, Norway spruce*, red pine*.	Acre stonecrop, bearberry, cotoneaster, creeping liriopse, English ivy, lilyofthevalley, Waukegan juniper.	Amur privet*, bayberry, bearberry, blackberry, cardinal autumn-olive*, fragrant sumac, Siberian crabapple*, Siberian peashrub*, Tatarian honeysuckle*.
31----- Wallkill	---	---	---	---	---	American cranberry-bush*, bayberry, grape, gray dogwood*, silky dogwood*, nannyberry viburnum*, northern white-cedar*, redosier dogwood*.

See footnotes at end of table.

TABLE 8.--ENVIRONMENTAL PLANTINGS--Continued

Soil name and map symbol	Street borders	Shade trees	Ornamentals	Screens	Plants for shaded areas, roadsides, and steep banks	Wildlife food and cover
32----- Palms	---	---	---	---	---	American cranberry-bush*, bayberry, grape, gray dogwood*, silky dogwood*, nannyberry viburnum*, northern white-cedar*, redosier dogwood*.
36B, 36C, 36D, 36E, 36F----- Marlette	Green ash, littleleaf linden, Norway maple, ruby red horsechestnut, thornless honeylocust.	American basswood, American beech, green ash, Norway maple, pin oak, red maple, ruby red horsechestnut, sugar maple, thornless honeylocust.	Amur maple, blue spruce, eastern redbud, European mountainash, flowering dogwood, forsythia, lilac, Roselow sargent crabapple, ruby red horsechestnut, winged euonymus.	Austrian pine*, Douglas-fir, eastern white pine*, imperial Carolina poplar*, Norway spruce*, red pine*.	Andorra juniper, bugleweed, creeping cotoneaster, epimedium, Hall honeysuckle, moss pink, myrtle, sargent juniper.	American cranberry-bush*, arrowwood*, cardinal autumn-olive*, European mountainash, fragrant sumac, gray dogwood*, silky dogwood*, Norway spruce*, Siberian crabapple*, Tatarian honeysuckle*.
37B----- Capac	Green ash, littleleaf linden, Norway maple, ruby red horsechestnut, thornless honeylocust, white oak.	American basswood, American beech, green ash, red maple, silver maple, sugar maple, thornless honeylocust, white oak.	Amur maple, blue spruce, forsythia, lilac, nannyberry viburnum, northern white-cedar, red maple, Roselow sargent crabapple, white spruce.	Austrian pine*, eastern white pine*, green ash*, imperial Carolina poplar*, Norway spruce*.	Baltic ivy, bugleweed, canby pachystima, goutweed, Japanese spurge, myrtle, purple-leaf wintercreeper, wintergreen.	American cranberry-bush*, bayberry, grape, gray dogwood*, silky dogwood*, nannyberry viburnum*, northern white-cedar*, Siberian crabapple*, Tatarian honeysuckle*, Washington hawthorn*.
38----- Parkhill	Green ash-----	American basswood, green ash, red maple, silver maple.	American cranberrybush, Amur maple, nannyberry viburnum, northern white-cedar, red maple.	Eastern white pine*, green ash*, imperial Carolina poplar*.	Baltic ivy, bigleaf wintercreeper, bugleweed, goutweed, purple-leaf wintercreeper, rockspray cotoneaster.	American cranberry-bush*, bayberry, grape, gray dogwood*, silky dogwood*, nannyberry viburnum*, northern white-cedar*, redosier dogwood*.
39B, 39C----- Arkport	Green ash, littleleaf linden, Norway maple, ruby red horsechestnut, thornless honeylocust, white oak.	American basswood, American beech, green ash, Norway maple, pin oak, red maple, sugar maple, thornless honeylocust, white oak.	Blue spruce, forsythia, lilac, red pine, Roselow sargent crabapple, white spruce.	Austrian pine*, Douglas-fir, eastern white pine*, imperial Carolina poplar*, Norway spruce*, red pine*.	Acre stonecrop, bugleweed, creeping thyme, epimedium, Hall honeysuckle, lilyofthevalley, moss pink, myrtle, Waukegan juniper.	Amur privet*, bayberry, bearberry, blackberry, cardinal autumn-olive*, fragrant sumac, grape, Siberian crabapple*, Siberian peashrub*, Tatarian honeysuckle*.

See footnotes at end of table.

TABLE 8.--ENVIRONMENTAL PLANTINGS--Continued

Soil name and map symbol	Street borders	Shade trees	Ornamentals	Screens	Plants for shaded areas, roadsides, and steep banks	Wildlife food and cover
40B----- Martherton	Green ash, littleleaf linden, Norway maple, ruby red horsechestnut, thornless honeylocust, white oak.	American basswood, American beech, green ash, red maple, silver maple, sugar maple, thornless maple, honeylocust, white oak.	American cranberry-bush, Amur maple, blue spruce, nannyberry viburnum, northern white-cedar, red maple, red mulberry, Roselow sargent crabapple, Siberian crabapple, white spruce.	Austrian pine*, eastern white pine*, green ash*, imperial Carolina poplar*, Norway spruce*.	Baltic ivy, bugleweed, canby pachystima, goutweed, Japanese spurge, myrtle, purple-leaf, wintercreeper, wintergreen.	American cranberry-bush*, bayberry, grape, gray dogwood*, silky dogwood*, nannyberry viburnum*, northern white-cedar*, redosier dogwood*, Siberian crabapple*, Tatarian honeysuckle*, Washington hawthorn*.
41B----- Kibbie	Green ash, littleleaf linden, Norway maple, ruby red horsechestnut, thornless honeylocust, white oak.	American basswood, American beech, green ash, red maple, silver maple, sugar maple, thornless maple, honeylocust, white oak.	American cranberry-bush, Amur maple, blue spruce, nannyberry viburnum, northern white-cedar, red maple, Roselow sargent crabapple, white spruce.	Austrian pine*, eastern white pine*, green ash*, imperial Carolina poplar*, Norway spruce*.	Baltic ivy, bugleweed, canby pachystima, goutweed, Japanese spurge, myrtle, purple-leaf, wintercreeper, wintergreen.	American cranberry-bush*, bayberry, grape, gray dogwood*, silky dogwood*, nannyberry viburnum*, northern white-cedar*, redosier dogwood*, Siberian crabapple*, Tatarian honeysuckle*, Washington hawthorn*.
42B----- Tedrow	Green ash, littleleaf linden, Norway maple, ruby red horsechestnut, thornless honeylocust, white oak.	American basswood, American beech, green ash, red maple, silver maple, sugar maple, thornless maple, honeylocust, white oak.	American cranberrybush, Amur maple, blue spruce, nannyberry viburnum, northern white-cedar, red maple, red mulberry, Roselow sargent crabapple, white spruce.	Austrian pine*, eastern white pine*, green ash*, imperial Carolina poplar*, Norway spruce*, pin oak*, red pine*.	Acre stonecrop, bearberry, cotoneaster, creeping liriope, English ivy, lilyofthevalley, Waukegan juniper.	American cranberry-bush*, bayberry, cardinal autumn-olive*, grape, nannyberry viburnum*, northern white-cedar*, Siberian crabapple*, Tatarian honeysuckle*, Washington hawthorn*.
43----- Granby	Green ash-----	Green ash, red maple, silver maple.	Amur maple, northern white-cedar, red maple, red mulberry, Roselow sargent crabapple, Siberian crabapple.	Eastern white pine*, green ash*, imperial Carolina poplar*.	Baltic ivy, bigleaf wintercreeper, bugleweed, goutweed, mountain cranberry, purple-leaf wintercreeper, rockspray cotoneaster.	American cranberry-bush*, Amur privet*, gray dogwood*, silky dogwood*, nannyberry viburnum*, northern white-cedar*, redosier dogwood*.

See footnotes at end of table.

TABLE 8.--ENVIRONMENTAL PLANTINGS--Continued

Soil name and map symbol	Street borders	Shade trees	Ornamentals	Screens	Plants for shaded areas, roadsides, and steep banks	Wildlife food and cover
44----- Edwards	---	---	---	---	---	American cranberry-bush*, bayberry, grape, gray dogwood*, silky dogwood*, nannyberry viburnum*, northern white-cedar*, redosier dogwood*.
45B, 45C, 45D, 45E, 45F----- Perrinton	Green ash, littleleaf linden, Norway maple, ruby red horsechestnut, thornless honeylocust.	American basswood, American beech, green ash, Norway maple, pin oak, red maple, ruby red horsechestnut, sugar maple, thornless honeylocust.	Amur maple, blue spruce, eastern redbud, European mountainash, flowering dogwood, forsythia, lilac, Roselow sargent crabapple, ruby red horsechestnut, winged euonymus.	Austrian pine*, Douglas-fir, eastern white pine*, imperial Carolina poplar*, Norway spruce*, red pine*.	Andorra juniper, bugleweed, creeping cotoneaster, epimedium, moss pink, myrtle, sargent juniper.	American cranberry-bush*, arrowwood*, cardinal autumn-olive*, European mountainash*, fragrant sumac, gray dogwood*, silky dogwood*, Norway spruce*, Siberian crabapple*, silver buffaloberry*, Tatarian honeysuckle*.
46B----- Ithaca	Green ash, littleleaf linden, Norway maple, ruby red horsechestnut, thornless honeylocust, white oak.	American basswood, American beech, green ash, red maple, silver maple, sugar maple, thornless honeylocust, white oak.	American cranberry-bush, Amur maple, blue spruce, nannyberry viburnum, northern white-cedar, red maple, Roselow sargent crabapple, white spruce.	Austrian pine*, eastern white pine*, green ash*, imperial Carolina poplar*, Norway spruce*.	Baltic ivy, bugleweed, canby pachystima, goutweed, Japanese spurge, myrtle, purple-leaf wintercreeper, wintergreen.	American cranberry-bush*, bayberry, grape, gray dogwood*, silky dogwood*, nannyberry viburnum*, northern white-cedar*, redosier dogwood*, Siberian crabapple*, Tatarian honeysuckle*, Washington hawthorn*.
47----- Pewamo	Green ash-----	American basswood, green ash, red maple, silver maple.	Amur maple, northern white-cedar, red maple.	Eastern white pine*, green ash*, imperial Carolina poplar*.	Baltic ivy, bigleaf wintercreeper, bugleweed, goutweed, purple-leaf wintercreeper, rockspray cotoneaster.	American cranberry-bush*, bayberry, grape, gray dogwood*, silky dogwood*, nannyberry viburnum*, northern white-cedar*, redosier dogwood*.

See footnotes at end of table.

TABLE 8.--ENVIRONMENTAL PLANTINGS--Continued

Soil name and map symbol	Street borders	Shade trees	Ornamentals	Screens	Plants for shaded areas, roadsides, and steep banks	Wildlife food and cover
48B, 48C, 48D----- Metea	Green ash, littleleaf linden, Norway maple, ruby red horsechestnut, thornless honeylocust, white oak.	American basswood, American beech, green ash, Norway maple, pin oak, red maple, sugar maple, thornless honeylocust, white oak.	Blue spruce, forsythia, lilac, red pine, Roselow sargent crabapple, white spruce.	Austrian pine*, Douglas-fir, eastern white pine*, imperial Carolina poplar*, Norway spruce*, red pine*.	Andorra juniper, bugleweed, creeping cotoneaster, epimedium, Hall honeysuckle, moss pink, myrtle, sargent juniper.	American cranberry-bush*, arrowwood*, cardinal autumn-olive*, European mountainash, fragrant sumac, gray dogwood*, silky dogwood*, Norway spruce*, Siberian crabapple*, Tatarian honeysuckle*.
49B----- Selfridge	Green ash, littleleaf linden, Norway maple, ruby red horsechestnut, thornless honeylocust, white oak.	American basswood, American beech, green ash, red maple, silver maple, sugar maple, thornless honeylocust, white oak.	American cranberry-bush, Amur maple, blue spruce, nannyberry viburnum, northern white-cedar, red maple, red mulberry, Roselow sargent crabapple, white spruce.	Austrian pine*, eastern white pine*, green ash*, imperial Carolina poplar*, Norway spruce*.	Baltic ivy, bugleweed, canby pachystima, goutweed, Japanese spurge, myrtle, purple-leaf wintercreeper, wintergreen.	American cranberry-bush*, bayberry, grape, gray dogwood*, silky dogwood*, nannyberry viburnum*, northern white-cedar*, redosier dogwood*, Siberian crabapple*, Tatarian honeysuckle*, Washington hawthorn*.
50B, 50C, 50D----- Woodbeck	Green ash, littleleaf linden, ruby red horsechestnut, thornless honeylocust, white oak.	American basswood, American beech, green ash, Norway maple, pin oak, ruby red horsechestnut, sugar maple, thornless honeylocust, white oak.	Amur maple, blue spruce, eastern redbud, European mountainash, flowering dogwood, forsythia, lilac, Roselow sargent crabapple, ruby red horsechestnut, winged euonymus.	Austrian pine*, Douglas-fir, eastern white pine*, green ash*, imperial Carolina poplar*, Norway spruce*, red pine*.	Andorra juniper, bugleweed, creeping cotoneaster, epimedium, Hall honeysuckle, moss pink, myrtle, sargent juniper.	American cranberry-bush*, arrowwood*, cardinal autumn-olive*, European mountainash, fragrant sumac, gray dogwood*, silky dogwood*, Norway spruce*, Siberian crabapple*, Tatarian honeysuckle*.
51B, 51C----- Oakville	Green ash, thornless honeylocust, white oak.	Green ash, red maple, silver maple, sugar maple, thornless honeylocust, white oak.	Blue spruce, forsythia, lilac, Midwest flowering crabapple, red pine, Roselow sargent crabapple, Tatarian honeysuckle, white spruce.	Austrian pine*, Douglas-fir, eastern white pine*, imperial Carolina poplar*, Norway spruce*, pin oak*, red pine*.	Andorra juniper, bugleweed, creeping cotoneaster, epimedium, Hall honeysuckle, moss pink, myrtle, sargent juniper.	American cranberry-bush*, arrowwood*, cardinal autumn-olive*, European mountainash, fragrant sumac, gray dogwood*, silky dogwood*, Norway spruce*, Siberian crabapple*, Tatarian honeysuckle*.

See footnotes at end of table.

TABLE 8.--ENVIRONMENTAL PLANTINGS--Continued

Soil name and map symbol	Street borders	Shade trees	Ornamentals	Screens	Plants for shaded areas, roadsides, and steep banks	Wildlife food and cover
52----- Belleville	Green ash-----	Green ash, red maple, silver maple.	Amur maple, nanny-berry viburnum, northern white-cedar, red maple, red mulberry, Roselow sargent crabapple, Siberian crabapple.	Eastern white pine*, green ash*, imperial Carolina poplar*.	Baltic ivy, bigleaf wintercreeper, bugleweed, goutweed, mountain craberry, purple-leaf wintercreeper, rockspray cotoneaster.	American cranberry-bush*, gray dogwood*, silky dogwood*, nanny-berry viburnum*, northern white-cedar*, redosier dogwood*, Tatarian honeysuckle*.
54B, 54C----- Tuscola	Green ash, littleleaf linden, Norway maple, ruby red horsechestnut, thornless honeylocust, white oak.	American basswood, American beech, green ash, Norway maple, pin oak, red maple, ruby red horsechestnut, silver maple, sugar maple, thornless honeylocust, white oak.	Amur maple, blue spruce, eastern redbud, European mountainash, flowering dogwood, forsythia, lilac, Roselow sargent crabapple, ruby red horsechestnut, winged euonymus.	Austrian pine*, Douglas-fir, eastern white pine*, green ash*, imperial Carolina poplar*, Norway spruce*, red pine*.	Andorra juniper, bugleweed, creeping cotoneaster, epimedium, Hall honeysuckle, moss pink, myrtle, sargent juniper.	American cranberry-bush*, arrowwood*, cardinal autumn-olive*, European mountainash, fragrant sumac, gray dogwood*, silky dogwood*, Norway spruce*, Siberian crabapple*, Tatarian honeysuckle*.
56B, 56C, 56D----- Scalley	Green ash, littleleaf linden, Norway maple, ruby red horsechestnut, thornless honeylocust, white oak.	American basswood, American beech, green ash, Norway maple, pin oak, red maple, ruby red horsechestnut, silver maple, sugar maple, thornless honeylocust, white oak.	Amur maple, blue spruce, eastern redbud, European mountainash, flowering dogwood, forsythia, lilac, Roselow sargent crabapple, ruby red horsechestnut, winged euonymus.	Austrian pine*, Douglas-fir, eastern white pine*, green ash*, imperial Carolina poplar*, Norway spruce*, red pine*.	Andorra juniper, bugleweed, creeping cotoneaster, epimedium, Hall honeysuckle, moss pink, myrtle, sargent juniper.	American cranberry-bush*, arrowwood*, cardinal autumn-olive*, European mountainash, fragrant sumac, gray dogwood*, silky dogwood*, Norway spruce*, Siberian crabapple*, Tatarian honeysuckle*.
58. Napoleon						
59B, 59C, 59D----- Okee	Green ash, littleleaf linden, Norway maple, ruby red horsechestnut, thornless honeylocust, white oak.	American basswood, American beech, green ash, Norway maple, pin oak, red maple, sugar maple, thornless honeylocust, white oak.	Blue spruce, forsythia, lilac, red pine, Roselow sargent crabapple, white spruce.	Austrian pine*, Douglas-fir, eastern white pine*, imperial Carolina poplar*, Norway spruce*, red pine*.	Acre stonecrop, bugleweed, creeping thyme, epimedium, lilyofthevalley, moss pink, plantain lily, Waukegan juniper.	Amur privet*, bayberry, bearberry, blackberry, cardinal autumn-olive*, grape, gray dogwood*, silky dogwood*, redosier dogwood*, Siberian peashrub*, Tatarian honeysuckle*.

See footnotes at end of table.

TABLE 8.--ENVIRONMENTAL PLANTINGS--Continued

Soil name and map symbol	Street borders	Shade trees	Ornamentals	Screens	Plants for shaded areas, roadsides, and steep banks	Wildlife food and cover
62A, 62B, 62C, 62D, 62E----- Tekonink	Green ash, littleleaf linden, Norway maple, ruby red horsechestnut, thornless honeylocust, white oak.	American basswood, American beech, green ash, Norway maple, pin oak, sugar maple, thornless honeylocust.	Amur maple, blue spruce, eastern redbud, European mountainash, flowering dogwood, forsythia, lilac, Roselow sargent crabapple, ruby red horsechestnut, winged euonymus.	Austrian pine*, Douglas-fir*, eastern white pine*, imperial Carolina poplar*, Norway spruce*, red pine*.	Andorra juniper, bugleweed, creeping cotoneaster, epimedium, Hall honeysuckle, moss pink, myrtle, sargent juniper.	American cranberry-bush*, arrowwood*, cardinal autumn-olive*, European mountainash, fragrant sumac, gray dogwood*, silky dogwood*, Norway spruce*, Siberian crabapple*, Tatarian honeysuckle*.
63**: Urban land. Cohoctah-----	---	American basswood, green ash, red maple, silver maple.	American cranberrybush, Amur maple, nannyberry viburnum, northern white-cedar, red maple.	Eastern white pine*, green ash*, imperial Carolina poplar*.	Baltic ivy, bigleaf winter-creeper, bugleweed, goutweed, mountain cranberry, purple-leaf wintercreeper, rockspray cotoneaster.	American cranberry-bush*, bayberry, grape, gray dogwood*, silky dogwood*, nannyberry viburnum*, northern white-cedar*, redosier dogwood*.
64B, 64C----- Grattan	Green ash, thornless honeylocust, white oak.	Green ash, red maple, silver maple, sugar maple, thornless honeylocust, white oak.	Blue spruce, forsythia, lilac, Midwest flowering crabapple, red pine, Roselow sargent crabapple, Tatarian honeysuckle.	Austrian pine*, Douglas-fir, eastern white pine*, imperial Carolina poplar*, Norway spruce*, pin oak*, red pine*.	Acre stonecrop, bearberry, cotoneaster, creeping liriopse, English ivy, lilyofthevalley, Waukegan juniper.	Amur privet*, bayberry, bearberry, blackberry, cardinal autumn-olive*, fragrant sumac, grape, Siberian crabapple*, Siberian peashrub*, Tatarian honeysuckle*.
66B, 66C, 66D, 66E----- Boyer	Green ash, littleleaf linden, ruby red horsechestnut, thornless honeylocust, white oak.	American basswood, American beech, green ash, Norway maple, pin oak, ruby red horsechestnut, sugar maple, thornless honeylocust, white oak.	Amur maple, blue spruce, eastern redbud, flowering dogwood, forsythia, lilac, red pine, Roselow sargent crabapple, white spruce.	Austrian pine*, Douglas-fir, eastern white pine*, green ash*, imperial Carolina poplar*, Norway spruce*, red pine*.	Acre stonecrop, bugleweed, creeping thyme, epimedium, Hall honeysuckle, lilyofthevalley, moss pink, myrtle, Waukegan juniper.	Amur privet*, bayberry, bearberry, blackberry, cardinal autumn-olive*, grape, Siberian crabapple*, Siberian peashrub*, Tatarian honeysuckle*.

See footnotes at end of table.

TABLE 8.--ENVIRONMENTAL PLANTINGS--Continued

Soil name and map symbol	Street borders	Shade trees	Ornamentals	Screens	Plants for shaded areas, roadsides, and steep banks	Wildlife food and cover
67B, 67C, 67D----- Kalamazoo	Green ash, littleleaf linden, ruby red horsechestnut, thornless honeylocust, white oak.	American basswood, American beech, green ash, Norway maple, pin oak, ruby red horsechestnut, sugar maple, thornless honeylocust.	Amur maple, blue spruce, eastern redbud, European mountainash, flowering dogwood, forsythia, lilac, Roselow sargent crabapple, ruby red horsechestnut, winged euonymus.	Austrian pine*, Douglas-fir, eastern white pine*, imperial Carolina poplar*, Norway spruce*, red pine*.	Andorra juniper, bugleweed, creeping cotoneaster, epimedium, Hall honeysuckle, moss pink, myrtle, sargent juniper.	American cranberry-bush*, arrowwood*, cardinal autumn-olive*, European mountainash, fragrant sumac, gray dogwood*, silky dogwood*, Norway spruce*, Siberian crabapple*, silver buffaloberry*, Tatarian honeysuckle*.
68B, 68C----- Saylesville	Green ash, littleleaf linden, Norway maple, ruby red horsechestnut, thornless honeylocust.	American basswood, American beech, green ash, Norway maple, pin oak, red maple, ruby red horsechestnut, sugar maple, thornless honeylocust.	Amur maple, blue spruce, eastern redbud, European mountainash, flowering dogwood, forsythia, lilac, Roselow sargent crabapple, ruby red horsechestnut, winged euonymus.	Austrian pine*, Douglas-fir*, eastern white pine*, imperial Carolina poplar*, Norway spruce*, red pine*.	Andorra juniper, bugleweed, creeping cotoneaster, epimedium, moss pink, myrtle, sargent juniper.	American cranberry-bush*, arrowwood*, cardinal autumn-olive*, European mountainash, fragrant sumac, gray dogwood*, silky dogwood*, Norway spruce*, Siberian crabapple*, silver buffaloberry*, Tatarian honeysuckle*.
69----- Colwood	Green ash-----	American basswood, green ash, red maple, silver maple.	American cranberrybush, Amur maple, nannyberry viburnum, northern white-cedar, red maple.	Eastern white pine*, green ash*, imperial Carolina poplar*.	Baltic ivy, bigleaf winter-creeper, bugleweed, goutweed, mountain cranberry, purple-leaf wintercreeper, rockspray cotoneaster.	American cranberry-bush*, bayberry, grape, gray dogwood*, silky dogwood*, nannyberry viburnum*, northern white-cedar*, redosier dogwood*.
73----- Sebewa	Green ash-----	American basswood, green ash, red maple, silver maple.	American cranberrybush, Amur maple, nannyberry viburnum, northern white-cedar, red maple.	Eastern white pine*, green ash*, imperial Carolina poplar*.	Baltic ivy, bigleaf winter-creeper, bugleweed, goutweed, purple-leaf wintercreeper, rockspray cotoneaster.	American cranberry-bush*, bayberry, grape, gray dogwood*, silky dogwood*, nannyberry viburnum*, northern white-cedar*, redosier dogwood*.
74**. Dumps						

See footnotes at end of table.

TABLE 8.--ENVIRONMENTAL PLANTINGS--Continued

Soil name and map symbol	Street borders	Shade trees	Ornamentals	Screens	Plants for shaded areas, roadsides, and steep banks	Wildlife food and cover
75. Udorthents						
76. Udipsamments						
77**. Pits						
78**. Urban land						
79**. Houghton						
80. Udorthents						
81B**, 81C**, 81D**: Urban land. Spinks-----	Green ash, littleleaf linden, Norway maple, ruby red horsechestnut, thornless honeylocust, white oak.	American basswood, American beech, green ash, Norway maple, pin oak, red maple, sugar maple, thornless honeylocust, white oak.	Blue spruce, forsythia, lilac, red pine, Roselow sargent crabapple.	Douglas-fir, eastern white pine*, imperial Carolina poplar*, Norway spruce*, red pine*.	Acre stonecrop, bearberry, cotoneaster, creeping liriopse, English ivy, lilyofthevalley, Waukegan juniper.	Amur privet*, bayberry, bearberry, blackberry, cardinal autumn-olive*, fragrant sumac, grape, Siberian crabapple*, Siberian peashrub*, Tatarian honeysuckle*.
82B**, 82C**, 82D**: Urban land. Perrinton-----	Green ash, littleleaf linden, Norway maple, ruby red horsechestnut, thornless honeylocust.	American basswood, American beech, green ash, Norway maple, pin oak, red maple, sugar maple, thornless honeylocust.	Amur maple, blue spruce, eastern redbud, European mountainash, flowering dogwood, forsythia, lilac, Roselow sargent crabapple, ruby red horsechestnut, winged euonymus.	Douglas-fir, eastern white pine*, imperial Carolina poplar*, Norway spruce*.	Andorra juniper, bugleweed, creeping cotoneaster, epimedium, Hall honeysuckle, moss pink, myrtle, sargent juniper.	American cranberry-bush*, arrowwood*, cardinal autumn-olive*, European mountainash, gray dogwood*, silky dogwood*, Norway spruce*, Siberian crabapple*, Tatarian honeysuckle*.

See footnotes at end of table.

TABLE 8.--ENVIRONMENTAL PLANTINGS--Continued

Soil name and map symbol	Street borders	Shade trees	Ornamentals	Screens	Plants for shaded areas, roadsides, and steep banks	Wildlife food and cover
83B----- Marlette	Green ash, littleleaf linden, Norway maple, ruby red horsechestnut, thornless honeylocust.	American basswood, American beech, green ash, Norway maple, pin oak, red maple, ruby red horsechestnut, sugar maple, thornless honeylocust.	Amur maple, blue spruce, eastern redbud, European mountainash, flowering dogwood, forsythia, lilac, Roselow sargent crabapple, ruby red horsechestnut, winged euonymus.	Austrian pine*, Douglas-fir, eastern white pine*, imperial pine*, Carolina poplar*, Norway spruce*, red pine*.	Andorra juniper, bugleweed, creeping cotoneaster, epimedium, Hall honeysuckle, moss pink, myrtle, sargent juniper.	American cranberry-bush*, arrowwood*, cardinal autumn-olive*, European mountainash, fragrant sumac, gray dogwood*, silky dogwood*, Norway spruce*, Siberian crabapple*, Tatarian honeysuckle*.
84B----- Dixboro	Green ash, littleleaf linden, Norway maple, ruby red horsechestnut, thornless honeylocust, white oak.	American basswood, American beech, green ash, red maple, silver maple, sugar maple, thornless honeylocust, white oak.	American cranberry-bush, Amur maple, blue spruce, nannyberry viburnum, northern white-cedar, red maple, red mulberry, Roselow sargent crabapple, Siberian crabapple, white spruce.	Austrian pine*, eastern white pine*, green ash*, imperial pine*, Norway spruce*, Carolina poplar*.	Baltic ivy, bugleweed, canby pachystima, goutweed, Japanese spurge, myrtle, purple-leaf wintercreeper, wintergreen.	American cranberry-bush*, bayberry, grape, gray dogwood*, silky dogwood*, nannyberry viburnum*, northern white-cedar*, redosier dogwood*, Siberian crabapple*, Tatarian honeysuckle*, Washington hawthorn*.
85----- Lamson	Green ash-----	American basswood, green ash, red maple, silver maple.	American cranberrybush, Amur maple, nannyberry viburnum, northern white-cedar, red maple.	Eastern white pine*, green ash*, imperial pine*, Carolina poplar*.	Baltic ivy, bigleaf wintercreeper, bugleweed, goutweed, mountain cranberry, purple-leaf wintercreeper, rockspray cotoneaster.	American cranberry-bush*, bayberry, grape, gray dogwood*, silky dogwood*, nannyberry viburnum*, northern white-cedar*, redosier dogwood*.
86B----- Teasdale	Green ash, littleleaf linden, Norway maple, ruby red horsechestnut, thornless honeylocust, white oak.	American basswood, American beech, green ash, red maple, silver maple, sugar maple, thornless honeylocust, white oak.	American cranberry-bush, Amur maple, blue spruce, nannyberry viburnum, northern white-cedar, red maple, Roselow sargent crabapple, Siberian crabapple, white spruce.	Austrian pine*, eastern white pine*, green ash*, imperial pine*, Carolina poplar*, Norway spruce*.	Baltic ivy, bugleweed, goutweed, Japanese spurge, myrtle, purple-leaf wintercreeper, wintergreen.	American cranberry-bush*, bayberry, grape, gray dogwood*, silky dogwood*, nannyberry viburnum*, northern white-cedar*, redosier dogwood*, Siberian crabapple*, Tatarian honeysuckle*, Washington hawthorn*.

See footnotes at end of table.

TABLE 8.--ENVIRONMENTAL PLANTINGS--Continued

Soil name and map symbol	Street borders	Shade trees	Ornamentals	Screens	Plants for shaded areas, roadsides, and steep banks	Wildlife food and cover
87B----- Pipestone	Green ash, thornless honeylocust, white oak.	Green ash, red maple, silver maple, sugar maple, thornless honeylocust, white oak.	Amur maple, blue spruce, Midwest flowering crabapple, northern white-cedar, red maple, red mulberry, Roselow sargent crabapple, Tatarian honeysuckle.	Austrian pine*, Douglas-fir, eastern white pine*, Norway spruce*, pin oak*, red pine*.	Acre stonecrop, bearberry, cotoneaster, creeping liriopse, English ivy, lilyofthevalley, Waukegan juniper.	American cranberry-bush*, bayberry, cardinal autumn-olive*, grape, nanny-berry viburnum*, northern white-cedar*, Siberian crabapple*, Tatarian honeysuckle*, Washington hawthorn*.
89E**: Marlette-----	Green ash, littleleaf linden, Norway maple, ruby red horsechestnut, thornless honeylocust.	American basswood, American beech, green ash, Norway maple, pin oak, red maple, ruby red horsechestnut, sugar maple, thornless honeylocust.	Amur maple, blue spruce, eastern redbud, European mountainash, flowering dogwood, forsythia, green ash, lilac, Roselow sargent crabapple, ruby red horsechestnut, winged euonymus.	Austrian pine*, Douglas-fir, eastern white pine*, imperial Carolina poplar*, Norway spruce*, red pine*.	Andorra juniper, bugleweed, creeping cotoneaster, epimedium, Hall honeysuckle, moss pink, myrtle, sargent juniper.	American cranberry-bush*, arrowwood*, cardinal autumn-olive*, European mountainash, fragrant sumac, gray dogwood*, silky dogwood*, Norway spruce*, Siberian crabapple*, Tatarian honeysuckle*.
Oakville-----	Green ash, thornless honeylocust, white oak.	Green ash, red maple, silver maple, sugar maple, thornless honeylocust, white oak.	Blue spruce, forsythia, lilac, Midwest flowering crabapple, red pine, Roselow sargent crabapple, Tatarian honeysuckle.	Austrian pine*, Douglas-fir, imperial Carolina poplar*, Norway spruce*, pin oak*, red pine*.	Acre stonecrop, bearberry, cotoneaster, creeping liriopse, lilyofthevalley, Waukegan juniper.	Amur privet*, bayberry, bearberry, blackberry, cardinal autumn-olive*, fragrant sumac, Siberian crabapple*, Siberian peashrub*, Tatarian honeysuckle*.
Boyer-----	Green ash, littleleaf linden, ruby red horsechestnut, thornless honeylocust, white oak.	American basswood, American beech, green ash, Norway maple, pin oak, sugar maple, thornless honeylocust, white oak.	Amur maple, eastern redbud, flowering dogwood, forsythia, lilac, red pine, Roselow sargent crabapple, white spruce.	Austrian pine*, eastern white pine*, green ash*, imperial Carolina poplar*, Norway spruce*, red pine*.	Acre stonecrop, bugleweed, creeping thyme, epimedium, Hall honeysuckle, lilyofthevalley, moss pink, myrtle, Waukegan juniper.	Amur privet*, bayberry, bearberry, blackberry, cardinal autumn-olive*, grape, Siberian crabapple*, Siberian peashrub*, Tatarian honeysuckle*.

* The plant is suitable for use in windbreaks.

** 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
2B----- Oakville	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty.
3B----- Covert	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty, too sandy.
4B----- Perrin	Moderate: small stones, wetness.	Moderate: wetness, small stones.	Moderate: small stones.	Slight-----	Moderate: droughty.
5----- Algansee	Severe: flooding, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: flooding, wetness.
6----- Glendora	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness, flooding.
7----- Cohoctah	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.	Severe: flooding, wetness.
9B----- Rimer	Severe: wetness, percs slowly.	Severe: percs slowly.	Severe: wetness, percs slowly.	Moderate: wetness.	Moderate: wetness, droughty.
10----- Landes	Severe: flooding.	Slight-----	Slight-----	Slight-----	Moderate: droughty, flooding.
11B*: Owosso-----	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, percs slowly.	Slight-----	Slight.
Marlette-----	Slight-----	Slight-----	Moderate: slope.	Slight-----	Slight.
11C*: Owosso-----	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Slight-----	Moderate: slope.
Marlette-----	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight-----	Moderate: slope.
12B----- Tustin	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, percs slowly.	Slight-----	Slight.
12C----- Tustin	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Slight-----	Moderate: slope.
13A----- Metamora	Severe: wetness.	Moderate: wetness, percs slowly.	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
14----- Shoals	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
15----- Sloan	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness, flooding.
16----- Ceresco	Severe: flooding, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness, droughty, flooding.
17B----- Chelsea	Slight-----	Slight-----	Slight-----	Slight-----	Moderate: droughty.
17C----- Chelsea	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight-----	Moderate: slope, droughty.
17D----- Chelsea	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
17E----- Chelsea	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
18B----- Glynwood	Moderate: percs slowly, wetness.	Moderate: wetness, percs slowly.	Moderate: wetness, slope, percs slowly.	Moderate: wetness.	Slight.
18C----- Glynwood	Moderate: slope, percs slowly, wetness.	Moderate: slope, wetness, percs slowly.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
19A, 19B----- Blount	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
20----- Houghton	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding.
22B----- Oshtemo	Slight-----	Slight-----	Moderate: small stones, slope.	Slight-----	Slight.
22C----- Oshtemo	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight-----	Moderate: slope.
23A----- Thetford	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness, droughty.
24A----- Abscota	Severe: flooding.	Slight-----	Moderate: flooding.	Slight-----	Moderate: flooding, droughty.
25B----- Oakville	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	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
25C----- Oakville	Severe: too sandy.	Severe: too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Moderate: slope, droughty.
25D----- Oakville	Severe: too sandy, slope.	Severe: too sandy, slope.	Severe: slope, too sandy.	Severe: too sandy.	Severe: slope.
25E----- Oakville	Severe: too sandy, slope.	Severe: too sandy, slope.	Severe: slope, too sandy.	Severe: slope, too sandy.	Severe: slope.
26----- Adrian	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding.
27B----- Wasepi	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness, droughty.
28----- Gilford	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
29B----- Plainfield	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
29C----- Plainfield	Severe: too sandy.	Severe: too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Severe: droughty.
29D----- Plainfield	Severe: slope, too sandy.	Severe: slope, too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Severe: droughty, slope.
29E----- Plainfield	Severe: slope, too sandy.	Severe: slope, too sandy.	Severe: slope, too sandy.	Severe: slope, too sandy.	Severe: droughty, slope.
30B----- Spinks	Slight-----	Slight-----	Moderate: slope, small stones.	Slight-----	Moderate: droughty.
30C----- Spinks	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight-----	Moderate: droughty, slope.
30D----- Spinks	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
31----- Wallkill	Severe: flooding, wetness, excess humus.	Severe: wetness, excess humus.	Severe: excess humus, wetness.	Severe: wetness, excess humus, erodes easily.	Severe: wetness, flooding.
32----- Palms	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: ponding, excess humus.
36B----- Marlette	Slight-----	Slight-----	Moderate: slope, small stones.	Slight-----	Slight.

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
36C----- Marlette	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight-----	Moderate: slope.
36D, 36E----- Marlette	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
36F----- Marlette	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
37B----- Capac	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
38----- Parkhill	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
39B----- Arkport	Slight-----	Slight-----	Moderate: slope.	Slight-----	Moderate: droughty.
39C----- Arkport	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight-----	Moderate: droughty, slope.
40B----- Matherton	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
41B----- Kibbie	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
42B----- Tedrow	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness, droughty.
43----- Granby	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
44----- Edwards	Severe: ponding, excess humus.	Severe: excess humus, ponding.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: excess humus, ponding.
45B----- Perrinton	Slight-----	Slight-----	Moderate: slope.	Slight-----	Slight.
45C----- Perrinton	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight-----	Moderate: slope.
45D, 45E, 45F----- Perrinton	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
46B----- Ithaca	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
47----- Pewamo	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
48B----- Metea	Slight-----	Slight-----	Moderate: slope.	Slight-----	Moderate: droughty.
48C----- Metea	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight-----	Moderate: 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
48D----- Metea	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
49B----- Selfridge	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
50B----- Woodbeck	Slight-----	Slight-----	Moderate: slope.	Slight-----	Slight.
50C----- Woodbeck	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight-----	Moderate: slope.
50D----- Woodbeck	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
51B----- Oakville	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty.
51C----- Oakville	Severe: too sandy.	Severe: too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Moderate: droughty, slope.
52----- Belleville	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
54B----- Tuscola	Moderate: wetness.	Moderate: wetness.	Moderate: slope, wetness.	Slight-----	Slight.
54C----- Tuscola	Moderate: slope, wetness.	Moderate: slope, wetness.	Severe: slope.	Slight-----	Moderate: slope.
56B----- Scalley	Slight-----	Slight-----	Moderate: slope, small stones.	Slight-----	Slight.
56C----- Scalley	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight-----	Moderate: slope.
56D----- Scalley	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
58----- Napoleon	Severe: ponding, excess humus, too acid.	Severe: ponding, excess humus, too acid.	Severe: excess humus, ponding, too acid.	Severe: ponding, excess humus.	Severe: too acid, ponding, excess humus.
59B----- Okee	Slight-----	Slight-----	Moderate: slope.	Slight-----	Slight.
59C----- Okee	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight-----	Moderate: slope.
59D----- Okee	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
62A----- Tekonink	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
62B----- Tekonink	Slight-----	Slight-----	Moderate: slope, small stones.	Slight-----	Moderate: droughty.
62C----- Tekonink	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight-----	Moderate: droughty, slope.
62D----- Tekonink	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
62E----- Tekonink	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
63*: Urban land.					
Cohoctah-----	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
64B----- Grattan	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
64C----- Grattan	Severe: too sandy.	Severe: too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Severe: droughty.
66B----- Boyer	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Slight-----	Moderate: small stones.
66C----- Boyer	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.	Slight-----	Moderate: small stones, slope.
66D----- Boyer	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.	Severe: slope.
66E----- Boyer	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.	Severe: slope.
67B----- Kalamazoo	Slight-----	Slight-----	Moderate: slope, small stones.	Slight-----	Slight.
67C----- Kalamazoo	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight-----	Moderate: slope.
67D----- Kalamazoo	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
68B----- Saylesville	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, percs slowly.	Slight-----	Slight.
68C----- Saylesville	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
69----- Colwood	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.

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
73----- Sebewa	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
74*. Dumps					
75. Udorthents					
76. Udipsamments					
77*. Pits					
78*. Urban land					
79----- Houghton	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding, excess humus.
80. Udorthents					
81B*: Urban land.					
Spinks-----	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty, too sandy.
81C*: Urban land.					
Spinks.					
81D*: Urban land.					
Spinks-----	Severe: slope, too sandy.	Severe: slope, too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Severe: slope.
82B*: Urban land.					
Perrinton-----	Slight-----	Slight-----	Moderate: slope.	Slight-----	Slight.
82C*: Urban land.					
Perrinton-----	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight-----	Moderate: slope.
82D*: Urban land.					
Perrinton-----	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: 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
83B----- Marlette	Slight-----	Slight-----	Moderate: slope.	Slight-----	Slight.
84B----- Dixboro	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
85----- Lamson	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
86B----- Teasdale	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
87B----- Pipestone	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness.	Severe: wetness, too sandy.	Severe: wetness.
89E*: Marlette-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Oakville-----	Severe: too sandy, slope.	Severe: too sandy, slope.	Severe: slope, too sandy.	Severe: slope, too sandy.	Severe: slope.
Boyer-----	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.	Severe: slope.

* 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
2B----- Oakville	Poor	Poor	Fair	Good	Good	Poor	Very poor.	Poor	Good	Very poor.
3B----- Covert	Poor	Poor	Fair	Good	Good	Poor	Poor	Poor	Good	Poor.
4B----- Perrin	Fair	Fair	Good	Good	Good	Poor	Very poor.	Fair	Good	Poor.
5----- Alganssee	Poor	Fair	Fair	Good	Good	Fair	Fair	Fair	Fair	Fair.
6----- Glendora	Poor	Fair	Fair	Fair	Fair	Fair	Good	Fair	Fair	Fair.
7----- Cohoctah	Poor	Fair	Fair	Fair	Poor	Good	Good	Fair	Fair	Good.
9B----- Rimer	Poor	Fair	Good	Good	Good	Fair	Poor	Fair	Good	Poor.
10----- Landes	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
11B*: Owosso-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Marlette-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
11C*: Owosso-----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Marlette-----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
12B, 12C----- Tustin	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
13A----- Metamora	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
14----- Shoals	Poor	Fair	Fair	Good	Good	Fair	Fair	Fair	Good	Fair.
15----- Sloan	Fair	Fair	Good	Poor	Poor	Good	Good	Fair	Poor	Good.
16----- Ceresco	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
17B----- Chelsea	Poor	Fair	Fair	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
17C, 17D, 17E----- Chelsea	Very poor.	Fair	Fair	Good	Good	Very poor.	Very poor.	Poor	Fair	Very poor.
18B----- Glynwood	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
18C----- Glynwood	Fair	Good	Good	Fair	Fair	Very poor.	Very poor.	Good	Fair	Very poor.
19A----- Blount	Fair	Good	Good	Fair	Fair	Fair	Fair	Good	Fair	Fair.
19B----- Blount	Fair	Good	Good	Fair	Fair	Poor	Very poor.	Good	Fair	Very poor.
20----- Houghton	Fair	Poor	Poor	Fair	Fair	Good	Good	Poor	Poor	Good.
22B----- Oshtemo	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
22C----- Oshtemo	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
23A----- Thetford	Poor	Fair	Good	Good	Good	Fair	Fair	Fair	Good	Fair.
24A----- Abscota	Poor	Fair	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
25B----- Oakville	Poor	Poor	Fair	Good	Good	Poor	Very poor.	Poor	Good	Very poor.
25C, 25D----- Oakville	Poor	Poor	Fair	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
25E----- Oakville	Very poor.	Poor	Fair	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
26----- Adrian	Poor	Poor	Poor	Fair	Fair	Good	Good	Poor	Fair	Good.
27B----- Wasepi	Fair	Good	Good	Good	Good	Very poor.	Poor	Good	Good	Very poor.
28----- Gilford	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
29B----- Plainfield	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
29C, 29D, 29E----- Plainfield	Very poor.	Poor	Fair	Good	Good	Very poor.	Very poor.	Poor	Fair	Very poor.
30B----- Spinks	Fair	Fair	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
30C, 30D----- Spinks	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
31----- Walkkill	Very poor.	Poor	Poor	Fair	Fair	Good	Good	Poor	Fair	Good.
32----- Palms	Good	Poor	Poor	Poor	Poor	Good	Good	Fair	Poor	Good.
36B----- Marlette	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
36C----- Marlette	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
36D, 36E----- Marlette	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
36F----- Marlette	Very poor.	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
37B----- Capac	Good	Good	Good	Good	Fair	Fair	Fair	Good	Good	Fair.
38----- Parkhill	Poor	Fair	Fair	Good	Good	Good	Good	Fair	Good	Good.
39B----- Arkport	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
39C----- Arkport	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
40B----- Matherton	Good	Good	Good	Good	Fair	Poor	Poor	Good	Good	Poor.
41B----- Kibbie	Good	Good	Good	Good	Fair	Poor	Poor	Good	Good	Fair.
42B----- Tedrow	Poor	Fair	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
43----- Granby	Poor	Poor	Poor	Fair	Fair	Good	Good	Poor	Poor	Good.
44----- Edwards	Very poor.	Poor	Poor	Fair	Poor	Good	Good	Poor	Fair	Good.
45B----- Perrinton	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
45C----- Perrinton	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
45D, 45E, 45F----- Perrinton	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
46B----- Ithaca	Fair	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
47----- Pewamo	Good	Fair	Fair	Good	Good	Good	Good	Fair	Good	Good.

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
48B----- Metea	Poor	Fair	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
48C, 48D----- Metea	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
49B----- Selfridge	Poor	Fair	Good	Good	Good	Poor	Poor	Fair	Good	Poor.
50B----- Woodbeck	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
50C----- Woodbeck	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
50D----- Woodbeck	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
51B, 51C----- Oakville	Poor	Poor	Fair	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
52----- Belleville	Poor	Fair	Fair	Poor	Poor	Fair	Good	Fair	Poor	Fair.
54B----- Tuscola	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
54C----- Tuscola	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
56B----- Scalley	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
56C, 56D----- Scalley	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
58----- Napoleon	Very poor.	Very poor.	Poor	Poor	Poor	Good	Good	Very poor.	Poor	Good.
59B, 59C----- Okee	Fair	Good	Fair	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
59D----- Okee	Poor	Fair	Fair	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
62A, 62B----- Tekonink	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
62C----- Tekonink	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
62D----- Tekonink	Poor	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
62E----- Tekonink	Poor	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
63*: Urban land.										
Cohoctah-----	Fair	Fair	Fair	Fair	Poor	Good	Good	Fair	Fair	Good.

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
64B----- Grattan	Poor	Poor	Fair	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
64C----- Grattan	Very poor.	Poor	Fair	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
66B, 66C, 66D----- Boyer	Fair	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
66E----- Boyer	Very poor.	Fair	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
67B----- Kalamazoo	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
67C, 67D----- Kalamazoo	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
68B----- Saylesville	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
68C----- Saylesville	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
69----- Colwood	Good	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
73----- Sebewa	Good	Fair	Fair	Good	Good	Good	Good	Fair	Good	Good.
74*. Dumps										
75. Udorthents										
76. Udipsamments										
77*. Pits										
78*. Urban land										
79----- Houghton	Very poor.	Poor	Very poor.	Poor	Poor	Good	Good	Very poor.	Poor	Good.
80. Udorthents										
81B*: Urban land.										
Spinks-----	Fair	Fair	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
81C*, 81D*: Urban land.										
Spinks-----	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
82B*: Urban land.										
Perrinton-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
82C*: Urban land.										
Perrinton-----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
82D*: Urban land.										
Perrinton-----	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
83B----- Marlette	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
84B----- Dixboro	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
85----- Lamson	Very poor.	Poor	Poor	Fair	Fair	Good	Good	Poor	Fair	Good.
86B----- Teasdale	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
87B----- Pipestone	Poor	Poor	Fair	Good	Good	Poor	Very poor.	Poor	Good	Very poor.
89E*: Marlette-----	Very poor.	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Oakville-----	Very poor.	Poor	Fair	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
Boyer-----	Very poor.	Fair	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very 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
2B----- Oakville	Severe: cutbanks cave.	Slight-----	Moderate: wetness.	Slight-----	Slight-----	Moderate: droughty.
3B----- Covert	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: droughty, too sandy.
4B----- Perrin	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness, frost action.	Moderate: droughty.
5----- Alganssee	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding.	Moderate: flooding, wetness.
6----- Glendora	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding.	Severe: wetness, flooding.
7----- Cohoctah	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, frost action, wetness.	Severe: flooding, wetness.
9B----- Rimer	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness.	Severe: frost action.	Moderate: wetness, droughty.
10----- Landes	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: droughty, flooding.
11B*: Owosso-----	Slight-----	Slight-----	Slight-----	Moderate: slope.	Severe: low strength.	Slight.
Marlette-----	Slight-----	Slight-----	Slight-----	Moderate: slope.	Severe: low strength.	Slight.
11C*: Owosso-----	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: low strength.	Moderate: slope.
Marlette-----	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: low strength.	Moderate: slope.
12B----- Tustin	Severe: cutbanks cave.	Slight-----	Severe: shrink-swell.	Moderate: slope.	Moderate: frost action.	Slight.
12C----- Tustin	Severe: cutbanks cave.	Moderate: slope.	Severe: shrink-swell.	Severe: slope.	Moderate: slope, frost action.	Moderate: slope.
13A----- Metamora	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: frost action.	Moderate: wetness.

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
14----- Shoals	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding, frost action.	Severe: wetness.
15----- Sloan	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness, flooding.	Severe: wetness, flooding.
16----- Ceresco	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, frost action.	Moderate: wetness, droughty, flooding.
17B----- Chelsea	Severe: cutbanks cave.	Slight-----	Slight-----	Slight-----	Slight-----	Moderate: droughty.
17C----- Chelsea	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope, droughty.
17D, 17E----- Chelsea	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
18B----- Glynwood	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: slope, shrink-swell, wetness.	Severe: frost action, low strength.	Slight.
18C----- Glynwood	Severe: wetness.	Moderate: slope, shrink-swell, wetness.	Severe: wetness.	Severe: slope.	Severe: frost action, low strength.	Moderate: slope.
19A, 19B----- Blount	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, frost action.	Moderate: wetness.
20----- Houghton	Severe: ponding, excess humus.	Severe: ponding, low strength.	Severe: ponding, low strength.	Severe: ponding, low strength.	Severe: ponding, low strength, frost action.	Severe: excess humus, ponding.
22B----- Oshtemo	Severe: cutbanks cave.	Slight-----	Slight-----	Slight-----	Slight-----	Slight.
22C----- Oshtemo	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
23A----- Thetford	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Moderate: wetness, frost action.	Moderate: wetness, droughty.
24A----- Abscota	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding, droughty.
25B----- Oakville	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
25C----- Oakville	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope, droughty.
25D, 25E----- Oakville	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
26----- Adrian	Severe: ponding, cutbanks cave, excess humus.	Severe: ponding, low strength.	Severe: ponding.	Severe: ponding, low strength.	Severe: ponding, low strength, frost action.	Severe: excess humus, ponding.
27B----- Wasepi	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: frost action.	Moderate: wetness, droughty.
28----- Gilford	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding, frost action.	Severe: ponding.
29B----- Plainfield	Severe: cutbanks cave.	Slight-----	Slight-----	Slight-----	Slight-----	Severe: droughty.
29C----- Plainfield	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Severe: droughty.
29D, 29E----- Plainfield	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: droughty, slope.
30B----- Spinks	Severe: cutbanks cave.	Slight-----	Slight-----	Slight-----	Slight-----	Moderate: droughty.
30C----- Spinks	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
30D----- Spinks	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
31----- Walkill	Severe: excess humus, wetness.	Severe: flooding, wetness, low strength.	Severe: flooding, wetness, low strength.	Severe: flooding, wetness, low strength.	Severe: wetness, flooding, frost action.	Severe: wetness, flooding.
32----- Palms	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.
36B----- Marlette	Slight-----	Slight-----	Slight-----	Moderate: slope.	Severe: low strength.	Slight.
36C----- Marlette	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: low strength.	Moderate: slope.
36D, 36E, 36F----- Marlette	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, 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
37B----- Capac	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: frost action.	Moderate: wetness.
38----- Parkhill	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: low strength, ponding, frost action.	Severe: ponding.
39B----- Arkport	Severe: cutbanks cave.	Slight-----	Slight-----	Slight-----	Moderate: frost action.	Moderate: droughty.
39C----- Arkport	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: droughty, slope.
40B----- Matherton	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: frost action.	Moderate: wetness.
41B----- Kibbie	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: frost action.	Moderate: wetness.
42B----- Tedrow	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Moderate: wetness, frost action.	Moderate: wetness, droughty.
43----- Granby	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
44----- Edwards	Severe: ponding, excess humus.	Severe: ponding, low strength.	Severe: ponding, low strength.	Severe: ponding, low strength.	Severe: ponding, frost action, low strength.	Severe: excess humus, ponding.
45B----- Perrinton	Moderate: too clayey.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength.	Slight.
45C----- Perrinton	Moderate: too clayey, slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope.
45D, 45E, 45F----- Perrinton	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
46B----- Ithaca	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, frost action.	Moderate: wetness.
47----- Pewamo	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: low strength, ponding, frost action.	Severe: ponding.
48B----- Metea	Severe: cutbanks cave.	Slight-----	Slight-----	Moderate: slope.	Moderate: frost action.	Moderate: droughty.
48C----- Metea	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: droughty, 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
48D----- Metae	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
49B----- Selfridge	Severe: wetness, cutbanks cave.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: frost action.	Moderate: wetness.
50B----- Woodbeck	Severe: cutbanks cave.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength.	Slight.
50C----- Woodbeck	Severe: cutbanks cave.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope.
50D----- Woodbeck	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
51B----- Oakville	Severe: cutbanks cave.	Slight-----	Slight-----	Slight-----	Slight-----	Moderate: droughty.
51C----- Oakville	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
52----- Belleville	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding, frost action.	Severe: ponding.
54B----- Tuscola	Severe: cutbanks cave, wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, shrink-swell, slope.	Severe: frost action.	Slight.
54C----- Tuscola	Severe: cutbanks cave, wetness.	Moderate: wetness, shrink-swell, slope.	Severe: wetness.	Severe: slope.	Severe: frost action.	Moderate: slope.
56B----- Scalley	Severe: cutbanks cave.	Slight-----	Slight-----	Moderate: slope.	Severe: low strength.	Slight.
56C----- Scalley	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: low strength.	Moderate: slope.
56D----- Scalley	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
58----- Napoleon	Severe: excess humus, ponding.	Severe: ponding, low strength.	Severe: ponding, low strength.	Severe: ponding, low strength.	Severe: ponding, frost action.	Severe: too acid, ponding, excess humus.
59B----- Okee	Severe: cutbanks cave.	Slight-----	Slight-----	Slight-----	Slight-----	Slight.
59C----- Okee	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: 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
59D----- Okee	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
62A----- Tekonink	Severe: cutbanks cave.	Slight-----	Slight-----	Slight-----	Moderate: frost action.	Moderate: droughty.
62B----- Tekonink	Severe: cutbanks cave.	Slight-----	Slight-----	Moderate: slope.	Moderate: frost action.	Moderate: droughty.
62C----- Tekonink	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: droughty, slope.
62D, 62E----- Tekonink	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
63*: Urban land.						
Cohoctah-----	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, frost action, wetness.	Severe: wetness.
64B----- Grattan	Severe: cutbanks cave.	Slight-----	Slight-----	Slight-----	Slight-----	Severe: droughty.
64C----- Grattan	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Severe: droughty.
66B----- Boyer	Severe: cutbanks cave.	Slight-----	Slight-----	Slight-----	Slight-----	Moderate: small stones.
66C----- Boyer	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: small stones, slope.
66D, 66E----- Boyer	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
67B----- Kalamazoo	Severe: cutbanks cave.	Slight-----	Slight-----	Slight-----	Moderate: low strength, frost action.	Slight.
67C----- Kalamazoo	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope, frost action.	Moderate: slope.
67D----- Kalamazoo	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
68B----- Saylesville	Moderate: too clayey.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength.	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
68C----- Saylesville	Moderate: too clayey, slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope.
69----- Colwood	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding, frost action.	Severe: ponding.
73----- Sebewa	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: frost action, ponding.	Severe: ponding.
74*. Dumps						
75. Udorthents						
76. Udipsamments						
77*. Pits						
78*. Urban land						
79----- Houghton	Severe: excess humus, ponding.	Severe: ponding, low strength.	Severe: ponding.	Severe: ponding, low strength.	Severe: ponding, frost action.	Severe: ponding, excess humus.
80. Udorthents						
81B*: Urban land.						
Spinks-----	Severe: cutbanks cave.	Slight-----	Slight-----	Moderate: slope.	Slight-----	Moderate: droughty, too sandy.
81C*: Urban land.						
Spinks-----	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	
81D*: Urban land.						
Spinks-----	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
82B*: Urban land.						
Perrinton-----	Moderate: too clayey.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength.	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
82C*: Urban land.						
Perrinton-----	Moderate: too clayey, slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope.
82D*: Urban land.						
Perrinton-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
83B----- Marlette	Moderate: wetness.	Slight-----	Moderate: wetness.	Slight-----	Severe: low strength.	Slight.
84B----- Dixboro	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: frost action.	Moderate: wetness.
85----- Lamson	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness.
86B----- Teasdale	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: frost action.	Moderate: wetness.
87B----- Pipestone	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
89E*: Marlette-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
Oakville-----	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Boyer-----	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.

* 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
2B----- Oakville	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy.
3B----- Covert	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy.
4B----- Perrin	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy.
5----- Alganssee	Severe: flooding, wetness, poor filter.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Poor: seepage, too sandy, wetness.
6----- Glendora	Severe: flooding, wetness, poor filter.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Poor: seepage, too sandy, wetness.
7----- Cohoctah	Severe: wetness, flooding.	Severe: flooding, seepage, wetness.	Severe: seepage, flooding, wetness.	Severe: seepage, flooding, wetness.	Poor: wetness.
9B----- Rimer	Severe: wetness, percs slowly.	Severe: seepage.	Severe: wetness, too clayey.	Severe: seepage, wetness.	Poor: too clayey, hard to pack, wetness.
10----- Landes	Severe: flooding, poor filter.	Severe: seepage, flooding.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage.	Poor: seepage, too sandy.
11B*: Owosso-----	Severe: percs slowly.	Severe: seepage.	Moderate: too clayey.	Severe: seepage.	Fair: too clayey.
Marlette-----	Severe: percs slowly.	Moderate: slope.	Moderate: too clayey.	Slight-----	Fair: too clayey.
11C*: Owosso-----	Severe: percs slowly.	Severe: seepage, slope.	Moderate: slope, too clayey.	Severe: seepage.	Fair: too clayey, slope.
Marlette-----	Severe: percs slowly.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: slope, too clayey.

See footnotes 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
12B----- Tustin	Severe: percs slowly.	Severe: seepage.	Severe: too clayey.	Severe: seepage.	Poor: too clayey, hard to pack.
12C----- Tustin	Severe: percs slowly.	Severe: seepage, slope.	Severe: too clayey.	Severe: seepage.	Poor: too clayey, hard to pack.
13A----- Metamora	Severe: percs slowly, wetness.	Severe: wetness, seepage.	Severe: wetness.	Severe: wetness, seepage.	Poor: wetness.
14----- Shoals	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
15----- Sloan	Severe: flooding, wetness, percs slowly.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
16----- Ceresco	Severe: flooding, wetness.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Poor: wetness.
17B----- Chelsea	Severe: poor filter**.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: too sandy, seepage.
17C----- Chelsea	Severe: poor filter**.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: too sandy, seepage.
17D, 17E----- Chelsea	Severe: slope, poor filter**.	Severe: seepage, slope.	Severe: seepage, too sandy, slope.	Severe: seepage, slope.	Poor: too sandy, slope, seepage.
18B----- Glynwood	Severe: percs slowly, wetness.	Moderate: slope.	Moderate: wetness, too clayey.	Moderate: wetness.	Fair: too clayey, wetness.
18C----- Glynwood	Severe: percs slowly, wetness.	Severe: slope.	Moderate: wetness, too clayey, slope.	Moderate: slope, wetness.	Fair: slope, too clayey, wetness.
19A, 19B----- Blount	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
20----- Houghton	Severe: ponding, percs slowly.	Severe: seepage, ponding, excess humus.	Severe: ponding, excess humus.	Severe: ponding, seepage.	Poor: ponding, excess humus.
22B----- Oshtemo	Slight-----	Severe: seepage.	Severe: seepage.	Severe: seepage.	Poor: seepage.

See footnotes 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
22C----- Oshtemo	Moderate: slope.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Poor: seepage.
23A----- Thetford	Severe: wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Poor: wetness, thin layer.
24A----- Abscota	Severe: flooding, wetness, poor filter.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Poor: too sandy, seepage.
25B----- Oakville	Severe: poor filter**.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: too sandy, seepage.
25C----- Oakville	Severe: poor filter**.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: too sandy, seepage.
25D, 25E----- Oakville	Severe: slope, poor filter**.	Severe: seepage, slope.	Severe: seepage, too sandy, slope.	Severe: seepage, slope.	Poor: too sandy, slope, seepage.
26----- Adrian	Severe: ponding, poor filter.	Severe: seepage, ponding, excess humus.	Severe: ponding, seepage.	Severe: ponding, seepage.	Poor: ponding, excess humus.
27B----- Wasepi	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy.
28----- Gilford	Severe: ponding, poor filter.	Severe: seepage, ponding.	Severe: seepage, ponding, too sandy.	Severe: seepage, ponding.	Poor: seepage, too sandy, small stones.
29B----- Plainfield	Severe: poor filter**.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: too sandy, seepage.
29C----- Plainfield	Severe: poor filter**.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: too sandy, seepage.
29D, 29E----- Plainfield	Severe: slope, poor filter**.	Severe: seepage, slope.	Severe: seepage, slope, too sandy.	Severe: seepage, slope.	Poor: too sandy, slope, seepage.
30B----- Spinks	Slight-----	Severe: seepage.	Severe: too sandy.	Severe: seepage.	Poor: seepage, too sandy.
30C----- Spinks	Moderate: slope.	Severe: seepage, slope.	Severe: too sandy.	Severe: seepage.	Poor: seepage, too sandy.

See footnotes 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
30D----- Spinks	Severe: slope.	Severe: seepage, slope.	Severe: slope, too sandy.	Severe: seepage, slope.	Poor: seepage, too sandy, slope.
31----- Wallkill	Severe: flooding, wetness, poor filter.	Severe: seepage, flooding, excess humus.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Poor: wetness, excess humus.
32----- Palms	Severe: subsides, ponding.	Severe: seepage, excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding, seepage.	Poor: ponding, excess humus.
36B----- Marlette	Severe: percs slowly.	Moderate: slope.	Moderate: too clayey.	Slight-----	Fair: too clayey.
36C----- Marlette	Severe: percs slowly.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: slope, too clayey.
36D, 36E, 36F----- Marlette	Severe: slope, percs slowly.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
37B----- Capac	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
38----- Parkhill	Severe: ponding, percs slowly.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Poor: ponding.
39B----- Arkport	Slight-----	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Fair: too sandy, thin layer.
39C----- Arkport	Moderate: slope.	Severe: slope, seepage.	Severe: seepage, too sandy.	Severe: seepage.	Fair: slope, too sandy, thin layer.
40B----- Matherton	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, small stones.
41B----- Kibbie	Severe: wetness.	Severe: wetness.	Severe: wetness, too sandy.	Severe: wetness.	Poor: too sandy, wetness.
42B----- Tedrow	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, wetness.
43----- Granby	Severe: ponding, poor filter.	Severe: seepage, ponding.	Severe: seepage, ponding, too sandy.	Severe: seepage, ponding.	Poor: seepage, too sandy, ponding.

See footnotes 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
44----- Edwards	Severe: ponding, percs slowly.	Severe: ponding, seepage, excess humus.	Severe: ponding.	Severe: ponding, seepage.	Poor: ponding, excess humus.
45B----- Perrinton	Severe: percs slowly.	Moderate: slope.	Moderate: too clayey.	Slight-----	Fair: too clayey.
45C----- Perrinton	Severe: percs slowly.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, slope.
45D, 45E, 45F----- Perrinton	Severe: percs slowly, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
46B----- Ithaca	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
47----- Pewamo	Severe: percs slowly, ponding.	Severe: ponding.	Severe: ponding, too clayey.	Severe: ponding.	Poor: too clayey, ponding, hard to pack.
48B----- Metea	Severe: poor filter**.	Severe: seepage.	Severe: too sandy.	Severe: seepage.	Poor: seepage, too sandy.
48C----- Metea	Severe: poor filter**.	Severe: seepage, slope.	Severe: too sandy.	Severe: seepage.	Poor: seepage, too sandy.
48D----- Metea	Severe: poor filter**, slope.	Severe: seepage, slope.	Severe: slope, too sandy.	Severe: seepage, slope.	Poor: seepage, too sandy, slope.
49B----- Selfridge	Severe: percs slowly, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, seepage.	Poor: wetness.
50B----- Woodbeck	Severe: percs slowly, poor filter.	Severe: seepage.	Severe: seepage, too clayey.	Severe: seepage.	Poor: too clayey, hard to pack.
50C----- Woodbeck	Severe: percs slowly, poor filter.	Severe: seepage, slope.	Severe: seepage, too clayey.	Severe: seepage.	Poor: too clayey, hard to pack.
50D----- Woodbeck	Severe: percs slowly, poor filter, slope.	Severe: seepage, slope.	Severe: seepage, slope, too clayey.	Severe: seepage, slope.	Poor: too clayey, hard to pack, slope.
51B----- Oakville	Severe: poor filter**.	Severe: seepage.	Severe: too sandy.	Severe: seepage.	Poor: seepage, too sandy.
51C----- Oakville	Severe: poor filter**.	Severe: seepage, slope.	Severe: too sandy.	Severe: seepage.	Poor: seepage, too sandy.

See footnotes 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
52----- Belleville	Severe: ponding, percs slowly.	Severe: seepage, ponding.	Severe: ponding.	Severe: seepage, ponding.	Poor: ponding.
54B----- Tuscola	Severe: wetness.	Severe: wetness.	Severe: wetness, too sandy.	Severe: wetness.	Poor: too sandy.
54C----- Tuscola	Severe: wetness.	Severe: slope, wetness.	Severe: wetness, too sandy.	Severe: wetness.	Poor: too sandy.
56B----- Scalley	Severe: poor filter**.	Severe: seepage.	Severe: seepage.	Slight-----	Poor: thin layer.
56C----- Scalley	Severe: poor filter**.	Severe: slope, seepage.	Severe: seepage.	Moderate: slope.	Poor: thin layer.
56D----- Scalley	Severe: slope, poor filter**.	Severe: slope, seepage.	Severe: slope, seepage.	Severe: slope.	Poor: slope, thin layer.
58----- Napoleon	Severe: ponding.	Severe: seepage, excess humus, ponding.	Severe: seepage, ponding, excess humus.	Severe: seepage, ponding.	Poor: ponding, excess humus, too acid.
59B----- Okee	Slight-----	Severe: seepage.	Severe: seepage.	Severe: seepage.	Poor: seepage.
59C----- Okee	Moderate: slope.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Poor: seepage.
59D----- Okee	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: seepage, slope.
62A, 62B----- Tekonink	Slight-----	Severe: seepage.	Severe: seepage.	Slight-----	Good.
62C----- Tekonink	Moderate: slope.	Severe: seepage, slope.	Severe: seepage.	Moderate: slope.	Fair: slope.
62D, 62E----- Tekonink	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: slope.	Poor: slope.
63*: Urban land.					
Cohoctah-----	Severe: wetness, flooding.	Severe: flooding, seepage, wetness.	Severe: seepage, flooding, wetness.	Severe: seepage, flooding, wetness.	Poor: wetness.
64B----- Grattan	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.

See footnotes 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
64C----- Grattan	Severe: poor filter**.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
66B----- Boyer	Severe: poor filter**.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
66C----- Boyer	Severe: poor filter**.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
66D, 66E----- Boyer	Severe: poor filter**, slope.	Severe: seepage, slope.	Severe: seepage, slope, too sandy.	Severe: seepage, slope..	Poor: seepage, too sandy, small stones.
67B----- Kalamazoo	Severe: poor filter**.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Poor: thin layer.
67C----- Kalamazoo	Severe: poor filter**.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Poor: thin layer.
67D----- Kalamazoo	Severe: poor filter**, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: slope, thin layer.
68B----- Saylesville	Severe: percs slowly,	Moderate: slope.	Moderate: too clayey.	Slight-----	Fair: too clayey.
68C----- Saylesville	Severe: percs slowly.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, slope.
69----- Colwood	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Poor: ponding, thin layer.
73----- Sebewa	Severe: poor filter, ponding.	Severe: seepage, ponding.	Severe: seepage, ponding, too sandy.	Severe: seepage, ponding.	Poor: small stones, seepage, too sandy.
74*. Dumps					
75. Udorthents					
76. Udipsammments					
77*. Pits					
78*. Urban land					

See footnotes 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
79----- Houghton	Severe: ponding, percs slowly.	Severe: seepage, excess humus, ponding.	Severe: ponding, excess humus.	Severe: seepage, ponding.	Poor: ponding, excess humus.
80. Udorthents					
81B*: Urban land.					
Spinks-----	Slight-----	Severe: seepage.	Severe: too sandy.	Severe: seepage.	Poor: seepage, too sandy.
81C*: Urban land.					
Spinks-----	Moderate: slope.	Severe: seepage, slope.	Severe: too sandy.	Severe: seepage.	Poor: seepage, too sandy.
81D*: Urban land.					
Spinks-----	Severe: slope.	Severe: seepage, slope.	Severe: slope, too sandy.	Severe: seepage, slope.	Poor: seepage, too sandy, slope.
82B*: Urban land.					
Perrinton-----	Severe: percs slowly.	Moderate: slope.	Moderate: too clayey.	Slight-----	Fair: too clayey.
82C*: Urban land.					
Perrinton-----	Severe: percs slowly.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, slope.
82D*: Urban land.					
Perrinton-----	Severe: percs slowly, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
83B----- Marlette	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Fair: too clayey, wetness.
84B----- Dixboro	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
85----- Lamson	Severe: wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Poor: wetness, thin layer.

See footnotes 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
86B----- Teasdale	Severe: wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Poor: wetness.
87B----- Pipestone	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, wetness.
89E*: Marlette-----	Severe: slope, percs slowly.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
Oakville-----	Severe: slope, poor filter**.	Severe: seepage, slope.	Severe: seepage, too sandy, slope.	Severe: seepage, slope.	Poor: too sandy, slope, seepage.
Boyer-----	Severe: poor filter**, slope.	Severe: seepage, slope.	Severe: seepage, slope, too sandy.	Severe: seepage, slope.	Poor: seepage, too sandy, small stones.

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

** The effluent drains satisfactorily, but there is a danger of ground water pollution.

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
2B----- Oakville	Good-----	Probable-----	Improbable: too sandy.	Poor: too sandy.
3B----- Covert	Fair: wetness.	Probable-----	Improbable: too sandy.	Poor: too sandy.
4B----- Perrin	Fair: wetness.	Probable-----	Probable-----	Fair: small stones.
5----- Algansee	Fair: wetness.	Probable-----	Improbable: too sandy.	Fair: too sandy.
6----- Glendora	Poor: wetness.	Probable-----	Improbable: too sandy.	Poor: wetness.
7----- Cohoctah	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
9B----- Rimer	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy.
10----- Landes	Good-----	Probable-----	Improbable: too sandy.	Poor: thin layer.
11B*: Owosso-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
Marlette-----	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
11C*: Owosso-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope.
Marlette-----	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope.
12B----- Tustin	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy.
12C----- Tustin	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope, too sandy.
13A----- Metamora	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
14----- Shoals	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
15----- Sloan	Poor: wetness, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
16----- Ceresco	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
17B----- Chelsea	Good-----	Probable-----	Improbable: too sandy.	Fair: too sandy.
17C----- Chelsea	Good-----	Probable-----	Improbable: too sandy.	Fair: too sandy, slope.
17D----- Chelsea	Fair: slope.	Probable-----	Improbable: too sandy.	Poor: slope.
17E----- Chelsea	Poor: slope.	Probable-----	Improbable: too sandy.	Poor: slope.
18B, 18C----- Glynwood	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
19A, 19B----- Blount	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
20----- Houghton	Poor: wetness, low strength.	Improbable: excess humus.	Improbable: excess humus.	Poor: wetness, excess humus.
22B, 22C----- Oshtemo	Good-----	Probable-----	Probable-----	Poor: small stones.
23A----- Thetford	Fair: wetness.	Probable-----	Improbable: too sandy.	Fair: too sandy.
24A----- Abscota	Fair: wetness.	Probable-----	Improbable: too sandy.	Poor: too sandy.
25B, 25C----- Oakville	Good-----	Probable-----	Improbable: too sandy.	Poor: too sandy.
25D----- Oakville	Fair: slope.	Probable-----	Improbable: too sandy.	Poor: too sandy, slope.
25E----- Oakville	Poor: slope.	Probable-----	Improbable: too sandy.	Poor: too sandy, slope.
26----- Adrian	Poor: wetness, low strength.	Probable-----	Improbable: too sandy.	Poor: wetness, excess humus.
27B----- Wasepi	Fair: wetness.	Probable-----	Probable-----	Fair: small stones.
28----- Gilford	Poor: wetness.	Probable-----	Probable-----	Poor: wetness.
29B, 29C----- Plainfield	Good-----	Probable-----	Improbable: too sandy.	Poor: too sandy.
29D----- Plainfield	Fair: slope.	Probable-----	Improbable: too sandy.	Poor: too sandy, slope.

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
29E----- Plainfield	Poor: slope.	Probable-----	Improbable: too sandy.	Poor: too sandy, slope.
30B----- Spinks	Good-----	Probable-----	Improbable: too sandy.	Fair: too sandy.
30C----- Spinks	Good-----	Probable-----	Improbable: too sandy.	Fair: slope, too sandy.
30D----- Spinks	Fair: slope.	Probable-----	Improbable: too sandy.	Poor: slope.
31----- Wallkill	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
32----- Palms	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness, excess humus.
36B----- Marlette	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
36C----- Marlette	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope, small stones.
36D, 36E----- Marlette	Fair: low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
36F----- Marlette	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
37B----- Capac	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
38----- Parkhill	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
39B, 39C----- Arkport	Good-----	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy.
40B----- Matherton	Fair: wetness.	Probable-----	Probable-----	Fair: area reclaim.
41B----- Kibbie	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
42B----- Tedrow	Fair: wetness.	Probable-----	Improbable: too sandy.	Fair: too sandy.
43----- Granby	Poor: wetness.	Probable-----	Improbable: too sandy.	Poor: wetness.
44----- Edwards	Poor: wetness, low strength.	Improbable: excess humus.	Improbable: excess humus.	Poor: wetness, excess humus.
45B, 45C----- Perrinton	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim.

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
45D, 45E, 45F----- Perrinton	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, slope.
46B----- Ithaca	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
47----- Pewamo	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
48B----- Metea	Good-----	Improbable: thin layer.	Improbable: too sandy.	Fair: too sandy, area reclaim.
48C----- Metea	Good-----	Improbable: thin layer.	Improbable: too sandy.	Fair: too sandy, area reclaim.
48D----- Metea	Fair: slope.	Improbable: thin layer.	Improbable: too sandy.	Poor: slope.
49B----- Selfridge	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy, small stones.
50B, 50C----- Woodbeck	Good-----	Probable-----	Probable-----	Poor: thin layer.
50D----- Woodbeck	Fair: slope.	Probable-----	Probable-----	Poor: thin layer, slope.
51B, 51C----- Oakville	Fair: thin layer.	Improbable: thin layer.	Improbable: too sandy.	Poor: too sandy.
52----- Belleville	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
54B----- Tuscola	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: thin layer.
54C----- Tuscola	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: thin layer, slope.
56B----- Scalley	Good-----	Probable-----	Improbable: too sandy.	Fair: small stones, area reclaim.
56C----- Scalley	Good-----	Probable-----	Improbable: too sandy.	Fair: small stones, area reclaim, slope.
56D----- Scalley	Fair: slope.	Probable-----	Improbable: too sandy.	Poor: slope.

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
58----- Napoleon	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess humus, wetness, too acid.
59B, 59C----- Okee	Good-----	Probable-----	Probable-----	Poor: area reclaim.
59D----- Okee	Fair: slope.	Probable-----	Probable-----	Poor: area reclaim, slope.
62A, 62B, 62C----- Tekonink	Good-----	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
62D----- Tekonink	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
62E----- Tekonink	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
63*: Urban land.				
Cohoctah-----	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
64B, 64C----- Grattan	Good-----	Probable-----	Improbable: too sandy.	Poor: too sandy.
66B, 66C----- Boyer	Good-----	Probable-----	Probable-----	Poor: small stones, area reclaim.
66D----- Boyer	Fair: slope.	Probable-----	Probable-----	Poor: small stones, area reclaim, slope.
66E----- Boyer	Poor: slope.	Probable-----	Probable-----	Poor: small stones, area reclaim, slope.
67B, 67C----- Kalamazoo	Good-----	Probable-----	Probable-----	Poor: small stones, area reclaim.
67D----- Kalamazoo	Fair: slope.	Probable-----	Probable-----	Poor: small stones, area reclaim, slope.
68B, 68C----- Saylesville	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
69----- Colwood	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
73----- Sebewa	Poor: wetness.	Probable-----	Probable-----	Poor: wetness.

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
74*. Dumps				
75. Udorthents				
76. Udipsamments				
77*. Pits				
78*. Urban land				
79----- Houghton	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess humus, wetness.
80. Udorthents				
81B*: Urban land.				
Spinks-----	Good-----	Probable-----	Improbable: too sandy.	Poor: too sandy.
81C*: Urban land.				
Spinks-----	Good-----	Probable-----	Improbable: too sandy.	Poor: too sandy.
81D*: Urban land.				
Spinks-----	Fair: slope.	Probable-----	Improbable: too sandy.	Poor: slope, too sandy.
82B*, 82C*: Urban land.				
Perrinton-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim.
82D*: Urban land.				
Perrinton-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, slope.
83B----- Marlette	Fair: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
84B----- Dixboro	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy, thin layer.

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
85----- Lamson	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
86B----- Teasdale	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
87B----- Pipestone	Poor: wetness.	Probable-----	Improbable: too sandy.	Poor: too sandy, wetness.
89E*: Marlette-----	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Oakville-----	Poor: slope.	Probable-----	Improbable: too sandy.	Poor: too sandy, slope.
Boyer-----	Poor: slope.	Probable-----	Probable-----	Poor: small stones, area reclaim, slope.

* 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	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
2B----- Oakville	Severe: seepage.	Severe: cutbanks cave.	Deep to water	Droughty, fast intake, soil blowing.	Too sandy, soil blowing.	Droughty.
3B----- Covert	Severe: seepage.	Severe: cutbanks cave.	Cutbanks cave	Wetness, droughty, fast intake.	Wetness, too sandy, soil blowing.	Droughty.
4B----- Perrin	Severe: seepage.	Severe: cutbanks cave.	Cutbanks cave	Wetness, droughty, fast intake.	Wetness, too sandy, soil blowing.	Droughty.
5----- Alganssee	Severe: seepage.	Severe: cutbanks cave.	Flooding, cutbanks cave.	Wetness, droughty, flooding.	Wetness, too sandy, soil blowing.	Wetness, droughty.
6----- Glendora	Severe: seepage.	Severe: cutbanks cave.	Flooding, cutbanks cave.	Wetness, droughty, fast intake.	Wetness, too sandy.	Wetness, droughty.
7----- Cohoctah	Severe: seepage.	Slight-----	Flooding, frost action.	Wetness, soil blowing.	Wetness, soil blowing.	Wetness.
9B----- Rimer	Severe: seepage.	Severe: no water.	Percs slowly, frost action.	Wetness, droughty, fast intake.	Wetness, soil blowing, percs slowly.	Wetness, droughty.
10----- Landes	Severe: seepage.	Severe: cutbanks cave.	Deep to water	Droughty, rooting depth.	Too sandy-----	Droughty, rooting depth.
11B*: Owosso-----	Severe: seepage.	Severe: no water.	Deep to water	Soil blowing, rooting depth, slope.	Soil blowing---	Favorable.
Marlette-----	Moderate: slope.	Severe: no water.	Deep to water	Soil blowing, slope.	Soil blowing---	Favorable.
11C*: Owosso-----	Severe: seepage, slope.	Severe: no water.	Deep to water	Soil blowing, rooting depth, slope.	Slope, soil blowing.	Slope.
Marlette-----	Severe: slope.	Severe: no water.	Deep to water	Soil blowing, slope.	Slope, soil blowing.	Slope.
12B----- Tustin	Severe: seepage.	Severe: no water.	Deep to water	Droughty, fast intake, soil blowing.	Soil blowing, percs slowly.	Droughty.
12C----- Tustin	Severe: seepage, slope.	Severe: no water.	Deep to water	Droughty, fast intake, soil blowing.	Slope, soil blowing, percs slowly.	Slope, droughty.
13A----- Metamora	Slight-----	Severe: slow refill.	Frost action---	Wetness, soil blowing.	Wetness, soil blowing.	Wetness.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--			
	Pond reservoir areas	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
14----- Shoals	Moderate: seepage.	Moderate: slow refill.	Flooding, frost action.	Wetness, erodes easily, flooding.	Erodes easily, wetness.	Wetness, erodes easily.
15----- Sloan	Moderate: seepage.	Severe: slow refill.	Flooding, frost action.	Wetness, erodes easily, flooding.	Erodes easily, wetness.	Wetness, erodes easily.
16----- Ceresco	Severe: seepage.	Severe: cutbanks cave.	Flooding, frost action, cutbanks cave.	Wetness, droughty.	Wetness, soil blowing.	Wetness, droughty.
17B----- Chelsea	Severe: seepage.	Severe: no water.	Deep to water	Droughty, fast intake, soil blowing.	Too sandy, soil blowing.	Droughty.
17C, 17D, 17E----- Chelsea	Severe: slope, seepage.	Severe: no water.	Deep to water	Droughty, fast intake, soil blowing.	Slope, too sandy, soil blowing.	Slope, droughty.
18B----- Glynwood	Moderate: slope.	Severe: no water.	Slope, percs slowly, frost action.	Slope, percs slowly, wetness.	Erodes easily, wetness.	Erodes easily.
18C----- Glynwood	Severe: slope.	Severe: no water.	Slope, percs slowly, frost action.	Slope, percs slowly, wetness.	Slope, erodes easily, wetness.	Slope, erodes easily.
19A----- Blount	Slight-----	Severe: no water.	Percs slowly, frost action.	Wetness, percs slowly.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily.
19B----- Blount	Moderate: slope.	Severe: no water.	Percs slowly, frost action, slope.	Wetness, percs slowly.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily.
20----- Houghton	Severe: seepage.	Moderate: slow refill.	Frost action, subsides, ponding.	Soil blowing, ponding.	Ponding, soil blowing.	Wetness.
22B----- Oshtemo	Severe: seepage.	Severe: no water.	Deep to water	Soil blowing, slope.	Too sandy, soil blowing.	Favorable.
22C----- Oshtemo	Severe: seepage, slope.	Severe: no water.	Deep to water	Soil blowing, slope.	Slope, too sandy, soil blowing.	Slope.
23A----- Thetford	Severe: seepage.	Severe: cutbanks cave.	Cutbanks cave	Wetness, droughty, fast intake.	Wetness, too sandy, soil blowing.	Wetness, droughty.
24A----- Abscota	Severe: seepage.	Severe: cutbanks cave.	Flooding, cutbanks cave.	Fast intake, droughty, wetness.	Too sandy, soil blowing, wetness.	Droughty.
25B----- Oakville	Severe: seepage.	Severe: no water.	Deep to water	Fast intake, droughty, soil blowing.	Too sandy, soil blowing.	Droughty.
25C, 25D, 25E----- Oakville	Severe: seepage, slope.	Severe: no water.	Deep to water	Fast intake, droughty, soil blowing.	Slope, too sandy, soil blowing.	Slope, droughty.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
26----- Adrian	Severe: seepage.	Severe: slow refill, cutbanks cave.	Ponding, frost action, subsides.	Ponding, soil blowing.	Ponding, soil blowing, too sandy.	Wetness.
27B----- Wasepi	Severe: seepage.	Severe: cutbanks cave.	Frost action, cutbanks cave.	Wetness, droughty, fast intake.	Wetness, too sandy, soil blowing.	Wetness, droughty.
28----- Gilford	Severe: seepage.	Severe: cutbanks cave.	Ponding, frost action, cutbanks cave.	Ponding, soil blowing.	Ponding, too sandy, soil blowing.	Wetness.
29B----- Plainfield	Severe: seepage.	Severe: no water.	Deep to water	Droughty, fast intake, soil blowing.	Too sandy, soil blowing.	Droughty.
29C, 29D, 29E----- Plainfield	Severe: seepage, slope.	Severe: no water.	Deep to water	Droughty, fast intake, soil blowing.	Slope, too sandy, soil blowing.	Droughty, slope.
30B----- Spinks	Severe: seepage.	Severe: no water.	Deep to water	Droughty, fast intake, soil blowing.	Too sandy, soil blowing.	Droughty.
30C, 30D----- Spinks	Severe: seepage, slope.	Severe: no water.	Deep to water	Droughty, fast intake, soil blowing.	Slope, too sandy, soil blowing.	Slope, droughty.
31----- Wallkill	Severe: seepage.	Moderate: slow refill.	Flooding, frost action.	Wetness, erodes easily, flooding.	Erodes easily, wetness.	Wetness, erodes easily.
32----- Palms	Severe: seepage.	Moderate: slow refill.	Ponding, subsides, frost action.	Ponding, soil blowing.	Ponding, soil blowing.	Wetness.
36B----- Marlette	Moderate: slope.	Severe: no water.	Deep to water	Slope-----	Favorable-----	Favorable.
36C, 36D, 36E, 36F----- Marlette	Severe: slope.	Severe: no water.	Deep to water	Slope-----	Slope-----	Slope.
37B----- Capac	Slight-----	Severe: slow refill.	Frost action--	Wetness-----	Wetness-----	Wetness.
38----- Parkhill	Moderate: seepage.	Severe: slow refill.	Ponding, frost action.	Ponding, rooting depth.	Ponding-----	Wetness, rooting depth.
39B----- Arkport	Severe: seepage.	Severe: no water.	Deep to water	Droughty, fast intake, slope.	Favorable-----	Droughty.
39C----- Arkport	Severe: seepage, slope.	Severe: no water.	Deep to water	Droughty, fast intake, slope.	Slope-----	Slope, droughty.
40B----- Matherton	Severe: seepage.	Severe: cutbanks cave.	Frost action, cutbanks cave.	Wetness-----	Wetness, too sandy.	Wetness.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--			
	Pond reservoir areas	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
41B----- Kibbie	Moderate: seepage.	Severe: cutbanks cave.	Frost action, cutbanks cave.	Wetness-----	Erodes easily, wetness, too sandy.	Wetness, erodes easily.
42B----- Tedrow	Severe: seepage.	Severe: cutbanks cave.	Cutbanks cave	Wetness, droughty, fast intake.	Wetness, too sandy, soil blowing.	Wetness, droughty.
43----- Granby	Severe: seepage.	Severe: cutbanks cave.	Ponding, cutbanks cave.	Ponding, droughty, fast intake.	Ponding, too sandy, soil blowing.	Wetness, droughty.
44----- Edwards	Severe: seepage.	Moderate: slow refill.	Frost action, ponding, subsides.	Ponding, soil blowing.	Ponding, soil blowing.	Wetness.
45B----- Perrinton	Moderate: slope.	Severe: no water.	Deep to water	Rooting depth, slope.	Favorable-----	Favorable.
45C, 45D, 45E, 45F----- Perrinton	Severe: slope.	Severe: no water.	Deep to water	Rooting depth, slope.	Slope-----	Slope.
46B----- Ithaca	Moderate: slope.	Severe: no water.	Frost action, slope.	Wetness, slope.	Wetness-----	Wetness.
47----- Pewamo	Slight-----	Severe: slow refill.	Ponding, frost action.	Ponding-----	Ponding-----	Wetness.
48B----- Metea	Severe: seepage.	Severe: no water.	Deep to water	Droughty, fast intake, soil blowing.	Too sandy, soil blowing.	Droughty.
48C, 48D----- Metea	Severe: seepage, slope.	Severe: no water.	Deep to water	Droughty, fast intake, soil blowing.	Slope, too sandy, soil blowing.	Slope, droughty.
49B----- Selfridge	Severe: seepage.	Severe: no water.	Frost action--	Wetness, fast intake, soil blowing.	Wetness, soil blowing, erodes easily.	Wetness, erodes easily.
50B----- Woodbeck	Severe: seepage.	Severe: no water.	Deep to water	Rooting depth	Favorable-----	Rooting depth.
50C, 50D----- Woodbeck	Severe: seepage, slope.	Severe: no water.	Deep to water	Rooting depth	Slope-----	Slope, rooting depth.
51B----- Oakville	Severe: seepage.	Severe: no water.	Deep to water	Droughty, fast intake, soil blowing.	Too sandy, soil blowing.	Droughty.
51C----- Oakville	Severe: seepage, slope.	Severe: no water.	Deep to water	Droughty, fast intake, soil blowing.	Slope, too sandy, soil blowing.	Slope, droughty.
52----- Belleville	Severe: seepage.	Severe: slow refill, cutbanks cave.	Ponding, frost action.	Ponding, droughty, fast intake.	Ponding, soil blowing.	Wetness, droughty.
54B----- Tuscola	Moderate: seepage, slope.	Severe: cutbanks cave.	Frost action, slope, cutbanks cave.	Wetness, slope.	Wetness, too sandy.	Favorable.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--			
	Pond reservoir areas	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
54C----- Tuscola	Severe: slope.	Severe: cutbanks cave.	Frost action, slope, cutbanks cave.	Wetness, slope.	Slope, wetness, too sandy.	Slope.
56B----- Scalley	Severe: seepage.	Severe: no water.	Deep to water	Soil blowing, slope.	Soil blowing---	Favorable.
56C, 56D----- Scalley	Severe: slope, seepage.	Severe: no water.	Deep to water	Soil blowing, slope.	Slope, soil blowing.	Slope.
58----- Napoleon	Severe: seepage.	Moderate: slow refill.	Ponding, subsides, frost action.	Ponding, soil blowing, too acid.	Ponding, soil blowing.	Wetness.
59B----- Okee	Severe: seepage.	Severe: no water.	Deep to water	Fast intake, soil blowing.	Too sandy, soil blowing.	Favorable.
59C, 59D----- Okee	Severe: seepage, slope.	Severe: no water.	Deep to water	Fast intake, soil blowing.	Slope, too sandy, soil blowing.	Slope.
62A----- Tekonink	Moderate: seepage.	Severe: no water.	Deep to water	Droughty, soil blowing.	Soil blowing---	Droughty.
62B----- Tekonink	Moderate: seepage, slope.	Severe: no water.	Deep to water	Droughty, soil blowing.	Soil blowing---	Droughty.
62C, 62D, 62E----- Tekonink	Severe: slope.	Severe: no water.	Deep to water	Droughty, soil blowing.	Slope, soil blowing.	Slope, droughty.
64B----- Grattan	Severe: seepage.	Severe: no water.	Deep to water	Droughty, fast intake, soil blowing.	Too sandy, soil blowing.	Droughty.
64C----- Grattan	Severe: seepage, slope.	Severe: no water.	Deep to water	Droughty, fast intake, soil blowing.	Slope, too sandy, soil blowing.	Slope, droughty.
66B----- Boyer	Severe: seepage.	Severe: no water.	Deep to water	Droughty, soil blowing, fast intake.	Too sandy-----	Favorable.
66C, 66D, 66E----- Boyer	Severe: seepage, slope.	Severe: no water.	Deep to water	Droughty, soil blowing, fast intake.	Slope, too sandy.	Slope.
67B----- Kalamazoo	Severe: seepage.	Severe: no water.	Deep to water	Favorable-----	Favorable-----	Favorable.
67C, 67D----- Kalamazoo	Severe: seepage, slope.	Severe: no water.	Deep to water	Favorable-----	Slope-----	Slope.
68B----- Saylesville	Moderate: slope.	Severe: no water.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.
68C----- Saylesville	Severe: slope.	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
69----- Colwood	Moderate: seepage.	Severe: cutbanks cave.	Ponding, frost action.	Ponding-----	Erodes easily, ponding.	Wetness, erodes easily.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--			
	Pond reservoir areas	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
73----- Sebewa	Severe: seepage.	Severe: cutbanks cave.	Frost action, cutbanks cave, ponding.	Ponding-----	Too sandy, ponding.	Wetness.
74*. Dumps						
75. Udorthents						
76. Udipsamments						
77*. Pits						
78*. Urban land						
79----- Houghton	Severe: seepage.	Severe: slow refill.	Ponding, subsides, frost action.	Ponding-----	Ponding-----	Wetness.
80. Udorthents						
83B----- Marlette	Moderate: slope.	Severe: slow refill.	Slope-----	Wetness, slope.	Wetness-----	Favorable.
84B----- Dixboro	Moderate: seepage.	Severe: cutbanks cave.	Frost action, cutbanks cave.	Wetness, fast intake, soil blowing.	Wetness, too sandy, soil blowing.	Wetness.
85----- Lamson	Severe: seepage.	Severe: cutbanks cave.	Frost action---	Wetness-----	Wetness-----	Wetness.
86B----- Teasdale	Moderate: seepage.	Severe: cutbanks cave.	Frost action---	Wetness, soil blowing.	Wetness, soil blowing.	Wetness.
87B----- Pipestone	Severe: seepage.	Severe: cutbanks cave.	Cutbanks cave	Wetness, droughty, fast intake.	Wetness, too sandy, soil blowing.	Wetness, droughty.
89E*: Marlette-----	Severe: slope.	Severe: no water.	Deep to water	Slope-----	Slope-----	Slope.
Oakville-----	Severe: seepage, slope.	Severe: no water.	Deep to water	Fast intake, droughty, soil blowing.	Slope, too sandy, soil blowing.	Slope, droughty.
Boyer-----	Severe: seepage, slope.	Severe: no water.	Deep to water	Droughty, soil blowing, fast intake.	Slope, too sandy.	Slope.

* 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	
2B----- Oakville	0-6	Fine sand-----	SM, SP, SP-SM	A-2, A-3	0	100	100	50-85	0-35	---	NP
	6-60	Fine sand, sand, loamy fine sand.	SM, SP, SP-SM	A-2, A-3	0	100	95-100	65-95	0-25	---	NP
3B----- Covert	0-6	Sand-----	SP-SM, SM	A-3, A-2-4	0	95-100	90-100	50-75	5-15	---	NP
	6-25	Sand-----	SP-SM, SM	A-3, A-2-4	0	95-100	90-100	50-70	5-15	---	NP
	25-60	Sand, fine sand	SP-SM, SM	A-3, A-2-4	0	95-100	90-100	50-70	5-15	---	NP
4B----- Perrin	0-19	Gravelly loamy sand.	SM	A-2-4, A-1-b	0-5	95-100	65-95	45-70	15-30	---	NP
	19-38	Sandy loam, sandy clay loam, gravelly sandy clay loam.	SM, SC, SM-SC	A-2, A-4, A-6	0-5	95-100	65-95	55-85	25-45	15-35	2-16
	38-60	Stratified sand to gravel.	SP, SP-SM, GP, GP-GM	A-1, A-3, A-2-4	0-10	40-90	35-85	30-60	0-10	---	NP
5----- Algansee	0-8	Loamy fine sand	SM	A-2-4	0	100	100	50-75	15-30	---	NP
	8-60	Stratified sand to loam.	SM, SP-SM	A-3, A-2-4	0	100	100	50-70	5-15	---	NP
6----- Glendora	0-7	Loamy sand-----	SP-SM, SM	A-3, A-2, A-4, A-1	0-5	95-100	90-100	45-95	5-40	<20	NP-4
	7-60	Stratified sand to loamy fine sand.	SP, SM, SP-SM	A-3, A-2-4, A-1-b	0-5	95-100	90-100	45-85	0-35	---	NP
7----- Cohoctah	0-10	Loam-----	ML, SM	A-4, A-2	0	100	100	65-95	30-75	<30	NP-6
	10-31	Loam, fine sandy loam, sandy loam.	ML, SM, SC, CL	A-4, A-2	0	95-100	80-100	70-90	30-70	<30	NP-10
	31-60	Loam, fine sandy loam, loamy sand.	ML, SM, SC, CL	A-4, A-2	0	95-100	80-100	65-90	20-70	<30	NP-10
9B----- Rimer	0-9	Loamy fine sand	SM, ML	A-2, A-4, A-1	0	100	95-100	45-80	15-55	---	NP
	9-22	Loamy fine sand, fine sand, loamy sand.	SM	A-2, A-4	0	100	95-100	75-90	20-40	---	NP
	22-32	Fine sandy loam, sandy loam.	SM, SM-SC, SC	A-4	0	100	95-100	60-80	35-50	15-30	NP-10
	32-60	Clay, silty clay, silty clay loam.	CH, CL, MH, ML	A-7, A-6	0	100	90-100	85-100	75-95	35-60	15-30
10----- Landes	0-25	Loam-----	CL, CL-ML	A-4, A-6	0	100	90-100	85-95	50-75	25-35	5-15
	25-60	Stratified fine sand to silt loam.	SM, ML, SP-SM, SC	A-2, A-4	0	100	85-100	60-95	10-70	<30	NP-10
11B*, 11C*: Owosso-----	0-10	Sandy loam-----	SM, SM-SC, SC	A-2, A-4	0-5	95-100	75-100	50-70	20-45	12-29	NP-10
	10-22	Sandy loam, loam, fine sandy loam.	SM, SC, SM-SC	A-2, A-4	0-5	95-100	75-100	60-90	25-45	15-30	NP-10
	22-60	Loam, sandy loam, sandy clay loam.	CL, CL-ML	A-4, A-6	0-5	95-100	90-95	85-95	60-90	25-40	6-21

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	
11B*, 11C*: Marlette-----	0-9	Sandy loam-----	SM, SM-SC	A-4, A-2	0-5	95-100	85-95	60-70	30-40	<25	NP-7
	9-40	Loam, clay loam, silty clay loam.	CL, CL-ML	A-4, A-6	0-5	95-100	85-95	80-95	55-90	20-40	5-25
	40-60	Loam, clay loam	CL, CL-ML	A-4, A-6	0-5	95-100	85-95	75-95	50-75	20-40	5-25
12B, 12C----- Tustin	0-22	Loamy fine sand	SM	A-2	0	100	100	60-100	15-25	---	NP
	22-43	Silty clay loam, clay loam, sandy loam.	SC, CL	A-6, A-4	0-5	90-100	90-100	80-90	45-55	20-30	7-13
	43-60	Silty clay, silty clay loam, clay.	CL, CH	A-7, A-6	0-5	90-100	90-100	85-100	65-100	30-80	15-50
13A----- Metamora	0-9	Sandy loam-----	SM, SM-SC	A-2, A-4	0-5	95-100	95-100	60-80	25-45	<25	NP-7
	9-24	Sandy loam, loamy sand.	SM, SM-SC	A-2, A-4	0-5	95-100	90-100	50-80	15-45	<25	NP-7
	24-38	Clay loam, loam, sandy clay loam.	CL, CL-ML	A-4, A-6, A-7	0	100	90-100	80-100	60-85	20-45	5-25
	38-60	Clay loam, loam, silty clay loam.	CL, CL-ML	A-4, A-6, A-7	0	100	90-100	80-100	60-85	20-45	5-25
14----- Shoals	0-8	Loam-----	CL, CL-ML	A-4, A-6	0	100	100	90-100	65-90	20-35	6-15
	8-30	Silt loam, loam, clay loam.	CL, CL-ML	A-4, A-6	0	100	100	90-100	75-85	25-40	5-15
	30-60	Stratified silt loam to sandy loam.	ML, CL, CL-ML	A-4	0-3	90-100	85-100	60-80	50-70	<30	4-10
15----- Sloan	0-16	Loam-----	CL, ML, CL-ML	A-6, A-4	0	100	95-100	85-100	70-95	20-40	3-15
	16-40	Silty clay loam, clay loam, loam.	CL, ML	A-6, A-7, A-4	0	100	90-100	85-100	75-95	30-45	8-18
	40-60	Stratified gravelly sandy loam to silty clay loam.	ML, CL	A-4, A-6	0	95-100	70-100	60-95	50-90	25-40	3-15
16----- Ceresco	0-10	Loam-----	SM, ML, CL-ML, SM-SC	A-2, A-4	0	100	100	60-90	30-75	10-20	NP-6
	10-60	Fine sandy loam, fine sand, silt loam.	SM, ML, CL, SC	A-2, A-4	0	95-100	80-100	60-95	15-80	15-30	NP-8
17B, 17C, 17D, 17E----- Chelsea	0-24	Loamy fine sand	SM, SP-SM	A-2-4	0	100	100	65-80	10-35	---	NP
	24-60	Fine sand, sand, loamy sand.	SP, SM, SP-SM	A-3, A-2-4	0	100	100	65-80	3-15	---	NP
18B, 18C----- Glynwood	0-11	Loam-----	CL-ML, CL	A-4, A-6	0	95-100	90-100	80-100	55-90	23-40	4-15
	11-35	Clay, silty clay, silty clay loam.	CL, CH	A-7, A-6	0-5	95-100	85-100	75-100	65-95	35-55	15-30
	35-60	Clay loam, silty clay loam.	CL	A-6, A-4	0-5	95-100	80-100	75-95	65-90	25-40	7-18
19A, 19B----- Blount	0-7	Loam-----	CL	A-6, A-4	0-5	95-100	95-100	90-100	80-95	25-40	8-20
	7-23	Silty clay loam, silty clay, clay loam.	CH, CL	A-7, A-6	0-5	95-100	90-100	80-90	75-85	35-60	15-35
	23-60	Silty clay loam, clay loam.	CL	A-6, A-7	0-10	90-100	90-100	80-100	70-90	30-45	10-25

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	
20----- Houghton	0-60	Sapric material	PT	A-8	0	---	---	---	---	---	---
22B, 22C----- Oshtemo	0-15	Sandy loam-----	SM, SM-SC	A-2, A-4	0	95-100	60-95	60-70	25-40	15-25	2-7
	15-32	Sandy loam, sandy clay loam, gravelly sandy loam.	SM, SC, SM-SC	A-2, A-4, A-6	0	95-100	60-95	60-85	25-45	12-30	2-16
	32-60	Stratified loamy sand to gravel.	SP-SM, GP, SP, GP-GM	A-1, A-2, A-3	0-5	40-90	35-85	20-60	0-10	---	NP
23A----- Thetford	0-22	Loamy sand, sand	SM	A-2, A-4	0	95-100	90-100	70-85	20-45	<20	NP-4
	22-60	Loamy sand, sandy loam.	SM	A-2, A-4	0	95-100	90-100	60-80	20-40	<20	NP-4
24A----- Abscota	0-5	Loamy sand-----	SM	A-2-4	0	95-100	95-100	50-75	15-30	---	NP
	5-14	Sand, loamy fine sand, loamy sand.	SP, SM, SP-SM	A-2-4, A-1, A-3	0	95-100	95-100	45-65	0-15	---	NP
	14-60	Sand, coarse sand, gravelly sand.	SP-SM, SP	A-1, A-3, A-2-4	0	90-100	80-100	45-60	0-10	---	NP
25B, 25C, 25D, 25E----- Oakville	0-6	Fine sand-----	SM, SP, SP-SM	A-2, A-3	0	100	100	50-85	0-35	---	NP
	6-60	Fine sand, sand, loamy fine sand.	SM, SP, SP-SM	A-2, A-3	0	100	95-100	65-95	0-25	---	NP
26----- Adrian	0-27	Sapric material	PT	A-8	---	---	---	---	---	---	---
	27-60	Sand, loamy sand, fine sand.	SP, SM	A-2, A-3, A-1	0	80-100	60-100	35-75	0-30	---	NP
27B----- Wasepi	0-14	Loamy sand-----	SM	A-2	0-5	85-100	70-95	50-65	15-30	---	NP
	14-25	Gravelly loamy sand, gravelly sandy loam, gravelly sandy clay loam.	SM, SC, SM-SC	A-2, A-4, A-6	0-5	85-100	70-95	55-85	20-45	15-35	2-16
	25-60	Sand, gravel, gravelly sand.	SP, SP-SM, GP, GP-GM	A-1, A-3, A-2	0-10	40-80	35-70	30-60	0-10	---	NP
28----- Gilford	0-11	Fine sandy loam	SM, SC, SM-SC	A-4	0	95-100	90-100	65-80	35-45	15-25	2-10
	11-28	Sandy loam, fine sandy loam.	SM, SC, SM-SC	A-2-4	0	90-100	90-100	55-70	25-35	20-30	NP-8
	28-36	Coarse sand, sand, loamy sand.	SM, SP, SP-SM	A-3, A-1-b, A-2-4	0	90-100	85-100	18-60	3-18	---	NP
	36-60	Gravelly sand, gravelly coarse sand.	SP, SP-SM, GP, GP-GM	A-1	0-15	40-85	35-80	20-50	3-10	---	NP
29B, 29C, 29D, 29E----- Plainfield	0-9	Sand-----	SP-SM, SM, SP	A-3, A-2, A-1	0	75-100	75-100	40-80	3-35	---	NP
	9-29	Sand-----	SP, SM, SP-SM	A-3, A-1, A-2	0	75-100	75-100	40-70	1-15	---	NP
	29-60	Sand, fine sand	SP, SM, SP-SM	A-3, A-1, A-2	0	75-100	75-100	40-90	1-15	---	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		
	<u>In</u>				<u>Pct</u>					<u>Pct</u>	
30B, 30C, 30D---- Spinks	0-10	Loamy sand-----	SM	A-2-4	0	100	80-100	50-90	15-30	---	NP
	10-16	Loamy sand, sand	SM, SP-SM	A-2-4, A-3	0	100	80-100	50-90	5-25	---	NP
	16-60	Stratified fine sand to loamy fine sand.	SM, SP-SM	A-2-4	0	100	80-100	60-90	10-30	---	NP
31----- Wallkill	0-12	Silt loam-----	ML, SM, OL	A-5, A-7	0	95-100	90-100	70-100	40-90	40-50	5-15
	12-35	Silt loam, loam, gravelly silt loam.	CL, CL-ML, SM-SC, SC	A-4	0	75-100	70-100	60-100	40-90	15-25	5-10
	35-60	Sapric material, hemic material.	PT	A-8	0	---	---	---	---	---	---
32----- Palms	0-42	Sapric material	PT	A-8	---	---	---	---	---	---	---
	42-60	Clay loam, silty clay loam, fine sandy loam.	CL-ML, CL	A-4, A-6	0	85-100	80-100	70-95	50-90	25-40	5-20
36B, 36C, 36D, 36E, 36F---- Marlette	0-9	Loam-----	CL, ML, CL-ML	A-4	0-5	95-100	85-95	80-95	60-70	20-30	3-10
	9-40	Loam, clay loam, silty clay loam.	CL, CL-ML	A-4, A-6	0-5	95-100	85-95	80-95	55-90	20-40	5-25
	40-60	Loam, clay loam	CL, CL-ML	A-4, A-6	0-5	95-100	85-95	75-95	50-75	20-40	5-25
37B----- Capac	0-10	Loam-----	CL, ML, CL-ML	A-4	0-5	95-100	90-100	80-95	60-75	<25	3-10
	10-38	Loam, clay loam, fine sandy loam.	CL, CL-ML	A-4, A-6	0-5	95-100	90-100	85-100	50-80	25-40	5-20
	38-60	Loam, clay loam	CL, CL-ML	A-4, A-6	0-5	95-100	85-100	80-95	60-75	15-35	5-15
38----- Parkhill	0-8	Loam-----	CL-ML, CL	A-4, A-6	0-5	95-100	90-100	85-95	60-85	20-40	6-18
	8-25	Clay loam, silt loam, silty clay loam.	CL	A-6	0-5	95-100	90-100	85-100	65-95	25-40	10-20
	25-60	Loam, silt loam	CL, CL-ML	A-4, A-6	0-5	95-100	90-100	80-90	60-75	15-35	5-15
39B, 39C----- Arkport	0-8	Loamy very fine sand.	SM, ML	A-4	0	95-100	95-100	65-95	40-65	<15	NP-4
	8-16	Very fine sandy loam, loamy very fine sand, loamy fine sand.	SM, ML	A-2, A-4	0	95-100	95-100	70-95	30-65	<15	NP-4
	16-60	Very fine sand, loamy fine sand, loamy very fine sand.	SM, ML	A-2, A-4	0	95-100	95-100	65-95	20-60	---	NP
40B----- Matherton	0-12	Loam-----	ML, CL, CL-ML	A-4	0-5	90-100	80-100	80-95	50-90	20-30	NP-8
	12-30	Sandy clay loam, clay loam, sandy loam.	SC, CL, CL-ML, SM-SC	A-6, A-4	0-5	90-100	65-95	50-85	35-70	25-40	5-20
	30-60	Gravelly sand, sand.	GP, SP, SP-SM, GP-GM	A-1, A-3, A-2-4	0-10	40-100	35-90	30-55	0-10	---	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		
41B----- Kibbie	0-12	Loam-----	ML	A-4, A-6	0	100	100	75-95	50-85	25-40	2-14
	12-34	Silt loam, silty clay loam, sandy clay loam.	CL, CL-ML, SC, SM-SC	A-4, A-6, A-7	0	90-100	85-100	80-100	35-90	25-45	6-25
	34-60	Stratified silt loam to fine sand.	ML, SM, SC, CL	A-4, A-2	0	100	95-100	70-95	30-80	<30	NP-10
42B----- Tedrow	0-7	Loamy fine sand	SM	A-2	0	100	95-100	60-80	20-35	---	NP
	7-13	Loamy fine sand, loamy sand, sand.	SM, SP-SM	A-2, A-3	0	100	95-100	60-80	5-35	---	NP
	13-60	Sand, fine sand	SM, SP, SP-SM	A-2, A-3	0	100	95-100	50-70	3-35	---	NP
43----- Granby	0-11	Loamy fine sand	SM	A-2	0	100	100	50-75	15-30	---	NP
	11-42	Sand, fine sand, loamy fine sand.	SP, SP-SM, SM	A-3, A-2	0	100	95-100	50-75	0-20	---	NP
	42-60	Sand, fine sand	SP, SP-SM	A-3, A-2	0	100	95-100	50-70	0-5	---	NP
44----- Edwards	0-30	Sapric material	PT	A-8	0	---	---	---	---	---	---
	30-60	Marl-----	---	---	0	100	95-100	80-90	60-80	---	---
45B, 45C, 45D, 45E, 45F----- Perrinton	0-8	Loam-----	ML, CL, CL-ML	A-4, A-6	0-5	95-100	95-100	80-100	55-80	18-35	2-15
	8-39	Clay loam, silty clay loam, clay.	CL, CH	A-6, A-7	0-5	95-100	95-100	80-100	65-90	25-55	11-30
	39-60	Clay loam, silty clay loam.	CL	A-6	0-5	95-100	95-100	90-100	65-90	25-36	11-18
46B----- Ithaca	0-9	Loam-----	CL	A-4, A-6	0-3	95-100	95-100	80-100	55-85	25-35	7-15
	9-32	Clay loam, silty clay loam, clay.	CL, CH	A-7	0-3	95-100	90-100	85-100	60-90	40-55	20-30
	32-60	Clay loam, silty clay loam, clay.	CL, CH	A-7	0-3	95-100	90-100	85-100	60-90	40-55	20-30
47----- Pewamo	0-16	Loam, silty clay loam.	ML, CL, CL-ML	A-4	0-5	90-100	80-100	80-95	60-85	20-35	3-10
	16-36	Clay loam, silty clay loam, silty clay.	CL, CH	A-7, A-6	0-5	95-100	90-100	90-100	75-95	35-55	15-30
	36-60	Clay loam, silty clay loam.	CL	A-7	0-5	95-100	90-100	90-100	70-90	40-50	15-25
48B, 48C, 48D----- Metea	0-9	Loamy sand-----	SM	A-2-4	0	100	100	50-80	15-35	---	NP
	9-29	Loamy sand, loamy fine sand, sand.	SP-SM, SM	A-2-4, A-3	0	100	100	50-80	5-35	---	NP
	29-35	Sandy clay loam, fine sandy loam, sandy loam.	SC, SM-SC, CL, CL-ML	A-4, A-2-4	0	95-100	95-100	55-90	15-75	<27	4-9
	35-60	Loam, clay loam	CL	A-6	0-3	95-100	85-90	75-90	50-80	30-40	10-15
49B----- Selfridge	0-22	Loamy sand-----	SM, SM-SC	A-2	0-5	95-100	95-100	70-85	20-35	<20	NP-5
	22-30	Sandy loam-----	SM, SC, SM-SC	A-2, A-4	0-5	95-100	95-100	65-80	25-45	15-30	NP-10
	30-60	Clay loam, loam, silty clay loam.	CL	A-6, A-7	0-5	95-100	90-100	85-100	60-90	25-50	10-25

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	
50B, 50C, 50D--- Woodbeck	0-12	Silt loam-----	CL	A-4, A-6	0	100	95-100	85-100	60-90	25-35	7-15
	12-36	Silty clay loam, silty clay, clay.	CH, CL	A-7	0	100	95-100	90-100	75-100	40-60	20-35
	36-60	Sand, fine sand, gravelly sand.	SP, SM, SP-SM	A-1, A-2, A-3	0	70-100	70-100	15-70	2-25	---	NP
51B, 51C----- Oakville	0-10	Fine sand-----	SM	A-2	0	100	100	55-75	15-25	---	NP
	10-50	Fine sand, loamy fine sand, sand.	SM, SP, SP-SM	A-2, A-3	0	100	100	65-95	0-35	---	NP
	50-60	Clay loam, silty clay loam.	CL	A-6, A-7	0	100	100	90-100	70-95	25-50	12-30
52----- Belleville	0-12	Loamy sand-----	SM	A-2	0	100	95-100	70-85	20-35	<20	NP-4
	12-25	Fine sand, loamy sand, loamy fine sand.	SM	A-2	0-3	95-100	90-100	50-85	15-30	<20	NP-4
	25-60	Clay loam, silty clay loam, loam.	CL	A-6, A-7	0-3	95-100	90-100	90-100	70-90	25-50	10-25
54B, 54C----- Tuscola	0-7	Silt loam-----	ML, CL, CL-ML	A-4	0	100	100	85-100	60-90	20-30	3-10
	7-38	Silty clay loam, silt loam, sandy clay loam.	CL, CL-ML	A-4, A-6	0	100	100	80-95	50-90	20-40	6-20
	38-60	Stratified fine sand to silt loam.	SM, ML	A-4	0	100	95-100	75-90	40-90	<25	NP-4
56B, 56C, 56D--- Scalley	0-18	Sandy loam-----	SM, SM-SC, SC	A-2, A-4	0-5	95-100	85-100	60-70	25-45	<28	3-10
	18-38	Clay loam, loam, silty clay loam.	CL	A-6	0-5	95-100	85-100	80-95	80-90	30-40	10-20
	38-60	Stratified loamy sand to sand.	SM	A-2-4, A-1-b	0-5	80-100	65-100	45-90	15-30	---	NP
58----- Napoleon	0-24	Sapric material	PT	A-8	0	---	---	---	---	---	---
	24-60	Hemic material---	PT	A-8	0	---	---	---	---	---	---
59B, 59C, 59D--- Okee	0-27	Loamy fine sand	SM, SP-SM	A-2, A-4, A-1-b	0	90-100	90-100	45-85	10-40	---	NP
	27-36	Sandy clay loam, sandy loam, loam.	SC, SM, ML, CL	A-2, A-4	0-10	90-100	90-100	50-90	20-55	<25	2-10
	36-60	Gravelly sandy loam, fine sandy loam, loamy sand.	SM, SP-SM, GM, GP-GM	A-2, A-4, A-3, A-1-b	1-15	50-95	50-95	25-75	5-40	---	NP
62A, 62B, 62C, 62D, 62E----- Tekonink	0-12	Fine sandy loam	SM, SM-SC, SC	A-4, A-2-4	0-10	95-100	80-100	55-85	25-50	<25	NP-10
	12-30	Fine sandy loam, sandy loam, loamy fine sand.	SM, SM-SC, SC	A-4, A-2-4	0-10	95-100	80-100	50-85	20-50	<25	NP-10
	30-59	Fine sandy loam, sandy loam, sandy clay loam.	SM-SC, SC, CL, CL-ML	A-4, A-2-4, A-2-6, A-6	0-10	95-100	80-100	55-85	25-55	<30	4-15
	59-60	Sandy loam, fine sandy loam, loamy fine sand.	SM, SC, SM-SC	A-4, A-2-4	0-10	95-100	80-100	50-95	20-45	<25	NP-10

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 Pct	Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
63*: Urban land.											
Cohoctah-----	0-10	Loam-----	ML, SM	A-4, A-2	0	100	100	65-95	30-75	<30	NP-6
	10-31	Loam, fine sandy loam, sandy loam.	ML, SM, SC, CL	A-4, A-2	0	95-100	80-100	70-90	30-70	<30	NP-10
	31-60	Loam, fine sandy loam, loamy sand.	ML, SM, SC, CL	A-4, A-2	0	95-100	80-100	65-90	20-70	<30	NP-10
64B, 64C----- Grattan	0-12	Sand-----	SM, SP-SM	A-2-4, A-3	0	95-100	95-100	60-80	5-15	---	NP
	12-27	Sand-----	SM, SP-SM, SP	A-2-4, A-3	0	95-100	90-100	60-85	0-15	---	NP
	27-60	Sand, coarse sand	SP, SP-SM	A-1, A-2-4, A-3	0	95-100	90-100	40-85	0-10	---	NP
66B, 66C, 66D, 66E----- Boyer	0-15	Loamy sand, gravelly loamy sand.	SM, SM-SC	A-2, A-1, A-4	0-5	95-100	65-95	45-75	15-45	<20	NP-6
	15-25	Sandy loam, loam, gravelly sandy loam.	SM, SC, SM-SC, SP-SM	A-2, A-4, A-6	0-5	80-100	65-95	55-85	10-45	10-35	NP-16
	25-60	Gravelly sand, coarse sand, gravel.	SP, SP-SM, GP, GP-GM	A-1, A-3, A-2-4	0-10	40-100	35-100	30-70	0-10	---	NP
67B, 67C, 67D----- Kalamazoo	0-10	Loam-----	ML, CL-ML, CL	A-4	0-5	95-100	80-100	80-90	55-70	<25	NP-10
	10-38	Clay loam, gravelly sandy clay loam, gravelly sandy loam.	SC, CL	A-4, A-6	0-5	95-100	70-95	65-95	35-80	20-38	9-20
	38-43	Loamy coarse sand, loamy sand, gravelly loamy sand.	SM, SP-SM	A-2-4, A-1-b	0-5	95-100	60-95	40-60	10-25	---	NP
	43-60	Sand, gravelly sand, very gravelly sand.	SP, SP-SM	A-1, A-3, A-2	0-5	60-80	25-75	10-55	0-10	---	NP
68B, 68C----- Saylesville	0-9	Silt loam-----	CL, CL-ML	A-4, A-6	0	100	95-100	85-100	60-90	20-35	5-15
	9-30	Clay, silty clay, silty clay loam.	CL, CH	A-7	0	100	95-100	95-100	85-100	40-65	22-40
	30-60	Silty clay loam	CL	A-6, A-7	0	100	100	95-100	95-100	30-45	10-25
69----- Colwood	0-16	Silt loam-----	ML, CL, CL-ML	A-4, A-6	0	100	100	85-100	60-90	15-35	2-12
	16-36	Loam, silty clay loam, silt loam.	CL, CL-ML	A-6, A-4	0	100	100	80-100	50-90	20-40	6-20
	36-60	Stratified silty clay loam to fine sand.	SM, ML	A-2, A-4	0	100	95-100	70-100	30-80	<35	NP-10

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	
73----- Sebewa	0-10	Loam-----	CL, CL-ML, ML	A-4, A-6	0	95-100	80-100	75-95	50-90	15-30	3-15
	10-38	Sandy clay loam, loam, gravelly clay loam.	SC, CL	A-4, A-6	0	95-100	65-95	55-85	40-75	25-40	8-20
	38-60	Gravelly sand----	SP, SP-SM, GP, GP-GM	A-1	0-5	40-75	35-70	20-40	0-10	---	NP
74*. Dumps											
75. Udorthents											
76. Udipsamments											
77*. Pits											
78*. Urban land											
79----- Houghton	0-60	Sapric material	PT	A-8	0	---	---	---	---	---	---
80. Udorthents											
81B*, 81C*, 81D*: Urban land.											
Spinks-----	0-10	Loamy sand-----	SM	A-2-4	0	100	80-100	50-90	15-30	---	NP
	10-16	Loamy sand, sand	SM, SP-SM	A-2-4, A-3	0	100	80-100	50-90	5-25	---	NP
	16-60	Stratified fine sand to loamy fine sand.	SM, SP-SM	A-2-4	0	100	80-100	60-90	10-30	---	NP
82B*, 82C*, 82D*: Urban land.											
Perrinton-----	0-8	Loam-----	ML, CL, CL-ML	A-4, A-6	0-5	95-100	95-100	80-100	55-80	18-35	2-15
	8-39	Clay loam, silty clay loam, clay.	CL, CH	A-6, A-7	0-5	95-100	95-100	80-100	65-90	25-55	11-30
	39-60	Clay loam, silty clay loam.	CL	A-6	0-5	95-100	95-100	90-100	65-90	25-36	11-18
83B----- Marlette	0-9	Loam-----	CL-ML, ML, CL, SC	A-4	0-5	95-100	85-95	70-95	40-70	20-30	3-10
	9-40	Loam, clay loam, silty clay loam.	CL, CL-ML	A-4, A-6	0-5	95-100	85-95	80-95	55-90	20-40	5-25
	40-60	Loam, clay loam	CL, CL-ML	A-4, A-6	0-5	95-100	85-95	75-95	50-75	20-40	5-25
84B----- Dixboro	0-16	Loamy fine sand	SM, ML	A-2-4, A-4	0	100	100	70-95	20-60	<20	NP-4
	16-31	Fine sandy loam, loamy fine sand, very fine sandy loam.	SM, ML, SC, CL	A-4	0	100	100	70-95	40-90	<25	2-10
	31-60	Stratified fine sand to silt loam.	SM, ML, SC, CL	A-2-4, A-4	0	100	95-100	70-95	20-80	<20	NP-8

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	
85----- Lamson	0-11	Fine sandy loam	SM, ML	A-4	0	95-100	90-100	70-90	40-85	<20	NP-4
	11-50	Fine sandy loam, very fine sandy loam.	SM, ML	A-4	0	95-100	80-100	55-95	45-65	<20	NP-4
	50-60	Fine sand, very fine sand, silt loam.	SM, ML	A-2, A-4	0	95-100	80-100	60-90	20-90	---	NP
86B----- Teasdale	0-16	Fine sandy loam	SM, SM-SC, SC	A-2-4, A-4	0-5	95-100	95-100	55-95	25-50	<25	2-8
	16-56	Fine sandy loam, loamy fine sand.	ML, CL, SM, SC	A-2-4, A-2-6, A-4, A-6	0-8	85-100	80-100	50-85	25-70	20-35	2-15
	56-60	Sandy loam, loamy sand, fine sandy loam.	SM, SM-SC, SC	A-2-4, A-4	0-5	85-100	85-100	55-70	15-40	<25	NP-8
87B----- Pipestone	0-11	Sand-----	SP, SM, SP-SM	A-2-4, A-3	0	95-100	90-100	60-80	0-20	---	NP
	11-24	Sand, loamy sand, fine sand.	SP-SM, SP, SM	A-2-4, A-3	0	95-100	90-100	60-80	0-15	---	NP
	24-60	Sand, fine sand	SP-SM, SP	A-3, A-2-4	0	95-100	90-100	50-80	0-10	---	NP
89E*: Marlette-----	0-9	Loam-----	CL, ML, CL-ML	A-4	0-5	95-100	85-95	80-95	60-70	20-30	3-10
	9-40	Loam, clay loam, silty clay loam.	CL, CL-ML	A-4, A-6	0-5	95-100	85-95	80-95	55-90	20-40	5-25
	40-60	Loam, clay loam	CL, CL-ML	A-4, A-6	0-5	95-100	85-95	75-95	50-75	20-40	5-25
Oakville-----	0-6	Fine sand-----	SM, SP, SP-SM	A-2, A-3	0	100	100	50-85	0-35	---	NP
	6-60	Fine sand, sand, loamy fine sand.	SM, SP, SP-SM	A-2, A-3	0	100	95-100	65-95	0-25	---	NP
Boyer-----	0-15	Loamy sand-----	SM, SM-SC	A-2, A-1, A-4	0-5	95-100	65-95	45-75	15-45	<20	NP-6
	15-25	Sandy loam, loam, gravelly sandy loam.	SM, SC, SM-SC, SP-SM	A-2, A-4, A-6	0-5	80-100	65-95	55-85	10-45	10-35	NP-16
	25-60	Gravelly sand, coarse sand, gravel.	SP, SP-SM, GP, GP-GM	A-1, A-3, A-2-4	0-10	40-100	35-100	30-70	0-10	---	NP

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

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		Moist bulk density g/cc	Permeability In/hr	Available water capacity In/in	Soil reaction pH	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter Pct
	In	Pct						K	T		
2B----- Oakville	0-6	0-10	1.30-1.55	6.0-20	0.07-0.09	5.6-7.3	Low-----	0.15	5	1	.5-2
	6-60	0-10	1.30-1.65	6.0-20	0.06-0.08	5.6-7.3	Low-----	0.15			
3B----- Covert	0-6	2-10	1.25-1.55	6.0-20	0.06-0.09	4.5-7.3	Low-----	0.15	5	1	1-2
	6-25	2-10	1.25-1.60	6.0-20	0.05-0.08	4.5-7.3	Low-----	0.15			
	25-60	0-10	1.45-1.65	6.0-20	0.04-0.07	5.6-7.3	Low-----	0.15			
4B----- Perrin	0-19	2-12	1.15-1.60	6.0-20	0.07-0.12	5.6-7.3	Low-----	0.17	4	2	.5-3
	19-38	5-18	1.30-1.55	2.0-6.0	0.08-0.18	5.6-7.8	Low-----	0.28			
	38-60	0-10	1.20-1.50	>20	0.02-0.04	7.4-8.4	Low-----	0.10			
5----- Algansee	0-8	0-15	1.35-1.50	6.0-20	0.10-0.12	5.6-7.3	Low-----	0.17	5	2	1-4
	8-60	0-18	1.40-1.65	6.0-20	0.05-0.07	5.6-7.8	Low-----	0.17			
6----- Glendora	0-7	0-15	1.35-1.50	2.0-20	0.07-0.15	5.6-7.8	Low-----	0.17	5	2	---
	7-60	0-10	1.40-1.65	6.0-20	0.05-0.11	5.6-7.8	Low-----	0.17			
7----- Cohoctah	0-10	5-20	1.20-1.60	2.0-6.0	0.13-0.22	6.1-7.8	Low-----	0.28	5	3	1-4
	10-31	5-27	1.45-1.65	2.0-6.0	0.12-0.20	6.1-8.4	Low-----	0.28			
	31-60	2-25	1.45-1.65	2.0-6.0	0.08-0.20	6.1-8.4	Low-----	0.28			
9B----- Rimer	0-9	3-15	1.40-1.60	6.0-20	0.07-0.12	5.1-7.3	Low-----	0.17	4	2	1-3
	9-22	5-15	1.40-1.70	6.0-20	0.06-0.11	5.1-7.3	Low-----	0.17			
	22-32	7-18	1.50-1.70	2.0-6.0	0.12-0.17	5.1-7.3	Low-----	0.17			
	32-60	35-55	1.50-1.70	<0.2	0.08-0.12	6.1-8.4	High-----	0.32			
10----- Landes	0-25	8-22	1.20-1.40	0.6-2.0	0.20-0.22	6.1-8.4	Low-----	0.28	5	5	1-2
	25-60	8-18	1.60-1.80	6.0-20	0.05-0.15	6.1-8.4	Low-----	0.20			
11B*, 11C*: Owosso-----	0-10	5-18	1.10-1.65	2.0-6.0	0.13-0.18	5.1-7.3	Low-----	0.24	5	3	1-2
	10-22	10-22	1.10-1.65	2.0-6.0	0.09-0.17	5.1-7.3	Low-----	0.24			
	22-60	18-35	1.30-1.70	0.2-0.6	0.14-0.20	5.1-8.4	Low-----	0.24			
Marlette-----	0-9	10-18	1.30-1.65	2.0-6.0	0.12-0.15	5.6-7.3	Low-----	0.32	5	3	1-3
	9-40	18-30	1.30-1.70	0.2-0.6	0.18-0.20	5.6-7.8	Low-----	0.32			
	40-60	15-25	1.30-1.70	0.2-0.6	0.12-0.19	7.9-8.4	Low-----	0.32			
12B, 12C----- Tustin	0-22	4-10	1.55-1.70	6.0-20	0.09-0.13	5.1-7.3	Low-----	0.17	4	2	.5-2
	22-43	15-25	1.40-1.70	0.6-2.0	0.11-0.19	5.6-7.3	Low-----	0.24			
	43-60	35-60	1.45-1.55	0.06-0.2	0.07-0.20	5.6-8.4	High-----	0.32			
13A----- Metamora	0-9	5-15	1.25-1.40	2.0-6.0	0.14-0.18	5.1-7.3	Low-----	0.20	5	3	1-2
	9-24	5-15	1.40-1.60	2.0-6.0	0.10-0.15	5.1-7.3	Low-----	0.20			
	24-38	18-35	1.45-1.70	0.2-0.6	0.16-0.18	6.1-7.3	Moderate----	0.32			
	38-60	12-30	1.45-1.70	0.2-0.6	0.14-0.18	6.6-8.4	Moderate----	0.32			
14----- Shoals	0-8	18-27	1.30-1.50	0.6-2.0	0.22-0.24	6.1-7.8	Low-----	0.37	5	5	2-5
	8-30	18-33	1.35-1.55	0.6-2.0	0.17-0.22	6.1-7.8	Low-----	0.37			
	30-60	12-25	1.35-1.60	0.6-2.0	0.12-0.21	6.6-8.4	Low-----	0.37			
15----- Sloan	0-16	15-27	1.20-1.40	0.6-2.0	0.20-0.24	6.1-7.8	Low-----	0.37	5	6	3-6
	16-40	22-35	1.25-1.55	0.2-2.0	0.15-0.19	6.1-8.4	Moderate----	0.37			
	40-60	10-30	1.20-1.50	0.2-2.0	0.13-0.18	6.6-8.4	Low-----	0.37			
16----- Ceresco	0-10	2-15	1.15-1.60	2.0-6.0	0.13-0.22	6.1-7.8	Low-----	0.20	5	3	3-5
	10-60	10-20	1.40-1.70	0.6-6.0	0.08-0.13	6.1-8.4	Low-----	0.20			

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
17B, 17C, 17D, 17E----- Chelsea	0-24	8-15	1.50-1.55	6.0-20	0.10-0.15	5.6-7.3	Low-----	0.17	5	2	.5-1
	24-60	5-10	1.55-1.70	6.0-20	0.06-0.08	5.1-5.5	Low-----	0.17			
18B, 18C----- Glynwood	0-11	16-27	1.25-1.50	0.6-2.0	0.20-0.24	5.6-7.3	Low-----	0.43	3	6	1-3
	11-35	35-55	1.45-1.75	0.06-0.2	0.11-0.18	4.5-7.8	Moderate----	0.32			
	35-60	27-36	1.65-1.85	0.06-0.2	0.06-0.10	7.4-8.4	Moderate----	0.32			
19A, 19B----- Blount	0-7	22-27	1.35-1.55	0.6-2.0	0.20-0.24	5.1-7.3	Low-----	0.43	3	6	2-3
	7-23	35-50	1.40-1.70	0.06-0.6	0.12-0.19	4.5-6.5	Moderate----	0.43			
	23-60	27-38	1.60-1.85	0.06-0.6	0.07-0.10	7.4-8.4	Moderate----	0.43			
20----- Houghton	0-60	---	0.15-0.45	0.2-6.0	0.35-0.45	4.5-7.8	-----	---	2	2	>70
22B, 22C----- Oshtemo	0-15	2-10	1.20-1.60	2.0-6.0	0.10-0.15	5.1-6.5	Low-----	0.24	5	3	.5-3
	15-32	10-18	1.20-1.60	2.0-6.0	0.12-0.19	5.1-6.5	Low-----	0.24			
	32-60	0-15	1.20-1.50	>20	0.02-0.04	7.4-8.4	Low-----	0.10			
23A----- Thetford	0-22	2-15	1.25-1.41	2.0-6.0	0.10-0.13	5.6-7.3	Low-----	0.17	5	2	1-4
	22-60	8-18	1.35-1.45	2.0-6.0	0.08-0.13	5.6-7.8	Low-----	0.17			
24A----- Abscota	0-5	2-15	1.20-1.60	6.0-20	0.08-0.12	6.1-7.3	Low-----	0.17	5	2	.5-3
	5-14	0-10	1.25-1.60	6.0-20	0.05-0.11	6.1-7.8	Low-----	0.17			
	14-60	0-10	1.20-1.45	6.0-20	0.05-0.07	6.1-8.4	Low-----	0.17			
25B, 25C, 25D, 25E----- Oakville	0-6	0-10	1.30-1.55	6.0-20	0.07-0.09	5.6-7.3	Low-----	0.15	5	1	.5-2
	6-60	0-10	1.30-1.65	6.0-20	0.06-0.10	5.6-7.3	Low-----	0.15			
26----- Adrian	0-27	---	0.30-0.55	0.2-6.0	0.35-0.45	5.1-7.8	-----	---	2	2	55-75
	27-60	2-10	1.40-1.75	6.0-20	0.03-0.08	5.6-8.4	Low-----	---			
27B----- Wasepi	0-14	0-10	1.25-1.40	6.0-20	0.10-0.12	5.6-7.3	Low-----	0.20	4	2	1-4
	14-25	10-18	1.35-1.45	2.0-6.0	0.12-0.18	5.6-7.3	Low-----	0.20			
	25-60	0-10	1.25-1.50	>20	0.02-0.04	7.4-7.8	Low-----	0.10			
28----- Gilford	0-11	10-20	1.50-1.70	2.0-6.0	0.16-0.18	5.6-7.3	Low-----	0.20	4	3	2-4
	11-28	8-17	1.60-1.80	2.0-6.0	0.10-0.14	5.6-7.3	Low-----	0.20			
	28-36	3-12	1.70-1.90	6.0-20	0.05-0.08	6.6-8.4	Low-----	0.15			
	36-60	1-5	1.70-1.90	>20	0.02-0.04	6.6-8.4	Low-----	0.10			
29B, 29C, 29D, 29E----- Plainfield	0-9	2-5	1.50-1.65	6.0-20	0.04-0.09	4.5-7.3	Low-----	0.15	5	1	.5-2
	9-29	0-4	1.50-1.65	6.0-20	0.04-0.07	4.5-6.5	Low-----	0.17			
	29-60	0-4	1.50-1.70	6.0-20	0.04-0.07	4.5-6.5	Low-----	0.17			
30B, 30C, 30D---- Spinks	0-10	2-15	1.20-1.60	6.0-20	0.08-0.10	5.1-7.3	Low-----	0.17	5	2	2-4
	10-16	3-15	1.20-1.60	2.0-20	0.05-0.10	5.6-7.3	Low-----	0.17			
	16-60	0-15	1.20-1.50	2.0-6.0	0.04-0.08	5.6-7.8	Low-----	0.17			
31----- Wallkill	0-12	10-27	1.15-1.40	0.6-2.0	0.16-0.21	5.1-7.8	Low-----	0.37	5	---	4-12
	12-35	15-27	1.15-1.45	0.6-2.0	0.15-0.20	5.1-7.8	Low-----	0.37			
	35-60	---	0.25-0.45	2.0-20	0.35-0.45	5.6-7.8	-----	---			
32----- Palms	0-42	---	0.25-0.45	0.2-6.0	0.35-0.45	5.1-7.8	-----	---	2	2	>75
	42-60	7-35	1.45-1.75	0.2-2.0	0.14-0.22	6.1-8.4	Low-----	---			
36B, 36C, 36D, 36E, 36F----- Marlette	0-9	10-18	1.30-1.65	2.0-6.0	0.18-0.22	5.6-7.3	Low-----	0.32	5	5	1-3
	9-40	18-30	1.30-1.70	0.2-0.6	0.18-0.20	5.6-7.8	Low-----	0.32			
	40-60	15-25	1.30-1.70	0.2-0.6	0.12-0.19	7.9-8.4	Low-----	0.32			

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
37B----- Capac	0-10	10-18	1.40-1.70	0.6-2.0	0.18-0.20	5.6-7.3	Low-----	0.32	5	5	1-3
	10-38	18-35	1.45-1.70	0.2-0.6	0.14-0.18	5.6-7.3	Low-----	0.32			
	38-60	10-35	1.50-1.70	0.2-0.6	0.14-0.16	7.4-8.4	Low-----	0.32			
38----- Parkhill	0-8	10-20	1.10-1.50	0.6-2.0	0.20-0.22	6.1-7.3	Low-----	0.28	5	5	1-4
	8-25	18-35	1.45-1.80	0.2-0.6	0.15-0.19	6.1-7.8	Low-----	0.28			
	25-60	12-25	1.46-1.95	0.2-0.6	0.17-0.19	7.4-8.4	Low-----	0.28			
39B, 39C----- Arkport	0-8	5-18	1.10-1.40	2.0-6.0	0.09-0.17	4.5-7.3	Low-----	0.28	3	---	1-3
	8-16	3-15	1.25-1.55	2.0-6.0	0.06-0.16	4.5-7.3	Low-----	0.28			
	16-60	1-5	1.25-1.55	2.0-6.0	0.06-0.12	5.1-7.3	Low-----	0.28			
40B----- Matherton	0-12	10-20	1.30-1.65	2.0-6.0	0.13-0.24	5.6-7.3	Low-----	0.28	4	5	2-4
	12-30	20-35	1.40-1.70	0.6-2.0	0.16-0.18	5.6-7.3	Low-----	0.28			
	30-60	0-10	1.50-1.65	>6.0	0.02-0.04	7.4-8.4	Low-----	0.10			
41B----- Kibbie	0-12	5-25	1.40-1.65	0.6-2.0	0.16-0.24	5.6-7.3	Low-----	0.28	5	5	2-3
	12-34	18-35	1.40-1.65	0.6-2.0	0.17-0.22	5.6-7.3	Low-----	0.43			
	34-60	2-18	1.40-1.70	0.6-2.0	0.12-0.22	7.4-8.4	Low-----	0.43			
42B----- Tedrow	0-7	2-10	1.40-1.60	6.0-20	0.08-0.12	6.1-7.3	Low-----	0.17	5	2	1-3
	7-13	2-8	1.50-1.70	6.0-20	0.07-0.11	5.6-7.8	Low-----	0.17			
	13-60	1-8	1.50-1.70	6.0-20	0.05-0.07	6.6-8.4	Low-----	0.17			
43----- Granby	0-11	2-14	1.20-1.60	6.0-20	0.10-0.12	5.6-7.3	Low-----	0.17	5	2	4-6
	11-42	0-14	1.45-1.65	6.0-20	0.05-0.12	5.6-7.8	Low-----	0.17			
	42-60	0-10	1.45-1.65	6.0-20	0.05-0.09	6.6-8.4	Low-----	0.17			
44----- Edwards	0-30	---	0.30-0.55	0.2-6.0	0.35-0.45	5.6-7.8	-----	---	2	2	55-75
	30-60	---	---	---	---	7.4-8.4	-----	---			
45B, 45C, 45D, 45E, 45F----- Perrinton	0-8	10-30	1.50-1.85	0.6-2.0	0.20-0.24	5.1-6.5	Low-----	0.32	4	6	1-3
	8-39	35-50	1.50-1.80	0.2-0.6	0.10-0.20	5.1-6.5	Moderate-----	0.32			
	39-60	35-50	1.65-1.95	0.2-0.6	0.14-0.20	7.9-8.4	Moderate-----	0.32			
46B----- Ithaca	0-9	8-27	1.40-1.70	0.6-2.0	0.20-0.24	5.1-7.3	Low-----	0.32	5	6	1-4
	9-32	35-50	1.40-1.65	0.2-0.6	0.10-0.20	5.1-7.8	Moderate-----	0.32			
	32-60	30-50	1.50-1.65	0.2-0.6	0.13-0.20	7.9-8.4	Moderate-----	0.32			
47----- Pewamo	0-16	18-27	1.35-1.55	0.6-2.0	0.20-0.22	6.1-7.3	Low-----	0.24	5	5	3-5
	16-36	35-50	1.40-1.70	0.2-0.6	0.12-0.20	5.6-7.8	Moderate-----	0.24			
	36-60	30-40	1.50-1.75	0.2-0.6	0.14-0.18	7.4-8.4	Moderate-----	0.24			
48B, 48C, 48D----- Metea	0-9	3-8	1.55-1.65	6.0-20	0.10-0.12	5.6-7.3	Low-----	0.17	5	2	.5-2
	9-29	2-10	1.60-1.70	6.0-20	0.06-0.11	5.1-6.5	Low-----	0.17			
	29-35	12-22	1.45-1.55	0.2-0.6	0.15-0.19	5.6-6.5	Low-----	0.32			
	35-60	27-35	1.45-1.65	0.2-0.6	0.15-0.19	5.6-7.3	Moderate-----	0.32			
49B----- Selfridge	0-22	2-15	1.25-1.40	6.0-20	0.10-0.12	5.6-7.3	Low-----	0.15	5	2	1-3
	22-30	8-18	1.35-1.45	6.0-20	0.12-0.14	5.6-7.3	Low-----	0.15			
	30-60	18-35	1.50-1.90	0.2-0.6	0.10-0.14	7.4-8.4	Low-----	0.37			
50B, 50C, 50D----- Woodbeck	0-12	15-27	1.50-1.80	0.6-2.0	0.20-0.24	5.6-7.3	Low-----	0.32	4	6	1-3
	12-36	35-50	1.55-1.80	0.2-0.6	0.10-0.20	5.6-7.8	Moderate-----	0.32			
	36-60	0-10	1.40-1.55	6.0-20	0.02-0.07	6.1-8.4	Low-----	0.15			
51B, 51C----- Oakville	0-10	2-14	1.30-1.55	6.0-20	0.07-0.09	5.6-7.3	Low-----	0.15	5	1	.5-2
	10-50	0-10	1.30-1.60	6.0-20	0.06-0.10	5.6-7.3	Low-----	0.15			
	50-60	27-35	1.60-1.75	0.2-0.6	0.14-0.20	7.9-8.4	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
52----- Belleville	0-12	3-12	0.90-1.60	6.0-20	0.10-0.12	6.1-7.8	Low-----	0.17	5	2	.5-3
	12-25	2-12	1.45-1.70	6.0-20	0.06-0.10	6.1-8.4	Low-----	0.17			
	25-60	25-35	1.45-1.95	0.2-0.6	0.14-0.20	7.4-8.4	Moderate----	0.32			
54B, 54C----- Tuscola	0-7	8-20	1.30-1.65	0.6-2.0	0.20-0.22	5.6-7.3	Low-----	0.32	5	5	1-2
	7-38	18-35	1.30-1.70	0.6-2.0	0.15-0.20	5.6-7.3	Moderate----	0.32			
	38-60	5-45	1.30-1.70	0.6-2.0	0.14-0.18	7.4-8.4	Low-----	0.32			
56B, 56C, 56D---- Scalley	0-18	10-18	1.30-1.65	2.0-6.0	0.12-0.15	5.6-7.3	Low-----	0.24	4	3	1-3
	18-38	25-35	1.30-1.70	0.6-2.0	0.14-0.20	5.6-7.3	Low-----	0.32			
	38-60	0-15	1.20-1.50	>6.0	0.02-0.10	5.6-7.8	Low-----	0.17			
58----- Napoleon	0-24	---	0.30-0.40	0.2-6.0	0.35-0.45	<4.5	-----	---	2	2	70-90
	24-60	---	0.10-0.20	0.6-6.0	0.45-0.55	<4.5	-----	---			
59B, 59C, 59D---- Okee	0-27	4-10	1.55-1.70	2.0-6.0	0.12-0.14	6.1-7.3	Low-----	0.17	4	2	.5-2
	27-36	10-18	1.55-1.70	0.6-2.0	0.12-0.16	5.6-7.8	Low-----	0.28			
	36-60	4-15	1.35-1.85	0.6-6.0	0.07-0.12	7.4-8.4	Low-----	0.28			
62A, 62B, 62C, 62D, 62E----- Tekonink	0-12	2-15	1.15-1.60	0.6-2.0	0.10-0.18	5.1-7.3	Low-----	0.24	5	3	1-3
	12-30	2-15	1.25-1.60	0.6-2.0	0.08-0.17	5.1-7.3	Low-----	0.24			
	30-59	10-22	1.25-1.70	0.6-2.0	0.10-0.17	5.1-7.3	Low-----	0.24			
	59-60	2-15	1.30-1.70	0.6-6.0	0.08-0.16	7.4-8.4	Low-----	0.24			
63*: Urban land.											
Cohoctah-----	0-10	5-20	1.20-1.60	2.0-6.0	0.13-0.22	6.1-7.8	Low-----	0.28	5	3	1-4
	10-31	5-27	1.45-1.65	2.0-6.0	0.12-0.20	6.1-8.4	Low-----	0.28			
	31-60	2-25	1.45-1.65	2.0-6.0	0.08-0.20	6.1-8.4	Low-----	0.28			
64B, 64C----- Grattan	0-12	0-10	1.35-1.40	6.0-20	0.07-0.09	4.5-6.5	Low-----	0.15	5	1	---
	12-27	0-10	1.30-1.60	6.0-20	0.04-0.06	4.5-6.5	Low-----	0.15			
	27-60	0-10	1.40-1.55	6.0-20	0.02-0.04	5.6-7.3	Low-----	0.15			
66B, 66C, 66D, 66E----- Boyer	0-15	0-10	1.15-1.60	6.0-20	0.10-0.12	5.6-7.3	Low-----	0.17	4-3	2	.5-3
	15-25	10-18	1.25-1.60	2.0-6.0	0.12-0.18	5.6-7.8	Low-----	0.24			
	25-60	0-10	1.20-1.45	>20	0.02-0.04	7.4-8.4	Low-----	0.10			
67B, 67C, 67D---- Kalamazoo	0-10	8-25	1.10-1.65	0.6-2.0	0.16-0.22	5.1-7.3	Low-----	0.32	4	5	1-3
	10-38	18-35	1.25-1.70	0.6-2.0	0.10-0.18	5.1-7.3	Moderate----	0.32			
	38-43	2-15	1.50-1.65	6.0-20	0.02-0.08	5.1-7.8	Low-----	0.10			
	43-60	0-10	1.50-1.65	6.0-20	0.01-0.03	7.4-8.4	Low-----	0.10			
68B, 68C----- Saylesville	0-9	12-25	1.35-1.55	0.6-2.0	0.19-0.24	5.6-7.8	Low-----	0.37	5	5	1-3
	9-30	38-45	1.60-1.70	0.2-0.6	0.08-0.20	6.6-7.8	Moderate----	0.37			
	30-60	27-35	1.60-1.75	0.2-0.6	0.18-0.20	7.4-8.4	Moderate----	0.37			
69----- Colwood	0-16	5-26	1.15-1.60	0.6-2.0	0.20-0.24	6.1-7.8	Low-----	0.28	5	5	3-8
	16-36	18-35	1.30-1.60	0.6-2.0	0.17-0.22	6.1-8.4	Moderate----	0.43			
	36-60	0-12	1.20-1.45	0.6-2.0	0.12-0.22	7.4-8.4	Low-----	0.43			
73----- Sebewa	0-10	10-25	1.10-1.60	0.6-2.0	0.18-0.25	6.1-7.8	Low-----	0.24	4	5	1-6
	10-38	18-35	1.50-1.80	0.6-2.0	0.15-0.19	6.1-7.8	Low-----	0.24			
	38-60	0-3	1.55-1.75	6.0-20	0.02-0.04	7.4-8.4	Low-----	0.10			
74*. Dumps											
75. Udorthents											

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth		Clay Pct	Moist bulk density g/cc	Permeability In/hr	Available water capacity In/in	Soil reaction pH	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter Pct
	In	Pct							K	T		
76. Udipsamments												
77*. Pits												
78*. Urban land												
79----- Houghton	0-60	---	0.08-0.30	0.2-6.0	0.35-0.45	6.6-7.3					8	>70
80. Udorthents												
81B*, 81C*, 81D*: Urban land.												
Spinks-----	0-10 10-16 16-60	2-15 3-15 0-15	1.20-1.60 1.20-1.60 1.20-1.50	6.0-20 2.0-20 2.0-6.0	0.08-0.10 0.05-0.10 0.04-0.08	5.1-7.3 5.6-7.3 5.6-7.8	Low----- Low----- Low-----	0.17 0.17 0.17	5		2	2-4
82B*, 82C*, 82D*: Urban land.												
Perrinton-----	0-8 8-39 39-60	10-30 35-50 35-50	1.50-1.85 1.50-1.80 1.65-1.95	0.6-2.0 0.2-0.6 0.2-0.6	0.20-0.24 0.10-0.20 0.14-0.20	5.1-6.5 5.1-6.5 7.9-8.4	Low----- Moderate----- Moderate-----	0.32 0.32 0.32	4		6	1-3
83B----- Marlette	0-9 9-40 40-60	10-18 18-30 15-25	1.30-1.65 1.30-1.70 1.30-1.70	2.0-6.0 0.2-0.6 0.2-0.6	0.18-0.22 0.18-0.20 0.12-0.19	5.6-7.3 5.6-7.8 7.9-8.4	Low----- Low----- Low-----	0.32 0.32 0.32	5		5	1-3
84B----- Dixboro	0-16 16-31 31-60	2-12 6-17 0-15	1.30-1.65 1.40-1.70 1.50-1.65	2.0-6.0 0.6-2.0 0.6-2.0	0.10-0.14 0.15-0.20 0.07-0.20	5.6-7.3 5.6-7.3 6.6-8.4	Low----- Low----- Low-----	0.20 0.20 0.20	5		2	2-3
85----- Lamson	0-11 11-50 50-60	5-18 5-18 1-10	1.10-1.40 1.25-1.55 1.45-1.65	0.6-6.0 0.6-6.0 0.6-6.0	0.15-0.22 0.12-0.17 0.02-0.04	5.6-7.8 6.1-8.4 6.1-8.4	Low----- Low----- Low-----	0.28 0.20 0.20	5		3	3-10
86B----- Teasdale	0-16 16-56 56-60	5-15 10-18 5-15	1.25-1.75 1.40-1.85 1.70-1.95	2.0-6.0 0.6-2.0 2.0-6.0	0.12-0.15 0.11-0.17 0.08-0.15	5.1-6.5 4.5-7.3 6.6-8.4	Low----- Low----- Low-----	0.24 0.24 0.24	5		3	2-3
87B----- Pipestone	0-11 11-24 24-60	2-12 2-12 2-12	1.20-1.60 1.20-1.60 1.20-1.60	6.0-20 6.0-20 6.0-20	0.07-0.10 0.06-0.09 0.05-0.07	4.5-7.3 4.5-7.3 5.1-7.3	Low----- Low----- Low-----	0.17 0.17 0.17	5		1	3-4
89E*: Marlette-----	0-9 9-40 40-60	10-18 18-30 15-25	1.30-1.65 1.30-1.70 1.30-1.70	2.0-6.0 0.2-0.6 0.2-0.6	0.18-0.22 0.18-0.20 0.12-0.19	5.6-7.3 5.6-7.8 7.9-8.4	Low----- Low----- Low-----	0.32 0.32 0.32	5		5	1-3
Oakville-----	0-6 6-60	0-10 0-10	1.30-1.55 1.30-1.65	6.0-20 6.0-20	0.07-0.09 0.06-0.10	5.6-7.3 5.6-7.3	Low----- Low-----	0.15 0.15	5		1	.5-2
Boyer-----	0-15 15-25 25-60	0-10 10-18 0-10	1.15-1.60 1.25-1.60 1.20-1.45	6.0-20 2.0-6.0 >20	0.10-0.12 0.12-0.18 0.02-0.04	5.6-7.3 5.6-7.8 7.4-8.4	Low----- Low----- Low-----	0.17 0.24 0.10	4-3		2	.5-3

* 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 "brief," "apparent," and "perched" are explained in the text. The symbol < means less than; > means more than. Absence of an entry indicates that the feature is not a concern or that data were not estimated]

Soil name and map symbol	Hydrologic group	Flooding			High water table			Subsidence	Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Total		Uncoated steel	Concrete
					<u>Ft</u>			<u>In</u>			
2B----- Oakville	A	None-----	---	---	3.0-6.0	Apparent	Nov-Apr	---	Low-----	Low-----	Moderate.
3B----- Covert	A	None-----	---	---	2.0-3.5	Apparent	Nov-Apr	---	Low-----	Low-----	Moderate.
4B----- Perrin	B	None-----	---	---	2.0-3.5	Apparent	Nov-May	---	Moderate	Low-----	Moderate.
5----- Alganssee	B	Occasional	Long-----	Nov-May	1.0-2.0	Apparent	Nov-May	---	Moderate	Low-----	Low.
6----- Glendora	A/D	Frequent----	Long-----	Jan-Dec	0-1.0	Apparent	Nov-Jun	---	Moderate	High-----	Moderate.
7----- Cohoctah	B/D	Frequent----	Brief to long.	Nov-Apr	0-1.0	Apparent	Sep-May	---	High-----	High-----	Low.
9B----- Rimer	C	None-----	---	---	1.0-2.5	Perched	Jan-Apr	---	High-----	High-----	Moderate.
10----- Landes	B	Occasional	Brief-----	Jan-Apr	4.0-6.0	Apparent	Mar-May	---	Moderate	Low-----	Low.
11B*, 11C*: Owosso-----	B	None-----	---	---	>6.0	---	---	---	Moderate	Moderate	Moderate.
Marlette-----	B	None-----	---	---	>6.0	---	---	---	Moderate	Low-----	Moderate.
12B, 12C----- Tustin	B	None-----	---	---	>6.0	---	---	---	Moderate	High-----	Low.
13A----- Metamora	B	None-----	---	---	1.0-2.0	Apparent	Nov-May	---	High-----	Moderate	Moderate.
14----- Shoals	C	Occasional	Brief-----	Oct-Jun	0.5-1.5	Apparent	Jan-Apr	---	High-----	High-----	Low.
15----- Sloan	B/D	Frequent----	Brief-----	Nov-Jun	0-1.0	Apparent	Nov-Jun	---	High-----	High-----	Low.
16----- Ceresco	B	Occasional	Brief-----	Mar-May	1.0-2.0	Apparent	Sep-May	---	High-----	Low-----	Low.

See footnote at end of table.

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

Soil name and map symbol	Hydrologic group	Flooding			High water table			Subsidence	Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Total		Uncoated steel	Concrete
					<u>Ft</u>			<u>In</u>			
17B, 17C, 17D, 17E----- Chelsea	A	None-----	---	---	>6.0	---	---	---	Low-----	Low-----	Low.
18B, 18C----- Glynwood	C	None-----	---	---	2.0-3.5	Perched	Jan-Apr	---	High-----	High-----	Moderate.
19A, 19B----- Blount	C	None-----	---	---	1.0-3.0	Perched	Jan-May	---	High-----	High-----	High.
20----- Houghton	A/D	None-----	---	---	+1-1.0	Apparent	Sep-Jun	55-60	High-----	High-----	Low.
22B, 22C----- Oshtemo	B	None-----	---	---	>6.0	---	---	---	Low-----	Low-----	High.
23A----- Thetford	A	None-----	---	---	1.0-2.0	Apparent	Feb-May	---	Moderate	Low-----	Moderate.
24A----- Abscota	A	Occasional	Brief-----	Mar-Jun	2.5-5.0	Apparent	Dec-May	---	Low-----	Low-----	Low.
25B, 25C, 25D, 25E----- Oakville	A	None-----	---	---	>6.0	---	---	---	Low-----	Low-----	Moderate.
26----- Adrian	A/D	None-----	---	---	+1-1.0	Apparent	Nov-May	29-33	High-----	High-----	Moderate.
27B----- Wasepi	B	None-----	---	---	1.0-2.0	Apparent	Nov-May	---	High-----	Moderate	Low.
28----- Gilford	B/D	None-----	---	---	+1-1.0	Apparent	Dec-May	---	High-----	High-----	Moderate.
29B, 29C, 29D, 29E----- Plainfield	A	None-----	---	---	>6.0	---	---	---	Low-----	Low-----	High.
30B, 30C, 30D----- Spinks	A	None-----	---	---	>6.0	---	---	---	Low-----	Low-----	Low.
31----- Wallkill	C/D	None-----	---	---	+1-1.0	Apparent	Sep-Jun	---	High-----	Moderate	Moderate.
32----- Palms	A/D	None-----	---	---	+1-1.0	Apparent	Nov-May	25-32	High-----	High-----	Moderate.
36B, 36C, 36D, 36E, 36F----- Marlette	B	None-----	---	---	>6.0	---	---	---	Moderate	Low-----	Moderate.

See footnote at end of table.

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

Soil name and map symbol	Hydrologic group	Flooding			High water table			Subsidence	Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months			Total	Uncoated steel
					<u>Ft</u>			<u>In</u>			
37B----- Capac	C	None-----	---	---	1.0-2.0	Apparent	Nov-May	---	High-----	High-----	Low.
38----- Parkhill	B/D	None-----	---	---	+1-1.0	Apparent	Nov-May	---	High-----	High-----	Low.
39B, 39C----- Arkport	B	None-----	---	---	>6.0	---	---	---	Moderate	Low-----	Moderate.
40B----- Matherton	B	None-----	---	---	1.0-2.0	Apparent	Nov-May	---	High-----	Moderate	Low.
41B----- Kibbie	B	None-----	---	---	1.0-2.0	Apparent	Nov-May	---	High-----	Low-----	High.
42B----- Tedrow	B	None-----	---	---	1.0-2.0	Apparent	Jan-Apr	---	Moderate	Low-----	Low.
43----- Granby	A/D	None-----	---	---	+1-1.0	Apparent	Nov-Jun	---	Moderate	High-----	Low.
44----- Edwards	B/D	None-----	---	---	+1-0.5	Apparent	Sep-Jun	25-30	High-----	High-----	Low.
45B, 45C, 45D, 45E, 45F----- Perrinton	C	None-----	---	---	>6.0	---	---	---	Moderate	High-----	Moderate.
46B----- Ithaca	C	None-----	---	---	1.0-2.0	Perched	Oct-May	---	High-----	High-----	Moderate.
47----- Pewamo	C/D	None-----	---	---	+1-1.0	Apparent	Dec-May	---	High-----	High-----	Low.
48B, 48C, 48D----- Metea	B	None-----	---	---	>6.0	---	---	---	Moderate	Moderate	Moderate.
49B----- Selfridge	B	None-----	---	---	1.0-2.0	Perched	Nov-May	---	High-----	High-----	Low.
50B, 50C, 50D----- Woodbeck	B	None-----	---	---	>6.0	---	---	---	Moderate	High-----	Moderate.
51B, 51C----- Oakville	A	None-----	---	---	>6.0	---	---	---	Low-----	Low-----	Moderate.
52----- Belleville	B/D	None-----	---	---	+1-1.0	Apparent	Nov-May	---	High-----	High-----	Low.
54B, 54C----- Tuscola	B	None-----	---	---	2.0-3.5	Apparent	Nov-Apr	---	High-----	Moderate	Low.

See footnote at end of table.

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

Soil name and map symbol	Hydrologic group	Flooding			High water table			Subsidence	Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth Ft	Kind	Months	Total In		Uncoated steel	Concrete
56B, 56C, 56D----- Scalley	B	None-----	---	---	>6.0	---	---	---	Moderate	Low-----	Moderate.
58----- Napoleon	A/D	None-----	---	---	+1-1.0	Apparent	Sep-Jun	50-59	High-----	Moderate	High.
59B, 59C, 59D----- Okee	B	None-----	---	---	>6.0	---	---	---	Low-----	Moderate	Moderate.
62A, 62B, 62C, 62D, 62E----- Tekonink	B	None-----	---	---	>6.0	---	---	---	Moderate	Low-----	Moderate.
63*: Urban land.											
Cohoctah-----	B/D	Occasional	Brief to long.	Nov-Apr	0-1.0	Apparent	Sep-May	---	High-----	High-----	Low.
64B, 64C----- Grattan	A	None-----	---	---	>6.0	---	---	---	Low-----	Low-----	High.
66B, 66C, 66D, 66E----- Boyer	B	None-----	---	---	>6.0	---	---	---	Low-----	Low-----	Moderate.
67B, 67C, 67D----- Kalamazoo	B	None-----	---	---	>6.0	---	---	---	Moderate	Low-----	Low.
68B, 68C----- Saylesville	C	None-----	---	---	>6.0	---	---	---	Moderate	High-----	Moderate.
69----- Colwood	B/D	None-----	---	---	+1-1.0	Apparent	Oct-May	---	High-----	High-----	Low.
73----- Sebewa	B/D	None-----	---	---	+1-1.0	Apparent	Sep-May	---	High-----	High-----	Low.
74*. Dumps											
75. Udorthents											
76. Udipsamments											
77*. Pits											

See footnote at end of table.

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

Soil name and map symbol	Hydrologic group	Flooding			High water table			Subsidence	Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth Ft	Kind	Months	Total In		Uncoated steel	Concrete
78*. Urban land											
79----- Houghton	D	None-----	---	---	+2-0.5	Apparent	Sep-Jun	40-60	High-----	High-----	Low.
80. Udorthents											
81B*, 81C*, 81D*: Urban land.											
Spinks-----	A	None-----	---	---	>6.0	---	---	---	Low-----	Low-----	Low.
82B*, 82C*, 82D*: Urban land.											
Perrinton-----	C	None-----	---	---	>6.0	---	---	---	Moderate	High-----	Moderate.
83B----- Marlette	B	None-----	---	---	2.5-6.0	Apparent	Dec-Apr	---	Moderate	Low-----	Moderate.
84B----- Dixboro	B	None-----	---	---	1.0-2.0	Apparent	Nov-Apr	---	High-----	Moderate	Moderate.
85----- Lamson	B/D	None-----	---	---	+1-0.5	Apparent	Dec-May	---	High-----	High-----	Low.
86B----- Teasdale	B	None-----	---	---	1.0-2.0	Apparent	Nov-May	---	High-----	Moderate	Moderate.
87B----- Pipestone	B	None-----	---	---	0.5-1.5	Apparent	Oct-Jun	---	Moderate	Low-----	Moderate.
89E*: Marlette-----	B	None-----	---	---	>6.0	---	---	---	Moderate	Low-----	Moderate.
Oakville-----	A	None-----	---	---	>6.0	---	---	---	Low-----	Low-----	Moderate.
Boyer-----	B	None-----	---	---	>6.0	---	---	---	Low-----	Low-----	Moderate.

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

TABLE 18.--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
Abscota-----	Mixed, mesic Typic Udipsamments
Adrian-----	Sandy or sandy-skeletal, mixed, eucic, mesic Terric Medisaprists
Algansee-----	Mixed, mesic Aquic Udipsamments
Arkport-----	Coarse-loamy, mixed, mesic Psammentic HapludalFs
Belleville-----	Sandy over loamy, mixed, mesic Typic Haplaquolls
Blount-----	Fine, illitic, mesic Aeric OchraqualFs
*Boyer-----	Coarse-loamy, mixed, mesic Typic HapludalFs
*Capac-----	Fine-loamy, mixed, mesic Aeric OchraqualFs
Ceresco-----	Coarse-loamy, mixed, mesic Fluvaquentic Hapludolls
Chelsea-----	Mixed, mesic Alfic Udipsamments
Cohoctah-----	Coarse-loamy, mixed, mesic Fluvaquentic Haplaquolls
Colwood-----	Fine-loamy, mixed, mesic Typic Haplaquolls
Covert-----	Sandy, mixed, mesic Entic Haplorthods
*Dixboro-----	Coarse-loamy, mixed, mesic Aquollic HapludalFs
Edwards-----	Marly, eucic, mesic Limnic Medisaprists
Gilford-----	Coarse-loamy, mixed, mesic Typic Haplaquolls
Glendora-----	Mixed, mesic Mollic Psammaquents
Glynwood-----	Fine, illitic, mesic Aquic HapludalFs
Granby-----	Sandy, mixed, mesic Typic Haplaquolls
Grattan-----	Sandy, mixed, mesic Entic Haplorthods
Houghton-----	Eucic, mesic Typic Medisaprists
Ithaca-----	Fine, mixed, mesic Glossaquic HapludalFs
Kalamazoo-----	Fine-loamy, mixed, mesic Typic HapludalFs
Kibbie-----	Fine-loamy, mixed, mesic Aquollic HapludalFs
*Lamson-----	Coarse-loamy, mixed, nonacid, mesic Aeric Haplaquepts
Landes-----	Coarse-loamy, mixed, mesic Fluventic Hapludolls
Marlette-----	Fine-loamy, mixed, mesic Glossoboric HapludalFs
*Matherton-----	Fine-loamy over sandy or sandy-skeletal, mixed, mesic Udollic OchraqualFs
*Metamora-----	Fine-loamy, mixed, mesic Udollic OchraqualFs
Metea-----	Loamy, mixed, mesic Arenic HapludalFs
Napoleon-----	Dysic, mesic Typic Medihemists
Oakville-----	Mixed, mesic Typic Udipsamments
Okee-----	Loamy, mixed, mesic Arenic HapludalFs
*Oshtemo-----	Coarse-loamy, mixed, mesic Typic HapludalFs
*Owosso-----	Fine-loamy, mixed, mesic Typic HapludalFs
Palms-----	Loamy, mixed, eucic, mesic Terric Medisaprists
*Parkhill-----	Fine-loamy, mixed, nonacid, mesic Mollic Haplaquepts
*Perrin-----	Coarse-loamy, mixed, mesic Typic HapludalFs
Perrinton-----	Fine, mixed, mesic Glossoboric HapludalFs
Pewamo-----	Fine, mixed, mesic Typic Argiaquolls
Pipestone-----	Sandy, mixed, mesic Entic Haplaquods
Plainfield-----	Mixed, mesic Typic Udipsamments
Rimer-----	Loamy, mixed, mesic Aquic Arenic HapludalFs
Saylesville-----	Fine, illitic, mesic Typic HapludalFs
Scalley-----	Fine-loamy over sandy or sandy-skeletal, mixed, mesic Glossoboric HapludalFs
Sebawa-----	Fine-loamy over sandy or sandy-skeletal, mixed, mesic Typic Argiaquolls
Selfridge-----	Loamy, mixed, mesic Aquic Arenic HapludalFs
Shoals-----	Fine-loamy, mixed, nonacid, mesic Aeric Fluvaquents
Sloan-----	Fine-loamy, mixed, mesic Fluvaquentic Haplaquolls
Spinks-----	Sandy, mixed, mesic Psammentic HapludalFs
Teasdale-----	Coarse-loamy, siliceous, mesic Glossaquic HapludalFs
Tedrow-----	Mixed, mesic Aquic Udipsamments
*Tekenink-----	Coarse-loamy, mixed, mesic Glossoboric HapludalFs
Thetford-----	Sandy, mixed, mesic Psammaquentic HapludalFs
*Tuscola-----	Fine-loamy, mixed, mesic Aquic HapludalFs
Tustin-----	Clayey, mixed, mesic Arenic HapludalFs
Udipsamments-----	Mixed, mesic Udipsamments
Udorthents-----	Loamy, mixed, mesic Udorthents
Wallkill-----	Fine-loamy, mixed, nonacid, mesic Thapto-Histic Fluvaquents
Wasepi-----	Coarse-loamy, mixed, mesic Aquollic HapludalFs
Woodbeck-----	Clayey over sandy or sandy-skeletal, mixed, mesic Glossoboric HapludalFs

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