United States
Department of
Agriculture

Soil
Conservation
Service

In cooperation with
Massachusetts Agricultural
Experiment Station

Soil Survey of Berkshire County Massachusetts

HOW TO USE

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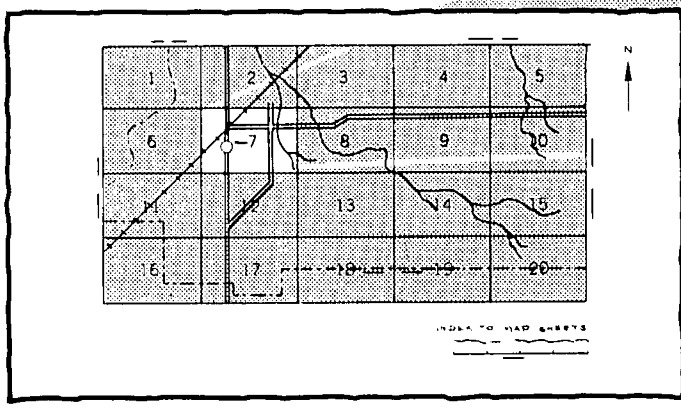

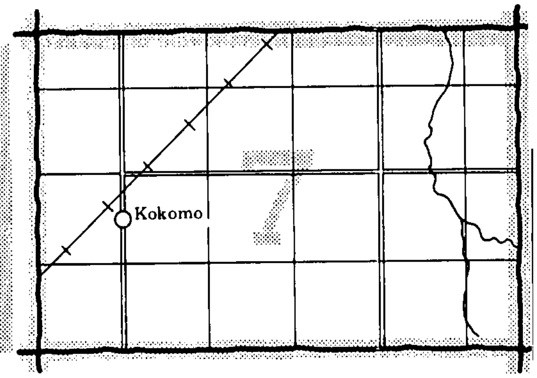

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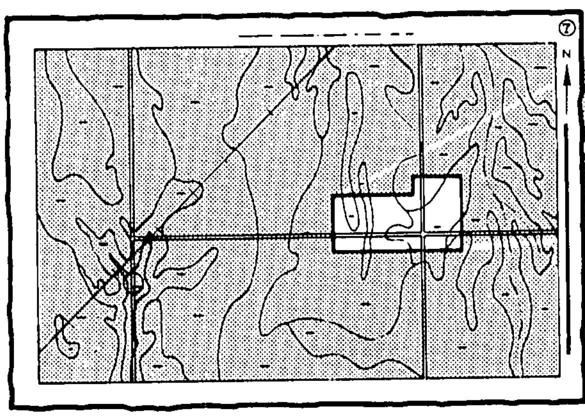

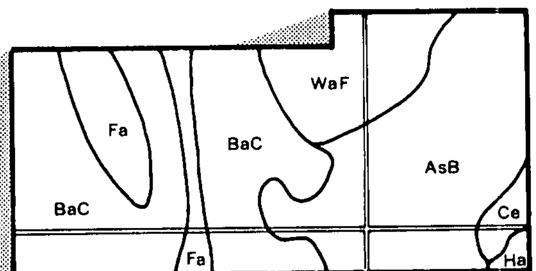

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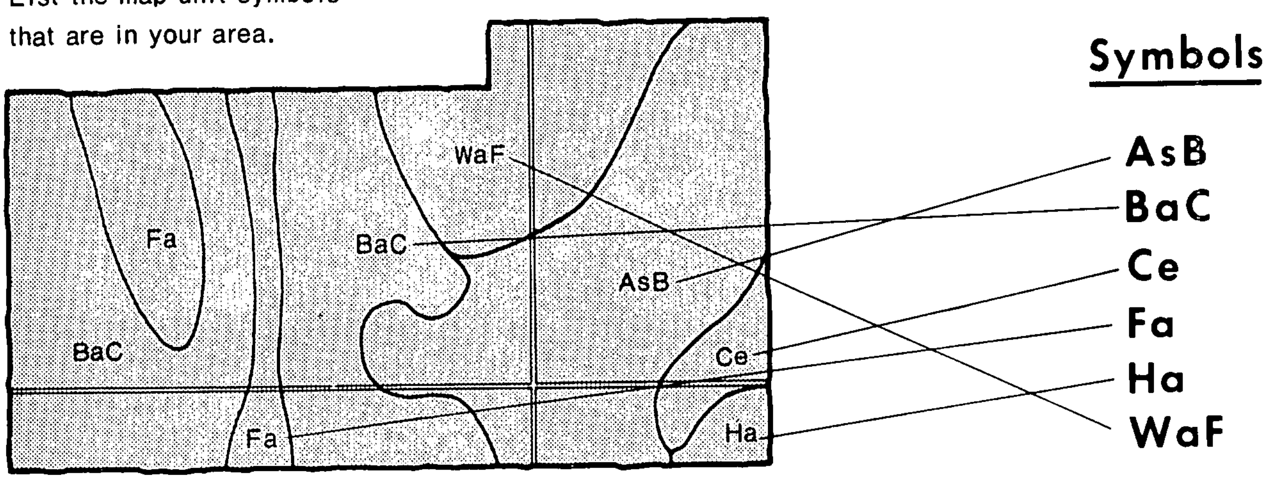
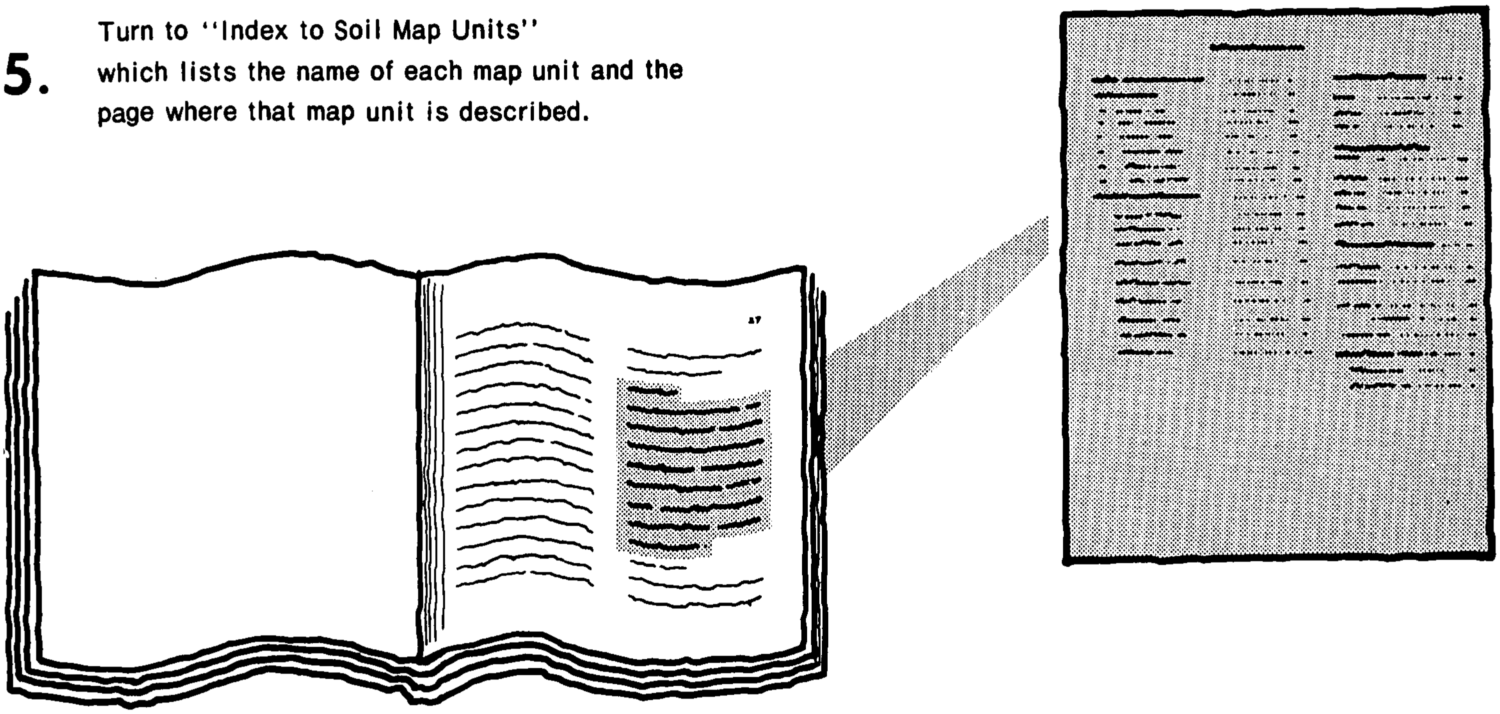
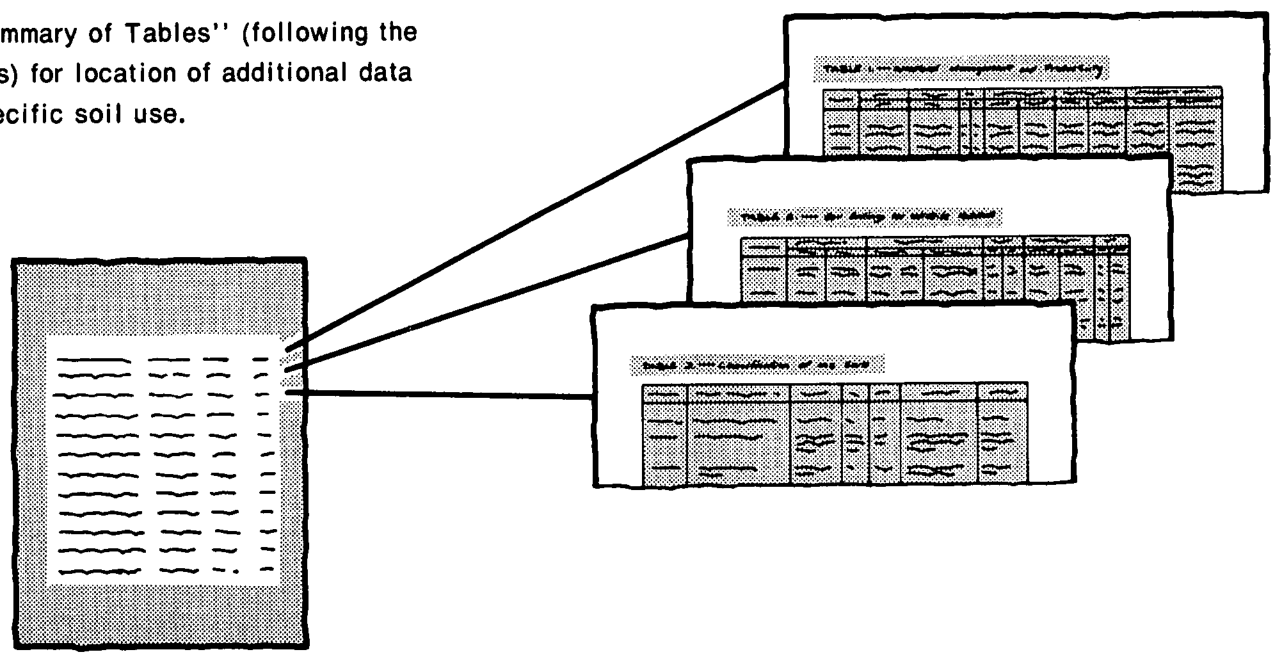


THIS SOIL SURVEY

5. Turn to "Index to Soil Map Units" which lists the name of each map unit and the page where that map unit is described.



6. See "Summary of Tables" (following the Contents) for location of additional data on a specific soil use.



7. Consult "Contents" for parts of the publication that will meet your specific needs. This survey contains useful information for farmers or ranchers, foresters or agronomists; for planners, community decision makers, engineers, developers, builders, or homebuyers; for conservationists, recreationists, teachers, or students; to specialists in wildlife management, waste disposal, or pollution control.

This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other federal agencies, state agencies including the Agricultural Experiment Stations, and local agencies. The Soil Conservation Service has leadership for the federal part of the National Cooperative Soil Survey. In line with Department of Agriculture policies, benefits of this program are available to all, regardless of race, color, national origin, sex, religion, marital status, or age.

Major fieldwork for this soil survey was completed in 1983. Soil names and descriptions were approved in 1984. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1983. This survey was made cooperatively by the Soil Conservation Service and the Massachusetts Agricultural Experiment Station. The survey is part of the technical assistance furnished to the Berkshire Conservation District. Part of the funding for this survey was provided by local units of government.

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

Cover: A typical area in the Amenia-Pittsfield-Farmington general soil map unit. Pittsfield loam, 3 to 8 percent slopes, is in the foreground. Amenia silt loam, 3 to 8 percent slopes, is in the low-lying area. Farmington loam, 3 to 15 percent slopes, rocky, is in the background.

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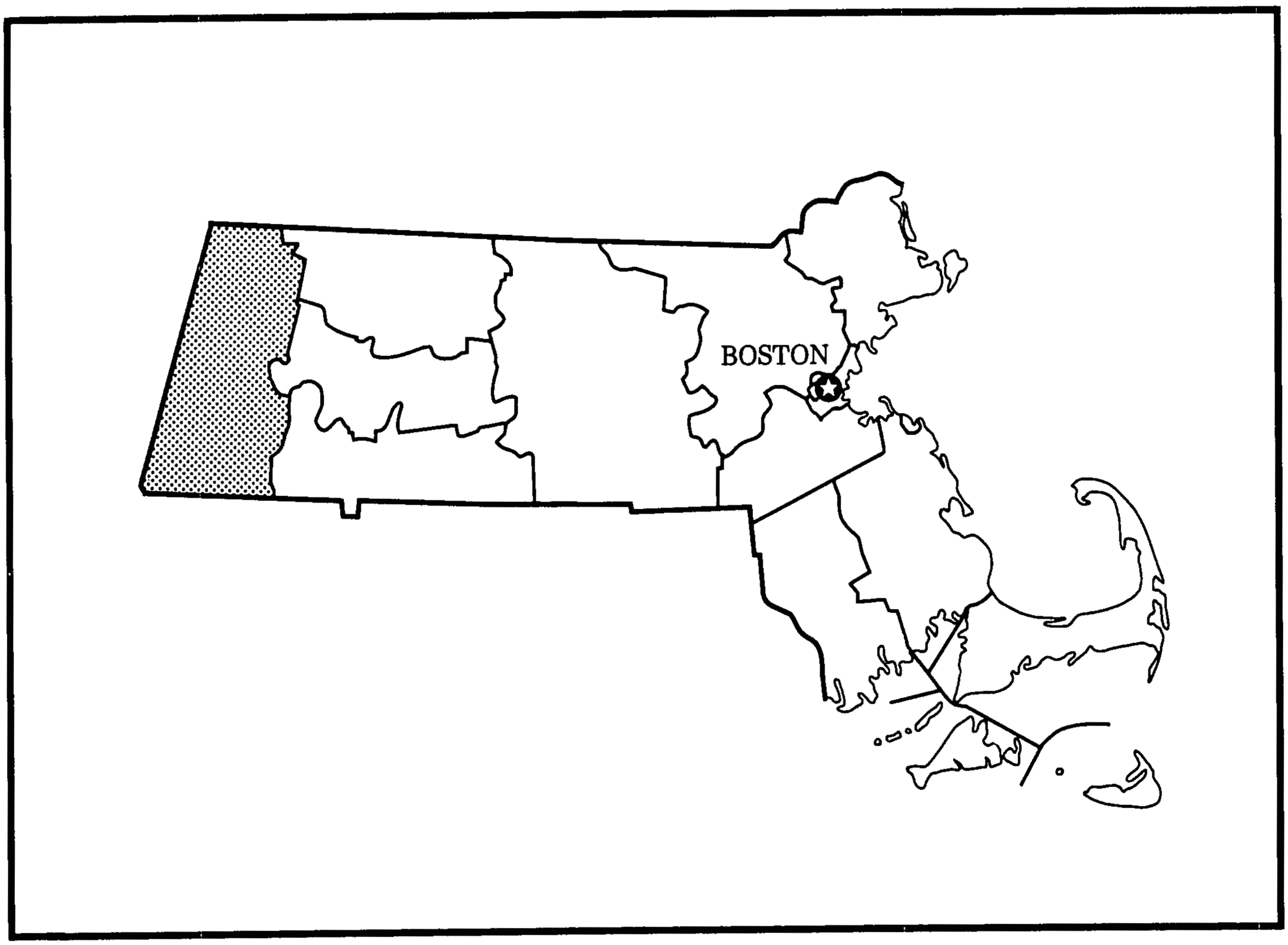
Preface

This soil survey contains information that can be used in land-planning programs in Berkshire County. It contains predictions of soil behavior for selected land uses. The survey also highlights limitations and hazards inherent in the soil, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

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

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

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



Location of Berkshire County in Massachusetts.

Soil Survey of Berkshire County, Massachusetts

By Richard J. Scanu, Soil Conservation Service

Fieldwork by Richard J. Scanu, Donald C. Fuller, John R. Mott, and Eric I. Swenson, Soil Conservation Service

United States Department of Agriculture, Soil Conservation Service
In cooperation with
Massachusetts Agricultural Experiment Station

BERKSHIRE COUNTY is in the extreme western part of the state. It is bounded on the east by Franklin, Hampshire, and Hampden Counties, Massachusetts; on the south by Litchfield County, Connecticut, and Dutchess County, New York; on the west by Columbia and Rensselaer Counties, New York; and on the north by Bennington County, Vermont.

The county, roughly rectangular in shape, is about 53 miles long from north to south, about 12 miles wide at the northern boundary, and about 23 miles wide at the southern boundary. It consists of 32 towns and has an area of 602,200 acres, or about 940 square miles. Pittsfield, the county seat, is in the north-central part of the county. The population of the county in 1980 was about 145,000. In summer the famous summer resorts in the county attract many tourists and vacationers.

This soil survey of Berkshire County provides more information than the survey of the county published in 1923 and has maps that show the soils in greater detail.

General Nature of the County

This section provides general information about the settlement, natural resources, farming, climate, physiography, relief, and drainage, and geology of the survey area.

Settlement

Berkshire County was settled much later than the other parts of Massachusetts. Contributing causes for this later settlement were the indefinite location of the western and southern state boundaries during colonial times, the natural barrier of the Hoosac Mountains and the highlands in the eastern part of the county, and the danger of Indian raids. Not until 1744 was settlement extensive. Rapid settlement followed the French and Indian War (1754-60). The population of the county has increased steadily from that time until the present.

Natural Resources

Soil is the most important natural resource in the county. The soils have been used mainly for timber production.

The main mineral resources are sand and gravel and ground limestone. Sand and gravel deposits are excavated in many valley areas throughout the county. Lime is obtained from ground limestone in the towns of Adams, Lee, and West Stockbridge. In the past iron ore was mined in the towns of Richmond and West Stockbridge.

Many lakes and ponds in the county are used for recreation and municipal water supplies.

Farming

Since the earliest periods of settlement, farming has been an important enterprise. The main crops at that time were wheat, rye, corn, and hay. The main fruit was apples. Dairying and raising beef cattle for market were also important.

At the present time the main crops are hay, corn, vegetables, and, to a lesser extent, apples. Dairying is the principal livestock industry, and some purebred dairy cattle are raised.

Farming is mostly in the valley areas, although the soils in many other parts of the county are suited to crops. Farms are steadily declining in number but increasing in size.

Climate

Prepared by the National Climatic Center, Asheville, North Carolina.

In Berkshire County winters are cold and summers are moderately warm and have occasional hot spells. The mountains are markedly cooler than the main farming areas in the lowlands. Precipitation is well distributed throughout the year and is nearly always adequate for all crops. Winter snows occur frequently, occasionally as blizzards, and cover the ground much of the time.

Table 1 gives data on temperature and precipitation for the survey area as recorded at Stockbridge in the period 1951 to 1981. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on length of the growing season.

In winter the average temperature is 24 degrees F, and the average daily minimum temperature is 14 degrees. The lowest temperature on record, which occurred at Stockbridge on January 18, 1957, is -29 degrees. In summer the average temperature is 66 degrees, and the average daily maximum temperature is 78 degrees. The highest recorded temperature, which occurred on July 21, 1977, is 95 degrees.

Growing degree days are shown in table 1. They are equivalent to "heat units." During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (40 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

The total annual precipitation is 43 inches. Of this, 23 inches, or 55 percent, usually falls in April through September. The growing season for most crops falls within this period. In 2 years out of 10, the rainfall in April through September is less than 20 inches. The heaviest 1-day rainfall during the period of record was 4 inches on September 8, 1969. Thunderstorms occur on about 27 days each year, and most occur in summer.

The average seasonal snowfall is 71 inches. The greatest snow depth at any one time during the period of record was 33 inches. On the average, 42 days of the year have at least 1 inch of snow on the ground. The number of such days varies greatly from year to year.

The average relative humidity in midafternoon is about 55 percent. Humidity is higher at night, and the average at dawn is about 80 percent. The sun shines 60 percent of the time possible in summer and 40 percent in winter. The prevailing wind is from the south. Average windspeed is highest, 11 miles per hour, in spring.

Physiography, Relief, and Drainage

Three physiographic divisions are in the county. The glaciated and limestone belt includes the slate hills and narrow valley in the northwestern part of the county and the limestone valley, a wide lowland area that runs through the Housatonic River Valley, and the Hoosic River Valley. It also includes the Taconic Mountains, the rugged mountain ranges in the western part of the county, and parts of the Taconic and Everett ranges. Mount Greylock (3,491 feet), the highest point in Massachusetts, is in the Taconic Mountains.

The second physiographic division is the Berkshire Plateau and Mountains. The Berkshire Plateau and Hills, a deeply dissected plateau that covers almost all of the eastern quarter of the county, extends from Vermont to Connecticut. The Berkshire Mountains extend along the western edge of the plateau from Vermont to Great Barrington and Monterey.

The Green Mountains, the third physiographic division, includes the intermountain valleys and foothills, a small valley that adjoins the Vermont line north of North Adams and the limestone valley. The southern end of the main range of the Green Mountains is in the northeastern part of Williamstown and the western part of Clarksburg.

The highest point, Mount Greylock, and the lowest point, where the Hoosic River leaves the county (approximately 555 feet), are less than 8 miles apart and in the northwestern part of the county.

The eastern plateau ranges in elevation from 1,700 to 2,200 feet in the northern part and from 1,400 to 1,800 feet in the southern part, but some ridges and hills are a few hundred feet higher. Generally, the limestone valley in the southern part of the county ranges from 700 to 800 feet above sea level. It rises gradually to the north to an elevation of about 1,420 feet at the divide between the Housatonic and Hoosic Rivers and drops to the lowest point in the county at the Vermont line. The ridges throughout the valley range from 1,000 to 2,000 feet above sea level. The lower mountains along the western boundary range from 1,500 to 2,000 feet above sea level, the Taconic range attains elevations of 1,800 to 2,500 feet, and the Mount Everett range is 2,000 to 2,602 feet above sea level, at Mount Everett.

Drainage in the county is in many directions (fig. 3). The central and south-central parts of the county are drained by the Housatonic River and its tributaries, which flow southerly to Long Island Sound. The northwestern part of the county is drained by the Hoosic River and its tributaries, which flow northwest as part of the Hudson River system. Part of the town of Hancock is drained by Kinderhook Creek, and part of the town of Mount Washington is drained by Bishbash Brook, which both flow west as part of the Hudson River system. The entire eastern part of the county is drained by the Connecticut River system. The northeastern corner of the county is drained by the Deerfield River, the central part by the Westfield River, and the southeastern part by the Farmington River.

The streams have cut deeply into nearly every part of the uplands except the steep mountainsides, where they flow through rocky gulches. In most places the water supply and drainage are good, but in some areas the stream bottoms and the heads of lakes and ponds are swampy. A few small swamps are on the broad stream terraces in the southern part of the central valley. The streams in the valley are generally sluggish, but those in the plateau and mountains are more rapid.

Many lakes are in the county. The largest of these, Otis Reservoir, covers about 1,200 acres. Many lakes are wholly or partly artificial. The lakes are used for water supplies, water power, or recreation; some have more than one use.

Geology

The three physiographic divisions described above correspond to the pattern of geologic strata within the county. The main valleys of the Hoosic and Housatonic Rivers are underlain by large areas of limestone and dolomite and smaller areas of quartzite. The eastern highlands consist of small amounts of marble but mainly of very old schist and gneiss. The Taconic Range to the west is made up almost entirely of schistose and phyllitic rocks, as are many of the hills and mountains within the valley area.

The present topographic features are partly the result of geologic erosion by the Housatonic and Hoosic River systems and their geologic ancestors. The features are also the result of changes caused by the Pleistocene ice sheets that covered the survey area until 10,000 to 11,000 years ago. The valley was formed because it is underlain by relatively soft, slightly soluble, and therefore easily eroded limestone and dolomite. The Taconic Range and the eastern highlands, of higher elevation, are underlain by harder, more resistant, metamorphic rocks.

The bedrock in the county is covered by a veneer of differing amounts of unconsolidated material, the upper part of which makes up the soil. In the upland areas this unconsolidated material is commonly thin and in places entirely absent. In the major valleys the glacial material in some areas is more than 200 feet thick. Where this unconsolidated material is thick, it generally consists of stratified layers of sand, silt, gravel, and clay. Much of this material was deposited in a great glacial lake that covered much of the southern part of the county during the recession of the Pleistocene ice sheet (*3*).

How This Survey Was Made

This survey was made to provide information about the soils in the survey area. The information includes a description of the soils and their location and a discussion of the suitability, limitations, and management of the soils for specified uses. Soil scientists observed the steepness, length, and shape of slopes; the general pattern of drainage; the kinds of crops and native plants growing on the soils; and the kinds of bedrock. They dug many holes to study the soil profile, which is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed. The unconsolidated material has few or no roots or other living organisms and has been changed very little by other biologic activity.

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

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

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

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

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

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

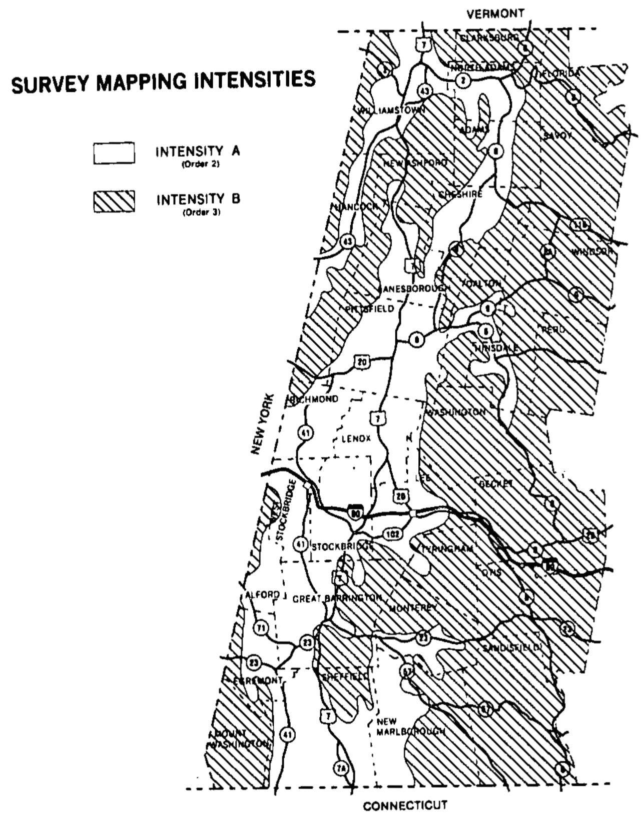


Figure 1.—Survey mapping intensities used in Berkshire County, Massachusetts.

Map Unit Composition

A map unit delineation on a soil map represents an area dominated by one major kind of soil or an area dominated by several kinds of soil. A map unit is identified and named according to the taxonomic classification of the dominant soil or soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural objects. In common with other natural objects, they have a characteristic variability in their properties. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of soils of other taxonomic classes. Consequently, every map unit is made up of the soil or soils for which it is named and some soils that belong to other taxonomic classes. These latter soils are called inclusions or included soils (fig. 1.).

Most inclusions have properties and behavioral patterns similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting (similar) inclusions. They may or may not be mentioned in the map unit descriptions. Other inclusions, however, have properties and behavior divergent enough to affect use or require different management. These are contrasting (dissimilar) inclusions. They generally occupy small areas and cannot be shown separately on the soil maps because of the scale used in mapping. The inclusions of contrasting soils are mentioned in the map unit descriptions. A few inclusions may not have been observed and consequently are not mentioned in the descriptions, especially where the soil pattern was so complex that it was impractical to make enough observations to identify all of the kinds of soil on the landscape.

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

Soil Survey Intensities

The county was mapped at different levels of intensity, or orders of mapping. The order of mapping used was determined by the intricacy of the soil pattern in relation to the expected intensity of land use. Areas below an elevation of about 1,000 feet were mapped at intensity A, or order 2 mapping; areas above an elevation of about 1,000 feet were mapped at intensity B, or order 3 mapping.

In areas mapped at intensity A, or order 2 mapping, the soils were examined at regular intervals and the map units were narrowly defined. During the mapping of the soils detailed information was gathered about soil resources. This information can be used to predict the suitability and the management needed for intensive land uses. The smallest areas shown on the detailed soil maps at the back of this survey are 3 to 5 acres in size. The soil areas less than 3 to 5 acres that are significant to use and management are represented on the maps by special symbols or are described in the map unit descriptions if they occur in a predictable pattern.

In areas mapped at intensity B, or order 3 mapping, the soils were examined at wider intervals and the map units were broadly defined. The soils mapping was conducted for extensive land uses that do not require detailed information about small areas of soils. This information, however, can be used in planning timber management, recreation areas, and similarly extensive land uses and in community planning. Significant areas of soil inclusions are in most map units. The smallest areas shown on the detailed soil maps in the back of this survey are about 20 acres. The soil inclusions that are significant to use and management are discussed in the map unit descriptions.

General Soil Map Units

The general soil map at the back of this publication shows the soil associations in this survey area. Each association has a distinctive pattern of soils, relief, and drainage. Each is a unique natural landscape. Typically, an association consists of one or more major soils and some minor soils. It is named for the major soils. The soils making up one association can occur in another but in a different pattern.

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

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

Soil Descriptions

1. Tunbridge-Lyman-Peru

Moderately deep, shallow and very deep, well drained, somewhat excessively drained, and moderately well drained, gently sloping to very steep, loamy soils formed in glacial till derived from schist, gneiss, and granite; on uplands

This map unit consists of gently sloping to very steep soils on hilltops and hillsides mainly in the eastern half of the county (fig. 2). Areas of rock outcrops are scattered throughout the map unit. Stones and boulders are on the surface.

This map unit, the most extensive, makes up about 51 percent of the county. It is about 23 percent Tunbridge soils, 20 percent Lyman soils, 15 percent Peru soils, and 42 percent soils of minor extent (fig. 3).

Tunbridge soils are moderately deep, well drained, and medium textured. They are gently sloping to very steep. They formed in moderately deep deposits of glacial till derived mainly from schist bedrock. They have a friable subsoil overlying bedrock at a depth of about 26 inches. They are typically in the less sloping areas or in pockets between Lyman soils and areas of rock outcrops.

Lyman soils are shallow, somewhat excessively drained, and medium textured. They are gently sloping to very steep. They formed in thin deposits of glacial till derived mainly from schist bedrock. They have a friable subsoil overlying bedrock at a depth of about 16 inches. Typically, they are on the upper slopes.

Peru soils are very deep, moderately well drained, and medium textured. They are gently sloping and strongly sloping. Typically, they are in concave areas and on the lower slopes. They formed in deposits of glacial till derived mainly from schist bedrock. They have a friable subsoil and a firm substratum, which impedes water movement and restricts the root zone.

The soils of minor extent in this map unit are Pillsbury, Marlow, and Berkshire soils. Also included are scattered areas of rock outcrops on hillsides and ridges. The poorly drained and very poorly drained Pillsbury soils are in low or depressional areas. The very deep, well drained Marlow and Berkshire soils are intermingled on the sides of hills and mountains.

Most areas of the soils in this map unit are forest. These soils are poorly suited to cultivated crops, hay, and pasture because of stones on the surface and rock outcrops.

The main limitations to use of the soils as sites for buildings and sanitary facilities are slope, shallowness to rock, and the stones on the surface.

2. Taconic-Macomber-Lanesboro

Shallow, moderately deep and very deep, somewhat excessively drained and well drained, gently sloping to very steep, loamy soils formed in glacial till derived from phyllite, slate, and shale; on uplands

This map unit consists of gently sloping to very steep soils on hilltops and hillsides mainly in the western part of the county (fig. 4). The unit is characterized by steep, rocky and stony, forested mountains and a few narrow valleys.

This map unit makes up about 11 percent of the survey area. About 35 percent of the map unit is Taconic soils, 30 percent is Macomber soils, 8 percent is Lanesboro soils, and 27 percent is soils of minor extent (fig. 5).

Taconic soils are shallow, somewhat excessively drained, and medium textured. They are gently sloping to very steep. They formed in thin deposits of glacial till derived mainly from slate, shale, and phyllite. Bedrock is within 20 inches of the surface, and rock outcrops are common. Slate and shale fragments are throughout the soils.

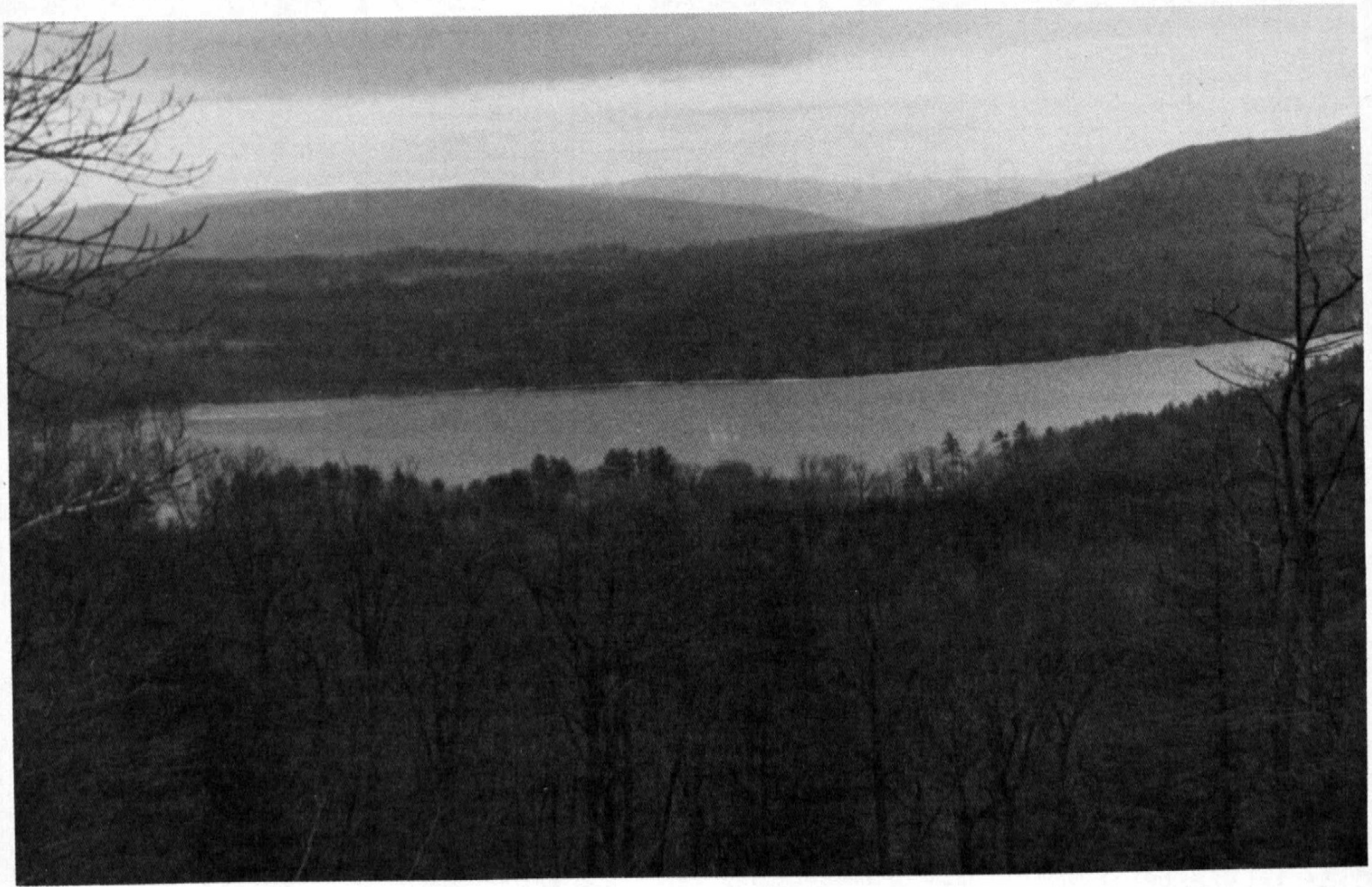


Figure 2.—The area known locally as the "Stockbridge Bowl" is surrounded by an area of the Tunbridge-Lyman-Peru general soil map unit.

Macomber soils are moderately deep, well drained, and medium textured. They are gently sloping to very steep. They are intermingled with Taconic soils in areas between the folds of bedrock. They formed in the same kind of slaty till as Taconic soils. Bedrock is between depths of 20 and 40 inches.

Lanesboro soils are very deep, well drained, and medium textured. They are steep and very steep. Typically, they are on drumlin-like hills. They formed in the same kind of slaty till as Taconic and Macomber soils. They have a friable subsoil and a dense substratum, which impedes water movement and restricts the root zone.

The soils of minor extent in this map unit are Fullam, Dummerston, and Brayton soils. Also included, on hillsides and ridges, are scattered areas of rock outcrops. The well drained Dummerston soils are intermingled with Lanesboro soils and are similar to Lanesboro soils except that they do not have a dense substratum. The moderately well drained Fullam soils and the poorly drained Brayton soils are in the lower lying areas and the wet areas on uplands.

Most areas of the soils in this map unit are forest. Some areas are in recreation use, including sites for ski resorts, cross-country ski trails, and hiking trails. The main limitations to use of the soils as cropland and as sites for buildings and sanitary facilities are slope, the stones on the surface, and shallowness to rock.

3. Amenia-Pittsfield-Farmington

Very deep and shallow, moderately well drained, well drained, and somewhat excessively drained, nearly level to very steep, loamy soils formed in glacial till derived from limestone; on uplands

This map unit consists of nearly level to very steep soils in the central part of the valley region of the county (fig. 6). The valley region extends north and south from the northern boundary of the county at the Vermont state line to the southern boundary at the Connecticut state line.

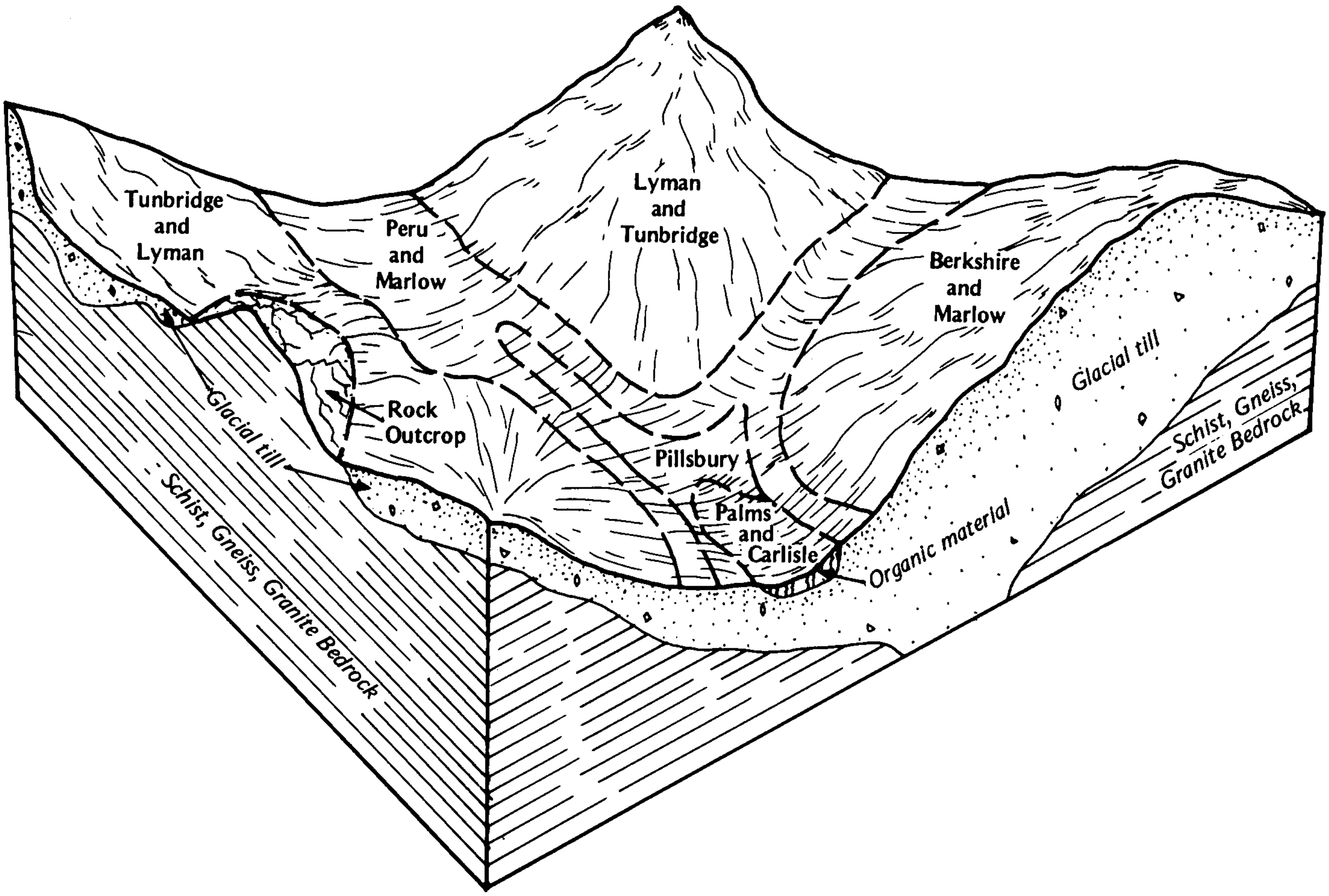


Figure 3.—Typical pattern of soils and parent material in the Tunbridge-Lyman-Peru general soil map unit.

This map unit makes up about 26 percent of the survey area. About 20 percent of the map unit is Amenia soils, 15 percent is Pittsfield soils, 12 percent is Farmington soils, and 53 percent is soils of minor extent (fig. 7).

Amenia soils are very deep, moderately well drained, and medium textured. They are mainly nearly level to moderately steep. They are on uplands. They formed in thick deposits of glacial till derived mainly from limestone. They have a friable subsoil and a dense substratum, which impedes water movement and restricts the root zone.

Pittsfield soils are very deep, well drained, and medium textured. They are gently sloping to very steep. They formed in thick deposits of glacial till derived from limestone. They have a friable subsoil and substratum.

Farmington soils are shallow, well drained and somewhat excessively drained, and medium textured. They are gently sloping to steep. They formed in thick deposits of glacial till derived mainly from limestone. Limestone bedrock is commonly at a depth of less than 20 inches, but the depth differs within short distances.

The soils of minor extent in this map unit are Nellis, Stockbridge, Kendaia, and Lyons soils. The well drained Nellis and Stockbridge soils are intermingled with Pittsfield and Amenia soils on uplands. The poorly drained Kendaia soils and the very poorly drained Lyons soils are in depressions and in concave, wet areas on uplands.

Most areas of the soils in this map unit are cleared. Areas of these soils are the most extensively farmed in the county. There are few limitations to use of the soils for farming.

These soils are fairly well suited to cultivated crops. In the more sloping areas erosion is a hazard. Stripcropping, conservation tillage, cover crops, and

Figure 4.—Ski trails in a typical area of the Taconic-Macomber-Lanesboro general soil map unit.

grasses and legumes included in the cropping system help to control erosion.

In most areas these soils are well suited to hay and pasture. Proper stocking rates, deferred grazing, and rotation grazing help to maintain the desirable species of pasture plants.

These soils are fairly well suited to use as sites for buildings and sanitary facilities. On the shallow soils or the wet, included soils, special designs, such as constructing buildings without basements, laying tile drainage around foundations, and placing distribution lines for sanitary facilities in a more suitable material, help to overcome the limitations to these uses.

4. Copake-Hero-Hoosic

Very deep, somewhat excessively drained and moderately well drained, nearly level to moderately steep, loamy soils formed in glacial outwash; on outwash plains and terraces

This map unit consists of nearly level to moderately steep soils on gravelly glacial outwash plains and terraces mainly in the central part of the valley area of the county.

This map unit makes up about 9 percent of the survey area. About 25 percent of the map unit is Copake soils, 12 percent is Hero soils, 10 percent is Hoosic soils, and 53 percent is soils of minor extent (fig. 8).

Copake soils are very deep, somewhat excessively drained, and moderately coarse textured. They are nearly level to moderately steep. They formed in calcareous glacial outwash. They have a friable subsoil and a loose, coarse textured substratum.

Hero soils are very deep, moderately well drained, and moderately coarse textured. They are nearly level and gently sloping. They formed in calcareous glacial outwash. They have a friable subsoil and a loose, coarse textured substratum.

Hoosic soils are very deep, somewhat excessively drained, and moderately coarse textured. They are nearly level to moderately steep. They formed in acid glacial outwash. They have a friable subsoil and a loose, coarse textured substratum.

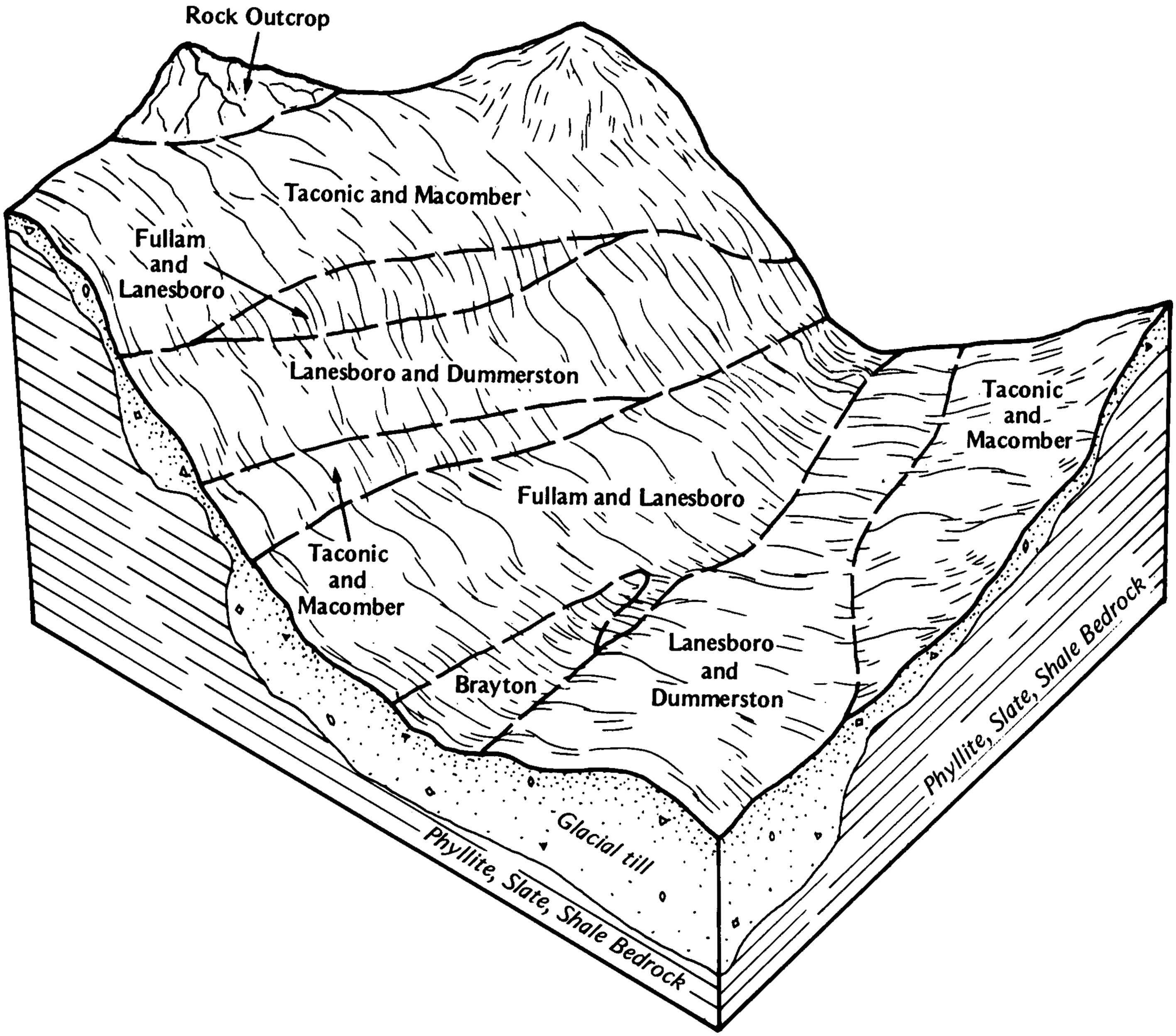


Figure 5.—Typical pattern of soils and parent material in the Taconic-Macomber-Lanesboro general soil map unit.

The soils of minor extent in this map unit are Groton, Merrimac, Hinckley, Oakville, Deerfield, Fredon, Wareham, Halsey, Palms, and Carlisle soils. The excessively drained Groton, Merrimac, Hinckley, and Oakville soils are intermingled with Copake and Hoosic soils. The moderately well drained Deerfield soils are intermingled with Hero soils. The poorly drained Fredon and Wareham soils and the very poorly drained Halsey soils are in depressions, drainageways, and wet areas. Small areas of the very poorly drained Palms and Carlisle soils, which formed in organic material, are in depressions and drainageways.

Most areas of the soils in this map unit are cleared and are used for farming and commercial uses. The main limitations to use of these soils for farming are droughtiness and the rapid permeability in the

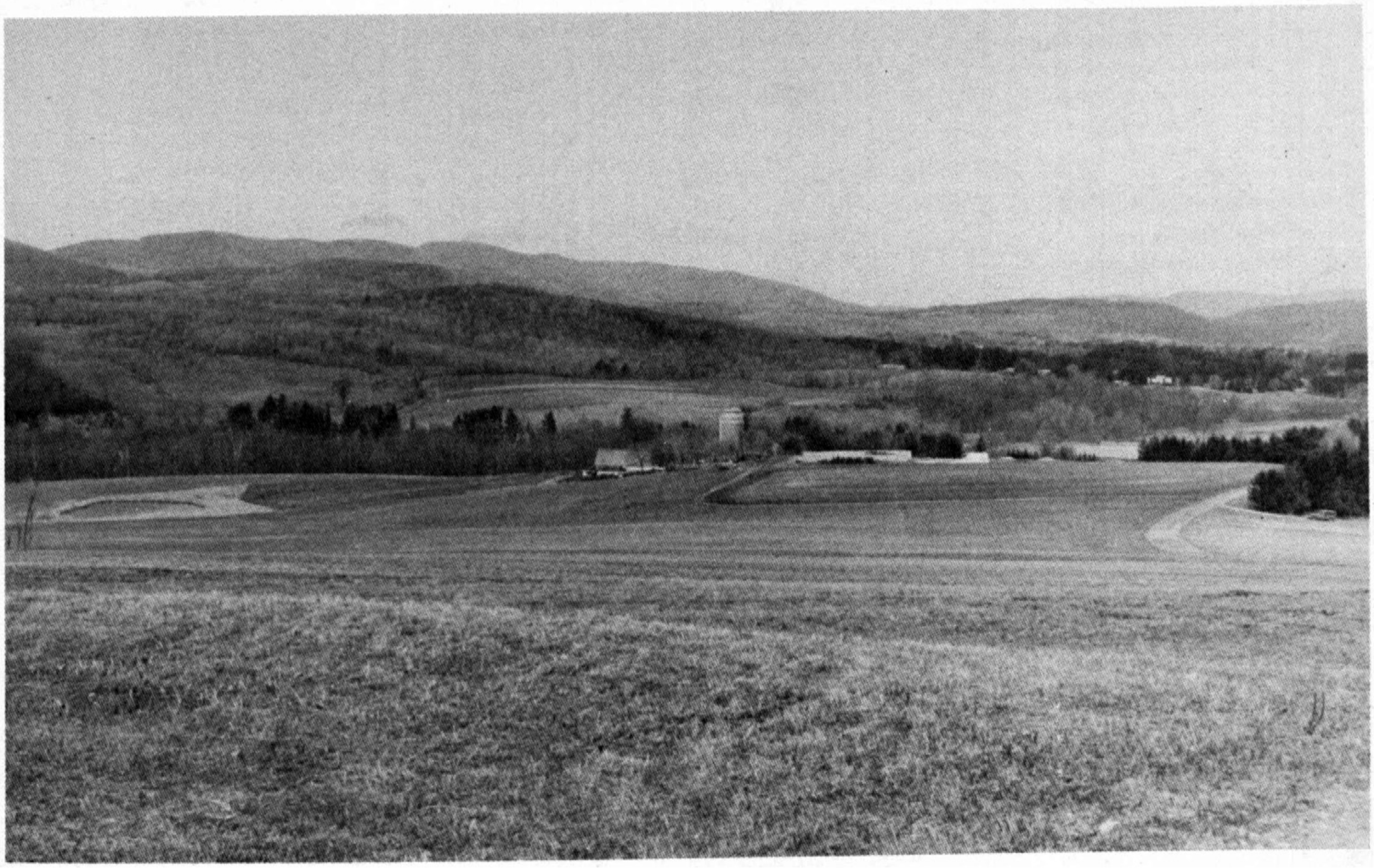


Figure 6.—A typical area in the Amenia-Pittsfield-Farmington general soil map unit. The soils on the hills in the background make up part of the Taconic-Macomber-Lanesboro general soil map unit.

substratum. The soils are well suited to row crops, small grains, hay, and pasture. In some years droughtiness in late summer is a limitation. Cultivated crops can be irrigated. In the steeper areas erosion is a hazard. Stripcropping, conservation tillage, and cover crops help to reduce runoff and to control erosion. Proper stocking rates, deferred grazing, and, during wet periods, restricted grazing help to maintain the desirable species of pasture plants and to reduce surface compaction.

Most areas of these soils are well suited to use as sites for buildings and sanitary facilities. In the wetter areas special designs, such as constructing buildings without basements and laying tile drainage around foundations to reduce wetness, help to overcome some limitations to these uses. Placing distribution lines in a more suitable fill material helps to increase the lateral and downward flow of effluent.

5. Limerick-Saco-Winooski

Very deep, poorly drained, very poorly drained, and moderately well drained, nearly level, loamy soils formed in alluvial deposits; on flood plains

This map unit consists of nearly level, generally long and narrow areas on flood plains of major streams throughout the county.

This map unit makes up about 3 percent of the survey area. About 30 percent of the map unit is Limerick soils, 15 percent is Saco soils, 15 percent is Winooski soils, and 40 percent is soils of minor extent (fig. 9).

Limerick soils are poorly drained and medium textured. They are in concave areas adjacent to streams and rivers. The seasonal high water table restricts the root zone.

Saco soils are very poorly drained and medium textured. They are in concave areas and depressions where alluvial soils are adjacent to upland soils.

Winooski soils are very deep, moderately well drained, and medium textured.

The soils of minor extent in this map unit are the well drained Hadley soils and the very poorly drained Palms and Carlisle soils. Hadley soils are on low terraces throughout the map unit. Palms and Carlisle soils, which formed in organic material, are in depressions and old oxbows.

Most areas of the soils in this map unit are cleared and are used for crops, hay, and pasture. The soils are fairly well suited to row crops and small grains and to grasses and legumes for hay and pasture. The main limitations are the seasonal high water table and flooding. Surface drainage can be used to remove excess water if suitable outlets are available. Proper timing of farm operations and proper plant species also help to overcome the limitations. Proper stocking rates, deferred grazing, and rotation grazing help to maintain the desirable species of pasture plants.

These soils are generally not suited to use as sites for buildings and sanitary facilities because of flooding and the seasonal high water table. Some areas, which are protected from flooding, are used as sites for buildings and sanitary facilities and are in recreation use. Soils that are better suited to these uses are generally nearby.

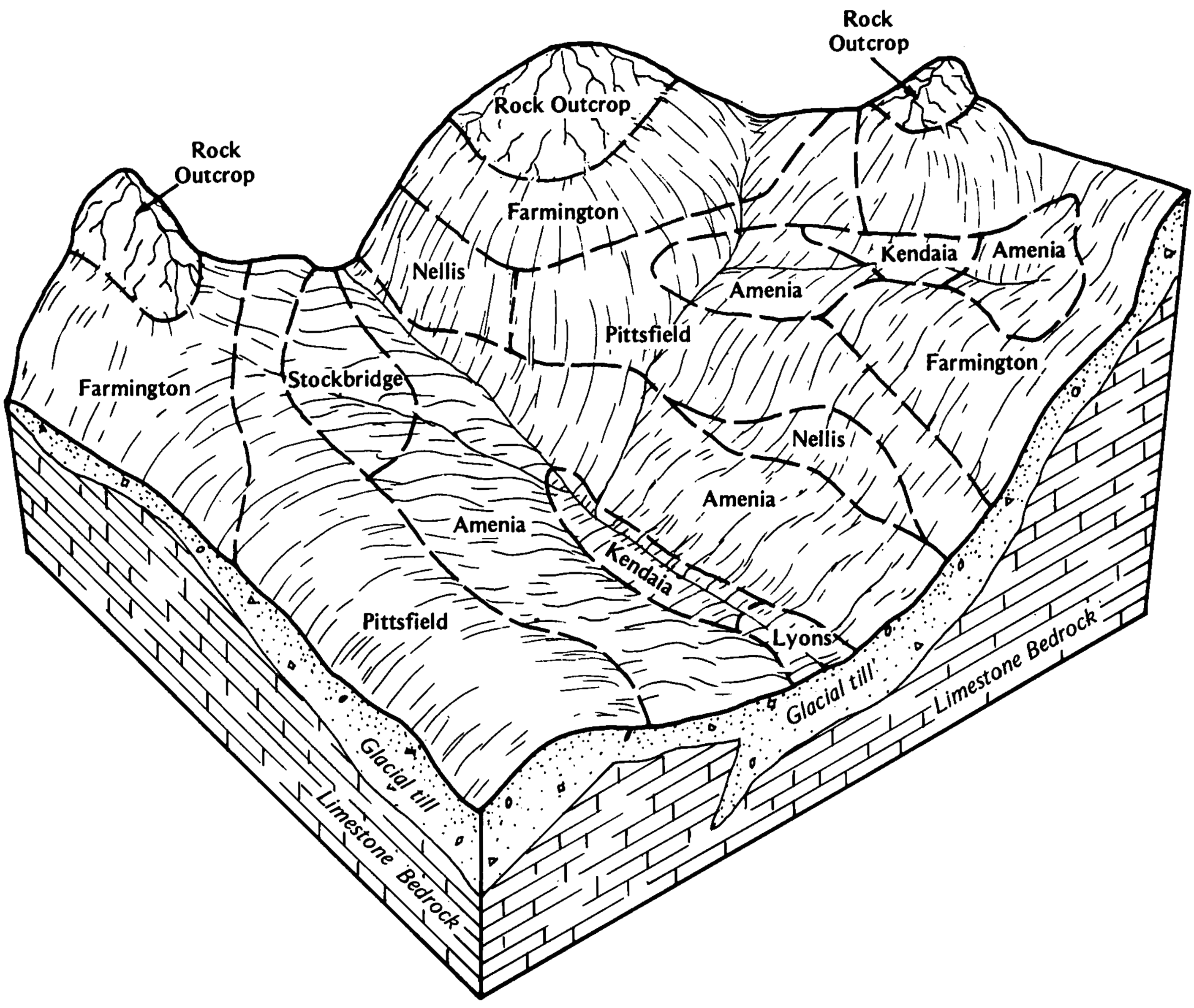


Figure 7.—Typical pattern of soils and parent material in the Amenia-Pittsfield-Farmington general soil map unit.

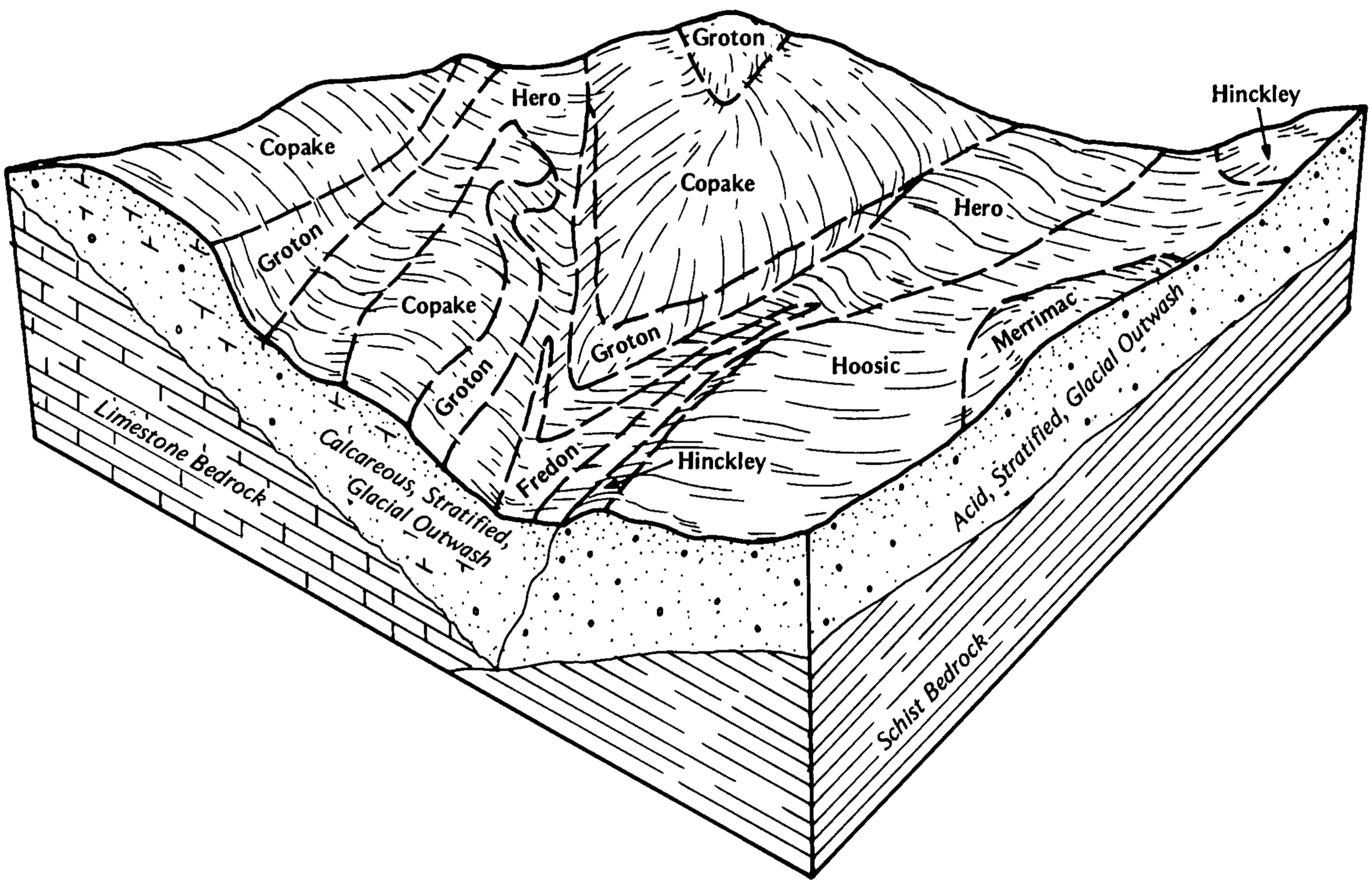


Figure 8.—Typical pattern of soils and parent material in the Copake-Hero-Hoosic general soil map unit.

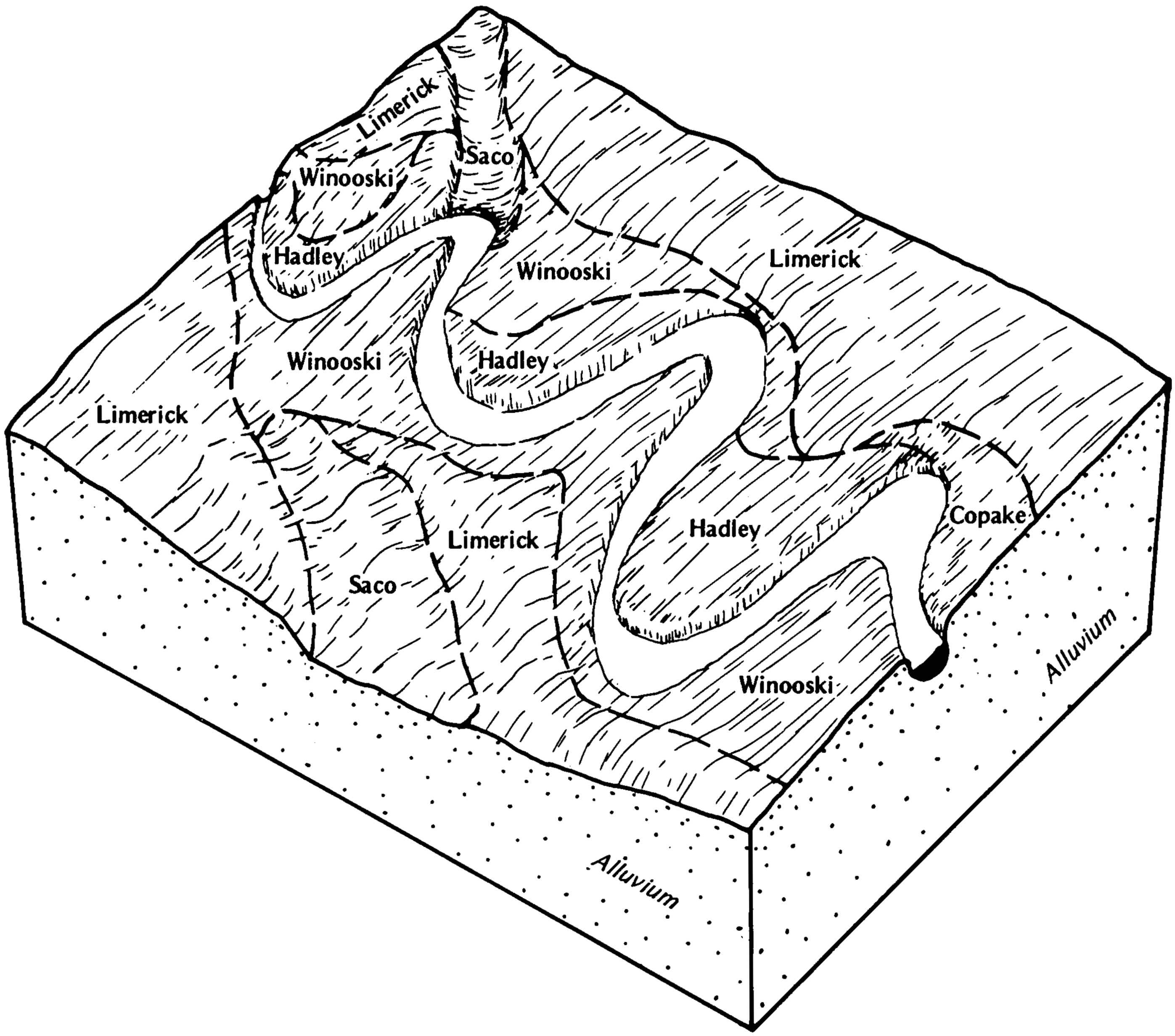


Figure 9.—Typical pattern of soils and parent material in the Limerick-Saco-Winooski general soil map unit.

Detailed Soil Map Units

The map units on the detailed soil maps at the back of this survey represent the soils in the survey area. The map unit descriptions in this section, along with the soil maps, can be used to determine the suitability and potential of a soil for specific uses. They also can be used to plan the management needed for those uses. More information on each map unit, or soil, is given under "Use and Management of the Soils."

Each map unit on the detailed soil maps represents an area on the landscape and consists of one or more soils for which the unit is named.

A symbol identifying the soil precedes the map unit name in the soil descriptions. Each description includes general facts about the soil and gives the principal hazards and limitations to be considered in planning for specific uses.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer or of the underlying material, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer or of the underlying material. They also can differ in slope, stoniness, salinity, wetness, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Pittsfield loam, 3 to 8 percent slopes, very stony, is one of several phases in the Pittsfield series.

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

A *soil complex* consists of two or more soils, or one or more soils and a miscellaneous area, in such an intricate pattern or in such small areas that they cannot be shown separately on the soil maps. The pattern and proportion of the soils are somewhat similar in all areas. Farmington-Rock outcrop complex, 3 to 15 percent slopes, is an example.

A *soil association* is made up of two or more geographically associated soils that are shown as one unit on the maps. Because of present or anticipated soil uses in the survey area, it was not considered practical or necessary to map the soils separately. The pattern and relative proportion of the soils are somewhat similar. Berkshire-Marlow association, steep, extremely stony, is an example.

An *undifferentiated group* is made up of two or more soils that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils in the mapped areas are not uniform. An area can be made up of only one of the major soils, or it can be made up of all of them. Groton and Hinckley gravelly sandy loams, 25 to 35 percent slopes, is an undifferentiated group in this survey area.

Most map units include small scattered areas of soils other than those for which the map unit is named. Some of these included soils have properties that differ substantially from those of the major soil or soils. Such differences could significantly affect use and management of the soils in the map unit. The included soils are identified in each map unit description. Some small areas of strongly contrasting soils are identified by a special symbol on the soil maps.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Pits, gravel, is an example. Miscellaneous areas are shown on the soil maps. Some that are too small to be shown are identified by a special symbol on the soil maps.

Table 4 gives the acreage and proportionate extent of each map unit. Other tables (see "Summary of Tables") give properties of the soils and the limitations, capabilities, and potentials for many uses. The Glossary defines many of the terms used in describing the soils.

Soil Descriptions

AmA—Amenia silt loam, 0 to 3 percent slopes. This is a nearly level, very deep, moderately well drained soil in depressional areas of glacial till uplands. Individual areas are irregular in shape and range from 5 to 25 acres.

Typically, the surface layer is dark brown silt loam about 8 inches thick. The subsoil is about 19 inches thick. In the upper 3 inches it is dark yellowish brown, friable silt loam. In the next 8 inches it is olive brown, friable silt loam that is mottled in the lower part. In the lower 8 inches it is olive brown, mottled, friable loam.

The substratum is dark grayish brown, mottled, firm gravelly loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Stockbridge and Kendaia soils in low, concave areas. Also included are soils that have slopes of more than 3 percent. The included soils make up 10 to 15 percent of the map unit.

Permeability in this Amenia soil is moderate in the subsoil and slow in the substratum. The available water capacity is moderate. The seasonal high water table is at a depth of about 24 inches in winter and early spring. The root zone is restricted by the firm substratum, and in early spring root growth is impeded by the seasonal high water table. The soil is moderately acid to mildly alkaline in the surface layer and the subsoil and mildly alkaline or moderately alkaline in the substratum.

Most areas of this soil have been cleared of stones and are used for crops or hay. Some areas have reverted to woodland.

This soil is well suited to cultivated crops. Good tilth is easily maintained in cultivated areas. The main management concern is the seasonal high water table in spring. Generally, artificial drainage is needed only in wet spots. Stripcropping, conservation tillage, cover crops, and grasses and legumes included in the cropping system help to reduce runoff and to control erosion. Mixing crop residue and manure into the plow layer helps to maintain good tilth and increases organic matter content.

This soil is well suited to hay and pasture. Proper stocking rates, deferred grazing, and rotation grazing help to maintain the desirable species of pasture plants.

Potential productivity for northern red oak on this soil is moderately high. There are no major limitations to woodland management. Plant competition during regeneration is moderate if conifers are grown. Thinning crowded stands to accepted, standard stocking levels allows more vigorous growth. Shelterwood cutting, seed-tree cutting, and clearcutting establish natural regeneration or provide suitable planting sites. In some areas removing or controlling competing vegetation is necessary for the best growth of newly established seedlings. Pruning improves the quality of white pine.

Constructing buildings without basements and above the seasonal high water table helps to prevent the interior damage caused by wetness. Tile drains laid around foundations help to reduce wetness. Landscaping designed to drain surface runoff away from buildings provides added protection against damage caused by wetness. Constructing roads on a well compacted, coarse textured base material helps to prevent the damaged pavement caused by frost heave. The main limitations to use of the soil as sites for septic tank absorption fields are the seasonal high water table and the slow permeability. Placing the distribution lines in a suitable fill material helps to increase the lateral and downward flow of effluent.

This map unit is in capability subclass IIw.

AmB—Amenia silt loam, 3 to 8 percent slopes. This is a gently sloping, very deep, moderately well drained soil in depressional areas of glacial till uplands. Individual areas are irregular in shape and range from 5 to 50 acres.

Typically, the surface layer is dark brown silt loam about 8 inches thick. The subsoil is about 19 inches thick. In the upper 3 inches it is dark yellowish brown, friable silt loam. In the next 8 inches it is olive brown, friable silt loam that is mottled in the lower part. In the lower 8 inches it is olive brown, mottled, friable loam. The substratum is dark grayish brown, mottled, firm gravelly loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Stockbridge and Kendaia soils in low, concave areas. Also included are soils that have slopes of more than 8 percent. The included soils make up about 10 to 15 percent of the map unit.

Permeability in this Amenia soil is moderate in the subsoil and slow in the substratum. The available water capacity is moderate. The seasonal high water table is at a depth of about 24 inches in winter and early spring. The root zone is restricted by the firm substratum, and in early spring root growth is impeded by the seasonal high water table. The soil is moderately acid to mildly alkaline in the surface layer and the subsoil and mildly alkaline or moderately alkaline in the substratum.

Most areas of this soil have been cleared of stones and are used for crops and hay. Some areas have reverted to woodland.

This soil is well suited to cultivated crops. Good tilth is easily maintained in cultivated areas. Erosion is a hazard. The main management concern is the seasonal high water table in spring. Generally, artificial drainage is needed only in wet spots. Stripcropping, conservation tillage, cover crops, and grasses and legumes included in the cropping system help to reduce runoff and to control erosion. Mixing crop residue and manure into the plow layer helps to maintain good tilth and increases organic matter content.

This soil is well suited to hay and pasture. Proper stocking rates, deferred grazing, and rotation grazing help to maintain the desirable species of pasture plants.

Potential productivity for northern red oak on this soil is moderately high. There are no major limitations to woodland management. Plant competition during regeneration is moderate if conifers are grown. Thinning crowded stands to accepted, standard stocking levels allows more vigorous growth. Shelterwood cutting, seed-tree cutting, and clearcutting establish natural regeneration or provide suitable planting sites. In some areas removing or controlling competing vegetation is necessary for the best growth of newly established seedlings. Pruning improves the quality of white pine.

Constructing buildings without basements and above the seasonal high water table helps to prevent the interior damage caused by wetness. Tile drains laid around foundations help to reduce wetness. Landscaping designed to drain surface runoff away from buildings provides added protection against damage caused by wetness. Constructing roads on a well compacted, coarse textured base material helps to prevent the damaged pavement caused by frost heave. The main limitations to use of the soil as sites for septic tank absorption fields are the seasonal high water table and the slow permeability. Placing the distribution lines in a suitable fill material helps to increase the lateral and downward flow of effluent.

This map unit is in capability subclass IIe.

AmC—Amenia silt loam, 8 to 15 percent slopes. This is a sloping, very deep, moderately well drained soil on the sides of drumlin-like, glacial till ridges. Individual areas are irregular in shape and range from 5 to 50 acres.

Typically, the surface layer is dark brown silt loam about 8 inches thick. The subsoil is about 19 inches thick. In the upper 3 inches it is dark yellowish brown, friable silt loam. In the next 8 inches it is olive brown, friable silt loam that is mottled in the lower part. In the lower 8 inches it is olive brown, mottled, friable loam. The substratum is dark grayish brown, mottled, firm gravelly loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Stockbridge and Kendaia soils in low, concave areas. Also included are soils that have slopes of more than 15 percent. The included soils make up about 10 to 15 percent of the map unit.

Permeability in this Amenia soil is moderate in the subsoil and slow in the substratum. The available water capacity is moderate. The seasonal high water table is at a depth of about 24 inches in winter and early spring. The root zone is restricted by the firm substratum, and in early spring root growth is impeded by the seasonal high water table. The soil is moderately acid to mildly alkaline in the surface layer and the subsoil and mildly alkaline or moderately alkaline in the substratum.

Most areas of this soil have been cleared of stones and are used for crops and hay. Some areas have reverted to woodland.

This soil is fairly well suited to cultivated crops. Erosion is a hazard. Good tilth is easily maintained in cultivated areas. The main management concern is the seasonal high water table in spring. Generally, artificial drainage is needed only in wet spots. Stripcropping, conservation tillage, cover crops, and grasses and legumes included in the cropping system help to reduce runoff and to control erosion. Mixing crop residue and manure into the plow layer helps to maintain good tilth and increases organic matter content.

This soil is well suited to hay and pasture. Proper stocking rates, deferred grazing, and rotation grazing help to maintain the desirable species of pasture plants.

Potential productivity for northern red oak on this soil is moderately high. There are no major limitations to woodland management. Plant competition at the time of regeneration is moderate if conifers are grown. Thinning crowded stands to accepted, standard stocking levels allows for more vigorous growth. Shelterwood cutting, seed-tree cutting, and clearcutting establish natural regeneration or provide suitable planting sites. In some areas removing or controlling competing vegetation is necessary for the best growth of newly established seedlings. Pruning improves the quality of white pine.

Constructing buildings with the lower or basement level above the seasonal high water table helps to prevent the interior damage caused by wetness. Tile drains laid around foundations help to reduce wetness. Landscaping designed to drain surface runoff away from buildings provides added protection against damage caused by wetness. In some areas land shaping is needed. Constructing roads on well compacted, coarse textured base material helps to prevent the damaged pavement caused by frost heave. The main limitations to use of the soil as sites for septic tank absorption fields are the seasonal high water table and the slow permeability. Placing the distribution lines in a suitable material helps to increase the lateral and downward flow of effluent.

This map unit is in capability subclass IIIe.

AmD—Amenia silt loam, 15 to 25 percent slopes. This is a moderately steep, very deep, moderately well drained soil on side slopes of drumlin-like, glacial till ridges. Individual areas are irregular in shape and range from 10 to 30 acres.

Typically, the surface layer is dark brown silt loam about 8 inches thick. The subsoil is about 19 inches thick. It is dark yellowish brown and olive brown, friable silt loam in the upper part and olive brown, mottled, friable silt loam and loam in the lower part. The substratum is dark grayish brown, mottled, firm gravelly loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Stockbridge soils. The included soils make up about 5 to 10 percent of the map unit.

Permeability in this Amenia soil is moderate above the substratum and slow in the substratum. The available water capacity is moderate. The seasonal high water table is at a depth of about 24 inches. The root zone is restricted by the firm substratum, and root growth is impeded by the seasonal high water table. The soil is moderately acid to mildly alkaline in the surface layer and the subsoil and mildly alkaline or moderately alkaline in the substratum.

Most areas of this soil have been cleared of stones and are used for hay and pasture. Some areas have reverted to woodland. Some areas are in urban use.

This soil is poorly suited to cultivated crops, hay, and pasture. The main limitations are slope and the erosion hazard. If the soil is used for hay and pasture, proper stocking rates, deferred grazing, and rotation grazing help to maintain the desirable species of pasture plants.

Potential productivity for northern red oak on this soil is moderately high. The main management concerns are slope and the erosion hazard. Plant competition is moderate if conifers are grown. Laying out access roads and trails with grades between 2 and 10 percent and installing water bars help to control erosion. Minimizing soil disturbance and retaining the sponge-like mulch of leaves help to increase absorption of precipitation, to reduce runoff, and to control erosion. Thinning crowded stands to accepted, standard stocking levels while removing diseased, poorly formed, and otherwise undesirable trees allows more vigorous growth. Shelterwood cutting, seed-tree cutting, and clearcutting establish natural regeneration or provide suitable planting sites. Removing or controlling competing vegetation is necessary for the best growth of newly established seedlings.

Constructing buildings with the lower or basement level above the seasonal high water table helps to prevent the interior damage caused by wetness. Tile drains laid around foundations help to reduce wetness. In some areas land shaping is needed because of slope. Landscaping designed to drain surface runoff away from buildings provides added protection against damage caused by wetness. Constructing roads on the contour, where possible, and planting roadbanks to well adapted grasses help to control erosion. Using a well compacted, coarse textured base material helps prevent damage to the pavement by frost heave. The main limitations to use of the soil as sites for septic tank absorption fields are the seasonal high water table, slope, and the slow permeability. Placing the distribution lines across the slope and in a suitable fill material helps to increase the lateral and downward flow of effluent.

This map unit is in capability subclass IVe.

AsB—Amenia silt loam, 3 to 8 percent slopes, very stony. This is a gently sloping, very deep, moderately well drained soil in depressional areas of glacial till uplands. Areas are irregular in shape and 5 to 40 acres. Stones, 20 to 50 feet apart, are on the surface.

Typically, the surface layer is dark brown silt loam about 8 inches thick. The subsoil is about 19 inches thick. In the upper 3 inches it is dark yellowish brown, friable silt loam. In the next 8 inches it is olive brown, friable silt loam that is mottled in the lower part. In the lower 8 inches it is olive brown, mottled, friable loam. The substratum is dark grayish brown, mottled, firm gravelly loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas, generally less than 3 acres, of Stockbridge and Kendaia soils, and some areas of Farmington soils and rock outcrops. Also included are soils that have slope of more than 8 percent. The included soils make up about 5 to 10 percent of the map unit.

Permeability in this Amenia soil is moderate in the surface layer and the subsoil and slow in the substratum. The available water capacity is moderate. The seasonal high water table is at a depth of about 24 inches in winter and early spring. The root zone is restricted by the firm substratum. The soil is moderately acid to mildly alkaline in the surface layer and the subsoil and mildly alkaline or moderately alkaline in the substratum.

Most areas of this soil are woodland. Some areas are used as homesites. Some areas are used for unimproved pasture.

This soil is poorly suited to cultivated crops and to use as habitat for openland and wetland wildlife. It is well suited to use as woodland and as habitat for woodland wildlife. It is poorly suited to cultivated crops because of stones on the surface.

In pasture management, proper stocking rates, deferred grazing, and rotation grazing help to maintain the desirable species of pasture plants.

Potential productivity for northern red oak on this soil is moderately high. There are no major limitations to woodland management. Plant competition during regeneration is moderate if conifers are grown. Thinning crowded stands to accepted, standard stocking levels allows more vigorous growth. Shelterwood cutting, seed-tree cutting, and clearcutting establish natural regeneration or provide suitable planting sites. In some areas removing or controlling competing vegetation is necessary for the best growth of newly established seedlings.

Constructing buildings without basements and above the seasonal high water table helps to prevent the interior damage caused by wetness. Tile drains laid around foundations help to reduce wetness. Landscaping designed to drain surface runoff away from buildings provides added protection against damage caused by wetness. Constructing roads on a well compacted, coarse textured base material helps to prevent the damaged pavement caused by frost heave. The main limitations to use of the soil as sites for septic tank absorption fields are the seasonal high water table and the slow permeability. Placing the distribution lines in a suitable fill material helps to increase the lateral and downward flow of effluent.

This map unit is in capability subclass VIs.

AsC—Amenia silt loam, 8 to 15 percent slopes, very stony. This is a strongly sloping, very deep, and moderately well drained soil on the sides of drumlin-like, glacial till ridges. Individual areas are irregular in shape and 5 to 40 acres. Stones, 20 to 50 feet apart, are on the surface.

Typically, the surface layer is dark brown silt loam about 8 inches thick. The subsoil is about 19 inches thick. In the upper 3 inches it is dark yellowish brown, friable silt loam. In the next 8 inches it is olive brown, friable silt loam that is mottled in the lower part. In the lower 8 inches it is olive brown, mottled, friable loam. The substratum is dark grayish brown, mottled, firm gravelly loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas, usually less than 3 acres, of Stockbridge and Kendaia soils and some areas of Farmington soils and rock outcrops. Also included are soils that have slopes of more than 15 percent. The included soils make up about 5 to 10 percent of the map unit.

Permeability in this Amenia soil is moderate in the surface layer and the subsoil and slow in the substratum. The available water capacity is moderate. The seasonal high water table is at a depth of about 24 inches in winter and early spring. The root zone is restricted by the firm substratum. The soil is moderately acid to mildly alkaline in the surface layer and the subsoil and mildly alkaline or moderately alkaline in the substratum.

Most areas of this soil are woodland. Some areas are used as homesites. Some areas are used for unimproved pasture.

This soil is generally not suited to cultivated crops and poorly suited to hay and pasture because of stones on the surface.

In pasture management, proper stocking rates, deferred grazing, and rotation grazing help to maintain the desirable species of pasture plants.

Potential productivity for northern red oak on this soil is moderately high. There are no major limitations to woodland management. Plant competition during regeneration is moderate if conifers are grown. Thinning crowded stands to accepted, standard stocking levels allows more vigorous growth. Shelterwood cutting, seed-tree cutting, and clearcutting establish natural regeneration or provide suitable planting sites. In some areas removing or controlling competing vegetation is necessary for the best growth of newly established seedlings.

Constructing buildings with the lower or basement level above the seasonal high water table helps to prevent the interior damage caused by wetness. Tile drains laid around foundations help to reduce wetness. Landscaping designed to drain surface runoff away from buildings provides added protection against damage caused by wetness. In some areas land shaping is needed. Constructing roads on a well compacted, coarse textured base material helps to prevent the damaged pavement caused by frost heave. The main limitations to use of the soil as sites for septic tank absorption fields are the seasonal high water table and the slow permeability. Placing the distribution lines in a suitable fill material helps to increase the lateral and downward flow of effluent.

This map unit is in capability subclass VIs.

AsD—Amenia silt loam, 15 to 25 percent slopes, very stony. This is a moderately steep, very deep, moderately well drained soil on side slopes of drumlin-like, glacial till ridges. Individual areas are irregular in shape and 5 to 30 acres. Stones, 20 to 50 feet apart, are on the surface.

Typically, the surface layer is dark brown silt loam about 8 inches thick. The subsoil is about 19 inches thick. In the upper 3 inches it is dark yellowish brown, friable silt loam. In the next 8 inches it is olive brown, friable silt loam that is mottled in the lower part. In the lower 8 inches it is olive brown, mottled, friable loam. The substratum is dark grayish brown, mottled, firm gravelly loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Stockbridge soils and some areas of Farmington soils and rock outcrops. Also included are soils that have slopes of more than 25 percent. The included soils make up about 10 to 15 percent of the map unit.

Permeability in this Amenia soil is moderate in the surface layer and the subsoil and slow in the substratum. The available water capacity is moderate. The seasonal high water table is at a depth of about 24 inches in winter and early spring. The root zone is restricted by the firm substratum. The soil is moderately acid to mildly alkaline in the surface layer and the subsoil and mildly alkaline or moderately alkaline in the substratum.

Most areas of this soil are woodland. Some very small areas are used as homesites. Some areas are used for unimproved pasture.

This soil is generally not suited to cultivated crops and is poorly suited to pasture and hay because of slope and stones on the surface.

In pasture management, proper stocking rates, deferred grazing, and rotation grazing help to maintain the desirable species of pasture plants.

Potential productivity for northern red oak on this soil is moderately high. The main management concerns are slope and the erosion hazard. Plant competition is moderate if conifers are grown. Constructing access roads and trails with grades between 2 and 10 percent and installing water bars help to control erosion. Minimizing soil disturbance and retaining the sponge-like mulch of leaves help to reduce runoff and to control erosion. Thinning crowded stands to accepted, standard stocking levels while removing diseased, poorly formed, and otherwise undesirable trees allows more vigorous growth. Shelterwood cutting, seed-tree cutting, and clearcutting establish natural regeneration or provide suitable planting sites. In some areas removing or controlling competing vegetation is necessary for the best growth of newly established seedlings.

Constructing buildings with the lower or basement level above the seasonal high water table helps to prevent the interior damage caused by wetness. Tile drains laid around foundations help to reduce wetness. In some areas land shaping is needed because of slope. Landscaping designed to drain surface runoff away from buildings provides added protection against the damage caused by wetness. Constructing roads on the contour, where possible, and planting roadbanks to well adapted grasses help to control erosion. Using a well compacted, coarse textured base material helps to prevent the damaged pavement caused by frost heave. The main limitations to use of the soil as sites for septic tank absorption fields are the seasonal high water table, slope, and the slow permeability. Installing the distribution lines across the slope in a suitable fill material helps to increase the lateral and downward flow of effluent.

This map unit is in capability subclass VIs.

AvB—Amenia silt loam, 3 to 8 percent slopes, extremely stony. This is a gently sloping, very deep, moderately well drained soil in the lower positions on the landscape. Individual areas are irregular in shape and 5 to 60 acres. Stones, 5 to 20 feet apart, are on the surface.

Typically, the surface layer is dark brown silt loam about 8 inches thick. The subsoil is about 19 inches thick. In the upper 3 inches it is dark yellowish brown, friable silt loam. In the next 8 inches it is olive brown, friable silt loam that is mottled in the lower part. In the lower 8 inches it is olive brown, mottled, friable loam. The substratum is dark grayish brown, mottled, firm gravelly loam to a depth of 60 inches or more.

Included with this soil in mapping are areas, generally less than 3 acres, of Stockbridge and Kendaia soils and some areas of Farmington soils and rock outcrops. Also included are soils that have slopes of less than 3 percent or more than 8 percent. The included soils make up about 10 to 15 percent of the map unit.

Permeability in this Amenia soil is moderate in the surface layer and the subsoil and slow in the substratum. The available water capacity is moderate. The seasonal high water table is at a depth of about 24 inches in winter and early spring. The root zone is restricted by the firm substratum. The soil is moderately acid to mildly alkaline in the surface layer and the subsoil and mildly alkaline or moderately alkaline in the substratum.

Most areas of this soil are wooded. Some areas are used as homesites. Some small areas are used for unimproved pasture.

This soil is generally not suited to cultivated crops and poorly suited to pasture and hay because of stones on the surface.

Potential productivity for northern red oak on this soil is moderately high. The main management concern is large stones and boulders on the surface. Plant competition during regeneration is moderate if conifers are grown. Thinning crowded stands to accepted, standard stocking levels allows more vigorous growth. Shelterwood cutting, seed-tree cutting, and clearcutting establish natural regeneration or provide suitable planting sites. In some areas removing or controlling competing vegetation is necessary for the best growth of newly established seedlings.

Constructing buildings without basements and above the seasonal high water table helps to prevent the interior damage caused by wetness. Tile drains laid around foundations help to reduce wetness. Landscaping designed to drain surface runoff away from buildings provides added protection against damage caused by wetness. Constructing roads on well compacted, coarse textured base material helps to prevent the damaged pavement caused by frost heave. The main limitations to use of the soil as sites for septic tank absorption fields are the seasonal high water table and the slow permeability. Placing the distribution lines in a suitable fill material helps to increase the lateral and downward flow of effluent.

This map unit is in capability subclass VIIs.

AvC—Amenia silt loam, 8 to 15 percent slopes, extremely stony. This is a strongly sloping, very deep, moderately well drained soil on the sides of drumlin-like, glacial till ridges. Individual areas are irregular in shape and 5 to 50 acres. Stones, 5 to 20 feet apart, are on the surface.

Typically, the surface layer is dark brown silt loam about 8 inches thick. The subsoil is about 19 inches thick. In the upper 3 inches it is dark yellowish brown, friable silt loam. In the next 8 inches it is olive brown, friable silt loam that is mottled in the lower part. In the lower 8 inches it is olive brown, mottled, friable loam. The substratum is dark grayish brown, mottled, firm gravelly loam to a depth of 60 inches or more.

Included with this soil in mapping are areas, generally less than 3 acres, of Stockbridge and Kendaia soils and some areas of Farmington soils and rock outcrops. Also included are soils that have slopes of less than 8 percent or more than 15 percent. The included soils make up about 5 to 10 percent of the map unit.

Permeability in this Amenia soil is moderate in the surface layer and subsoil and slow in the substratum. The available water capacity is moderate. The seasonal high water table is at a depth of about 24 inches in winter and early spring. The root zone is restricted by the firm substratum. The soil is moderately acid to mildly alkaline in the surface layer and the subsoil and mildly alkaline or moderately alkaline in the substratum.

Most areas of this soil are wooded. Some areas are used as homesites. Some small areas are used for unimproved pasture.

This soil is generally not suited to cultivated crops and poorly suited to pasture and hay because of stones on the surface.

Potential productivity for northern red oak on this soil is moderately high. The main management concern is large stones and boulders on the surface. Plant competition during regeneration is moderate if conifers are grown. Thinning crowded stands to accepted, standard stocking levels allows more vigorous growth. Shelterwood cutting, seed-tree cutting, and clearcutting establish natural regeneration or provide suitable planting sites. In some areas removing or controlling competing vegetation is necessary for the best growth of newly established seedlings.

Constructing buildings without basements and above the seasonal high water table helps to prevent the interior damage caused by wetness. Tile drains laid around foundations help to reduce wetness. Landscaping designed to drain surface runoff away from buildings provides added protection against damage caused by wetness. Constructing roads on well compacted, coarse textured base material helps to prevent the damaged pavement caused by frost heave. The main limitations to use of the soil as sites for septic tank absorption fields are the seasonal high water table and the slow permeability. Placing the distribution lines in a suitable fill material helps to increase the lateral and downward flow of effluent.

This map unit is in capability subclass VIIs.

AvD—Amenia silt loam, 15 to 25 percent slopes, extremely stony. This is a moderately steep, very deep, moderately well drained soil on the side slopes of drumlin-like, glacial till ridges. Individual areas are irregular in shape and 5 to 40 acres. Stones, 5 to 20 feet apart, are on the surface.

Typically, the surface layer is dark brown silt loam about 8 inches thick. The subsoil is about 19 inches thick. In the upper 3 inches it is dark yellowish brown, friable silt loam. In the next 8 inches it is olive brown, friable silt loam that is mottled in the lower part. In the lower 8 inches it is olive brown, mottled, friable loam. The substratum is dark grayish brown, mottled, firm gravelly loam to a depth of 60 inches or more.

Included with this soil in mapping are areas, usually less than 3 acres, of Stockbridge soils and some areas of Farmington soils and rock outcrops. Also included are soils that have slopes of less than 15 percent or more than 25 percent. The included soils make up about 5 to 10 percent of the map unit.

Permeability in this Amenia soil is moderate in the surface layer and subsoil and slow in the substratum. The available water capacity is moderate. The seasonal high water table is at a depth of about 24 inches in winter and early spring. The root zone is restricted by the firm substratum. The soil is moderately acid to mildly alkaline in the surface layer and the subsoil and mildly alkaline or moderately alkaline in the substratum.

Most areas of this soil are woodland. Some areas are used as homesites. Some small areas are used for unimproved pasture.

This soil is generally not suited to cultivated crops and poorly suited to pasture and hay because of stones on the surface.

Potential productivity for northern red oak on this soil is moderately high. The main management concerns are large stones and boulders on the surface and slope. In some areas stones and boulders limit the use of equipment. Constructing access roads and trails on the contour, installing water bars, and retaining the sponge-like mulch of leaves help to increase the absorption of precipitation, to reduce runoff, and to control erosion. Plant competition is moderate if conifers are grown. Thinning stands of undesired stock, such as dead or diseased trees, or removing trees in crowded areas allows more vigorous growth and regeneration. Thinning also allows the restocking or replanting of preferred trees. Removing and controlling competing understory vegetation allows the best growth of new plantings.

Constructing buildings with the lower or basement level above the seasonal high water table helps to prevent the interior damage caused by wetness. Tile drains laid around foundations help to reduce wetness. In some areas land shaping is needed because of slope. Landscaping designed to drain surface runoff away from buildings provides added protection against damage caused by wetness. Constructing roads on the contour, where possible, and planting roadbanks to well adapted grasses help to control erosion. Using a well compacted, coarse textured base material helps to prevent the damaged pavement caused by frost heave. The main limitations to use of the soil as sites for septic tank absorption fields are the seasonal high water table, slope, and the slow permeability. Installing the distribution lines across the slope in a suitable fill material helps to increase the lateral and downward flow of effluent.

This map unit is in capability subclass VIIs.

BmE—Berkshire-Marlow association, steep, extremely stony. This map unit consists of very deep, well drained Berkshire and Marlow soils. It is about 55 percent Berkshire soils, 30 percent Marlow soils, and 15 percent other soils. These soils are on the sides of hills and mountains. Berkshire soils are typically on the steeper and higher slopes, and Marlow soils are on the less steep and lower slopes or in concave areas. Slopes range from 15 to 45 percent. Stones and boulders cover from 1 to 15 percent of the surface. Areas of the individual soils are large enough to map separately, but in considering the present and predicted use they were mapped as one unit. Areas of this map unit are irregular in shape and range from 50 to 300 acres.

Typically, the surface layer of Berkshire soils is reddish gray, friable loam about 2 inches thick. The subsoil is dark reddish brown and brown, friable and very friable gravelly loam and gravelly fine sandy loam about 25 inches thick. The substratum is olive brown and olive, friable gravelly fine sandy loam to a depth of 60 inches or more.

Typically, the surface layer of Marlow soils is black, friable fine sandy loam about 3 inches thick. The subsurface layer is dark grayish brown fine sandy loam about 3 inches thick. The subsoil is dark reddish brown and dark brown, friable and very friable fine sandy loam about 26 inches thick. The substratum is dark grayish brown, very firm fine sandy loam to a depth of 60 inches or more.

Included with these soils in mapping are the moderately well drained Peru soils in the less sloping areas of hillsides and Lyman soils, which are shallow to bedrock, on the sides of hills. The included soils, which are in areas as much as 20 acres each, make up about 10 to 15 percent of the map unit.

Permeability in Berkshire soils is moderate to moderately rapid, and that in Marlow soils is moderate above the substratum and moderately slow to slow in the substratum. The perched seasonal high water table in Marlow soils is at a depth of about 2 feet in early spring. The available water capacity is high for Berkshire soils and moderate for Marlow soils. The root zone extends into the substratum in Berkshire soils. It is restricted by the firm or very firm substratum in Marlow soils. Both soils range from extremely acid to moderately acid throughout.

Most areas of these soils are used as woodland. Some areas have been cleared. Some areas are used for recreation.

These soils generally are not suitable for cultivated crops, hay, and pasture because of slope and stones on the surface.

Potential productivity is very high for eastern white pine on Berkshire soils and moderate for northern red oak on Marlow soils. The main management concerns are large stones and boulders, slope, and the severe erosion hazard. In most areas stones and boulders and slope limit the use of equipment and hand-planting is needed. Constructing access roads and trails on the contour and installing water bars help to control erosion. Minimizing soil disturbance and retaining the sponge-like mulch of leaves help to increase absorption of precipitation, to reduce runoff, and to control erosion. Plant competition is moderate. Thinning woodlands of undesired stock, such as dead or diseased trees, or removing trees in crowded areas allows more vigorous growth and regeneration. Thinning also allows restocking or replanting of preferred trees. Removing and controlling competing understory vegetation allows the best growth of new plantings.

The main limitation to use of these soils as sites for buildings and sanitary facilities is slope. In the included areas of Lyman soils, on the sides of hills, the main limitations are slope and shallowness to rock. In the included areas of Peru soils, in the less sloping areas, the main limitation is the seasonal high water table. Some areas of Peru soils are more suitable than Berkshire and Marlow soils for use as sites for buildings and sanitary facilities if the wetness limitation is overcome. Onsite investigation is needed to determine if areas of other soils within this map unit are suited to the intended use.

This map unit is in capability subclass VIIs.

BrB—Brayton silt loam, 0 to 8 percent slopes, very stony. This is a nearly level and gently sloping, very deep, somewhat poorly drained and poorly drained soil on foot slopes and drainageways. Stones and boulders, about 5 to 50 feet apart, are on the surface. Areas are irregularly shaped and range from 30 to 300 acres.

Typically, the surface and subsurface layers are black and very dark gray, very friable silt loam about 9 inches thick. The subsoil is mottled, firm olive gray gravelly silt loam about 7 inches thick. The substratum is olive, mottled, very firm gravelly silt loam to a depth of 60 inches or more.

Included with this soil in mapping are areas, as much as 20 acres, of very poorly drained mineral soils that have a hardpan, the moderately well drained Fullam soils, and very poorly drained organic soils in depressions or pockets. Also included, on the sides of hills, are areas of Taconic soils which are shallow to bedrock. The included soils make up about 45 percent of the map unit. The very poorly drained mineral soils make up about 15 to 20 percent of the map unit, and the very poorly drained organic soils make up about 5 percent.

Permeability of the Brayton soil is moderate to moderately rapid above the substratum and very slow or slow in the substratum. The available water capacity is low. The seasonal high water table is perched above the substratum in winter and spring and after prolonged rains. The root zone is restricted by the very firm substratum. The soil ranges from extremely acid to moderately acid in the surface and subsurface layers, strongly acid to slightly acid in the subsoil, and moderately acid to neutral in the substratum.

Most areas of this soil are woodland. Some areas have been cleared and are used for unimproved pasture.

This soil generally is not suited to cultivated crops and hay because of the seasonal high water table and stones on the surface. In areas used for pasture, proper stocking rates, deferred grazing, and rotation grazing help to maintain the desired species of pasture plants.

Potential productivity for red maple on this soil is moderate. The main management concerns are the seasonal high water table, the high seedling mortality, the windthrow hazard, and the equipment limitation. The low soil strength limits the use of equipment to periods when the soil is dry or frozen. Thinning minimizes windthrow by locating and orienting cuts to reduce wind effects by keeping residual stand density at or slightly above standard stocking levels, and by limiting changes in stand density to 30 percent or less.

Constructing buildings without basements and above the seasonal high water table helps to prevent the interior damage caused by wetness. Tile drains laid around foundations help to reduce wetness. Landscaping designed to drain surface runoff away from buildings provides added protection against damage caused by wetness. Constructing roads on raised, coarse textured base material and providing adequate side ditches and culverts help to prevent the damaged pavement caused by the seasonal high water table and frost action. The main limitations to use of the soil as sites for septic tank absorption fields are the seasonal high water table and the very slow or slow permeability. Placing the distribution lines in a suitable fill material help to increase the lateral and downward flow of effluent. Some areas of the included soils have fewer or more restricting limitations than those of the Brayton soil for the intended use. Onsite investigation is needed to determine the suitability of particular areas for any use.

This soil is in capability subclass VIIs.

CoA—Copake fine sandy loam, 0 to 3 percent slopes. This is a nearly level, very deep, somewhat excessively drained soil on slightly convex ridges. Individual areas are irregular in shape and range from 5 to 100 acres.

Typically, the surface layer is dark brown fine sandy loam about 4 inches thick. The subsoil is about 22 inches thick. In the upper 17 inches it is brown, very friable gravelly fine sandy loam, and in the lower 5 inches it is dark yellowish brown, very friable fine sandy loam. The substratum is dark brown, dark yellowish brown, and grayish brown, stratified loamy fine sand to very gravelly sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Groton, Hero, and Fredon soils in slightly concave depressions. Also included, at the edge of a few map units, are soils that have slope of more than 3 percent. The included soils make up 10 to 15 percent of the map unit.

Permeability in the Copake soil is moderate or moderately rapid in the subsoil and very rapid in the substratum. The available water capacity is moderate. The root zone is restricted at a depth of about 48 inches by loose sand and gravel. In some years the soil is droughty in late summer. The soil is very strongly acid to neutral in the surface layer, strongly acid to neutral in the subsoil, and slightly acid to moderately alkaline in the substratum.

Most areas of this soil are used for cultivated crops. A few areas are woodland.

This soil is well suited to row crops and small grains (fig. 10). The main limitation is droughtiness in some years. Crops can be irrigated. Crop residue mixed into the soil helps to maintain or increase the organic matter content in the surface layer.

This soil is well suited to grasses and legumes for hay and pasture. Plants that tolerate droughtiness in late summer produce the highest yields. The main management concern is overgrazing, which causes surface compaction and reduces the hardiness and density of plants. Proper stocking rates, timely deferred grazing, and, during wet periods, restricted grazing help to maintain the desirable species of pasture plants and to prevent surface compaction.

Potential productivity for eastern white pine on this soil is high. There are no major limitations to woodland management. Plant competition during regeneration is moderate if conifers are grown. Thinning crowded stands to accepted, standard stocking levels allows more vigorous growth. Shelterwood cutting, seed-tree cutting, and clearcutting establish natural regeneration or provide suitable planting sites. Removing or controlling competing vegetation is needed for the best growth of newly established seedlings. Pruning improves the quality of white pine.

There are no major limitations to use of this soil for building site development. Constructing roads on well compacted, coarse textured base material helps to prevent the damaged pavement caused by frost action. Ground water contamination is a hazard if the soil is used as sites for septic tank absorption fields. The soil readily absorbs effluent but does not adequately filter it.

This map unit is in capability subclass I.

CoB—Copake fine sandy loam, 3 to 8 percent slopes. This is a gently sloping, very deep, somewhat excessively drained soil on slightly convex ridges. Individual areas are irregular in shape and range from 5 to 200 acres.

Typically, the surface layer is dark brown fine sandy loam about 4 inches thick. The subsoil is about 22 inches thick. In the upper 17 inches it is brown, very friable gravelly fine sandy loam, and in the lower 5 inches it is dark yellowish brown, very friable fine sandy loam. The substratum is dark brown, dark yellowish brown, and grayish brown, stratified loamy fine sand to very gravelly sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas, in slightly concave depressions, of Groton, Hero, and Fredon soils. Also included, at the edge of a few map units, are some areas of soils that have slope of more than 8 percent. The included soils make up about 5 to 10 percent of the map unit.

Permeability in this Copake soil is moderate or moderately rapid in the subsoil and very rapid in the substratum. The available water capacity is moderate. The root zone is restricted at a depth of about 48 inches

Figure 10.—Corn stubble in an area of Copake fine sandy loam, 0 to 3 percent slopes. The soil is well suited to corn and other row crops.

by loose sand and gravel. In some years the soil is droughty in late summer. The soil is very strongly acid to neutral in the surface layer, strongly acid to neutral in the subsoil, and slightly acid to moderately alkaline in the substratum.

Most areas of this soil are used for cultivated crops. A few areas are woodland.

This soil is well suited to row crops and small grains. Erosion is a hazard. The main limitation is droughtiness in some years. Crops can be irrigated. Stripcropping, conservation tillage, and cover crops reduce runoff and help to control erosion. Crop residue mixed into the soil helps to increase or maintain the organic matter content of the surface layer.

This soil is well suited to grasses and legumes for hay and pasture. Plants that tolerate drought in late summer produce the highest yields. The main management concern is overgrazing, which causes surface compaction and reduces the hardiness and density of plants. Proper stocking rates, timely grazing, and, during wet periods, restricted grazing help to maintain the desirable species of pasture plants and to reduce surface compaction.

Potential productivity for eastern white pine on this soil is high. There are no major limitations to woodland management. Plant competition during regeneration is moderate if conifers are grown. Thinning crowded stands to accepted, standard stocking levels allows more vigorous growth. Shelterwood cutting, seed-tree cutting, and clearcutting establish natural regeneration or provide suitable planting sites. In some areas removing or controlling competing vegetation is needed for the best growth of newly established seedlings. Pruning improves the quality of white pine.

There are no major limitations to use of this soil for building site development. Constructing roads on well compacted, coarse textured base material helps to prevent the damaged pavement caused by frost action. Ground water contamination is a hazard if the soil is used as sites for septic tank absorption fields. The soil readily absorbs effluent but does not adequately filter it.

This map unit is in capability subclass IIe.

CoC—Copake fine sandy loam, 8 to 15 percent slopes. This is a strongly sloping, very deep, somewhat excessively drained soil on smooth, undulating areas.

Individual areas are elongated and irregularly shaped and range from 5 to 40 acres.

Typically, the surface layer is dark brown fine sandy loam about 4 inches thick. The subsoil is about 22 inches thick. In the upper 17 inches it is brown, very friable gravelly fine sandy loam, and in the lower 5 inches it is dark yellowish brown, very friable fine sandy loam. The substratum is dark brown, dark yellowish brown, and grayish brown, stratified loamy fine sand to very gravelly sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Groton and Hero soils. The included soils make up about 5 to 10 percent of the map unit.

Permeability of this Copake soil is moderate or moderately rapid in the subsoil and very rapid in the substratum. The available water capacity is moderate. The root zone is restricted at a depth of about 48 inches by the loose sand and gravel. In some years the soil is droughty in late summer. It is very strongly acid to neutral in the surface layer, strongly acid to neutral in the subsoil, and slightly acid to moderately alkaline in the substratum.

Most areas of this soil are used as farmland. A few areas are covered by trees and brush.

This soil is well suited to row crops and small grains. The main limitation is droughtiness in some years. Erosion is a hazard. Crops can be irrigated. Conservation tillage, crop rotation, and contour farming help to control erosion.

This soil is well suited to grasses and legumes for hay and pasture. Plants that tolerate droughtiness in late summer produce the highest yields. The main management concern is overgrazing, which causes surface compaction, increases surface runoff, and reduces the hardiness and density of plants. Proper stocking rates, timely grazing, and, during wet periods, restricted grazing help to maintain the desirable species of pasture plants, to prevent surface compaction, and to reduce runoff.

Potential productivity for eastern white pine on this soil is high. There are no major limitations to woodland management. Plant competition during regeneration is moderate if conifers are grown. Thinning crowded stands to accepted, standard stocking levels allows more vigorous growth. Shelterwood cutting, seed-tree cutting, and clearcutting establish natural regeneration or provide suitable planting sites. Removing or controlling competing vegetation is needed for the best growth of newly established seedlings. Pruning improves the quality of white pine.

Designing buildings to conform to the natural slope of the land helps to overcome the slope limitation and to control erosion in disturbed areas. Extensive cut-and-fill is generally needed when constructing roads on this soil. Constructing roads on the contour, if possible, and planting roadbanks to well adapted grasses help to control erosion. Using a well compacted, coarse textured base material helps to prevent the damaged pavement caused by frost heave. The main limitations to use of the soil as sites for septic tank absorption fields are slope and the rapid permeability. Ground water contamination is a hazard if the soil is used as sites for septic tank absorption fields. The soil readily absorbs effluent but does not adequately filter it. The distribution lines can be installed across the slope, but additional measures are needed for adequate filtering of the effluent.

This map unit is in capability subclass IIIe.

CoD—Copake fine sandy loam, 15 to 25 percent slopes. This is a moderately steep, very deep, somewhat excessively drained soil in smooth, undulating areas. Individual areas of this soil are elongated and irregularly shaped, and range from 5 to 40 acres.

Typically, the surface layer is dark brown fine sandy loam about 4 inches thick. The subsoil is about 22 inches thick. In the upper 17 inches it is brown, very friable fine sandy loam, and in the lower 5 inches it is dark yellowish brown, very friable fine sandy loam. The substratum is dark brown, dark yellowish brown, and grayish brown, stratified loamy fine sand to very gravelly sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Groton and Hero soils. The included soils make up about 10 to 15 percent of the map unit.

Permeability of this Copake soil is moderate or moderately rapid in the subsoil and very rapid in the substratum. The available water capacity is moderate. The root zone is restricted at a depth of about 48 inches by the loose sand and gravel. In some years the soil is droughty in late summer. It is very strongly acid to neutral in the surface layer, strongly acid to neutral in the subsoil, and slightly acid to moderately alkaline in the substratum.

Most areas of this soil, once used as farmland, are mixed brushland and woodland.

This soil is poorly suited to row crops and small grains. Erosion is a hazard. The main limitation is slope. Conservation tillage, crop rotation, and contour farming help to control erosion.

This soil is fairly well suited to grasses and legumes for hay and pasture. Plants that tolerate droughtiness in late summer produce the highest yields. The main management concern is overgrazing, which causes surface compaction, increases surface runoff, and reduces the hardiness and density of plants. Proper stocking rates, timely grazing, and, during wet periods, restricted grazing help to maintain the desirable species of pasture plants, to prevent surface compaction, and to reduce runoff.

Potential productivity for eastern white pine on this soil is high. Erosion is a hazard. The main management concerns are slope and the equipment limitation. Plant competition is moderate if conifers are grown. Constructing access roads and trails on the contour and installing water bars help to control erosion. Minimizing soil disturbance and retaining the sponge-like mulch of leaves help to increase absorption of precipitation, to reduce runoff, and to control erosion. Thinning woodlands of undesired stock, such as dead or diseased trees, or removing trees in crowded areas allows more vigorous growth and regeneration of preferred trees. Thinning allows restocking or replanting of preferred trees. Removing and controlling competing understory vegetation allows the best growth of new plantings. In some areas hand-planting is needed. Pruning is a suitable practice for white pine and red pine.

The main limitation to use of this soil as sites for buildings is slope. Extensive land shaping is generally needed. Designing buildings and lots to conform to the natural slope of the land help to overcome the slope limitation and to control erosion in disturbed areas. Extensive cut-and-fill is generally needed when constructing roads on the soil. Constructing roads on the contour, if possible, and planting roadbanks to well adapted grasses help to control erosion. Using a well compacted, coarse textured base material helps to prevent the damaged pavement caused by frost heave. The main limitation to use of the soil as sites for septic tank absorption fields are slope and the very rapid permeability. Ground water contamination is a hazard if the soil is used as sites for septic tank absorption fields. The soil readily absorbs effluent but does not adequately filter it. The distribution lines can be installed across the slope, but additional measures are needed for adequate filtering of the effluent.

This map unit is in capability subclass IVe.

CuC—Copake-Urban land complex, 0 to 15 percent slopes. This map unit consists of very deep, nearly level to moderately steep, somewhat excessively drained Copake soil and Urban land on glacial outwash terraces. A typical area of the map unit is about 55 percent Copake soil, 25 percent Urban land, and 20 percent other soils. The Copake soil is in vacant lots and is used as lawns, parks, and other areas that are interspersed with buildings and streets. Urban land consists of areas of soils that have been altered or have been obscured by urban works and structures. The Copake soil and Urban land are in areas so small or intermixed that they could not be mapped separately at the scale selected for mapping. Areas of the complex are irregular in shape and range from 10 to several hundred acres.

Typically, the surface layer of the Copake soil is dark brown, very friable fine sandy loam about 4 inches thick. The subsoil is brown, very friable gravelly fine sandy loam and dark yellowish brown, very friable fine sandy loam about 22 inches thick. The substratum is dark brown, dark yellowish brown, and grayish brown stratified loamy sand to very gravelly sand to a depth of 60 inches or more.

Included with this complex in mapping are the excessively drained Groton and Hinckley soils, the well drained Merrimac and Oakville soils on steeper slopes, and the wetter Hero and Fredon soils in depressions and drainageways. The included soils make up about 15 to 20 percent of the complex.

Permeability of the Copake soil is moderate or moderately rapid in the subsoil and very rapid in the substratum. The available water capacity is moderate. The Copake soil ranges from very strongly acid to neutral in the surface layer, strongly acid to neutral in the subsoil, and slightly acid to moderately alkaline in the substratum.

Potential productivity for eastern white pine on the Copake soil is high. There are no major limitations to woodland management. Plant competition during regeneration is moderate if conifers are grown. Thinning crowded stands to accepted, standard stocking levels allows more vigorous growth. Shelterwood cutting, seed-tree cutting, and clearcutting establish natural regeneration or provide suitable planting sites. In some areas removing or controlling competing vegetation is needed for the best growth of newly established seedlings. Pruning improves the quality of white pine.

Onsite investigation is needed to determine the suitability of the Copake soil for any use. There are few limitations to most urban uses. The main limitation to use of the soil as sites for most sanitary waste disposal facilities is the rapid permeability in the substratum.

This map unit has not been assigned to a capability subclass.

DeA—Deerfield loamy fine sand, 0 to 3 percent slopes. This is a nearly level, very deep, moderately well drained soil in slightly convex positions at the base of the steeper slopes and on flat ridgetops. Areas are irregular in shape and range from 5 to 50 acres.

Typically, the surface layer is dark brown loamy fine sand about 6 inches thick. The subsoil is about 20 inches thick. In the upper 5 inches it is light olive brown, very friable loamy fine sand. In the next 5 inches it is dark grayish brown loamy fine sand. In the lower 10 inches it is olive brown, loose loamy fine sand. The substratum is olive gray loamy fine sand and coarse sand to a depth of 60 inches or more.

Included with this soil in mapping are areas of soils where gravel makes up more than 20 percent of the substratum, by volume. Also included, in most map units, are small areas of the somewhat excessively drained Hoosic soils. Also included are areas of Wareham soils in slight, concave depressions and soils that have slope of 3 to 8 percent at the perimeter of a few map units. The included soils make up about 10 to 15 percent of the map unit.

Permeability of this Deerfield soil is rapid in the subsoil and rapid or very rapid in the substratum. The available water capacity is low. The seasonal high water table is at a depth of 1 1/2 to 3 feet in winter and early spring. The root zone is restricted at a depth of about 26 inches by the loose sand and the seasonal high water table. The soil is droughty in late summer. It is very strongly acid to moderately acid throughout.

Most areas of this soil are used for row crops. A few areas are covered by mixed brushland and woodland.

This soil is fairly well suited to row crops and small grains. The main limitation is the seasonal high water table. In some years planting and harvesting are delayed because of wetness. Crop residue returned to the soil helps to maintain or to increase the organic matter content in the surface layer.

This soil is fairly well suited to hay and pasture. The main management concern is overgrazing, which causes surface compaction and reduces the hardiness and density of plants. Proper stocking rates, timely grazing, and, during wet periods, restricted grazing help to maintain the desired species of pasture plants and to prevent surface compaction.

Potential productivity for eastern white pine on this soil is high. There are no major limitations to woodland management. Plant competition during regeneration is moderate if conifers are grown. Thinning crowded stands to accepted, standard stocking levels allows more vigorous growth. Shelterwood cutting, seed-tree cutting, and clearcutting establish natural regeneration or provide suitable planting sites. Removing or controlling competing vegetation is needed for the best growth of newly established seedlings. Pruning improves the quality of white pine.

Constructing buildings without basements and above the seasonal high water table helps to prevent the interior damage caused by wetness. Tile drains laid around foundations helps to reduce wetness. Landscaping designed to drain surface runoff away from buildings provides added protection against damage caused by wetness. Constructing roads on raised, coarse textured base material and providing adequate side ditches and culverts help to prevent the damaged pavement caused by wetness and frost action. The main limitations to use of the soil as sites for septic tank absorption fields are the seasonal high water table and the rapid or very rapid permeability. Ground water contamination is a hazard if the soil is used as sites for septic tank absorption fields. The soil readily absorbs effluent but does not adequately filter it. The distribution lines can be installed in a more suitable fill material to increase the lateral and downward flow of effluent.

This map unit is in capability subclass IIIw.

FaC—Farmington loam, 3 to 15 percent slopes, rocky. This is a gently sloping to strongly sloping, shallow, well drained soil on glaciated uplands. These soils are typically on the upper slopes. In some areas rock crops out on the surface. Areas of this map unit are irregular in shape and range from 10 to 50 acres.

Typically, the surface layer is very dark grayish brown, friable loam about 9 inches thick. The subsoil is about 8 inches thick. It is yellowish brown and dark yellowish brown friable loam and gravelly loam. Bedrock is at a depth of about 17 inches.

Included with this soil in mapping are the deep Pittsfield and Nellis soils in long, sloping areas. Also included are areas that have a few inches of disintegrated limestone overlying hard bedrock. Also included are small areas of the wet Kendaia and Lyons soils in depressions and drainageways. The included soils make up about 20 percent of the map unit. Also included are areas of rock outcrop. These areas make up about 10 percent of the map unit.

Permeability in the Farmington soil is moderate. The available water capacity is low. The root zone is restricted by the underlying bedrock at a depth of 8 to 20 inches. The soil is slightly acid in the surface layer and ranges from slightly acid to mildly alkaline in the subsoil.

Most areas of this soil are used for unimproved pasture and are woodland.

This soil is generally not suitable for cultivated crops because of droughtiness and rock outcrops.

This soil is fairly well suited to hay and pasture. Proper stocking rates, deferred grazing, and rotation grazing help to maintain the desirable species of pasture plants.

This soil is poorly suited to use as woodland because of the shallow depth to bedrock and the low available water capacity. Growth and survival are poor. In some areas the use of equipment is restricted because of rock outcrops. In some areas tree plantings are practical if special practices are used.

Excavation for building sites is hindered by bedrock. In most areas the bedrock, which is very hard or cemented, can be excavated only by large machinery. Road construction is generally hindered by bedrock, and large machinery is generally required for excavations. The main limitation to use of the soil as sites for septic tank absorption fields is the shallow depth to bedrock.

This map unit is in capability subclass VIs.

FcC—Farmington-Rock outcrop complex, 3 to 15 percent slopes. This map unit consists of the Farmington soil and areas of Rock outcrop. A typical area of the map unit is about 55 percent Farmington soil, 30 percent Rock outcrop, and 15 percent other soils. The Farmington soil is gently sloping to strongly sloping, shallow, and well drained. It is between rock outcrops and rock ridges and crests on the upper slopes of glaciated uplands. Rock outcrop consists of areas where limestone bedrock crops out on the surface. The Farmington soil and Rock outcrop are in areas so small or intermixed that they could not be mapped separately at the scale selected for mapping. Areas of the map unit are irregular in shape and range from 10 to 100 acres.

Typically, the surface layer of the Farmington soil is very dark grayish brown, friable loam about 9 inches thick. The subsoil is about 8 inches thick. It is yellowish brown and dark yellowish brown, friable loam and gravelly loam. Bedrock is at a depth of about 17 inches.

Included with this unit in mapping are the deep Pittsfield and Nellis soils in long, sloping areas. Also included are small, wet areas of Kendaia and Lyons soils in depressions and drainageways. The included areas make up about 15 percent of the map unit.

Permeability in the Farmington soil is moderate. The available water capacity is low. The root zone is restricted by the underlying bedrock at a depth of 8 to 20 inches. The soil is slightly acid in the surface layer and ranges from slightly acid to mildly alkaline in the subsoil.

Most areas of this map unit are woodland.

The Farmington soil is generally not suitable for cultivated crops, hay, and pasture because of droughtiness and rock outcrops. It can be used for unimproved pasture. Proper stocking rates, deferred grazing, and rotation grazing help to maintain the desirable species of pasture plants.

The Farmington soil is poorly suited to use as woodland because of the shallow depth to bedrock and the low available water capacity. Growth and survival are poor. In some areas equipment operations are restricted because of rock outcrops. In some areas tree plantings are practical if special practices are used.

Excavation for building sites is hindered by bedrock. In most areas the bedrock, which is very hard or cemented, can be excavated only by large machinery. In some areas road construction is hindered by bedrock, and large machinery is generally required for excavations. The main limitation to use of the soil as sites for septic tank absorption fields is the shallow depth to bedrock.

This map unit is in capability subclass VIIs.

FcD—Farmington-Rock outcrop complex, 15 to 35 percent slopes. This map unit consists of the Farmington soil and areas of Rock outcrop. A typical area of the map unit is about 50 percent Farmington soil, 45 percent Rock outcrop, and 5 percent other soils. The Farmington soil is moderately steep and steep, shallow, and well drained. Typically, it is between rock outcrops and rock ridges and crests on the upper slopes of glaciated uplands. Rock outcrop consists of areas where limestone bedrock crops out on the surface. Many stones and boulders cover the surface. Areas of the map unit are irregular in shape and range from 15 to 200 acres.

Typically, the surface layer of the Farmington soil is very dark grayish brown, friable loam about 9 inches thick. The subsoil is yellowish brown and dark yellowish brown, friable loam and gravelly loam about 8 inches thick. Bedrock is at a depth of about 17 inches.

Included with this unit in mapping are the deep Pittsfield and Nellis soils in long, sloping areas. Also included are small, wet areas of Amenia soils in drainageways. The included areas make up about 5 percent of the map unit.

Permeability in the Farmington soil is moderate. The available water capacity is low. The root zone is restricted by the underlying bedrock at a depth of 8 to 20 inches. The soil is slightly acid in the surface layer and ranges from slightly acid to mildly alkaline in the subsoil.

Most areas of this map unit are woodland.

The Farmington soil generally is not suitable for cultivated crops, hay, and pasture because of slope, rock outcrops, and shallow depth to bedrock.

The Farmington soil is poorly suited to use as woodland because of the shallow depth to bedrock, the low available water capacity, and slope. Growth and survival are poor. In some areas equipment operations are restricted because of rock outcrops and slope. Thinning is generally not a good practice because windthrow is a moderate hazard. Minimizing soil disturbance and retaining the sponge-like mulch of leaves help to increase the absorption of precipitation, to reduce runoff, and to control erosion. In some areas tree plantings are practical if special practices are used.

The main limitations to use of the Farmington soil as sites for buildings are slope and the shallow depth to bedrock. Extensive land shaping and blasting of bedrock are generally necessary. Constructing roads on the contour, if possible, and planting roadbanks to well adapted grasses help to control erosion. In some areas road construction is hindered by bedrock. Roads should be relocated if more suitable areas are nearby. The main limitations to use of the Farmington soil as sites for septic tank absorption fields are the shallow depth to bedrock and slope.

This map unit is in capability subclass VIIs.

FrA—Fredon fine sandy loam, 0 to 3 percent slopes. This is a nearly level, very deep, poorly drained soil on outwash plains and stream terraces. Areas are irregular in shape and range from 5 to 50 acres.

Typically, the surface layer is very dark grayish brown fine sandy loam about 8 inches thick. The subsoil is about 18 inches thick. In the upper 6 inches it is yellowish brown, friable fine sandy loam. In the next laye it is dark yellowish brown, friable fine sandy loam about 4 inches thick. In the lower 8 inches it is grayish brown, friable fine sandy loam. The substratum is grayish brown loamy fine sand to a depth of 60 inches or more.

Included with this soil in mapping are areas of Hero and Halsey soils and areas of Fredon soils that have a subsoil and a substratum that have silt and very fine sand. Also included are a few small areas of soils that have slope of more than 3 percent. The included soils make up about 15 percent of the map unit.

Permeability of this Fredon soil is moderate to moderately slow in the subsoil and rapid in the substratum. The available water capacity is high. The root zone is restricted below the upper part of the subsoil. The seasonal high water table is at or near the surface from October through June. The root zone in the lower part of the subsoil and in the substratum is restricted by the seasonal high water table. Reaction ranges from slightly acid to neutral in the surface layer and the subsoil and from slightly acid to moderately alkaline in the substratum.

Most areas of this soil are wooded. Some areas are used for unimproved pasture and hay (fig. 11). Some areas are drained and used for cultivated crops.

This soil is poorly suited to row crops, hay, and improved pasture unless it is artificially drained. The seasonal high water table limits plant growth and the use of machinery. If suitable outlets are available, drainage is generally easy to install. Proper stocking rates, deferred grazing, and rotation grazing help to maintain the desirable species of plants for unimproved pasture. Restricted grazing when the soil is wet helps to prevent cutting the sod and thus maintains pasture production.

Potential productivity for red maple on this soil is moderate. The main management concerns are the seasonal high water table, high seedling mortality, and the windthrow hazard. The use of equipment is limited by the low soil strength except during periods when the soil is dry or frozen. Thinning minimizes windthrow by locating and orienting cuts to reduce wind effects, by keeping residual stand density at or slightly above standard stocking levels, and by limiting changes in stand density to 30 percent or less.

Constructing buildings without basements and above the seasonal high water table helps to prevent the interior damage caused by wetness. Tile drains laid around foundations help to reduce wetness. Landscaping designed to drain surface water away from buildings provides added protection against damage caused by wetness. Constructing roads on raised, coarse textured base material and providing adequate side ditches and culverts help to prevent the damaged pavement caused by the seasonal high water table and frost heave. The main limitations to use of the soil as sites for septic tank absorption fields are the seasonal high water table and the rapid permeability. Ground water contamination is a hazard if the soil is used as sites for septic tank absorption fields because the soil does not adequately filter the effluent. Placing the distribution lines in a suitable fill material helps to filter adequately the effluent.

This map unit is in capability subclass IIIw.

Figure 11.—In the foreground, a typical area of Fredon fine sandy loam, 0 to 3 percent slopes. The pasture in the background is in an area of Hero loam, 0 to 3 percent slopes. The Hero soil is well suited to grasses and legumes for hay and pasture.

FwC—Fullam-Lanesboro association, rolling, very stony. This map unit consists of very deep, moderately well drained Fullam soils and very deep, well drained Lanesboro soils. It is about 60 percent Fullam soils, 20 percent Lanesboro soils, and 20 percent other soils. These soils are on the sides of hills and mountains. Fullam soils are typically on the lower part of side slopes or in slightly concave areas, and Lanesboro soils are typically on the upper parts of side slopes or in convex areas. Slopes range from 3 to 15 percent. Stones and boulders, about 5 to 100 feet apart, are on the landscape. Areas of the individual soils are large enough to map separately, but in considering the present and predicted use they were mapped as one unit. Areas of this map unit are irregularly shaped and range from 60 to 300 acres.

Typically, the surface layer of Fullam soils is dark brown, friable silt loam about 7 inches thick. The subsoil is about 13 inches thick. It is olive brown and olive, friable silt loam and gravelly silt loam that is mottled in the lower part. The substratum is olive gray, mottled, very firm gravelly silt loam to a depth of 60 inches or more.

Typically, the surface layer of Lanesboro soils is very dark gray, friable loam about 2 inches thick. The subsurface layer is dark brown gravelly silt loam about 2 inches thick. The subsoil is about 25 inches thick. In the upper part it is dark yellowish brown, friable gravelly silt loam. In the middle part it is yellowish brown, friable, gravelly silt loam. In the bottom part it is yellowish brown, friable gravelly loam. The substratum is light olive brown, firm gravelly loam to a depth of 60 inches or more.

Included with these soils in mapping are areas of the poorly drained Brayton soils and very poorly drained mineral and organic soils on nearly level slopes and depressions. Also included, on hillsides, are areas of Taconic soils, which are shallow to bedrock. Also included are areas of Macomber soils on hills and knolls. The included soils make up about 20 percent of the map unit.

Permeability of Fullam and Lanesboro soils is moderate in the subsoil and slow in the substratum. The available water capacity of both soils is moderate. The seasonal high water table is perched above the substratum of both soils for brief periods in winter and spring and after prolonged rains. The root zone is restricted by the firm or very firm substratum. Both soils range from very strongly acid to moderately acid throughout.

Most areas of these soils are woodland. Some areas have been cleared, and some areas are used for pasture and cultivated crops.

These soils are generally not suitable for cultivated crops because of the stones on the surface. In cleared areas these soils are well suited to cultivated crops, hay, and pasture. Mixing corn residue and manure into the surface layer improves soil tilth and increases the organic matter content. Conservation tillage, crop rotation, and contour farming help to reduce runoff and to control erosion. Proper stocking rates, deferred grazing, and rotation grazing help to maintain the desirable species of pasture plants.

Potential productivity is moderate for northern red oak on Fullam soils and is high for eastern white pine on Lanesboro soils. There are no major limitations to woodland management. Plant competition during regeneration is moderate if conifers are grown. Thinning crowded stands to accepted, standard stocking levels allows more vigorous growth. Shelterwood cutting, seed-tree cutting, and clearcutting establish natural regeneration or provide suitable planting sites. Removing or controlling competing vegetation is needed for the best growth of newly established seedlings.

Constructing buildings with the lower level or basement above the seasonal high water table helps to prevent the interior damage caused by wetness. Tile drains laid around foundations help to reduce wetness. In some areas land shaping is needed because of slope. Landscaping designed to drain surface runoff away from buildings provides added protection against damage caused by wetness. Constructing roads on the contour, if possible, and planting roadbanks to well adapted grasses help to control erosion. Using a well compacted, coarse textured base material helps to prevent the damaged pavement caused by the seasonal high water table and frost heave. The main limitations to use of these soils as sites for septic tank absorption fields are the seasonal high water table in Fullam soils and the slow permeability in Fullam and Lanesboro soils. The distribution lines can be installed in a suitable fill material to adequately filter the effluent.

Some areas of the included soils, which are as much as 20 acres, have fewer or more restricting limitations than those of Fullam and Lanesboro soils for the intended use. Onsite investigation is needed to determine the suitability of particular areas for any use.

This map unit is in capability subclass VIs.

GrA—Groton gravelly sandy loam, 0 to 3 percent slopes. This is a nearly level, very deep, excessively drained soil in slightly convex areas at the base of gently sloping areas or on flat terraces. Individual areas are irregular in shape and range from 5 to 200 acres.

Typically, the surface layer is very dark grayish brown, very friable gravelly sandy loam about 6 inches thick. The subsoil is yellowish brown, friable gravelly sandy loam about 9 inches thick. The substratum is dark grayish brown and olive brown sand and gravel to a depth of 60 inches or more.

Included with this soil in mapping are a few areas of soils that have a surface layer of fine sandy loam and some areas of soils that have less gravel in the substratum. Also included, in most map units, are small areas of Copake soils. Also included, in slightly concave depressions, are areas of Hero and Fredon soils. Also included, at the edge of a few map units, are soils that have slope of more than 3 percent. The included soils make up about 10 to 15 percent of the map unit.

Permeability of this Groton soil is moderately rapid in the subsoil and very rapid in the substratum. The available water capacity is low. The surface layer is easily tilled under proper moisture conditions. The root zone is restricted at a depth of about 15 inches by the loose sand and gravel. This soil is droughty in late summer. The soil is moderately acid to neutral in the surface layer and the subsoil and neutral to moderately alkaline in the substratum.

Most areas of this soil are used for crops and hay. A few areas are woodland.

This soil is well suited to row crops and small grains. The main limitation is droughtiness. Crop residue mixed into the soil helps to increase or maintain the organic matter content of the surface layer.

This soil is well suited to grasses and legumes for hay and pasture. Plants that tolerate drought in late summer produce the highest yields. The main management concern is overgrazing, which causes surface compaction and reduces the hardiness and density of plants. Proper stocking rates, deferred grazing, and, during wet periods, restricted grazing, help to maintain the desired species of pasture plants and to prevent surface compaction.

Potential productivity for eastern white pine on this soil is high. The main management concern is moisture stress caused by the low available water capacity. Thinning crowded stands to accepted, standard stocking levels while removing diseased, poorly formed, and otherwise undesirable trees allows more vigorous growth. Shelterwood cutting, seed-tree cutting, and clearcutting establish natural regeneration or provide suitable planting sites. In some areas removing or controlling competing vegetation is needed for the best growth of newly established seedlings. Minimizing soil disturbance and retaining the sponge-like mulch of leaves help to increase the absorption of precipitation. Designing regeneration cuts to preserve shade and reduce evapotranspiration helps to retain the limited soil moisture.

There are no major limitations to use of this soil for building site development and for local roads. Ground water contamination is a hazard if the soil is used as sites for septic tank absorption fields. The soil readily absorbs the effluent but does not adequately filter it.

This map unit is in capability subclass IIIs.

GrB—Groton gravelly sandy loam, 3 to 8 percent slopes. This is a gently sloping, very deep, excessively drained soil in slightly convex areas on the sides and tops of terraces and outwash plains. Individual areas are irregular in shape and range from 5 to 300 acres.

Typically, the surface layer is very dark grayish brown, very friable gravelly sandy loam about 6 inches thick. The subsoil is yellowish brown, friable gravelly sandy loam about 9 inches thick. The substratum is dark grayish brown and olive brown sand and gravel to a depth of 60 inches or more.

Included with this soil in mapping are a few areas of soils where the surface layer is fine sandy loam and some areas of soils where less gravel is in the substratum. Also included, in most map units, are small areas of Copake soils. Also included, at the edge of a few map units, are areas of soils that have slope of more than 8 percent. The included soils make up about 5 to 10 percent of the map unit.

Permeability of this Groton soil is moderately rapid in the subsoil and very rapid in the substratum. The available water capacity is low. The surface layer is easily tilled under proper moisture conditions. The root zone is restricted at a depth of about 15 inches by the loose sand and gravel. This soil is droughty in late summer. Reaction ranges from moderately acid to neutral in the surface layer and the subsoil and neutral to moderately alkaline in the substratum.

Most areas of this soil are used for crops and hay. A few areas are woodland.

This soil is well suited to row crops and small grains. The main limitation is droughtiness. Crop residue returned to the soil helps to increase or maintain the organic matter content of the surface layer.

This soil is well suited to grasses and legumes for hay and pasture. Plants that tolerate drought in late summer produce the highest yields. The main management concern is overgrazing, which causes surface compaction and reduces the hardiness and density of plants. Proper stocking rates, deferred grazing, and, during wet periods, restricted grazing, help to maintain the desired species of plants and to reduce surface compaction.

Potential productivity for eastern white pine on this soil is high. The main management concern is moisture stress caused by the low available water capacity. Thinning crowded stands to accepted, standard stocking levels while removing diseased, poorly formed, and otherwise undesirable trees allows more vigorous growth. Shelterwood cutting, seed-tree cutting, and clearcutting establish natural regeneration or provide suitable planting sites. In some areas removing or controlling competing vegetation is needed for the best growth of newly established seedlings. Minimizing soil disturbance and retaining the sponge-like mulch of leaves help to increase the absorption of precipitation. Designing regeneration cuts to preserve shade and reduce evapotranspiration helps to retain the limited soil moisture.

There are no major limitations to use of this soil for building site development and for local roads. Ground water contamination is a hazard if the soil is used as sites for septic tank absorption fields. The soil readily absorbs the effluent but does not adequately filter it.

This map unit is in capability subclass IIIs.

GrC—Groton gravelly sandy loam, 8 to 15 percent slopes. This is a strongly sloping, very deep, excessively drained soil in elongated, irregularly shaped, rolling areas. Slopes are convex and as much as 300 feet long. Areas of this soil are irregular in shape and range from 5 to 80 acres.

Typically, the surface layer is very dark grayish brown, very friable gravelly sandy loam about 6 inches thick. The subsoil is yellowish brown, friable gravelly sandy loam about 9 inches thick. The substratum is dark grayish brown and olive brown, stratified sand and gravel to a depth of 60 inches or more. In some areas the upper part of the subsoil is gravelly fine sandy loam.

Included with this soil in mapping are areas of soils where the surface layer is fine sandy loam and a few areas of soils where some of the original surface layer has been removed by erosion. Also included, in most map units, are small areas of Copake soils. Also included, at the base of many slopes, are areas of Hero soils. The included soils make up about 5 to 10 percent of the map unit.

Permeability of this Groton soil is moderately rapid in the subsoil and very rapid in the substratum. The available water capacity is low. The surface layer is easily tilled under proper moisture conditions. The root zone is restricted at a depth of about 15 inches by the loose sand and gravel. This soil is droughty in late summer. It ranges from moderately acid to neutral in the surface layer and the subsoil and neutral to moderately alkaline in the substratum.

Most areas of this soil are used as farmland. A few areas are mixed brushland and woodland.

This soil is poorly suited to cultivated crops. Hay included in the crop rotation helps to reduce runoff and to control erosion. Contour stripcropping and conservation tillage help to reduce runoff and to control erosion.

This soil is fairly well suited to grasses and legumes for hay and pasture. Plants that tolerate drought in late summer produce the highest yields. The main management concern is overgrazing, which causes surface compaction, increases surface runoff, and reduces the hardiness and density of plants. Proper stocking rates, timely grazing, and, during wet periods, restricted grazing, help to maintain the desired species of pasture plants, to prevent surface compaction, and to reduce runoff.

Potential productivity for eastern white pine on this soil is high. The main management concern is moisture stress caused by the low available water capacity. Thinning crowded stands to accepted, standard stocking levels while removing diseased, poorly formed, and otherwise undesirable trees allows more vigorous growth. Shelterwood cutting, seed-tree cutting, and clearcutting establish natural regeneration or provide suitable planting sites. In some areas removing or controlling competing vegetation is needed for the best growth of newly established seedlings. Minimizing soil disturbance and retaining the sponge-like mulch of leaves help to increase the absorption of precipitation. Designing regeneration cuts to preserve shade and reduce evapotranspiration helps to retain the limited soil moisture.

Buildings designed to conform to the natural slope of the land help to overcome the slope limitation and to control erosion in disturbed areas. In some areas land shaping is needed. Constructing roads on the contour, if possible, and planting roadbanks to well adapted grasses help to control erosion. The main limitations to use of the soil as sites for septic tank absorption fields are slope and permeability. Ground water contamination is a hazard if the soil is used as sites for septic tank absorption fields because the soil does not adequately filter the effluent. Installing distribution lines across the slope help to overcome the slope limitation, but in some areas additional measures are needed to filter adequately the effluent.

This map unit is in capability subclass IVs.

GrD—Groton gravelly sandy loam, 15 to 25 percent slopes. This is a moderately steep, very deep, excessively drained soil on elongated and irregularly shaped, hilly areas. Slopes are convex and as much as 100 feet long. Areas of the soil are irregular in shape and range from 5 to 40 acres.

Typically, the surface layer is very dark grayish brown gravelly sandy loam 6 inches thick. The subsoil is yellowish brown, friable gravelly sandy loam about 9 inches thick. The substratum is dark grayish brown and olive brown sand and gravel to a depth of 60 inches or more. In a few areas the upper part of the subsoil is gravelly fine sandy loam.

Included with this soil in mapping are areas of soils where the surface layer is fine sandy loam and a few areas of soils where most of the original surface layer has been removed by erosion. Also included, in most map units, are small areas of Copake soils. The included soils make up about 5 percent of the map unit.

Permeability of this Groton soil is moderately rapid in the subsoil and very rapid in the substratum. The available water capacity is low. The surface layer is very friable. The root zone is restricted at a depth of about 15 inches by the loose sand and gravel. The soil is droughty in late summer. It ranges from moderately acid to neutral in the surface layer and the subsoil and neutral to moderately alkaline in the substratum.

Most areas of this soil, which were once used for hay and pasture, are mixed brushland and woodland.

This soil generally is not suitable for row crops and small grains. The main limitation is droughtiness. Erosion is a hazard. Conservation tillage, crop rotation, contour farming, or a combination of these practices helps to control erosion.

This soil is poorly suited to grasses and legumes for hay and pasture. Plants that tolerate drought in late summer produce the highest yields. The main management concern is overgrazing, which causes surface compaction, increases surface runoff, and reduces the hardiness and density of plants. Proper stocking rates, deferred grazing, and, during wet periods, restricted grazing, help to maintain the desirable species of pasture plants, to prevent surface compaction, and to reduce runoff.

Potential productivity for eastern white pine on this soil is high. The main management concerns are droughtiness and the hazard of erosion. Thinning crowded stands to accepted, standard stocking levels while removing diseased, poorly formed, and otherwise undesirable trees allows more vigorous growth. Shelterwood cutting, seed-tree cutting, and clearcutting establish natural regeneration or provide suitable planting sites. In some areas removing or controlling competing vegetation is needed for the best growth of newly established seedlings. Minimizing soil disturbance and retaining the sponge-like mulch of leaves help to increase the absorption of precipitation. Designing regeneration cuts to preserve shade and reduce evapotranspiration helps to retain the limited soil moisture. Constructing access roads and trails with grades between 2 and 10 percent and installing water bars help to control erosion.

The main limitation to use of the soil as sites for buildings is slope. Extensive land shaping is generally needed. Buildings and lots designed to conform to the natural slope of the land help to overcome the slope limitation and to control erosion in disturbed areas. Extensive cut-and-fill is generally needed when constructing roads on this soil. Constructing roads on the contour and planting roadbanks to well adapted grasses help to control erosion. The main limitations to use of the soil as sites for septic tank absorption fields are slope and the very rapid permeability. Ground water contamination is a hazard if the soil is used as sites for septic tank absorption fields because the soil does not filter adequately the effluent. Distribution lines installed across the slope help to overcome the slope limitation, but in some areas additional precautionary measures are needed to filter adequately the effluent.

This map unit is in capability subclass VIs.

GsE—Groton and Hinckley gravelly sandy loams, 25 to 35 percent slopes. This map unit consists of steep, very deep, excessively drained soils on elongated, irregularly shaped areas. It is about 50 percent Groton soils, 40 percent Hinckley soils, and 10 percent other soils, but the proportion is different in each mapped area. The Groton and Hinckley soils were mapped together because they are similar in use and management. Slopes are convex and typically are 50 to 100 feet long. Areas of these soils range from 5 to 50 acres.

Typically, the surface layer of Groton soils is very dark grayish brown gravelly sandy loam about 6 inches thick. The subsoil is yellowish brown, friable gravelly sandy loam about 9 inches thick. The substratum is dark grayish brown and olive brown sand and gravel to a depth of 60 inches or more.

Typically, the surface layer of Hinckley soils is very dark grayish brown gravelly sandy loam about 9 inches thick. The subsoil is yellowish brown very gravelly loamy sand about 14 inches thick. The substratum is yellowish brown extremely gravelly sand to a depth of 60 inches or more.

Included with these soils in mapping are areas of soils where the surface layer is gravelly fine sandy loam and a few areas of soils where most of the original surface layer has been removed by erosion. Also included are small areas of Copake and Merrimac soils. The included soils make up about 0 to 10 percent of the map unit.

Permeability of Groton soils is moderately rapid in the subsoil and very rapid in the substratum. Permeability of Hinckley soils is rapid in the subsoil and very rapid in the substratum. The available water capacity is low in both soils. The root zone is restricted at a depth of about 15 inches by the loose sand and gravel. These soils are droughty most of the time. Groton soils range from moderately acid to neutral in the surface layer and the subsoil and from neutral to moderately alkaline in the substratum. Hinckley soils range from extremely acid to moderately acid throughout.

Most areas of these soils are wooded. These soils are generally not suited to cultivated crops and poorly suited to hay and pasture because of droughtiness and slope.

Potential productivity for eastern white pine on this map unit is high. The main management concerns are droughtiness and the erosion hazard. Thinning crowded stands to accepted, standard stocking levels while removing diseased, poorly formed, and otherwise undesirable trees allows more vigorous growth. Shelterwood cutting, seed-tree cutting, and clearcutting establish natural regeneration or provide suitable planting sites. In some areas removing or controlling competing vegetation is needed for the best growth of newly established seedlings. Minimizing soil disturbance and retaining the sponge-like mulch of leaves help to increase the absorption of moisture. Designing regeneration cuts to preserve shade and to reduce evapotranspiration help to retain the limited soil moisture. Constructing access roads and trails with grades between 2 and 10 percent and installing water bars help to control erosion.

The main limitation to use of these soils as sites for buildings is slope. Extensive land shaping is generally needed. Buildings and lots designed to conform to the natural slope of the land help to overcome the slope limitation and to control erosion in disturbed areas. Extensive cut-and-fill is generally needed when constructing roads on these soils. Constructing roads on the contour and planting roadbanks to well adapted grasses help to control erosion. The main limitations to use of the soil as sites for septic tank absorption fields are slope and the very rapid permeability in Groton soils and the rapid and very rapid permeability in Hinckley soils. Ground water contamination is a hazard if the soils are used as sites for septic tank absorption fields. The soils do not filter adequately the effluent. Distribution lines installed across the slope help to overcome the slope limitation, but in some areas additional precautionary measures are needed to filter adequately the effluent.

This map unit is in capability subclass VIIs.

Ha—Hadley silt loam. This is a nearly level, very deep, well drained soil on flood plains. The soil is subject to occasional flooding, but the water recedes quickly. Individual areas of this soil are irregular in shape and range from 5 to 40 acres (fig. 12).

Typically, the surface layer is very dark grayish brown silt loam about 8 inches thick. The substratum extends to a depth of 60 inches or more. In the upper part it is olive brown, friable silt loam, and in the lower part it is light olive brown and very dark grayish brown, friable silt loam and very fine sandy loam.

Included with this soil in mapping are areas of Winooski soils that are more level than this Hadley soil and areas of Limerick soils in low, concave positions. Also included are areas of soils that are 5 to 10 percent gravel, by volume, in the substratum. The included soils make up about 10 percent of the map unit.

Permeability of this Hadley soil is moderate in the upper part and moderately rapid in the lower part. The available water capacity is high. The seasonal high water table is at a depth of 4 to 6 feet. The surface layer, which is friable, is easily tilled under the proper moisture conditions. The soil ranges from strongly acid to neutral throughout.

Most areas of this soil are cultivated. Some areas, which were once farmed, are idle, mixed brushland and woodland.

This soil is well suited to row crops and small grains. Flooding is a hazard. However, in most years it occurs in early spring before crops are planted. Crop residue returned to the soil helps to maintain or increase the organic matter content of the surface layer. The main

Figure 12.—The Sheffield covered bridge across the Housatonic River. The soil along the river is Hadley silt loam.

management concern is the restricted access to fields caused by the wet soil conditions. In most years the soil is wet during spring planting.

This soil is well suited to grasses and legumes for hay and pasture. Proper stocking rates, deferred grazing, and rotation grazing help to maintain the desirable species of pasture plants.

Potential productivity for eastern white pine on this soil is very high. There are no major limitations to woodland management. Intensive management is appropriate for both hardwoods and conifers. Plant competition during regeneration is moderate if conifers are grown. Thinning crowded stands to accepted, standard stocking levels allows more vigorous growth. Shelterwood cutting, seed-tree cutting, and clearcutting establish natural regeneration or provide suitable planting sites. In some areas removing or controlling competing vegetation is needed for the best growth of newly established seedlings. Pruning improves the quality of white pine.

This soil is generally not suitable for use as sites for buildings and septic tank absorption fields because flooding is a hazard. Sites on soils that are better suited to these uses are generally available nearby. Constructing roads on raised, well compacted fill material and providing adequate side ditches and culverts help to prevent the damaged pavement caused by flooding and frost heave.

This map unit is in capability subclass I.

Hb—Halsey fine sandy loam. This is a very deep, nearly level, very poorly drained soil on stream terraces and outwash plains. Areas are irregular in shape and range from 5 to 40 acres.

Typically, the surface layer is very dark gray, friable fine sandy loam about 10 inches thick. The subsoil is gray, friable fine sandy loam about 10 inches thick. The substratum is gray very gravelly sand to a depth of 60 inches or more.

Included with this soil in mapping are areas of Hero and Fredon soils and organic soils. Also included are areas of Halsey soils that are underlain by silty material within a depth of 40 inches. The included soils make up about 10 to 15 percent of the map unit.

Permeability is moderate or moderately rapid in the subsoil and rapid in the substratum. The available water capacity is high. The root zone is not restricted, but root growth is impeded by the seasonal high water table. The seasonal high water table is at or near the surface for more than 9 months of the year. The soil is moderately acid to neutral in the surface layer and the subsoil and slightly acid to moderately alkaline in the substratum.

Most of the acreage of this soil is wooded. Some areas are used for cultivated crops. A few areas are used as habitat for wetland wildlife.

This soil is poorly suited to cultivated crops, hay, and pasture because of the seasonal high water table. Artificial drainage can be installed if suitable outlets are available. If drained, the soil is fairly well suited to water-tolerant species of hay and pasture plants. Proper stocking rates, deferred grazing, and rotation grazing help to maintain the desirable species of pasture plants.

Potential productivity for red maple on this soil is moderate. The main management concerns are the seasonal high water table, the high seedling mortality, and the windthrow hazard. Growth and survival are poor. The low soil strength limits the use of equipment except when the soil is very dry or frozen. Thinning should be designed to minimize windthrow by locating and orienting cuts to reduce wind effects, by keeping residual stand density at or slightly above standard stocking levels, and by limiting changes in stand density to 30 percent or less. In some areas tree plantings are practical if special practices are used.

Constructing buildings without basements and above the seasonal high water table helps to prevent the interior damage caused by the seasonal high water table. Tile drains laid around foundations help to reduce wetness. Landscaping designed to drain surface runoff away from buildings provides added protection against damage caused by wetness. Constructing roads on raised, coarse textured base material and providing adequate side ditches and culverts help to prevent the damaged pavement caused by the seasonal high water table and frost heave. The main limitations to use of the soil as sites for septic tank absorption fields are the seasonal high water table and the rapid permeability. Ground water contamination is a hazard if the soil is used as sites for septic tank absorption fields. The soil does not adequately filter the effluent. Distribution lines installed in a suitable fill material help to increase the lateral and downward flow of effluent and thus adequately filter the effluent.

This map unit is in capability subclass Vw.

HeA—Hero loam, 0 to 3 percent slopes. This is a nearly level, very deep, moderately well drained soil in slightly convex areas at the base of the steeper sloping soils and on the flat areas of terraces. Areas of this soil are irregular in shape and range from 5 to 50 acres.

Typically, the surface layer is dark brown loam about 8 inches thick. The subsoil is about 24 inches thick. In the upper part it is dark brown, friable loam. In the next part it is dark brown, friable gravelly fine sandy loam. In the lower part it is olive brown, friable gravelly fine sandy loam. The substratum is dark grayish brown gravelly sand to a depth of 60 inches or more. In some areas the content of gravel in the substratum is less than 10 percent.

Included with this soil in mapping are a few areas of soils where the surface layer is silt loam. Also included, in the higher lying positions in most map units, are small areas of Copake soils. Also included, in depressions, are areas of Fredon soils. Also included, at the perimeter of a few map units, are areas of soils that have slope of more than 3 percent. The included soils make up about 5 to 10 percent of the map unit.

Permeability of this Hero soil is moderate or moderately rapid in the subsoil and rapid or very rapid in the substratum. The available water capacity is high. The surface layer, which is friable, is easily tilled under proper moisture conditions. The root zone is restricted at a depth of about 20 inches by the seasonal high water table. The seasonal high water table is at a depth of 1 1/2 to 3 feet from November through April. In some years this soil is droughty in late summer. The soil ranges from moderately acid to neutral in the surface layer and the subsoil and is mildly alkaline or moderately alkaline in the substratum.

Most areas of this soil are cultivated. A few areas are mixed brushland and woodland.

This soil is well suited to row crops and small grains. The main limitation is the seasonal high water table. The main management concern is the restricted access caused by wet soil conditions. Crop residue returned to the soil helps to maintain or increase the organic matter content of the surface layer.

This soil is well suited to grasses and legumes for hay and pasture. Water-tolerant plants produce the highest yields of hay. The main management concern is overgrazing, which causes surface compaction and reduces the hardiness and density of plants. Proper stocking rates, timely grazing, and, during wet periods, restricted grazing help to maintain the desirable species of pasture plants and to prevent surface compaction.

Potential productivity for northern red oak on this soil is moderate. There are no major limitations to woodland management. Plant competition during regeneration is moderate if conifers are grown. Thinning crowded stands to accepted, standard stocking levels allows more vigorous growth. Shelterwood cutting, seed-tree cutting, and clearcutting establish natural regeneration or provide suitable planting sites. In some areas removing or controlling competing vegetation is needed for the best growth of newly established seedlings.

Constructing buildings without basements and above the seasonal high water table helps to prevent the interior damage caused by wetness. Tile drains laid around foundations help to reduce wetness. Landscaping designed to drain surface runoff away from buildings provides added protection against damage caused by wetness. Constructing roads on well compacted, coarse textured base material helps to prevent the damaged pavement caused by frost heave. The main limitations to use of the soil as sites for septic tank absorption fields are the seasonal high water table and the rapid or very rapid permeability. Ground water contamination is a hazard if the soil is used as sites for septic tank absorption fields. The soil does not filter adequately the effluent. Placing distribution lines in a suitable fill material helps to increase the lateral and downward flow of effluent and thus adequately filter the effluent.

This map unit is in capability subclass IIw.

HeB—Hero loam, 3 to 8 percent slopes. This is a gently sloping, very deep, moderately well drained soil on terrace crests but mainly in slightly convex areas on stream terraces and kames. Individual areas are irregular in shape and range from 5 to 50 acres.

Typically, the surface layer is dark brown loam about 8 inches thick. The subsoil is about 24 inches thick. In the upper part it is dark brown, friable loam. In the next part it is dark brown, friable gravelly fine sandy loam. In the lower part it is olive brown, friable gravelly fine sandy loam. The substratum is dark grayish brown gravelly sand to a depth of 60 inches or more.

Included with this soil in mapping are a few areas of soils where the surface layer is silt loam and some areas of soils that are less than 10 percent gravel, by volume, in the substratum. Also included, in most map units, are small areas of Copake soils. Also included are areas of Fredon soils in slightly concave depressions. Also included, at the base of a few map units, are areas of soils that have slope of more than 3 percent. The included soils make up about 10 to 15 percent of the map unit.

Permeability of this Hero soil is moderate or moderately rapid in the subsoil and rapid or very rapid in the substratum. The available water capacity is high. The surface layer of this soil is friable and easily tilled under proper moisture conditions. The root zone is restricted at a depth of about 20 inches by the seasonal high water table. In some years the soil is droughty in late summer. The soil ranges from moderately acid to neutral in the surface layer and the subsoil and mildly alkaline or moderately alkaline in the substratum.

Most areas of this soil are cultivated. A few areas are mixed brushland and woodland.

This soil is well suited to row crops and small grains. Erosion is a hazard. The main management concerns are the seasonal high water table in spring and restricted access to fields caused by wet soil conditions. Crop residue returned to the soil helps to maintain or increase the organic matter content of the surface layer. Stripcropping, conservation tillage, cover crops, and grasses and legumes incorporated into the cropping system help to reduce runoff and to control erosion.

This soil is well suited to grasses and legumes for hay and pasture. Water-tolerant plants produce the highest yields of hay. The main management concern is overgrazing, which causes surface compaction and reduces the hardiness and density of plants. Proper stocking rates, timely grazing, and, during wet periods, restricted grazing help to maintain the desirable species of pasture plants and to prevent surface compaction.

Potential productivity for northern red oak on this soil is moderate. There are no major limitations to woodland management. Plant competition during regeneration is moderate if conifers are grown. Thinning crowded stands to accepted, standard stocking levels provides more vigorous growth. Shelterwood cutting, seed-tree cutting, and clearcutting establish natural regeneration or provide suitable planting sites. In some areas removing or controlling competing vegetation is needed for the best growth of newly established seedlings.

Constructing buildings without basements and above the seasonal high water table helps to prevent the interior damage caused by wetness. Tile drains laid around foundations help to reduce wetness. Landscaping designed to drain surface runoff away from buildings provides added protection against damage caused by wetness. Constructing roads on well compacted, coarse textured base material helps to prevent the damaged pavement caused by frost heave. The main limitations to use of the soil as sites for septic tank absorption fields are the seasonal high water table and the rapid or very rapid permeability. Ground water contamination is a hazard if the soil is used as sites for septic tank absorption fields. The soil does not filter adequately the effluent. Placing distribution lines in a suitable fill material help to increase the lateral and downward flow of effluent and thus adequately filter the effluent.

This map unit is in capability subclass IIe.

HgA—Hero Variant gravelly loam, 0 to 3 percent slopes. This is a nearly level, very deep, moderately well drained soil in the slightly convex areas at the base of steeper sloping soils. Individual areas are irregular in shape and range from 5 to 15 acres.

Typically, the surface layer is very dark grayish brown, friable gravelly loam about 9 inches thick. The subsoil is about 13 inches thick. In the upper part it is yellowish brown, friable gravelly sandy loam. In the lower part it is dark yellowish brown, friable gravelly sandy loam. The substratum is olive, friable, stratified silt and very fine sand to a depth of 60 inches or more.

Included with this soil in mapping are a few areas of soils that have less silt and clay in the substratum. Also included, in most map units, are small areas of Hero soils. Also included are areas of Fredon and Halsey soils in concave depressions and, at the edge of a few map units, areas of soils that have slope of more than 3 percent. The included soils make up about 5 to 10 percent of the map unit.

Permeability of this Hero Variant soil is moderate or moderately rapid in the subsoil and moderately slow in the substratum. The available water capacity is high. The surface layer is easily tilled under proper moisture conditions. The root zone is somewhat restricted at a depth of about 18 inches by the seasonal high water table. The seasonal high water table is at a depth of 1 1/2 to 3 feet from November through April. The soil ranges from moderately acid to neutral in the surface layer, moderately acid to mildly alkaline in the subsoil, and neutral to moderately alkaline in the substratum.

Most areas of this soil are cultivated. A few areas are mixed brushland and woodland.

This soil is well suited to row crops and small grains. The main limitation is the seasonal high water table. The main management concern is restricted access to fields caused by wet soil conditions. Crop residue returned to the soil helps to increase or maintain the organic matter content of the surface layer.

This soil is well suited to grasses and legumes for hay and pasture. In some areas drainage is needed and water-tolerant plants produce the highest yields. The main management concern is overgrazing, which causes surface compaction and reduces the hardiness and density of plants. Proper stocking rates, timely grazing, and, during wet periods, restricted grazing help to maintain the desirable species of pasture plants and to prevent surface compaction.

Potential productivity for northern red oak on this soil is moderate. There are no major limitations to woodland management. Plant competition during regeneration is moderate if conifers are grown. Thinning crowded stands to accepted, standard stocking levels allows more vigorous growth. Shelterwood cutting, seed-tree cutting, and clearcutting establish natural regeneration or provide suitable planting sites. In some areas removing or controlling competing vegetation is needed for the best growth of newly established seedlings.

Constructing buildings without basements and above the seasonal high water table helps to prevent the interior damage caused by wetness. Tile drains laid around foundations help to reduce wetness. Landscaping designed to drain surface runoff away from buildings provides added protection against damage caused by wetness. Constructing roads on a well compacted, coarse textured base material helps to prevent the damaged pavement caused by frost heave. The main limitations to use of this soil as sites for septic tank absorption fields are the seasonal high water table and the moderately slow permeability. Placing distribution lines in a suitable fill material help to increase the lateral and downward flow of effluent and thus adequately filter the effluent.

This map unit is in capability subclass IIw.

HgB—Hero Variant gravelly loam, 3 to 8 percent slopes. This is a gently sloping, very deep, moderately well drained soil in convex areas on outwash plains and terraces. Individual areas are irregular in shape and range from 5 to 15 acres.

Typically, the surface layer is very dark grayish brown, friable gravelly loam about 9 inches thick. The subsoil is about 13 inches thick. In the upper part it is yellowish brown, friable gravelly sandy loam. In the lower part it is dark yellowish brown, friable gravelly sandy loam. The substratum to a depth of 60 inches is olive, friable, stratified silt and very fine sand.

Included with this soil in mapping are a few areas of soils that have less silt and clay in the substratum. Also included, in most map units, are small areas of Hero soils. Also included are areas of Fredon soils in concave depressions, and areas of soils that have slope of less than 3 percent. The included soils make up about 10 to 15 percent of the map unit.

Permeability of this Hero Variant soil is moderate or moderately rapid in the subsoil and moderately slow in the substratum. The available water capacity is high. The surface layer is easily tilled under proper moisture conditions. The root zone is somewhat restricted at a depth of about 18 inches by the seasonal high water table. The soil ranges from moderately acid to neutral in the surface layer, moderately acid to mildly alkaline in the subsoil, and neutral to moderately alkaline in the substratum.

Most areas of this soil are cultivated. A few areas are mixed brushland and woodland.

This soil is well suited to row crops and small grains. Erosion is a hazard. The main management concerns are the seasonal high water table in spring and restricted access to fields caused by wet soil conditions. Crop residue returned to the soil helps to maintain or increase the organic matter content of the surface layer. Stripcropping, conservation tillage, cover crops, and grasses and legumes incorporated into the cropping system help to reduce runoff and to control erosion.

This soil is well suited to grasses and legumes for hay and pasture. In some areas drainage is needed and water-tolerant plants produce the highest yields. The main management concern is overgrazing, which causes surface compaction and reduces the hardiness and density of plants. Proper stocking rates, timely grazing, and, during wet periods, restricted grazing help to maintain the desired species of pasture plants and to prevent surface compaction.

Potential productivity for northern red oak on this soil is moderate. There are no major limitations to woodland management. Plant competition during regeneration is moderate if conifers are grown. Thinning crowded stands to accepted, standard stocking levels allows more vigorous growth. Shelterwood cutting, seed-tree cutting, and clearcutting establish natural regeneration or provide suitable planting sites. In some areas removing or controlling competing vegetation is needed for the best growth of newly established seedlings.

Constructing buildings without basements and above the seasonal high water table helps to prevent the interior damage caused by wetness. Tile drains laid around foundations help to reduce wetness. Landscaping designed to drain surface runoff away from buildings provides added protection against damage caused by wetness. Constructing roads on a well compacted, coarse textured base material helps to prevent the damaged pavement caused by frost heave. The main limitations to use of the soil as sites for septic tank absorption fields are the seasonal high water table and the moderately slow permeability. Placing distribution lines in a suitable fill material help to increase the lateral and downward flow of effluent and thus filter adequately the effluent.

This map unit is in capability subclass IIw.

HkA—Hinckley gravelly sandy loam, 0 to 3 percent slopes. This is a nearly level, very deep, excessively drained soil on slightly convex areas on the crests of stream terraces and outwash plains. Individual areas are irregular in shape and range from 5 to 100 acres.

Typically, the surface layer is very dark grayish brown, very friable gravelly sandy loam about 9 inches thick. The subsoil is yellowish brown, loose very gravelly loamy sand about 14 inches thick. The substratum is yellowish brown, loose extremely gravelly sand to a depth of 60 inches or more.

Included with this soil in mapping are a few areas of soils that are less than 5 percent gravel, by volume, in the substratum. Also included, in most map units, are small areas of Merrimac soils. Also included are areas of Hero soils in slight concave depressions and, at the edges of a few map units, areas of soils that have slope of more than 3 percent. The included soils make up about 5 to 10 percent of the map unit.

Permeability of this Hinckley soil is rapid in the subsoil and very rapid in the substratum. The available water capacity is low. The surface layer is easily tilled under proper moisture conditions. The root zone is restricted by loose sand and gravel at a depth of about 23 inches. The soil is droughty in summer. It ranges from extremely acid to moderately acid throughout.

Most areas of this soil are cultivated. A few areas are woodland.

This soil is fairly well suited to row crops and small grains. The main limitation is droughtiness. Crop residue returned to the soil helps to maintain or increase the organic matter content of the surface layer.

This soil is fairly well suited to grasses and legumes for hay and pasture. Plants that tolerate drought in summer produce the highest yields. The main management concern is overgrazing, which causes surface compaction and reduces the hardiness and density of plants. Proper stocking rates and timely grazing help to maintain the desired species of pasture plants and to prevent surface compaction.

Potential productivity for eastern white pine on this soil is high. The main management concern is moisture stress caused by the low available water capacity. Thinning crowded stands to accepted, standard stocking levels while removing diseased, poorly formed, and otherwise undesirable trees allows more vigorous growth. Shelterwood cutting and clearcutting establish natural regeneration or provide suitable planting sites. In some areas removing or controlling competing vegetation is needed for the best growth of newly established seedlings. Minimizing soil disturbance and retaining the sponge-like mulch of leaves help to increase the absorption of precipitation. Designing regeneration cuts to preserve shade and to reduce evapotranspiration help to retain the limited soil moisture.

There are no major limitations of this soil to building site development and to local roads. Ground water contamination is a hazard if the soil is used as sites for septic tank absorption fields because of the rapid and very rapid permeability. The soil readily absorbs the effluent but does not adequately filter it.

This map unit is in capability subclass IIIs.

HkB—Hinckley gravelly sandy loam, 3 to 8 percent slopes. This is a gently sloping, very deep, excessively drained soil on slightly convex areas on stream terraces and outwash plains. Individual areas are irregular in shape and range from 5 to 150 acres.

Typically, the surface layer is very dark grayish brown, very friable gravelly sandy loam about 9 inches thick. The subsoil is yellowish brown, loose very gravelly loamy sand about 14 inches thick. The substratum is yellowish brown, loose extremely gravelly sand to a depth of 60 inches or more.

Included with this soil in mapping are a few areas of soils that are less than 5 percent gravel, by volume, in the substratum. Also included, in most map units, are small areas of Merrimac soils. Also included are areas of Hero soils in slightly concave depressions and, at the edges of a few map units, areas of soils that have slope of more than 8 percent. The included soils make up about 10 to 15 percent of the map unit.

Permeability of this Hinckley soil is rapid in the subsoil and very rapid in the substratum. The available water capacity is low. The surface layer is easily tilled under proper moisture conditions. The root zone is restricted by the loose sand and gravel at a depth of about 23 inches. The soil is droughty in summer. It ranges from extremely acid to moderately acid throughout.

Most areas of this soil are cultivated. A few areas are woodland.

This soil is fairly well suited to row crops and small grains. The main limitation is droughtiness. Crop residue returned to the soil helps to maintain or increase the organic matter content of the surface layer.

This soil is fairly well suited to grasses and legumes for hay and pasture. Plants that tolerate drought in summer produce the highest yields. The main management concern is overgrazing, which causes surface compaction and reduces the hardiness and density of plants. Proper stocking rates and timely grazing help to maintain the desired species of pasture plants and to prevent surface compaction.

Potential productivity for eastern white pine on this soil is high. The main management concern is moisture stress caused by the low available water capacity. Thinning crowded stands to accepted, standard stocking levels while removing diseased, poorly formed, and otherwise undesirable trees allows more vigorous growth. Shelterwood cutting, seed-tree cutting, and clearcutting establish natural regeneration or provide suitable planting sites. In some areas removing or controlling competing vegetation is needed for the best growth of newly established seedlings. Minimizing soil disturbance and retaining the sponge-like mulch of leaves help to increase the absorption of precipitation. Designing regeneration cuts to preserve shade and to reduce evapotranspiration help to retain the limited soil moisture.

This soil has no major limitations to building site development and to local roads. Ground water contamination is a hazard if the soil is used as sites for septic tank absorption fields because of the rapid and very rapid permeability. The soil readily absorbs the effluent but does not adequately filter it.

This map unit is in capability subclass IIIs.

HkC—Hinckley gravelly sandy loam, 8 to 15 percent slopes. This is a strongly sloping, very deep, excessively drained soil in elongated and irregularly shaped, rolling areas. Slopes are convex and as much as 200 feet long. Individual areas range from 5 to 80 acres.

Typically, the surface layer is very dark grayish brown, very friable gravelly sandy loam about 9 inches thick. The subsoil is yellowish brown, loose very gravelly loamy sand about 14 inches thick. The substratum is yellowish brown, loose extremely gravelly sand to a depth of 60 inches or more.

Included with this soil in mapping are areas of soils where some of the original surface layer has been removed by erosion. Also included, in most map units, are small areas of Merrimac soils. Also included, at the base of many slopes, are areas of Hero soils. The included soils make up about 5 to 10 percent of the map unit.

Permeability of this Hinckley soil is rapid in the subsoil and very rapid in the substratum. The available water capacity is low. The surface layer is very friable. The root zone is restricted by loose sand and gravel at a depth of about 23 inches. The soil is droughty in summer. It ranges from extremely acid to moderately acid throughout.

Most areas of this soil are used for hay and pasture. A few areas are mixed brushland and woodland.

This soil is poorly suited to row crops and small grains. The main limitation is droughtiness. Erosion is a hazard. Conservation tillage, crop rotation, contour farming, or a combination of these practices helps to control erosion.

This soil is fairly well suited to grasses and legumes for hay and pasture. Plants that tolerate drought in summer produce the highest yields. The main management concern is overgrazing, which causes surface compaction, increases surface runoff, and reduces the hardiness and density of plants. Proper stocking rates and timely grazing help to maintain the desired species of pasture plants, to prevent surface compaction, and to reduce runoff.

Potential productivity for eastern white pine on this soil is high. The main management concern is moisture stress caused by the low available water capacity. Thinning crowded stands to accepted, standard stocking levels while removing diseased, poorly formed, and otherwise undesirable trees allows more vigorous growth. Shelterwood cutting, seed-tree cutting, and clearcutting establish natural regeneration or provide suitable planting sites. In some areas removing or controlling competing vegetation is needed for the best growth of newly established seedlings. Minimizing soil disturbance and retaining the sponge-like mulch of leaves help to increase the absorption of precipitation. Designing regeneration cuts to preserve shade and to reduce evapotranspiration help to retain the limited soil moisture.

Buildings designed to conform to the natural slope of the land help to overcome the slope limitation and to control erosion in disturbed areas. Land shaping is needed in some areas. Constructing roads on the contour, if possible, and planting roadbanks to well adapted grasses help to control erosion. Ground water contamination is a hazard if the soil is used as sites for septic tank absorption fields because of the rapid and very rapid permeability. The soil readily absorbs the effluent but does not adequately filter it.

This map unit is in capability subclass IVs.

HkD—Hinckley gravelly sandy loam, 15 to 25 percent slopes. This is a moderately steep, very deep, excessively drained soil on elongated and irregularly shaped, hilly areas. Slopes are convex and as much as 100 feet long. Individual areas range from 5 to 40 acres.

Typically, the surface layer is very dark grayish brown, very friable gravelly sandy loam about 9 inches thick. The subsoil is yellowish brown, loose, very gravelly loamy sand about 14 inches thick. The substratum is yellowish brown loose, extremely gravelly sand to a depth of 60 inches or more.

Included with this soil in mapping are areas of soils where most of the surface layer has been removed by erosion. Also included, in most map units, are small areas of Merrimac soils at the base of slopes. The included soils make up about 5 to 10 percent of the map unit.

Permeability of this Hinckley soil is rapid in the subsoil and very rapid in the substratum. The available water capacity is low. The root zone is restricted by the loose sand and gravel at a depth of about 23 inches. The soil is droughty in summer. It ranges from extremely acid to moderately acid throughout.

Most areas of this soil were used as farmland but are now mixed brushland and woodland. A few areas are used for hay and pasture.

This soil is generally not suited to row crops and poorly suited to small grains. The main limitation is droughtiness. Erosion is a hazard.

This soil is poorly suited to grasses and legumes for hay and pasture. Plants that tolerate drought in summer produce the highest yields. The main management concern is overgrazing, which causes surface compaction, increases surface runoff, and reduces the hardiness and density of plants. Proper stocking rates and timely grazing help to maintain the desired species of plants to prevent surface compaction and to reduce runoff.

Potential productivity for eastern white pine on this soil is high. The main management concern is droughtiness. Thinning crowded stands to accepted, standard stocking levels while removing diseased, poorly formed, and otherwise undesirable trees allows more vigorous growth. Shelterwood cutting, seed-tree cutting, and clearcutting establish natural regeneration or provide suitable planting sites. In some areas removing or controlling competing vegetation is needed for the best growth of newly established seedlings. Minimizing soil disturbance and retaining the sponge-like mulch of leaves help to increase the absorption of precipitation. Designing regeneration cuts to preserve shade and reduce evapotranspiration helps to retain the limited soil moisture. Constructing access roads and trails with grades between 2 and 10 percent and installing water bars help to control erosion.

The main limitation to use of this soil as sites for buildings is slope. Extensive land shaping is generally needed. Buildings and lots designed to conform to the natural slope of the land help to overcome the slope limitation and to control erosion in disturbed areas. Extensive cut-and-fill is generally needed when constructing roads on the soil. Constructing roads on the contour and planting roadbanks to well adapted grasses help to control erosion. The main limitations to use of the soil as sites for septic tank absorption fields are slope and the rapid and very rapid permeability. Ground water contamination is a hazard if the soil is used as sites for septic tank absorption fields. Distribution lines installed across the slope help to overcome the slope limitation, but in some areas additional precautionary measures are needed to adequately filter the effluent.

This map unit is in capability subclass VIs.

HoA—Hoosic gravelly fine sandy loam, 0 to 3 percent slopes. This is a nearly level, very deep, somewhat excessively drained soil in slightly convex areas on the crests of stream terraces and outwash plains. Individual areas are irregular in shape and range from 5 to 60 acres.

Typically, the surface layer is very dark grayish brown, friable gravelly fine sandy loam about 4 inches thick. The subsoil is about 16 inches thick. In the upper 6 inches it is dark brown, very friable gravelly sandy loam. In the next layer it is dark yellowish brown, friable gravelly sandy loam. In the lower 3 inches it is olive brown, very friable gravelly loamy sand. The substratum is dark grayish brown, stratified very gravelly sand to a depth of 60 inches or more.

Included with this soil in mapping are a few areas of soils where the volume of slate fragments make up less than 35 percent of the substratum. Also included are areas of Deerfield and Wareham soils in slightly concave depressions and, at the edges of a few map units, areas of soils that have slope of more than 3 percent. The included soils make up about 10 to 15 percent of the map unit.

Permeability of this Hoosic soil is moderately rapid in the subsoil and rapid or very rapid in the substratum. The available water capacity is low. The surface layer of this soil is easily tilled under proper moisture conditions. The root zone is restricted by loose sand and gravel at a depth of about 20 inches. The soil is droughty in late summer. It is very strongly acid or strongly acid in the surface layer and the subsoil and very strongly acid to moderately acid in the substratum.

Most areas of this soil are cultivated. A few areas are woodland.

This soil is fairly well suited to row crops and small grains. The main limitation is droughtiness. Crop residue returned to the soil helps to maintain or increase the organic matter content of the surface layer.

This soil is fairly well suited to grasses and legumes for hay and pasture. Plants that tolerate drought in late summer produce the highest yields. The main management concern is overgrazing, which causes surface compaction and reduces the hardiness and density of plants. Proper stocking rates and timely grazing help to maintain the desirable species of pasture plants and to prevent surface compaction.

Potential productivity for northern red oak on this soil is moderately high. There are no major limitations to woodland management. Plant competition during regeneration is moderate if conifers are grown. Thinning crowded stands to accepted, standard stocking levels allows more vigorous growth. Shelterwood cutting, seed-tree cutting, and clearcutting establish natural regeneration or provide suitable planting sites. In some areas removing or controlling competing vegetation is needed for the best growth of newly established seedlings. Pruning improves the quality of white pine.

There are no major limitations to use of this soil as sites for buildings and for local roads. Ground water contamination is a hazard if the soil is used as sites for septic tank absorption fields because of the rapid or very rapid permeability. The soil readily absorbs the effluent but does not adequately filter it.

This map unit is in capability subclass IIIs.

HoB—Hoosic gravelly fine sandy loam, 3 to 8 percent slopes. This is a gently sloping, very deep, somewhat excessively drained soil in slightly convex areas on stream terraces and outwash plains. Individual areas are irregular in shape and range from 5 to 80 acres.

Typically, the surface layer is very dark grayish brown, friable gravelly fine sandy loam about 4 inches thick. The subsoil is about 16 inches thick. In the upper 6 inches it is dark brown, very friable gravelly sandy loam. In the next 7 inches it is dark yellowish brown, friable gravelly sandy loam. In the lower 3 inches it is olive brown, very friable gravelly loamy sand. The substratum is dark grayish brown, stratified very gravelly sand to a depth of 60 inches or more.

Included with this soil in mapping are a few areas of soils where the volume of slate fragments is less than 35 percent in the substratum. Also included are areas of Deerfield soils in slightly concave depressions and, at the edges of a few map units, areas of soils that have slope of more than 8 percent. The included soils make up about 5 to 10 percent of the map unit.

Permeability of this Hoosic soil is moderately rapid in the subsoil and very rapid in the substratum. The available water capacity is low. The surface layer is easily tilled under proper moisture conditions. The root zone is restricted by loose sand and gravel at a depth of about 20 inches. The soil is droughty in late summer. It is very strongly or strongly acid in the surface layer and the subsoil and very strongly acid to moderately acid in the substratum.

Most areas of this soil are cultivated. A few areas are woodland.

This soil is fairly well suited to row crops and small grains. Droughtiness is the main limitation. Crop residue mixed into the soil helps to maintain or increase the organic matter content of the surface layer.

This soil is fairly well suited to grasses and legumes for hay and pasture. Plants that tolerate drought in late summer produce the highest yields. The main management concern is overgrazing, which causes surface compaction and reduces the hardiness and density of plants. Proper stocking rates and timely grazing help to maintain the desirable species of pasture plants and to prevent surface compaction.

Potential productivity for northern red oak on this soil is moderately high. There are no major limitations to woodland management. Plant competition during regeneration is moderate if conifers are grown. Thinning crowded stands to accepted, standard stocking levels allows more vigorous growth. Shelterwood cutting, seed-tree cutting, and clearcutting establish natural regeneration or provide suitable planting sites. In some areas removing or controlling competing vegetation is needed for the best growth of newly established seedlings.

There are no major limitations to use of this soil as sites for buildings and for local roads. Ground water contamination is a hazard if the soil is used as sites for septic tank absorption fields because of the very rapid permeability. The soil readily absorbs the effluent but does not adequately filter it.

This map unit is in capability subclass IIIs.

HoC—Hoosic gravelly fine sandy loam, 8 to 15 percent slopes. This is a strongly sloping, very deep, somewhat excessively drained soil in elongated and irregularly shaped, rolling areas. Slopes are convex and as much as 300 feet long. Individual areas range from 5 to 40 acres.

Typically, the surface layer is very dark grayish brown gravelly fine sandy loam about 4 inches thick. The subsoil is about 16 inches thick. In the upper 6 inches it is dark brown, very friable gravelly sandy loam. In the next 7 inches it is dark grayish brown, friable gravelly sandy loam. In the lower 3 inches it is olive brown, very friable gravelly loamy sand. The substratum is dark grayish brown, stratified very gravelly sand to a depth of 60 inches or more.

Included with this soil in mapping are areas of soils where the volume of slate fragments make up less than 35 percent of the substratum. Also included, at the base of many slopes, are areas of Deerfield soils. The included soils make up about 5 to 10 percent of the map unit.

Permeability of this Hoosic soil is moderately rapid in the subsoil and very rapid in the substratum. The available water capacity is low. The surface layer is easily tilled under proper moisture conditions. The root zone is restricted by loose sand and gravel at a depth of about 20 inches. The soil is droughty in late summer. It is very strongly acid in the surface layer and the subsoil and very strongly acid to moderately acid in the substratum.

Most areas of this soil are used for cultivated crops, hay, and pasture. Some areas are mixed brushland and woodland.

This soil is poorly suited to row crops and small grains. Erosion is a hazard. The main limitation is droughtiness. Conservation tillage, crop rotation, contour farming, or a combination of these practices helps to control erosion.

This soil is fairly well suited to grasses and legumes for hay and pasture. Plants that tolerate drought in late summer produce the highest yields. The main management concern is overgrazing, which causes surface compaction, increases surface runoff, and reduces the hardiness and density of plants. Proper stocking rates and timely grazing help to maintain the desirable species of pasture plants, to prevent surface compaction, and to reduce runoff.

Potential productivity for northern red oak on this soil is moderately high. There are no major limitations to woodland management. Plant competition during regeneration is moderate if conifers are grown. Thinning crowded stands to accepted, standard stocking levels allows more vigorous growth. Shelterwood cutting, seed-tree cutting, and clearcutting establish natural regeneration or provide suitable planting sites. In some areas removing or controlling competing vegetation is needed for the growth of newly established seedlings.

Buildings designed to conform to the natural slope of the land help to overcome the slope limitation and to control the erosion in disturbed areas. Land shaping is needed in some areas. Constructing roads on the contour, if possible, and planting roadbanks to well adapted grasses help to control erosion. Ground water contamination is a hazard if the soil is used as sites for septic tank absorption fields because of the very rapid permeability. The soil readily absorbs the effluent but does not adequately filter it.

This map unit is in capability subclass IIIe.

HoD—Hoosic gravelly fine sandy loam, 15 to 25 percent slopes. This is a moderately steep, very deep, somewhat excessively drained soil in elongated and irregularly shaped, hilly areas. Slopes are convex and as much as 300 feet long. Individual areas range from 5 to 40 acres.

Typically, the surface layer is very dark grayish brown gravelly fine sandy loam about 4 inches thick. The subsoil is about 16 inches thick. In the upper 6 inches it is dark brown, very friable gravelly sandy loam. In the next layer it is dark grayish brown, friable gravelly sandy loam. In the lower 3 inches it is olive brown, very friable gravelly loamy sand. The substratum is dark grayish brown, stratified very gravelly sand to a depth of 60 inches or more.

Included with this soil in mapping are areas of soils where most of the original surface layer has been removed by erosion. Also included, at the base of many slopes, are areas of Deerfield soils. The included soils make up about 5 to 10 percent of the map unit.

Permeability of this Hoosic soil is moderately rapid in the subsoil and very rapid in the substratum. The available water capacity is low. The surface layer is easily tilled under proper moisture conditions. The root zone is restricted by loose sand and gravel at a depth of about 20 inches. The soil is droughty in late summer. It is very strongly acid or strongly acid in the surface layer and the subsoil and very strongly acid to moderately acid in the substratum.

Most areas of this soil were used for farmland but are now mixed brushland and woodland. A few areas are used for hay and pasture.

This soil is poorly suited to row crops and small grains. Erosion is a hazard. Conservation tillage, crop rotation, contour farming, or a combination of these practices helps to control erosion.

This soil is poorly suited to grasses and legumes for hay and pasture. Plants that tolerate drought in late summer produce the highest yields. The main management concern is overgrazing, which causes surface compaction, increases surface runoff, and reduces the hardiness and density of plants. Proper stocking rates and timely grazing help to maintain the desirable species of pasture plants, to prevent surface compaction, and to reduce runoff.

Potential productivity for northern red oak on this soil is moderately high. The main management concern is the hazard of erosion, particularly in such disturbed areas as skid trails, landings, and access roads. Constructing access roads and trails with grades between 2 and 10 percent and installing water bars help to control erosion. Seedling mortality is moderate because of moisture stress caused by the low available water capacity of the soil. Minimizing soil disturbance and retaining the sponge-like mulch of leaves help to increase the absorption of precipitation. Designing regeneration cuts to preserve shade and to reduce evapotranspiration help to retain the limited soil moisture. Thinning crowded stands to accepted, standard stocking levels while removing diseased, poorly formed, and otherwise undesirable trees allows more vigorous growth. Shelterwood cutting, seed-tree cutting, and clearcutting establish natural regeneration or provide suitable planting sites.

The main limitation to use of the soil as sites for buildings is slope. Extensive land shaping is generally needed. Buildings and lots designed to conform to the natural slope of the land help to overcome the slope limitation and to control erosion in disturbed areas. Extensive cut-and-fill is generally needed when constructing roads on the soil. Constructing roads on the contour and planting roadbanks to well adapted grasses help to control erosion. The main limitations to use of this soil as sites for septic tank absorption fields are slope and the very rapid permeability. Ground water contamination is a hazard if the soil is used as sites for septic tank absorption fields. Distribution lines installed across the slope help to overcome the slope limitation, but in some areas additional precautionary measures are needed for adequate filtering of the effluent.

This map unit is in capability subclass IVe.

KeA—Kendaia silt loam, 0 to 3 percent slopes. This is a nearly level, very deep, poorly drained soil in small depressions and in areas around drainageways. Individual areas are irregular in shape and range from 5 to 20 acres.

Typically, the surface layer is very dark grayish brown, friable silt loam about 8 inches thick. The subsoil is 18 inches thick. In the upper 8 inches it is brown, friable silt loam. In the lower 10 inches it is grayish brown, mottled, friable silt loam. The substratum is dark grayish brown, mottled, firm gravelly silt loam to a depth of 60 inches or more.

Included with this soil in mapping are areas of Amenia soils on slightly convex rises and areas of Lyons soils in low, concave areas. Also included are areas of soils where the surface is covered with stones and areas of soils that have slope of more than 3 percent. The included soils make up about 5 to 10 percent of the map unit.

Permeability of this Kendaia soil is moderate in the subsoil and slow in the substratum. The available water capacity is moderate. The seasonal high water table is near the surface in winter and early spring. The surface layer is easily tilled under the proper moisture conditions. The root zone is restricted by the seasonal high water table in early spring and by the firm substratum below a depth of about 26 inches. The soil is slightly acid or neutral in the surface layer, slightly acid to mildly alkaline in the subsoil, and mildly alkaline or moderately alkaline in the substratum.

Most areas of this soil are used for pasture (fig. 13).

This soil is fairly well suited to row crops and small grains in areas that are adequately drained. The main limitations are the seasonal high water table and the firm substratum. Surface drainage, diversions, open ditches, tile drains, or a combination of these practices help to remove excess water from the soil. Minimum tillage and crop residue returned to the soil help to maintain and improve soil tilth and the organic matter content.

This soil is well suited to grasses and legumes for hay and pasture. Drainage is needed, and water-tolerant plants produce the highest yields. The main management concerns are overgrazing and grazing when the soil is too wet. Proper stocking rates, timely grazing, and, during wet periods, restricted grazing help to maintain the desired species of pasture plants.

Potential productivity for red maple on this soil is moderate. The main management concerns are the seasonal high water table, high seedling mortality, and the windthrow hazard. The low soil strength limits the use of equipment except when the soil is dry or frozen. Thinning should be designed to minimize windthrow by locating and orienting cuts to reduce wind effects, by keeping residual stand density at or slightly above standard stocking levels, and by limiting changes in stand density to 30 percent or less.

Constructing buildings without basements and above the seasonal high water table helps to prevent the interior damage caused by wetness. Tile drains laid around foundations help to reduce wetness. Landscaping designed to drain surface runoff away from buildings provides added protection against damage caused by wetness. Constructing roads on raised, coarse textured base material and providing adequate side ditches and culverts help to prevent the damaged pavement caused by the seasonal high water table and frost heave. The

Figure 13.—Surface drainage in an area of Kendaia silt loam, 0 to 3 percent slopes.

main limitations to use of the soil as sites for septic tank absorption fields are the seasonal high water table and the slow permeability. Placing distribution lines in suitable fill material helps to increase the lateral and downward flow of effluent.

This map unit is in capability subclass IIIw.

KeB—Kendaia silt loam, 3 to 8 percent slopes. This is a gently sloping, very deep, poorly drained soil in small depressions and in areas around drainageways. Individual areas are irregular in shape and range from 5 to 30 acres.

Typically, the surface layer is very dark grayish brown silt loam about 8 inches thick. The subsoil is 18 inches thick. In the upper 8 inches it is brown, friable silt loam. In the lower 10 inches it is grayish brown, mottled friable silt loam. The substratum is dark grayish brown, mottled, firm gravelly silt loam to a depth of 60 inches or more.

Included with this soil in mapping are areas of Amenia soils on slightly convex rises and at the upper boundary of map units and areas of Lyons soils in low, concave areas. Also included are areas of soils that have slope of more than 8 percent. The included soils make up about 5 to 10 percent of the map unit.

Permeability of this Kendaia soil is moderate in the subsoil and slow in the firm substratum. The available water capacity is moderate. The seasonal high water table is near the surface in winter and early spring. The surface layer is easily tilled under the proper moisture conditions. The root zone is restricted by the seasonal high water table in early spring and by the firm substratum below a depth of about 26 inches. The soil is slightly acid or neutral in the surface layer, slightly acid to mildly alkaline in the subsoil, and mildly alkaline or moderately alkaline in the substratum.

Most areas of this soil are used for pasture.

This soil is fairly well suited to row crops and small grains in areas that are adequately drained. The main limitations are the seasonal high water table and the firm substratum. Surface drainage, diversions, open ditches, tile drains, or a combination of these practices helps to remove excess water from the soil. Conservation tillage and crop residue returned to the soil help to maintain and improve soil tilth and organic matter content.

This soil is well suited to grasses and legumes for hay and pasture. Drainage is needed, and water-tolerant plants produce the highest yields. The main management concerns are overgrazing and grazing when the soil is too wet, which reduce the hardiness and density of plants. Proper stocking rates, timely grazing, and, during wet periods, restricted grazing help to maintain the desirable species of pasture plants.

Potential productivity for red maple on this soil is moderate. The main management concerns are the seasonal high water table, high seedling mortality, and the windthrow hazard. The low soil strength limits the use of equipment except when the soil is dry or frozen. Thinning should be designed to minimize windthrow by locating and orienting cuts to reduce wind effects, by keeping residual stand density at or slightly above standard stocking levels, and by limiting changes in stand density to 30 percent or less.

Constructing buildings without basements and above the seasonal high water table helps to prevent the interior damage caused by wetness. Tile drains laid around foundations help to reduce wetness. Landscaping designed to drain surface runoff away from buildings provides added protection against damage caused by wetness. Constructing roads on raised, coarse textured base material and providing adequate side ditches and culverts help to prevent the damaged pavement caused by the seasonal high water table and frost heave. The main limitations to use of the soil as sites for septic tank absorption fields are the seasonal high water table and the slow permeability. Placing distribution lines in a suitable fill material helps to increase the lateral and downward flow of effluent.

This map unit is in capability subclass IIIw.

KvA—Kendaia silt loam, 0 to 3 percent slopes, extremely stony. This is a nearly level, very deep, poorly drained soil in depressions and low areas. Slopes are smooth and slightly concave and are typically 10 to 100 feet long. Individual areas are irregular in shape and range from 5 to 20 acres. Stones, 3 to 20 feet apart, are on the surface.

Typically, the surface layer is friable, very dark grayish brown silt loam about 8 inches thick. The subsoil is about 18 inches thick. In the upper 8 inches it is friable, brown silt loam. In the lower part it is grayish brown, mottled, friable silt loam. The substratum is dark grayish brown, mottled, firm gravelly silt loam to a depth of 60 inches or more.

Included with this soil in mapping are a few areas of soils where very few stones are on the surface and some areas of very poorly drained soils. Also included are a few small areas of soils that have slope of more than 3 percent. The included soils make up about 10 to 15 percent of the map unit.

Permeability is moderate in the subsoil and slow in the firm substratum. The available water capacity is moderate. The root zone is restricted by the firm substratum at a depth of about 26 inches. The seasonal high water table is at a depth of 1/2 to 1 1/2 feet in winter and early spring. The soil is slightly acid or neutral in the surface layer, slightly acid to mildly alkaline in the subsoil, and mildly alkaline or moderately alkaline in the substratum.

Most areas of this soil are woodland.

This soil is generally not suited to cultivated crops, hay, or pasture. The main limitations are the seasonal high water table and the stones on the surface. Installing drainage tile is difficult because in many areas suitable outlets are not available.

In areas used for pasture, grazing during wet periods causes surface compaction. Proper stocking rates, deferred grazing, and rotation grazing help to maintain the desirable species of pasture plants.

Potential productivity for red maple on this soil is moderate. The main management concerns are the seasonal high water table, high seedling mortality, and the windthrow hazard. The low soil strength limits the use of equipment except when the soil is dry or frozen. Thinning should be designed to minimize windthrow by locating and orienting cuts to reduce wind effects, by keeping residual stand density at or slightly above standard stocking levels, and by limiting changes in stand density to 30 percent or less.

Constructing buildings without basements and above the seasonal high water table helps to prevent the interior damage caused by wetness. Tile drains laid around foundations help to reduce wetness. Landscaping designed to drain surface runoff away from buildings provides added protection against damage caused by wetness. Constructing roads on raised, coarse textured base material and providing adequate side ditches and culverts help to prevent the damaged pavement caused by the seasonal high water table and frost heave. The main limitations to use of the soil as sites for septic tank absorption fields are the seasonal high water table and the slow permeability. Placing distribution lines in a suitable fill material help to increase the lateral and downward flow of effluent.

This map unit is in capability subclass VIIs.

KvB—Kendaia silt loam, 3 to 8 percent slopes, extremely stony. This is a gently sloping, very deep, poorly drained soil in small depressions and drainageways. Individual areas are irregular in shape and range from 5 to 30 acres. Stones, 3 to 20 feet apart, are on the surface.

Typically, the surface layer is very dark grayish brown, friable silt loam about 8 inches thick. The subsoil is about 18 inches thick. In the upper 8 inches it is brown, friable silt loam. In the lower 10 inches it is grayish brown, mottled, friable silt loam. The substratum is dark grayish brown, mottled, firm gravelly silt loam to a depth of 60 inches or more.

Included with this soil in mapping are areas of soils where very few stones are on the surface and some areas of soils that are better drained than the Kendaia soil. Also included are soils that have slope of more than

8 percent. The included soils make up about 5 to 10 percent of the map unit.

Permeability of this Kendaia soil is moderate in the subsoil and slow in the firm substratum. The available water capacity is moderate. The seasonal high water table is at a depth of 1/2 to 1 1/2 feet in winter and early spring. The surface layer is easily tilled under proper moisture conditions and if cleared of stones. The root zone is restricted by the seasonal high water table in early spring and by the firm substratum at a depth of about 26 inches. The soil is slightly acid or neutral in the surface layer, slightly acid to mildly alkaline in the subsoil, and mildly alkaline or moderately alkaline in the substratum.

Most areas of this soil are woodland.

This soil is generally not suited to cultivated crops, hay, or pasture. The main limitations are the stones on the surface and the seasonal high water table.

In areas used for pasture, proper stocking rates, deferred grazing, and rotation grazing help to maintain the desirable species of pasture plants.

Potential productivity for red maple on this soil is moderate. The main management concerns are the seasonal high water table, high seedling mortality, and the windthrow hazard. The low soil strength limits the use of equipment except when the soil is dry or frozen. Thinning should be designed to minimize windthrow by locating and orienting cuts to reduce wind effects, by keeping residual stand density at or slightly above standard stocking levels, and by limiting changes in stand density to 30 percent or less.

Constructing buildings without basements and above the seasonal high water table helps to prevent the interior damage caused by wetness. Tile drains laid around foundations help to reduce wetness. Landscaping designed to drain surface runoff away from buildings provides added protection against damage caused by wetness. Constructing roads on raised, coarse textured base material and providing adequate side ditches and culverts help to prevent the damaged pavement caused by the seasonal high water and frost heave. The main limitations to use of the soil as sites for septic tank absorption fields are the seasonal high water table and the slow permeability. Placing distribution lines in a suitable fill material helps to increase the lateral and downward flow of effluent.

This map unit is in capability subclass VIIs.

KvC—Kendaia silt loam, 8 to 15 percent slopes, extremely stony. This is a strongly sloping, very deep, poorly drained soil in drainageways and on the lower side slopes. Slopes are smooth and concave and are typically 10 to 200 feet long. Individual areas are irregular in shape and range from 5 to 50 acres. Stones, 3 to 20 feet apart, are on the surface.

Typically, the surface layer is very dark grayish brown, friable silt loam about 8 inches thick. The subsoil is about 18 inches thick. In the upper part it is brown, friable silt loam. In the lower part it is grayish brown, mottled, friable silt loam. The substratum is dark grayish brown, mottled, firm gravelly silt loam to a depth of 60 inches or more.

Included with this soil in mapping are a few areas of soils where very few stones are on the surface and some areas of soils that are better drained than the Kendaia soil. Also included are a few small areas of soils that have slope of less than 8 percent. The included soils make up about 5 to 10 percent of the map unit.

Permeability of this Kendaia soil is moderate in the subsoil and slow in the firm substratum. The available water capacity is moderate. The root zone is restricted by the firm substratum at a depth of about 26 inches. The seasonal high water table is at a depth of 1/2 to 1 1/2 feet in winter and early spring. Reaction is slightly acid or neutral in the surface layer, slightly acid to mildly alkaline in the subsoil, and mildly alkaline or moderately alkaline in the substratum.

Most areas of this soil are woodland.

This soil is generally not suited to cultivated crops, hay, and pasture. The main limitations are the seasonal high water table and the stones on the surface.

In areas used for pasture, grazing during wet periods causes surface compaction. Proper stocking rates, deferred grazing, and rotation grazing help to maintain the desirable species of pasture plants.

Potential productivity for red maple on this soil is moderate. The main management concerns are the seasonal high water table, high seedling mortality, and the windthrow hazard. The low soil strength limits the use of equipment except when the soil is dry or frozen. Thinning should be designed to minimize windthrow by locating and orienting cuts to reduce wind effects, by keeping residual stand density at or slightly above standard stocking levels, and by limiting changes in stand density to 30 percent or less.

Constructing buildings without basements and above the seasonal high water table helps to prevent the interior damage caused by wetness. Tile drains laid around foundations help to reduce wetness. Landscaping designed to drain surface runoff away from buildings provides added protection against damage caused by wetness. Constructing roads on raised, coarse textured base material and providing adequate side ditches and culverts help to prevent the damaged pavement caused by the seasonal high water table and frost heave. The main limitations to use of the soil as sites for septic tank absorption fields are the seasonal high water table and the slow permeability. Placing distribution lines in a suitable fill material helps to increase the lateral and downward flow of effluent.

This map unit is in capability subclass VIIs.

LdE—Lanesboro-Dummerston association, steep, very stony. This map unit consists of very deep, well drained Lanesboro and Dummerston soils. It is about 50 percent Lanesboro soils, 30 percent Dummerston soils, and 20 percent other soils. These soils are on the sides of hills and mountains. Lanesboro soils are typically on the lower, less steep slopes, and Dummerston soils are on the higher, steeper slopes. Slopes range from 15 to 45 percent. Stones and boulders, 5 to 100 feet apart, cover the surface. Areas of the individual soils are large enough to map separately, but in considering the present and predicted use the two soils were mapped as one unit. Areas of these soils are irregular in shape and range from 50 to 300 acres.

Typically, the surface layer of Lanesboro soils is very dark gray, friable loam about 2 inches thick. The subsurface layer is dark brown gravelly silt loam about 2 inches thick. The subsoil is about 25 inches thick. In the upper 4 inches it is dark yellowish brown, friable gravelly silt loam. In the next 7 inches it is yellowish brown, friable, gravelly silt loam. In the next 4 inches it is thick, yellowish brown, friable gravelly silt loam. In the lower 10 inches it is yellowish brown, friable gravelly loam. The substratum is light olive brown, firm gravelly loam to a depth of 60 inches or more.

Typically, the surface layer of Dummerston soils is dark brown, very friable loam about 10 inches thick. The subsoil is about 16 inches thick. It is olive brown, friable silt loam. The substratum is very dark grayish brown gravelly sandy loam to a depth of 60 inches or more.

Included with these soils in mapping are areas of the moderately well drained Fullam soils on the less sloping areas of hillsides. Also included are areas of the shallow Taconic soils on the sides of hills. The included soils make up about 15 to 20 percent of the map unit.

Permeability is moderate above the substratum and slow in the substratum in Lanesboro soils and moderate throughout in Dummerston soils. The available water capacity is moderate in Lanesboro soils and high in Dummerston soils. Lanesboro soils have a seasonal high water table at a depth of about 2 feet. The root zone is restricted by the firm substratum in Lanesboro soils but is not restricted in Dummerston soils. Both soils range from very strongly acid to moderate acid throughout.

Most areas of these soils are woodland.

These soils are generally not suitable for cultivated crops, hay, and pasture because of slope and the stones on the surface.

Potential productivity is high for eastern white pine on Lanesboro soils and is moderate for sugar maple on Dummerston soils. The main management concerns are the large stones and boulders, slope, and the hazard of erosion. In most areas the use of equipment is limited, and hand-planting is generally needed. Constructing access roads and trails on the contour and installing water bars help to control erosion. Keeping soil disturbance to a minimum and retaining the sponge-like mulch of leaves help to increase the absorption of precipitation, to reduce runoff, and to control erosion. Plant competition is moderate. Thinning woodlands of undesired stock, such as dead or diseased trees, or removing trees in crowded areas allows more vigorous growth and regeneration. Thinning also allows the restocking or replanting of preferred trees. Removing and controlling competing understory vegetation allows the best growth of new plantings.

The main limitation to use of these soils as sites for buildings is slope. Extensive land shaping is generally needed. Designing buildings and lots to conform to the natural slope of the land helps to overcome the slope limitation and to control erosion in disturbed areas. Extensive cut-and-fill is generally needed when constructing roads on these soils. Constructing roads on the contour and planting roadbanks to well adapted grasses help to control erosion. The main limitations to use of these soils as sites for septic tank absorption fields is slope. On Lanesboro soils the slow permeability is also a limitation. On Lanesboro soils, placing the distribution lines in a suitable fill material helps to increase the lateral and downward flow of effluent.

Some areas of the included soils have fewer or more restricting limitations than those of Lanesboro and Dummerston soils. Onsite investigation is needed to determine the suitability of particular areas for any use.

This map unit is in capability subclass VIIs.

Lm—Limerick silt loam. This is a nearly level, very deep, poorly drained soil in depressions on flood plains. Individual areas are irregular in shape and range from 5 to 10 acres.

Typically, the surface layer is very dark grayish brown, friable silt loam about 10 inches thick. The substratum extends to a depth of 60 inches or more. In the upper part it is olive gray, mottled, friable silt loam. In the next part it is olive, mottled, friable silt loam. In the lower part it is olive gray, mottled, friable very fine sandy loam.

Included with this soil in mapping are areas of Winooski soils in more convex positions and areas of Saco soils in the lower lying, concave positions. The included soils make up about 5 to 10 percent of the map unit.

Permeability of this Limerick soil is moderate. The available water capacity is high. The seasonal high water table is above a depth of 1/2 to 1 1/2 feet in winter and spring. The soil is flooded every year, usually in winter and early spring. The surface layer is easily tilled under the proper moisture conditions. The root zone is restricted at a depth of about 1 to 2 feet by the seasonal high water table in early spring. The soil ranges from moderately acid to neutral throughout.

Most areas of this soil are woodland. Some areas are used for cultivated crops, hay, and pasture.

This soil is fairly well suited to row crops, small grains, and grasses and legumes for hay or pasture. The main limitations are the seasonal high water table and flooding. Surface drainage helps to remove excess water if suitable outlets are available. Proper timing of farming operations, water-tolerant plant species, and planting after spring flooding are suitable management practices. Crop residue returned to the soil helps to maintain or increase the organic matter content of the surface layer.

This soil is well suited to grasses and legumes for hay and pasture. The main management concern is restricted access to fields caused by wet soil conditions. Proper stocking rates, deferred grazing, and rotation grazing help to maintain the desirable species of pasture plants.

Potential productivity for red maple on this soil is moderate. The main management concerns are the seasonal high water table, high seedling mortality, and the windthrow hazard. The low soil strength limits the use of equipment except when the soil is dry or frozen. Thinning should be designed to minimize windthrow by locating and orienting cuts to reduce wind effects, by keeping residual stand density at or slightly above standard stocking levels, and by limiting changes in stand density to 30 percent or less.

This soil is generally not suitable for use as sites for buildings and septic tank absorption fields because of flooding and the seasonal high water table. Sites on soils that are better suited to the intended uses are generally nearby. Constructing roads on raised, coarse textured fill material and providing adequate side ditches and culverts help to prevent the damaged pavement caused by flooding, the seasonal high water table, and frost heave.

This map unit is in capability subclass IIIw.

LtE—Lyman-Tunbridge association, steep, extremely stony. This map unit consists of shallow, somewhat excessively drained Lyman soils and moderately deep, well drained Tunbridge soils. It is about 45 percent Lyman soils, 45 percent Tunbridge soils, and 10 percent other soils. These soils are on the mountainous uplands (fig. 14). Lyman soils are typically on the upper steep slopes and Tunbridge soils are in the less sloping areas or in pockets between Lyman soils and rock outcrops. Rock outcrops and many stones and boulders cover the surface. Slopes range from 15 to 45 percent. Areas of the individual soils are large enough to map separately, but in considering the present and predicted use they were mapped as one unit. Areas of the map unit are irregular in shape and range from 50 to 350 acres.

Typically, the surface layer of Lyman soils is very dark brown, friable fine sandy loam about 3 inches thick. The subsoil is about 13 inches thick. In the upper 7 inches it is dark brown, friable loam. In the lower 6 inches it is yellowish brown, friable loam. The underlying bedrock, which is schist, gneiss, and granite, is fractured at the surface but solid underneath.

Typically, the surface layer of Tunbridge soils is black, very friable, fine sandy loam about 1 inch thick. The subsoil is about 19 inches thick. In the upper 7 inches it is dark brown, friable loam. In the next 6 inches it is dark yellowish brown, friable fine sandy loam. In the lower 6 inches it is dark yellowish brown, friable fine sandy loam. The substratum is dark yellowish brown, friable fine sandy loam to a depth of 26 inches. The underlying bedrock, which is schist, gneiss, and granite, is fractured at the surface but solid underneath.

Included with these soils in mapping are areas of rock outcrops and areas of Berkshire soils on steep hillsides and mountainsides. Also included are some poorly drained and very poorly drained mineral and organic soils in depressions or in pockets in the lesser sloping areas. The included areas make up about 10 to 15 percent of the map unit.

Permeability is moderately rapid in Lyman soils and moderate or moderately rapid in Tunbridge soils. The available water capacity in both soils is moderate. The root zone in both soils is restricted by bedrock. In both soils the surface layer and the subsoil are extremely acid to moderately acid. The substratum in Tunbridge soils is strongly acid to slightly acid.

Most areas of these soils are woodland.

These soils are generally not suitable for cultivated crops, hay, or pasture because of depth to bedrock, rock outcrop, and slope.

Potential productivity for sugar maple on these soils is moderate. The main management concerns are shallow depth to bedrock, the low available water capacity of the soils, and slope. Growth and survival are poor. The use of equipment is limited because of rock outcrops and slope. Thinning is generally not a good practice because windthrow is a moderate hazard. Minimizing soil disturbance and retaining the sponge-like mulch of leaves help to increase the absorption of precipitation, to reduce runoff, and to control erosion.

The main limitations to use of the soil as sites for buildings are slope and the shallow depth to bedrock. Extensive land shaping and blasting of bedrock are generally necessary. Constructing roads on the contour, if possible, and planting roadbanks to well adapted grasses help to control erosion. The underlying bedrock hinders road construction in some areas. The main limitations to use of the soil as sites for septic tank absorption fields are the shallow depth to bedrock and slope. Installing the distribution lines across the slope is generally needed for proper operation. In some areas bedrock hinders installation.

Some areas of the included soils have fewer or more restricting limitations than those of the Lyman and Tunbridge soils for the intended use. Onsite investigation is needed to determine the suitability of particular areas for any use.

This map unit is in capability subclass VIIs.

Ly—Lyons mucky silt loam. This is a nearly level, very deep, very poorly drained soil in depressions and

Figure 14.—A typical area of Lyman-Tunbridge association, steep, extremely stony.

drainageways. Individual areas are irregular in shape and range from 3 to 20 acres.

Typically, the surface layer is very dark gray, friable mucky silt loam about 9 inches thick. The subsoil is about 27 inches thick. In the upper 13 inches it is dark gray, friable loam, and in the lower 14 inches it is dark gray, friable fine sandy loam. The substratum is olive gray, friable fine sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are areas of Kendaia soils on slight convex rises. Also included are a few areas of soils where cobblestones are in the surface layer and a few areas of soils where stones cover about 1 percent of the surface. The included soils make up about 5 to 10 percent of the map unit.

Permeability of this Lyons soil is moderate or moderately slow in the surface layer and the subsoil and slow or very slow in the substratum. The available water capacity is moderate. The seasonal high water table is at or near the surface in fall and spring or after periods of heavy rain. Root growth is impeded by the seasonal high water table. The soil ranges from moderately acid to neutral in the surface layer, slightly acid to mildly alkaline in the subsoil, and mildly alkaline or moderately alkaline in the substratum.

Most areas of this soil are mixed brushland and woodland.

This soil is poorly suited to row crops and small grains. The main limitation is the seasonal high water table.

This soil is poorly suited to grasses and legumes for unimproved pasture because of the seasonal high water table. Water-tolerant plants produce the highest yields. The main management concern is overgrazing or grazing when the soil is too wet, which reduce the hardiness and density of plants. Proper stocking rates, timely grazing, and, during wet periods, restricted grazing help to maintain the desirable species of pasture plants.

Potential productivity for red maple on this soil is moderate. The main management concerns are the seasonal high water table, high seedling mortality, and the windthrow hazard. Growth and survival are poor. The low soil strength limits the use of equipment except when the soil is very dry or frozen. Thinning should be designed to minimize windthrow by locating and orienting cuts to reduce wind effects, by keeping residual stand density at or slightly above standard stocking levels, and by limiting changes in stand density to 30 percent or less. In some areas tree plantings are practical if special practices are used.

This soil is generally not suitable for use as sites for buildings and septic tank absorption fields because of the seasonal high water table. Soils that are better suited to these uses are generally nearby. Constructing roads on a raised, coarse textured base material and providing adequate side ditches and culverts help to prevent the damaged pavement caused by the seasonal high water table and frost heave.

This map unit is in capability subclass Vw.

Lz—Lyons mucky silt loam, extremely stony. This is a nearly level, very deep, very poorly drained soil in depressions and drainageways. Individual areas are irregular in shape and range from 3 to 20 acres. Stones, 3 to 20 feet apart, are on the surface.

Typically, the surface layer is very dark gray, friable, mucky silt loam about 9 inches thick. The subsoil is about 27 inches thick. In the upper 13 inches it is dark gray, friable loam, and in the lower 14 inches it is dark gray, friable fine sandy loam. The substratum is olive gray, friable fine sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are areas of Kendaia soils on slight, convex rises. The included soils make up about 5 to 10 percent of the map unit.

Permeability of this Lyons soil is moderate or moderately slow in the surface layer and the subsoil and slow or very slow in the substratum. The available water capacity is moderate. The seasonal high water table is at or near the surface in fall and spring or after periods of heavy rainfall. Root growth is impeded by the seasonal high water table. The soil ranges from moderately acid to neutral in the surface layer, slightly acid to mildly alkaline in the subsoil, and mildly alkaline or moderately alkaline in the substratum.

Most areas of this soil are mixed brushland and woodland.

This soil is generally not suitable for row crops and small grains. The main limitations are the seasonal high water table and stones on the surface.

This soil is poorly suited to grasses and legumes for unimproved pasture. The main management concerns are overgrazing or grazing when the soil is too wet, which reduce the hardiness and density of plants. Proper stocking rates, timely grazing, and, during wet periods, restricted grazing help to maintain the desired species of pasture plants.

Potential productivity for red maple on this soil is moderate. The main management concerns are the seasonal high water table, high seedling mortality, and the windthrow hazard. Growth and survival are poor. The low soil strength limits the use of equipment except when the soil is very dry or frozen. Thinning should be designed to minimize windthrow by locating and orienting cuts to reduce wind effects, by keeping residual stand density at or slightly above standard stocking levels, and by limiting changes in stand density to 30 percent or less. In some areas tree plantings are practical if special practices are used.

This soil is generally not suited to use as sites for buildings and septic tank absorption fields because of the seasonal high water table. Soils that are better suited to these uses are generally nearby. Constructing roads on raised, coarse textured base material and providing adequate side ditches and culverts help to prevent the damaged pavement caused by the seasonal high water table and frost heave.

This map unit is in capability subclass VIIs.

MeA—Merrimac fine sandy loam, 0 to 3 percent slopes. This is a nearly level, very deep, somewhat excessively drained soil on slight convex ridges. Individual areas are irregular in shape and range from 5 to 200 acres.

Typically, the surface layer is dark brown, friable fine sandy loam about 9 inches thick. The subsoil is about 13 inches thick. In the upper 5 inches it is dark yellowish brown, friable fine sandy loam. In the lower 8 inches it is yellowish brown, friable sandy loam. The substratum is light olive brown gravelly sand to a depth of 60 inches or more.

Included with this soil in mapping are a few small areas of soils where the volume of gravel is less than 25 percent in the substratum. Also included, in most map units, are small areas of Hinckley soils. Also included, at the edges of a few map units, are soils that have slope of more than 3 percent. The included soils make up about 5 to 10 percent of the map unit.

Permeability of this Merrimac soil is moderately rapid in the subsoil and rapid in the substratum. The available water capacity is moderate. The surface layer is easily tilled under the proper moisture conditions. The root zone is restricted by loose sand and gravel at a depth of about 22 inches. The soil is droughty in late summer. It ranges from extremely acid to moderately acid throughout.

Most areas of this soil are used for cultivated crops. A few areas are woodland.

This soil is well suited to row crops and small grains. The main limitation is droughtiness. Crop residue returned to the soil helps to maintain or increase the organic matter content of the surface layer.

This soil is well suited to grasses and legumes for hay and pasture. Plants that tolerate drought in late summer produce the highest yields. The main management concern is overgrazing, which causes surface compaction and reduces the hardiness and density of plants. Proper stocking rates, timely grazing, and, during wet periods, restricted grazing help to maintain the desirable species of pasture plants.

Potential productivity for eastern white pine on this soil is high. Seedling mortality is moderate because of moisture stress caused by the moderate available water capacity. Minimizing soil disturbance and retaining the sponge-like mulch of leaves increase the absorption of precipitation and retain the limited soil moisture. In some areas rémoving and controlling competing understory vegetation allow more vigorous growth and regeneration of preferred trees.

There are no major limitations to use of the soil as sites for buildings and for local roads. Because of the rapid permeability, ground water contamination is a hazard if the soil is used as sites for septic tank absorption fields. The soil readily absorbs the effluent but does not adequately filter it.

This map unit is in capability subclass IIs.

MeB—Merrimac fine sandy loam, 3 to 8 percent slopes. This is a gently sloping, very deep, somewhat excessively drained soil on slightly convex ridges. Individual areas are irregular in shape and range from 5 to 200 acres.

Typically, the surface layer is dark brown, friable fine sandy loam about 9 inches thick. The subsoil is about 13 inches thick. In the upper 5 inches it is dark yellowish brown, friable fine sandy loam. In the lower 8 inches it is yellowish brown, friable fine sandy loam. The substratum is light olive brown gravelly sand to a depth of 60 inches or more.

Included with this soil in mapping are a few small areas of soils where gravel makes up less than 25 percent of the volume of the substratum. Also included, within most map units, are small areas of Hinckley soils. Also included are areas of Hero and Fredon soils in slightly concave areas. The included soils make up about 5 to 10 percent of the map unit.

Permeability of this Merrimac soil is moderately rapid in the subsoil and rapid in the substratum. The available water capacity is moderate. The surface layer is easily tilled under the proper moisture conditions. The root zone is restricted by loose sand and gravel at a depth of about 22 inches. The soil is droughty in late summer. The soil ranges from extremely acid to moderately acid throughout.

Most areas of this soil are used for cultivated crops. A few areas are woodland.

This soil is well suited to row crops and small grains. The main limitation is droughtiness. Crop residue returned to the soil helps to maintain or increase the organic matter content of the surface layer.

This soil is well suited to grasses and legumes for hay and pasture. Plants that tolerate drought in late summer produce the highest yields. The main management concern is overgrazing, which causes surface compaction and reduces the hardiness and density of plants. Proper stocking rates, timely grazing, and, during wet periods, restricted grazing help to maintain the desired species of pasture plants.

Potential productivity for eastern white pine on this soil is high. Seedling mortality is moderate because of moisture stress caused by the moderate available water capacity. Minimizing soil disturbance and retaining the sponge-like mulch of leaves help to increase the absorption of precipitation and retain the limited soil moisture. Removing and controlling competing understory vegetation allow more vigorous growth and regeneration of preferred trees.

There are no major limitations to use of the soil as sites for buildings and for local roads. Because of the rapid permeability, ground water contamination is a hazard if the soil is used as sites for septic tank absorption fields. The soil readily absorbs the effluent but does not adequately filter it.

This map unit is in capability subclass IIs.

MeC—Merrimac fine sandy loam, 8 to 15 percent slopes. This is a strongly sloping, very deep, somewhat excessively drained soil on elongated and irregularly shaped, undulating areas. Slopes are convex and as much as 300 feet long. Individual areas range from 5 to 40 acres.

Typically, the surface layer is dark brown, friable fine sandy loam about 9 inches thick. The subsoil is about 13 inches thick. In the upper 5 inches it is dark yellowish brown, friable fine sandy loam. In the lower 8 inches it is yellowish brown, friable fine sandy loam. The substratum is light olive brown gravelly sand to a depth of 60 inches or more.

Included with this soil in mapping are a few areas of soils where some of the original surface layer has been removed by erosion. Also included are a few areas of soils where gravel makes up more than 15 percent of the volume in the upper part of the subsoil. Also included, within most map units, are small areas of Hero soils. The included soils make up about 10 to 15 percent of the map unit.

Permeability of this Merrimac soil is moderately rapid in the subsoil and rapid in the substratum. The available water capacity is moderate. The surface layer is easily tilled under the proper moisture conditions. The root zone is restricted by loose sand and gravel at a depth of about 22 inches. The soil is droughty in late summer. The soil ranges from extremely acid to moderately acid throughout.

Most areas of this soil are used for cultivated crops. A few areas are mixed brushland or woodland.

This soil is fairly well suited to row crops and small grains. Erosion is a hazard. The main limitation is droughtiness. Conservation tillage, crop rotation, contour farming, or a combination of these practices helps to control erosion.

This soil is well suited to grasses and legumes for hay and pasture. Plants that tolerate drought in late summer produce the highest yields. The main management concern is overgrazing, which causes surface compaction, increases surface runoff, and reduces the hardiness and density of plants. Proper stocking rates, timely grazing, and, during wet periods, restricted grazing help to maintain the desired species of pasture plants, to prevent surface compaction, and to reduce runoff.

Potential productivity for eastern white pine on this soil is high. The main management concern in disturbed areas is the hazard of erosion. Plant competition is moderate if conifers are grown. Constructing access roads and trails on the contour and installing water bars help to control erosion. Minimizing soil disturbance and retaining the sponge-like mulch of leaves help to increase the absorption of precipitation, to reduce runoff, and to control erosion. Thinning woodlands of undesired stock, such as dead or diseased trees, or removing trees in crowded areas allows more vigorous growth and regeneration of preferred trees. Removing and controlling competing understory vegetation allow for the best growth of new plantings. Pruning improves the quality of white pine and red pine.

Designing buildings to conform to the natural slope of the land helps to overcome the slope limitation and to control erosion in disturbed areas. Land shaping may be needed in some areas. Constructing roads on the contour, if possible, and planting roadbanks to well adapted grasses help to control erosion. Ground water contamination is a hazard if the soil is used as sites for septic tank absorption fields because of the rapid permeability. The soil readily absorbs the effluent but does not adequately filter it.

This map unit is in capability subclass IIIe.

MeD—Merrimac fine sandy loam, 15 to 25 percent slopes. This is a moderately steep, very deep, somewhat excessively drained soil in elongated and irregularly shaped, undulating areas. Slopes are convex and as much as 200 feet long. Individual areas range from 5 to 40 acres.

Typically, the surface layer is dark brown, friable fine sandy loam about 9 inches thick. The subsoil is about 13 inches thick. In the upper 5 inches it is dark yellowish brown, friable fine sandy loam. In the lower 8 inches it is yellowish brown, friable fine sandy loam. The substratum is light olive brown gravelly sand to a depth of 60 inches or more.

Included with this soil in mapping are areas of soils where most of the original surface layer has been removed by erosion. Also included are a few areas of soils where gravel makes up more than 15 percent of the volume of the upper part of the subsoil. Also included, within most map units, are small areas of Hinckley soils. Also included, at the base of many slopes, are areas of Hero soils. The included soils make up about 5 to 10 percent of the map unit.

Permeability of this Merrimac soil is moderately rapid in the subsoil and rapid in the substratum. The available water capacity is moderate. The surface layer is easily tilled under the proper moisture conditions. The root zone is restricted by loose sand and gravel at a depth of about 22 inches. The soil is droughty in late summer. The soil ranges from extremely acid to moderately acid throughout.

Most areas of this soil, which were once used as farmland, are mixed brushland and woodland.

This soil is poorly suited to row crops and small grains. The main limitations are slope and the erosion hazard. Conservation tillage, crop rotation, contour farming, or a combination of these practices helps to control erosion.

This soil is fairly well suited to grasses and legumes for hay and pasture. Plants that tolerate drought in late summer produce the highest yields. The main management concern is overgrazing, which causes surface compaction, increases surface runoff, and reduces the hardiness and density of plants. Proper stocking rates, timely grazing, and, during wet periods, restricted grazing help to maintain the desired species of pasture plants, to prevent surface compaction, and to reduce runoff.

Potential productivity for eastern white pine on this soil is high. The main management concern is the hazard of erosion, particularly in disturbed areas, such as skid trails, landings, and access roads. Constructing access roads and trails with grades between 2 and 10 percent and installing water bars help to control erosion. Seedling mortality is moderate because of moisture stress caused by the moderate available water capacity. Minimizing soil disturbance and retaining the sponge-like mulch of leaves help to increase the absorption of precipitation. Designing regeneration cuts to preserve shade and reduce evapotranspiration help to retain the limited soil moisture. Thinning crowded stands to accepted, standard stocking levels while removing diseased, poorly formed, and otherwise undesirable trees allows more vigorous growth. Shelterwood cutting, seed-tree cutting, and clearcutting establish natural regeneration or provide suitable planting sites.

The main limitation to use of the soil as sites for buildings is slope. Extensive land shaping is generally needed. Designing buildings and lots to conform to the natural slope of the land helps to overcome the slope limitation and to control erosion in disturbed areas. Extensive cut-and-fill is generally needed when constructing roads. Constructing roads on the contour and planting roadbanks to well adapted grasses help to control erosion. The main limitations to use of the soil as sites for septic tank absorption fields are slope and the rapid permeability. Because of the rapid permeability, ground water contamination is a hazard if the soil is used as sites for septic tank absorption fields. The soil does not adequately filter the effluent. Distribution lines installed across the slope help to overcome the slope limitation, but in some areas additional precautionary measures are needed to filter adequately the effluent.

This map unit is in capability subclass IVe.

NeB—Nellis loam, 3 to 8 percent slopes. This is a gently sloping, very deep, well drained soil on the crest of drumloids or glacial till ridges. Individual areas are irregular in shape and range from 10 to 15 acres.

Typically, the surface layer is dark brown, very friable loam about 7 inches thick. The subsoil is about 25 inches thick. In the upper 5 inches it is dark yellowish brown, friable gravelly loam. In the next 7 inches it is olive brown, friable gravelly loam. In the lower 13 inches it is very dark grayish brown, friable gravelly loam. The substratum extends to a depth of 60 inches or more. In the upper part it is very dark grayish brown, friable gravelly loam, and in the lower part it is dark grayish brown, firm gravelly loam.

Included with this soil in mapping are small areas of Amenia, Kendaia, and Farmington soils. Also included are areas of soils that have slope of less than 3 percent or more than 8 percent. The included soils make up about 5 to 10 percent of the map unit.

Permeability of this Nellis soil is moderate in the subsoil and moderately slow or moderate in the substratum. The available water capacity is high. The soil is moderately acid to neutral in the surface layer and the subsoil and mildly alkaline or moderately alkaline in the substratum.

Most areas of this soil have been cleared of surface stones and are used for crops, hay, and pasture. A small acreage is used as sites for buildings.

This soil is well suited to cultivated crops, hay, and pasture. Good tilth is easily maintained in cultivated areas. Conservation tillage, contour tillage, cover crops, and grasses and legumes included in the cropping system help to reduce runoff and to control erosion. Crop residue and manure mixed into the surface layer improve soil tilth and increase organic matter content.

This soil is well suited to grasses and legumes for hay and pasture. The main management concern is overgrazing, which reduces the hardiness and density of plants. Proper stocking rates, deferred grazing, and rotation grazing help to maintain the desirable species of pasture plants.

Potential productivity for northern red oak on this soil is moderately high. There are no major limitations to woodland management. Plant competition is moderate if conifers are grown. Thinning woodlands of undesired stock, such as dead or diseased trees, or removing trees in crowded areas allows more vigorous growth and regeneration of preferred trees. Removing and controlling competing understory vegetation allow the best growth of new plants.

There are no major limitations to use of this soil as sites for buildings. Constructing roads on well compacted, coarse textured, base material helps to prevent the damaged pavement caused by frost heave. The main limitation to use of the soil as sites for septic tank absorption fields is the moderately slow permeability. The soil does not readily absorb effluent from septic tank absorption fields. If the absorption fields are larger than average, the lateral and downward flow of effluent are increased.

This map unit is in capability subclass IIe.

NeC—Nellis loam, 8 to 15 percent slopes. This is a strongly sloping, very deep, well drained soil on the upper side slopes of drumloids, or glacial till ridges. Individual areas are irregular in shape and range from 10 to 30 acres.

Typically, the surface layer is dark brown, very friable loam about 7 inches thick. The subsoil is about 25 inches thick. In the upper 5 inches it is dark yellowish brown, friable gravelly loam. In the next 7 inches it is olive brown, friable gravelly loam. In the lower 13 inches it is very dark grayish brown, friable gravelly loam. The substratum extends to a depth of 60 inches or more. In the upper part it is very dark grayish brown, friable gravelly loam, and in the lower part it is dark grayish brown, firm gravelly loam.

Included with this soil in mapping are small areas of Amenia, Farmington, and Kendaia soils. The included soils make up about 10 to 15 percent of the map unit.

Permeability in this Nellis soil is moderate in the subsoil and moderately slow or moderate in the substratum. The available water capacity is high. The soil is moderately acid to neutral in the surface layer and the subsoil and mildly alkaline or moderately alkaline in the substratum.

Most areas of these soils have been cleared of surface stones and are used for crops, hay, and pasture. Some areas have reverted to woodland.

This soil is fairly well suited to cultivated crops. Good tilth is easily maintained in cultivated areas. Erosion is a hazard. The main limitation is slope. Conservation tillage, contour tillage, cover crops, and grasses and legumes included in the cropping system help to reduce runoff and to control erosion. Crop residue and manure mixed into the surface layer improve soil tilth and increase organic matter content.

This soil is well suited to grasses and legumes for hay and pasture. The main management concern is overgrazing, which reduces the hardiness and density of plants. Proper stocking rates, deferred grazing, and rotation grazing help to maintain the desirable species of pasture plants.

Potential productivity for northern red oak on this soil is moderately high. There are no major limitations to woodland management. Plant competition is moderate if conifers are grown. Thinning woodlands of undesired stock, such as dead or diseased trees, or removing trees in crowded areas allows more vigorous growth and regeneration of preferred trees. Removing and controlling competing understory vegetation allow the best growth of new plantings.

Designing buildings to conform to the natural slope of the land helps to overcome the slope limitation and to control erosion in disturbed areas. Constructing roads on the contour, if possible, and planting roadbanks to well adapted grasses help to control erosion. Using a well compacted, coarse textured base material helps to prevent the damaged pavement caused by frost heave. The main limitation to use of the soil as sites for septic tank absorption fields is the moderately slow permeability. The soil does not readily absorb effluent from septic tank absorption fields. Installing absorption fields that are larger than average helps to increase the lateral and downward flow of effluent.

This map unit is in capability subclass IIIe.

NeD—Nellis loam, 15 to 25 percent slopes. This is a moderately steep, very deep, well drained soil on side slopes of drumloids, or glacial till ridges. Individual areas are irregular in shape and range from 10 to 30 acres.

Typically, the surface layer is dark brown, very friable loam about 7 inches thick. The subsoil is about 25 inches thick. In the upper 5 inches it is dark yellowish brown, friable gravelly loam. In the next 7 inches it is olive brown, friable gravelly loam. In the lower 13 inches it is very dark grayish brown, friable gravelly loam. The substratum extends to a depth of 60 inches or more. In the upper part it is very dark grayish brown, friable gravelly loam. In the lower part it is dark grayish brown, firm gravelly loam.

Included with this soil in mapping are small areas of Amenia and Farmington soils. The included soils make up about 5 to 10 percent of the map unit.

Permeability of this Nellis soil is moderate in the subsoil and moderately slow or moderate in the substratum. The available water capacity is high. The soil is moderately acid to neutral in the surface layer and the subsoil and mildly alkaline or moderately alkaline in the substratum.

Most areas of this map unit are woodland. Some areas have been cleared of surface stones and are used for hay and pasture.

This soil is poorly suited to row crops and small grains. Erosion is a hazard. The main limitation is slope. Conservation tillage, crop rotation, contour farming, or a combination of these practices helps to control erosion.

This soil is fairly well suited to grasses and legumes for hay and pasture. The main management concern is overgrazing, which causes surface compaction, increases surface runoff, and reduces the hardiness and density of plants. Proper stocking rates, deferred grazing, and, during wet periods, restricted grazing help to maintain the desired species of pasture plants, to prevent surface compaction, and to reduce runoff.

Potential productivity for northern red oak on this soil is moderately high. The main management concerns are slope and the hazard of erosion. Plant competition is moderate if conifers are grown. Constructing access roads and trails with grades between 2 and 10 percent and installing water bars help to control erosion. Minimizing soil disturbance and retaining the sponge-like mulch of leaves help to reduce runoff and to control erosion. Thinning crowded stands to accepted, standard stocking levels while removing diseased, poorly formed, and otherwise undesirable trees allows more vigorous growth. Shelterwood cutting, seed-tree cutting, and clearcutting establish natural regeneration or provide suitable planting sites. In some areas removing or controlling competing vegetation is needed for the best growth of newly established seedlings.

The main limitation to use of this soil as sites for buildings is slope. Extensive land shaping is generally needed. Designing buildings and lots to conform to the natural slope of the land helps to overcome the slope limitation and to control erosion in disturbed areas. Extensive cut-and-fill is generally needed in road construction. Constructing roads on the contour and planting roadbanks to well adapted grasses help to control erosion. The main limitations to use of this soil as sites for septic tank absorption fields are slope and the moderately slow permeability. The soil does not readily absorb effluent. Soils that are better suited to use as septic tank absorption fields are generally nearby.

This map unit is in capability subclass IVe.

NsB—Nellis loam, 3 to 8 percent slopes, very stony. This is a gently sloping, very deep, well drained soil on the crests of drumloids, or glacial till ridges, which are generally oriented northeast to southwest. Stones cover 1 to 3 percent of the surface. Individual areas are irregular in shape and 10 to 15 acres.

Typically, the surface layer is dark brown, very friable loam about 7 inches thick. The subsoil is about 25 inches thick. In the upper 5 inches it is dark yellowish brown, friable gravelly loam. In the next 7 inches it is olive brown, friable gravelly loam. In the lower 13 inches it is very dark grayish brown, friable gravelly loam. The substratum extends to a depth of 60 inches or more. In the upper part it is very dark grayish brown, friable gravelly loam. In the lower part it is dark grayish brown, firm gravelly loam.

Included with this soil in mapping are small areas of Amenia, Kendaia, and Farmington soils. Also included in mapping are areas of soils where stones cover more than 3 percent of the surface. The included soils make up about 10 to 15 percent of the map unit.

Permeability is moderate in the subsoil and moderately slow or moderate in the substratum. The available water capacity is high. The soil is moderately acid to neutral in the surface layer and the subsoil and mildly alkaline or moderately alkaline in the substratum.

Most areas of this soil are woodland. A small acreage is used for pasture. The main limitation for most uses is the stones on the surface. If the surface is cleared of stones and trees, the soil is suitable for cultivated crops and hay.

This soil is generally not suited to cultivated crops and hay because of the stones on the surface. If it is used for pasture, the stones on the surface are the main management concern. Proper stocking rates, deferred grazing, and rotation grazing help to maintain the desired species of pasture plants.

Potential productivity for northern red oak on this soil is moderately high. There are no major limitations to woodland management. Plant competition during regeneration is moderate if conifers are grown. Thinning crowded stands to accepted, standard stocking levels allows more vigorous growth. Shelterwood cutting, seed-tree cutting, and clearcutting establish natural regeneration or provide suitable planting sites. In some areas removing or controlling competing vegetation is needed for the best growth of newly established seedlings.

There are no major limitations to use of this soil as sites for buildings. Constructing roads on a well compacted, coarse textured, base material helps to prevent the damaged pavement caused by frost heave. The main limitation to use of the soil as sites for septic tank absorption fields is the moderately slow permeability. The soil does not readily absorb effluent from septic tank absorption fields. Installing absorption fields that are larger than average helps to increase the lateral and downward flow of effluent.

This map unit is in capability subclass VIs.

NsC—Nellis loam, 8 to 15 percent slopes, very stony. This is a strongly sloping, very deep, well drained soil on the crests and side slopes of drumloids, or glacial till ridges. Stones cover 1 to 3 percent of the surface. Individual areas are irregular in shape and range from 10 to 30 acres.

Typically, the surface layer is dark brown, very friable loam about 7 inches thick. The subsoil is about 25 inches thick. In the upper 5 inches it is dark yellowish brown, friable gravelly loam. In the next 7 inches it is olive brown, friable gravelly loam. In the lower 13 inches it is very dark grayish brown, friable gravelly loam. The substratum extends to a depth of 60 inches or more. In the upper part it is very dark grayish brown, friable gravelly loam. In the lower part it is dark grayish brown, firm gravelly loam.

Included with this soil in mapping are small areas of Amenia, Kendaia, and Farmington soils. Also included are areas of soils where stones cover more than 3 percent of the surface. Also included are some areas of soils that have slope of less than 8 percent or more than 15 percent. The included soils make up about 10 to 15 percent of the map unit.

Permeability of this Nellis soil is moderate in the subsoil and moderately slow or moderate in the substratum. The available water capacity is high. The soil is moderately acid to neutral in the surface layer and the subsoil and mildly alkaline or moderately alkaline in the substratum.

Most areas of this soil are woodland. Some small areas are used for pasture.

This soil is generally not suited to crops because of the stones on the surface and slope. The stones impede the use of equipment for planting. Erosion is a hazard if the soil is not protected by a vegetative cover.

This soil is fairly well suited to pasture. The stones on the surface impede the use of equipment. Proper stocking rates, deferred grazing, and rotation grazing help to maintain the desirable species of pasture plants.

Potential productivity for northern red oak on this soil is moderately high. There are no major limitations to woodland management. Plant competition during regeneration is moderate if conifers are grown. Thinning crowded stands to accepted, standard stocking levels allows more vigorous growth. Shelterwood cutting, seed-tree cutting, and clearcutting establish natural regeneration or provide suitable planting sites. In some areas removing or controlling competing vegetation is needed for the best growth of newly established seedlings.

Designing buildings to conform to the natural slope of the land helps to overcome the slope limitation and to control erosion in disturbed areas. Constructing roads on the contour, if possible, and planting roadbanks to well adapted grasses help to control erosion. Using a well compacted, coarse textured base material helps to prevent the damaged pavement caused by frost heave. The main limitation to use of the soil as sites for septic tank absorption fields is the moderately slow permeability. The soil does not readily absorb effluent from septic tank absorption fields. Installing absorption fields that are larger than average helps to increase the lateral and downward flow of effluent.

This map unit is in capability subclass VIs.

NsD—Nellis loam, 15 to 25 percent slopes, very stony. This is a moderately steep, very deep, well drained soil on the side slopes of drumloids, or glacial till ridges. Stones cover 1 to 3 percent of the surface. Individual areas are irregular in shape and range from 10 to 30 acres.

Typically, the surface layer is dark brown, very friable loam about 7 inches thick. The subsoil is about 25 inches thick. In the upper 5 inches it is dark yellowish brown, friable gravelly loam. In the next 7 inches it is olive brown, friable gravelly loam. In the lower 13 inches it is very dark grayish brown, friable gravelly loam. The substratum extends to a depth of 60 inches or more. In the upper part it is very dark grayish brown, friable gravelly loam, and in the lower part it is dark grayish brown, firm gravelly loam.

Included with this soil in mapping are small areas of Amenia and Farmington soils. Also included are areas of soils where stones cover more than 3 percent of the surface. The included soils make up about 5 to 10 percent of the map unit.

Permeability of this Nellis soil is moderate in the subsoil and moderately slow or moderate in the substratum. The available water capacity is high. This soil is moderately acid to neutral in the surface layer and the subsoil and mildly alkaline or moderately alkaline in the substratum.

Most areas of this soil are woodland.

This soil is generally not suited to crops and hay. Slope and the stones on the surface limit the use of equipment. Erosion is a severe hazard if the soil is not protected by a vegetative cover.

This soil is poorly suited to pasture. The stones on the surface impede the use of equipment. If the soil is used for pasture, intensive management practices are needed to control erosion. Proper stocking rates, deferred grazing, and rotation grazing help to maintain the desirable species of pasture plants.

Potential productivity for northern red oak on this soil is moderately high. The main management concerns are slope and the hazard of erosion. Plant competition is moderate if conifers are grown. Constructing access roads and trails with grades between 2 and 10 percent and installing water bars help to control erosion. Minimizing soil disturbance helps to retain the sponge-like mulch of leaves that help to reduce runoff and to control erosion. Thinning crowded stands to accepted, standard stocking levels while removing diseased, poorly formed, and otherwise undesirable trees allows more vigorous growth. Shelterwood cutting, seed-tree cutting, and clearcutting establish natural regeneration or provide suitable planting sites. In some areas removing or controlling competing vegetation is needed for the best growth of newly established seedlings.

The main limitation to use of this soil as sites for buildings is slope. Extensive land shaping is generally needed. Designing buildings and lots to conform to the natural slope of the land helps to overcome the slope limitation and to control erosion in disturbed areas. Extensive cut-and-fill is generally needed when constructing roads on the soil. Constructing roads on the contour and planting roadbanks to well adapted grasses help to control erosion. The main limitations to use of the soil as sites for septic tank absorption fields are slope and the moderately slow permeability. The soil does not readily absorb effluent from septic tank absorption fields. Soils that are better suited to this use are generally nearby.

This map unit is in capability subclass VIs.

NvC—Nellis loam, 8 to 15 percent slopes, extremely stony. This is a strongly sloping, very deep, well drained soil on the side slopes of drumloids, or glacial till ridges. Stones cover 3 to 15 percent of the surface. Individual areas are irregular in shape and range from 10 to 15 acres.

Typically, the surface layer is dark brown, very friable loam about 7 inches thick. The subsoil is about 25 inches thick. In the upper 5 inches it is dark yellowish brown, friable gravelly loam. In the next 7 inches it is olive brown, friable gravelly loam. In the lower 13 inches it is very dark grayish brown, friable gravelly loam. The substratum extends to a depth of 60 inches or more. In the upper part it is very dark grayish brown, friable gravelly loam, and in the lower part it is dark grayish brown, firm gravelly loam.

Included with this soil in mapping are small areas of Amenia, Kendaia, and Farmington soils. Also included are areas of soils that have slope of more than 15 percent and areas of soils where stones cover less than 3 percent. The included soils make up about 10 to 15 percent of the map unit.

Permeability of this Nellis soil is moderate in the subsoil and moderately slow or moderate in the substratum. The available water capacity is high. The soil is moderately acid to neutral in the surface layer and the subsoil and mildly alkaline or moderately alkaline in the substratum.

Most areas of this soil are woodland. Some small areas are used for pasture.

This soil is generally not suited to crops, hay, and pasture because of slope and the stones on the surface.

Potential productivity for northern red oak on this soil is moderately high. There are no major limitations to woodland management. Plant competition is moderate if conifers are grown. Thinning woodlands of undesired stock, such as dead or diseased trees, or removing trees in crowded areas allows more vigorous growth and regeneration of preferred trees. Removing and controlling competing understory vegetation allow the best growth of new plantings.

Designing buildings to conform to the natural slope of the land helps to overcome the slope limitation and to control erosion in disturbed areas. Constructing roads on the contour, if possible, and planting roadbanks to well adapted grasses help to control erosion. Using well compacted, coarse textured base material helps to prevent the damaged pavement caused by frost heave. The main limitation to use of the soil as sites for septic tank absorption fields is the moderately slow permeability. The soil does not readily absorb effluent from septic tank absorption fields. Installing a larger than average absorption field helps to increase the lateral and downward flow of effluent.

This map unit is in capability subclass VIIs.

NvD—Nellis loam, 15 to 25 percent slopes, extremely stony. This is a moderately steep, very deep, well drained soil on the side slopes of drumloids, or glacial till ridges. Stones cover 3 to 15 percent of the surface. Individual areas are irregular in shape and range from 15 to 30 acres.

Typically, the surface layer is dark brown, very friable loam about 7 inches thick. The subsoil is about 25 inches thick. In the upper 5 inches it is dark yellowish brown, friable gravelly loam. In the next 7 inches it is olive brown, friable gravelly loam. In the lower 13 inches it is very dark grayish brown, friable gravelly loam. The substratum extends to a depth of 60 inches or more. In the upper part it is very dark grayish brown, friable gravelly loam, and in the lower part it is dark grayish brown, firm gravelly loam.

Included with this soil in mapping are small areas of Amenia and Farmington soils. Also included are small areas of soils that have slope of less than 15 percent or more than 25 percent. Also included are small areas of soils where stones cover less than 3 percent of the surface. The included soils make up about 5 to 10 percent of the map unit.

Permeability is moderate in the subsoil and moderately slow or moderate in the substratum. The available water capacity is high. The soil is moderately acid to neutral in the surface layer and the subsoil and mildly alkaline or moderately alkaline in the substratum.

Most areas of this soil are woodland.

This soil is generally not suited to crops, hay, and pasture. Slope and the stones on the surface limit the use of equipment. Erosion is a severe hazard if the soil is not protected by a vegetative cover.

Potential productivity for northern red oak on this soil is moderately high. The main management concerns are the hazard of erosion and the equipment limitation because of slope. Plant competition is moderate if conifers are grown. Constructing access roads and trails on the contour and installing water bars help to control erosion. Minimizing soil disturbance helps to retain the sponge-like mulch of leaves that helps to increase the absorption of precipitation, to reduce runoff, and to control erosion. Thinning woodlands of undesired stock, such as dead or diseased trees, or removing trees in crowded areas allows more vigorous growth and regeneration of preferred trees. Thinning allows restocking or replanting of preferred trees. Removing and controlling competing understory vegetation allow the best growth in new plantings. On some steep and very steep slopes, hand-planting is needed.

The main limitation to use of this soil as sites for buildings is slope. Extensive land shaping is generally needed. Designing buildings and lots to conform to the natural slope of the land helps to overcome the slope limitation and to control erosion in disturbed areas. Extensive cut-and-fill is generally needed when constructing roads on the soil. Constructing roads on the contour and planting roadbanks to well adapted grasses help to control erosion. The main limitations to use of the soil as sites for septic tank absorption fields are slope and the moderately slow permeability. The soil does not readily absorb effluent. Soils that are better suited to this use are generally nearby.

This map unit is in capability subclass VIIs.

OaA—Oakville loamy sand, 0 to 3 percent slopes. This is a nearly level, very deep, well drained soil on high stream terraces. Individual areas are irregular in shape and range from 5 to 10 acres.

Typically, the surface layer is very dark grayish brown, very friable loamy sand about 8 inches thick. The subsoil is about 19 inches thick. In the upper 4 inches it is dark yellowish brown, very friable loamy sand. In the next 10 inches it is yellowish brown, loose sand. In the lower 5 inches it is yellowish brown, loose coarse sand. The substratum is brown, loose coarse sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Copake and Groton soils. Also included are soils that have slopes of more than 3 percent. The included soils make up about 5 to 10 percent of the map unit.

Permeability of this Oakville soil is rapid throughout. The available water capacity is moderate. The soil is moderately acid to neutral throughout.

Most areas of this soil are cleared and are used for cultivated crops and hay. Some small areas have reverted to woodland.

This soil is well suited to cultivated crops. The main limitation is droughtiness. Crop residue returned to the soil helps to increase or maintain the organic matter content of the surface layer.

This soil is well suited to grasses and legumes for hay and pasture. Plants that tolerate drought in late summer produce the highest yields. The main management concern is overgrazing, which causes surface compaction and reduces the hardiness and density of plants. Proper stocking rates and deferred grazing help to maintain the desired species of pasture plants and to prevent surface compaction.

Potential productivity for northern red oak on this soil is moderate. The main management concern is moisture stress caused by the moderate available water capacity. Thinning crowded stands to accepted, standard stocking levels while removing diseased, poorly formed, and otherwise undesirable trees allows more vigorous growth. Shelterwood cutting, seed-tree cutting, and clearcutting establish natural regeneration or provide suitable planting sites. In some areas removing or controlling competing vegetation is needed for the best growth of newly established seedlings. Minimizing soil disturbance and retaining the sponge-like mulch of leaves help to absorb precipitation. Designing regeneration cuts to preserve shade and to reduce evapotranspiration help to retain the limited soil moisture.

There are no major limitations to use of this soil as sites for buildings and for local roads. Because of the rapid permeability, ground water contamination is a hazard if the soil is used as sites for septic tank absorption fields.

This map unit is in capability subclass IVs.

OaB—Oakville loamy sand, 3 to 8 percent slopes. This is a gently sloping, very deep, well drained soil on high stream terraces. Individual areas are irregular in shape and range from 5 to 20 acres.

Typically, the surface layer is very dark grayish brown, very friable loamy sand about 8 inches thick. The subsoil is about 19 inches thick. In the upper 4 inches it is dark yellowish brown, very friable loamy sand. In the next 10 inches it is yellowish brown, loose sand. In the lower 5 inches it is yellowish brown, loose coarse sand. The substratum is brown, loose coarse sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Copake and Groton soils. Also included in mapping are areas of soils that have slope of less than 3 percent or more than 8 percent. The included soils make up about 5 to 10 percent of the map unit.

Permeability of this Oakville soil is rapid throughout. The available water capacity is moderate. The root zone is restricted only by the type of vegetation. The soil is moderately acid to neutral throughout.

Most areas of this soil are cleared and are used for cultivated crops and hay. Some small areas have reverted to woodland.

This soil is fairly well suited to cultivated crops. The main limitation is droughtiness. Erosion is a hazard if the soil is not protected by a vegetative cover. If the soil is used for cultivated crops, a cropping system is needed to control erosion.

This soil is well suited to grasses and legumes for hay and pasture. Plants that tolerate drought in late summer produce the highest yields. The main management concern is overgrazing, which causes surface compaction and reduces the hardiness and density of plants. Proper stocking rates and deferred grazing help to maintain the desired species of pasture plants and to prevent surface compaction.

Potential productivity for northern red oak on this soil is moderate. The main management concern is moisture stress caused by the moderate available water capacity. Thinning crowded stands to accepted, standard stocking levels while removing diseased, poorly formed, and otherwise undesirable trees allows more vigorous growth. Shelterwood cutting, seed-tree cutting, and clearcutting establish natural regeneration or provide suitable planting sites. In some areas removing or controlling competing vegetation is needed for the best growth of newly established seedlings. Minimizing soil disturbance and retaining the sponge-like mulch of leaves help to absorb precipitation. Designing regeneration cuts to preserve shade and to reduce evapotranspiration help to retain the limited soil moisture.

There are no major limitations to use of this soil as sites for buildings and for local roads. Because of the rapid permeability, ground water contamination is a hazard if the soil is used as sites for septic tank absorption fields. The soil readily absorbs the effluent but does not adequately filter it.

This map unit is in capability subclass IVs.

OaC—Oakville loamy sand, 8 to 15 percent slopes. This is a strongly sloping, very deep, well drained soil on the side slopes of kames and on stream terraces. Individual areas are irregular in shape and range from 10 to 20 acres.

Typically, the surface layer is very dark grayish brown, very friable loamy sand about 8 inches thick. The subsoil is about 19 inches thick. In the upper 4 inches it is dark yellowish brown, very friable loamy sand. In the next 10 inches it is yellowish brown, loose sand. In the lower 5 inches it is yellowish brown, loose coarse sand. The substratum is brown, loose coarse sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Copake and Groton soils. The included soils make up about 5 to 10 percent of the map unit.

Permeability of this Oakville soil is rapid throughout. The available water capacity is moderate. The soil is moderately acid to neutral throughout.

Most areas of this soil have been cleared and are used for cropland. Some small areas have reverted to woodland.

This soil is generally not suited to cultivated crops. The main limitation is droughtiness. Erosion is a hazard.

This soil is fairly well suited to grasses and legumes for hay and pasture. Plants that tolerate drought in late summer produce the highest yields. The main management concern is overgrazing, which causes surface compaction, increases surface runoff, and reduces the hardiness and density of plants. Proper stocking rates and deferred grazing help to maintain the desirable species of pasture plants, to prevent surface compaction, and to reduce runoff.

Potential productivity for northern red oak on this soil is moderate. The main management concern is moisture stress caused by the moderate available water capacity. Thinning crowded stands to accepted, standard stocking levels while removing diseased, poorly formed, and otherwise undesirable trees allows more vigorous growth. Shelterwood cutting, seed-tree cutting, and clearcutting establish natural regeneration or provide suitable planting sites. In some areas removing or controlling competing vegetation is needed for the best growth of newly established seedlings. Minimizing soil disturbance and retaining the sponge-like mulch of leaves help to absorb precipitation. Designing regeneration cuts to preserve shade and reduce evapotranspiration help to retain the limited soil moisture.

Designing buildings to conform to the natural slope of the land helps to overcome the slope limitation and to control erosion in disturbed areas. In some areas land shaping is needed. Constructing roads on the contour, if possible, and planting roadbanks to well adapted grasses help to control erosion. Because of the rapid permeability, ground water contamination is a hazard if the soil is used as sites for septic tank absorption fields. The soil readily absorbs the effluent but does not adequately filter it.

This map unit is in capability subclass VIs.

OaD—Oakville loamy sand, 15 to 25 percent slopes. This is a moderately steep, very deep, well drained soil on side slopes of kames and on stream terraces. Individual areas are irregular in shape and range from 10 to 20 acres.

Typically, the surface layer is very dark grayish brown, very friable loamy sand about 8 inches thick. The subsoil is about 19 inches thick. In the upper 4 inches it is dark yellowish brown, very friable loamy sand. In the next 10 inches it is yellowish brown, loose sand. In the lower 5 inches it is yellowish brown, loose coarse sand. The substratum is brown loose coarse sand to a depth of 60 inches or more.

Included in mapping are small areas of Copake and Groton soils. The included soils make up about 5 to 10 percent of the map unit.

Permeability of this Oakville soil is rapid throughout. The available water capacity is moderate. The soil is moderately acid to neutral throughout.

Most areas of this soil are woodland. Some areas have been cleared and are used for hay and pasture.

This soil is generally not suited to crops because of slope and the hazard of erosion.

This soil is poorly suited to grasses and legumes for hay and pasture. Plants that tolerate drought in late summer produce the highest yields. Proper stocking rates, deferred grazing, and, during wet periods, restricted grazing help to maintain the hardiness and density of pasture plants, to prevent surface compaction, and to reduce runoff.

Potential productivity for northern red oak on this soil is moderate. The main management concern is moisture stress caused by the moderate available water capacity. Thinning crowded stands to accepted, standard stocking levels while removing diseased, poorly formed, and otherwise undesirable trees allows more vigorous growth. Shelterwood cutting, seed-tree cutting, and clearcutting establish natural regeneration or provide suitable planting sites. In some areas removing or controlling competing vegetation is needed for the best growth of newly established seedlings. Minimizing soil disturbance and retaining the sponge-like mulch of leaves help to absorb precipitation. Designing regeneration cuts to preserve shade and reduce evapotranspiration help to retain the limited soil moisture.

The main limitation to use of this soil as sites for buildings is slope. Extensive land shaping is generally needed. Designing buildings and lots to conform to the natural slope of the land helps to overcome the slope limitation and to control erosion in disturbed areas. Extensive cut-and-fill is generally needed when constructing roads on the soil. Constructing roads on the contour and planting roadbanks to well adapted grasses help to control erosion. The main limitations to use of the soil as sites for septic tank absorption fields are slope and the rapid permeability. Because of the rapid permeability, ground water contamination is a hazard if the soil is used as sites for septic tank absorption fields. Installing distribution lines across the slope helps to overcome the slope limitation, but in some areas additional precautionary measures are needed to filter adequately the effluent.

This map unit is in capability subclass VIIs.

Pc—Palms and Carlisle mucks. This map unit consists of moderately deep, very poorly drained Palms soils and very deep, very poorly drained Carlisle soils. It is about 50 percent Palms soils, 40 percent Carlisle soils, and 10 percent other soils, but the proportion is different in each mapped area. The Palms and Carlisle soils were mapped together because they are similar in use and management. These soils formed in organic material on the low-lying glacial till plains and outwash plains throughout the central part of the county (fig. 15). They are subject to frequent ponding. Individual areas of the map unit are irregular in shape and range from 5 to several hundred acres.

Typically, Palms soils consist of black, very dark grayish brown and dark reddish gray decomposed organic material to a depth of 40 inches. The substratum is gray silt loam to a depth of 60 inches or more.

Typically, Carlisle soils are black and dark reddish brown decomposed organic material to a depth of about 52 inches. The substratum is very dark gray loamy sand to a depth of 60 inches or more.

Included with these soils in mapping are the very deep, poorly drained Lyons and Halsey soils at the edges of the mapped areas. The included soils make up about 5 to 10 percent of the map unit.

Permeability is moderately slow to moderately rapid in the organic layer of Palms and Carlisle soils. The available water capacity is high. The root zone is restricted by the seasonal high water table at or near the surface most of the year. Reaction in Palms soils ranges from strongly acid to neutral in the upper, organic part and slightly acid or neutral in the lower, mineral part. Reaction in Carlisle soils ranges from strongly acid to neutral throughout.

These soils are poorly suited to most types of cultivated crops, hay, and pasture because of the

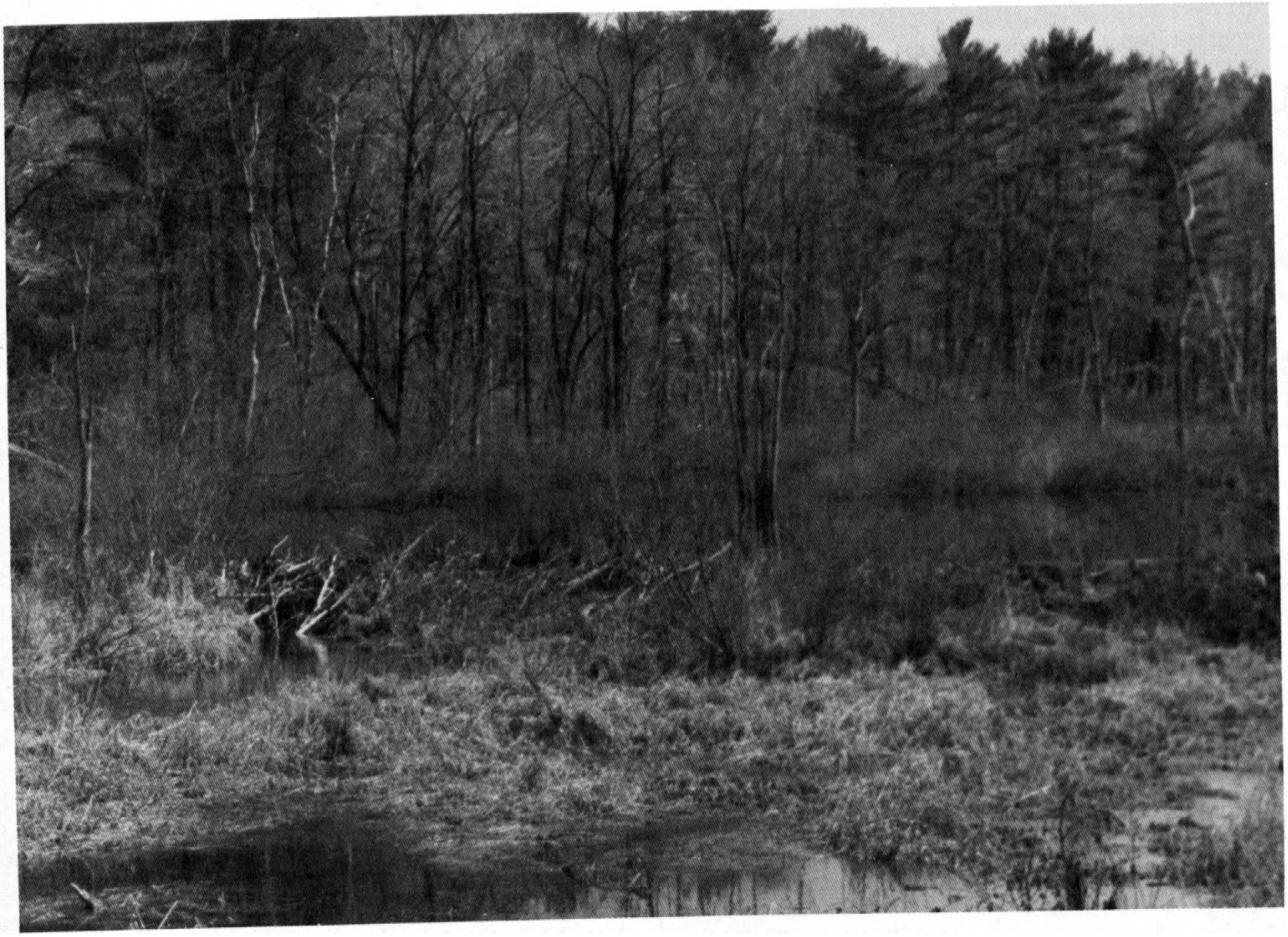


Figure 15.—A typical area of Palms and Carlisle mucks.

seasonal high water table. Drainage is needed, but generally suitable outlets are not available.

Potential productivity for red maple on these soils is moderate. The main limitations are the seasonal high water table, high seedling mortality, and the windthrow hazard. Growth and survival are poor. The use of equipment is limited by the low soil strength except during periods when the soils are very dry or frozen. Thinning minimizes windthrow by keeping residual stand density at or slightly above standard stocking levels and by limiting changes in stand density to 30 percent or less. In some areas tree plantings are practical if special practices are used.

These soils are generally not suited to use as building sites because of ponding. In some areas structural damage is a hazard because of low soil strength. The soils are generally not suitable to use as sites for septic tank absorption fields because of the seasonal high water table and ponding. Soils that are better suited to these uses are generally available nearby. Constructing roads on a raised, coarse textured fill material and providing adequate side ditches and culverts help to prevent the damaged pavement caused by ponding and the low soil strength.

This map unit is in capability subclass Vw.

PmC—Peru-Marlow association, rolling, extremely stony. This map unit consists of very deep, moderately well drained Peru soils and very deep, well drained Marlow soils. It is about 60 percent Peru soils, 20 percent Marlow soils, and 20 percent other soils. These soils are on the sides and crests of glacial till uplands (fig. 16). Peru soils are typically on the lower parts of slopes or in slightly concave areas and Marlow soils are on the upper parts of slopes or in convex areas. Slopes range from 3 to 15 percent. Stones and boulders, approximately 3 to 20 feet apart, are on the surface. Areas of the individual soils are large enough to map separately, but in considering the present and predicted use they were mapped as one unit. Areas of this map unit are irregular in shape and range from 30 to 300 acres.

Typically, the surface layer of Peru soils is dark brown, friable fine sandy loam about 8 inches thick. The subsoil is about 16 inches thick. In the upper part it is brown, friable fine sandy loam. In the lower part it is yellowish brown, mottled, friable gravelly fine sandy loam. The substratum is olive brown, mottled, firm gravelly fine sandy loam to a depth of 60 inches or more.

Typically, the surface layer of Marlow soils is black, very friable fine sandy loam about 3 inches thick. The subsurface layer is dark grayish brown, very friable fine sandy loam 3 inches thick. The subsoil is about 26 inches thick. In the upper part it is dark reddish brown, friable fine sandy loam. In the lower part it is dark brown, friable fine sandy loam. The substratum is dark grayish brown, very firm fine sandy loam to a depth of 60 inches or more.

Included with these soils in mapping are areas of the poorly drained Pillsbury soils on nearly level slopes and in depressions. Also included are areas of the shallow Lyman soils on hillsides and areas of the very deep Berkshire soils on hillsides and knolls. The included areas make up about 10 to 20 percent of the map unit.

Permeability of Peru soils is moderate above the substratum and moderately slow to slow in the substratum. Permeability of Marlow soils is moderate above the substratum and moderately slow or slow in the substratum. The available water capacity is moderate. The seasonal high water table is perched above the substratum for brief periods in winter and spring and after prolonged rains. The root zone is restricted by the firm or very firm substratum. The soils range from very strongly acid to moderately acid throughout.

Figure 16.—A typical area of Peru-Marlow association, rolling, extremely stony.

Most areas of these soils are woodland. Some areas have been cleared and are used for cultivated crops, hay, and pasture.

These soils are generally not suited to cultivated crops, hay, and pasture because of the stones on the surface.

Potential productivity is moderate for sugar maple on Peru soils and for northern red oak on Marlow soils. The main management concerns are the large stones and boulders on the surface and plant competition. The stones and boulders impede the use of harvesting and planting equipment. In some areas hand-planting is needed. Thinning crowded stands to accepted, standard stocking levels while removing diseased, poorly formed, and otherwise undesirable trees allows more vigorous growth. Shelterwood cutting, seed-tree cutting, and clearcutting establish natural regeneration or provide suitable planting sites. In some areas removing or controlling competing vegetation is needed for the best growth of newly established seedlings.

Constructing buildings with the lower or basement level above the seasonal high water table helps to prevent the interior damage caused by wetness. Tile drains laid around foundations help to reduce wetness. Landscaping designed to drain surface water away from buildings provides added protection against damage caused by wetness. In some areas land shaping is needed. Constructing roads on a well compacted, coarse textured base material helps to prevent the damaged pavement caused by frost heave. The main limitations to use of the soils as sites for septic tank absorption fields are the seasonal high water table and the moderately slow or slow permeability. Placing distribution lines in a suitable fill material helps to increase the lateral and downward flow of effluent. Some areas of the included soils have fewer or more restricting limitations than those of the Peru and Marlow soils. Onsite investigation is needed to determine the suitability of particular areas for any use.

This map unit is in capability subclass VIIs.

PoB—Pillsbury loam, 0 to 8 percent slopes, extremely stony. This is a nearly level to gently sloping, very deep, poorly drained soil on foot slopes of drainageways and in slightly concave areas of glacial till uplands. Stones and boulders, approximately 5 to 20 feet apart, cover the landscape. Individual areas are irregular in shape and range from 30 to 300 acres.

Typically, the surface layer is very dark grayish brown, friable loam about 4 inches thick. The subsoil is 18 inches thick. In the upper part it is dark brown, friable loam about 8 inches thick. In the lower part it is light brownish gray, mottled, friable fine sandy loam about 10 inches thick. The substratum is light olive brown, mottled, firm fine sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are areas of the moderately well drained Peru soils in the higher positions on the landscape, very poorly drained mineral soils in depressions, and very poorly drained organic soils in depressions or pockets. Also included on the sides of hills are the shallow Lyman soils. The included soils make up about 20 to 40 percent of the map unit.

Permeability of this Pillsbury soil is moderate above the substratum and slow in the substratum. The available water capacity is moderate. The seasonal high water table is at or near the surface in winter and spring and after prolonged rains. The root zone is restricted by the firm or very firm substratum. Reaction is very strongly acid or strongly acid in the surface layer and the subsoil and very strongly acid to moderately acid in the substratum.

Most areas of this soil are woodland. Some areas have been cleared and are used for unimproved pasture.

These soils are generally not suited to cultivated crops and poorly suited to hay and pasture because of the seasonal high water table and the stones on the surface.

If the soil is used for pasture, proper stocking rates, deferred grazing, and rotation grazing help to maintain the desirable species of plants.

Potential productivity for sugar maple on this soil is moderate. The main management concerns are the seasonal high water table, high seedling mortality, and the windthrow hazard. The low soil strength limits the use of equipment except when the soil is dry or frozen. Thinning should be designed to minimize windthrow by locating and orienting cuts to reduce wind effects, by keeping residual stand density at or slightly above standard stocking levels, and by limiting changes in stand density to 30 percent or less.

Constructing buildings without basements and above the seasonal high water table help to prevent the interior damage caused by wetness. Tile drains laid around foundations help to reduce wetness. Landscaping designed to drain surface water away from buildings provides added protection against damage caused by wetness. Constructing roads on raised, coarse textured base material and providing adequate side ditches and culverts help to prevent the damaged pavement caused by the seasonal high water table and frost heave. The main limitations to use of the soil as sites for septic tank absorption fields are the seasonal high water table and the slow permeability. Placing distribution lines in a suitable fill material help to increase the lateral and downward flow of effluent.

Some areas of the included soils have fewer or more restricting limitations than those of this Pillsbury soil. Onsite investigation is needed to determine the suitability of particular areas for any use.

This map unit is in capability subclass VIIs.

Pp—Pits, gravel. This map unit consists of excavations in areas of loose, sandy glacial till but mainly in areas of gravelly and sandy glacial outwash. The pits were made by excavating gravel for use in construction. They are 3 to 50 feet deep. The sides are generally steep, and the floors are mostly level. Stones and boulders in piles are commonly scattered on the pit floors. Some pits have small pools of water. The pits are commonly irregular in shape, depending on the nature of the gravel deposits and the ownership boundaries. They range in size from 2 to 100 acres or more.

Pits are generally devoid of vegetation, although some older ones are covered by scattered bushes, patches of grass, and annuals. The available water capacity is very low. Permeability differs from area to area but generally is moderately rapid to very rapid.

This map unit is poorly suited to farming and woodland use because of the very low available water capacity. Generally, it is poorly suited to use as habitat for wildlife, although some species of birds prefer to nest in these areas.

Ground water contamination is a hazard if this map unit is used as sites for sanitary waste disposal because of the rapid or very rapid permeability. Onsite investigation is needed to determine the suitability of each site for a particular use.

This map unit has not been assigned to a capability subclass.

Pq—Pits, quarry. This map unit consists of excavations mainly in areas of limestone bedrock. The pits were made by excavating limestone for commercial purposes. They are 50 to 300 feet deep. The sides are generally steep, and the floors are mostly level. Stones and boulders in piles are commonly scattered on the pit floors. Some pits have small pools of water. The pits are commonly irregular in shape, depending on the nature of the limestone deposits and the ownership boundaries. They range in size from 2 to 100 acres.

Pits are generally devoid of vegetation, although some older ones are covered by scattered bushes, patches of grass, and annuals.

This map unit is poorly suited to farming and to use as woodland because the soil is too shallow to support plants. Generally, it is poorly suited to use as habitat for wildlife.

This map unit is poorly suited to most urban and recreation uses because of bedrock at or near the surface. Onsite investigation of each site is needed for any use.

This map unit has not been assigned to a capability subclass.

PrB—Pittsfield loam, 3 to 8 percent slopes. This is a gently sloping, very deep, well drained soil on the crests and side slopes of drumloids, or glacial till ridges. Individual areas are irregular in shape and range from 10 to 15 acres.

Typically, the surface layer is very dark grayish brown, very friable loam about 9 inches thick. The subsoil is about 23 inches thick. In the upper 6 inches it is dark yellowish brown, very friable loam. In the next 10 inches it is brown, very friable fine sandy loam. In the lower 7 inches it is olive brown, friable gravelly sandy loam. The substratum is olive brown and olive gray, friable, gravelly sandy loam and gravelly fine sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Amenia, Kendaia, and Farmington soils. Also included in mapping are areas of soils that have slope of less than 3 percent or more than 8 percent. The included soils make up about 10 to 15 percent of the map unit.

Permeability of this Pittsfield soil is moderate or moderately rapid in the solum and moderately rapid in the substratum. The available water capacity is high. The soil is very strongly acid to neutral in the surface layer, strongly acid to neutral in the subsoil, and moderately acid to moderately alkaline in the substratum.

Most areas of this soil have been cleared of stones and are used for crops and hay. A small acreage is used as building sites.

This soil is well suited to cultivated crops. Erosion is a hazard if the soil is not protected by a vegetative cover. Stripcropping, conservation tillage, cover crops, and grasses and legumes included in the cropping system help to reduce runoff and to control erosion. Crop residue and animal manure mixed into the plow layer improve soil tilth and increase organic matter content.

This soil is well suited to hay and pasture. Proper stocking rates, deferred grazing, and rotation grazing help to maintain the desirable species of pasture plants.

Potential productivity for northern red oak on this soil is moderately high. There are no major limitations to woodland management. Plant competition during regeneration is moderate if conifers are grown. Thinning crowded stands to accepted, standard stocking levels allows more vigorous growth. Shelterwood cutting, seed-tree cutting, and clearcutting establish natural regeneration or provide suitable planting sites. In some areas removing or controlling competing vegetation is needed for the best growth of newly established seedlings.

This soil is suited to use as sites for buildings and septic tank absorption fields. Constructing roads on well compacted, coarse textured base material helps to prevent the damaged pavement caused by the low soil strength and frost heave.

This map unit is in capability subclass IIe.

PrC—Pittsfield loam, 8 to 15 percent slopes. This is a strongly sloping, very deep, well drained soil on the upper side slopes of drumloids, or glacial till ridges. Individual areas are irregular in shape and range from 10 to 30 acres.

Typically, the surface layer is very dark grayish brown, very friable loam about 9 inches thick. The subsoil is about 23 inches thick. In the upper 6 inches it is dark yellowish brown, very friable loam. In the next 10 inches it is brown, very friable fine sandy loam. In the lower 7 inches it is olive brown, friable gravelly sandy loam. The substratum is olive brown and olive gray, friable, gravelly sandy loam and gravelly fine sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Amenia, Farmington, and Kendaia soils. The included soils make up about 5 to 10 percent of the map unit.

Permeability of this Pittsfield soil is moderate to moderately rapid in the solum and moderately rapid in the substratum. The available water capacity is high. The soil is very strongly acid to neutral in the surface layer, strongly acid to neutral in the subsoil, and moderately acid to moderately alkaline in the substratum.

Most areas of this soil have been cleared of stones and are used for crops, hay, and pasture. Some areas have reverted to woodland.

This soil is fairly well suited to cultivated crops. Erosion is a hazard if the soil is not protected by a vegetative cover. If the soil is cropped, stripcropping, conservation tillage, cover crops, and grasses and legumes incorporated into the cropping system help to reduce runoff and to control erosion. Crop residue and animal manure mixed into the plow layer improve soil tilth and increase organic matter content.

This soil is well suited to hay and pasture. Proper stocking rates, deferred grazing, and rotation grazing help to maintain the desirable species of pasture plants.

The potential productivity for northern red oak on this soil is moderately high. There are no major limitations to woodland management. Plant competition during regeneration is moderate if conifers are grown. Thinning crowded stands to accepted, standard stocking levels allows more vigorous growth. Shelterwood cutting, seed-tree cutting, and clearcutting establish natural regeneration or provide suitable planting sites. In some areas removing or controlling competing vegetation is needed for the best growth of newly established seedlings.

Designing buildings to conform to the natural slope of the land helps to overcome the slope limitation and to control erosion in disturbed areas. In some areas land shaping is needed. Constructing roads on a well compacted, coarse textured base material helps to prevent the damaged pavement caused by the low soil strength and frost heave. Constructing roads on the contour, if possible, and planting roadbanks to well adapted grasses help to control erosion. If the soil is used for septic tank absorption fields, land shaping and installing distribution lines across the slope help to increase the lateral and downward flow of effluent.

This map unit is in capability subclass IIIe.

PrD—Pittsfield loam, 15 to 25 percent slopes. This is a moderately steep, very deep, well drained soil on the side slopes of drumloids, or glacial till ridges. Individual areas are irregular in shape and range from 10 to 30 acres.

Typically, the surface layer is very dark grayish brown, very friable loam about 9 inches thick. The subsoil is about 23 inches thick. In the upper 6 inches it is dark yellowish brown, very friable loam. In the next 10 inches it is brown, very friable fine sandy loam. In the lower 7 inches it is olive brown, friable gravelly sandy loam. The substratum is olive brown and olive gray, friable, gravelly sandy loam and gravelly fine sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Amenia and Farmington soils. The included soils make up about 5 to 10 percent of the map unit.

Permeability of this Pittsfield soil is moderate or moderately rapid in the solum and moderately rapid in the substratum. The available water capacity is high. The soil is very strongly acid to neutral in the surface layer, strongly acid to neutral in the subsoil, and moderately acid to moderately alkaline in the substratum.

Most areas of this soil are woodland.

This soil is poorly suited to cultivated crops and hay. Slope limits the use of equipment. Erosion is a severe hazard unless the soil is protected by a vegetative cover.

This soil is fairly well suited to pasture. If the soil is used for pasture, intensive management practices are needed to control erosion. Proper stocking rates, deferred grazing, and rotation grazing help to maintain the desirable species of pasture plants.

Potential productivity for northern red oak on this soil is moderately high. The main management concerns are slope and the hazard of erosion. Plant competition is moderate if conifers are grown. Installing water bars on access roads help to control erosion. Minimizing soil disturbance and retaining the sponge-like mulch of leaves help to reduce runoff and to control erosion. Thinning crowded stands to accepted, standard stocking levels while removing diseased, poorly formed, and otherwise undesirable trees allows more vigorous growth. Shelterwood cutting, seed-tree cutting, and clearcutting establish natural regeneration or provide suitable planting sites. In some areas removing or controlling competing vegetation is needed for the best growth of newly established seedlings.

The main limitation to use of this soil as sites for buildings is slope. Extensive land shaping is generally needed. Buildings and lots designed to conform to the natural slope of the land help to overcome the slope limitation and to control erosion in disturbed areas. Extensive cut-and-fill is generally needed when constructing roads on the soil. Constructing roads on the contour, if possible, and planting roadbanks to well adapted grasses help to control erosion. If the soil is used as sites for septic tank absorption fields, land shaping and installing distribution lines across the slope help to increase the lateral and downward flow of effluent.

This map unit is in capability subclass IVe.

PsB—Pittsfield loam, 3 to 8 percent slopes, very stony. This is a gently sloping, very deep, well drained soil on the crests and side slopes of drumloids, or glacial till ridges. Stones cover 1 to 3 percent of the surface. Individual areas are irregular in shape and range from 10 to 15 acres.

Typically, the surface layer is a very dark grayish brown, very friable loam about 9 inches thick. The subsoil is about 23 inches thick. In the upper 6 inches it is dark yellowish brown, very friable loam. In the next 10 inches it is brown, very friable fine sandy loam. In the lower 7 inches it is olive brown, friable gravelly sandy loam. The substratum is olive brown and olive gray, friable, gravelly sandy loam and gravelly fine sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Amenia, Kendaia, and Farmington soils. Also included are areas of soils where stones cover more than 3 percent of the surface. The included soils make up about 10 to 15 percent of the map unit.

Permeability of this Pittsfield soil is moderate to moderately rapid in the solum and moderately rapid in the substratum. The available water capacity is high. The soil is very strongly acid to neutral in the surface layer, strongly acid to neutral in the subsoil, and moderately acid to moderately alkaline in the substratum.

Most areas of this soil are woodland. A small acreage is used for unimproved pasture. The main limitation to most uses is the stones on the surface. If the soil is cleared of trees and stones, it is suitable for cultivated crops and hay. A small acreage is used as sites for dwellings.

This soil is generally not suited to cultivated crops and poorly suited to hay because of the stones on the surface. If the soil is used for unimproved pasture, the main management concern is the stones on the surface. Proper stocking rates, deferred grazing, and rotation grazing help to maintain the desirable species of pasture plants.

Potential productivity for northern red oak on this soil is moderately high. There are no major limitations to woodland management. Plant competition during regeneration is moderate if conifers are grown. Thinning crowded stands to accepted, standard stocking levels allows more vigorous growth. Shelterwood cutting, seed-tree cutting, and clearcutting establish natural regeneration or provide suitable planting sites. In some areas removing or controlling competing vegetation is needed for the best growth of newly established seedlings.

This soil is suited to use as sites for buildings and septic tank absorption fields. Constructing roads on a well compacted, coarse textured base material helps to prevent the damaged pavement caused by the low soil strength and frost heave.

This map unit is in capability subclass VIs.

PsC—Pittsfield loam, 8 to 15 percent slopes, very stony. This is a strongly sloping, very deep, well drained soil on the side slopes of drumloids, or glacial till ridges. Stones cover 1 to 3 percent of the surface. Individual areas are irregular in shape and range from 10 to 30 acres.

Typically, the surface layer is very dark grayish brown, very friable loam about 9 inches thick. The subsoil is about 23 inches thick. In the upper 6 inches it is dark yellowish brown, very friable loam. In the next 10 inches it is brown, very friable fine sandy loam. In the lower 7 inches it is olive brown, friable gravelly sandy loam. The substratum is olive brown and olive gray, friable, gravelly sandy loam and gravelly fine sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Amenia, Kendaia, and Farmington soils. Also included in mapping are areas of soils where stones cover more than 3 percent of the surface. Also included are areas of soils that have slope of less than 8 percent or more than 15 percent. The included soils make up about 10 to 15 percent of the map unit.

Permeability of this Pittsfield soil is moderate to moderately rapid in the subsoil and moderately rapid in the substratum. The available water capacity is high. The soil is very strongly acid to neutral in the surface layer, strongly acid to neutral in the subsoil, and moderately acid to moderately alkaline in the substratum.

Most areas of this soil are woodland. Small areas are used for unimproved pasture. If the soil is cleared of trees, it is suitable as sites for dwellings. If cleared of trees and stones, the soil is suitable for hay and forage crops.

This soil is generally not suited to cultivated crops because of slope and the stones on the surface. The stones on the surface impede the use of equipment for planting. Erosion is a hazard if the soil is not protected by a vegetative cover.

This soil is poorly suited to pasture. The stones on the surface impede the use of equipment. Proper stocking rates, deferred grazing, and rotation grazing help to maintain the desirable species of pasture plants.

Potential productivity for northern red oak on this soil is moderately high. There are no major limitations to woodland management. Plant competition during regeneration is moderate if conifers are grown. Thinning crowded stands to accepted, standard stocking levels allows more vigorous growth. Shelterwood cutting, seed-tree cutting, and clearcutting establish natural regeneration or provide suitable planting sites. In some areas removing or controlling competing vegetation is needed for the best growth of newly established seedlings.

Designing buildings to conform to the natural slope of the land helps to overcome the slope limitation and to control erosion in disturbed areas. In some areas land shaping is needed. Constructing roads on well compacted, coarse textured base material helps to prevent the damaged pavement caused by the low soil strength and frost heave. Constructing roads on the contour, if possible, and planting roadbanks to well adapted grasses help to control erosion. If the soil is used as sites for septic tank absorption fields, land shaping and installing distribution lines across the slope are generally needed to increase the lateral and downward flow of effluent.

This map unit is in capability subclass VIs.

PsD—Pittsfield loam, 15 to 25 percent slopes, very stony. This is a moderately steep, very deep, well drained soil on the side slopes of drumloids, or glacial till ridges. Stones cover 1 to 3 percent of the surface. Individual areas are irregular in shape and range from 10 to 30 acres.

Typically, the surface layer is very dark grayish brown, friable loam about 9 inches thick. The subsoil is about 23 inches thick. In the upper 6 inches it is dark yellowish brown, very friable loam. In the next 10 inches it is brown, very friable fine sandy loam. In the lower 7 inches it is olive brown, friable gravelly sandy loam. The substratum is olive brown and olive gray, friable, gravelly sandy loam and gravelly fine sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Amenia and Farmington soils. Also included are areas of soils where stones cover more than 3 percent of the surface. The included soils make up about 5 to 10 percent of the map unit.

Permeability of this Pittsfield soil is moderate to moderately rapid in the subsoil and moderately rapid in the substratum. The available water capacity is high. The soil is very strongly acid to neutral in the surface layer, strongly acid to neutral in the subsoil, and moderately acid to moderately alkaline in the substratum.

Most areas of this map unit are woodland. Slope, the hazard of erosion, and the stones on the surface reduce the suitability for most other uses.

This soil is generally not suited to cultivated crops. Slope and the stones on the surface limit the use of equipment. Erosion is a severe hazard if the soil is not protected by a vegetative cover.

This soil is poorly suited to pasture. The stones on the surface impede the use of equipment. If the soil is used for pasture, intensive management practices are needed to control erosion. Proper stocking rates, deferred grazing, and rotation grazing help to maintain the desirable species of pasture plants.

Potential productivity for northern red oak on this soil is moderately high. The main management concerns are slope and the hazard of erosion. Plant competition is moderate if conifers are grown. Constructing access roads and trails with grades between 2 and 10 percent and installing water bars help to control erosion. Minimizing soil disturbance and retaining the sponge-like mulch of leaves help to reduce runoff and to control erosion. Thinning crowded stands to accepted, standard stocking levels while removing diseased, poorly formed, and otherwise undesirable trees allows more vigorous growth. Shelterwood cutting, seed-tree cutting, and clearcutting establish natural regeneration or provide suitable planting sites. In some areas removing or controlling competing vegetation is needed for the best growth of newly established seedlings.

The main limitation to use of the soil as sites for buildings is slope. Extensive land shaping is generally needed. Buildings and lots designed to conform to the natural slope of the land help to overcome the slope limitation and to control erosion in disturbed areas. Extensive cut-and-fill is generally needed when constructing roads on the soil. Constructing roads on the contour, if possible, and planting roadbanks to well adapted grasses help to control erosion. If the soil is used as sites for septic tank absorption fields, land shaping and installing the distribution lines across the slope generally increases the downward and lateral flow of effluent.

This map unit is in capability subclass VIs.

PvB—Pittsfield loam, 3 to 8 percent slopes, extremely stony. This is a gently sloping, very deep, well drained soil on the crests and side slopes of drumloids, or glacial till ridges. Stones cover 3 to 15 percent of the surface. Individual areas are irregular in shape and range from 10 to 15 acres.

Typically, the surface layer is very dark grayish brown, very friable loam about 9 inches thick. The subsoil is about 23 inches thick. In the upper 6 inches it is dark yellowish brown, very friable loam. In the next 10 inches it is brown, very friable fine sandy loam. In the lower 7 inches it is olive brown, friable gravelly sandy loam. The substratum is olive brown and olive gray, friable, gravelly sandy loam and gravelly fine sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Amenia, Kendaia, and Farmington soils. Also included in mapping are areas of soils that have slope of less than 3 percent or more than 8 percent. Also included are small areas of soils where stones cover less than 3 percent of the surface. The included soils make up about 10 to 15 percent of the map unit.

Permeability of this Pittsfield soil is moderate to moderately rapid in the subsoil and moderately rapid in the substratum. The available water capacity is high. The soil is very strongly acid to neutral in the surface layer, strongly acid to neutral in the subsoil, and moderately acid to moderately alkaline in the substratum.

Most areas of this map unit are woodland. Some areas are used for unimproved pasture.

This soil is generally not suited to cultivated crops because of the stones on the surface. It is poorly suited to use as hay and pasture.

Potential productivity for northern red oak on this soil is moderately high. The main management concerns are large stones and boulders on the surface and plant competition. The stones and boulders impede the use of harvesting and planting equipment. In some areas hand-planting is needed. Thinning crowded stands to accepted, standard stocking levels while removing diseased, poorly formed, and otherwise undesirable trees allows more vigorous growth. Shelterwood cutting, seed-tree cutting, and clearcutting establish natural regeneration or provide suitable planting sites. In some areas removing or controlling competing vegetation is needed for the best growth of newly established seedlings.

This soil is suited to use as sites for buildings and septic tank absorption fields. Constructing roads on a well compacted, coarse textured base material helps to prevent the damaged pavement caused by the low soil strength and frost heave.

This map unit is in capability subclass VIIs.

PvC—Pittsfield loam, 8 to 15 percent slopes, extremely stony. This is a strongly sloping, very deep, well drained soil on the side slopes of drumloids, or glacial till ridges. Stones cover 3 to 15 percent of the surface. Individual areas are irregular in shape and range from 10 to 15 acres.

Typically, the surface layer is very dark grayish brown, very friable loam about 9 inches thick. The subsoil is about 23 inches thick. In the upper 6 inches it is dark yellowish brown, very friable loam. In the next 10 inches it is brown, very friable fine sandy loam. In the lower 7 inches it is olive brown, friable gravelly sandy loam. The substratum is olive brown and olive gray, friable, gravelly sandy loam and gravelly fine sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Amenia, Kendaia, and Farmington soils. Also included are areas of soils that have slope of more than 15 percent and areas of soils where stones cover less than 3 percent of the surface. The included soils make up about 5 to 10 percent of the map unit.

Permeability of this Pittsfield soil is moderate to moderately rapid in the subsoil and moderately rapid in the substratum. The available water capacity is high. The soil is very strongly acid to neutral in the surface layer, strongly acid to neutral in the subsoil, and moderately acid to moderately alkaline in the substratum.

Most areas of this map unit are woodland. Some areas are used for unimproved pasture.

This soil is generally not suited to cultivated crops and is poorly suited to hay and pasture because of the stones on the surface. The stones impede the use of equipment for planting. Proper stocking rates, deferred grazing, and rotation grazing help to maintain the desirable species of pasture plants.

Potential productivity for northern red oak on this soil is moderately high. The main management concern is plant competition. Thinning crowded stands to accepted, standard stocking levels while removing diseased, poorly formed, and otherwise undesirable trees allows more vigorous growth. Shelterwood cutting, seed-tree cutting, and clearcutting establish natural regeneration or provide suitable planting sites. In some areas removing or controlling competing vegetation is needed for the best growth of newly established seedlings.

Designing buildings to conform to the natural slope of the land helps to overcome the slope limitation and to control erosion in disturbed areas. In some areas land shaping is needed. Constructing roads on a well compacted, coarse textured base material help to prevent the damaged pavement caused by the low soil strength and frost heave. Constructing roads on the contour, if possible, and planting roadbanks to well adapted grasses help to control erosion. If the soil is used as sites for septic tank absorption fields, land shaping and installing distribution lines across the slope help to increase the downward and lateral flow of effluent.

This map unit is in capability subclass VIIs.

PvD—Pittsfield loam, 15 to 25 percent slopes, extremely stony. This is a moderately steep, very deep, well drained soil on the side slopes of drumloids, or glacial till ridges. Stones cover 3 to 15 percent of the surface. Individual areas are irregular in shape and range from 15 to 30 acres.

Typically, the surface layer is very dark grayish brown, very friable loam about 9 inches thick. The subsoil is about 23 inches thick. In the upper 6 inches it is dark yellowish brown, very friable loam. In the next 10 inches it is brown, very friable fine sandy loam. In the lower 7 inches it is olive brown, friable gravelly sandy loam. The substratum is olive brown and olive gray, friable, gravelly sandy loam and gravelly fine sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Amenia and Farmington soils. Also included are areas of soils that have slope of less than 15 percent or more than 25 percent. Also included are areas of soils where stones cover less than 3 percent of the surface. The included soils make up about 5 to 10 percent of the map unit.

Permeability of this Pittsfield soil is moderate to moderately rapid in the subsoil and moderately rapid in the substratum. The available water capacity is high. The soil is very strongly acid to neutral in the surface layer, strongly acid to neutral in the subsoil, and moderately acid to moderately alkaline in the substratum.

Most areas of this map unit are woodland.

This soil is generally not suited to cultivated crops and hay. Slope and the stones on the surface limit the use of equipment. Erosion is a severe hazard if the soil is not protected by a vegetative cover.

This soil is poorly suited to pasture. Proper stocking rates, deferred grazing, and rotation grazing help to maintain the desirable species of pasture plants.

Potential productivity for northern red oak on this soil is moderately high. The main management concerns are slope, the stones and boulders on the surface, and the hazard of erosion. Minimizing soil disturbance and retaining the sponge-like mulch of leaves help to reduce runoff and to control erosion. In some areas removing or controlling competing vegetation is needed for the best growth of newly established seedlings.

The main limitation to use of the soil as sites for buildings is slope. Extensive land shaping is generally needed. Designing buildings and lots to conform to the natural slope of the land helps to overcome the slope limitation and to control erosion in disturbed areas. Extensive cut-and-fill is generally needed when constructing roads on the soil. Constructing roads on the contour, if possible, and planting roadbanks to well adapted grasses help to control erosion. If the soil is used as sites for septic tank absorption fields, land shaping and installing the distribution lines across the slope help to increase the lateral and downward flow of effluent.

This map unit is in capability subclass VIIs.

PwE—Pittsfield and Nellis loams, 25 to 35 percent slopes, extremely stony. This map unit consists of moderately steep and steep, very deep, well drained soils in rugged mountain areas. In places it is downslope from rock outcrops. It is about 60 percent Pittsfield soils, 25 percent Nellis soils, and 15 percent other soils, but the proportion is different in each mapped area. The Pittsfield and Nellis soils were mapped together because they are similar in use and management. Stones cover 3 to 15 percent of the surface. Individual areas of the map unit are irregular in shape and range from 20 to 30 acres.

Typically, the surface layer of Pittsfield soils is very dark grayish brown, very friable loam about 9 inches thick. The subsoil is about 23 inches thick. In the upper 6 inches it is dark yellowish brown, very friable loam. In the next 10 inches it is brown, very friable fine sandy loam. In the lower 7 inches it is olive brown, friable gravelly sandy loam. The substratum is olive brown and olive gray, friable, gravelly sandy loam and gravelly fine sandy loam to a depth of 60 inches or more.

Typically, the surface layer of Nellis soils is dark brown, very friable loam about 7 inches thick. The subsoil is about 25 inches thick. In the upper 5 inches it is dark yellowish brown, friable gravelly loam. In the next 7 inches it is olive brown, friable gravelly loam. In the lower 13 inches it is very dark grayish brown, friable gravelly loam. The substratum is very dark grayish brown and dark grayish brown, friable and firm, gravelly loam to a depth of 60 inches or more.

Included with these soils in mapping are small areas of Farmington soils. Also included are small areas of soils that have slope of less than 25 percent or more than 35 percent. Also included are areas of soils where stones cover more than 15 percent of the surface. The included soils make up about 10 to 15 percent of the map unit.

Permeability in Pittsfield soils is moderate or moderately rapid in the subsoil and moderately rapid in the substratum. Permeability in Nellis soils is moderate or moderately rapid in the subsoil and moderately slow or moderate in the substratum. The available water capacity is high in both soils. Pittsfield soils are very strongly acid to neutral in the surface layer, strongly acid to neutral in the subsoil, and moderately acid to moderately alkaline in the substratum. Nellis soils are moderately acid to neutral in the surface layer and the subsoil and mildly alkaline or moderately alkaline in the substratum.

Most areas of these soils are woodland.

These soils are generally not suited to cultivated crops and poorly suited to hay and pasture. The main management concerns are slope and the stones on the surface. Erosion is a severe hazard if the soils are not protected by a vegetative cover.

Potential productivity for northern red oak on these soils is moderately high. The main management concerns are the large stones and boulders, slope, and the severe hazard of erosion. In most areas the stones and boulders and slope restrict the use of equipment. Hand-planting is generally needed. Constructing access roads and trails on the contour and installing water bars help to control erosion. Minimizing soil disturbance and retaining the sponge-like mulch of leaves help to absorb precipitation, to reduce runoff, and to control erosion. Plant competition is moderate. Thinning woodland of undesired stock, such as dead or diseased trees, or removing trees in crowded areas allows more vigorous growth and regeneration. Thinning also allows restocking or replanting of preferred trees. Removing and controlling competing understory vegetation allow the best growth of new plantings.

The main limitation to use of these soils as sites for buildings is slope. Extensive land shaping is generally needed. Buildings and lots designed to conform to the natural slope of the land help to overcome the slope limitation and to control erosion in disturbed areas. Extensive cut-and-fill is generally needed when constructing roads on these soils. Constructing roads on the contour and planting roadbanks to well adapted grasses help to control erosion. The main limitations to use of these soils as sites for septic tank absorption fields are slope and the moderately slow permeability. The soils do not readily absorb effluent. Soils that are better suited to this use are generally nearby.

This map unit is in capability subclass VIIs.

PyC—Pittsfield-Urban land complex, 0 to 15 percent slopes. This map unit consists of the Pittsfield soil and Urban land on glaciated limestone till uplands. The Pittsfield soil is very deep, nearly level to strongly sloping, and well drained. A typical area of this map unit is about 60 percent Pittsfield soil, 25 percent Urban land, and 15 percent other soils. The Pittsfield soil is in vacant lots and is used for lawns, as parks, and as other areas that are interspersed with buildings and streets. Urban land consists of areas of soils that have been altered or have been obscured by urban works and structures. Slopes range from 3 to 15 percent. Areas of the complex are irregular in shape and range from 10 to 300 acres.

Typically, the surface layer of the Pittsfield soil is very dark grayish brown, very friable loam about 9 inches thick. The subsoil is about 23 inches thick. In the upper 6 inches it is dark yellowish brown, very friable loam. In the next 10 inches it is brown, very friable fine sandy loam. In the lower 7 inches it is olive brown, friable gravelly sandy loam. The substratum is olive brown and olive gray, friable, gravelly sandy loam and gravelly fine sandy loam to a depth of 60 inches or more.

Included with this complex in mapping are the well drained Berkshire and Marlow soils, the poorly drained Kendaia soils, and soils on the steeper slopes. The included soils make up about 10 to 15 percent of the complex.

Permeability of the Pittsfield soil is moderate or moderately rapid in the surface layer and the subsoil and moderately rapid in the substratum. The available water capacity is high. The Pittsfield soil ranges from very strongly acid to neutral in the surface layer, strongly acid to neutral in the subsoil, and moderately acid to moderately alkaline in the substratum.

Potential productivity for northern red oak on the Pittsfield soil is moderately high. There are no major limitations to woodland management. Plant competition is moderate if conifers are grown. Thinning woodlands of undesired stock, such as dead or diseased trees, or removing trees in crowded areas allows more vigorous growth and regeneration of preferred trees. Removing and controlling competing understory vegetation allow the best growth of new plantings.

Onsite investigation is needed to determine the suitability of the Pittsfield soil for any use.

This map unit has not been assigned to a capability subclass.

Sa—Saco silt loam. This is a nearly level, very deep, very poorly drained soil in depressions on flood plains. Slopes range from 0 to 3 percent. Individual areas are irregular in shape and range from 5 to 50 acres (fig. 17).

Typically, the surface layer is very dark grayish brown, very friable silt loam about 10 inches thick. The substratum is dark gray, friable silt loam to a depth of 60 inches or more.

Included with this soil in mapping are areas of Limerick soils in adjacent, less depressed areas. Also included are soils where the content of gravel is 5 to 10 percent in the substratum. The included soils make up about 5 to 10 percent of the map unit.

Permeability of this Saco soil is moderate. The available water capacity is high. The seasonal high water table is at or near the surface from fall through spring. The soil is flooded every year, but the floodwater recedes quickly. The root zone is restricted by the seasonal high water table much of the year. The soil ranges from strongly acid to neutral throughout.

Most areas of this soil are idle. Some areas are mixed brushland and woodland.

This soil is generally not suited to row crops and small grains. The main limitation is the seasonal high water table and flooding. Surface drainage is needed to remove excess water, but suitable outlets generally are not available in most areas.

This soil is poorly suited to grasses and legumes for hay and pasture. The main management concern is the seasonal high water table. Proper stocking rates, deferred grazing, and rotation grazing help to maintain the desirable species of pasture plants.

Potential productivity for red maple on this soil is moderate. The main management concerns are the seasonal high water table, the high seedling mortality, and the windthrow hazard. Growth and survival are poor. The low soil strength and the seasonal high water table limit the use of equipment except when the soil is very dry or frozen. Thinning should be designed to minimize windthrow by locating and orienting cuts to reduce wind effects, by keeping residual stand density at or slightly above standard stocking levels, and by limiting changes in stand density to 30 percent or less. In some areas tree plantings are practical if special practices are used.

This soil is generally not suited to use as sites for buildings and septic tank absorption fields because of flooding and the seasonal high water table. Ground water contamination is a hazard if the soil is used as sites for septic tank absorption fields. Soils that are better suited to these uses are generally nearby. Constructing roads on a raised, well compacted, coarse textured fill material and providing adequate side ditches and culverts help to prevent the damaged pavement caused by flooding, the seasonal high water table, and frost heave.

This map unit is in capability subclass VIw.

StB—Stockbridge gravelly silt loam, 3 to 8 percent slopes. This is a gently sloping, very deep, well drained soil on the crests and the lower side slopes of drumloids,

Figure 17.—Flooding in an area of Saco silt loam. From October through May the soil is subject to frequent flooding of brief duration.

or glacial till ridges. Individual areas are irregular in shape and range from 5 to 10 acres.

Typically, the surface layer is very dark grayish brown, very friable, gravelly silt loam about 7 inches thick. The subsoil is olive brown, friable silt loam about 17 inches thick. The substratum extends to a depth of 60 inches or more. In the upper 16 inches it is olive brown, firm gravelly silt loam. In the next 11 inches it is dark grayish brown, firm gravelly silt loam. In the lower part it is dark grayish brown, firm silt loam. In a few areas south of Williamstown Center, the subsoil and the substratum are silty clay loam.

Included with this soil in mapping are small areas of the moderately well drained Amenia soils, the somewhat poorly drained Kendaia soils, and the somewhat excessively drained Farmington soils. Also included are small areas of soils that have slope of less than 3 percent or more than 8 percent. The included soils make up about 10 to 15 percent of the map unit.

Permeability of this Stockbridge soil is moderate above the substratum and slow or moderately slow in the substratum. The available water capacity is moderate. The depth of the root zone is restricted by the firm substratum. The soil is strongly acid to neutral in the surface layer, moderately acid to mildly alkaline in the subsoil, and slightly acid to moderately alkaline in the substratum.

Most areas of this soil have been cleared of stones and are used as cropland and hayland. Some areas are used as orchards (fig. 18). Some areas have reverted to woodland. The acreage used as sites for dwellings is small, but increasing.

This soil is well suited to cultivated crops. If the soil is used for cultivated crops, a cropping system helps to control erosion. Minimum tillage, contour tillage, cover crops, and grasses and legumes included in the cropping system help to reduce runoff and to control erosion.

This soil is well suited to grasses and legumes for hay and pasture. The main management concern is overgrazing, which reduces the hardiness and density of plants. Proper stocking rates, deferred grazing, and rotation grazing help to maintain the desirable species of pasture plants.

Potential productivity for northern red oak on this soil is moderately high. There are no major limitations to woodland management. Plant competition during regeneration is moderate if conifers are grown. Thinning crowded stands to accepted, standard stocking levels allows more vigorous growth. Shelterwood cutting, seed-tree cutting, and clearcutting establish natural regeneration or provide suitable planting sites. In some areas removing or controlling competing vegetation is needed for the best growth of newly established seedlings.

There are no major limitations to use of this soil as sites for buildings. Constructing roads on well compacted, coarse textured, base material helps to prevent the damaged pavement caused by the low soil strength and frost heave. The main limitation to use of the soil as sites for septic tank absorption fields is the slow or moderately slow permeability. The soil does not readily absorb effluent. Installing a larger than average absorption field helps to increase the lateral and downward flow of effluent.

This map unit is in capability subclass IIe.

StC—Stockbridge gravelly silt loam, 8 to 15 percent slopes. This is a strongly sloping, very deep, well drained soil on the crests and the side slopes of drumloids, or glacial till ridges. Individual areas are irregular in shape and range from 15 to 40 acres.

Figure 18.—An apple orchard in an area of Stockbridge gravelly silt loam, 3 to 8 percent slopes.

Typically, the surface layer is very dark grayish brown, very friable, gravelly silt loam about 7 inches thick. The subsoil is olive brown, friable silt loam about 17 inches thick. The substratum extends to a depth of 60 inches or more. In the upper 16 inches it is olive brown, firm gravelly silt loam. In the next 11 inches it is dark grayish brown, firm gravelly silt loam. In the lower part it is dark grayish brown, firm silt loam.

Included in mapping are small areas of the moderately well drained Amenia soils, the poorly drained Kendaia soils, and the somewhat excessively drained Farmington soils. Also included, in some areas, are small areas of soils that have slope of less than 8 percent and more than 15 percent. The included soils make up about 10 to 15 percent of the map unit.

Permeability of this Stockbridge soil is moderate above the substratum and slow or moderately slow in the substratum. The available water capacity is moderate. The root zone is restricted by the firm substratum. The soil is strongly acid to neutral in the surface layer, moderately acid to mildly alkaline in the subsoil, and slightly acid to moderately alkaline in the substratum.

Most areas of this soil have been cleared of stones and are used for crops, hay, and pasture. Some areas have reverted to woodland. A small acreage is used as sites for dwellings.

This soil is well suited to cultivated crops, but erosion control is needed. The main limitations for cultivated crops are slope and the hazard of erosion. Conservation tillage, contour farming, cover crops, and grasses and legumes included in the cropping system help to reduce runoff and to control erosion.

This soil is well suited to grasses and legumes for hay and pasture. The main management concern is overgrazing, which reduces the hardiness and density of plants. Proper stocking rates, deferred grazing, and rotation grazing help to maintain the desirable species of pasture plants.

Potential productivity for northern red oak on this soil is moderately high. The main management concerns are the large stones and boulders on the surface and plant competition. Plant competition during regeneration is moderate if conifers are grown. Thinning crowded stands to accepted, standard stocking levels allows more vigorous growth. Shelterwood cutting, seed-tree cutting, and clearcutting establish natural regeneration or provide suitable planting sites. In some areas removing or controlling competing vegetation is needed for the best growth of newly established seedlings. Pruning improves the quality of white pine.

Designing buildings to conform to the natural slope of the land helps to overcome the slope limitation and to control erosion in disturbed areas. In some areas land shaping is needed. Constructing roads on a well compacted, coarse textured base material helps to prevent the damaged pavement caused by the low soil strength and frost heave. Constructing roads on the contour, if possible, and planting roadbanks to well adapted grasses help to control erosion. The main limitation to use of the soil as sites for septic tank absorption fields is the slow or moderately slow permeability. The soil does not readily absorb effluent. Installing a larger than average absorption field helps to increase the lateral flow of effluent.

This map unit is in capability subclass IIIe.

StD—Stockbridge gravelly silt loam, 15 to 25 percent slopes. This is a moderately steep, very deep, well drained soil on the side slopes of drumloids, or glacial till ridges. Individual areas are irregular in shape and range from 10 to 30 acres.

Typically, the surface layer is very dark grayish brown, very friable, gravelly silt loam about 7 inches thick. The subsoil is olive brown, friable silt loam about 17 inches thick. The substratum extends to a depth of 60 inches or more. In the upper 16 inches it is olive brown, firm gravelly silt loam. In the next 11 inches it is dark grayish brown, firm gravelly silt loam. In the lower part it is dark grayish brown, firm silt loam.

Included with this soil in mapping are small areas of the moderately well drained Amenia soils and the somewhat excessively drained Farmington soils. The included soils make up about 5 to 10 percent of the map unit.

Permeability is moderate above the substratum and slow or moderately slow in the substratum. The available water capacity is moderate. The root zone is restricted by the firm substratum. The soil is strongly acid to neutral in the surface layer, moderately acid to mildly alkaline in the subsoil, and slightly acid to moderately alkaline in the substratum.

Some areas of this soil have been cleared of stones and are used as hayland and pasture. Some areas have reverted to woodland. A small acreage is used as sites for dwellings.

This soil is poorly suited to cultivated crops. The main management concerns are the erosion hazard and slope. Conservation tillage, crop rotation, contour farming, or a combination of these practices helps to control erosion.

This soil is fairly well suited to grasses and legumes for hay and pasture. The main management concern is overgrazing, which causes surface compaction, increases surface runoff, and reduces the hardiness and density of plants. Proper stocking rates, deferred grazing, and, during wet periods, rotation grazing help to maintain the desired species of plants, to prevent surface compaction, and to reduce runoff.

Potential productivity for northern red oak on this soil is moderately high. The main management concerns are slope and the hazard of erosion. Plant competition is moderate if conifers are grown. Constructing access roads and trails with grades between 2 and 10 percent and installing water bars help to control erosion.

Minimizing soil disturbance and retaining the sponge-like mulch of leaves help to reduce runoff and to control erosion. Thinning crowded stands to accepted, standard stocking levels while removing diseased, poorly formed, and otherwise undesirable trees allows more vigorous growth. Shelterwood cutting, seed-tree cutting, and clearcutting establish natural regeneration or provide suitable planting sites. In some areas removing or controlling competing vegetation is needed for the best growth of newly established seedlings.

The main limitation to use of the soil as sites for buildings is slope. Extensive land shaping is generally needed. Designing buildings and lots to conform to the natural slope of the land helps to overcome the slope limitation and to control erosion in disturbed areas. Extensive cut-and-fill is generally needed when constructing roads on the soil. Constructing roads on the contour and planting roadbanks to well adapted grasses help to control erosion. The main limitations to use of the soil as sites for septic tank absorption fields are slope and the slow or moderately slow permeability. The soil does not readily absorb effluent. Soils that are better suited to this use are generally nearby.

This map unit is in capability subclass IVe.

SvC—Stockbridge gravelly silt loam, 8 to 15 percent slopes, very stony. This is a strongly sloping, very deep, well drained soil on the side slopes of drumloids, or glacial till ridges. Stones cover as much as 3 percent of the surface. Individual areas are irregular in shape and range from 10 to 30 acres.

Typically, the surface layer is very dark grayish brown, very friable, gravelly silt loam about 7 inches thick. The subsoil is olive brown, friable silt loam about 17 inches thick. The substratum extends to a depth of 60 inches or more. In the upper 16 inches it is olive brown, firm gravelly silt loam. In the next 11 inches it is dark grayish brown, firm gravelly silt loam. In the lower part it is dark grayish brown, firm silt loam.

Included with this soil in mapping are small areas of the moderately well drained Amenia soils and the somewhat excessively drained Farmington soils. Also included are areas of soils where stones cover more than 3 percent of the surface. The included soils make up about 10 to 15 percent of the map unit.

Permeability of this Stockbridge soil is moderate above the substratum and slow or moderately slow in the substratum. The available water capacity is moderate. The root zone is restricted by the firm substratum. The soil is strongly acid to neutral in the surface layer, moderately acid to mildly alkaline in the subsoil, and slightly acid to moderately alkaline in the substratum.

Most areas of this soil are woodland. Slope, the hazard of erosion, the stones on the surface, and the slow or moderately slow permeability in the substratum reduce the suitability of the soil for most other uses.

This soil is poorly suited to cultivated crops and hay. Slope and the stones on the surface limit the use of equipment. Erosion is a severe hazard unless the soil is protected by a vegetative cover.

This soil is poorly suited to pasture. The stones on the surface impede the use of equipment. If the soil is used for pasture, intensive management practices are needed to control erosion. Proper stocking rates, deferred grazing, and rotation grazing help to control erosion and to maintain the desired species of pasture plants.

Potential productivity for northern red oak on this soil is moderately high. There are no major limitations to woodland management. Plant competition during regeneration is moderate if conifers are grown. Thinning crowded stands to accepted, standard stocking levels allows more vigorous growth. Shelterwood cutting, seed-tree cutting, and clearcutting establish natural regeneration or provide suitable planting sites. In some areas removing or controlling competing vegetation is needed for the best growth of newly established seedlings.

Designing buildings to conform to the natural slope of the land helps to overcome the slope limitation and to control erosion in disturbed areas. In some areas land shaping is needed. Constructing roads on well compacted, coarse textured base material helps to prevent the damaged pavement caused by the low soil strength and frost heave. Constructing roads on the contour, if possible, and planting roadbanks to well adapted grasses help to control erosion. The main limitation to use of the soil as sites for septic tank absorption fields is the slow or moderately slow permeability. The soil does not readily absorb effluent. Installing a larger than average absorption field helps to increase the lateral flow of effluent.

This map unit is capability subclass VIs.

SvD—Stockbridge gravelly silt loam, 15 to 25 percent slopes, very stony. This is a moderately steep, very deep, well drained soil on the side slopes of drumloids, or glacial till ridges. Stones cover as much as 3 percent of the surface. Individual areas are irregular in shape and range from 10 to 30 acres.

Typically, the surface layer is very dark grayish brown, very friable, gravelly silt loam about 7 inches thick. The subsoil is olive brown, friable silt loam about 17 inches thick. The substratum extends to a depth of 60 inches or more. In the upper 16 inches it is olive brown, firm gravelly silt loam. In the next 11 inches it is dark grayish brown, firm gravelly silt loam. In the lower part it is dark grayish brown, firm silt loam.

Included with this soil in mapping are small areas of the moderately well drained Amenia soils and the somewhat excessively drained Farmington soils. Also included are areas of soils where stones cover more than 3 percent of the surface. The included soils make up about 5 to 10 percent of the map unit.

Permeability of this Stockbridge soil is moderate above the substratum and slow or moderately slow in the substratum. The available water capacity is moderate. The root zone is restricted by the firm substratum. The soil is strongly acid to neutral in the surface layer, moderately acid to mildly alkaline in the subsoil, and slightly acid to moderately alkaline in the substratum.

Most areas of this soil are woodland. Slope, the hazard of erosion, the stones on the surface, and the slow or moderately slow permeability in the substratum reduce the suitability of the soil for most other uses.

This soil is poorly suited to cultivated crops and hay. Slope and the stones on the surface limit the use of equipment. Erosion is a severe hazard unless the soil is protected by a vegetative cover.

The soil is poorly suited to pasture. The stones on the surface impede the use of equipment. If the soil is used for pasture, intensive management practices are needed to control erosion. Proper stocking rates, deferred grazing, and rotation grazing help to control erosion and to maintain the desired species of pasture plants.

Potential productivity for northern red oak on this soil is moderately high. The main management concerns are slope and the hazard of erosion. Plant competition is moderate if conifers are grown. Constructing access roads and trails on the contour and installing water bars help to control erosion. Minimizing soil disturbance and retaining the sponge-like mulch of leaves help to reduce runoff and to control erosion. Thinning crowded stands to accepted, standard stocking levels while removing diseased, poorly formed, and otherwise undesirable trees allows more vigorous growth. Shelterwood cutting, seed-tree cutting, and clearcutting establish natural regeneration or provide suitable planting sites. In some areas removing or controlling competing vegetation is needed for the best growth of newly established seedlings.

The main limitation to use of this soil as sites for buildings is slope. Extensive land shaping is generally needed. Designing buildings and lots to conform to the natural slope of the land helps to overcome the slope limitation and to control erosion in disturbed areas. Extensive cut-and-fill is generally needed when constructing roads on the soil. Constructing roads on the contour and planting roadbanks to well adapted grasses help to control erosion. The main limitations to use of the soil as sites for septic tank absorption fields are slope and the slow or moderately slow permeability. The soil does not readily absorb effluent. Soils that are better suited to this use are generally nearby.

This map unit is in capability subclass VIs.

TmC—Taconic-Macomber association, rolling, very stony. This map unit consists of shallow, somewhat excessively drained Taconic soils and moderately deep, well drained Macomber soils. It is about 55 percent Taconic soils, 35 percent Macomber soils, and 10 percent other soils and areas of rock outcrop. These soils are on the sides and tops of hills and mountains (fig. 19). Taconic soils are on the upper slopes or in convex areas, and Macomber soils typically are on the longer, smoother parts of slopes between rock outcrops. Slopes range from 3 to 15 percent. Stones, boulders, and rock outcrops, approximately 5 to 20 feet apart, are on the surface. Areas of the individual soils are large enough to map separately, but in considering the present and predicted use they were mapped as one unit. Areas of the map unit are irregularly shaped and range from 20 to 300 acres.

Typically, the surface layer of Taconic soils is dark brown, very friable gravelly loam about 7 inches thick. The subsoil is dark yellowish brown, very friable very gravelly loam about 8 inches thick. The underlying bedrock is typically fractured at the surface but solid underneath.

Typically, the surface layer of Macomber soils is very dark grayish brown, friable loam about 9 inches thick. The subsoil is dark yellowish brown, friable, gravelly silt loam about 9 inches thick. The substratum is olive, friable, very gravelly loam to a depth of 24 inches.

Included with these soils in mapping are areas of rock outcrops and the deep Dummerston soils on hillsides and mountain slopes. Also included are areas of moderately well drained and poorly drained soils in nearly level areas and in depressions. The included areas make up about 10 to 15 percent of the map unit.

Permeability is moderate or moderately rapid in Taconic soils and moderate in Macomber soils. The available water capacity is very low in Taconic soils and low in Macomber soils. The root zone is restricted in Taconic and Macomber soils by the underlying bedrock. These soils are very strongly acid or strongly acid throughout.

Most areas of these soils are woodland.

These soils are poorly suited to cultivated crops, hay, and pasture because of the stones on the surface and rock outcrops.

Potential productivity is moderate for sugar maple on Taconic soils and moderately high for northern red oak on Macomber soils. Windthrow is a moderate hazard because of depth to bedrock. Generally, the soils are droughty. In some years seedling mortality is severe. Minimizing soil disturbance and retaining the sponge-like mulch of leaves help to absorb precipitation and to retain the limited soil moisture. Thinning is generally not a suitable management practice because of the windthrow hazard. Removing and controlling competing understory vegetation improve the growth and survival of new plantings.

Excavating building sites in some areas is difficult because of the underlying bedrock. In most areas bedrock is very hard or cemented, and large machinery is required for bedrock excavation. The underlying bedrock impedes road construction, and large machinery

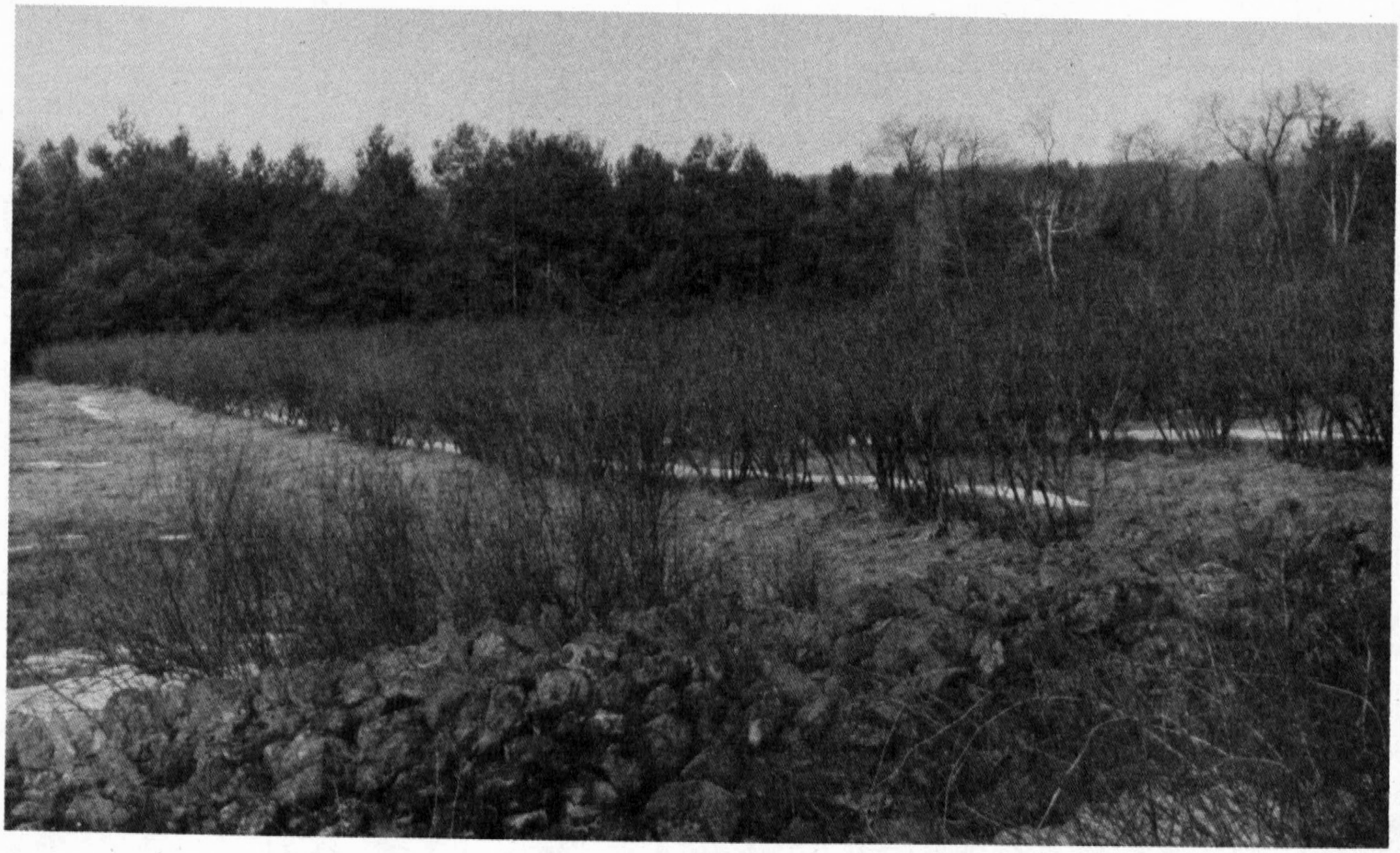


Figure 19.—A blueberry patch in an area of Taconic-Macomber association, rolling, very stony.

is generally required for excavations. The main limitation to use of the soil as sites for septic tank absorption fields is depth to bedrock. In some areas bedrock impedes the installation of distribution lines.

Some areas of the included soils have fewer or more restricting limitations than those of Taconic and Macomber soils for the intended use. Onsite investigation is needed to determine the suitability of particular areas for any use.

This map unit is in capability subclass VIIs.

TmE—Taconic-Macomber association, steep, very stony. This map unit consists of shallow, somewhat excessively drained Taconic soils and moderately deep, well drained Macomber soils. It is about 45 percent Taconic soils, 45 percent Macomber soils, and 10 percent other soils and areas of rock outcrop. These soils are on the mountainous uplands. Taconic and Macomber soils are typically on the upper slopes (fig. 20). Slopes range from 15 to 45 percent. Rock outcrops and many stones and boulders cover the surface. Areas of the individual soils are large enough to map separately, but in considering the present and predicted use they were mapped as one unit. Areas of this map unit are irregular in shape and range from 20 to 350 acres.

Typically, the surface layer of Taconic soils is dark brown, very friable gravelly loam about 7 inches thick. The subsoil is dark yellowish brown, very friable very gravelly loam about 8 inches thick. The underlying bedrock is typically fractured at the surface but solid underneath.

Typically, the surface layer of Macomber soils is very dark grayish brown, friable, loam about 9 inches thick. The subsoil is dark yellowish brown, friable gravelly silt loam about 9 inches thick. The substratum is olive, friable, very gravelly loam to a depth of 24 inches.

Included with these soils in mapping are areas of rock outcrop and the deep Dummerston soils on steep hillsides and mountain slopes. Also included are some poorly drained and very poorly drained mineral and organic soils in depressions or pockets in nearly level areas. The included soils make up about 5 to 10 percent of the map unit.

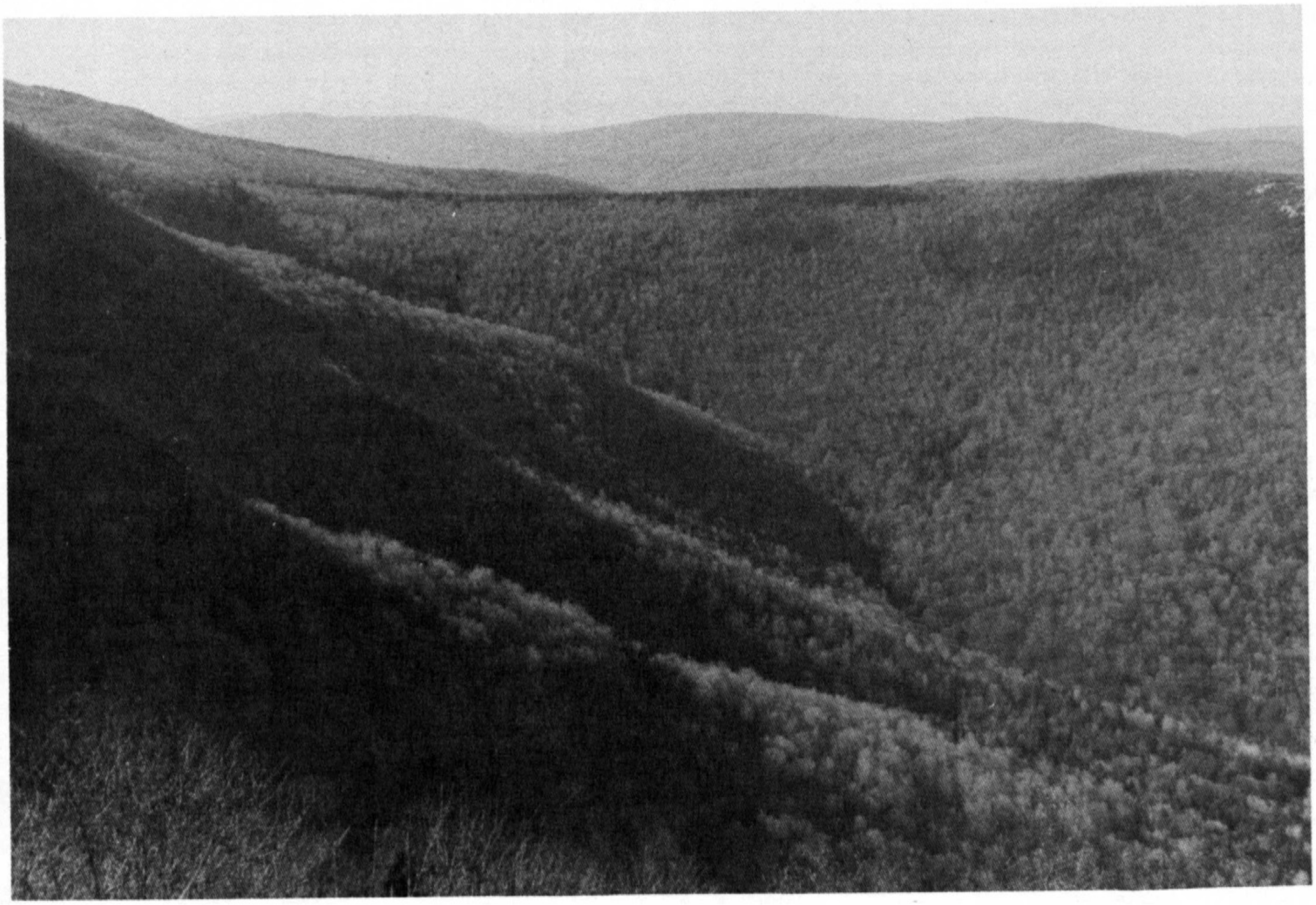


Figure 20.—This area, known locally as the "Hopper," makes up part of the Taconic-Macomber association, steep, very stony.

Permeability is moderate or moderately rapid in Taconic soils and moderate in Macomber soils. The available water capacity is very low in Taconic soils and low in Macomber soils. The root zone is restricted by depth to bedrock. These soils are very strongly acid or strongly acid throughout.

Most areas of these soils are woodland.

These soils are poorly suited to cultivated crops, hay, and pasture because of slope, the stones on the surface, and rock outcrops.

Potential productivity is moderate for sugar maple on Taconic soils and is moderately high for northern red oak on Macomber soils. Windthrow is a moderate hazard because of depth to bedrock. Generally, the soils are droughty. Erosion is a moderate hazard because of slope. In some years seedling mortality is severe. Minimizing soil disturbance and retaining the sponge-like mulch of leaves help to absorb precipitation, to retain the limited soil moisture, to reduce runoff, and to control erosion. Constructing access roads and trails on the contour and installing water bars help to control erosion. Thinning is generally not a suitable management practice because of the windthrow hazard. Removing and controlling competing understory vegetation improve the growth and survival of new plantings.

The main limitations to use of the soils as sites for buildings are slope and depth to bedrock. Extensive land shaping and blasting of bedrock is generally needed. Constructing roads on the contour, if possible, and planting roadbanks to well adapted grasses help to control erosion. The underlying bedrock in some areas impedes road construction. The main limitations to use of the soils as sites for septic tank absorption fields are depth to bedrock and slope. Installing the distribution lines across the slope generally increases the lateral and downward flow of effluent. In many areas bedrock impedes the installation of septic tank absorption fields.

Some areas of the included soils have fewer or more restricting limitations than those of Taconic and Macomber soils for the intended use. Onsite investigation is needed to determine the suitability of particular areas for any use.

This map unit is in capability subclass VIIs.

TuC—Tunbridge-Lyman association, rolling, extremely stony. This map unit consists of moderately deep, well drained Tunbridge soils and shallow, somewhat excessively drained Lyman soils. It is about 55 percent Tunbridge soils, 35 percent Lyman soils, and 10 percent other soils and areas of rock outcrops. These soils are on the sides and tops of hills and mountains. Tunbridge soils are typically on the flatter parts of slopes between rock outcrops, and Lyman soils are on the upper slopes or in convex areas. Slopes range from 3 to 15 percent. Stones, boulders, and rock outcrops, approximately 3 to 20 feet apart, are on the surface. Areas of the individual soils are large enough to map separately, but in considering the present and predicted use they were mapped as one unit. Areas of this map unit are irregular in shape and range from 30 to 500 acres.

Typically, the surface layer of Tunbridge soils is black, very friable loam about 1 inch thick. The subsoil is about 19 inches thick. In the upper 7 inches it is dark brown, friable loam. In the next 6 inches it is dark yellowish brown, friable fine sandy loam. In the lower 6 inches it is dark yellowish brown, friable fine sandy loam. The substratum is dark yellowish brown, friable fine sandy loam to a depth of 26 inches. The underlying bedrock typically is fractured at the surface but solid underneath.

Typically, the surface layer of Lyman soils is very dark brown, friable fine sandy loam about 3 inches thick. The subsoil is about 13 inches thick. In the upper 7 inches it is dark brown, friable loam. In the lower 6 inches it is yellowish brown, friable loam. The underlying bedrock is typically fractured at the surface but solid underneath.

Included with these soils in mapping are areas of rock outcrop and the very deep Berkshire soils on hillsides and mountain slopes. Also included are some poorly drained and very poorly drained soils in nearly level areas and in depressions. The included areas make up about 10 to 15 percent of the map unit.

Permeability is moderate or moderately rapid in Tunbridge soils and moderately rapid in Lyman soils. The available water capacity in both soils is moderate. The root zone is restricted by depth to bedrock. These soils range from extremely acid to moderately acid throughout.

Most areas of this map unit are woodland (fig. 21).

These soils are poorly suited to cultivated crops, hay, and pasture because of the stones on the surface and rock outcrop.

Potential productivity for sugar maple on these soils is moderate. Windthrow is a moderate hazard because of depth to bedrock. Generally, the soils are droughty. In some years seedling mortality is severe. Minimizing soil disturbance and retaining the sponge-like mulch of leaves help to absorb precipitation and to retain the limited soil moisture. Thinning is generally not a good practice because of the windthrow hazard. Removing and controlling competing understory vegetation improve the growth and survival of new plantings.

Excavating building sites in some areas is difficult because of the underlying bedrock. In most areas bedrock is very hard or cemented, and large machinery is required for bedrock excavation. The underlying bedrock impedes road construction, and large machinery is generally required for excavations. The main limitation to use of the soil as sites for septic tank absorption fields is depth to bedrock. In some areas bedrock impedes the installation of the distribution lines. Some areas of the included soils have fewer or more restricting limitations than those of Tunbridge and Lyman soils for the intended use. Onsite investigation is needed to determine the suitability of particular areas for any use.

This soil is in capability subclass VIIs.

Ud—Udorthents, smoothed. This map unit consists of areas of very deep, well drained to excessively drained sand and gravel or glacial till that have been stripped of topsoil or used as borrow pits for construction work. Individual areas are typically irregular in shape and range from 5 to 25 acres.

The texture of the soil material in this map unit generally ranges from sand and gravel to fine sandy loam, but in some places it is loam or silt loam.

Udorthents, smoothed, are generally devoid of vegetation, although some older areas are covered by scattered bushes, patches of grass, and weeds. Permeability ranges from very rapid to slow. The available water capacity ranges from very low to high.

Onsite investigation is needed to determine the suitability and limitation of each site for any use.

This map unit has not been assigned to a capability subclass.

Ur—Urban land. This map unit consists of areas of soils where buildings, industrial areas, paved parking lots, sidewalks, roads, and railroad yards cover more than 90 percent of the surface. Areas of the map unit have sharp angular boundaries, are irregular in shape, and range from 10 to several hundred acres.

Included in mapping are small areas of Udorthents, smoothed.

Onsite investigation is needed to determine the suitability and limitations of particular areas for any use.

This map unit has not been assigned to a capability subclass.

Wh—Wareham loamy fine sand. This is a nearly level, very deep, somewhat poorly drained and poorly

Figure 21.—A Christmas tree plantation in an area of Tunbridge-Lyman association, rolling, extremely stony.

drained soil in slightly concave areas on outwash plains and stream terraces. Individual areas are irregular in shape and range from 5 to 15 acres.

Typically, the surface layer is very dark grayish brown, very friable loamy fine sand about 6 inches thick. The subsoil is about 12 inches thick. It is light olive brown, mottled, loose loamy fine sand. The substratum is grayish brown, loose, fine and medium sand to a depth of 60 inches or more.

Included with this soil in mapping are a few areas of soils that have a surface layer of fine sandy loam and some areas of gravelly soils. Also included, in some map units, are small areas of Hero soils. Also included are areas of Halsey soils in concave depressions and, at the edges of a few map units, areas of soils that have slope of more than 3 percent. The included soils make up about 5 to 10 percent of the map unit.

Permeability of this Wareham soil is rapid. The available water capacity is moderate. The seasonal high water table is at or near the surface in winter and early spring. The root zone is restricted by the seasonal high water table. The soil is extremely acid to slightly acid throughout.

Most areas of this soil are woodland. It is fairly well suited to unimproved pasture.

This soil is poorly suited to row crops and small grains. The main limitation is the seasonal high water table. Surface drainage is needed to remove excess water, but suitable outlets generally are not available in most areas.

This soil is poorly suited to grasses and legumes for hay and pasture. Plants that tolerate wetness produce the highest yields. Proper stocking rates, deferred grazing, and rotation grazing help to maintain the desirable species of pasture plants.

Potential productivity for red maple on this soil is moderate. The main management concerns are the seasonal high water table, the high seedling mortality, the windthrow hazard, and the equipment limitation. The low soil strength limits the use of equipment except when the soil is dry or frozen. Thinning should be designed to minimize windthrow by locating and orienting cuts to reduce wind effects, by keeping residual stand density at or slightly above standard stocking levels, and by limiting changes in stand density to 30 percent or less.

Constructing buildings without basements and above the seasonal high water table helps to prevent the interior damage caused by wetness. Tile drains laid around foundations help to reduce wetness. Landscaping designed to drain surface runoff away from buildings provide added protection against damage caused by wetness. Constructing roads on a raised, coarse textured fill material and providing adequate side ditches and culverts help to prevent the damaged pavement caused by the seasonal high water table. The main limitations to use of the soil as sites for septic tank absorption fields are the seasonal high water table and the rapid permeability. Because of the rapid permeability, ground water contamination is a hazard if the soil is used as sites for septic tank absorption fields. Placing distribution lines in a suitable fill material helps to increase the lateral and downward flow of effluent.

This map unit is in capability subclass IVw.

Figure 22. Pasture in an area of Winooski silt loam. An area of Pits, quarry, is in the middle ground below an area of Farmington-Rock outcrop complex, 3 to 15 percent slopes.

Wy—Winooski silt loam. This is a nearly level, very deep, moderately well drained soil in depressions on flood plains (fig. 22). Individual areas are irregular in shape and range from 5 to 20 acres.

Typically, the surface layer is very dark grayish brown, friable silt loam about 12 inches thick. The substratum extends to a depth of 60 inches or more. In the upper 12 inches it is olive brown, friable silt loam. In the lower part it is dark brown, mottled, friable silt loam and loamy very fine sand that has lenses of fine sand.

Included with this soil in mapping are Hadley soils on more convex rises and areas of Limerick soils in low, concave areas. Also included are areas of soils where the content of gravel is 5 to 10 percent in the substratum. The included soils make up about 5 to 10 percent of the map unit.

Permeability of this Winooski soil is moderate or moderately rapid. The available water capacity is high. The seasonal high water table is at a depth of 1 1/2 to 3 feet in winter and early spring. The soil is flooded every year, but the floodwater recedes quickly. The surface layer is easily tilled under the proper moisture conditions. The root zone is restricted at a depth of about 18 to 24 inches by the seasonal high water table in early spring. The soil ranges from very strongly acid to neutral throughout.

Most areas of this soil are cultivated. Some areas, where farming has been phased out, are mixed brushland and woodland.

This soil is well suited to row crops and small grains. The main limitations are the seasonal high water table and flooding. In areas not flooded, surface drainage is needed to remove excess water. Crop residue returned to the soil helps to maintain or increase the organic matter content of the surface layer.

This soil is well suited to grasses and legumes for hay and pasture. The main management concern is the restricted access to the fields caused by the wet soil conditions. Proper stocking rates, deferred grazing, and rotation grazing help to maintain the desirable species of pasture plants.

Potential productivity for northern red oak is moderately high. There are no major limitations to woodland management. Plant competition during regeneration is moderate if conifers are grown. Thinning crowded stands to accepted, standard stocking levels allows more vigorous growth. Shelterwood cutting, seed-tree cutting, and clearcutting establish natural regeneration or provide suitable planting sites. In some areas removing or controlling competing vegetation is needed for the best growth of newly established seedlings.

This soil is generally not suited to use as sites for buildings and septic tank absorption fields because of flooding and the seasonal high water table. Soils that are better suited to these uses are generally nearby. Constructing roads on raised, well compacted fill material and providing adequate side ditches and culverts help to prevent the damaged pavement caused by flooding and frost heave.

This map unit is in capability subclass IIw.

Prime Farmland

Prime farmland is one of several kinds of important farmlands defined by the U.S. Department of Agriculture. Identification of prime farmland is a major step in meeting the Nation's needs for food and fiber.

The U.S. Department of Agriculture defines prime farmland as the land that is best suited to producing food, feed, forage, fiber, and oilseed crops. It has the soil quality, growing season, and moisture supply needed to produce a sustained high yield of crops while using acceptable farming methods. Prime farmland produces the highest yields and requires minimal amounts of energy and economic resources, and farming it results in the least damage to the environment.

An area identified as prime farmland must be used for producing food or fiber or must be available for those uses. Thus, urban and built-up land and water areas are not classified as prime farmland.

The general criteria for prime farmland are as follows: a generally adequate and dependable supply of moisture from precipitation or irrigation, favorable temperature and growing-season length, acceptable levels of acidity or alkalinity, few or no rocks, and permeability to air and water. Prime farmland is not excessively erodible, is not saturated with water for long periods, and is not flooded during the growing season. The slope range is mainly from 0 to 8 percent. For more detailed information on the criteria for prime farmland, consult the local staff of the Soil Conservation Service.

The survey area contains about 45,275 acres of prime farmland. That acreage makes up about 8 percent of the total acreage in the survey area and is mainly in the central part of the county. The largest areas are in map units 3, 4, and 5 on the general soil map. Other areas of prime farmland are scattered throughout the county.

The soil map units that make up prime farmland in the survey area are listed below. This list does not constitute a recommendation for a particular land use. The extent of each listed map unit is shown in table 4, and the location of each unit is shown on the detailed soil maps at the back of this publication. The soil properties and characteristics that affect use and management of the units are described in the section "Detailed soil map units."

AmA Amenia silt loam, 0 to 3 percent slopes
AmB Amenia silt loam, 3 to 8 percent slopes
CoA Copake fine sandy loam, 0 to 3 percent slopes
CoB Copake fine sandy loam, 3 to 8 percent slopes
Ha Hadley silt loam
HeA Hero loam, 0 to 3 percent slopes
HeB Hero loam, 3 to 8 percent slopes
HgA Hero Variant gravelly loam, 0 to 3 percent slopes
HgB Hero Variant gravelly loam, 3 to 8 percent slopes
MeA Merrimac fine sandy loam, 0 to 3 percent slopes
MeB Merrimac fine sandy loam, 3 to 8 percent slopes
NeB Nellis loam, 3 to 8 percent slopes
PrB Pittsfield loam, 3 to 8 percent slopes
StB Stockbridge gravelly silt loam, 3 to 8 percent slopes
Wy Winooski silt loam

Use and Management of the Soils

This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and potentials of natural resources and the environment. Also, it can help avoid soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavior characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis in predicting soil behavior.

Information in this section can be used to plan the use and management of soils for crops and pasture; as woodland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreation facilities; and for wildlife habitat. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in all or part of the survey area. The survey can help planners to maintain or create a land use pattern in harmony with the natural soil.

Contractors can use this survey to locate sources of sand and gravel, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

Crops and Pasture

Gary N. Parker, district conservationist, Soil Conservation Service, helped to prepare this section.

General management needed for crops and pasture is suggested in this section. The crops or pasture plants best suited to the soils, including some not commonly grown in the survey area, are identified; the system of land capability classification used by the Soil Conservation Service is explained; and the estimated yields of the main crops and hay and pasture plants are listed for each soil.

Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil under "Detailed Soil Map Units." Specific information can be obtained from the local office of the Soil Conservation Service or the Cooperative Extension Service.

Of the total acreage in farm use in the survey area, approximately 28,000 acres is used for hay and pasture, 6,000 acres is used for grain and silage corn, and less than 1,000 acres is used for orchards, vegetables, and nurseries.

The main management concerns are erosion, drainage, and fertility. Erosion is a hazard in sloping areas, which include much of the hayland and pastureland and some cropland. Loss of the surface layer by erosion can be particularly damaging to such soils as Amenia and Stockbridge soils, which have a layer that restricts the root zone. Crop rotation, stripcropping, diversions, conservation tillage, reduced tillage, or a combination of these practices helps to control erosion.

Installing drainage is a major management concern on many soils in the survey area. On the very poorly drained soils, such as Saco, Halsey, and Lyons soils, the production of crops common to the area is generally not feasible because of the seasonal high water table. On some other soils, such as the poorly drained Fredon soils and the somewhat poorly drained and poorly drained Wareham soils, drainage allows the production of water-tolerant crops. In drained areas these soils are commonly used as pasture and hayland (fig. 23).

If drainage is installed on the moderately well drained soils, such as Amenia, Fullam, Hero, and Deerfield soils, these soils are among the most productive in the survey area. They are generally wet in early spring and cannot be tilled until late spring. Consequently, they are not well suited to early season crops.

Natural fertility is low in the soils in the survey area. In most areas the soils are naturally acid, and applications of lime are needed to lower the reaction to slightly acid or neutral for highest crop yields. Also, the levels of available phosphorous and potassium are naturally low, and fertilizer is needed for the best growth of plants.

Tilth is important in the germination of seeds and in the infiltration of water into the soil. Soils that have good

Figure 23.—Hayland in an area of Fredon fine sandy loam, 0 to 3 percent slopes, and Hero loam, 0 to 3 percent slopes. In the background is an area of Lyman-Tunbridge association, steep, extremely stony.

tilth are granular and porous. In general, tilth is good on the soils in the survey area commonly used for crop production. Regular additions of crop residue and animal manure, a common practice on much of the cropland, help to maintain organic matter content, soil structure, and the rate of water intake.

Yields Per Acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 5. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors. The land capability classification of each map unit also is shown in the table.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby counties and results of field trials and demonstrations are also considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss.

For yields of irrigated crops, it is assumed that the irrigation system is adapted to the soils and to the crops grown, that good quality irrigation water is uniformly applied as needed, and that tillage is kept to a minimum.

The estimated yields reflect the productive capacity of each soil for each of the principal crops. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Crops other than those shown in table 5 are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Soil Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils for those crops.

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for woodland or for engineering purposes.

In the capability system, soils are generally grouped at three levels: capability class, subclass, and unit. Only class and subclass are used in this survey. The levels are defined in the following paragraphs.

Capability classes, the broadest groups, are designated by Roman numerals I through VIII. The numerals indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class I soils have slight limitations that restrict their use.

Class II soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class III soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.

Class IV soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

Class V soils are not likely to erode but have other limitations, impractical to remove, that limit their use.

Class VI soils have severe limitations that make them generally unsuitable for cultivation.

Class VII soils have very severe limitations that make them unsuitable for cultivation.

Class VIII soils and miscellaneous areas have limitations that nearly preclude their use for commercial crop production.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e, w, s,* or *c,* to the class numeral, for example, IIe. The letter *e* shows that the main limitation is risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c*, used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class I there are no subclasses because the soils of this class have few limitations. Class V contains only the subclasses indicated by *w, s,* or *c* because the soils in class V are subject to little or no erosion. They have other limitations that restrict their use to pasture, woodland, wildlife habitat, or recreation.

Capability units are soil groups within a subclass. The soils in a capability unit are enough alike to be suited to the same crops and pasture plants, to require similar management, and to have similar productivity. Capability units are generally designated by adding an Arabic numeral to the subclass symbol, for example, IIe-4 or IIIe-6.

The capability classification of each map unit is given in the section "Detailed Soil Map Units" and in the yields table.

Woodland Management and Productivity

Robert Lear, forester, Massachusetts Division of Forests and Parks, and David J. Welsch, forester, Soils Conservation Service, helped to prepare this section.

About 75 percent of the land area, or 450,000 acres, of the county is forestland. The makeup of the forestland differs greatly because of the differences in soils and elevation. In general, the forest types in the northern part of the county are northern hardwoods, (beech, birch, and maple), elm, ash, and red maple. Those in the southern part are pine and oak-hickory.

Many highly productive woodland sites are in the county. They support high quality stands of red oak, sugar maple, white ash, and white pine. The majority of stands, both sawtimber and pole-sized stands, are overstocked and have many undesirable trees.

Private landowners in the county manage forestland for recreation, aesthetics, wildlife habitat, and timber production. Markets are good for all forest products, including sawtimber, veneer, pulpwood, and fuelwood (fig. 24). Many municipal watersheds are managed to increase the volume and quality of drinking water through the controlled growth and harvesting of trees.

Table 6 can be used by woodland owners or forest managers in planning the use of soils for wood crops. Only those soils suitable for wood crops are listed in the tables. The table gives the ordination symbol for each

Figure 24.—A landing site for logging operations in an area of Peru-Marlow association, rolling, extremely stony.

soil. Soils assigned the same ordination symbol require the same general management and have about the same potential productivity.

The first part of the *ordination symbol*, a number, indicates the potential productivity of the soils for an indicator tree species. The number indicates the volume, in cubic meters per hectare per year, that the indicator species can produce. The larger the number, the greater the potential productivity. The number 1 indicates low productivity; 2 and 3, moderate; 4 and 5, moderately high; 6 through 8, high; 9 through 11, very high; and 12 or more, extremely high. The second part of the symbol, a letter, indicates the major kind of soil limitation for use and management. The letter *R* indicates steep slopes; *X*, stones or rocks on the surface; *W*, excessive water in or on the soil; *T*, excessive alkalinity, acidity, sodium salts, or other toxic substances in the soil; *D*, restricted rooting depth caused by bedrock, hardpan, or other restrictive layer; *C*, clay in the upper part of the soil; *S*, sandy texture; and *F*, high content of rock fragments in the soil profile. The letter *A* indicates that limitations or restrictions are insignificant. If a soil has more than one limitation, the priority is as follows: R,X,W,T,D,C,S, and F.

In table 6, *slight, moderate,* and *severe* indicate the degree of the major soil limitations to be considered in management.

Erosion hazard is the probability that erosion can occur as a result of site preparation or following cutting operations and where the soil is exposed, for example, roads, skid trails, fire lanes, and log handling areas. Forests that are abused by fire or overgrazing are also subject to erosion. The ratings for the erosion hazard are based on the percent of the slope and on the erosion factor K shown in table 14. A rating of *slight* indicates that no particular measures to prevent erosion are needed under ordinary conditions. A rating of *moderate* indicates that erosion control measures are needed in certain silvicultural activities. A rating of *severe* indicates that special precautions are needed to control erosion in most silvicultural activities.

The proper construction and maintenance of roads, trails, landings, and fire lanes will help overcome the erosion hazard.

Equipment limitation reflects the characteristics and conditions of the soil that restrict use of the equipment generally needed in woodland management or harvesting. The chief characteristics and conditions considered in the ratings are slope, stones on the surface, rock outcrops, soil wetness, and texture of the surface layer. A rating of *Slight* indicates that equipment use normally is not restricted either in kind of equipment that can be used or time of year because of soil factors. If soil wetness is a factor, equipment use can be restricted for a period not to exceed 2 months. A rating of *moderate* indicates that equipment use is moderately restricted because of one or more soil factors. If soil wetness is a factor, equipment use is restricted for 2 to 6 months. A rating of *severe* indicates that equipment use is severely restricted either in kind of equipment or season of use. If soil wetness is a factor, equipment use is restricted for more than 6 months.

Choosing the most suitable equipment and timing harvesting and other management operations to avoid seasonal limitations help overcome the equipment limitation.

Seedling mortality refers to the probability of death of naturally occuring or planted tree seedlings as influenced by kinds of soil or topographic conditions. The factors considered in rating the soils for seedling mortality are texture of the surface layer, depth and duration of the water table, rock fragments in the surface layer, rooting depth, and aspect of the slope. A rating of *slight* indicates that under usual conditions the expected mortality is less than 25 percent. A rating of *moderate* indicates that the expected mortality is 25 to 50 percent. Extra precautions are advisable. A rating of *severe* indicates that the expected mortality is more than 50 percent. Extra precautions are important. Replanting may be necessary.

The use of special planting stock and special site preparation, such as bedding, furrowing, or surface drainage, can help reduce seedling mortality.

Windthrow hazard is the likelihood of trees being uprooted (tipped over) by the wind because the soil is not deep enough for adequate root anchorage. The main restrictions are a seasonal high water table and bedrock or a fragipan or other limiting layer. A rating of *slight* indicates that normally no trees are blown down by the wind. Strong winds may break trees but do not uproot them. A rating of *moderate* indicates that moderate or strong winds occasionally blow down a few trees during periods of soil wetness. A rating of *severe* indicates that moderate or strong winds may blow down many trees during periods of soil wetness.

The use of specialized equipment that does not damage surficial root systems during partial cutting operations can help reduce windthrow. Care in thinning or no thinning also can help reduce windthrow.

The *potential productivity* of merchantable or *common trees* on a soil is expressed as a *site index*. This index is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands. Common trees are those that woodland managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability.

The *productivity class*, a number, represents an expected volume produced by the most important trees. This number, expressed as cubic meters per hectare per year, indicates the amount of fiber produced on a fully stocked, even-aged, unmanaged stand. One cubic meter per hectare equals 14.3 cubic feet per acre.

The first tree species listed under common trees for a soil is the indicator species for that soil. The indicator species is the species that is common in the area and is generally the most productive on the soil. The productivity class of the indicator species is the number used for the ordination symbol.

Trees to plant are those that are suited to the soil and are planted for commercial wood production.

Recreation

Recreation, including hiking, skiing, and picnicking, is one of the main attractions in the county. More than 100,000 acres of state forest, public, and private land in the Berkshires is available for recreation activities.

Hiking is perhaps the most popular recreation in the county. Nature trails, including part of the Appalachian Trail, wind for hundreds of miles through woods, over mountains, and around lakes.

The Berkshire Mountains have the greatest concentration of ski resorts in the United States. Downhill skiing is available at Bousquet Ski Area, Brodie Mountain, Butternut Basin, Catamount, Jiminy Peak, and Otis Ridge. Cross-country ski trails covering hundreds of miles are throughout the county.

The state parks include Pittsfield State Forest, Mount Greylock, Beartown State Forest, October Mountain State Forest, and Savoy State Forest. They offer public picnicking, swimming, hiking, and overnight camping.

The soils of the survey area are rated in table 7 according to limitations that affect their suitability for recreation. The ratings are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewerlines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation are also important. Soils subject to flooding are limited for recreation use by the duration and intensity of flooding and the season when flooding occurs. In planning recreation facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

In table 7, the degree of soil limitation is expressed as slight, moderate, or severe. *Slight* means that soil properties are generally favorable and that limitations are minor and easily overcome. *Moderate* means that limitations can be overcome or alleviated by planning, design, or special maintenance. *Severe* means that soil properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or by a combination of these measures.

The information in table 7 can be supplemented by other information in this survey, for example, interpretations for septic tank absorption fields in table 10 and interpretations for dwellings without basements and for local roads and streets in table 9.

Camp areas require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The best soils have mild slopes and are not wet or subject to flooding during the period of use. The surface has few or no stones or boulders, absorbs rainfall readily but remains firm, and is not dusty when dry. Strong slopes and stones or boulders can greatly increase the cost of constructing campsites.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The best soils for picnic areas are firm when wet, are not dusty when dry, are not subject to flooding during the period of use, and do not have slopes or stones or boulders that increase the cost of shaping sites or of building access roads and parking areas.

Playgrounds require soils that can withstand intensive foot traffic. The best soils are almost level and are not wet or subject to flooding during the season of use. The surface is free of stones and boulders, is firm after rains, and is not dusty when dry. If grading is needed, the depth of the soil over bedrock or a hardpan should be considered.

Paths and trails for hiking and horseback riding should require little or no cutting and filling. The best soils are not wet, are firm after rains, are not dusty when dry, and are not subject to flooding more than once a year during the period of use. They have moderate slopes and few or no stones or boulders on the surface.

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. The best soils for use as golf fairways are firm when wet, are not dusty when dry, and are not subject to prolonged flooding during the period of use. They have moderate slopes and no stones or boulders on the surface. The suitability of the soil for tees or greens is not considered in rating the soils.

Wildlife Habitat

Kathleen Hinkel, biologicial technician, Soil Conservation Service, and Anthony Gola, district game manager, Massachusetts Division of Fisheries and Wildlife, helped to prepare this section.

Excellent wildlife habitat is abundant in Berkshire County. Some of the unusual habitats include the limestone ledges and the calcareous wetlands. Bartholomew's Cobble in Sheffield, in the calcareous wetlands, supports a variety of unusual plant and wildlife species. The calcareous soils in this area produce high quality food, which contributes to good antler development in deer and to the survival of many wildlife species.

The state owns and operates a number of wildlife areas in the county. The state manages only one sanctuary, the Edward Howe Forbush Wildlife Sanctuary (268 acres in Hancock). However, the state owns and operates eight wildlife management areas. These include Becket (234 acres in Becket), Savoy (420 acres in Savoy), Stafford Hill (675 acres in Cheshire), Chalet (723 acres in Dalton and Windsor), Housatonic Valley (812 acres in Pittsfield, Lenox, and Lee), Hinsdale Flats (1,100 acres in Hinsdale), Eugene D. Moran (1,147 acres in Windsor), and Peru (2,638 acres in Peru).

Massachusetts Audubon owns and operates the Pleasant Valley Wildlife Sanctuary in Lenox and the Rice Wildlife Sanctuary in Peru. The state Trustees of Reservations operates Bartholomew's Cobble, Notchview Reservation (3,000 acres in Windsor) and Naumkeag Reservation in Stockbridge. Eleven state forests, including Otis, Bashbish Falls, and October Mountain State Forests, and a number of state parks, although not managed exclusively for wildlife, provide excellent habitat for wildlife.

The Pleasant Valley Sanctuary is notable as a salamander sanctuary because of the buffering capacity of limestone. It is inhabited by the Jefferson, spotted, four-toed, and spring salamanders, all of which are included on the Massachusetts list of species for special consideration. A number of other species, listed statewide by the state as endangered, threatened, or rare, are found in the county. These include the bog turtle, timber rattlesnake, long-tailed shrew, water shrew, trout-perch, burbot, American bittern, olive-sided flycatcher, Swainson's thrush, and Henslow's sparrow.

The mixed deciduous and coniferous woodlands and openland provide excellent habitat for a variety of nongame birds in the county. The raptors, or predatory birds, include the goshawk and the broad-winged, sparrow, marsh, red-tailed, red-shouldered, and sharp-shinned hawks. Some other raptors are the raven, the turkey vulture, and the barn, screech, great-horned, barred, and long-eared owls. In addition, other nesting species include the whip-poor-will, chimney swift, ruby-throated hummingbird, yellow-billed and black-billed cuckoos, tufted titmouse, the red-breasted and white-breasted nuthatches, golden-crowned kinglet, yellow-shafted flicker, yellow-bellied sapsucker, the pileated, downy, and hairy woodpeckers, cardinal, purple finch, bobolink, and warblers, sparrows, thrushes, swallows, and flycatchers.

In the numerous ponds, lakes, streams, and upland wetlands, the species of waterfowl and waders flourish. Those that nest in the county include the Canada goose, mallard, the black and wood ducks, hooded merganser, pied-billed grebe, blue-winged teal, common gallinule, Virginia rail, sora rail, American bittern, and the great blue, green, and black-crowned night herons. The killdeer and the spotted sandpiper are two species of shorebirds commonly found in the county.

Some of the best habitat for upland gamebirds in Massachusetts is in Berkshire County. The farmland, open areas, and woodland support ruffed grouse, American woodcock, and an increasing population of wild turkey.

The game species of mammals are also numerous. These include flying, red, and gray squirrels, eastern cottontail, snowshoe hare, opossum, skunk, raccoon, beaver, mink, otter, weasel, fisher, muskrat, ermine, red fox, gray fox, bobcat, white-tailed deer, and black bear. The nongame mammals include the masked shrew, short-tailed shrew, hairy-tail mole, meadow and red-back voles, white-footed mouse, woodland jumping mouse, chipmunk, woodchuck, porcupine, and coyote.

In addition to the rare or endangered reptiles and amphibians, the woodlands and wetlands of the county also support many other species. These include the American toad, spring peeper, wood frog, pickerel frog, green frog, bullfrog, snapping turtle, painted turtle, milksnake, smooth green snake, ring-necked snake, and water and garter snake.

The county has many miles of warm and cold water streams and numerous ponds and lakes. The fish species in them include rainbow, brown, and brook trout, creek chub, banded killifish, blacknose and longnose dace, yellow and brown bullheads, and slimy sculpin. They also include smallmouth bass, largemouth bass, rock bass, bluegill, chain pickerel, northern pike, emerald shiner, yellow and white perch, and white and longnose suckers.

Soils affect the kind and amount of vegetation that is available to wildlife as food and cover. They also affect the construction of water impoundments. The kind and abundance of wildlife depend largely on the amount and distribution of food, cover, and water. Wildlife habitat can be created or improved by planting appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants.

In table 8, the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in determining the intensity of management needed for each element of the habitat.

The potential of the soil is rated good, fair, poor, or very poor. A rating of *good* indicates that the element or kind of habitat is easily established, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected. A rating of *fair* indicates that the element or kind of habitat can be established, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. A rating of *poor* indicates that limitations are severe for the designated element or kind of habitat. Habitat can be created, improved, or maintained in most places, but management is difficult and must be intensive. A rating of *very poor* indicates that restrictions for the element or kind of habitat are very severe and that unsatisfactory results can be expected. Creating, improving, or maintaining habitat is impractical or impossible.

The elements of wildlife habitat are described in the following paragraphs.

Grain and seed crops are domestic grains and seed-producing herbaceous plants. Soil properties and features that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, surface stoniness, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of grain and seed crops are corn, wheat, oats, and cereal rye.

Grasses and legumes are domestic perennial grasses and herbaceous legumes. Soil properties and features that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, flood hazard, and slope. Soil temperature and soil moisture are also considerations. Examples of grasses and legumes are fescue, timothy, bromegrass, clover, and alfalfa.

Wild herbaceous plants are native or naturally established grasses and forbs, including weeds. Soil properties and features that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of wild herbaceous plants are goldenrod, yellow rocket, beggar-ticks, quackgrass, and ragweed.

Hardwood trees and woody understory produce nuts or other fruit, buds, catkins, twigs, bark, and foliage. Soil properties and features that affect the growth of hardwood trees and shrubs are depth of the root zone, available water capacity, and wetness. Examples of these plants are oak, birch, cherry, maple, apple, hawthorn, dogwood, hickory, sumac, and blueberry. Examples of fruit-producing shrubs that are suitable for planting on soils rated *good* are gray dogwood, autumn-olive, and crabapple.

Coniferous plants furnish browse and seeds. Soil properties and features that affect the growth of coniferous trees, shrubs, and ground cover are depth of the root zone, available water capacity, and wetness. Examples of coniferous plants are pine, spruce, yew, hemlock, cedar, and juniper.

Wetland plants are annual and perennial wild herbaceous plants that grow on moist or wet sites. Submerged or floating aquatic plants are excluded. Soil properties and features affecting wetland plants are texture of the surface layer, wetness, reaction, salinity, slope, and surface stoniness. Examples of wetland plants are smartweed, arrowhead, burreed, pickerel weed, cattail, rushes, sedges, and common reed.

Shallow water areas have an average depth of less than 5 feet. Some are naturally wet areas. Others are created by dams, levees, or other water-control structures. Soil properties and features affecting shallow water areas are depth to bedrock, wetness, surface stoniness, slope, and permeability. Examples of shallow water areas are marshes, swamps, and ponds.

The habitat for various kinds of wildlife is described in the following paragraphs.

Habitat for openland wildlife consists of cropland, pasture, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. The wildlife attracted to these areas include meadow vole, meadowlark, field sparrow, cottontail, and red fox.

Habitat for woodland wildlife consists of areas of deciduous plants or coniferous plants or both and associated grasses, legumes, and wild herbaceous plants. Wildlife attracted to these areas include wild turkey, ruffed grouse, woodcock, thrushes, woodpeckers, squirrels, gray fox, raccoon, and deer.

Habitat for wetland wildlife consists of open, marshy or swampy shallow water areas. Some of the wildlife attracted to such areas are ducks, geese, herons, shore birds, muskrat, frogs, and tree swallow.

Engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. The ratings are given in the following tables: Building site development, Sanitary facilities, Construction materials, and Water management. The ratings are based on observed performance of the soils and on the estimated data and test data in the "Soil Properties" section.

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil within a depth of 5 or 6 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations need to be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about grain-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 to 6 feet of the surface, soil wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kind of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to (1) evaluate the potential of areas for residential, commercial, industrial, and recreation uses; (2) make preliminary estimates of construction conditions; (3) evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; (4) evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; (5) plan detailed onsite investigations of soils and geology; (6) locate potential sources of gravel, sand, earthfill, and topsoil; (7) plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; and (8) predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

The information in the tables, along with the soil maps, the soil descriptions, and other data provided in this survey can be used to make additional interpretations.

Some of the terms used in this soil survey have a special meaning in soil science and are defined in the Glossary.

Building Site Development

Table 9 shows the degree and kind of soil limitations that affect shallow excavations, dwellings with and without basements, small commercial buildings, local roads and streets, and lawns and landscaping. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required. Special feasibility studies may be required where the soil limitations are severe.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for basements, graves, utility lines, open ditches, and other purposes. The ratings are based on soil properties, site features, and observed performance of the soils. The ease of digging, filling, and compacting is affected by the depth to bedrock, a cemented pan, or a very firm dense layer; stone content; soil texture; and slope. The time of the year that excavations can be made is affected by the depth to a seasonal high water table and the susceptibility of the soil to flooding. The resistance of the excavation walls or banks to sloughing or caving is affected by soil texture and the depth to the water table.

Dwellings and small commercial buildings are structures built on shallow foundations on undisturbed soil. The load limit is the same as that for single-family dwellings no higher than three stories. Ratings are made for small commercial buildings without basements, for dwellings with basements, and for dwellings without basements. The ratings are based on soil properties, site features, and observed performance of the soils. A high water table, flooding, shrink-swell potential, and organic layers can cause the movement of footings. A high water table, depth to bedrock or to a cemented pan, large stones, slope, and flooding affect the ease of excavation and construction. Landscaping and grading that require cuts and fills of more than 5 to 6 feet are not considered.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material, a base of gravel, crushed rock, or stabilized soil material, and a flexible or rigid surface. Cuts and fills are generally limited to less than 6 feet. The ratings are based on soil properties, site features, and observed performance of the soils. Depth to bedrock or to a cemented pan, a high water table, flooding, large stones, and slope affect the ease of excavating and grading. Soil strength (as inferred from the engineering classification of the soil), shrink-swell potential, frost-action potential, and depth to a high water table affect the traffic-supporting capacity.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. The ratings are based on soil properties, site features, and observed performance of the soils. Soil reaction, a high water table, depth to bedrock or to a cemented pan, the available water capacity in the upper 40 inches, and the content of salts, sodium, and sulfidic materials affect plant growth. Flooding, wetness, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer affect trafficability after vegetation is established.

Sanitary Facilities

Table 10 shows the degree and kind of soil limitations that affect septic tank absorption fields, sewage lagoons, and sanitary landfills. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required.

Table 10 also shows the suitability of the soils for use as daily cover for landfills. A rating of *good* indicates that soil properties and site features are favorable for the use and good performance and low maintenance can be expected; *fair* indicates that soil properties and site features are moderately favorable for the use and one or more soil properties or site features make the soil less desirable than the soils rated good; and *poor* indicates that one or more soil properties or site features are unfavorable for the use and overcoming the unfavorable properties requires special design, extra maintenance, or costly alteration.

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 72 inches is evaluated. The ratings are based on soil properties, site features, and observed performance of the soils. Permeability, a high water table, depth to bedrock or to a cemented pan, and flooding affect absorption of the effluent. Large stones and bedrock or a cemented pan interfere with installation.

Unsatisfactory performance of septic tank absorption fields, including excessively slow absorption of effluent, surfacing of effluent, and hillside seepage, can affect public health. Ground water can be polluted if highly permeable sand and gravel or fractured bedrock is less than 4 feet below the base of the absorption field, if slope is excessive, or if the water table is near the surface. There must be unsaturated soil material beneath the absorption field to filter the effluent effectively. Many local ordinances require that this material be of a certain thickness.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Lagoons generally are designed to hold the sewage within a depth of 2 to 5 feet. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water.

Table 10 gives ratings for the natural soil that makes up the lagoon floor. The surface layer and, generally, 1 or 2 feet of soil material below the surface layer are excavated to provide material for the embankments. The ratings are based on soil properties, site features, and observed performance of the soils. Considered in the ratings are slope, permeability, a high water table, depth to bedrock or to a cemented pan, flooding, large stones, and content of organic matter.

Excessive seepage due to rapid permeability of the soil or a water table that is high enough to raise the level of sewage in the lagoon causes a lagoon to function unsatisfactorily. Pollution results if seepage is excessive or if floodwater overtops the lagoon. A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope, bedrock, and cemented pans can cause construction problems, and large stones can hinder compaction of the lagoon floor.

Sanitary landfills are areas where solid waste is disposed of by burying it in soil. There are two types of landfill—trench and area. In a trench landfill, the waste is placed in a trench. It is spread, compacted, and covered daily with a thin layer of soil excavated at the site. In an area landfill, the waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site.

Both types of landfill must be able to bear heavy vehicular traffic. Both types involve a risk of ground water pollution. Ease of excavation and revegetation needs to be considered.

The ratings in table 10 are based on soil properties, site features, and observed performance of the soils. Permeability, depth to bedrock or to a cemented pan, a high water table, slope, and flooding affect both types of landfill. Texture, stones and boulders, highly organic layers, soil reaction, and content of salts and sodium affect trench type landfills. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, a limitation rated slight or moderate may not be valid. Onsite investigation is needed.

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area type sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste.

Soil texture, wetness, coarse fragments, and slope affect the ease of removing and spreading the material during wet and dry periods. Loamy or silty soils that are free of large stones or excess gravel are the best cover for a landfill. Clayey soils are sticky or cloddy and are difficult to spread; sandy soils are subject to soil blowing.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock, a cemented pan, or the water table to permit revegetation. The soil material used as final cover for a landfill should be suitable for plants. The surface layer generally has the best workability, more organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

Construction Materials

Table 11 gives information about the soils as a source of roadfill, sand, gravel, and topsoil. The soils are rated *good, fair,* or *poor* as a source of roadfill and topsoil. They are rated as a *probable* or *improbable* source of sand and gravel. The ratings are based on soil properties and site features that affect the removal of the soil and its use as construction material. Normal compaction, minor processing, and other standard construction practices are assumed. Each soil is evaluated to a depth of 5 or 6 feet.

Roadfill is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the soil material below the surface layer to a depth of 5 or 6 feet. It is assumed that soil layers will be mixed during excavating and spreading. Many soils have layers of contrasting suitability within their profile. The table showing engineering index properties provides detailed information about each soil layer. This information can help determine the suitability of each layer for use as roadfill. The performance of soil after it is stabilized with lime or cement is not considered in the ratings.

The ratings are based on soil properties, site features, and observed performance of the soils. The thickness of suitable material is a major consideration. The ease of excavation is affected by large stones, a high water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the engineering classification of the soil) and shrink-swell potential.

Soils rated *good* contain significant amounts of sand or gravel or both. They have at least 5 feet of suitable material, low shrink-swell potential, few cobbles and stones, and slopes of 15 percent or less. Depth to the water table is more than 3 feet. Soils rated *fair* are more than 35 percent silt- and clay-sized particles and have a plasticity index of less than 10. They have moderate shrink-swell potential, slopes of 15 to 25 percent, or many stones. Depth to the water table is 1 to 3 feet. Soils rated *poor* have a plasticity index of more than 10, a high shrink-swell potential, many stones, or slopes of more than 25 percent. They are wet, and the depth to the water table is less than 1 foot. They may have layers of suitable material, but the material is less than 3 feet thick.

Sand and gravel are natural aggregates suitable for commercial use with a minimum of processing. Sand and gravel are used in many kinds of construction. Specifications for each use vary widely. In table 11, only the probability of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material.

The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the engineering classification of the soil), the thickness of suitable material, and the content of rock fragments. Kinds of rock, acidity, and stratification are given in the soil series descriptions. Gradation of grain sizes is given in the table on engineering index properties.

A soil rated as a probable source has a layer of clean sand or gravel or a layer of sand or gravel that is up to 12 percent silty fines. This material must be at least 3 feet thick and less than 50 percent, by weight, large stones. All other soils are rated as an improbable source. Coarse fragments of soft bedrock, such as shale and siltstone, are not considered to be sand and gravel.

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area.

Plant growth is affected by toxic material and by such properties as soil reaction, available water capacity, and fertility. The ease of excavating, loading, and spreading is affected by rock fragments, slope, a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, a water table, rock fragments, bedrock, and toxic material.

Soils rated *good* have friable loamy material to a depth of at least 40 inches. They are free of stones and cobbles, have little or no gravel, and have slopes of less than 8 percent. They are low in content of soluble salts, are naturally fertile or respond well to fertilizer, and are not so wet that excavation is difficult.

Soils rated *fair* are sandy soils, loamy soils that have a relatively high content of clay, soils that have only 20 to 40 inches of suitable material, soils that have an appreciable amount of gravel, stones, or soluble salts, or soils that have slopes of 8 to 15 percent. The soils are not so wet that excavation is difficult.

Soils rated *poor* are very sandy or clayey, have less than 20 inches of suitable material, have a large amount of gravel, stones, or soluble salts, have slopes of more than 15 percent, or have a seasonal water table at or near the surface.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

Water Management

Table 12 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas; embankments, dikes, and levees; and aquifer-fed excavated ponds. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and are easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increase in construction costs, and possibly increased maintenance are required.

This table also gives for each soil the restrictive features that affect drainage, terraces and diversions, and grassed waterways.

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil and the depth to fractured bedrock or other permeable material. Excessive slope can affect the storage capacity of the reservoir area.

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth even greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders, organic matter, or salts or sodium. A high water table affects the amount of usable material. It also affects trafficability.

Aquifer-fed excavated ponds are pits or dugouts that extend to a ground-water aquifer or to a depth below a permanent water table. Excluded are ponds that are fed only by surface runoff and embankment ponds that impound water 3 feet or more above the original surface. Excavated ponds are affected by depth to a permanent water table, permeability of the aquifer, and quality of the water as inferred from the salinity of the soil. Depth to bedrock and the content of large stones affect the ease of excavation.

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to bedrock, to a cemented pan, or to other layers that affect the rate of water movement; permeability; depth to a high water table or depth of standing water if the soil is subject to ponding; slope; susceptibility to flooding; subsidence of organic layers; and potential frost action. Excavating and grading and the stability of ditchbanks are affected by depth to bedrock or to a cemented pan, large stones, slope, and the hazard of cutbanks caving. The productivity of the soil after drainage is adversely affected by extreme acidity or by toxic substances in the root zone, such as salts, sodium, or sulfur. Availability of drainage outlets is not considered in the ratings.

Terraces and diversions are embankments or a combination of channels and ridges constructed across a slope to reduce erosion and conserve moisture by intercepting runoff. Slope, wetness, large stones, and depth to bedrock or to a cemented pan affect the construction of terraces and diversions. A restricted rooting depth, a severe hazard of wind or water erosion, an excessively coarse texture, and restricted permeability adversely affect maintenance.

Grassed waterways are natural or constructed channels, generally broad and shallow, that conduct surface water to outlets at a nonerosive velocity. Large stones, wetness, slope, and depth to bedrock or to a cemented pan affect the construction of grassed waterways. A hazard of wind erosion, low available water capacity, restricted rooting depth, toxic substances such as salts or sodium, and restricted permeability adversely affect the growth and maintenance of the grass after construction.

Soil Properties

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

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

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

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

Engineering Index Properties

Table 13 gives estimates of the engineering classification and of the range of index properties for the major layers of each soil in the survey area. Most soils have layers of contrasting properties within the upper 5 or 6 feet.

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

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

Classification of the soils is determined according to the Unified soil classification system (*2*) and the system adopted by the American Association of State Highway and Transportation Officials (*1*).

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

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

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

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

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

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

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

Physical and Chemical Properties

Table 14 shows estimates of some characteristics and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

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

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

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at 1/3 bar moisture tension. Weight is determined after drying the soil at 105 degrees C. In this table, the estimated moist bulk density of each major soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. A bulk density of more than 1.6 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

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

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

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

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

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

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In table 14, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

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

Soil and Water Features

Table 15 gives estimates of various soil and water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are used to estimate runoff from precipitation. Soils not protected by vegetation are assigned to one of four groups. They are grouped according to the intake of water when the soils are thoroughly wet and receive precipitation from long-duration storms.

Some soils in table 15 are assigned to two hydrologic soil groups. Dual grouping is used for one of two reasons: (1) Some soils have a seasonal high water table but can be drained. In this instance the first letter applies to the drained condition of the soil and the second letter to the undrained condition. (2) In some soils that are less than 20 inches deep to bedrock, the first letter applies to areas where the bedrock is cracked and pervious and the second letter to areas where the bedrock is impervious or where exposed bedrock makes up more than 25 percent of the surface of the soil.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have high shrink-swell potential, soils that have a permanent high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Flooding, the temporary covering of the soil surface by flowing water, is caused by overflowing streams, by runoff from adjacent slopes, or by inflow from high tides. Shallow water standing or flowing for short periods after rainfall or snowmelt is not considered flooding. Standing water in swamps and marshes or in a closed depression is considered ponding.

Table 15 gives the frequency and duration of flooding and the time of year when flooding is most likely to occur.

Frequency, duration, and probable period of occurrence are estimated. Frequency generally is expressed as *none, rare, occasional, common,* or *frequent*. *None* means that flooding is not probable. *Rare* means that flooding is unlikely but possible under unusual weather conditions (there is a near 0 to 5 percent chance of flooding in any year). *Occasional* means that flooding occurs infrequently under normal weather conditions (there is a 5 to 50 percent chance of flooding in any year). *Frequent* means that flooding occurs often under normal weather conditions (there is more than a 50 percent chance of flooding in any year). *Common* is used when classification as occasional or frequent does not affect interpretations. Duration is expressed as *very brief* (less than 2 days), *brief* (2 to 7 days), *long* (7 days to 1 month), and *very long* (more than 1 month). The time of year that floods are most likely to occur is expressed in months. November-May, for example, means that flooding can occur during the period November through May. About two-thirds to three-fourths of all flooding occurs during the stated period.

The information on flooding is based on evidence in the soil profile, namely, thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and absence of distinctive horizons, which are characteristic of soils that are not subject to flooding.

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

High water table (seasonal) is the highest level of a saturated zone in the soil in most years. The depth to a seasonal high water table applies to undrained soils. The estimates are based mainly on the evidence of a saturated zone, namely, grayish colors or mottles in the soil. Indicated in table 15 are the depth to the seasonal high water table; the kind of water table, that is, *perched, artesian,* or *apparent;* and the months of the year that the water table commonly is highest. A water table that is seasonally high for less than 1 month is not indicated in table 15.

An *apparent* water table is a thick zone of free water in the soil. It is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil. An *artesian* water table is under hydrostatic head, generally below an impermeable layer. When this layer is penetrated, the water level rises in an uncased borehole. A *perched* water table is water standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

The two numbers in the "High water table-Depth" column indicate the normal range in depth to a saturated zone. Depth is given to the nearest half foot. The first numeral in the range indicates the highest water level. A plus sign preceding the range in depth indicates that the water table is above the surface of the soil. "More than 6.0" indicates that the water table is below a depth of 6 feet or that the water table exists for less than a month.

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

Potential frost action is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, permeability, content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured clayey soils that have a high water table in winter are the most susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage mainly to pavements and other rigid structures.

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories (*5*). 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 16 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 Inceptisol.

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 Aquept (*Aqu*, meaning water, plus *ept*, from Inceptisol).

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 Haplaquepts (*Hapl*, meaning minimal horizonation, plus *aquept*, the suborder of the Inceptisols that have an aquic moisture regime).

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

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, nonacid, mesic Aeric Haplaquepts.

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

Soil Series and Their Morphology

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

Characteristics of the soil and the material in which it formed are identified for each series. 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* (*4*). Many of the technical terms used in the descriptions are defined in *Soil Taxonomy* (*5*). 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."

Amenia Series

The Amenia series consists of very deep, moderately well drained soils on uplands. These soils formed in calcareous glacial till. Slope ranges from 0 to 25 percent.

Amenia soils are similar to Peru soils and on many landscapes are adjacent to Stockbridge and Kendaia soils. Amenia soils are not as acid as Peru soils. Amenia soils have mottles in the lower part of the solum. Stockbridge soils do not have mottles. Kendaia soils have mottles throughout the solum.

Typical pedon of Amenia silt loam, 3 to 8 percent slopes, in the town of Richmond, 410 feet west-northwest of Route 41 and 1,640 feet south of the Pittsfield-Richmond town line, in a cultivated field:

Ap—0 to 8 inches; dark brown (10YR 3/3) silt loam; moderate fine and medium granular structure; friable; common fine and medium roots; 5 percent rock fragments; moderately acid; clear smooth boundary.

Bw1—8 to 11 inches; dark yellowish brown (10YR 4/4) silt loam that has common dark brown (10YR 3/3) material in cracks and worm burrows; weak fine and medium granular structure; friable; common medium roots; 5 percent rock fragments; moderately acid; clear smooth boundary.

Bw2—11 to 16 inches; olive brown (2.5Y 4/4) silt loam; weak fine subangular blocky structure; very friable; common fine roots; 5 percent rock fragments; moderately acid; clear smooth boundary.

Bw3—16 to 19 inches; olive brown (2.5Y 4/4) silt loam; common fine faint dark yellowish brown (10YR 4/4) and gray (5Y 5/1) mottles; very weak coarse subangular blocky structure; friable; common fine roots; 5 percent rock fragments; common earthworm casts and channels; slightly acid; clear wavy boundary.

Bw4—19 to 27 inches; olive brown (2.5Y 4/4) loam; common fine faint olive gray (5Y 5/2 and 5Y 4/2) and dark yellowish brown (10YR 4/4) mottles; moderate medium subangular blocky structure; friable; few fine roots; 5 percent rock fragments; slightly acid; clear wavy boundary.

Cr1—27 to 47 inches; dark grayish brown (2.5Y 4/2) gravelly loam; common fine faint olive gray (5Y 4/2) and olive brown (2.5Y 4/4) mottles; massive; firm; few fine roots; 20 percent rock fragments; moderately alkaline; slight effervescence; clear smooth boundary.

Cr2—47 to 60 inches; dark grayish brown (2.5Y 4/2) gravelly loam; massive; firm; 25 percent rock fragments; moderately alkaline; slight effervescence.

Depth to the dense till and the thickness of the solum range from 20 to 30 inches. Texture throughout is fine sandy loam, loam, silt loam, or their gravelly analog. Rock fragments make up 5 to 35 percent of the volume throughout. Reaction ranges from moderately acid to mildly alkaline in the A and B horizons and is mildly alkaline or moderately alkaline in the C horizon.

The A horizon has hue of 10YR, value of 2 or 3, chroma of 2 or 3.

The B horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 2 to 6. It is granular or subangular blocky.

The Cr horizon has hue of 10YR, 2.5Y, or 5Y, value of 4 or 5, and chroma of 2 or 3.

Berkshire Series

The Berkshire series consists of very deep, well drained soils on uplands. These soils formed in glacial till derived mainly from granite, gneiss, and schist. Slope ranges from 15 to 45 percent.

Berkshire soils are similar to Marlow soils and in many places are adjacent to Peru and Pillsbury soils. Berkshire soils do not have the dense substratum that the Marlow soils have. Unlike Berkshire soils, Pillsbury soils are mottled and Peru soils are mottled in the lower part of the subsoil.

Typical pedon of Berkshire loam, in an area of Berkshire-Marlow association, steep, extremely stony, in the town of Sandisfield, 100 feet southeast of Abbey Pond, in woodland:

Oi—5 to 3 inches; undecomposed litter of leaves and twigs of hemlock, beech, and yellow birch.

Oa—3 inches to 0; dark reddish brown (2.5Y 2/4) and black (N 2/0) humus mat of organic material.

E—0 to 2 inches; reddish gray (5YR 5/2) loam; weak fine granular structure; very friable; many fine and medium roots; 5 percent fine gravel, 5 percent cobblestones; extremely acid; abrupt broken boundary.

Bh—2 to 3 inches; dark reddish brown (2.5YR 2/4) gravelly loam; weak fine and medium granular structure; very friable; many fine, medium and coarse tree roots; 10 percent fine gravel, 5 percent cobblestones; extremely acid; abrupt wavy boundary.

Bs—3 to 10 inches; dark reddish brown (5YR 3/4) gravelly loam; weak fine and medium granular structure; very friable; many fine medium and coarse tree roots; 10 percent fine gravel, 5 percent cobblestones; very strongly acid; clear wavy boundary.

Bw—10 to 27 inches; brown (10YR 5/3) gravelly fine sandy loam; weak fine and medium granular structure; friable; many fine and medium tree roots; 10 percent fine gravel, 5 percent cobblestones; strongly acid; clear smooth boundary.

C1—27 to 44 inches; olive brown (2.5Y 4/4) gravelly fine sandy loam; massive; friable; common fine and medium tree roots in the upper part, few fine roots in the lower part; 10 percent fine gravel, 10 percent cobblestones; moderately acid; clear smooth boundary.

C2—44 to 60 inches; olive (5Y 4/3) gravelly fine sandy loam; massive; friable; 20 percent fine gravel, 10 percent cobblestones; moderately acid.

The solum ranges from 18 to 36 inches in thickness. Texture throughout is sandy loam, fine sandy loam, or loam in the fine earth fraction. Rock fragments range from 5 to 35 percent throughout. In unlimed areas reaction ranges from extremely acid to moderately acid throughout.

The E horizon has hue of 5YR to 2.5Y, value of 2 to 5, and chroma of 1 or 2. Some pedons have a thin A horizon that has hue of 5YR to 2.5Y, value of 2 to 5, and chroma of 1 or 2.

The Bh horizon has hue of 2.5YR to 7.5YR, value of 2 to 6, and chroma of 1 to 4. The Bs horizon has hue of 5YR to 10YR, value of 3 to 4, and chroma of 2 to 6. The Bw horizon has hue of 10YR to 5Y, value of 3 to 5, and chroma of 2 to 4.

The C horizon has hue of 2.5Y or 5Y, value of 4 or 5, and chroma of 2 to 4.

Brayton Series

The Brayton series consists of very deep, somewhat poorly drained and poorly drained soils on uplands. These soils formed in acid glacial till derived mainly from phyllite, slate, shale, or schist. Slope ranges from 0 to 8 percent.

Brayton soils are similar to Wareham soils and on many landscapes are adjacent to Fullam and Lanesboro soils. Wareham soils do not have a firm substratum. Brayton soils have a grayer subsoil than Fullam soils. Lanesboro soils do not have mottles in the subsoil.

Typical pedon of Brayton silt loam, in an area of Brayton silt loam, 0 to 8 percent slopes, very stony, in the town of Mount Washington, 100 feet east of East Street, 300 feet northeast of the crossroad to Mount Ethel, in an idle field:

Ap1—0 to 6 inches; black (10YR 2/1) silt loam, gray (10YR 6/1) dry; moderate, very fine, fine and medium granular structure; very friable; many fine roots; 5 percent slaty fragments; very strongly acid; abrupt smooth boundary.

Ap2—6 to 9 inches; very dark gray (5Y 3/1) silt loam, light gray (5Y 7/1) dry; moderate fine and medium subangular blocky structure; very friable; many fine roots; few fine prominent yellowish red (5YR 4/8) stains along root channels; 10 percent slaty fragments; very strongly acid; abrupt smooth boundary.

Bg—9 to 16 inches; olive gray (5Y 5/2) gravelly silt loam; common fine and medium, prominent strong brown (7.5YR 5/8) mottles; weak and moderate medium subangular blocky structure; firm; very few roots; very few fine vesicular pores; 25 percent slaty fargments; strongly acid; abrupt wavy boundary.

Cr1—16 to 42 inches; olive (5Y 5/3) gravelly silt loam, pale yellow (5Y 7/3) dry; common medium and coarse distinct light gray (5Y 7/1) mottles with strong brown (7.5YR 5/8) edges; weak fine and medium platy structure; very firm; few fine vesicular pores; very dusky red (2.5YR 2/2) manganese stains; 30 percent slaty fragments; strongly acid; abrupt wavy boundary.

Cr2—42 to 60 inches; olive (5Y 5/3) gravelly silt loam; massive; very firm; few fine vesicular pores; very dusky red (2.5Y 2/2) manganese stains in pores and on pebbles; brownish yellow (10YR 6/8) rotted rock fragments; 35 percent slaty fragments; strongly acid.

The thickness of the solum and depth to the hardpan range from 15 to 25 inches. Rock fragments range from 5 to 25 percent in the solum and from 10 to 40 percent in the substratum. Reaction ranges from extremely acid to moderately acid in the A horizon, strongly acid to slightly acid in the B horizon, and moderately acid to neutral in the Cr horizon.

The A horizon has hue of 10YR to 5Y, value of 2 to 5, and chroma of 1 or 2. It is silt loam or gravelly silt loam.

The B horizon has hue of 10YR to 5Y, value of 4 to 6, and chroma of 1 or 2. It is silt loam or gravelly silt loam.

The Cr horizon has hue of 2.5Y or 5Y, value of 4 to 6, and chroma of 2 or 3. It is silt loam or gravelly silt loam. Its consistence is firm or very firm.

Carlisle Series

The Carlisle series consists of deep, very poorly drained soils on outwash plains and till plains. These soils formed in well decomposed organic material. Slope ranges from 0 to 3 percent.

Carlisle soils are similar to Palms soils and in many places are near Lyons and Saco soils. Carlisle soils are deeper than Palms soils. Lyons and Saco soils are mineral soils.

Typical pedon of Carlisle muck, in an area of Palms and Carlisle mucks, in the town of Stockbridge, 2,000 feet north of the Great Barrington town line, 50 feet west of Ice Glen Road, in brushland:

Oa1—0 to 17 inches; black (5YR 2/1) broken face and rubbed muck (sapric material); about 5 percent fiber, 1 percent rubbed; weak medium granular structure; very friable; about 5 percent mineral material; strongly acid; abrupt smooth boundary.

Oa2—17 to 52 inches; dark reddish brown (5YR 3/2) broken face and rubbed muck (sapric material); about 25 percent fiber, 2 percent rubbed; massive; very friable; about 5 percent mineral material; strongly acid; abrupt smooth boundary.

2C—52 to 60 inches; very dark gray (10YR 3/1) loamy sand; massive; very friable; strongly acid.

The depth to the mineral horizon ranges from 51 to 60 inches. Reaction ranges from strongly acid to neutral throughout.

The surface tier is neutral or has hue of 10YR; value is 2, and chroma is 0 or 1. It is typically sapric material, but some pedons have layers of hemic material.

The subsurface and bottom tiers are neutral or have hue of 5YR to 10YR, value of 2 or 3, and chroma of 0 to

3. The subsurface tier has a granular or blocky structure or is massive. The bottom tier is massive, but in some pedons it is blocky or has a thick platy structure.

Copake Series

The Copake series consists of very deep, somewhat excessively drained soils on glacial outwash plains, kames, and stream terraces. These soils formed in glacial outwash material derived mainly from calcareous sand and gravel. Slope ranges from 0 to 25 percent.

Copake soils are similar to Groton soils and in many places are adjacent to Hero and Fredon soils. Unlike Copake soils, Hero and Fredon soils have mottles. Also, Copake soils are on higher lying, more convex positions than Hero and Fredon soils. Copake soils have more fines in the upper part of the solum than Groton soils.

Typical pedon of Copake fine sandy loam, 8 to 15 percent slopes, in the town of Lee, 600 feet east of the Lenox-Lee town line, 4,400 feet north of Willow Hill Road, in an open field:

A—0 to 4 inches; dark brown (7.5YR 3/2) fine sandy loam; weak fine granular structure; very friable; many fine and medium roots; 10 percent fine gravel; slightly acid; clear wavy boundary.

Bw1—4 to 21 inches; brown (7.5YR 5/4) gravelly fine sandy loam; weak fine granular structure; very friable; many fine and medium roots; 30 percent fine gravel; neutral; clear wavy boundary.

Bw2—21 to 26 inches; dark yellowish brown (10YR 4/4) fine sandy loam; weak fine granular structure; very friable; common fine roots; 5 percent fine gravel; slightly acid; clear wavy boundary.

2C—26 to 30 inches; dark brown (7.5YR 4/4) gravelly loamy sand; weak fine granular structure; very friable; common fine roots; 30 percent fine gravel; slightly acid; clear wavy boundary.

3C—30 to 48 inches; dark yellowish brown (10YR 4/4) loamy fine sand; weak fine granular structure; very friable; common fine roots; 30 percent fine gravel; neutral; abrupt wavy boundary.

4C—48 to 60 inches; grayish brown (10YR 5/2) very gravelly sand; single grain; loose; very few fine roots; 60 percent fine gravel; slight effervescence; mildly alkaline.

The thickness of the solum and the typical depth to stratified sand and gravel range from 20 to 30 inches. Rock fragments range from 5 to 35 percent, by volume, in the solum and from 20 to 60 percent in the individual layers of the C horizon. In unlimed areas the soil is very strongly acid to neutral in the A horizon, strongly acid to neutral in the B horizon, and slightly acid to moderately alkaline in the C horizon.

The A horizon has hue of 7.5YR to 2.5Y, value of 3 or 4, and chroma of 2 or 3. It is very fine sandy loam, fine sandy loam, or loam. It is very friable or friable.

The B horizon has hue of 7.5YR to 5Y, value of 4 or 5, and chroma of 2 to 5. It is fine sandy loam, loam, or their gravelly analog. It is very friable or friable.

The C horizons have hue of 7.5YR to 5Y, value of 3 to 5, and chroma of 2 to 4. It is loamy fine sand or coarser.

Deerfield Series

The Deerfield series consists of very deep, moderately well drained soils on stream terraces and outwash plains. These soils formed in water-sorted deposits of sand and gravel. Slope ranges from 0 to 3 percent.

Deerfield soils are similar to Hoosic soils and in many places are adjacent to Hero and Wareham soils. Unlike Hoosic soils, Deerfield soils have mottles within 40 inches of the surface. Unlike Deerfield soils, Hero soils have gravel. Unlike Deerfield soils, Wareham soils have mottles in the subsoil. Also, Deerfield soils are on higher lying, more convex positions than Wareham soils.

Typical pedon of Deerfield loamy fine sand, 0 to 3 percent slopes, in the town of Sheffield, 1,300 feet south of the junction of U.S. Route 7 and Andrus Road, 250 feet west of Andrus Road, in a cultivated field:

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

Bw1—6 to 11 inches; light olive brown (2.5Y 5/4) loamy fine sand; weak fine granular structure; very friable; common fine and medium roots; strongly acid; clear smooth boundary.

Bw2—11 to 16 inches; dark grayish brown (2.5Y 4/2) fine sand; single grain; loose; few fine roots; strongly acid; clear smooth boundary.

Bw3—16 to 26 inches; olive brown (2.5Y 4/4) loamy fine sand; single grain; loose; few fine roots; strongly acid; clear wavy boundary.

C1—26 to 48 inches; olive gray (5Y 5/2) loamy fine sand; many medium distinct strong brown (7.5YR 5/6) and yellowish brown (10YR 5/6) mottles; single grain; loose; strongly acid; clear wavy boundary.

2C2—48 to 60 inches; olive gray (5Y 5/2) coarse sand; single grain; loose; moderately acid.

The solum ranges from 15 to 30 inches in thickness. Reaction ranges from very strongly acid to moderately acid throughout.

The A horizon has hue of 10YR, value of 2 to 4, and chroma of 2 or 3. It is fine sandy loam or loamy fine sand. The content of gravel ranges from 0 to 10 percent.

The B horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 2 to 4. The upper part of the B horizon is fine sandy loam or loamy fine sand. The content of fine gravel is 0 to 15 percent. The lower part of the B horizon is loamy fine sand or sand. The content of gravel is 0 to 15 percent.

The C and 2C horizons have hue of 2.5Y or 5Y, value of 4 to 6, and chroma of 2 to 4. It ranges from loamy fine sand to coarse sand. The content of gravel is 0 to 20 percent.

Dummerston Series

The Dummerston series consists of very deep, well drained soils on uplands. These soils formed in glacial till derived mainly from slate, shale, or phyllite. Slope ranges from 15 to 45 percent.

Dummerston soils are similar to Lanesboro soils and on many landscapes are adjacent to Macomber and Fullam soils. Unlike Dummerston soils, Lanesboro soils have a dense substratum. Unlike Dummerston soils, Macomber soils are moderately deep. Unlike Dummerston soils, Fullam soils have mottles.

Typical pedon of Dummerston loam, in an area of Lanesboro-Dummerston association, steep, very stony, in the town of Mount Washington, 200 feet east of West Street and 200 feet south of Mount Washington Park Road, in a wooded area:

Oi—2 inches to 1 inch; loose litter of leaves from white and gray birch, oak, and maple.

Oe—1 inch to 0; nearly black (N 2/0) partly decomposed organic material.

A—0 to 10 inches; dark brown (10YR 3/3) loam; weak fine granular structure; very friable; many fine and medium tree roots; 10 percent slaty fragments; very strongly acid; abrupt wavy boundary.

Bw—10 to 26 inches; olive brown (2.5Y 4/4) silt loam; weak medium subangular blocky structure; friable; common fine and medium tree roots; 10 percent slaty fragments; very strongly acid; abrupt wavy boundary.

C—26 to 60 inches; very dark grayish brown (2.5Y 3/2) gravelly sandy loam; massive; very friable; 20 percent phyllite fragments; strongly acid.

The solum ranges from 20 to 30 inches in thickness. Texture throughout is loam, silt loam, sandy loam, or their slaty analog. Rock fragments, mostly gravel, make up 5 to 30 percent of the solum and 10 to 35 percent of the substratum. In unlimed areas reaction ranges from very strongly acid to moderately acid throughout.

The A horizon has hue of 10YR, value of 2 or 3, and chroma of 2 to 4.

The B horizon has hue of 10YR, 2.5Y, or 5Y, value of 4 or 5, and chroma of 2 to 6. Its structure is subangular blocky or fine granular.

The C horizon has hue of 2.5Y or 5Y, value of 3 to 5, and chroma of 2 to 4.

Farmington Series

The Farmington series consists of shallow, well drained soils on glacial till uplands. These soils formed in a thin mantle of calcareous glacial till derived from limestone bedrock. Slope ranges from 3 to 35 percent.

Farmington soils are similar to Taconic and Lyman soils and in many places are adjacent to Pittsfield and Nellis soils. Farmington soils have a higher base saturation than Taconic and Lyman soils and are in the limestone valley areas. Farmington soils are on higher lying, more convex positions than Pittsfield and Nellis soils, which are very deep.

Typical pedon of Farmington loam, in an area of Farmington-Rock outcrop complex, 3 to 15 percent slopes, in the town of Richmond, 25 feet north of Lenox Road, 4,100 feet east of State Route 41, in a hayfield:

A—0 to 9 inches; very dark grayish brown (10YR 3/2) loam; weak fine granular structure; friable; common fine and medium roots; 10 percent rock fragments; slightly acid; abrupt smooth boundary.

Bw1—9 to 12 inches; yellowish brown (10YR 5/4) loam; weak fine granular structure; friable; few fine roots; 10 percent rock fragments; neutral; clear smooth boundary.

Bw2—12 to 17 inches; dark yellowish brown (10YR 4/4) gravelly loam; weak fine subangular blocky structure; friable; few fine roots; 20 percent rock fragments; neutral.

R—17 inches; limestone bedrock.

The thickness of the solum and the typical depth to bedrock range from 8 to 20 inches. Reaction is slightly acid in the A horizon and ranges from slightly acid to mildly alkaline in the B horizon.

The A horizon has hue of 10YR, value of 3 or 4, and chroma of 1 to 3. It is loam or fine sandy loam. The content of gravel is 5 to 20 percent.

The B horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 or 4. The B horizon is fine sandy loam, loam, or their gravelly analogs.

Bedrock is generally light-colored limestone.

Fredon Series

The Fredon series consists of very deep, poorly drained soils on glacial outwash plains, kames, and stream terraces. These soils formed in glacial outwash material derived mainly from slate, shale, sandstone, limestone, granite, and gneiss. Slope ranges from 0 to 3 percent.

Fredon soils are similar to Wareham soils and in many places are adjacent to Hero and Copake soils. Fredon soils have more mottles than Hero and Copake soils and are in lower lying, more concave positions. Fredon soils have more fines in the fine earth fraction than Wareham soils and are on landscapes similar to those of Wareham soils.

Typical pedon of Fredon fine sandy loam, 0 to 3 percent slopes, in the town of Stockbridge, 300 feet north of Stockbridge Cemetary and 650 feet east of State Route 102, in an open field:

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) fine sandy loam; weak fine granular structure; very friable; common fine and medium roots; 5 percent fine gravel; slightly acid; abrupt smooth boundary.
Bw1—8 to 14 inches; yellowish brown (10YR 5/4) fine sandy loam; weak fine subangular blocky structure; friable; common fine and medium roots; 10 percent fine gravel; slightly acid; clear smooth boundary.
Bw2—14 to 18 inches; dark yellowish brown (10YR 4/4) fine sandy loam; many fine distinct yellowish brown (10YR 5/8), white (10YR 8/2), and light gray (10YR 6/1) mottles; weak fine subangular blocky structure; friable; few fine roots; 10 percent fine gravel; slightly acid; clear smooth boundary.
Bw3—18 to 26 inches; grayish brown (2.5Y 5/2) fine sandy loam; common medium distinct white (10YR 8/2), light gray (10YR 6/1), and yellowish brown (10YR 5/8) mottles; weak fine subangular blocky structure; friable; 10 percent fine gravel; slightly acid; clear smooth boundary.
C—26 to 60 inches; grayish brown (2.5Y 5/2) stratified loamy fine sand and sand; common medium distinct white (10YR 8/2), light gray (10YR 6/1), and yellowish brown (10YR 5/8) mottles; massive; friable; 10 percent fine gravel; neutral.

The thickness of the solum and the typical depth to stratified coarse material range from 25 to 40 inches. In unlimed areas the soil is slightly acid to neutral in the A horizon and B horizon and slightly acid to moderately alkaline in the C horizon.

The A horizon has hue of 10YR, value of 2 to 4, and chroma of 1 or 2. It is very fine sandy loam, fine sandy loam, or loam. The content of gravel is 2 to 10 percent.

The B horizon has hue of 7.5YR to 5Y, value of 4 to 6, and chroma of 2 to 4. In the upper part it is very fine sandy loam, fine sandy loam, or loam. The gravel content is 5 to 10 percent. In the lower part it is fine sandy loam, sandy loam, loamy sand, or their gravelly analog. The content of gravel is 5 to 25 percent.

The C horizon has hue of 10YR to 5Y, value of 4 or 5, and chroma of 2 to 4. It is sand to loamy fine sand and is typically stratified. The content of gravel is 10 to 60 percent.

Fullam Series

The Fullam series consists of very deep, moderately well drained soils on uplands. These soils formed in glacial till derived mainly from slate, phyllite, and schist. Slope ranges from 3 to 15 percent.

Fullam soils are similar to Hero soils and on many landscapes are adjacent to Lanesboro and Brayton soils. Unlike Hero soils, Fullam soils have a dense substratum. Fullam soils are mottled in the lower part of the subsoil, but Lanesboro soils do not have mottles and Brayton soils are mottled throughout the subsoil.

Typical pedon of Fullam silt loam, in an area of Fullam-Lanesboro association, rolling, very stony, in the town of Mount Washington, 250 feet east of East Street, 3,200 feet north of Lee Pond, in a pasture:

Ap—0 to 7 inches; dark brown (10YR 3/3) silt loam; weak fine and medium granular structure; friable; many fine grass roots and common tree roots; 5 percent slaty fragments; strongly acid; abrupt smooth boundary.
Bw1—7 to 15 inches; olive brown (2.5Y 4/4) silt loam; weak fine and medium granular structure; friable; common fine roots; 10 percent slaty fragments; strongly acid; clear wavy boundary.
Bw2—15 to 20 inches; olive (5Y 4/3) gravelly silt loam; few to common fine distinct gray (5Y 5/1) and dark yellowish brown (10YR 4/4) mottles; weak fine subangular blocky and weak fine and medium granular structure; friable; few fine roots; 15 percent phyllite fragments; strongly acid; abrupt smooth boundary.
Cr—20 to 60 inches; olive gray (5Y 4/2) gravelly silt loam; many fine and medium prominent gray (5Y 5/1), dark brown (7.5YR 3/2), dusky red (2.5Y 3/2) and dark yellowish brown (10YR 4/4) mottles; moderate and strong thick and very thick platy structure; very firm; few fine roots in the upper 2 inches; 20 percent slaty fragments; strongly acid.

The thickness of the solum and the depth to the dense substratum range from 15 to 30 inches. Texture is silt loam, loam, or their gravelly analog. Rock fragments range from 5 to 30 percent throughout. In unlimed areas reaction ranges from very strongly acid to moderately acid throughout.

The A horizon has hue of 10YR, value of 2 to 4, and chroma of 2 or 3.

The B horizon has hue of 7.5YR to 5Y, value of 4 or 5, and chroma of 3 or 4. Its structure is granular or subangular blocky.

The Cr horizon has hue of 2.5Y or 5Y, value of 4 or 5, and chroma of 2 or 3. It is firm or very firm.

Groton Series

The Groton series consists of very deep, excessively drained soils on glacial outwash plains, kames, and stream terraces. These soils formed in glacial outwash material derived from limestone bedrock. Slope ranges from 0 to 35 percent.

Groton soils are similar to Hinckley soils and in many places are adjacent to Copake and Hero soils. Groton soils are more alkaline than Hinckley soils. They do not have as much fines in the fine earth fraction as Copake and Hero soils. Unlike Groton soils, Hero soils have mottles.

Typical pedon of Groton gravelly sandy loam, 8 to 15 percent slopes, in the city of Pittsfield, 400 feet north of Hancock Road and 1,210 feet east of Churchill Street, in a gravel pit:

A—0 to 6 inches; very dark grayish brown (10YR 3/2) gravelly sandy loam; weak fine granular structure; very friable; many fine and medium roots; 20 percent gravel; moderately acid; abrupt smooth boundary.

Bw1—6 to 10 inches; yellowish brown (10YR 5/4) gravelly sandy loam; weak fine granular structure; friable; many fine and medium roots; 20 percent gravel; moderately acid; clear smooth boundary.

Bw2—10 to 15 inches; yellowish brown (10YR 5/6) gravelly sandy loam; weak fine granular structure; friable; common fine roots; 30 percent gravel; moderately acid; clear smooth boundary.

2C1—15 to 44 inches; dark grayish brown (2.5Y 4/2) sand and gravel; single grain; loose; few fine roots; 50 percent gravel; slight effervescence; neutral; clear wavy boundary.

2C2—44 to 60 inches; olive brown (2.5Y 4/4) sand and gravel; single grain; loose; 55 percent gravel; slight effervescence; neutral.

The thickness of the solum and the typical depth to stratified sand and gravel range from 8 to 20 inches. Reaction ranges from moderately acid to neutral in the A and B horizons and from neutral to moderately alkaline in the 2C horizon.

The A horizon has hue of 10YR, value of 3 or 4, and chroma of 2 or 3. It is sandy loam, fine sandy loam, loam, or their gravelly analog. The content of fine gravel is 20 to 35 percent.

The B horizon has hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 3 to 6. It is sandy loam, fine sandy loam, loam, or their gravelly analog. The content of fine gravel is 20 to 35 percent.

The 2C horizon has hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 2 to 4. The content of fine gravel is 50 to 70 percent or more.

Hadley Series

The Hadley series consists of very deep, well drained soils on flood plains. These soils formed in alluvial deposits. Slope ranges from 0 to 3 percent.

Hadley soils are similar to Oakville soils and in many areas are adjacent to Winooski and Limerick soils. Hadley soils are finer textured than Oakville soils. Unlike Hadley soils, Winooski and Limerick soils have mottles. Also, Hadley soils are on slightly higher positions on the landscape than Winooski and Limerick soils.

Typical pedon of Hadley silt loam, in the town of Sheffield, 1,800 feet east of U.S. Route 7, 600 feet north of Boardman Street, in a cultivated field:

Ap—0 to 8 inches; very dark grayish brown (2.5Y 3/2) silt loam; light gray (2.5Y 7/2) dry; moderate fine granular structure; friable; many fine roots; neutral; abrupt wavy boundary.

C1—8 to 22 inches; olive brown (2.5Y 4/4) silt loam; moderate thin and medium platy structure; friable; common fine roots; neutral; abrupt broken boundary.

C2—22 to 37 inches; olive brown (2.5Y 4/4) very fine sandy loam; massive; friable; few fine roots; neutral; abrupt wavy boundary.

C3—37 to 47 inches; light olive brown (2.5Y 5/4) very fine sandy loam; many medium and coarse prominent black (5Y 2/1) and yellowish red (5YR 4/8) mottles; massive; friable; few fine roots; slightly acid; abrupt wavy boundary.

C4—47 to 62 inches; very dark grayish brown (10YR 3/2) very fine sandy loam; many fine prominent black (5Y 2/1) and yellowish red (5YR 4/8) mottles; massive; friable; few very fine roots; slightly acid.

The thickness of the solum and the depth of plowing range from 6 to 12 inches. In unlimed areas reaction is strongly acid to neutral throughout.

The A horizon has hue of 10YR to 5Y, value of 3 or 4, and chroma of 2 to 4. It is silt loam or very fine sandy loam. The gravel content ranges from 0 to 5 percent.

The C horizon has hue of 10YR to 5Y, value of 3 to 6, and chroma of 2 to 4. In the upper part it is silt loam or very fine sandy loam. In the lower part it ranges from silt loam to sand.

Halsey Series

The Halsey series consists of very deep, very poorly drained soils on glacial outwash plains and stream terraces. These soils formed in glacial outwash material derived mainly from slate, shale, sandstone, and limestone. Slope ranges from 0 to 3 percent.

Halsey soils are similar to Wareham soils and in many places are adjacent to Hero and Fredon soils. Unlike Wareham soils, Halsey soils have subhorizons that have chroma of less than 2. They have more mottles than and are in lower lying, more concave positions than Hero and Fredon soils.

Typical pedon of Halsey fine sandy loam, in the town of Sheffield, 100 feet east of Barnum Street, and 1,580 feet south of Salisbury Road, in a wooded area:

Oe—1 inch to 0; forest litter from deciduous and coniferous trees, partly decomposed.

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

Bg—10 to 20 inches; gray (N 5/0) fine sandy loam; common fine to medium distinct strong brown

(7.5YR 5/6) mottles; weak fine granular structure; friable; neutral; abrupt smooth boundary.

2Cg—20 to 60 inches; gray (5Y 5/1) very gravelly sand; few fine and medium distinct strong brown (7.5YR 5/6) mottles; single grain; loose; 50 percent gravel; neutral.

The thickness of the solum and the typical depth to stratified sand and gravel range from 20 to 30 inches. In unlimed areas reaction ranges from moderately acid to neutral in the A and B horizons and slightly acid to moderately alkaline in the C horizon.

The A horizon is neutral or has hue to 10YR or 2.5Y; value is 2 or 3 and chroma is 0 to 2. It is very fine sandy loam, fine sandy loam, or loam. The content of gravel ranges from 0 to 10 percent.

The B horizon is neutral or has hue of 10YR to 5Y; value is 4 to 6 and chroma is 0 to 2. The B horizon is loam, fine sandy loam, or sandy loam. The content of gravel ranges from 0 to 10 percent.

The 2C horizon is neutral or has hue of 2.5Y or 5Y, value of 3 to 6, and chroma of 0 to 2. It is sand and gravel that is typically stratified. The content of gravel ranges from 10 to 60 percent, and is typically concentrated in individual strata.

Hero Series

The Hero series consists of very deep, moderately well drained soils on stream terraces and kames. These soils formed in water-sorted deposits of calcareous sand and gravel. Slope ranges from 0 to 8 percent.

Hero soils are similar to Groton soils and in many places are adjacent to Copake and Fredon soils. Unlike Groton and Copake soils Hero soils have mottles. Also, Hero soils are lower on the landscape than Groton and Copake soils. Fredon soils have colors of lower chroma than Hero soils. Hero soils are on higher lying, more convex positions than Fredon soils.

Typical pedon of Hero loam, 0 to 3 percent slopes, in the town of Stockbridge, adjacent to dirt road south of Cherry Hill Road, northwest of Agawam Lake, about 75 feet west of woods and 150 feet south of elm tree, in an open field:

Ap—0 to 8 inches; dark brown (10YR 3/3) loam; weak fine and medium granular structure; friable; many fine and medium roots; 10 percent gravel; slightly acid; abrupt smooth boundary.

Bw1—8 to 20 inches; dark brown (10YR 4/3) loam; weak fine granular structure; friable; common fine roots; 10 percent gravel; neutral; clear smooth boundary.

Bw2—20 to 27 inches; dark brown (10YR 4/3) gravelly fine sandy loam; many large distinct mottles of yellowish brown (10YR 5/8) and dark reddish brown (5YR 2/2 and 5YR 3/4) mottles; weak fine granular structure; friable; few fine roots; 20 percent gravel; neutral; clear smooth boundary.

Bw3—27 to 32 inches; olive brown (2.5Y 4/4) gravelly fine sandy loam; weak fine granular structure; friable; few fine roots; 25 percent gravel; neutral; slight effervescence; clear smooth boundary.

2C—32 to 60 inches; dark grayish brown (2.5Y 4/2) gravelly sand; weak fine granular structure parting to single grain; very friable; 25 percent gravel; neutral; slight effervescence.

The thickness of the solum and the typical depth to stratified sand and gravel range from 18 to 32 inches. The soil is moderately acid to neutral in the solum and from mildly alkaline or moderately alkaline in the 2C horizon.

The A horizon has hue of 10YR or 2.5Y, value of 2 to 4, and chroma of 1 to 3. It is loam or fine sandy loam. The content of gravel ranges from 10 to 35 percent.

The B horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 2 to 6. It is loam, silt loam, fine sandy loam, or their gravelly analog. The content of gravel ranges from 10 to 35 percent.

The 2C horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 2 to 4. It is gravelly sand or stratified gravelly sand and gravel. The content of gravel ranges from 15 to 50 percent.

Hero Variant

Hero Variant consists of very deep, moderately well drained soils on stream terraces. These soils formed in water-sorted calcareous sand and gravel over lacustrine sediment. Slope ranges from 0 to 8 percent.

Hero Variant soils are similar to Hero soils and in many places are adjacent to Fredon and Halsey soils. They have more silt and clay in the substratum than Hero soils. Unlike Hero Variant soils, Fredon and Halsey soils have mottles. Also, Hero Variant soils are also in more convex positions on the landscape than Fredon and Halsey soils.

Typical pedon of Hero Variant gravelly loam, 0 to 3 percent slopes, in the town of Egremont, 1,900 feet northwest of the Sheffield town line, 250 feet northeast of Sheffield Road, in a cultivated field:

Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) gravelly loam; weak fine granular structure; friable; few fine roots; 20 percent fine gravel; neutral; abrupt smooth boundary.

Bw1—9 to 14 inches; yellowish brown (10YR 5/6) gravelly sandy loam; weak fine granular structure; friable; 20 percent fine gravel; neutral; clear smooth boundary.

Bw2—14 to 22 inches; dark yellowish brown (10YR 4/4) gravelly sandy loam; common medium distinct strong brown (7.5YR 5/6) mottles and many medium prominent dusky red (2.5YR 3/2) stains; weak fine granular structure; friable; 30 percent fine gravel; slight effervescence; neutral; clear smooth boundary.

2C—22 to 60 inches; olive (5Y 5/3) stratified silt and very fine sand; many medium prominent gray (5Y 6/1), strong brown (7.5YR 5/6), and dark red (2.5YR 3/6) mottles; massive; friable; slight effervescence; neutral.

The thickness of the solum and the typical depth to lacustrine sediment range from 20 to 40 inches. Reaction is moderately acid to neutral in the A horizon, moderately acid to mildly alkaline in the B horizon, and neutral to moderately alkaline in the 2C horizon.

The A horizon has hue of 10YR or 2.5Y, value of 2 to 4, and chroma of 1 to 3. It is fine sandy loam, loam, or their gravelly analog. The content of gravel ranges from 0 to 25 percent.

The B horizon has hue of 10YR to 5Y, value of 4 or 5, and chroma of 3 to 6. It is sandy loam, fine sandy loam, loam, or their gravelly analog. The content of fine gravel ranges from 0 to 35 percent.

Some pedons have a thin Bw3 or C horizon that has hue of 5Y, value of 4 or 5, and chroma of 1 or 2. It is loamy sand or sand. The content of gravel ranges from 0 to 20 percent.

The 2C horizon has hue of 10YR to 5Y, value of 3 to 5, and chroma of 2 or 3. It is very fine sand, silt loam, or varved silts and clays.

Hinckley Series

The Hinckley series consists of very deep, excessively drained soils on glacial outwash plains, kames, and stream terraces. These soils formed in glacial outwash material derived mainly from granite, gneiss, and schist. Slope ranges from 0 to 25 percent.

Hinckley soils are similar to Groton soils and in many places are adjacent to Hero and Oakville soils. Hinckley soils are more acid than Groton soils. Unlike Hinckley soils, Hero soils have mottles. Also, Hinckley soils are in higher lying, more convex positions than Hero soils. Hinckley soils have more gravel than Oakville soils.

Typical pedon of Hinckley gravelly sandy loam, 8 to 15 percent slopes, in the town of New Marlborough, 300 feet east of Corashire Road, 500 feet south of the Monterey-New Marlborough line, in a wooded area:

Oi—2 inches to 1 inch; loose litter of white pine needles, twigs, and cones.

Oa—1 inch to 0; humus mat.

Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) gravelly sandy loam; weak fine granular structure; very friable; many large, medium, and fine tree roots; 30 percent fine gravel; strongly acid; abrupt smooth boundary.

Bw—9 to 23 inches; yellowish brown (10YR 5/6) very gravelly loamy sand; single grain; loose; common large, medium, and fine tree roots; 50 percent fine gravel; strongly acid; clear smooth boundary.

2C1—23 to 45 inches; yellowish brown (10YR 5/4) extremely gravelly sand; single grain; loose; few large, medium, and fine tree roots; 70 percent fine gravel; 5 percent cobbles and 5 percent stones; strongly acid; gradual smooth boundary.

2C2—45 to 60 inches; yellowish brown (10YR 5/4) extremely gravelly sand; single grained; loose; very few large, medium, and fine tree roots; 70 percent fine gravel; moderately acid.

The thickness of the solum and the typical depth to stratified sand and gravel range from 12 to 30 inches. In unlimed areas reaction is extremely acid to moderately acid throughout.

The A horizon has hue of 10YR, value of 2 to 4, and chroma of 1 to 3. It is fine sandy loam, sandy loam, or their gravelly analog. The content of gravel ranges from 10 to 50 percent.

The B horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 6. It is fine sandy loam, sandy loam, loamy sand, or their gravelly or very gravelly analog. The content of gravel ranges from 5 to 50 percent.

The 2C horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 3 to 8. The content of gravel ranges from 35 to 70 percent, and that of cobblestones from 0 to 15 percent.

Hoosic Series

The Hoosic series consists of very deep, somewhat excessively drained soils on glacial outwash plains, kames, and stream terraces. These soils formed in glacial outwash material derived mainly from sandstone, shale, and slate. Slope ranges from 0 to 25 percent.

Hoosic soils are similar to Groton soils and in many places are adjacent to Fredon, Hero, and Oakville soils. Hoosic soils have less gravel in the solum than Groton soils. Unlike Hoosic soils, Fredon and Hero soils have mottles. Also, Hoosic soils are on higher lying, more convex positions than Fredon and Hero soils. Hoosic soils have more fines in the upper part of the solum and more gravel in the lower part of the solum than Oakville soils, and are on landscapes similar to those of Oakville soils.

Typical pedon of Hoosic gravelly fine sandy loam, 0 to 3 percent slopes, in the town of Great Barrington, 900 feet west of Seekonk Cross Road, 1,400 feet north of West Plain Road, in a wooded area:

Oi—1 1/2 inches to 1 inch; white pine needles and twigs.

Oa—1 inch to 0; humus mat.

A—0 to 4 inches; very dark grayish brown (10YR 3/2) gravelly fine sandy loam; weak fine granular structure; very friable; many fine, medium, and large roots; 20 percent fine slate fragments; strongly acid; abrupt smooth boundary.

Bw1—4 to 10 inches; dark brown (7.5YR 4/4) gravelly sandy loam; weak fine granular structure; very friable; common fine, medium, and large roots; 25 percent fine slaty fragments; strongly acid; clear wavy boundary.

Bw2—10 to 17 inches; dark yellowish brown (10YR 4/4) gravelly sandy loam; weak fine and medium granular structure; friable; common fine and medium roots; 25 percent fine slaty fragments; strongly acid; gradual wavy boundary.

Bw3—17 to 20 inches; olive brown (2.5Y 4/4) gravelly loamy sand; very weak fine granular structure; very friable; few fine roots; 30 percent fine slaty fragments; strongly acid; abrupt wavy boundary.

2C—20 to 60 inches; dark grayish brown (2.5Y 4/2) stratified very gravelly sand; single grain; loose; 60 percent fine slaty fragments; strongly acid.

The thickness of the solum and the typical depth to stratified sand and gravel range from 15 to 30 inches. In unlimed areas reaction is very strongly acid or strongly acid in the solum and very strongly acid to moderately acid in the 2C horizon.

The A horizon has hue of 7.5YR to 2.5Y, value of 3 to 5, and chroma of 2 or 3. It is loam, fine sandy loam, sandy loam, or their gravelly analog. The volume of slate fragments ranges from 10 to 40 percent.

The B horizon has hue of 5YR to 2.5Y, value of 4 or 5, and chroma of 4 to 6. It is sandy loam, loam, loamy sand, or their gravelly analog. The volume of slate fragments ranges from 10 to 50 percent.

The 2C horizon has hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 2 to 4. The volume of slate fragments ranges from 35 to 70 percent.

Kendaia Series

The Kendaia series consists of very deep, poorly drained soils on uplands. These soils formed in calcareous glacial till derived mainly from limestone. Slope ranges from 0 to 15 percent.

Kendaia soils are similar to Pillsbury soils and in many areas are adjacent to Amenia and Stockbridge soils. Kendaia soils have a higher base saturation than Pillsbury soils. Kendaia soils have mottles closer to the surface than Amenia soils, and Stockbridge soils do not have mottles.

Typical pedon of Kendaia silt loam, 3 to 8 percent slopes, in the town of Lenox, 100 feet west of Laurel Lake Cross Road, 750 feet south of Plunkett Street, in a wooded area:

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) silt loam; weak fine granular structure; friable; many fine and medium roots; 5 percent gravel; neutral; abrupt smooth boundary.

Bw1—8 to 16 inches; brown (10YR 5/3) silt loam; weak fine subangular blocky structure; friable; common fine and medium roots; 10 percent gravel; neutral; clear smooth boundary.

Bw2—16 to 26 inches; grayish brown (2.5Y 5/2) silt loam; many fine and medium distinct brownish yellow (10YR 5/8), gray (2.5Y 6/0), and light gray (2.5Y 7/2) mottles; weak fine and medium subangular blocky structure; friable; few fine roots; 10 percent gravel; neutral; clear smooth boundary.

2C—26 to 60 inches; dark grayish brown (2.5Y 4/2) gravelly silt loam; many fine and medium distinct brownish yellow (10YR 6/8), gray (2.5Y 6/0), and light gray (2.5Y 7/2) mottles; massive, firm; 15 percent gravel; slight effervescence; neutral.

The thickness of the solum and the depth to dense till range from 18 to 36 inches. Texture throughout is silt loam, loam, or their gravelly analog. Rock fragments make up 5 to 30 percent of the volume of the soil. Reaction is slightly acid or neutral in the A horizon, slightly acid to mildly alkaline in the B horizon, and mildly alkaline or moderately alkaline in the 2C horizon.

The A horizon has value of 3 or 4 and chroma of 2.

The B horizon has hue of 10YR to 2.5Y, value of 4 or 5, and chroma of 2 to 4.

The 2C horizon has hue of 2.5Y or 5Y, value of 4 or 5, and chroma of 1 or 2.

Lanesboro Series

The Lanesboro series consists of very deep, well drained soil on uplands. These soils formed in acid glacial till derived mainly from slate, shale, and phyllite. Slope ranges from 3 to 45 percent.

Lanesboro soils are similar to Dummerston soils and in many places are adjacent to Fulham and Brayton soils. Unlike Dummerston soils, Lanesboro soils have dense glacial till within a depth of 40 inches. Lanesboro soils are not mottled in the subsoil, but Fulham soils are mottled in the lower part of the subsoil and Brayton soils are mottled throughout the subsoil.

Typical pedon of Lanesboro loam, in an area of Fulham-Lanesboro association, rolling, very stony, in the town of Lanesboro, south of Widow White's Peak, 400 feet north of an old foundation, 10 feet on the west side of a trail, in a field:

A—0 to 2 inches; very dark gray (10YR 3/1) loam; weak fine granular structure; friable; many fine and medium roots; 10 percent slate fragments; 5 percent cobblestones; strongly acid; abrupt smooth boundary.

E—2 to 4 inches; dark brown (10YR 4/3) gravelly silt loam; weak fine granular structure; friable; many fine and medium roots; 15 percent slate fragments; 5 percent cobblestones; strongly acid; clear smooth boundary.

Bw1—4 to 8 inches; dark yellowish brown (10YR 4/4) gravelly silt loam; weak fine granular structure; friable; many fine and medium roots; 15 percent gravel, 10 percent cobblestones; moderately acid; clear smooth boundary.

Bw2—8 to 15 inches; yellowish brown (10YR 5/6) gravelly silt loam; weak fine granular structure; friable; many fine and common medium roots; 15 percent gravel, 10 percent cobblestones; strongly acid; clear smooth boundary.

Bw3—15 to 19 inches; yellowish brown (10YR 5/6) gravelly silt loam; moderate medium granular structure; friable; many fine and few medium roots; 25 percent gravel, 10 percent cobblestones; moderately acid; clear smooth boundary.

Bw4—19 to 29 inches; yellowish brown (10YR 5/6) gravelly loam; weak and moderate subangular blocky structure; friable; common fine and medium roots; 25 percent gravel, 10 percent cobblestones; moderately acid; clear smooth boundary.

Cr—29 to 60 inches; light olive brown (2.5Y 5/4) gravelly loam; common fine distinct strong brown (7.5YR 5/6) and dark brown (7.5R 4/4) mottles; weak thin platy structure; firm; 30 percent gravel, 10 percent cobblestones; moderately acid.

The thickness of the solum and the depth to dense till range from 24 to 30 inches. Rock fragments range from 15 to 25 percent in the A horizon and from 10 to 40 percent in the B and C horizons. Reaction ranges from very strongly acid to moderately acid throughout. The soil in the fine earth fraction is loam or silt loam.

The A horizon has hue of 10YR to 2.5Y, value of 2 or 3, and chroma of 1 to 3.

The E horizon has hue of 10YR to 2.5Y, value of 4 or 5, and chroma of 2 to 6. It is friable or very friable.

The upper part of the B horizon has hue of 7.5YR or 10YR. The lower part of the B horizon has hue of 10YR or 2.5Y. Both parts have value of 4 or 5 and chroma of 2 to 6. The B horizon has weak or moderate, fine, or medium granular or subangular blocky structure. It is very friable or friable.

The Cr horizon has hue of 2.5Y or 5Y, value of 4 or 5, and chroma of 2 or 4. It is massive or platy and firm or very firm.

Limerick Series

The Limerick series consists of very deep, poorly drained soils on flood plains. These soils formed in alluvial deposits. Slope ranges from 0 to 3 percent.

Limerick soils are similar to Wareham soils and in many areas are adjacent to Saco and Winooski soils. Limerick soils are finer textured than Wareham soils. They are on the same landscape as Winooski and Saco soils, but have more mottles than Winooski soils and fewer mottles than Saco soils.

Typical pedon of Limerick silt loam, in the town of Sheffield, 60 feet north of Boardman Street, and 2,350 feet northeast of U.S. Route 7, in a cultivated field:

Ap—0 to 10 inches; very dark grayish brown (2.5Y 3/2) silt loam; weak fine and medium granular structure; friable; common fine and medium roots; moderately acid; abrupt smooth boundary.

Cg1—10 to 31 inches; olive gray (5Y 5/2) silt loam; common, medium distinct brownish yellow (10YR 6/8) and yellowish red (5YR 5/8) mottles and many large prominent dark brown (7.5YR 3/2) mottles; moderate fine and medium granular structure; friable; few fine roots; slightly acid; clear smooth boundary.

Cg2—31 to 34 inches; olive (5Y 5/3) silt loam; common, medium distinct brownish yellow (10YR 6/8) and yellowish red (5YR 5/8) mottles and many large prominent dark brown (7.5YR 3/2) mottles; moderate fine and medium granular structure; friable; few fine roots; slightly acid; clear smooth boundary.

Cg3—34 to 60 inches; olive gray (5Y 5/2) very fine sandy loam; common medium distinct brownish yellow (10YR 6/8) and yellowish red (5YR 5/8) mottles and many large prominent dark brown (7.5YR 3/2) mottles; weak fine granular structure; very friable; moderately acid.

The thickness of the solum and the depth of plowing range from 6 to 12 inches. In unlimed areas reaction is moderately acid to neutral throughout.

The Ap horizon has hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 2 or 3. The content of gravel ranges from 0 to 5 percent.

The C horizon has hue of 2.5Y or 5Y, value of 4 or 5, and chroma of 1 or 2 above a depth of 30 inches and of 1 to 4 below that depth. In the upper part it is silt loam, and in the lower part it is very fine sandy loam or coarser and is, by volume, 0 to 10 percent gravel.

Lyman Series

The Lyman series consists of shallow, somewhat excessively drained soils on uplands. These soils formed in a thin mantle of glacial till and fractured rock derived mainly from gray, greenish gray, or nearly black mica schist. Slope ranges from 3 to 45 percent.

Lyman soils are similar to Berkshire and Marlow soils and in many places are adjacent to Peru and Pillsbury soils. Lyman soils are not as deep as and are slightly higher on the landscape than Berkshire and Marlow soils. Unlike Lyman soils, Peru and Pillsbury soils have a dense substratum. Also, Lyman soils are not as deep as Peru and Pillsbury soils.

Typical pedon of Lyman fine sandy loam, in an area of Tunbridge-Lyman association, rolling, extremely stony, in the town of Washington, 200 feet south of West Branch Road, 500 feet southeast of the junction of West Branch Road and Lenox-Whitney Place Road, in a wooded area:

Oe—1 inch to 0; partly decomposed litter.

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

Bs—3 to 10 inches; dark brown (7.5YR 4/4) loam; weak fine granular structure; friable; common fine and medium roots; 5 percent gravel; very strongly acid; abrupt smooth boundary.

Bw—10 to 16 inches; yellowish brown (10YR 5/4) loam; weak fine granular structure; friable; common fine and medium roots; 10 percent gravel; very strongly acid; abrupt smooth boundary.

R—16 inches; bedrock.

The thickness of the solum and the depth to bedrock range from 8 to 20 inches. Reaction ranges from extremely acid to moderately acid throughout.

The A horizon has hue of 7.5YR or 10YR, value of 2 or 3, and chroma of 1 or 2. The content of gravel is 5 to 25 percent.

The Bs horizon has hue of 7.5YR or 10YR, value of 3 or 4, and chroma of 2 to 4. The Bw horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 3 or 4. The B horizon is fine sandy loam, loam, or their gravelly analog.

The R horizon is schist, gneiss, and granitic bedrock.

Lyons Series

The Lyons series consists of very deep, very poorly drained soils on glacial till uplands. These soils formed in calcareous glacial till derived mainly from calcareous shale, and limestone. Slope ranges from 0 to 3 percent.

Lyons soils are similar to Halsey soils and in many places are adjacent to Amenia and Kendaia soils. Halsey soils do not have carbonates within 40 inches of the surface. Lyons soils have lower chroma mottles and are on lower lying, more concave positions than Amenia and Kendaia soils.

Typical pedon of Lyons mucky silt loam, in the town of Lenox, 600 feet north of Route 183 and 950 feet southeast of Under Mountain Road, in a wooded area:

A—0 to 9 inches; very dark gray (10YR 3/1) mucky silt loam; yellowish brown (10YR 5/8) dry; weak fine and medium granular structure; friable; common fine and medium roots; 5 percent gravel; neutral; abrupt smooth boundary.

Bg1—9 to 22 inches; dark gray (5Y 4/1) loam; weak fine and medium subangular blocky structure; friable; few fine roots; 5 percent gravel; neutral; clear smooth boundary.

Bg2—22 to 36 inches; dark gray (5Y 4/1) fine sandy loam; weak fine and medium subangular blocky structure; friable; 5 percent gravel; neutral; clear smooth boundary.

Cg—36 to 60 inches; olive gray (5Y 4/2) fine sandy loam; massive; friable; 10 percent gravel; slight effervescence; neutral.

The solum ranges from 20 to 40 inches in thickness. Depth to carbonates ranges from 12 to 40 inches. In unlimed areas reaction is moderately acid to neutral in the A horizon, ranges from slightly acid to mildly alkaline in the B horizon, and is mildly alkaline or moderately alkaline in the C horizon.

The A horizon is neutral or has hue of 10YR; value is 2 or 3 and chroma is 0 to 2. It is fine sandy loam or silt loam or their mucky analog. The content of gravel ranges from 5 to 10 percent.

The B horizon has hue of 10YR to 5Y, value of 4 to 6, and chroma of 1 or 2. It is fine sandy loam or loam. The content of gravel is 5 to 10 percent.

The C horizon has hue of 5YR to 5Y, value of 4 to 6, and chroma of 1 or 2. It is fine sandy loam, loam, or silt loam in the fine earth fraction. The content of gravel ranges from 10 to 60 percent.

Macomber Series

The Macomber series consists of moderately deep, well drained soils on uplands. These soils formed in acid glacial till derived mainly from phyllite and slate. Slope ranges from 3 to 45 percent.

Macomber soils are similar to Taconic soils and in many places are adjacent to Lanesboro and Dummerston soils. Macomber soils are deeper than Taconic soils but not as deep as Lanesboro and Dummerston soils.

Typical pedon of Macomber loam, in an area of Taconic-Macomber association, steep, very stony, in the town of Williamstown, 6,250 feet east of the New York state line, 150 feet north of State Route 2, 200 feet northwest of park area by open field, in woodland:

Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) loam; weak fine and medium granular structure; friable; common fine and medium roots; 10 percent slate fragments; strongly acid; abrupt smooth boundary.

Bw—9 to 18 inches; dark yellowish brown (10YR 4/4) gravelly silt loam; weak fine and medium subangular blocky structure; friable; common fine roots; 30 percent slate fragments; strongly acid; clear wavy boundary.

C—18 to 24 inches; olive (5Y 4/3) very gravelly loam; weak medium subangular blocky structure; friable; few fine roots; 45 percent slate fragments; strongly acid.
R—24 inches; phyllitic bedrock.

The solum ranges from 15 to 30 inches in thickness.
The A horizon has hue of 10YR or 2.5Y, value of 2 to 4, and chroma of 1 to 4. It is loam or silt loam. The content of slate fragments ranges from 10 to 30 percent. Reaction is very strongly acid or strongly acid throughout.
The B horizon has hue of 7.5YR to 2.5Y, value of 3 to 5, and chroma of 3 to 6. It is loam or silt loam. The content of slate fragments ranges from 30 to 60 percent.
The C horizon has hue of 10YR to 5Y, value of 4 or 5, and chroma of 2 to 6. It is loam or silt loam. The content of slate fragments ranges from 40 to 60 percent.

Marlow Series

The Marlow series consists of very deep, well drained soils on uplands. These soils formed in glacial till derived mainly from granite, gneiss, and schist. Slope ranges from 3 to 45 percent.
Marlow soils are similar to Berkshire soils and in many landscapes are adjacent to Peru and Pillsbury soils. Unlike Berkshire soils, Marlow soils have a dense substratum. Unlike Marlow soils, Pillsbury and Peru soils are mottled.
Typical pedon of Marlow fine sandy loam, in an area of Peru-Marlow association, rolling, extremely stony, in the town of Lee, 150 feet southeast of road and 1,000 feet southwest of the lowest point of dam of upper reservoir, in woodland:

A—0 to 3 inches; black (10YR 2/1) fine sandy loam; weak fine granular structure; very friable; many fine and medium roots; 5 percent fine gravel; strongly acid; abrupt smooth boundary.
E—3 to 6 inches; dark grayish brown (2.5Y 4/2) fine sandy loam; weak fine granular structure; very friable; many fine and medium roots; 5 percent fine gravel; strongly acid; abrupt smooth boundary.
Bs—6 to 23 inches; dark reddish brown (5YR 3/4) fine sandy loam; weak fine granular structure; very friable; many fine and medium roots; 10 percent fine gravel; strongly acid; clear smooth boundary.
Bw—23 to 32 inches; dark brown (7.5YR 4/4) fine sandy loam; weak medium granular structure; friable; common medium roots; 10 percent fine gravel; strongly acid; clear smooth boundary.
Cr—32 to 60 inches; dark grayish brown (2.5Y 4/2) fine sandy loam; moderate medium platy structure; very firm; 10 percent fine gravel; strongly acid.

The thickness of the solum and the depth to the dense substratum range from 24 to 36 inches. Rock fragments make up 5 to 30 percent of the volume throughout. Reaction is very strongly acid to moderately acid throughout.
The A horizon has hue of 10YR, value of 2 to 4, and chroma of 1 to 4. It is fine sandy loam or loam.
The B horizon has hue of 5YR to 10YR, value of 3 to 5, and chroma of 2 to 6. It is fine sandy loam or loam.
The Cr horizon has hue of 2.5Y or 5Y, value of 4 or 5, and chroma of 2 to 4. It is firm or very firm fine sandy loam or loam or their gravelly analog.

Merrimac Series

The Merrimac series consists of very deep, somewhat excessively drained soils on glacial outwash plains, kames, and stream terraces. These soils formed in glacial outwash material derived mainly from granite, gneiss, and schist. Slope ranges from 0 to 25 percent.
Merrimac soils are similar to Copake soils and in many places are adjacent to Hero and Fredon soils. Merrimac soils are more acid than Copake soils. Unlike Merrimac soils, Fredon and Hero soils have mottles. Also, Merrimac soils are in higher lying, more convex positions than Fredon and Hero soils.
Typical pedon of Merrimac fine sandy loam, 15 to 25 percent slopes, in the town of Sheffield, 600 feet east of Homes Road, 7,800 feet north of junction of Cross Road and Homes Road, in a cultivated field:

Ap—0 to 9 inches; dark brown (10YR 3/3) fine sandy loam; weak fine granular structure; friable; common fine and medium roots; 5 percent fine gravel; strongly acid; abrupt smooth boundary.
Bw1—9 to 14 inches; dark yellowish brown (10YR 4/4) fine sandy loam; weak fine granular structure; friable; few medium roots; 5 percent fine gravel; strongly acid; abrupt smooth boundary.
Bw2—14 to 22 inches; yellowish brown (10YR 5/4) sandy loam; weak fine granular structure; friable; 5 percent fine gravel; strongly acid; clear smooth boundary.
2C—22 to 60 inches; light olive brown (2.5Y 5/4) gravelly sand; single grain; loose; 25 percent fine gravel; strongly acid.

The thickness of the solum and the typical depth to stratified sand and gravel range from 20 to 30 inches. In unlimed areas reaction ranges from extremely acid to moderately acid throughout.
The A horizon has hue of 7.5YR or 10YR, value of 3 or 4, and chroma of 2 to 4. It is very fine sandy loam, fine sandy loam, or loam. The content of gravel ranges from 5 to 10 percent.
The B horizon has hue of 7.5YR to 2.5Y, value of 3 to 6, and chroma of 3 to 8. In the upper part it is very fine sandy loam or fine sandy loam and the content of gravel

is 5 to 10 percent. In the lower part the content of gravel ranges from 5 to 20 percent.

The 2C horizon has hue of 10YR to 5Y, value of 3 to 7, and chroma of 1 to 4. The content of gravel ranges from 25 to 50 percent.

Nellis Series

The Nellis series consists of very deep, well drained soils on glaciated uplands associated with limestone bedrock. These soils formed in calcareous glacial till derived mainly from gray or black mica schist that has thin, calcic seams, dark and white limestone, and phyllite. Slope ranges from 3 to 25 percent.

Nellis soils are similar to Pittsfield soils and in many places are adjacent to Amenia and Kendaia soils. Unlike Pittsfield soils, Nellis soils have carbonates within a depth of 40 inches. Unlike Nellis soils, Amenia and Kendaia soils have mottles. Also, Nellis soils are on higher lying, more convex positions than Amenia and Kendaia soils.

Typical pedon of Nellis loam, 8 to 15 percent slopes, in the town of Lenox, 100 feet east of Under Mountain Road, 6,500 feet north of State Route 183 at Tanglewood, in a cultivated field:

Ap—0 to 7 inches; dark brown (10YR 3/3) loam; weak medium granular structure; very friable; many fine and medium roots; 10 percent gravel; moderately acid; abrupt smooth boundary.

Bw1—7 to 12 inches; dark yellowish brown (10YR 4/4) gravelly loam; weak fine and medium granular structure; friable; many fine roots; 20 percent fine gravel; slightly acid; clear wavy boundary.

Bw2—12 to 19 inches; olive brown (2.5Y 4/4) gravelly loam; weak fine and medium granular structure; friable; common fine roots; 20 percent fine gravel; slightly acid; clear wavy boundary.

Bw3—19 to 32 inches; very dark grayish brown (2.5Y 3/2) gravelly loam; very weak medium granular structure; friable; few fine roots; 20 percent fine gravel of schist and limestone; neutral; clear smooth boundary.

C1—32 to 44 inches; very dark grayish brown (2.5Y 3/2) gravelly loam; massive; friable; very few fine roots; 25 percent fine gravel of limestone and schist; common brown (7.5YR 4/4) and dark yellowish brown (10YR 4/4) disintegrated limestone fragments; slight effervescence; mildly alkaline; clear smooth boundary.

C2—44 to 60 inches; dark grayish brown (2.5Y 4/2) gravelly loam; massive; firm; 35 percent fine gravel; slight effervescence; moderately alkaline.

The solum ranges from 15 to 40 inches in thickness. Reaction ranges from moderately acid to neutral in the solum, and is mildly alkaline or moderately alkaline in the C horizon.

The A horizon has hue of 10YR, value of 3 or 4, and chroma of 2 or 3. It is silt loam, loam, or fine sandy loam. The content of gravel ranges from 5 to 20 percent.

The B horizon has hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 2 to 4. It is silt loam, loam, fine sandy loam, or their gravelly analog. The content of gravel ranges from 5 to 20 percent.

The C horizon has hue of 2.5Y or 5Y, value of 3 to 5, and chroma of 2 to 4. Its texture is loam or gravelly loam. The content of gravel ranges from 10 to 50 percent.

Oakville Series

The Oakville series consists of very deep, well drained soils on stream terraces and outwash plains. These soils formed in calcareous glacial outwash derived from crystalline rock. Slope ranges from 0 to 25 percent.

Oakville soils are similar to Groton soils and in many places are adjacent to Hero and Fredon soils. Groton soils have a higher gravel content than Oakville soils. Unlike Oakville soils, Hero and Fredon soils have mottles. Also, Oakville soils do not have as high a gravel content as and are on higher lying, more convex positions than Hero and Fredon soils.

Typical pedon of Oakville loamy sand, 3 to 8 percent slopes, in the town of Sheffield, 400 feet west of U.S. Route 7 and 4,700 feet north of junction of Stahl Road and U.S. Route 7, in a sand pit:

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) loamy sand; weak fine granular structure; very friable; many fine and medium roots; moderately acid; abrupt smooth boundary.

Bw1—8 to 12 inches; dark yellowish brown (10YR 4/4) loamy sand; weak fine granular structure; very friable; many fine and medium roots; moderately acid; clear smooth boundary.

Bw2—12 to 22 inches; yellowish brown (10YR 5/4) sand; single grain; loose; common fine roots; moderately acid; clear smooth boundary.

Bw3—22 to 27 inches; yellowish brown (10YR 5/4) coarse sand; single grain; loose; few fine roots; slightly acid; clear smooth boundary.

C—27 to 60 inches; brown (10YR 5/3) coarse sand; single grain; loose; few fine roots; slightly acid.

The solum ranges from 20 to 36 inches in thickness. In unlimed areas reaction is moderately acid to neutral throughout.

The A horizon has hue of 10YR, value of 3 or 4, and chroma of 1 to 4. It is fine sand or loamy sand.

The B horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 8. In the upper part it is loamy sand and the content of gravel is 0 to 10 percent. In the lower part it is loamy sand, sand, or coarse sand.

The C horizon has hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 2 to 4. It is loamy sand, sand, or coarse sand.

Palms Series

The Palms series consists of moderately deep, very poorly drained soils on outwash plains and hillside seep areas. These soils formed in well decomposed organic material overlying loamy deposits. Slope ranges from 0 to 3 percent.

Palms soils are similar to Carlisle soils and in many places are adjacent to Lyons soils. Palms soils are not as deep as Carlisle soils. Lyons soils are mineral soils and have a thinner organic layer on the surface than Palms soils.

Typical pedon of Palms muck, in an area of Palms and Carlisle mucks, in the town of Great Barrington, 200 feet south of Blue Hill Road and 1,300 feet east of Monument Valley Road, in a wooded area:

Oa1—0 to 9 inches; black (10YR 2/1) broken face and rubbed muck (sapric material); about 5 percent fiber, 2 percent rubbed; moderate medium granular structure; about 5 percent mineral material; strongly acid; abrupt smooth boundary.

Oa2—9 to 16 inches; very dark grayish brown (10YR 3/2) broken face and rubbed muck (sapric material); about 15 percent fiber, 5 percent rubbed; massive; 5 percent mineral material; strongly acid; abrupt smooth boundary.

Oa3—16 to 40 inches; dark reddish gray (5YR 4/2) broken face and rubbed muck (sapric material); about 15 percent fiber, 5 percent rubbed; massive; 5 percent mineral material; strongly acid; abrupt smooth boundary.

C—40 to 60 inches; gray (5Y 5/1) silt loam; massive; firm; slightly acid.

The depth to the C horizon ranges from 16 to 50 inches. Reaction ranges from strongly acid to neutral in the upper part, and is slightly acid or neutral in the lower part.

The surface tier is neutral or has hue of 7.5YR or 10YR, value of 2 or 3, and chroma of 0 to 2.

The subsurface and bottom tiers are neutral or have hue of 5YR to 10YR; value is 2 to 4 and chroma is 0 to 3. Some pedons have thin layers of fibric material.

The C horizon has hue of 10YR to 5Y, value of 3 to 7, and chroma of 1 or 2. It is sandy loam, fine sandy loam, loam, silt loam, silty clay loam, or clay loam. It is slightly acid or neutral.

Peru Series

The Peru series consists of very deep, moderately well drained soils on uplands. These soils formed in glacial till derived mainly from granite, gneiss, and schist. Slope ranges from 3 to 15 percent.

Peru soils are similar to Marlow soils and in many places are adjacent to Pillsbury soils. Peru soils are mottled in the lower part of the subsoil, but Marlow soils do not have mottles. Pillsbury soils have a grayer subsoil than Peru soils.

Typical pedon of Peru fine sandy loam, in an area of Peru-Marlow association, rolling, extremely stony, in the town of Sandisfield, 1,800 feet southeast of intersection of Beech Plain Road and underground gas pipeline in an open field:

Ap—0 to 8 inches; dark brown (10YR 3/3) fine sandy loam; weak fine granular structure; friable; many fine roots; 5 percent gravel; very strongly acid; abrupt smooth boundary.

Bs1—8 to 17 inches; brown (10YR 4/3) fine sandy loam; weak fine subangular blocky structure; friable; common fine roots; 10 percent gravel; strongly acid; clear wavy boundary.

Bs2—17 to 24 inches; yellowish brown (10YR 5/4) gravelly fine sandy loam; many medium distinct light brownish gray (2.5Y 6/2) and brown (7.5YR 4/4) mottles; weak fine subangular blocky structure; friable; 20 percent gravel; strongly acid; clear smooth boundary.

Cr—24 to 60 inches; olive brown (2.5Y 4/4) gravelly fine sandy loam; many medium distinct grayish brown (2.5Y 5/2) and strong brown (7.5YR 5/8) mottles; moderate medium platy structure; firm; 20 percent gravel and 5 percent cobbles; strongly acid.

Depth to the dense substratum and the thickness of the solum range from 18 to 30 inches. Texture is sandy loam, fine sandy loam, loam, or their gravelly analog. Rock fragments range from 5 to 30 percent, by volume, throughout. Reaction ranges from very strongly acid to moderately acid throughout.

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

The upper part of the B horizon has hue of 2.5YR to 10YR, value of 2 to 4, chroma of 1 to 3. The lower part of the B horizon has hue of 5YR to 5Y, value of 3 to 6, and chroma of 2 to 8.

The Cr horizon has hue of 10YR to 5Y, value of 4 to 6, and chroma of 2 or 4. It is firm or very firm.

Pillsbury Series

The Pillsbury series consists of very deep, poorly drained soils on uplands. These soils formed in glacial till derived mainly from granite, gneiss, and schist. Slope ranges from 0 to 8 percent.

Pillsbury soils are similar to Kendaia soils and in many areas are adjacent to Marlow and Peru soils. Pillsbury soils have a lower base saturation than Kendaia soils.

Unlike Marlow soils, Pillsbury soils have mottles. Pillsbury soils have a subsoil that is grayer than that of Peru soils.

Typical pedon of Pillsbury loam, in an area of Pillsbury loam, 0 to 8 percent slopes, extremely stony, in the town of Windsor, 2,900 feet west of State Route 8A, 200 feet southwest of Cheshire Road in a wooded area:

A—0 to 4 inches; very dark grayish brown (10YR 3/2) loam; weak fine granular structure; friable; many fine and medium roots; 5 percent gravel; very strongly acid; abrupt smooth boundary.

Bw1—4 to 12 inches; dark brown (10YR 4/3) loam; weak fine and medium granular structure; friable; common fine and medium roots; 10 percent gravel; strongly acid; clear smooth boundary.

Bw2—12 to 22 inches; light brownish gray (10YR 6/2) fine sandy loam; many medium distinct light olive brown (2.5Y 5/4), light gray (10YR 6/1) and reddish yellow (7.5YR 6/8) mottles; weak fine granular structure; friable; few fine roots; 10 percent gravel; strongly acid; clear smooth boundary.

Cr—22 to 60 inches; light olive brown (2.5Y 5/4) fine sandy loam; many medium distinct light gray (10YR 6/1) and reddish yellow (7.5YR 6/8) mottles; weak thin and medium platy structure; firm; 10 percent gravel; strongly acid.

Depth to the dense substratum and the thickness of the solum range from 15 to 25 inches. Texture is sandy loam, loam, fine sandy loam, or their gravelly analog. Rock fragments range from 5 to 35 percent throughout. Reaction is very strongly acid or strongly acid in the solum and very strongly acid to moderately acid in the Cr horizon.

The A horizon has hue of 10YR or 5Y, value of 2 or 3, and chroma of 1 or 2.

The B horizon is neutral or has hue of 10YR or 2.5Y, value of 4 or 6, chroma of 0 to 4. It is granular, subangular blocky, or platy.

The Cr horizon has hue of 10YR to 5Y, value of 4 to 6, and chroma of 2 to 4.

Pittsfield Series

The Pittsfield series consists of very deep, well drained soils on uplands. These soils formed in glacial till derived mainly from limestone. Slope ranges from 3 to 35 percent.

Pittsfield soils are similar to Nellis soils and on many landscapes are adjacent to Amenia and Kendaia soils. Unlike Pittsfield soils, Nellis soils have carbonates within a depth of 40 inches. Unlike Pittsfield soils, Amenia and Kendaia soils are mottled.

Typical pedon of Pittsfield loam, 3 to 8 percent slopes, in the town of Great Barrington, 125 feet south of Seekonk Road and 1,650 feet east of Seekonk Cross Road, in a hayfield:

Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) loam, light brownish gray (10YR 6/2) dry; moderate fine and medium granular structure; very friable; many fine and medium roots; less than 5 percent fine channery fragments of schist; neutral; abrupt smooth boundary.

Bw1—9 to 15 inches; dark yellowish brown (10YR 4/4) loam; weak fine and medium granular structure; very friable; common fine roots; 10 percent fine channery fragments of schist; common earthworm casts and channels; neutral; clear smooth boundary.

Bw2—15 to 25 inches; brown (10YR 5/3) fine sandy loam; weak fine and medium granular structure; very friable; common fine roots; 10 percent fine channery fragments of schist; common earthworm casts and channels; neutral; clear smooth boundary.

BC—25 to 32 inches; olive brown (2.5Y 4/4) gravelly sandy loam; very weak thick platy structure; friable; common fine roots; 15 percent fine gravel and fine channery fragments of schist; quartzite and weathered limestone; common earthworm casts and channels; neutral; clear smooth boundary.

C1—32 to 43 inches; olive brown (2.5Y 4/4) gravelly sandy loam; massive; friable; very few fine roots; 20 percent fine gravel and fine channery fragments of schist, quartzite, and strong brown (7.5YR 5/6) weathered limestone; neutral; clear smooth boundary.

C2—43 to 60 inches; olive gray (5Y 4/2) gravelly fine sandy loam; massive; friable; 15 percent fine gravel and channery fragments of schist and partly weathered limestone; slight effervescence; mildly alkaline.

The solum ranges from 20 to 35 inches in thickness. Texture is sandy loam, fine sandy loam, loam, or their gravelly analog. Rock fragments make up 5 to 35 percent of the volume throughout. In unlimed areas reaction ranges from very strongly acid to neutral in the A horizon, strongly acid to neutral in the B horizon, and moderately acid to moderately alkaline in the substratum.

The A horizon has hue of 10YR or 2.5Y, value of 2 or 3, and chroma of 2 or 3.

The B horizon has hue of 10YR to 2.5Y, value of 4 to 6, and chroma of 3 to 6. It is massive or has weak, fine and medium granular structure.

The C horizon has hue of 2.5Y or 5Y, value of 4 or 5, and chroma of 2 to 4.

Saco Series

The Saco series consists of very deep, very poorly drained soils on flood plains. These soils formed in alluvial deposits. Slope ranges from 0 to 3 percent.

Saco soils are similar to Halsey soils and in many areas are adjacent to Winooski and Limerick soils. Saco soils have less sand and gravel than Halsey soils. They have mottles throughout; Winooski soils do not have mottles. Also, Saco soils are slightly lower on the landscape than Winooski soils. They are more gleyed than and slightly lower on the landscape than Limerick soils.

Typical pedon of Saco silt loam, in the town of Great Barrington, 900 feet west of U.S. Route 7, 4,000 feet north of Sheffield town line, in a pasture:

A—0 to 10 inches; very dark grayish brown (2.5Y 3/2) silt loam; weak fine granular structure; very fine roots; friable; neutral; abrupt smooth boundary.

Cg1—10 to 20 inches; dark gray (N 4/0) silt loam; massive; common medium distinct brownish yellow (10YR 6/8) mottles; few fine roots; very friable; neutral; clear smooth boundary.

Cg2—20 to 60 inches; dark gray (N 4/0) silt loam; massive; very friable; neutral.

In unlimed areas reaction is strongly acid to neutral throughout.

The A or Ap horizon has hue of 7.5YR to 2.5Y, value of 2 or 3, and chroma of 1 to 3. It is mucky silt loam, silt loam, or very fine sandy loam. The content of gravel is 0 to 5 percent.

The C horizon is neutral or has hue of 10YR to 5Y, value of 3 to 6, and chroma of 0 or 1. The C horizon is very fine sandy loam or silt loam.

Stockbridge Series

The Stockbridge series consists of very deep, well drained soils on the crests and sides of drumlins. These soils formed in calcareous glacial till derived mainly from limestone. Slope ranges from 3 to 25 percent.

Stockbridge soils are similar to Pittsfield soils and in many areas are adjacent to Amenia and Kendaia soils. Stockbridge soils are finer textured than Pittsfield soils and have a dense substratum. Unlike Stockbridge soils, Amenia and Kendaia soils have mottles and a seasonal high water table. Also, Stockbridge soils are on higher lying, more convex positions than Amenia and Kendaia soils.

Typical pedon of Stockbridge gravelly silt loam, 8 to 15 percent slopes, in the town of Richmond, 100 yards west of sharp 90 degree curve on Old Boy's Club Road, 400 yards west of Swamp Road, in a cultivated field:

Ap—0 to 7 inches; very dark grayish brown (10YR 3/2) gravelly silt loam; weak and moderate fine and medium granular structure; very friable; many fine and medium roots; 15 percent rock fragments; slightly acid; abrupt smooth boundary.

Bw1—7 to 15 inches; olive brown (2.5Y 4/4) silt loam; weak, medium platy structure parting to weak and moderate, very fine subangular blocky; friable; many fine and medium roots; 10 percent rock fragments; few faint silt films on faces of peds and in pores; neutral; clear smooth boundary.

Bw2—15 to 24 inches; olive brown (2.5Y 4/4) silt loam; weak medium subangular blocky structure; friable; common fine and medium roots; 10 percent rock fragments; very few, faint silt films on faces of peds and in pores; mildly alkaline; gradual smooth boundary.

C1—24 to 40 inches; olive brown (2.5Y 4/4) gravelly silt loam; weak very coarse prismatic structure parting to weak medium platy; firm; few fine roots; 25 percent rock fragments; moderately alkaline; gradual smooth boundary.

C2—40 to 51 inches; dark grayish brown (10YR 4/2) gravelly silt loam; weak medium platy structure; firm; 25 percent rock fragments; very few faint silt films on faces of peds, in worm holes, and in pores; mildly alkaline.

C3—51 to 64 inches; dark grayish brown (2.5Y 4/2) silt loam; weak, medium and coarse platy structure; frim; 15 percent rock fragments and unweathered limestone; few thin clay films on ped faces and in worm holes; mildly alkaline.

C4—64 to 78 inches; dark grayish brown (2.5Y 4/2) silt loam; massive; firm; moderately alkaline.

The solum ranges from 20 to 40 inches in thickness. Rock fragments range from 5 to 25 percent, by volume, in the solum and from 10 to 40 percent in the C horizon. Reaction ranges from strongly acid to neutral in the A horizon, moderately acid to mildly alkaline in the B horizon, and slightly acid to moderately alkaline in the C horizon.

The Ap horizon has hue of 10YR, value of 2 to 4, and chroma of 1 to 3. It is silt loam or gravelly silt loam.

The B horizon has hue of 10YR to 2.5Y, value of 4 to 6, and chroma of 3 to 7. It is loam, silt loam, or their gravelly analog.

The C horizon has hue of 10YR to 5Y, value of 4 or 5, and chroma of 2 to 4. It is fine sandy loam, loam, silt loam, or their gravelly or very gravelly analog.

Taconic Series

The Taconic series consists of shallow, somewhat excessively drained soils on uplands. These soils formed in glacial till derived mainly from slate or shale. Slope ranges from 3 to 45 percent.

Taconic soils are similar to Lyman soils and in many places are adjacent to Lanesboro and Fullam soils. Lyman soils formed in material derived from mica schist. Lanesboro and Fullam soils are deep. Unlike Taconic soils, Fullam soils have mottles.

Typical pedon of Taconic gravelly loam, in an area of Taconic-Macomber association, rolling, very stony, in the town of Williamstown, 750 feet south of Vermont State line, and 600 feet west of North West Hill Road, in a wooded area:

A—0 to 7 inches; dark brown (10YR 3/3) gravelly loam; weak fine granular structure; very friable; many fine and common medium roots; 30 percent slate fragments; strongly acid; abrupt smooth boundary.
Bw—7 to 14 inches; dark yellowish brown (10YR 4/4) very gravelly loam; weak fine subangular blocky structure; very friable; common fine and few medium roots; 40 percent slate fragments; strongly acid; abrupt smooth boundary.
R—14 inches; dark gray phyllitic bedrock.

The thickness of the solum and the depth to bedrock range from 10 to 20 inches. Reaction is very strongly acid or strongly acid throughout.

The A horizon has hue of 7.5YR or 10YR, value of 2 to 4, and chroma of 2 or 3. It is loam, silt loam, or their gravelly analog. The content of slate or shale fragments ranges from 10 to 35 percent.

The B horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 6. It is loam, silt loam, or their gravelly or very gravelly analog. The content of slate or shale fragments ranges from 35 to 50 percent.

Tunbridge Series

The Tunbridge series consists of moderately deep, well drained soils on uplands. These soils formed in acid glacial till derived mainly from gray, greenish gray, or nearly black mica schist. Slope ranges from 3 to 45 percent.

Tunbridge soils are similar to Lyman soils and in many places are adjacent to Berkshire and Marlow soils. Tunbridge soils are deeper than Lyman soils but not as deep as Berkshire and Marlow soils.

Typical pedon of Tunbridge loam, in an area of Tunbridge-Lyman association, rolling, very stony, in the town of Monterey, 1,900 feet southwest of junction of Monterey Road and Beartown Road, 75 feet east of dirt road and 500 feet east of town line, in a wooded area:

Oe—1 inch to 0; partly decomposed leaves and twigs.
A—0 to 1 inch; black (10YR 2/1) loam; weak fine granular structure; very friable; many fine, medium, and large tree roots; 5 percent gravel; very strongly acid; abrupt smooth boundary.
Bs1—1 inch to 8 inches; dark brown (7.5YR 4/4) loam; weak fine granular structure; friable; many fine, medium, and large tree roots; 5 percent gravel; very strongly acid; clear wavy boundary.
Bs2—8 to 14 inches; dark yellowish brown (10YR 4/4) fine sandy loam; weak fine granular structure; friable; common fine and medium roots; 5 percent gravel; strongly acid; clear wavy boundary.
Bs3—14 to 20 inches; dark yellowish brown (10YR 4/4) fine sandy loam; weak fine subangular blocky structure; friable; common fine and medium roots; 5 percent gravel; strongly acid; clear wavy boundary.
C—20 to 26 inches; dark yellowish brown (10YR 4/4) fine sandy loam; weak medium platy structure; friable; very few fine roots; 10 percent gravel; strongly acid.
R—26 inches; mica schist and gneiss.

The solum ranges from 14 to 30 inches in thickness. Depth to bedrock is 20 to 40 inches. Reaction ranges from extremely acid to moderately acid throughout.

The A horizon is neutral or has hue of 5YR to 10YR; value is 2 to 5, and chroma is 0 to 4. It is loam or fine sandy loam. The content of gravel ranges from 5 to 20 percent.

The B horizon has hue of 7.5YR to 2.5Y, value of 3 to 5, and chroma of 3 to 8. It is loam or fine sandy loam. The content of gravel ranges from 5 to 20 percent.

The C horizon has hue of 10YR to 5Y, value of 4 or 5, and chroma of 2 to 4. The content of gravel ranges from 10 to 20 percent.

Udorthents

Udorthents consist of areas of very deep, well drained to excessively drained soils where soil material has been excavated and of nearby areas where the material has been deposited. Slope ranges from 0 to 25 percent.

Udorthents are near many other soils and Urban land. But, unlike Urban land, they are not covered by impermeable structures.

These soils differ greatly from place to place; thus a typical pedon is not given. They have various colors but mostly grays and browns. The material ranges from mixed sand and gravel to loam and silt loam.

Wareham Series

The Wareham series consists of very deep, somewhat poorly drained and poorly drained soils on outwash plains and stream terraces. These soils formed in acid, glaciofluvial deposits derived mainly from granite and gneiss. Slope ranges from 0 to 3 percent.

Wareham soils are similar to Halsey soils and in many places are near Merrimac and Deerfield soils. Halsey soils are very poorly drained. Merrimac soils are somewhat excessively drained, and Deerfield soils are moderately well drained.

Typical pedon of Wareham loamy fine sand, in the town of Sheffield, 3,800 feet east of State Route 7A, at north end of old farm road, north of Bowman Hill, in a cultivated field:

Ap—0 to 6 inches; very dark grayish brown (10YR 3/2) loamy fine sand; weak fine granular structure; very friable; few fine roots; strongly acid; abrupt smooth boundary.

Bw—6 to 18 inches; light olive brown (2.5Y 5/4) loamy fine sand; many medium distinct olive yellow (2.5Y 6/6) mottles; single grain; loose; few fine roots; strongly acid; clear smooth boundary.
2C1—18 to 27 inches; grayish brown (2.5Y 5/2) fine sand; many medium distinct light olive brown (2.5Y 5/6) mottles; single grain; loose; strongly acid; clear smooth boundary.
2C2—27 to 32 inches; grayish brown (2.5Y 5/2) fine and medium sand; single grain; loose; strongly acid; clear smooth boundary.
2C3—32 to 60 inches; grayish brown (2.5Y 5/2) sand; single grain; loose; strongly acid.

The solum ranges from 6 to 42 inches in thickness. Rock fragments range from 0 to 15 percent, by volume, in the solum and from 0 to 30 percent in the 2C horizon. Reaction throughout ranges from extremely acid to slightly acid.

The A horizon is neutral or has hue of 10YR or 2.5Y; value is 2 or 3, and chroma is 0 to 2.

The B horizon has hue of 2.5Y or 10YR, value of 4 or 5, and chroma of 1 to 4. It is loamy fine sand or sand.

The 2C horizon is neutral or has hue of 10YR to 5Y, value of 4 or 5, and chroma of 0 to 3. It is loamy sand, fine sand, sand, or their gravelly analog.

Winooski Series

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

Winooski soils are similar to Deerfield soils and in many areas are adjacent to Hadley and Limerick soils. Winooski soils have less sand than Deerfield soils. Unlike Hadley soils, Winooski soils have mottles. Winooski soils are slightly lower on the landscape than Hadley soils. Winooski soils are browner than and slightly higher on the landscape than Limerick soils.

Typical pedon of Winooski silt loam, in the town of Sheffield, 200 feet south of County Road and 1,600 feet east of U.S. Route 7, in a cultivated field:

Ap—0 to 12 inches; very dark grayish brown (2.5Y 3/2) silt loam; weak fine granular structure; friable; many fine roots; slightly acid; abrupt smooth boundary.
C1—12 to 16 inches; olive brown (2.5Y 4/4) silt loam; weak fine granular structure; friable; few fine roots; slightly acid; clear smooth boundary.
C2—16 to 24 inches; olive brown (2.5Y 4/4) silt loam; common medium prominent olive gray (5Y 5/2) and strong brown (7.5YR 5/8) mottles; massive; friable; slightly acid; clear smooth boundary.
C3—24 to 33 inches; dark brown (7.5YR 4/4) silt loam; many medium prominent olive gray (5Y 5/2) and strong brown (7.5YR 5/8) mottles; massive; friable; slightly acid; clear smooth boundary.
2C4—33 to 60 inches; dark brown (7.5YR 4/4) loamy very fine sand; many medium prominent olive gray (5Y 5/2) and strong brown (7.5YR 5/8) mottles; massive; friable; lenses of fine sand; slightly acid.

The thickness of the solum and the depth of plowing range from 6 to 12 inches. In unlimed areas reaction is very strongly acid to neutral throughout.

The Ap horizon has hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 2 or 3. It is silt loam or very fine sandy loam. The content of gravel ranges from 0 to 5 percent.

The C and 2C horizons have hue of 10YR to 5Y, value of 4 or 5, and chroma of 2 to 4. The C horizon is silt loam or loamy very fine sand and commonly has lenses of fine sand.

Formation of the Soils

Factors of Soil Formation

Soil is formed by the interaction of parent material, climate, living organisms, time, and relief. The composition of soil anywhere on earth depends on the combination of these five factors. The relative importance of each of these factors differs from place to place. In extreme cases, one factor dominates in the formation of a soil and determines most of its properties.

The difference among the soils in Berkshire County can be attributed mainly to differences in parent material, climate, and relief. The other factors, living organisms and time, do not account for important differences among the soils. Throughout the county, the vegetation is fairly uniform and the soil material has been exposed to the soil-forming processes for about the same length of time.

Parent Material

Berkshire County lies wholly within the glaciated part of North America. Glacial drift, including glacial till and glacial outwash, originated from the bedrock formations within and to the north and west of the county. It is the parent material of many soils in the county. Most of the soils formed in one of four types of parent material: glacial till, glacial outwash, recent alluvial deposits, and miscellaneous materials. The soils that formed in glacial till are the most extensive. They include Berkshire, Lanesboro, Dummerston, Nellis, Marlow, Peru, Pittsfield, Pillsbury, Stockbridge, and Lyman soils. The soils that formed in glacial outwash include Hoosic, Hinckley, Groton, and Merrimac soils. Those that formed in recent alluvial deposits include Hadley, Winooski, Limerick, and Saco soils. Those that formed in miscellaneous materials include Udorthents, Urban land, and the organic soils.

Climate

Soils at the higher elevations, above about 1,000 feet, in Berkshire County formed in a colder climate. They include Berkshire, Marlow, Peru, Lyman, Tunbridge, and Pillsbury soils. The vegetation grows slower and the soil-forming processes act slower on the soils at the higher elevations than on those at the lower elevations.

Relief

The landforms, slope, and the seasonal high water table have greatly influenced the rate of soil formation in the county. Natural erosion, which is rapid, keeps almost an even pace with the rate of soil formation. Most of the soils in this county are on slopes that favor the development of distinct horizons.

Many nearly level soils are in depressions or on bottom lands, where surface runoff and internal drainage are slow and where the water table is usually high. In these areas the soils have a subsoil that is wet, mottled, and poorly aerated. The profiles of these wetter soils are normally not as well developed as the profiles of the better drained soils.

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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.

Alkali (sodic) soil. A soil having so high a degree of alkalinity (pH 8.5 or higher), or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

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—

	Inches
Very low	0 to 2.4
Low	2.4 to 3.2
Moderate	3.2 to 5.2
High	more than 5.2

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.

Bedding planes. Fine stratifications, less than 5 millimeters thick, in unconsolidated alluvial, eolian, lacustrine, or marine sediments.

Bedding system. A drainage system made by plowing, grading, or otherwise shaping the surface of a flat field. It consists of a series of low ridges separated by shallow, parallel dead furrows.

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

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.

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

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.

Broad-base terrace. A ridge-type terrace built to control erosion by diverting runoff along the contour at a nonscouring velocity. The terrace is 10 to 20 inches high and 15 to 30 feet wide and has gently sloping sides, a rounded crown, and a dish-shaped channel along the upper side. It may be nearly level or have a grade toward one or both ends.

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

Caliche. A more or less cemented deposit of calcium carbonate in soils of warm-temperate, subhumid to arid areas. Caliche occurs as soft, thin layers in the soil or as hard, thick beds just beneath the solum, or it is exposed at the surface by erosion.

California bearing ratio (CBR). The load-supporting capacity of a soil as compared to that of a standard crushed limestone, expressed as a ratio. First standardized in California. A soil having a CBR of 16 supports 16 percent of the load that would be supported by standard crushed limestone, per unit area, with the same degree of distortion.

Capillary water. Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

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

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

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

Catsteps. Very small, irregular terraces on steep hillsides, especially in pasture, formed by the trampling of cattle or the slippage of saturated soil.

Cement rock. Shaly limestone used in the manufacture of cement.

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

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.

Claypan. A slowly permeable soil horizon that contains much more clay than the horizons above it. A claypan is commonly hard when dry and plastic or stiff when wet.

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

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

Compressible (in tables). Excessive decrease in volume of soft soil under load.

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.

Congeliturbate. Soil material disturbed by frost action.

Conservation tillage. A tillage and planting system in which crop residue covers at least 30 percent of the soil surface after planting. Where soil erosion by wind is the main concern, the system leaves the equivalent of at least 1,000 pounds per acre of flat small-grain residue on the surface during the critical erosion period.

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

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

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

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

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

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

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

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

Cemented.—Hard; little affected by moistening.

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

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

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

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.

Decreasers. The most heavily grazed climax range plants. Because they are the most palatable, they are the first to be destroyed by overgrazing.

Deferred grazing. Postponing grazing or resting grazing land for a prescribed period.

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

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

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

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

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

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

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

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

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

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

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

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

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

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.

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

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

Excess alkali (in tables). Excess exchangeable sodium in the soil. The resulting poor physical properties restrict the growth of plants.

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

Excess lime (in tables). Excess carbonates in the soil that restrict the growth of some plants.

Excess salts (in tables). Excess water-soluble salts in the soil that restrict the growth of most plants.

Excess sulfur (in tables). Excessive amount of sulfur in the soil. The sulfur causes extreme acidity if the soil is drained, and the growth of most plants is restricted.

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

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

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

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

Flagstone. A thin fragment of sandstone, limestone, slate, shale, or (rarely) schist, 6 to 15 inches (15 to 38 centimeters) long.

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

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

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

Fragile (in tables). A soil that is easily damaged by use or disturbance.

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

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

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

Gilgai. Commonly a succession of microbasins and microknolls in nearly level areas or of microvalleys and microridges parallel with the slope. Typically, the microrelief of Vertisols—clayey soils having a high coefficient of expansion and contraction with changes in moisture content.

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 melt water.

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 melt water. 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.

Graded stripcropping. Growing crops in strips that grade toward a protected waterway.

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

Gravel. Rounded or angular fragments of rock 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.

Hardpan. A hardened or cemented soil horizon, or layer. The soil material is sandy, loamy, or clayey and is cemented by iron oxide, silica, calcium carbonate, or other substance.

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.

Increasers. Species in the climax vegetation that increase in amount as the more desirable plants are reduced by close grazing. Increasers commonly are the shorter plants and the less palatable to livestock.

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

Invaders. On range, plants that encroach into an area and grow after the climax vegetation has been reduced by grazing. Generally, invader plants follow disturbance of the surface.

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.

Karst (topography). The relief of an area underlain by limestone that dissolves in differing degrees, thus forming numerous depressions or small basins.

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

Landing site. Any place where round timber is assembled for further transport and, commonly, where the method of transport changes.

Landslide. The rapid downhill movement of a mass of soil and loose rock, generally when wet or saturated. The speed and distance of movement, as well as the amount of soil and rock material, vary greatly.

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

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

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.

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

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

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

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

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

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

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

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

Narrow-base terrace. A terrace no more than 4 to 8 feet wide at the base. A narrow-base terrace is similar to a broad-base terrace, except for the width of the ridge and channel.

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, glacial. Stratified sand and gravel produced by glaciers and carried, sorted, and deposited by glacial melt water.

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.

Pan. A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan, fragipan, claypan, plowpan,* and *traffic pan.*

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

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

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

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The downward movement of water through the soil.

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

Permafrost. Layers of soil, or even bedrock, occurring in arctic or subarctic regions, in which a temperture below freezing has existed continuously for a long time.

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

Very slow	less than 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Phase, soil. A subdivision of a soil series based on features that affect its use and management. For example, slope, stoniness, and thickness.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Pitting (in tables). Pits caused by melting ground ice. They form on the soil after plant cover is removed.

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.

Plinthite. The sesquioxide-rich, humus-poor, highly weathered mixture of clay with quartz and other diluents. It commonly appears as red mottles, usually in platy, polygonal, or reticulate patterns. Plinthite changes irreversibly to an ironstone hardpan or to irregular aggregates on repeated wetting and drying, especially if it is exposed also to heat from the sun. In a moist soil, plinthite can be cut with a spade. It is a form of laterite.

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.

Poor outlets (in tables). Refers to areas where surface or subsurface drainage outlets are difficult or expensive to install.

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.

Rangeland. Land on which the potential natural vegetation is predominantly grasses, grasslike plants, forbs, or shrubs suitable for grazing or browsing. It includes natural grasslands, savannas, many wetlands, some deserts, tundras, and areas that support certain forb and shrub communities.

Range condition. The present composition of the plant community on a range site in relation to the potential natural plant community for that site. Range condition is expressed as excellent, good, fair, or poor, on the basis of how much the present plant community has departed from the potential.

Range site. An area of rangeland where climate, soil, and relief are sufficiently uniform to produce a distinct natural plant community. A range site is the product of all the environmental factors responsible for its development. It is typified by an association of species that differ from those on other range sites in kind or proportion of species or total production.

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.

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

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

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

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.

Saline soil. A soil containing soluble salts in an amount that impairs growth of plants. A saline soil does not contain excess exchangeable sodium.

Salty water (in tables.) Water that is too salty for consumption by livestock.

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

Sandstone. Sedimentary rock containing dominantly sand-size particles.

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.

Saprolite (soil science). Unconsolidated residual material underlying the soil and grading to hard bedrock below.

Sedimentary rock. Rock made up of particles deposited from suspension in water. The chief kinds of sedimentary rock are conglomerate, formed from gravel; sandstone, formed from sand; shale, formed from clay; and limestone, formed from soft masses of calcium carbonate. There are many intermediate types. Some wind-deposited sand is consolidated into sandstone.

Seed-tree cutting. Removing, in one cut, the mature timber from an area, except for a small number of seed bearers left singly or in small groups.

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

Sequum. A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)

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

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

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

Shelterwood cutting. Any timber cutting in a more or less regular and mature crop, designed to establish a new crop under the protection of the old.

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.

Silica. A combination of silicon and oxygen. The mineral form is called quartz.

Silica-sesquioxide ratio. The ratio of the number of molecules of silica to the number of molecules of alumina and iron oxide. The more highly weathered soils or their clay fractions in warm-temperate, humid regions, and especially those in the tropics, generally have a low ratio.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Siltstone. Sedimentary rock made up of dominantly silt-sized particles.

Sinkhole. A depression in the landscape where limestone has been dissolved.

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

Slickensides. Polished and grooved surfaces produced by one mass sliding past another. In soils, slickensides may occur at the bases of slip surfaces on the steeper slopes; on faces of blocks, prisms, and columns; and in swelling clayey soils, where there is marked change in moisture content.

Slick spot. A small area of soil having a puddled, crusted, or smooth surface and an excess of exchangeable sodium. The soil is generally silty or clayey, is slippery when wet, and is low in productivity.

Slippage (in tables). Soil mass susceptible to movement downslope when loaded, excavated, or wet.

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

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

Sloughed till. Water-saturated till that has flowed slowly downhill from its original place of deposit by glacial ice. It may rest on other till, on glacial outwash, or on a glaciolacustrine deposit.

Slow intake (in tables). The slow movement of water into the soil.

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.

Sodicity. The degree to which a soil is affected by exchangeable sodium. Sodicity is expressed as a sodium adsorption ratio (SAR) of a saturation extract, or the ratio of Na^{+} to $Ca^{++} + Mg^{++}$. The degrees of sodicity are—

	SAR
Slight	less than 13:1
Moderate	13-30:1
Strong	more than 30:1

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:

	Millimeters
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.

Stone line. A concentration of coarse fragments in a soil. Generally it is indicative of an old weathered surface. In a cross section, the line may be one fragment or more thick. It generally overlies material that weathered in place and is overlain by recent sediment of variable thickness.

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter.

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 grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Stubble mulch. Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from wind 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.
Subsoiling. Breaking up a compact subsoil by pulling a special chisel through the soil.
Substratum. The part of the soil below the solum.
Subsurface layer. Any surface soil horizon (A, E, AB, or EB) below the surface layer.
Summer fallow. The tillage of uncropped land during the summer to control weeds and allow storage of moisture in the soil for the growth of a later crop. A practice common in semiarid regions, where annual precipitation is not enough to produce a crop every year. Summer fallow is frequently practiced before planting winter grain.
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 specifiying "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.
Too arid (in tables). The soil is dry most of the time, and vegetation is difficult to establish.
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.
Toxicity (in tables). Excessive amount of toxic substances, such as sodium or sulfur, that severely hinder establishment of vegetation or severely restrict plant growth.
Trace elements. Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, are in soils in extremely small amounts. They are essential to plant growth.
Tuff. A compacted deposit that is 50 percent or more volcanic ash and dust.
Unstable fill (in tables). Risk of caving or sloughing on banks of fill material.
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 melt water. In nonglaciated regions, alluvium deposited by heavily loaded streams.
Variant, soil. A soil having properties sufficiently different from those of other known soils to justify a new series name, but occurring in such a limited geographic area that creation of a new series is not justified.
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 melt water 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 ovendry 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 period 1951-74 at Stockbridge, Massachusetts]

Month	Temperature						Precipitation				
	Average daily maximum	Average daily minimum	Average daily	2 years in 10 will have-- Maximum temperature higher than--	2 years in 10 will have-- Minimum temperature lower than--	Average number of growing degree days*	Average	2 years in 10 will have-- Less than--	2 years in 10 will have-- More than--	Average number of days with 0.10 inch or more	Average snowfall
	°F	°F	°F	°F	°F	Units	In	In	In		In
January----	31.8	11.9	21.9	58	-18	8	3.05	1.41	4.45	7	15.9
February---	34.0	13.1	23.6	57	-18	7	2.85	1.66	3.89	7	17.2
March------	42.2	22.6	32.4	70	-3	21	3.28	2.00	4.43	8	14.4
April------	56.5	32.7	44.6	81	15	178	3.91	2.76	4.96	9	4.1
May--------	68.2	42.3	5.31	87	26	474	3.73	2.23	5.07	9	.1
June-------	75.8	51.1	63.5	91	32	705	3.71	2.14	5.10	8	.0
July-------	80.1	56.0	68.1	92	40	871	3.87	2.55	5.06	7	.0
August-----	77.7	54.6	66.2	90	38	812	4.06	2.30	5.61	8	.0
September--	70.1	47.6	58.9	87	26	567	3.99	2.20	5.56	7	.0
October----	60.5	37.0	48.8	81	17	279	3.36	1.74	4.77	7	.0
November---	48.1	29.4	38.8	70	9	70	3.86	2.55	5.04	8	4.0
December---	35.5	17.8	26.7	61	-12	13	3.64	2.14	4.97	8	15.7
Yearly:											
Average--	56.7	34.7	45.7	---	---	---	---	---	---	---	---
Extreme--	---	---	---	92	-23	---	---	---	---	---	---
Total----	---	---	---	---	---	4,005	43.31	36.83	49.19	93	71.4

* 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 (40° F).

TABLE 2.--FREEZE DATES IN SPRING AND FALL

[Recorded in the period 1951-74 at Stockbridge, Massachusetts]

Probability	Temperature		
	24° F or lower	28° F or lower	32° F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	May 23	May 20	June 6
2 years in 10 later than--	April 27	May 15	June 1
5 years in 10 later than--	April 18	May 4	May 22
First freezing temperature in fall:			
1 year in 10 earlier than--	October 5	September 21	Septermber 11
2 years in 10 earlier than--	October 10	September 26	September 15
5 years in 10 earlier than--	October 20	October 6	September 24

TABLE 3.--GROWING SEASON

[Recorded in the period 1951-74 at Stockbridge, Massachusetts]

Probability	Length of growing season if daily minimum temperature is--		
	Higher than 24° F	Higher than 28° F	Higher than 32° F
	Days	Days	Days
9 years in 10	165	132	103
8 years in 10	171	140	110
5 years in 10	184	154	124
2 years in 10	197	169	137
1 year in 10	204	177	144

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

Map symbol	Soil name	Acres	Percent
AmA	Amenia silt loam, 0 to 3 percent slopes	955	0.2
AmB	Amenia silt loam, 3 to 8 percent slopes	13,585	2.3
AmC	Amenia silt loam, 8 to 15 percent slopes	5,640	0.9
AmD	Amenia silt loam, 15 to 25 percent slopes	445	0.1
AsB	Amenia silt loam, 3 to 8 percent slopes, very stony	3,740	0.6
AsC	Amenia silt loam, 8 to 15 percent slopes, very stony	3,955	0.7
AsD	Amenia silt loam, 15 to 25 percent slopes, very stony	475	0.1
AvB	Amenia silt loam, 3 to 8 percent slopes, extremely stony	1,445	0.2
AvC	Amenia silt loam, 8 to 15 percent slopes, extremely stony	865	0.1
AvD	Amenia silt loam, 15 to 25 percent slopes, extremely stony	440	0.1
BmE	Berkshire-Marlow association, steep, extremely stony	45,580	7.6
BrB	Brayton silt loam, 0 to 8 percent slopes, very stony	1,440	0.2
CoA	Copake fine sandy loam, 0 to 3 percent slopes	2,850	0.5
CoB	Copake fine sandy loam, 3 to 8 percent slopes	5,245	0.9
CoC	Copake fine sandy loam, 8 to 15 percent slopes	2,590	0.4
CoD	Copake fine sandy loam, 15 to 25 percent slopes	1,030	0.2
CuC	Copake-Urban land complex, 0 to 15 percent slopes	4,735	0.8
DeA	Deerfield loamy fine sand, 0 to 3 percent slopes	905	0.2
FaC	Farmington loam, 3 to 15 percent slopes, rocky	10,695	1.8
FcC	Farmington-Rock outcrop complex, 3 to 15 percent slopes	4,225	0.7
FcD	Farmington-Rock outcrop complex, 15 to 35 percent slopes	14,000	2.3
FrA	Fredon fine sandy loam, 0 to 3 percent slopes	5,140	0.9
FwC	Fullam-Lanesboro association, rolling, very stony	8,250	1.4
GrA	Groton gravelly sandy loam, 0 to 3 percent slopes	435	0.1
GrB	Groton gravelly sandy loam, 3 to 8 percent slopes	855	0.1
GrC	Groton gravelly sandy loam, 8 to 15 percent slopes	470	0.1
GrD	Groton gravelly sandy loam, 15 to 25 percent slopes	565	0.1
GsE	Groton and Hinckley gravelly sandy loams, 25 to 35 percent slopes	2,430	0.4
Ha	Hadley silt loam	1,760	0.3
Hb	Halsey fine sandy loam	2,140	0.4
HeA	Hero loam, 0 to 3 percent slopes	4,450	0.7
HeB	Hero loam, 3 to 8 percent slopes	2,130	0.4
HgA	Hero Variant gravelly loam, 0 to 3 percent slopes	240	*
HgB	Hero Variant gravelly loam, 3 to 8 percent slopes	275	*
HkA	Hinckley gravelly sandy loam, 0 to 3 percent slopes	430	0.1
HkB	Hinckley gravelly sandy loam, 3 to 8 percent slopes	1,360	0.2
HkC	Hinckley gravelly sandy loam, 8 to 15 percent slopes	1,300	0.2
HkD	Hinckley gravelly sandy loam, 15 to 25 percent slopes	885	0.1
HoA	Hoosic gravelly fine sandy loam, 0 to 3 percent slopes	1,915	0.3
HoB	Hoosic gravelly fine sandy loam, 3 to 8 percent slopes	3,125	0.5
HoC	Hoosic gravelly fine sandy loam, 8 to 15 percent slopes	1,250	0.2
HoD	Hoosic gravelly fine sandy loam, 15 to 25 percent slopes	670	0.1
KeA	Kendaia silt loam, 0 to 3 percent slopes	2,645	0.4
KeB	Kendaia silt loam, 3 to 8 percent slopes	4,480	0.7
KvA	Kendaia silt loam, 0 to 3 percent slopes, extremely stony	1,205	0.2
KvB	Kendaia silt loam, 3 to 8 percent slopes, extremely stony	3,850	0.6
KvC	Kendaia silt loam, 8 to 15 percent slopes, extremely stony	555	0.1
LdE	Lanesboro-Dummerston association, steep, very stony	8,155	1.4
Lm	Limerick silt loam	6,005	1.0
LtE	Lyman-Tunbridge association, steep, extremely stony	96,120	16.0
Ly	Lyons mucky silt loam	485	0.1
Lz	Lyons mucky silt loam, extremely stony	335	0.1
MeA	Merrimac fine sandy loam, 0 to 3 percent slopes	1,285	0.2
MeB	Merrimac fine sandy loam, 3 to 8 percent slopes	2,375	0.4
MeC	Merrimac fine sandy loam, 8 to 15 percent slopes	1,010	0.2
MeD	Merrimac fine sandy loam, 15 to 25 percent slopes	195	*
NeB	Nellis loam, 3 to 8 percent slopes	1,300	0.2
NeC	Nellis loam, 8 to 15 percent slopes	2,215	0.4
NeD	Nellis loam, 15 to 25 percent slopes	740	0.1
NsB	Nellis loam, 3 to 8 percent slopes, very stony	745	0.1
NsC	Nellis loam, 8 to 15 percent slopes, very stony	800	0.1
NsD	Nellis loam, 15 to 25 percent slopes, very stony	1,170	0.2

See footnote at end of table.

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

Map symbol	Soil name	Acres	Percent
NvC	Nellis loam, 8 to 15 percent slopes, extremely stony	365	0.1
NvD	Nellis loam, 15 to 25 percent slopes, extremely stony	540	0.1
OaA	Oakville loamy sand, 0 to 3 percent slopes	830	0.1
OaB	Oakville loamy sand, 3 to 8 percent slopes	855	0.1
OaC	Oakville loamy sand, 8 to 15 percent slopes	235	*
OaD	Oakville loamy sand, 15 to 25 percent slopes	225	*
Pc	Palms and Carlisle mucks	7,310	1.2
PmC	Peru-Marlow association, rolling, extremely stony	92,590	15.5
PoB	Pillsbury loam, 0 to 8 percent slopes, extremely stony	45,455	7.5
Pp	Pits, gravel	905	0.1
Pq	Pits, quarry	435	0.1
PrB	Pittsfield loam, 3 to 8 percent slopes	4,625	0.8
PrC	Pittsfield loam, 8 to 15 percent slopes	3,610	0.6
PrD	Pittsfield loam, 15 to 25 percent slopes	700	0.1
PsB	Pittsfield loam, 3 to 8 percent slopes, very stony	1,555	0.3
PsC	Pittsfield loam, 8 to 15 percent slopes, very stony	2,820	0.5
PsD	Pittsfield loam, 15 to 25 percent slopes, very stony	1,560	0.3
PvB	Pittsfield loam, 3 to 8 percent slopes, extremely stony	810	0.1
PvC	Pittsfield loam, 8 to 15 percent slopes, extremely stony	1,405	0.2
PvD	Pittsfield loam, 15 to 25 percent slopes, extremely stony	1,890	0.3
PwE	Pittsfield and Nellis loams, 25 to 35 percent slopes, extremely stony	3,840	0.6
PyC	Pittsfield-Urban land complex, 0 to 15 percent slopes	5,030	0.8
Sa	Saco silt loam	3,105	0.5
StB	Stockbridge gravelly silt loam, 3 to 8 percent slopes	1,325	0.2
StC	Stockbridge gravelly silt loam, 8 to 15 percent slopes	2,890	0.5
StD	Stockbridge gravelly silt loam, 15 to 25 percent slopes	1,625	0.3
SvC	Stockbridge gravelly silt loam, 8 to 15 percent slopes, very stony	705	0.1
SvD	Stockbridge gravelly silt loam, 15 to 25 percent slopes, very stony	1,380	0.2
TmC	Taconic-Macomber association, rolling, very stony	12,160	2.0
TmE	Taconic-Macomber association, steep, very stony	37,525	6.2
TuC	Tunbridge-Lyman association, rolling, extremely stony	52,320	8.7
Ud	Udorthents, smoothed	1,205	0.2
Ur	Urban land	2,320	0.4
Wh	Wareham loamy fine sand	945	0.2
Wy	Winooski silt loam	2,875	0.5
	Water	3,645	0.6
	Total	602,200	100.0

* Less than 0.1 percent.

TABLE 5.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE

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

Soil name and map symbol	Land capability	Corn silage	Alfalfa hay	Grass-legume hay	Grass-clover
		Tons	Tons	Tons	AUM*
AmA: Amenia	IIw	24	4.5	4.5	8.6
AmB: Amenia	IIe	24	5.0	4.5	8.6
AmC: Amenia	IIIe	22	4.5	4.5	8.6
AmD: Amenia	IVe	19	4.0	4.0	7.6
AsB, AsC, AsD: Amenia	VIs	---	---	---	---
AvB, AvC, AvD: Amenia	VIIs	---	---	---	---
BmE**:					
Berkshire	VIIs	---	---	---	---
Marlow	VIIs	---	---	---	---
BrB**: Brayton	VIIs	---	---	---	---
CoA: Copake	I	24	5.0	4.5	8.6
CoB: Copake	IIe	24	5.0	4.5	8.6
CoC: Copake	IIIe	22	4.5	4.0	7.6
CoD: Copake	IVe	19	4.0	3.5	6.6
CuC**: Copake-Urban land	---	---	---	---	---
DeA: Deerfield	IIIw	16	3.5	3.0	5.7
FaC: Farmington	VIs	---	---	3.0	5.7
FcC**: Farmington-Rock outcrop	VIIs	---	---	---	---
FcD**: Farmington-Rock outcrop	VIIs	---	---	---	---
FrA: Fredon	IIIw	20	---	3.0	5.7

See footnote at end of table.

TABLE 5.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability	Corn silage	Alfalfa hay	Grass-legume hay	Grass-clover
		Tons	Tons	Tons	AUM*
FwC**:					
Fullam	VIs	---	---	---	---
Lanesboro	VIs	---	---	---	---
GrA, GrB Groton	IIIs	16	4.5	3.0	5.7
GrC Groton	IVs	14	4.5	3.0	4.0
GrD Groton	VIs	---	---	---	2.0
GsE Groton and Hinckley	VIIs	---	---	---	---
Ha Hadley	I	28	5.0	4.5	8.5
Hb Halsey	Vw	---	---	---	---
HeA Hero	IIw	22	4.0	4.0	6.6
HeB Hero	IIe	22	4.0	4.0	6.6
HgA Hero Variant	IIw	22	4.0	3.5	6.5
HgB Hero Variant	IIw	22	4.0	3.5	6.5
HkA, HkB Hinckley	IIIs	12	2.5	2.0	3.6
HkC Hinckley	IVs	---	---	---	2.5
HkD Hinckley	VIs	---	---	---	2.0
HoA Hoosic	IIIs	18	4.0	3.0	5.7
HoB Hoosic	IIIs	18	4.0	3.0	5.7
HoC Hoosic	IIIe	15	4.0	3.0	5.7
HoD Hoosic	IVe	---	3.5	2.5	4.7
KeA Kendaia	IIIw	20	---	3.5	6.6
KeB Kendaia	IIIw	21	---	3.5	6.6

See footnote at end of table.

TABLE 5.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability	Corn silage	Alfalfa hay	Grass-legume hay	Grass-clover
		Tons	Tons	Tons	AUM*
KvA, KvB, KvC------------- Kendaia	VIIs	---	---	---	---
LdE**:					
Lanesboro----------------	VIIs	---	---	---	---
Dummerston---------------	VIIs	---	---	---	---
Lm----------------------- Limerick	IIIw	20	---	3.5	6.6
LtE**:					
Lyman--------------------	VIIs	---	---	---	---
Tunbridge----------------	VIIs	---	---	---	---
Ly----------------------- Lyons	Vw	---	---	---	---
Lz----------------------- Lyons	VIIs	---	---	---	---
MeA, MeB----------------- Merrimac	IIs	18	4	3	5.7
MeC---------------------- Merrimac	IIIe	16	4	3	5.7
MeD---------------------- Merrimac	IVe	14	3.5	2.5	4.8
NeB---------------------- Nellis	IIe	25	5.5	4.5	8.6
NeC---------------------- Nellis	IIIe	23	5.5	4.5	8.6
NeD---------------------- Nellis	IVe	20	5.0	4.0	7.6
NsB, NsC, NsD------------ Nellis	VIs	---	---	---	2.5
NvC, NvD----------------- Nellis	VIIs	---	---	---	2.0
OaA, OaB----------------- Oakville	IVs	8	---	2.0	3.8
OaC---------------------- Oakville	VIs	---	---	1.8	3.4
OaD---------------------- Oakville	VIIs	---	---	---	2.0
Pc----------------------- Palms and Carlisle	Vw	---	---	---	---
PmC**:					
Peru---------------------	VIIs	---	---	---	---

See footnote at end of table.

TABLE 5.--LAND CAPABILITY CLASSES AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability	Corn silage	Alfalfa hay	Grass-legume hay	Grass-clover
		Tons	Tons	Tons	AUM*
PmC**:					
Marlow	VIIs	---	---	---	---
PoB** Pillsbury	VIIs	---	---	---	---
Pp**, Pq**. Pits					
PrB Pittsfield	IIe	24	5.0	4.0	7.6
PrC Pittsfield	IIIe	22	5.0	4.0	7.6
PrD Pittsfield	IVe	18	4.5	3.5	6.6
PsB, PsC, PsD Pittsfield	VIs	---	---	---	2.5
PvB, PvC, PvD Pittsfield	VIIs	---	---	---	2.0
PwE Pittsfield and Nellis	VIIs	---	---	---	---
PyC** Pittsfield-Urban land	---	---	---	---	---
Sa Saco	VIw	---	---	---	---
StB Stockbridge	IIe	24	5.0	4.5	8.5
StC Stockbridge	IIIe	22	5.0	4.5	8.5
StD Stockbridge	IVe	20	4.5	4.0	7.5
SvC, SvD Stockbridge	VIs	---	---	---	2.0
TmC**:					
Taconic	VIIs	---	---	---	---
Macomber	VIIs	---	---	---	---
TmE**:					
Taconic	VIIs	---	---	---	---
Macomber	VIIs	---	---	---	---
TuC**:					
Tunbridge	VIIs	---	---	---	---
Lyman	VIIs	---	---	---	---

See footnote at end of table.

TABLE 5.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability	Corn silage	Alfalfa hay	Grass-legume hay	Grass-clover
		Tons	Tons	Tons	AUM*
Ud. Udorthents					
Ur**. Urban land					
Wh------------------------- Wareham	IVw	16	---	2.5	5.7
Wy------------------------- Winooski	IIw	26	4.5	4.0	7.5

* Animal-unit-month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.
** See the description of the map unit for the composition and behavior characteristics of the map unit.

TABLE 6.--WOODLAND MANAGEMENT AND PRODUCTIVITY

(Only the soils suitable for production of commercial trees are listed. Absence of an entry indicates that information was not available)

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	Productivity class*	
AmA, AmB, AmC--- Amenia	4A	Slight	Slight	Slight	Slight	Northern red oak---- Sugar maple--------- Eastern white pine-- White ash----------- American basswood---	65 70 75 75 ---	4 3 10 3	Eastern white pine.
AmD------------- Amenia	4R	Moderate	Moderate	Slight	Slight	Northern red oak---- Sugar maple--------- Eastern white pine-- White ash----------- American basswood---	70 65 75 75 ---	4 3 10 3 --	Eastern white pine.
AsB, AsC-------- Amenia	4A	Slight	Slight	Slight	Slight	Northern red oak---- Sugar maple--------- Eastern white pine-- White ash----------- American basswood---	70 65 75 75 ---	4 3 10 3 --	Eastern white pine.
AsD------------- Amenia	4R	Slight	Moderate	Slight	Slight	Northern red oak---- Sugar maple--------- Eastern white pine-- White ash----------- American basswood---	70 65 75 75 ---	4 3 10 3 --	Eastern white pine.
AvB, AvC, AvD--- Amenia	4X	Slight	Moderate	Slight	Slight	Northern red oak---- Sugar maple--------- Eastern white pine-- White ash----------- American basswood---	70 65 75 75 ---	4 3 10 3 --	Eastern white pine.
BmE**:									
Berkshire------	9X	Slight	Moderate	Slight	Slight	Eastern white pine-- Sugar maple--------- Red spruce---------- White ash----------- Yellow birch-------- Paper birch--------- Balsam fir---------- White spruce-------- Red pine------------	72 52 50 62 55 60 60 55 65	9 2 8 3 2 4 8 9 8	Eastern white pine.
Marlow---------	3X	Moderate	Moderate	Slight	Moderate	Northern red oak---- Yellow birch-------- Paper birch--------- White spruce-------- White ash----------- American beech------ Red pine------------ American basswood---	67 62 60 60 67 62 65 56	3 3 4 10 3 3 8 2	

See footnote at end of table.

TABLE 6.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	Productivity class*	
BrB**----------- Brayton	3W	Slight	Severe	Moderate	Severe	Red maple-----------	65	3	
						White spruce--------	48	7	
						Balsam fir----------	48	6	
						Eastern white pine--	72	9	
						Red spruce----------	45	3	
						Paper birch---------	60	4	
CoA, CoB, CoC--- Copake	8A	Slight	Slight	Slight	Slight	Eastern white pine--	65	8	Eastern white pine.
						Northern red oak----	60	3	
						Sugar maple---------	55	2	
CoD------------- Copake	8R	Moderate	Moderate	Slight	Slight	Eastern white pine--	65	8	Eastern white pine.
						Northern red oak----	60	3	
						Sugar maple---------	55	2	
CuC**:									
Copake---------	8A	Slight	Slight	Slight	Slight	Eastern white pine--	65	8	Eastern white pine.
						Northern red oak----	60	3	
						Sugar maple---------	55	2	
Urban land.									
DeA------------- Deerfield	8S	Slight	Slight	Moderate	Slight	Eastern white pine--	65	8	Eastern white pine.
						Northern red oak----	55	3	
FrA------------- Fredon	3W	Slight	Severe	Severe	Severe	Red maple-----------	70	3	
						Yellow-poplar-------	80	5	
						Eastern white pine--	70	9	
						Northern red oak----	60	3	
FwC**:									
Fullam---------	3A	Slight	Slight	Slight	Slight	Northern red oak----	65	3	Eastern white pine.
						Sugar maple---------	60	3	
						Eastern white pine--	70	9	
						Red spruce----------	50	8	
						Balsam fir----------	55	8	
						American beech------	---	--	
						Paper birch---------	---	--	
						Yellow birch--------	---	--	
						White ash-----------	70	3	
						Hickory-------------	---	--	
						Eastern hemlock-----	---	--	
Lanesboro------	8A	Slight	Slight	Slight	Slight	Eastern white pine--	55	8	Eastern white pine.
						Northern white pine-	65	3	
						Sugar maple---------	65	3	
						Eastern hemlock-----	65	--	

See footnote at end of table.

TABLE 6.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	Productivity class*	
GrA, GrB, GrC--- Groton	7S	Slight	Slight	Severe	Slight	Eastern white pine--	60	7	Eastern white pine.
						Northern red oakne--	55	3	
						Red pine------------	60	6	
						Sugar maple---------	55	3	
GrD------------- Groton	7S	Moderate	Moderate	Severe	Slight	Eastern white pine--	60	7	Eastern white pine.
						Northern red oak----	55	3	
						Red pine------------	60	6	
						Sugar maple---------	55	3	
GsE**:									
Groton---------	7S	Moderate	Moderate	Severe	Slight	Eastern white pine--	60	7	Eastern white pine.
						Northern red oak----	55	3	
						Red pine------------	60	6	
						Sugar maple---------	55	3	
Hinckley-------	7S	Slight	Moderate	Severe	Slight	Eastern white pine--	60	7	Eastern white pine.
						Northern red oak----	49	2	
						Red pine------------	58	6	
						Sugar maple---------	57	2	
Ha-------------- Hadley	9A	Slight	Slight	Slight	Slight	Eastern white pine--	70	9	Eastern white pine.
						Sugar maple---------	63	3	
						Red pine------------	70	8	
Hb-------------- Halsey	2W	Slight	Severe	Severe	Severe	Red maple-----------	55	2	
						White oak-----------	---	--	
						Swamp white oak-----	---	--	
						American beech------	---	--	
						River birch---------	---	--	
HeA, HeB-------- Hero	3A	Slight	Slight	Slight	Slight	Northern red oak----	65	3	Eastern white pine.
						Eastern white pine--	70	9	
HgA, HgB-------- Hero Variant	3A	Slight	Slight	Slight	Slight	Northern red oak----	65	3	Eastern white pine.
						Eastern white pine--	70	9	
HkA, HkB, HkC--- Hinckley	7S	Slight	Slight	Severe	Slight	Eastern white pine--	60	7	Eastern white pine.
						Northern red oak----	49	2	
						Red pine------------	58	6	
						Sugar maple---------	57	2	
HkD------------- Hinckley	7S	Slight	Moderate	Severe	Slight	Eastern white pine--	60	7	Eastern white pine.
						Northern red oak----	49	2	
						Red pine------------	58	6	
						Sugar maple---------	57	2	
HoA, HoB, HoC--- Hoosic	4A	Slight	Slight	Slight	Slight	Northern red oak----	75	4	Eastern white pine.
						Sugar maple---------	65	3	

See footnote at end of table.

TABLE 6.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Potential productivity: Common trees	Site index	Productivity class*	Trees to plant
HoD------------- Hoosic	4R	Slight	Moderate	Slight	Slight	Northern red oak----	75	4	Eastern white pine.
						Sugar maple---------	65	3	
KeA, KeB-------- Kendaia	3W	Slight	Moderate	Moderate	Moderate	Red maple-----------	75	3	
						Northern red oak----	70	4	
						Eastern white pine--	75	10	
						Sugar maple---------	65	3	
						American elm--------	---	--	
						White ash-----------	75	3	
KvA, KvB, KvC--- Kendaia	3X	Slight	Moderate	Moderate	Moderate	Red maple-----------	75	3	Eastern white pine.
						Northern red oak----	70	4	
						Eastern white pine--	75	10	
						Sugar maple---------	65	3	
						American elm--------	---	--	
						White ash-----------	75	3	
LdE**:									
Lanesboro------	8R	Slight	Moderate	Slight	Slight	Eastern white pine--	65	8	Eastern white pine.
						Northern red oak----	55	3	
						Sugar maple---------	65	3	
						Eastern hemlock-----	65	--	
Dummerston-----	2R	Moderate	Moderate	Moderate	Slight	Sugar maple---------	60	2	Eastern white pine.
						White oak-----------	---	--	
						Hickory-------------	---	--	
						Red maple-----------	---	--	
						Northern red oak----	60	3	
						White ash-----------	---	--	
						Eastern hemlock-----	---	--	
						Eastern white pine--	---	--	
						American beech------	---	--	
						Paper birch---------	---	--	
						Black cherry--------	---	--	
Lm-------------- Limerick	2W	Slight	Severe	Severe	Severe	Red maple-----------	60	8	Eastern white pine.
						Eastern white pine--	65	2	
LtE**:									
Lyman----------	2X	Slight	Moderate	Severe	Moderate	Sugar maple---------	50	2	Eastern white pine.
						White spruce--------	55	9	
						Balsam fir----------	60	8	
						Red spruce----------	40	6	
Tunbridge------	3X	Severe	Moderate	Moderate	Moderate	Sugar maple---------	60	3	Eastern white pine.
						Eastern white pine--	---	--	
						Red spruce----------	50	8	
						Northern red oak----	---	--	
						Yellow birch--------	55	2	
						Paper birch---------	---	--	
						White spruce--------	55	9	
						Balsam fir----------	---	--	
						White ash-----------	65	3	

See footnote at end of table.

TABLE 6.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	Productivity class*	
Ly-------------- Lyons	2W	Slight	Severe	Severe	Severe	Red maple-----------	50	2	
Lz-------------- Lyons	2X	Slight	Severe	Severe	Severe	Red maple-----------	50	2	Eastern white pine.
MeA, MeB, MeC--- Merrimac	8S	Slight	Slight	Moderate	Slight	Eastern white pine-- Northern red oak---- Sugar maple---------	64 51 58	8 2 3	Eastern white pine.
MeD------------- Merrimac	8S	Slight	Moderate	Moderate	Slight	Eastern white pine-- Northern red oak---- Sugar maple---------	64 51 58	8 2 3	Eastern white pine.
NeB, NeC-------- Nellis	4A	Slight	Slight	Slight	Slight	Northern red oak---- Sugar maple--------- American basswood--- Eastern white pine-- White ash-----------	80 70 80 85 85	4 3 4 10 4	Eastern white pine.
NeD------------- Nellis	4R	Moderate	Moderate	Slight	Slight	Northern red oak---- Sugar maple--------- American basswood--- Eastern white pine-- White ash-----------	80 70 80 85 85	4 3 4 10 4	Eastern white pine.
NsB, NsC-------- Nellis	4A	Slight	Slight	Slight	Slight	Northern red oak---- Sugar maple--------- American basswood--- Eastern white pine-- White ash-----------	80 70 80 85 85	4 3 4 10 4	Eastern white pine.
NsD------------- Nellis	4R	Slight	Moderate	Slight	Slight	Northern red oak---- Sugar maple--------- American basswood--- Eastern white pine-- White ash-----------	80 70 80 85 85	4 3 4 10 4	Eastern white pine.
NvC, NvD-------- Nellis	4X	Slight	Moderate	Slight	Slight	Northern red oak---- Sugar maple--------- American basswood--- Eastern white pine-- White ash-----------	80 70 80 85 85	4 3 4 10 4	Eastern white pine.

See footnote at end of table.

TABLE 6.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordi- nation symbol	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equip- ment limita- tion	Seedling mortal- ity	Wind- throw hazard	Common trees	Site index	Produc- tivity class*	
OaA, OaB, OaC--- Oakville	3S	Slight	Moderate	Severe	Slight	Northern red oak---- Red pine------------ White oak----------- Bigtooth aspen------ Black oak----------- Eastern white pine--	67 --- --- 74 --- ---	3 -- -- 6 -- --	Eastern white pine.
OaD------------- Oakville	3R	Moderate	Severe	Severe	Slight	Northern red oak---- Red pine------------ White oak----------- Bigtooth aspen------ Black oak----------- Eastern white pine--	67 --- --- 74 --- ---	3 -- -- 6 -- --	Eastern white pine.
Pc**:									
Palms-----------	2W	Slight	Severe	Severe	Severe	Red maple----------- Silver maple-------- White ash----------- Quaking aspen------- Northern white-cedar Tamarack------------ Black ash-----------	55 82 --- --- 95 --- ---	2 2 -- -- 5 -- --	
Carlisle-------	2W	Slight	Severe	Severe	Severe	Red maple----------- White ash----------- Green ash----------- Quaking aspen------- Swamp white oak----- Silver maple--------	56 --- --- --- --- 82	2 -- -- -- -- 2	
PmC**:									
Peru-----------	2X	Slight	Slight	Slight	Moderate	Sugar maple--------- Eastern white pine-- Northern red oak---- Red spruce---------- Balsam fir---------- White spruce-------- White ash----------- Red pine------------	56 67 70 39 55 53 64 61	2 8 4 6 8 8 3 7	Eastern white pine.
Marlow---------	3X	Slight	Slight	Slight	Moderate	Northern red oak---- Yellow birch-------- Paper birch--------- White spruce-------- White ash----------- American beech------ Red pine------------ American basswood---	67 62 60 60 67 62 65 56	3 3 4 10 3 3 8 2	Eastern white pine.
PoB**----------- Pillsbury	2X	Slight	Severe	Moderate	Severe	Sugar maple--------- Red spruce---------- Eastern white pine-- Northern red oak---- Balsam fir----------	55 47 60 60 51	2 7 7 3 7	Eastern white pine.

See footnote at end of table.

TABLE 6.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Potential productivity: Common trees	Site index	Productivity class*	Trees to plant
PrB, PrC-------- Pittsfield	4A	Slight	Slight	Slight	Slight	Northern red oak---- Sugar maple--------- Eastern white pine--	70 63 65	4 3 8	Eastern white pine.
PrD------------- Pittsfield	4R	Slight	Moderate	Slight	Slight	Northern red oak---- Sugar maple--------- Eastern white pine--	70 63 65	4 3 8	Eastern white pine.
PsB, PsC-------- Pittsfield	4A	Slight	Slight	Slight	Slight	Northern red oak---- Sugar maple--------- Eastern white pine--	70 63 65	4 3 8	Eastern white pine.
PsD------------- Pittsfield	4R	Slight	Moderate	Slight	Slight	Northern red oak---- Sugar maple--------- Eastern white pine--	70 63 65	4 3 8	Eastern white pine.
PvB, PvC, PvD--- Pittsfield	4X	Slight	Moderate	Slight	Slight	Northern red oak---- Sugar maple--------- Eastern white pine--	70 63 65	4 3 8	Eastern white pine.
PwE**:									
Pittsfield-----	4X	Slight	Moderate	Slight	Slight	Northern red oak---- Sugar maple--------- Eastern white pine--	70 63 65	4 3 8	Eastern white pine.
Nellis---------	4X	Slight	Moderate	Slight	Slight	Northern red oak---- Sugar maple--------- American basswood--- Eastern white pine-- White ash-----------	80 70 80 85 85	3 4 4 10 4	Eastern white pine.
PyC**:									
Pittsfield-----	4A	Slight	Slight	Slight	Slight	Northern red oak---- Sugar maple--------- Eastern white pine--	70 63 65	4 3 8	Eastern white pine.

See footnote at end of table.

TABLE 6.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordi- nation symbol	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equip- ment limita- tion	Seedling mortal- ity	Wind- throw hazard	Common trees	Site index	Produc- tivity class*	
PyC**: Urban land.									
Sa-------------- Saco	2W	Slight	Severe	Severe	Severe	Red maple-----------	50	2	
						Eastern white pine--	50	6	
						Northern white-cedar	45	5	
StB, StC-------- Stockbridge	4A	Slight	Slight	Slight	Slight	Northern red oak----	70	4	Eastern white pine.
						Sugar maple---------	60	3	
						Eastern white pine--	75	10	
						American beech------	---	--	
						Eastern hemlock-----	---	--	
StD------------- Stockbridge	4R	Slight	Moderate	Slight	Slight	Northern red oak----	70	4	Eastern white pine.
						Sugar maple---------	60	3	
						Eastern white pine--	75	10	
						American beech------	---	--	
						Eastern hemlock-----	---	--	
SvC------------- Stockbridge	4A	Slight	Slight	Slight	Slight	Northern red oak----	70	4	Eastern white pine.
						Sugar maple---------	60	3	
						Eastern white pine--	75	10	
						American beech------	---	--	
						Eastern hemlock-----	---	--	
SvD------------- Stockbridge	4R	Slight	Moderate	Slight	Slight	Northern red oak----	70	4	Eastern white pine.
						Sugar maple---------	60	3	
						Eastern white pine--	75	10	
						American beech------	---	--	
						Eastern hemlock-----	---	--	
TmC**: Taconic--------	2D	Slight	Slight	Moderate	Severe	Sugar maple---------	50	2	Eastern white pine.
						White spruce--------	50	8	
						Balsam fir----------	50	7	
						Red spruce----------	40	6	
						American beech------	---	--	
						Paper birch---------	53	3	
						Eastern hemlock-----	---	--	
						White oak-----------	50	2	
						Northern red oak----	50	2	
Macomber-------	4A	Slight	Slight	Slight	Slight	Northern red oak----	70	4	Eastern white pine.
						White spruce--------	65	10	
						Balsam fir----------	65	9	
						Red spruce----------	55	9	
						American beech------	---	--	
						Paper birch---------	70	4	
						Eastern hemlock-----	---	--	
						White oak-----------	70	4	
						Sugar maple---------	65	3	

See footnote at end of table.

TABLE 6.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
TmE**:									
Taconic	2D	Moderate	Moderate	Moderate	Severe	Sugar maple	50	2	Eastern white pine.
						White spruce	50	8	
						Balsam fir	50	7	
						Red spruce	40	6	
						American beech	---	--	
						Paper birch	53	3	
						Eastern hemlock	---	--	
						White oak	50	2	
						Northern red oak	50	2	
Macomber	4R	Moderate	Moderate	Slight	Slight	Northern red oak	70	4	Eastern white pine.
						White spruce	65	10	
						Balsam fir	65	9	
						Red spruce	55	9	
						American beech	---	--	
						Paper birch	70	4	
						Eastern hemlock	---	--	
						White oak	70	4	
						Sugar maple	65	3	
TuC**:									
Tunbridge	3X	Moderate	Moderate	Slight	Moderate	Sugar maple	60	3	Eastern white pine.
						Eastern white pine	---	--	
						Red spruce	50	8	
						Northern red oak	---	--	
						Yellow birch	55	2	
						Paper birch	---	--	
						White spruce	55	9	
						Balsam fir	---	--	
						White ash	65	3	
Lyman	2X	Slight	Moderate	Severe	Moderate	Sugar maple	50	2	Eastern white pine.
						White spruce	55	9	
						Balsam fir	60	8	
						Red spruce	40	6	
						Northern red oak	40	6	
Wh: Wareham	3W	Slight	Severe	Severe	Severe	Red maple	65	3	Eastern white pine.
						Eastern white pine	65	8	
						Red spruce	45	7	
Wy: Winooski	4A	Slight	Slight	Slight	Slight	Northern red oak	70	4	Eastern white pine.
						Eastern white pine	75	10	
						White spruce	70	10	
						Sugar maple	65	3	

* Productivity class is the yield in cubic meters per hectare per year calculated at the age of culmination of mean annual increment for fully stocked natural stands.

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

TABLE 7.--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
AmA------------------- Amenia	Moderate: wetness.	Moderate: wetness.	Moderate: small stones.	Moderate: wetness.	Moderate: wetness.
AmB------------------- Amenia	Moderate: wetness.	Moderate: wetness.	Moderate: slope, small stones.	Moderate: wetness.	Moderate: wetness.
AmC------------------- Amenia	Moderate: slope, wetness.	Moderate: slope, wetness.	Severe: slope.	Moderate: wetness.	Moderate: wetness, slope.
AmD------------------- Amenia	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: wetness, slope.	Severe: slope.
AsB------------------- Amenia	Moderate: large stones.	Moderate: large stones.	Severe: large stones, small stones.	Moderate: wetness.	Moderate: small stones, large stones.
AsC------------------- Amenia	Moderate: slope, large stones.	Moderate: slope, large stones.	Severe: large stones, slope, small stones.	Moderate: wetness.	Moderate: small stones, large stones, slope.
AsD------------------- Amenia	Severe: slope.	Severe: slope.	Severe: large stones, slope, small stones.	Moderate: wetness, slope.	Severe: slope.
AvB------------------- Amenia	Severe: large stones.	Severe: large stones.	Severe: large stones, small stones.	Moderate: wetness.	Moderate: small stones, large stones.
AvC------------------- Amenia	Severe: large stones.	Severe: large stones.	Severe: large stones, slope, small stones.	Moderate: wetness.	Moderate: small stones, large stones, slope.
AvD------------------- Amenia	Severe: slope, large stones.	Severe: slope, large stones.	Severe: large stones, slope, small stones.	Moderate: wetness, slope.	Severe: slope.
BmE*:					
Berkshire------------	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope.	Severe: slope, large stones.
Marlow----------------	Severe: slope.	Severe: slope.	Severe: large stones, slope.	Severe: slope.	Severe: slope.
BrB*------------------ Brayton	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: large stones, small stones.	Severe: wetness.	Severe: wetness.

See footnote at end of table.

TABLE 7.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
CoA: Copake	Slight	Slight	Moderate: small stones.	Slight	Slight.
CoB: Copake	Slight	Slight	Moderate: slope, small stones.	Slight	Slight.
CoC: Copake	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.
CoD: Copake	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
CuC*:					
Copake	Slight	Slight	Severe: slope.	Slight	Slight.
Urban land.					
DeA: Deerfield	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Slight	Moderate: wetness.
FaC*: Farmington	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Slight	Severe: thin layer.
FcC*:					
Farmington	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Slight	Severe: thin layer.
Rock outcrop.					
FcD*:					
Farmington	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Moderate: slope.	Severe: slope, thin layer.
Rock outcrop.					
FrA: Fredon	Severe: small stones, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
FwC*:					
Fullam	Moderate: slope, wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Severe: large stones, slope.	Moderate: large stones, wetness.	Severe: large stones.
Lanesboro	Moderate: large stones, percs slowly.	Moderate: large stones, percs slowly.	Severe: large stones, slope, small stones.	Slight	Moderate: large stones, wetness, slope.
GrA, GrB: Groton	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Slight	Moderate: small stones, droughty.

See footnote at end of table.

TABLE 7.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
GrC------------------- Groton	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.	Slight----------	Moderate: small stones, droughty, slope.
GrD------------------- Groton	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.	Severe: slope.
GsE*:					
Groton---------------	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.	Severe: slope.
Hinckley-------------	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope.	Severe: small stones, droughty, slope.
Ha-------------------- Hadley	Severe: flooding.	Slight----------	Moderate: flooding.	Slight----------	Moderate: flooding.
Hb-------------------- Halsey	Severe: wetness.	Severe: wetness.	Severe: small stones, wetness.	Severe: wetness.	Severe: wetness.
HeA, HeB-------------- Hero	Moderate: wetness.	Moderate: wetness.	Moderate: slope, small stones, wetness.	Moderate: wetness.	Moderate: wetness.
HgA, HgB-------------- Hero Variant	Moderate: small stones, wetness.	Moderate: wetness, small stones.	Severe: small stones.	Moderate: wetness.	Moderate: small stones.
HkA, HkB-------------- Hinckley	Severe: small stones.	Severe: small stones.	Severe: small stones.	Slight----------	Severe: small stones, droughty.
HkC------------------- Hinckley	Severe: small stones.	Severe: small stones.	Severe: slope, small stones.	Slight----------	Severe: small stones, droughty.
HkD------------------- Hinckley	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Moderate: slope.	Severe: small stones, droughty, slope.
HoA, HoB-------------- Hoosic	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Slight----------	Moderate: droughty, small stones.
HoC------------------- Hoosic	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.	Slight----------	Moderate: droughty, small stones.
HoD------------------- Hoosic	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.	Severe: slope.

See footnote at end of table.

TABLE 7.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
KeA, KeB: Kendaia	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
KvA, KvB: Kendaia	Severe: large stones, wetness.	Severe: wetness, large stones.	Severe: large stones, wetness.	Severe: wetness.	Severe: wetness.
KvC: Kendaia	Severe: large stones, wetness.	Severe: wetness, large stones.	Severe: large stones, slope, wetness.	Severe: wetness.	Severe: wetness.
LdE*:					
Lanesboro	Severe: slope.	Severe: slope.	Severe: large stones, slope, small stones.	Severe: slope.	Severe: slope.
Dummerston	Severe: slope.	Severe: slope.	Severe: large stones, slope.	Moderate: large stones.	Severe: large stones, slope.
Lm: Limerick	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.	Severe: flooding, wetness.
LtE*:					
Lyman	Severe: slope, depth to rock, large stones.	Severe: slope, depth to rock, large stones.	Severe: slope, large stones, depth to rock.	Severe: slope.	Severe: slope, thin layer, droughty.
Tunbridge	Severe: slope.	Severe: slope.	Severe: large stones, slope, small stones.	Severe: large stones, slope.	Severe: large stones.
Ly: Lyons	Severe: wetness, percs slowly, excess humus.	Severe: wetness, excess humus, percs slowly.	Severe: wetness, excess humus.	Severe: wetness, excess humus.	Severe: wetness.
Lz: Lyons	Severe: wetness, large stones, percs slowly.	Severe: wetness, large stones, excess humus.	Severe: large stones, excess humus, wetness.	Severe: wetness, excess humus.	Severe: wetness.
MeA: Merrimac	Slight	Slight	Moderate: small stones.	Slight	Slight.
MeB: Merrimac	Slight	Slight	Moderate: slope, small stones.	Slight	Slight.
MeC: Merrimac	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.
MeD: Merrimac	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.

See footnote at end of table.

TABLE 7.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
NeB: Nellis	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, small stones.	Slight	Moderate: droughty.
NeC: Nellis	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Slight	Moderate: slope, droughty.
NeD: Nellis	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
NsB: Nellis	Moderate: large stones.	Moderate: large stones.	Severe: large stones, small stones.	Slight	Moderate: small stones, large stones.
NsC: Nellis	Moderate: slope, large stones.	Moderate: slope, large stones.	Severe: large stones, slope, small stones.	Slight	Moderate: small stones, large stones, slope.
NsD: Nellis	Severe: slope.	Severe: slope.	Severe: large stones, slope, small stones.	Moderate: slope.	Severe: slope.
NvC: Nellis	Severe: large stones.	Severe: large stones.	Severe: large stones, slope, small stones.	Slight	Moderate: small stones, large stones, slope.
NvD: Nellis	Severe: slope, large stones.	Severe: slope, large stones.	Severe: large stones, slope, small stones.	Moderate: slope.	Severe: slope.
OaA: Oakville	Moderate: too sandy.	Moderate: too sandy.	Moderate: too sandy.	Moderate: too sandy.	Moderate: droughty.
OaB: Oakville	Moderate: too sandy.	Moderate: too sandy.	Moderate: slope, too sandy.	Moderate: too sandy.	Moderate: droughty.
OaC: Oakville	Moderate: slope, too sandy.	Moderate: slope, too sandy.	Severe: slope.	Moderate: too sandy.	Moderate: droughty, slope.
OaD: Oakville	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: too sandy, slope.	Severe: slope.
Pc*:					
Palms	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: ponding, excess humus.
Carlisle	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding, excess humus.

See footnote at end of table.

TABLE 7.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
PmC*:					
Peru	Moderate: slope, large stones.	Moderate: slope, wetness, large stones.	Severe: large stones, slope.	Moderate: wetness.	Severe: large stones, wetness, slope.
Marlow	Moderate: slope, large stones.	Moderate: slope, large stones.	Severe: large stones, slope.	Slight	Moderate: large stones, slope.
PoB* Pillsbury	Severe: large stones, wetness.	Severe: wetness, large stones.	Severe: large stones.	Severe: wetness.	Severe: wetness.
Pp*, Pq*. Pits					
PrB Pittsfield	Slight	Slight	Moderate: slope, small stones.	Slight	Slight.
PrC Pittsfield	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.
PrD Pittsfield	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
PsB Pittsfield	Moderate: large stones.	Moderate: large stones.	Severe: large stones.	Slight	Moderate: large stones.
PsC Pittsfield	Moderate: slope, large stones.	Moderate: slope, large stones.	Severe: slope, large stones.	Slight	Moderate: large stones, slope.
PsD Pittsfield	Severe: slope.	Severe: slope.	Severe: slope, large stones.	Moderate: slope.	Severe: slope.
PvB Pittsfield	Severe: large stones.	Moderate: large stones.	Severe: large stones.	Slight	Moderate: large stones.
PvC Pittsfield	Severe: large stones.	Moderate: large stones.	Severe: slope, large stones.	Slight	Moderate: large stones, slope.
PvD Pittsfield	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Moderate: slope.	Severe: slope.
PwE*:					
Pittsfield	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope.	Severe: slope.
Nellis	Severe: slope, large stones.	Severe: slope, large stones.	Severe: large stones, slope, small stones.	Severe: slope.	Severe: slope.

See footnote at end of table.

TABLE 7.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
PyC*:					
Pittsfield	Slight	Slight	Moderate: slope, small stones.	Slight	Slight.
Urban land.					
Sa Saco	Severe: flooding.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness, flooding.
StB Stockbridge	Moderate: percs slowly.	Moderate: small stones, percs slowly.	Severe: small stones.	Slight	Moderate: small stones.
StC Stockbridge	Moderate: slope, percs slowly.	Moderate: slope, percs slowly, small stones.	Severe: slope, small stones.	Slight	Moderate: slope, small stones.
StD Stockbridge	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.	Severe: slope.
SvC Stockbridge	Moderate: slope, large stones.	Moderate: slope, large stones.	Severe: large stones, slope.	Slight	Moderate: large stones, slope.
SvD Stockbridge	Severe: slope.	Severe: slope.	Severe: large stones, slope.	Moderate: slope.	Severe: slope.
TmC*:					
Taconic	Severe: depth to rock.	Severe: depth to rock.	Severe: large stones, slope, small stones.	Moderate: large stones.	Severe: large stones, thin layer.
Macomber	Moderate: slope, large stones.	Moderate: slope, large stones.	Severe: large stones, slope, small stones.	Moderate: large stones.	Severe: droughty.
TmE*:					
Taconic	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: large stones, slope, small stones.	Severe: slope.	Severe: large stones, slope, thin layer.
Macomber	Severe: slope.	Severe: slope.	Severe: large stones, slope, small stones.	Severe: slope.	Severe: droughty, slope.
TuC*:					
Tunbridge	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: large stones, slope, small stones.	Severe: large stones.	Severe: large stones.

See footnote at end of table.

TABLE 7.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
TuC*:					
Lyman	Severe: depth to rock, large stones.	Severe: depth to rock, large stones.	Severe: slope, large stones, depth to rock.	Slight	Severe: thin layer, droughty.
Ud. Udorthents					
Ur*. Urban land					
Wh Wareham	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Wy Winooski	Severe: flooding.	Moderate: flooding, wetness.	Severe: flooding.	Slight	Severe: flooding.

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

TABLE 8.--WILDLIFE HABITAT

(See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates that the soil was not rated)

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
AmA: Amenia	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
AmB: Amenia	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
AmC: Amenia	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
AmD: Amenia	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
AsB: Amenia	Very poor.	Poor	Good	Good	Good	Poor	Very poor.	Poor	Good	Very poor.
AsC, AsD: Amenia	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
AvB: Amenia	Very poor.	Very poor.	Good	Good	Good	Poor	Very poor.	Very poor.	Good	Very poor.
AvC, AvD: Amenia	Very poor.	Very poor.	Good	Good	Good	Very poor.	Very poor.	Very poor.	Good	Very poor.
BmE*:										
Berkshire	Very poor.	Very poor.	Good	Good	Good	Very poor.	Very poor.	Poor	Fair	Very poor.
Marlow	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
BrB*: Brayton	Very poor.	Poor	Fair	Fair	Fair	Poor	Very poor.	Poor	Fair	Very poor.
CoA, CoB: Copake	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
CoC: Copake	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
CoD: Copake	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
CuC*:										
Copake	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Urban land.										
DeA: Deerfield	Poor	Fair	Fair	Poor	Poor	Poor	Poor	Fair	Poor	Poor.
FaC*: Farmington	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.

See footnote at end of table.

TABLE 8.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
FcC*, FcD*:										
Farmington	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Rock outcrop.										
FrA Fredon	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
FwC*:										
Fullam	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Lanesboro	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
GrA, GrB, GrC, GrD Groton	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
GsE*:										
Groton	Very poor.	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Hinckley	Very poor.	Poor	Poor	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Ha Hadley	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Hb Halsey	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
HeA Hero	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
HeB Hero	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
HgA Hero Variant	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
HgB Hero Variant	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
HkA, HkB, HkC, HkD Hinckley	Poor	Poor	Poor	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
HoA, HoB, HoC, HoD Hoosic	Poor	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Poor	Very poor.
KeA Kendaia	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
KeB Kendaia	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
KvA Kendaia	Very poor.	Poor	Good	Good	Good	Fair	Fair	Poor	Good	Fair.

See footnote at end of table.

TABLE 8.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
KvB----------------- Kendaia	Very poor.	Poor	Good	Good	Good	Poor	Very poor.	Poor	Good	Very poor.
KvC----------------- Kendaia	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
LdE*:										
Lanesboro----------	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
Dummerston---------	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Lm------------------ Limerick	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
LtE*:										
Lyman--------------	Very poor.	Very poor.	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Tunbridge----------	Very poor.	Very poor.	Good	Good	Good	Very poor.	Very poor.	Poor	Fair	Very poor.
Ly------------------ Lyons	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Lz------------------ Lyons	Very poor.	Very poor.	Poor	Poor	Poor	Good	Fair	Very poor.	Poor	Fair.
MeA, MeB------------ Merrimac	Good	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
MeC----------------- Merrimac	Fair	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
MeD----------------- Merrimac	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
NeB----------------- Nellis	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
NeC----------------- Nellis	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
NeD----------------- Nellis	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
NsB----------------- Nellis	Very poor.	Poor	Good	Good	Good	Poor	Very poor.	Poor	Good	Very poor.
NsC, NsD------------ Nellis	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
NvC, NvD------------ Nellis	Very poor.	Very poor.	Good	Good	Good	Very poor.	Very poor.	Very poor.	Good	Very poor.
OaA, OaB------------ Oakville	Poor	Fair	Fair	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
OaC, OaD------------ Oakville	Poor	Fair	Fair	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.

See footnote at end of table.

TABLE 8.--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
Pc*:										
Palms	Good	Poor	Poor	Poor	Poor	Good	Good	Fair	Poor	Good.
Carlisle	Fair	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
PmC*:										
Peru	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
Marlow	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
PoB* Pillsbury	Very poor.	Very poor.	Fair	Fair	Fair	Poor	Very poor.	Poor	Fair	Very poor.
Pp*, Pq*. Pits										
PrB Pittsfield	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
PrC Pittsfield	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
PrD Pittsfield	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
PsB Pittsfield	Very poor.	Poor	Good	Good	Good	Poor	Very poor.	Poor	Good	Very poor.
PsC, PsD Pittsfield	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
PvB Pittsfield	Very poor.	Very poor.	Good	Good	Good	Poor	Very poor.	Poor	Fair	Very poor.
PvC, PvD Pittsfield	Very poor.	Very poor.	Good	Good	Good	Very poor.	Very poor.	Poor	Fair	Very poor.
PwE*:										
Pittsfield	Very poor.	Very poor.	Good	Good	Good	Very poor.	Very poor.	Poor	Fair	Very poor.
Nellis	Very poor.	Very poor.	Good	Good	Good	Very poor.	Very poor.	Very poor.	Good	Very poor.
PyC*:										
Pittsfield	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Urban land.										
Sa Saco	Very poor.	Poor	Poor	Poor	Poor	Good	Fair	Poor	Poor	Fair.
StB Stockbridge	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
StC Stockbridge	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.

See footnote at end of table.

TABLE 8.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
StD----------------- Stockbridge	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
SvC, SvD----------- Stockbridge	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
TmC*, TmE*:										
Taconic-----------	Very poor.	Very poor.	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Macomber----------	Very poor.	Very poor.	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
TuC*:										
Tunbridge---------	Very poor.	Very poor.	Good	Good	Good	Very poor.	Very poor.	Poor	Fair	Very poor.
Lyman-------------	Very poor.	Very poor.	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Ud. Udorthents										
Ur*. Urban land										
Wh----------------- Wareham	Good	Fair	Fair	Poor	Poor	Fair	Fair	Fair	Poor	Fair.
Wy----------------- Winooski	Poor	Fair	Fair	Good	Good	Poor	Poor	Fair	Good	Poor.

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

TABLE 9.--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
AmA: Amenia	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Severe: frost action.	Moderate: wetness.
AmB: Amenia	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Severe: frost action.	Moderate: wetness.
AmC: Amenia	Severe: wetness.	Moderate: wetness, slope.	Severe: wetness.	Severe: slope.	Severe: frost action.	Moderate: wetness, slope.
AmD: Amenia	Severe: wetness, slope.	Severe: slope.	Severe: wetness, slope.	Severe: slope.	Severe: slope, frost action.	Severe: slope.
AsB: Amenia	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Severe: frost action.	Moderate: small stones, large stones.
AsC: Amenia	Severe: wetness.	Severe: wetness, slope.	Severe: wetness.	Severe: slope.	Severe: frost action.	Moderate: small stones, large stones, slope.
AsD: Amenia	Severe: wetness, slope.	Severe: slope.	Severe: wetness, slope.	Severe: slope.	Severe: slope, frost action.	Severe: slope.
AvB: Amenia	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Severe: frost action.	Moderate: small stones, large stones.
AvC: Amenia	Severe: wetness.	Severe: wetness, slope.	Severe: wetness.	Severe: slope.	Severe: frost action.	Moderate: small stones, large stones, slope.
AvD: Amenia	Severe: wetness, slope.	Severe: slope.	Severe: wetness, slope.	Severe: slope.	Severe: slope, frost action.	Severe: slope.
BmE*:						
Berkshire	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, large stones.	Severe: slope.	Severe: slope, large stones.
Marlow	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
BrB*: Brayton	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness.
CoA: Copake	Severe: cutbanks cave.	Slight	Slight	Slight	Moderate: frost action.	Slight.

See footnote at end of table.

TABLE 9.--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
CoB--------------- Copake	Severe: cutbanks cave.	Slight---------	Slight---------	Moderate: slope.	Moderate: frost action.	Slight.
CoC--------------- Copake	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: slope.
CoD--------------- Copake	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
CuC*: Copake-----------	Severe: cutbanks cave.	Slight---------	Slight---------	Moderate: slope.	Moderate: frost action.	Slight.
Urban land.						
DeA--------------- Deerfield	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: frost action, wetness.	Moderate: wetness.
FaC*-------------- Farmington	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: thin layer.
FcC*: Farmington-------	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: thin layer.
Rock outcrop.						
FcD*: Farmington-------	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, thin layer.
Rock outcrop.						
FrA--------------- Fredon	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness.
FwC*: Fullam-----------	Severe: wetness.	Moderate: wetness, slope.	Severe: wetness.	Severe: slope.	Moderate: wetness, slope, frost action.	Severe: large stones.
Lanesboro--------	Moderate: dense layer, wetness, slope.	Moderate: wetness, slope.	Moderate: wetness, slope.	Severe: slope.	Moderate: wetness, slope, frost action.	Moderate: large stones, wetness, slope.
GrA--------------- Groton	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Slight---------	Moderate: small stones, droughty.
GrB--------------- Groton	Severe: cutbanks cave.	Slight---------	Slight---------	Moderate: slope.	Slight---------	Moderate: small stones, droughty.

See footnote at end of table.

TABLE 9.--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
GrC------------------- Groton	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: small stones, droughty, slope.
GrD------------------- Groton	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
GsE*:						
Groton-----------	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Hinckley---------	Severe: slope, cutbanks cave.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: small stones, droughty, slope.
Ha-------------------- Hadley	Moderate: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding, frost action.	Moderate: flooding.
Hb-------------------- Halsey	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness.
HeA------------------- Hero	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Severe: frost action.	Moderate: wetness.
HeB------------------- Hero	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Severe: frost action.	Moderate: wetness.
HgA------------------- Hero Variant	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Severe: frost action.	Moderate: small stones.
HgB------------------- Hero Variant	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Severe: frost action.	Moderate: small stones.
HkA------------------- Hinckley	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Slight---------	Severe: small stones, droughty.
HkB------------------- Hinckley	Severe: cutbanks cave.	Slight---------	Slight---------	Moderate: slope.	Slight---------	Severe: small stones, droughty.
HkC------------------- Hinckley	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Severe: small stones, droughty.
HkD------------------- Hinckley	Severe: slope, cutbanks cave.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: small stones, droughty, slope.

See footnote at end of table.

TABLE 9.--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
HoA---------------- Hoosic	Severe: cutbanks cave.	Slight----------	Slight----------	Slight----------	Slight----------	Moderate: droughty, small stones.
HoB---------------- Hoosic	Severe: cutbanks cave.	Slight----------	Slight----------	Moderate: slope.	Slight----------	Moderate: droughty, small stones.
HoC---------------- Hoosic	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, small stones.
HoD---------------- Hoosic	Severe: slope, cutbanks cave.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
KeA, KeB, KvA, KvB-------------- Kendaia	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness.
KvC---------------- Kendaia	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, slope.	Severe: wetness, frost action.	Severe: wetness.
LdE*: Lanesboro---------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Dummerston-------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: large stones, slope.
Lm----------------- Limerick	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness, frost action.	Severe: flooding, wetness.
LtE*: Lyman-------------	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, thin layer, droughty.
Tunbridge---------	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: large stones.
Ly, Lz------------- Lyons	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness.
MeA---------------- Merrimac	Severe: cutbanks cave.	Slight----------	Slight----------	Slight----------	Slight----------	Slight.
MeB---------------- Merrimac	Severe: cutbanks cave.	Slight----------	Slight----------	Moderate: slope.	Slight----------	Slight.
MeC---------------- Merrimac	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.

See footnote at end of table.

TABLE 9.--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
MeD--------------- Merrimac	Severe: slope, cutbanks cave.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
NeB--------------- Nellis	Moderate: dense layer.	Slight---------	Slight---------	Moderate: slope.	Moderate: frost action.	Moderate: droughty.
NeC--------------- Nellis	Moderate: dense layer, slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: slope, droughty.
NeD--------------- Nellis	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
NsB--------------- Nellis	Moderate: dense layer.	Slight---------	Slight---------	Moderate: slope.	Moderate: frost action.	Moderate: small stones, large stones.
NsC--------------- Nellis	Moderate: dense layer, slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: small stones, large stones, slope.
NsD--------------- Nellis	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
NvC--------------- Nellis	Moderate: dense layer, slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: small stones, large stones, slope.
NvD--------------- Nellis	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
OaA--------------- Oakville	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Slight---------	Moderate: droughty.
OaB--------------- Oakville	Severe: cutbanks cave.	Slight---------	Slight---------	Moderate: slope.	Slight---------	Moderate: droughty.
OaC--------------- Oakville	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
OaD--------------- Oakville	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Pc*:						
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.
Carlisle---------	Severe: excess humus, ponding.	Severe: subsides, ponding, low strength.	Severe: subsides, ponding, low strength.	Severe: subsides, ponding, low strength.	Severe: subsides, ponding, frost action.	Severe: ponding, excess humus.

See footnote at end of table.

TABLE 9.--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
PmC*:						
Peru	Severe: wetness.	Moderate: wetness, slope.	Severe: wetness.	Severe: slope.	Severe: frost action.	Severe: large stones, wetness, slope.
Marlow	Moderate: dense layer, wetness, slope.	Moderate: slope.	Moderate: wetness, slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: large stones, slope.
PoB* Pillsbury	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness.
Pp*, Pq*. Pits						
PrB Pittsfield	Slight	Slight	Slight	Moderate: slope.	Moderate: low strength, frost action.	Slight.
PrC Pittsfield	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action, low strength.	Moderate: slope.
PrD Pittsfield	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
PsB Pittsfield	Slight	Slight	Slight	Moderate: slope.	Moderate: frost action, low strength.	Moderate: large stones.
PsC Pittsfield	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action, low strength.	Moderate: large stones, slope.
PsD Pittsfield	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
PvB Pittsfield	Slight	Slight	Slight	Moderate: slope.	Moderate: frost action, low strength.	Moderate: large stones.
PvC Pittsfield	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action, low strength.	Moderate: large stones, slope.
PvD Pittsfield	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
PwE*:						
Pittsfield	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Nellis	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.

See footnote at end of table.

TABLE 9.--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
PyC*:						
Pittsfield	Slight	Slight	Slight	Moderate: slope.	Moderate: low strength, frost action.	Slight.
Urban land.						
Sa: Saco	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding, frost action.	Severe: wetness, flooding.
StB: Stockbridge	Slight	Slight	Slight	Moderate: slope.	Moderate: low strength, frost action.	Moderate: small stones.
StC: Stockbridge	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, low strength, frost action.	Moderate: slope, small stones.
StD: Stockbridge	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
SvC: Stockbridge	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, frost action, slope.	Moderate: large stones, slope.
SvD: Stockbridge	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
TmC*:						
Taconic	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: large stones, thin layer.
Macomber	Severe: depth to rock.	Moderate: slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Moderate: depth to rock, slope, frost action.	Severe: droughty.
TmE*:						
Taconic	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: large stones, slope, thin layer.
Macomber	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: droughty, slope.
TuC*:						
Tunbridge	Severe: depth to rock.	Moderate: slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Moderate: depth to rock, slope, frost action.	Severe: large stones.
Lyman	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: thin layer, droughty.

See footnote at end of table.

TABLE 9.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
Ud. Udorthents						
Ur*. Urban land						
Wh Wareham	Severe: wetness, cutbanks cave.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Wy Winooski	Severe: wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding, frost action.	Severe: flooding.

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

TABLE 10.--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
AmA: Amenia	Severe: wetness, percs slowly.	Moderate: seepage.	Severe: wetness.	Moderate: wetness.	Fair: small stones, wetness.
AmB: Amenia	Severe: wetness, percs slowly.	Moderate: seepage, slope.	Severe: wetness.	Moderate: wetness.	Fair: small stones, wetness.
AmC: Amenia	Severe: wetness, percs slowly.	Severe: slope.	Severe: wetness.	Moderate: wetness, slope.	Fair: small stones, slope, wetness.
AmD: Amenia	Severe: wetness, percs slowly, slope.	Severe: slope.	Severe: wetness, slope.	Severe: slope.	Poor: slope.
AsB: Amenia	Severe: wetness, percs slowly.	Moderate: seepage, slope.	Severe: wetness.	Moderate: wetness.	Fair: small stones, wetness.
AsC: Amenia	Severe: wetness, percs slowly.	Severe: slope.	Severe: wetness.	Moderate: wetness, slope.	Fair: small stones, slope, wetness.
AsD: Amenia	Severe: wetness, percs slowly, slope.	Severe: slope.	Severe: wetness, slope.	Severe: slope.	Poor: slope.
AvB: Amenia	Severe: wetness, percs slowly.	Moderate: seepage, slope.	Severe: wetness.	Moderate: wetness.	Fair: small stones, wetness.
AvC: Amenia	Severe: wetness, percs slowly.	Severe: slope.	Severe: wetness.	Moderate: wetness, slope.	Fair: small stones, slope, wetness.
AvD: Amenia	Severe: wetness, percs slowly, slope.	Severe: slope.	Severe: wetness, slope.	Severe: slope.	Poor: slope.
BmE*:					
Berkshire	Severe: slope.	Severe: slope, seepage.	Severe: slope, seepage.	Severe: slope, seepage.	Poor: slope.
Marlow	Severe: percs slowly, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.

See footnote at end of table.

TABLE 10.--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
BrB*: Brayton	Severe: wetness, percs slowly.	Severe: seepage, wetness.	Severe: wetness.	Severe: seepage, wetness.	Poor: small stones, wetness.
CoA, CoB: Copake	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
CoC: Copake	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
CoD: Copake	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: seepage, slope, too sandy.	Severe: seepage, slope.	Poor: seepage, too sandy, small stones.
CuC*:					
Copake	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
Urban land.					
DeA: Deerfield	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: too sandy, seepage.
FaC*: Farmington	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: area reclaim.
FcC*:					
Farmington	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: area reclaim.
Rock outcrop.					
FcD*:					
Farmington	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: area reclaim, slope.
Rock outcrop.					
FrA: Fredon	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, small stones.
FwC*:					
Fullam	Severe: wetness, percs slowly.	Severe: slope, wetness.	Severe: wetness.	Moderate: wetness, slope.	Poor: small stones.

See footnote at end of table.

TABLE 10.--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
FwC*:					
Lanesboro	Severe: percs slowly.	Severe: slope.	Moderate: wetness, slope.	Moderate: wetness, slope.	Fair: small stones, slope, wetness.
GrA, GrB Groton	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
GrC Groton	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
GrD Groton	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: slope, seepage, too sandy.	Severe: seepage, slope.	Poor: seepage, too sandy, slope.
GsE*:					
Groton	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: slope, seepage, too sandy.	Severe: seepage, slope.	Poor: seepage, too sandy, slope.
Hinckley	Severe: slope, poor filter.	Severe: slope, seepage.	Severe: slope, seepage, too sandy.	Severe: slope, seepage.	Poor: slope, too sandy, seepage.
Ha Hadley	Severe: flooding.	Severe: flooding, seepage.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage.	Good.
Hb Halsey	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness.	Severe: wetness, seepage.	Poor: seepage, too sandy, small stones.
HeA, HeB Hero	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, small stones.
HgA, HgB Hero Variant	Severe: wetness, percs slowly.	Severe: seepage, wetness.	Severe: wetness.	Severe: wetness.	Fair: too clayey, wetness.
HkA, HkB Hinckley	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: too sandy, seepage, small stones.
HkC Hinckley	Severe: poor filter.	Severe: slope, seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: too sandy, seepage, small stones.

See footnote at end of table.

TABLE 10.--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
HkD: Hinckley	Severe: slope, poor filter.	Severe: slope, seepage.	Severe: slope, seepage, too sandy.	Severe: slope, seepage.	Poor: slope, too sandy, seepage.
HoA, HoB: Hoosic	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: small stones, seepage, too sandy.
HoC: Hoosic	Severe: poor filter.	Severe: slope, seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: small stones, seepage, too sandy.
HoD: Hoosic	Severe: poor filter, slope.	Severe: slope, seepage.	Severe: slope, seepage, too sandy.	Severe: slope, seepage.	Poor: small stones, seepage, too sandy.
KeA: Kendaia	Severe: wetness, percs slowly.	Moderate: seepage.	Severe: wetness.	Severe: wetness.	Poor: small stones, wetness.
KeB: Kendaia	Severe: wetness, percs slowly.	Moderate: seepage, slope.	Severe: wetness.	Severe: wetness.	Poor: small stones, wetness.
KvA: Kendaia	Severe: wetness, percs slowly.	Moderate: seepage.	Severe: wetness.	Severe: wetness.	Poor: small stones, wetness.
KvB: Kendaia	Severe: wetness, percs slowly.	Moderate: seepage, slope.	Severe: wetness.	Severe: wetness.	Poor: small stones, wetness.
KvC: Kendaia	Severe: wetness, percs slowly.	Severe: slope.	Severe: wetness.	Severe: wetness.	Poor: small stones, wetness.
LdE*:					
Lanesboro	Severe: percs slowly, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
Dummerston	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: small stones, slope.
Lm: Limerick	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
LtE*:					
Lyman	Severe: slope, depth to rock.	Severe: slope, depth to rock, seepage.	Severe: slope, depth to rock, seepage.	Severe: slope, seepage, depth to rock.	Poor: slope, thin layer, small stones.

See footnote at end of table.

TABLE 10.--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
LtE*: Tunbridge	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, seepage, slope.	Poor: area reclaim, slope.
Ly Lyons	Severe: wetness, percs slowly.	Slight	Severe: wetness.	Severe: wetness.	Poor: wetness.
Lz Lyons	Severe: wetness, percs slowly.	Slight	Severe: wetness.	Severe: wetness.	Poor: small stones, wetness.
MeA, MeB Merrimac	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
MeC Merrimac	Severe: poor filter.	Severe: slope, seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
MeD Merrimac	Severe: slope, poor filter.	Severe: slope, seepage.	Severe: slope, seepage, too sandy.	Severe: slope, seepage.	Poor: slope, seepage, too sandy.
NeB Nellis	Severe: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Poor: small stones.
NeC Nellis	Severe: percs slowly.	Severe: slope.	Moderate: slope.	Moderate: slope.	Poor: small stones.
NeD Nellis	Severe: percs slowly, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: small stones, slope.
NsB Nellis	Severe: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Poor: small stones.
NsC Nellis	Severe: percs slowly.	Severe: slope.	Moderate: slope.	Moderate: slope.	Poor: small stones.
NsD Nellis	Severe: percs slowly, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: small stones, slope.
NvC Nellis	Severe: percs slowly.	Severe: slope.	Moderate: slope.	Moderate: slope.	Poor: small stones.
NvD Nellis	Severe: percs slowly, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: small stones, slope.
OaA, OaB Oakville	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.

See footnote at end of table.

TABLE 10.--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
OaC----------------- Oakville	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
OaD----------------- Oakville	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: seepage, slope, too sandy.	Severe: seepage, slope.	Poor: seepage, too sandy, slope.
Pc*:					
Palms---------------	Severe: subsides, ponding.	Severe: seepage, excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding, seepage.	Poor: ponding, excess humus.
Carlisle------------	Severe: subsides, ponding, percs slowly.	Severe: seepage, excess humus, ponding.	Severe: seepage, ponding, excess humus.	Severe: seepage, ponding.	Poor: ponding, excess humus.
PmC*:					
Peru----------------	Severe: wetness, percs slowly.	Severe: slope.	Severe: wetness.	Moderate: wetness, slope.	Fair: small stones, wetness, slope.
Marlow--------------	Severe: percs slowly.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: small stones, slope.
PoB*---------------- Pillsbury	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Pp*, Pq*. Pits					
PrB----------------- Pittsfield	Slight--------------	Severe: seepage.	Severe: seepage.	Severe: seepage.	Fair: small stones.
PrC----------------- Pittsfield	Moderate: slope.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Fair: small stones, slope.
PrD----------------- Pittsfield	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: slope.
PsB----------------- Pittsfield	Slight--------------	Severe: seepage.	Severe: seepage.	Severe: seepage.	Fair: small stones.
PsC----------------- Pittsfield	Moderate: slope.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Fair: slope, small stones.
PsD----------------- Pittsfield	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: slope.
PvB----------------- Pittsfield	Slight--------------	Severe: seepage.	Severe: seepage.	Severe: seepage.	Fair: small stones.

See footnote at end of table.

TABLE 10.--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
PvC: Pittsfield	Moderate: slope.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Fair: slope, small stones.
PvD: Pittsfield	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: slope.
PwE*:					
Pittsfield	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: slope.
Nellis	Severe: percs slowly, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: small stones, slope.
PyC*:					
Pittsfield	Slight	Severe: seepage.	Severe: seepage.	Severe: seepage.	Fair: small stones.
Urban land.					
Sa: Saco	Severe: flooding, wetness.	Severe: seepage, flooding, wetness.	Severe: flooding, wetness, seepage.	Severe: flooding, wetness.	Poor: wetness.
StB: Stockbridge	Severe: percs slowly.	Moderate: slope.	Slight	Slight	Fair: small stones.
StC: Stockbridge	Severe: percs slowly.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: slope, small stones.
StD: Stockbridge	Severe: slope, percs slowly.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
SvC: Stockbridge	Severe: percs slowly.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: small stones, slope.
SvD: Stockbridge	Severe: slope, percs slowly.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
TmC*:					
Taconic	Severe: depth to rock.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage.	Severe: depth to rock, seepage.	Poor: area reclaim, small stones.
Macomber	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: area reclaim, small stones.

See footnote at end of table.

TABLE 10.--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
TmE*:					
Taconic	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, seepage, slope.	Poor: area reclaim, small stones, slope.
Macomber	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: area reclaim, small stones, slope.
TuC*:					
Tunbridge	Severe: depth to rock.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage.	Severe: depth to rock, seepage.	Poor: area reclaim.
Lyman	Severe: depth to rock.	Severe: slope, depth to rock, seepage.	Severe: depth to rock, seepage.	Severe: seepage, depth to rock.	Poor: area reclaim, small stones, thin layer.
Ud. Udorthents					
Ur*. Urban land					
Wh Wareham	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, small stones.
Wy Winooski	Severe: flooding, wetness.	Severe: flooding, wetness, seepage.	Severe: flooding, wetness, seepage.	Severe: flooding, wetness, seepage.	Fair: wetness.

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

TABLE 11.--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
AmA, AmB, AmC Amenia	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
AmD Amenia	Fair: wetness, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
AsB, AsC Amenia	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
AsD Amenia	Fair: wetness, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
AvB, AvC Amenia	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
AvD Amenia	Fair: wetness, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
BmE*:				
Berkshire	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: large stones, slope.
Marlow	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
BrB* Brayton	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones, wetness.
CoA, CoB, CoC Copake	Good	Probable	Probable	Poor: small stones, area reclaim.
CoD Copake	Fair: slope.	Probable	Probable	Poor: small stones, area reclaim, slope.
CuC*:				
Copake	Good	Probable	Probable	Poor: small stones, area reclaim.
Urban land.				
DeA Deerfield	Fair: wetness.	Probable	Improbable: excess fines.	Poor: too sandy, thin layer.

See footnote at end of table.

TABLE 11.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
FaC*: Farmington	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones.
FcC*:				
Farmington	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones.
Rock outcrop.				
FcD*:				
Farmington	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones, slope.
Rock outcrop.				
FrA: Fredon	Poor: wetness.	Probable	Probable	Poor: small stones, area reclaim, wetness.
FwC*:				
Fullam	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
Lanesboro	Fair: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
GrA, GrB, GrC: Groton	Good	Probable	Probable	Poor: small stones, area reclaim.
GrD: Groton	Fair: slope.	Probable	Probable	Poor: small stones, area reclaim, slope.
GsE*:				
Groton	Poor: slope.	Probable	Probable	Poor: small stones, area reclaim, slope.
Hinckley	Poor: slope.	Probable	Probable	Poor: slope, too sandy, small stones.
Ha: Hadley	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
Hb: Halsey	Poor: wetness.	Probable	Probable	Poor: small stones, area reclaim, wetness.

See footnote at end of table.

TABLE 11.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
HeA, HeB: Hero	Fair: wetness.	Probable	Probable	Poor: small stones, area reclaim.
HgA, HgB: Hero Variant	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
HkA, HkB, HkC: Hinckley	Good	Probable	Probable	Poor: too sandy, area reclaim, small stones.
HkD: Hinckley	Fair: slope.	Probable	Probable	Poor: slope, too sandy, small stones.
HoA, HoB, HoC: Hoosic	Good	Probable	Probable	Poor: small stones, area reclaim.
HoD: Hoosic	Fair: slope.	Probable	Probable	Poor: small stones, area reclaim, slope.
KeA, KeB, KvA, KvB, KvC: Kendaia	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, wetness.
LdE*:				
Lanesboro	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Dummerston	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
Lm: Limerick	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
LtE*:				
Lyman	Poor: slope, thin layer, area reclaim.	Improbable: excess fines, thin layer.	Improbable: excess fines, thin layer.	Poor: slope, small stones, thin layer.
Tunbridge	Poor: area reclaim, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Ly, Lz: Lyons	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, wetness.

See footnote at end of table.

TABLE 11.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
MeA, MeB, MeC: Merrimac	Good	Probable	Probable	Poor: small stones, area reclaim.
MeD: Merrimac	Fair: slope.	Probable	Probable	Poor: slope, small stones, area reclaim.
NeB, NeC: Nellis	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
NeD: Nellis	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
NsB, NsC: Nellis	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
NsD: Nellis	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
NvC: Nellis	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
NvD: Nellis	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
OaA, OaB, OaC: Oakville	Good	Probable	Improbable: too sandy.	Poor: too sandy.
OaD: Oakville	Fair: slope.	Probable	Improbable: too sandy.	Poor: too sandy, slope.
Pc*:				
Palms	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness, excess humus.
Carlisle	Poor: wetness.	Improbable: excess humus.	Improbable: excess humus.	Poor: excess humus, wetness.
PmC*:				
Peru	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Marlow	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.

See footnote at end of table.

TABLE 11.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
PoB*: Pillsbury	Poor: thin layer, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: large stones, small stones, wetness.
Pp*, Pq*. Pits				
PrB, PrC: Pittsfield	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
PrD: Pittsfield	Fair: low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
PsB, PsC: Pittsfield	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
PsD: Pittsfield	Fair: slope, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
PvB, PvC: Pittsfield	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
PvD: Pittsfield	Fair: slope, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
PwE*:				
Pittsfield	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Nellis	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
PyC*:				
Pittsfield	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Urban land.				
Sa: Saco	Poor: wetness.	Probable	Improbable: too sandy.	Poor: wetness.
StB, StC: Stockbridge	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
StD: Stockbridge	Fair: slope, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope, small stones.
SvC: Stockbridge	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope, small stones.

See footnote at end of table.

TABLE 11.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
SvD: Stockbridge	Fair: slope, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
TmC*:				
Taconic	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones.
Macomber	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
TmE*:				
Taconic	Poor: area reclaim, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones, slope.
Macomber	Poor: area reclaim, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
TuC*:				
Tunbridge	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Lyman	Poor: thin layer, area reclaim.	Improbable: excess fines, thin layer.	Improbable: excess fines, thin layer.	Poor: small stones, area reclaim, thin layer.
Ud. Udorthents				
Ur*. Urban land				
Wh: Wareham	Poor: wetness.	Probable	Probable	Poor: wetness, too sandy, area reclaim.
Wy: Winooski	Fair: wetness, low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.

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

TABLE 12.--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-- Pond reservoir areas	Limitations for-- Embankments, dikes, and levees	Limitations for-- Aquifer-fed excavated ponds	Features affecting-- Drainage	Features affecting-- Terraces and diversions	Features affecting-- Grassed waterways
AmA----------------- Amenia	Moderate: seepage.	Moderate: seepage, piping, wetness.	Severe: no water.	Percs slowly, frost action.	Wetness, percs slowly.	Percs slowly.
AmB----------------- Amenia	Moderate: seepage, slope.	Moderate: seepage, piping, wetness.	Severe: no water.	Percs slowly, frost action, slope.	Wetness, percs slowly.	Percs slowly.
AmC, AmD----------- Amenia	Severe: slope.	Moderate: seepage, piping, wetness.	Severe: no water.	Percs slowly, frost action, slope.	Slope, wetness, percs slowly.	Slope, percs slowly.
AsB----------------- Amenia	Moderate: seepage, slope.	Moderate: seepage, piping, wetness.	Severe: no water.	Percs slowly, frost action, slope.	Wetness, percs slowly.	Percs slowly.
AsC, AsD----------- Amenia	Severe: slope.	Moderate: seepage, piping, wetness.	Severe: no water.	Percs slowly, frost action, slope.	Slope, wetness, percs slowly.	Slope, percs slowly.
AvB----------------- Amenia	Moderate: seepage, slope.	Moderate: seepage, piping, wetness.	Severe: no water.	Percs slowly, frost action, slope.	Wetness, percs slowly.	Percs slowly.
AvC, AvD----------- Amenia	Severe: slope.	Moderate: seepage, piping, wetness.	Severe: no water.	Percs slowly, frost action, slope.	Slope, wetness, percs slowly.	Slope, percs slowly.
BmE*:						
Berkshire---------	Severe: slope, seepage.	Severe: piping.	Severe: no water.	Deep to water	Slope, large stones.	Slope, large stones.
Marlow------------	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, percs slowly.	Slope, rooting depth, percs slowly.
BrB*--------------- Brayton	Moderate: slope.	Severe: piping, wetness.	Severe: no water.	Percs slowly, frost action, slope.	Wetness, percs slowly.	Wetness, droughty.
CoA, CoB----------- Copake	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Too sandy------	Favorable.
CoC, CoD----------- Copake	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, too sandy.	Slope.

See footnote at end of table.

TABLE 12.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Terraces and diversions	Grassed waterways
CuC*:						
Copake	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Too sandy	Favorable.
Urban land.						
DeA Deerfield	Severe: seepage.	Severe: seepage.	Severe: cutbanks cave.	Cutbanks cave	Wetness, too sandy.	Droughty.
FaC* Farmington	Severe: depth to rock, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, droughty, depth to rock.
FcC*, FcD*:						
Farmington	Severe: depth to rock, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, droughty, depth to rock.
Rock outcrop.						
FrA Fredon	Severe: seepage.	Severe: seepage, wetness.	Severe: cutbanks cave.	Frost action	Wetness, too sandy.	Wetness.
FwC*:						
Fullam	Severe: slope.	Severe: piping.	Severe: no water.	Percs slowly, slope.	Slope, large stones, erodes easily.	Large stones, slope, erodes easily.
Lanesboro	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, large stones, percs slowly.	Large stones, slope, percs slowly.
GrA, GrB Groton	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Too sandy	Droughty.
GrC, GrD Groton	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, too sandy.	Slope, droughty.
GsE*:						
Groton	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, too sandy.	Slope, droughty.
Hinckley	Severe: slope, seepage.	Severe: seepage.	Severe: no water.	Deep to water	Slope, large stones, too sandy.	Large stones, droughty, slope.
Ha Hadley	Severe: seepage.	Severe: piping.	Moderate: deep to water.	Deep to water	Erodes easily	Erodes easily.
Hb Halsey	Severe: seepage.	Severe: seepage, wetness.	Severe: cutbanks cave.	Frost action, cutbanks cave.	Wetness, too sandy.	Wetness.
HeA Hero	Severe: seepage.	Severe: seepage, wetness.	Severe: cutbanks cave.	Frost action, cutbanks cave.	Wetness, too sandy.	Favorable.

See footnote at end of table.

TABLE 12.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Terraces and diversions	Grassed waterways
HeB: Hero	Severe: seepage.	Severe: seepage, wetness.	Severe: cutbanks cave.	Frost action, slope, cutbanks cave.	Wetness, too sandy.	Favorable.
HgA: Hero Variant	Severe: seepage.	Severe: piping, wetness.	Severe: slow refill.	Frost action	Wetness	Favorable.
HgB: Hero Variant	Severe: seepage.	Severe: piping, wetness.	Severe: slow refill.	Frost action, slope.	Wetness	Favorable.
HkA, HkB: Hinckley	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Large stones, too sandy.	Large stones, droughty.
HkC, HkD: Hinckley	Severe: slope, seepage.	Severe: seepage.	Severe: no water.	Deep to water	Slope, large stones, too sandy.	Large stones, droughty, slope.
HoA, HoB: Hoosic	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Too sandy	Droughty.
HoC, HoD: Hoosic	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, too sandy.	Slope, droughty.
KeA: Kendaia	Moderate: seepage.	Severe: wetness.	Severe: no water.	Percs slowly, frost action.	Wetness, percs slowly.	Wetness, percs slowly.
KeB: Kendaia	Moderate: seepage, slope.	Severe: wetness.	Severe: no water.	Percs slowly, frost action, slope.	Wetness, percs slowly.	Wetness, percs slowly.
KvA: Kendaia	Moderate: seepage.	Severe: wetness.	Severe: no water.	Percs slowly, frost action.	Wetness, percs slowly.	Wetness, percs slowly.
KvB: Kendaia	Moderate: seepage, slope.	Severe: wetness.	Severe: no water.	Percs slowly, frost action, slope.	Wetness, percs slowly.	Wetness, percs slowly.
KvC: Kendaia	Severe: slope.	Severe: wetness.	Severe: no water.	Percs slowly, frost action, slope.	Wetness, percs slowly, slope.	Wetness, percs slowly, slope.
LdE*:						
Lanesboro	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, large stones, percs slowly.	Large stones, slope, percs slowly.
Dummerston	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, large stones.	Large stones, slope, droughty.
Lm: Limerick	Moderate: seepage.	Severe: piping, wetness.	Moderate: slow refill.	Flooding, frost action.	Wetness, erodes easily.	Wetness, erodes easily.

See footnote at end of table.

TABLE 12.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Terraces and diversions	Grassed waterways
LtE*:						
Lyman	Severe: slope, seepage, depth to rock.	Severe: thin layer, piping.	Severe: no water.	Deep to water	Slope, depth to rock, large stones.	Slope, large stones, depth to rock.
Tunbridge	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, large stones, depth to rock.	Large stones, slope, droughty.
Ly, Lz Lyons	Slight	Severe: wetness.	Severe: slow refill.	Percs slowly, frost action.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, rooting depth.
MeA, MeB Merrimac	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Too sandy	Favorable.
MeC, MeD Merrimac	Severe: slope, seepage.	Severe: seepage.	Severe: no water.	Deep to water	Slope, too sandy.	Slope.
NeB Nellis	Moderate: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Favorable	Rooting depth, droughty.
NeC, NeD Nellis	Severe: slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope	Slope, rooting depth, droughty.
NsB Nellis	Moderate: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Favorable	Droughty, rooting depth.
NsC, NsD, NvC, NvD Nellis	Severe: slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope	Slope, droughty, rooting depth.
OaA, OaB Oakville	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Too sandy, soil blowing.	Droughty.
OaC, OaD Oakville	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, too sandy, soil blowing.	Slope, droughty.
Pc*:						
Palms	Severe: seepage.	Severe: excess humus, ponding.	Severe: slow refill.	Ponding, subsides, frost action.	Ponding, soil blowing.	Wetness.
Carlisle	Severe: seepage.	Severe: excess humus, ponding.	Severe: slow refill.	Ponding, subsides, frost action.	Ponding, soil blowing.	Wetness.
PmC*:						
Peru	Severe: slope.	Severe: piping.	Severe: no water.	Percs slowly, frost action, slope.	Slope, wetness, percs slowly.	Slope, rooting depth, percs slowly.

See footnote at end of table.

TABLE 12.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Terraces and diversions	Grassed waterways
PmC*:						
Marlow	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, percs slowly.	Slope, rooting depth, percs slowly.
PoB* Pillsbury	Moderate: slope.	Severe: piping, wetness.	Severe: no water.	Percs slowly, large stones, slope.	Large stones, wetness, percs slowly.	Large stones, wetness, rooting depth.
Pp*, Pq*. Pits						
PrB Pittsfield	Severe: seepage.	Moderate: seepage, piping.	Severe: no water.	Deep to water	Favorable	Favorable.
PrC, PrD Pittsfield	Severe: seepage, slope.	Moderate: seepage, piping.	Severe: no water.	Deep to water	Slope	Slope.
PsB Pittsfield	Severe: seepage.	Moderate: seepage, piping, large stones.	Severe: no water.	Deep to water	Large stones	Large stones.
PsC, PsD Pittsfield	Severe: seepage, slope.	Moderate: seepage, piping, large stones.	Severe: no water.	Deep to water	Slope, large stones.	Slope, large stones.
PvB Pittsfield	Severe: seepage.	Moderate: seepage, piping, large stones.	Severe: no water.	Deep to water	Large stones	Large stones.
PvC, PvD Pittsfield	Severe: seepage, slope.	Moderate: seepage, piping, large stones.	Severe: no water.	Deep to water	Slope, large stones.	Slope, large stones.
PwE*:						
Pittsfield	Severe: seepage, slope.	Moderate: seepage, piping, large stones.	Severe: no water.	Deep to water	Slope, large stones.	Slope, large stones.
Nellis	Severe: slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope	Slope, droughty, rooting depth.
PyC*:						
Pittsfield	Severe: seepage.	Moderate: seepage, piping.	Severe: no water.	Deep to water	Favorable	Favorable.
Urban land.						
Sa Saco	Moderate: seepage.	Severe: piping, wetness.	Severe: cutbanks cave.	Flooding, frost action, poor outlets.	Wetness, poor outlets.	Wetness.

See footnote at end of table.

TABLE 12.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Terraces and diversions	Grassed waterways
StB---------------- Stockbridge	Moderate: slope.	Severe: piping.	Severe: no water.	Deep to water	Percs slowly---	Percs slowly.
StC, StD---------- Stockbridge	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, percs slowly.	Slope, percs slowly.
SvC, SvD---------- Stockbridge	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Percs slowly, slope.	Slope, percs slowly.
TmC*, TmE*: Taconic----------	Severe: depth to rock, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, large stones, depth to rock.	Large stones, slope, droughty.
Macomber----------	Severe: slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, large stones, depth to rock.	Large stones, slope, droughty.
TuC*: Tunbridge---------	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, large stones, depth to rock.	Large stones, slope, droughty.
Lyman-------------	Severe: slope, seepage, depth to rock.	Severe: thin layer, piping.	Severe: no water.	Deep to water	Slope, depth to rock, large stones.	Slope, large stones, depth to rock.
Ud. Udorthents						
Ur*. Urban land						
Wh----------------- Wareham	Severe: seepage.	Severe: seepage, wetness.	Severe: cutbanks cave.	Cutbanks cave	Wetness, too sandy.	Wetness, droughty.
Wy----------------- Winooski	Severe: seepage.	Severe: piping.	Severe: cutbanks cave.	Flooding, frost action, cutbanks cave.	Erodes easily, wetness.	Erodes easily.

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

TABLE 13--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	
AmA, AmB, AmC, AmD------------- Amenia	0-8	Silt loam--------	ML, CL-ML, SM, SC	A-4	0-5	80-100	75-95	60-95	35-85	<30	NP-10
	8-27	Silt loam, loam, gravelly fine sandy loam.	ML, GM, GC, CL	A-2, A-4	0-5	55-95	50-90	40-85	25-70	<30	NP-10
	27-60	Gravelly fine sandy loam, gravelly loam.	GM, GC, SM, SC	A-2, A-4	0-15	55-80	50-75	40-65	25-50	<30	NP-10
AsB, AsC, AsD---- Amenia	0-8	Silt loam--------	ML, SM, CL-ML, SC	A-2, A-4, A-1	5-10	55-80	50-75	35-70	20-65	<30	NP-10
	8-27	Silt loam, loam, gravelly fine sandy loam.	ML, GM, GC, CL	A-2, A-4	0-5	55-95	50-90	40-85	25-70	<30	NP-10
	27-60	Gravelly fine sandy loam, gravelly loam.	GM, GC, SM, SC	A-2, A-4	0-15	55-80	50-75	40-65	25-50	<30	NP-10
AvB, AvC, AvD---- Amenia	0-8	Silt loam-------- silt loam.	ML, SM, CL-ML, SC	A-2, A-4, A-1	5-25	55-80	50-75	35-70	20-65	<30	NP-10
	8-27	Silt loam, loam, gravelly fine sandy loam.	ML, GM, GC, CL	A-2, A-4	0-5	55-95	50-90	40-85	25-70	<30	NP-10
	27-60	Gravelly fine sandy loam, gravelly loam.	GM, GC, SM, SC	A-2, A-4	0-15	55-80	50-75	40-65	25-50	<30	NP-10
BmE*: Berkshire-------	0-2	Loam-------------	SM, ML	A-2, A-4, A-5	20-45	80-95	70-90	45-85	25-65	<50	NP-10
	2-27	Fine sandy loam, sandy loam, gravelly loam.	SM, ML	A-2, A-4, A-5	0-15	75-95	65-85	40-75	20-60	<50	NP-10
	27-60	Fine sandy loam, sandy loam, gravelly loam.	SM, ML	A-2, A-4	0-15	75-90	65-85	40-80	20-55	<20	NP-6
Marlow----------	0-3	Fine sandy loam.	SM, ML, CL-ML	A-2, A-4	10-30	90-100	75-90	45-85	25-65	<30	NP-10
	3-32	Fine sandy loam, loam, gravelly sandy loam.	SM, ML, SM-SC, CL-ML	A-2, A-4, A-1-B	0-15	75-95	60-90	40-85	20-65	<30	NP-10
	32-60	Fine sandy loam, loam, gravelly sandy loam.	SM, ML, SM-SC, CL-ML	A-2, A-4, A-1-B	0-15	70-90	60-85	35-80	20-60	<30	NP-10
BrB*------------- Brayton	0-9	Silt loam-------- loam.	SM, ML, GM, SC	A-1, A-2, A-4	10-25	65-95	55-90	35-90	20-80	<30	NP-10
	9-16	Fine sandy loam, gravelly silt loam, silt loam.	SM, ML, GM, SC	A-1, A-2, A-4	0-10	65-95	55-90	35-90	20-80	<30	NP-10
	16-60	Gravelly silt loam, gravelly fine sandy loam, loam.	SM, ML, GM, SC	A-1, A-2, A-4	0-10	65-95	55-90	35-85	20-70	<30	---

See footnote at end of table.

TABLE 13.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
CoA, CoB, CoC, CoD-------------- Copake	0-4	Fine sandy loam	ML, SM	A-2, A-4	0-5	80-95	75-90	50-85	30-80	<25	NP-4
	4-26	Gravelly fine sandy loam, gravelly silt loam, fine sandy loam.	ML, SM, GM	A-1, A-2, A-4	0-10	60-95	55-90	40-85	20-80	<25	NP-4
	26-60	Stratified gravelly loamy fine sand to very gravelly coarse sand.	GM, SM, GP, SP	A-1	0-20	40-75	30-70	15-50	2-20	---	NP
CuC*: Copake----------	0-4	Fine sandy loam	ML, SM	A-2, A-4	0-5	80-95	75-90	50-85	30-80	<25	NP-4
	4-26	Gravelly fine sandy loam, gravelly silt loam, fine sandy loam.	ML, SM, GM	A-1, A-2, A-4	0-10	60-95	55-90	40-85	20-80	<25	NP-4
	26-60	Stratified gravelly loamy fine sand to very gravelly coarse sand.	GM, SM, GP, SP	A-1	0-20	40-75	30-70	15-50	2-20	---	NP
Urban land.											
DeA-------------- Deerfield	0-6	Loamy fine sand	SP-SM, SM	A-1, A-2, A-3, A-4	0	95-100	80-100	40-75	5-40	---	NP
	6-48	Loamy fine sand, fine sand, coarse sand.	SM, SP-SM	A-1, A-2, A-3	0	95-100	80-100	40-75	5-30	---	NP
	48-60	Sand, loamy fine sand, coarse sand.	SP, SM	A-1, A-2, A-3	0	95-100	65-100	30-75	3-30	---	NP
FaC*------------- Farmington	0-9	Loam-------------	ML, CL, SM, SC	A-2, A-4, A-6	0-5	80-95	75-90	50-85	30-80	20-35	3-15
	9-17	Silt loam, loam, gravelly loam.	ML, CL, GM, GC	A-2, A-4, A-6, A-1	0-5	60-95	55-90	35-85	20-80	20-35	3-15
	17	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
FcC*, FcD*: Farmington------	0-9	Loam-------------	ML, CL, SM, SC	A-2, A-4, A-6	0-5	80-95	75-90	50-85	30-80	20-35	3-15
	9-17	Silt loam, loam, gravelly loam.	ML, CL, GM, GC	A-2, A-4, A-6, A-1	0-5	60-95	55-90	35-85	20-80	20-35	3-15
	17	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
FrA-------------- Fredon	0-8	Fine sandy loam	ML, CL, SC, SM	A-2, A-4, A-1	0-2	80-100	75-95	30-90	15-70	20-30	NP-10
	8-26	Loam, silt loam, fine sandy loam.	SM, GC, ML, CL	A-2, A-4, A-1	0-2	60-100	50-95	30-85	15-70	20-30	NP-10
	26-60	Stratified very gravelly sand to loamy fine sand.	GP, GM, GW, GW-GM	A-1, A-2	0-5	30-90	25-85	10-60	0-35	---	NP

See footnote at end of table.

TABLE 13.--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	
FwC*:											
Fullam----------	0-7	Very stony silt loam.	SM, SC, ML, CL	A-2, A-4, A-6	5-35	65-100	60-95	40-95	25-85	<35	NP-15
	7-20	Silt loam, channery silt loam, channery fine sandy loam.	SM, SC, ML, CL	A-2, A-4, A-6	0-15	60-100	55-95	40-95	20-85	<30	NP-15
	20-60	Silt loam, channery silt loam, channery fine sandy loam.	SM, SC, ML, CL	A-2, A-4, A-6	0-15	55-90	50-85	35-85	20-80	<30	NP-15
Lanesboro-------	0-2	Very stony silt loam.	ML, CL-ML, SM, SM-SC	A-2, A-4, A-6, A-7	10-20	60-90	45-85	40-85	30-75	24-45	4-14
	2-29	Channery silt loam, silt loam, loam.	ML, CL-ML, SM, SM-SC	A-2, A-4	0-10	65-95	50-90	45-90	30-80	22-35	2-10
	29-60	Channery loam, channery silt loam, loam.	ML, CL-ML, SM, SM-SC	A-2, A-4	0-10	65-90	50-85	45-85	30-75	20-32	2-8
GrA, GrB, GrC, GrD------------- Groton	0-6	Gravelly sandy loam.	SM, GM	A-2, A-4	0-10	55-85	45-70	30-60	15-50	---	NP
	6-15	Gravelly sandy loam, gravelly fine sandy loam, very gravelly sandy loam.	GM, GP-GM, SP-SM	A-1, A-2	0-20	55-85	30-70	20-50	10-30	---	NP
	15-60	Stratified gravelly loamy fine sand to extremely gravelly coarse sand.	SP, GP, GP-GM	A-1	0-25	35-70	20-55	10-35	0-15	---	NP
GsE*:											
Groton----------	0-6	Gravelly sandy loam.	SM, GM	A-2, A-4	0-10	55-85	45-70	30-60	15-50	---	NP
	6-15	Gravelly sandy loam, gravelly fine sandy loam, very gravelly sandy loam.	GM, GP-GM, SP-SM	A-1, A-2	0-20	55-85	30-70	20-50	10-30	---	NP
	15-60	Stratified gravelly loamy fine sand to extremely gravelly coarse sand.	SP, GP, GP-GM	A-1	0-25	35-70	20-55	10-35	0-15	---	NP

See footnote at end of table.

TABLE 13.--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	
GsE*: Hinckley	0-9	Gravelly sandy loam.	SM, SP-SM	A-1, A-2, A-3, A-4	0-10	60-95	40-75	20-70	2-40	<20	NP
	9-23	Gravelly loamy sand, loamy fine sand, very gravelly loamy sand.	SM, GM, GP-GM, SP-SM	A-1, A-2, A-3	0-20	50-95	30-85	15-70	2-30	<20	NP
	23-60	Stratified extremely gravelly loamy fine sand to cobbly coarse sand.	SP, SP-SM, GP, GP-GM	A-1	5-30	20-65	20-50	10-40	0-20	<10	NP
Ha: Hadley	0-8	Silt loam	ML, CL-ML	A-4	0	100	95-100	85-100	60-90	<30	NP-9
	8-60	Silt loam, very fine sandy loam, very fine sand.	ML, CL-ML	A-4	0	100	95-100	80-100	50-90	<39	NP-13
Hb: Halsey	0-10	Fine sandy loam	ML, CL, SM	A-2, A-4	0-2	80-100	75-100	35-90	25-90	20-30	3-10
	10-20	Loam, silt loam, fine sandy loam.	SM, GC, ML, CL	A-2, A-4	0-2	65-100	50-100	35-90	30-85	20-30	3-10
	20-60	Stratified sandy loam to very gravelly sand.	SP, GP, GM, SM	A-1, A-2, A-3	5-10	30-90	25-85	20-70	0-35	---	NP
HeA, HeB: Hero	0-8	Loam	SM, ML	A-2, A-4	0-5	80-100	75-95	55-90	30-80	<25	NP-4
	8-32	Loam, gravelly silt loam, gravelly fine sandy loam.	SM, ML, GM	A-1, A-2, A-4	0-10	60-95	55-90	40-85	20-80	<25	NP-4
	32-60	Stratified gravelly loamy fine sand to very gravelly coarse sand.	SP, GP, SM, GM	A-1	0-20	40-85	30-75	15-50	2-25	---	NP
HgA, HgB: Hero Variant	0-9	Gravelly loam	SM, ML, GM	A-2, A-4, A-1	0-5	65-75	60-75	40-75	25-65	<25	NP-4
	9-22	Gravelly sandy loam, loam, silt loam.	SM, ML, GM	A-2, A-4, A-1	0-10	65-95	50-100	30-100	20-90	<20	NP-2
	22-60	Silt loam, very fine sandy loam, silty clay loam.	ML, CL, CL-ML	A-4	0	95-100	95-100	80-100	50-95	<25	NP-10
HkA, HkB, HkC, HkD: Hinckley	0-9	Gravelly sandy loam.	SM, SP-SM	A-1, A-2, A-3, A-4	0-10	60-95	40-75	20-70	2-40	<20	NP
	9-23	Gravelly loamy sand, loamy fine sand, very gravelly loamy sand.	SM, GM, GP-GM, SP-SM	A-1, A-2, A-3	0-20	50-95	30-85	15-70	2-30	<20	NP
	23-60	Stratified extremely gravelly loamy fine sand to cobbly coarse sand.	SP, SP-SM, GP, GP-GM	A-1	5-30	20-65	20-50	10-40	0-20	<10	NP

See footnote at end of table.

TABLE 13.--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	
HoA, HoB--------- Hoosic	0-4	Gravelly fine sandy loam.	GM, SM, ML	A-1, A-2, A-4	5-10	55-80	50-70	30-70	15-60	30-45	2-10
	4-17	Gravelly sandy loam, very gravelly sandy loam, gravelly loam.	GM, SM, GP-GM, SP-SM	A-1, A-2, A-4	5-10	40-75	35-65	20-60	10-45	20-30	2-8
	17-60	Very gravelly sand, very gravelly loamy sand.	GM, GP, SP, SM	A-1	10-15	35-65	30-50	15-40	2-20	---	NP
HoC, HoD--------- Hoosic	0-6	Gravelly fine sandy loam.	GM, SM, ML	A-1, A-2, A-4	5-10	55-80	50-70	30-70	15-60	30-45	2-10
	6-23	Gravelly sandy loam, very gravelly sandy loam, gravelly loam.	GM, SM, GP-GM, SP-SM	A-1, A-2, A-4	5-10	40-75	35-65	20-60	10-45	20-30	2-8
	23-60	Very gravelly sand, very gravelly loamy sand.	GM, GP, SP, SM	A-1	10-15	35-65	30-50	15-40	2-20	---	NP
KeA, KeB--------- Kendaia	0-8	Silt loam--------	ML, SM, CL, SC	A-4, A-6	0-5	80-95	75-90	50-85	40-80	30-40	5-15
	8-26	Silt loam, loam, gravelly fine sandy loam.	CL-ML, CL, GC, SC	A-4, A-2, A-6	0-5	60-95	55-90	40-85	25-80	20-30	5-15
	26-60	Gravelly loam, gravelly silt loam, very gravelly fine sandy loam.	CL, GC, SC, CL-ML	A-4, A-2, A-6	5-10	40-75	35-70	25-65	15-60	20-30	5-15
KvA, KvB, KvC---- Kendaia	0-8	Silt loam-------- silt loam.	ML, SM, GM, GC	A-4, A-6, A-2	5-25	60-80	55-75	40-65	25-60	30-40	5-15
	8-26	Silt loam, loam, gravelly fine sandy loam.	SC, CL, GC, CL-ML	A-4, A-2, A-6	0-5	60-95	55-90	40-85	25-80	20-30	5-15
	26-60	Gravelly loam, gravelly silt loam, very gravelly fine sandy loam.	SC, CL, GC, CL-ML	A-4, A-2, A-6	5-10	40-75	35-70	25-65	15-60	20-30	5-15
LdE*:											
Lanesboro-------	0-2	Loam------------- loam.	ML, CL-ML, SM, SM-SC	A-2, A-4, A-6, A-7	10-20	60-90	45-85	40-85	30-75	24-45	4-14
	2-29	Gravelly silt loam, silt loam, loam.	ML, CL-ML, SM, SM-SC	A-2, A-4	0-10	65-95	50-90	45-90	30-80	22-35	2-10
	29-60	Gravelly loam, gravelly silt loam, loam.	ML, CL-ML, SM, SM-SC	A-2, A-4	0-10	65-90	50-85	45-85	30-75	20-32	2-8

See footnote at end of table.

TABLE 13.--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	
LdE*:											
Dummerston	0-10	Loam	ML, CL, SM, SC	A-2, A-4, A-6	5-35	80-95	75-90	50-85	30-80	20-35	3-15
	10-26	Silt loam, gravelly silt loam, gravelly fine sandy loam.	ML, CL, SM, SC	A-2, A-4, A-6	0-15	60-100	55-95	40-95	20-85	<30	NP-15
	26-60	Silt loam, gravelly silt loam, gravelly sandy loam.	ML, CL, SM, SC	A-2, A-4, A-6	0-15	50-90	45-85	30-85	20-75	<30	NP-15
Lm Limerick	0-10	Silt loam	ML	A-4	0	100	100	95-100	80-95	---	NP
	10-60	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	80-95	---	NP
LtE*:											
Lyman	0-3	Fine sandy loam.	SM, ML	A-1, A-2, A-4	10-30	55-80	55-90	30-75	15-70	<30	NP-6
	3-16	Loam, gravelly fine sandy loam, silt loam.	SM, ML	A-1, A-2, A-4	0-20	55-90	60-90	35-85	20-80	<30	NP-4
	16	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Tunbridge	0-1	Loam	SM, ML, GM	A-4, A-2	25-65	55-100	50-95	35-95	20-85	<20	NP-2
	1-20	Silt loam, gravelly fine sandy loam, gravelly fine sandy loam.	SM, ML	A-4, A-5, A-2	0-15	70-100	65-95	45-95	25-85	20-50	NP-6
	20-26	Silt loam, gravelly fine sandy loam, gravelly fine sandy loam.	SM, ML	A-2, A-4	0-15	70-100	65-95	45-95	25-85	<20	NP-2
	26	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Ly Lyons	0-9	Mucky silt loam	ML, CL, SM	A-5, A-7, A-2, A-4	0	80-100	75-100	50-95	30-90	35-45	5-15
	9-36	Silt loam, loam, fine sandy loam.	CL, GC, CL-ML, GM-GC	A-4, A-6, A-2	0-5	60-95	55-90	45-85	25-80	20-35	5-15
	36-60	Gravelly loam, silty clay loam, fine sandy loam.	CL, GC, SC, GM-GC	A-2, A-4, A-6, A-1	5-10	35-95	30-90	25-85	15-80	20-35	5-15
Lz Lyons	0-9	Mucky silt loam.	ML, OL, GM, SM	A-5, A-7, A-2, A-4	5-25	60-75	55-70	45-65	25-60	35-45	5-15
	9-36	Fine sandy loam, gravelly loam, silty clay loam.	CL, GC, CL-ML, GM-GC	A-4, A-6, A-2	0-5	60-95	55-90	45-85	25-80	20-35	5-15
	36-60	Gravelly loam, silt loam, very gravelly fine sandy loam.	CL, GC, SC, GM-GC	A-2, A-4, A-6, A-1	5-10	35-95	30-90	25-85	15-80	20-35	5-15

See footnote at end of table.

TABLE 13.--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	
MeA, MeB, MeC, MeD------------- Merrimac	0-9	Fine sandy loam	SM, ML	A-2, A-4	0	85-95	70-90	40-85	20-55	<20	NP
	9-22	Sandy loam-------	SM	A-2	0	75-95	70-90	40-60	20-35	<25	NP
	22-60	Stratified sand to very gravelly coarse sand.	GP, SP, SP-SM, GP-GM	A-1	5-25	40-65	30-60	15-40	0-10	---	NP
NeB, NeC, NeD---- Nellis	0-7	Loam-------------	ML, SM	A-4	0-5	80-100	75-95	50-95	35-85	30-35	1-5
	7-32	Loam, gravelly loam, gravelly fine sandy loam.	ML, GM, SM, CL-ML	A-2, A-4, A-1	0-5	55-95	50-90	35-90	20-80	20-25	1-5
	32-60	Sandy loam, gravelly loam, very gravelly fine sandy loam.	GM, SM, GM-GC, SM-SC	A-2, A-4, A-1	0-5	40-95	35-90	20-85	10-70	<25	NP-5
NsB, NsC, NsD---- Nellis	0-7	Very stony loam	ML, SM, GM	A-2, A-4, A-1	5-15	55-80	50-75	35-70	20-65	30-35	1-5
	7-32	Loam, silt loam, gravelly fine sandy loam.	ML, GM, SM, CL-ML	A-2, A-4, A-1	0-5	55-95	50-90	35-90	20-80	20-25	1-5
	32-60	Sandy loam, gravelly loam, very gravelly fine sandy loam.	GM-GC, GM, SM, SM-SC	A-1, A-2, A-4	0-5	40-95	35-90	20-85	10-70	<25	NP-5
NvC, NvD--------- Nellis	0-7	Extremely stony loam.	ML, SM, GM	A-2, A-4, A-1	5-25	55-80	50-75	35-70	20-65	30-35	1-5
	7-32	Loam, silt loam, gravelly fine sandy loam.	ML, GM, SM, CL-ML	A-2, A-4, A-1	0-5	55-95	50-90	35-90	20-80	20-25	1-5
	32-60	Sandy loam, gravelly loam, very gravelly fine sandy loam.	GM-GC, GM, SM, SM-SC	A-1, A-2, A-4	0-5	40-95	35-90	20-85	10-70	<25	NP-5
OaA, OaB, OaC, OaD------------- Oakville	0-8	Loamy sand-------	SM	A-2	0	100	100	55-75	15-25	---	NP
	8-60	Sand coarse, sand loamy fine sand.	SM, SP, SP-SM	A-2, A-3	0	100	95-100	65-95	0-25	---	NP
Pc*: Palms-----------	0-40	Sapric material	PT	A-8	---	---	---	---	---	---	---
	40-60	Silt 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
Carlisle--------	0-52	Sapric material	PT	A-8	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 13.--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	
PmC*:											
Peru	0-8	Fine sandy loam.	SM, ML, CL-ML, SC	A-2, A-4	10-30	90-100	75-90	45-85	25-60	<30	NP-10
	8-24	Fine sandy loam, loam, gravelly fine sandy loam.	SM, ML, SM-SC, CL-ML	A-2, A-4, A-1-B	0-15	75-95	60-90	40-85	20-65	<30	NP-10
	24-60	Fine sandy loam, loam, gravelly fine sandy loam.	SM, ML, SM-SC, CL-ML	A-2, A-4, A-1-B	0-15	70-95	55-95	35-80	20-60	<30	NP-10
Marlow	0-3	Fine sandy loam.	SM, ML, CL-ML	A-2, A-4	10-30	90-100	75-90	45-85	25-65	<30	NP-10
	3-32	Fine sandy loam, loam, gravelly sandy loam.	SM, ML, SM-SC, CL-ML	A-2, A-4, A-1-B	0-15	75-95	60-90	40-85	20-65	<30	NP-10
	32-60	Fine sandy loam, loam, gravelly sandy loam.	SM, ML, SM-SC, CL-ML	A-2, A-4, A-1-B	0-15	70-90	60-85	35-80	20-60	<30	NP-10
PoB*: Pillsbury	0-4	Loam	SM, ML	A-2, A-4	10-30	80-100	55-95	35-95	25-85	<25	NP-3
	4-22	Loam, fine sandy loam, gravelly fine sandy loam.	SM, ML	A-2, A-4	0-15	80-95	55-95	35-80	25-60	<25	NP-3
	22-60	Fine sandy loam, sandy loam, gravelly fine sandy loam.	SM, ML	A-2, A-4	0-15	80-95	55-95	35-80	25-60	<25	NP-3
Pp*, Pq*. Pits											
PrB, PrC, PrD: Pittsfield	0-9	Loam	ML, SM	A-2, A-4	0-5	80-100	75-100	55-90	30-75	<40	NP-6
	9-32	Fine sandy loam, loam, gravelly sandy loam.	SM, ML	A-1, A-2, A-4	0-20	75-95	70-90	40-80	20-70	<20	NP-4
	32-60	Fine sandy loam, loam, gravelly sandy loam.	SM, ML	A-1, A-2, A-4	10-25	75-95	65-90	40-80	20-70	<20	NP-3
PsB, PsC: Pittsfield	0-9	Fine sandy loam .	ML, SM	A-2, A-4	10-25	70-100	65-100	45-90	25-75	<40	NP-6
	9-32	Fine sandy loam, loam, gravelly sandy loam.	SM, ML	A-1, A-2, A-4	0-20	75-95	70-90	40-80	20-70	<20	NP-4
	32-60	Fine sandy loam, loam, gravelly sandy loam.	SM, ML	A-1, A-2, A-4	10-25	75-95	65-90	40-80	20-70	<20	NP-3
PsD: Pittsfield	0-9	Loam	ML, SM	A-2, A-4	10-25	70-100	65-100	45-90	25-75	<40	NP-6
	9-32	Fine sandy loam, loam, gravelly sandy loam.	SM, ML	A-1, A-2, A-4	0-20	75-95	70-90	40-80	20-70	<20	NP-4
	32-60	Fine sandy loam, loam, gravelly sandy loam.	SM, ML	A-1, A-2, A-4	10-25	75-95	65-90	40-80	20-70	<20	NP-3

See footnote at end of table.

TABLE 13.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments > 3 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct					Pct	
PvB, PvC, PvD---- Pittsfield	0-9	Loam-------------	ML, SM	A-2, A-4	20-35	65-100	60-90	40-80	25-70	<40	NP-6
	9-32	Fine sandy loam, loam, gravelly sandy loam.	SM, ML	A-1, A-2, A-4	0-20	75-95	70-90	40-80	20-70	<20	NP-4
	32-60	Fine sandy loam, loam, gravelly sandy loam.	SM, ML	A-1, A-2, A-4	10-25	75-95	65-90	40-80	20-70	<20	NP-3
PwE*:											
Pittsfield------	0-9	Loam-------------	ML, SM	A-2, A-4	20-35	65-100	60-90	40-80	25-70	<40	NP-6
	9-32	Fine sandy loam, loam, gravelly sandy loam.	SM, ML	A-1, A-2, A-4	0-20	75-95	70-90	40-80	20-70	<20	NP-4
	32-60	Fine sandy loam, loam, gravelly sandy loam.	SM, ML	A-1, A-2, A-4	10-25	75-95	65-90	40-80	20-70	<20	NP-3
Nellis----------	0-7	Loam-------------	ML, SM, GM	A-2, A-4, A-1	5-25	55-80	50-75	35-70	20-65	30-35	1-5
	7-32	Loam, silt loam, gravelly loam.	ML, GM, SM, CL-ML	A-2, A-4, A-1	0-5	55-95	50-90	35-90	20-80	20-25	1-5
	32-60	Sandy loam, gravelly loam, very gravelly fine sandy loam.	GM-GC, GM, SM, SM-SC	A-1, A-2, A-4	0-5	40-95	35-90	20-85	10-70	<25	NP-5
PyC*:											
Pittsfield------	0-9	Loam-------------	ML, SM	A-2, A-4	0-5	80-100	75-100	55-90	30-75	<40	NP-6
	9-32	Fine sandy loam, loam, gravelly sandy loam.	SM, ML	A-1, A-2, A-4	0-20	75-95	70-90	40-80	20-70	<20	NP-4
	32-60	Fine sandy loam, loam, gravelly sandy loam.	SM, ML	A-1, A-2, A-4	10-25	75-95	65-90	40-80	20-70	<20	NP-3
Urban land.											
Sa--------------- Saco	0-10	Silt loam--------	ML	A-4	0	100	100	95-100	70-95	<40	NP-10
	10-60	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	70-95	<40	NP-10

See footnote at end of table.

TABLE 13.--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	
StB, StC, StD----Stockbridge	0-7	Gravelly silt loam.	ML, CL-ML, SM	A-4	0-10	70-80	60-70	45-65	35-55	20-40	3-12
	7-24	Loam, silt loam, gravelly silt loam.	ML, CL-ML	A-4	0-10	70-95	65-90	60-85	50-75	20-40	3-12
	24-60	Loam, silt loam, gravelly fine sandy loam.	ML, CL-ML, SM, GM	A-4, A-2	0-10	50-95	45-85	40-80	30-75	15-40	NP-12
SvC, SvD---------Stockbridge	0-7	Very stony silt loam.	ML, CL-ML, SM	A-4	5-15	70-95	60-90	45-85	35-75	20-40	3-12
	7-24	Loam, silt loam, gravelly silt loam.	ML, CL-ML	A-4	0-10	70-95	65-90	60-85	50-75	20-40	3-12
	24-60	Loam, silt loam, gravelly fine sandy loam.	ML, CL-ML, SM, GM	A-4, A-2	0-10	50-95	45-85	40-80	30-75	15-40	NP-12
TmC*: Taconic---------	0-7	Gravelly silt loam.	SM, ML, CL-ML, CL	A-2, A-4, A-6	5-40	55-80	50-75	40-75	30-70	15-35	3-15
	7-14	Gravelly loam, very gravelly loam, very gravelly silt loam.	GM, GC, SM, GM-GC	A-1, A-2, A-4, A-6	5-15	30-60	25-55	20-55	15-50	15-30	3-15
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Macomber--------	0-9	Loam-------------	SM, ML, CL-ML, CL	A-4, A-6	5-30	55-80	50-75	40-75	30-70	15-35	3-15
	9-24	Gravelly loam, very gravelly loam, very gravelly silt loam.	GM, GM-GC, GC	A-1, A-2, A-4, A-6	5-15	30-55	25-50	20-50	15-45	15-35	3-15
	24	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
TmE*: Taconic---------	0-3	Gravelly silt loam.	SM, ML, CL-ML, CL	A-2, A-4, A-6	5-40	55-80	50-75	40-75	30-70	15-35	3-15
	3-14	Gravelly loam, very gravelly loam, very gravelly silt loam.	GM, GC, SM, GM-GC	A-1, A-2, A-4, A-6	5-15	30-60	25-55	20-55	15-50	15-30	3-15
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 13.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments > 3 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
TmE*:											
Macomber	0-9	Loam	SM, ML, CL-ML, CL	A-4, A-6	5-30	55-80	50-75	40-75	30-70	15-35	3-15
	9-24	Gravelly loam, very gravelly loam, very gravelly silt loam.	GM, GM-GC, GC	A-1, A-2, A-4, A-6	5-15	30-55	25-50	20-50	15-45	15-35	3-15
	24	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
TuC*:											
Tunbridge	0-1	loam	SM, ML, GM	A-4, A-2	25-65	55-100	50-95	35-95	20-85	<20	NP-2
	1-26	Silt loam, fine sandy loam, fine sandy loam.	SM, ML	A-4, A-5, A-2	0-15	70-100	65-95	45-95	25-85	20-50	NP-6
	26	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Lyman	0-3	Fine sandy loam.	SM, ML	A-1, A-2, A-4	10-30	55-80	55-90	30-75	15-70	<30	NP-6
	3-16	Loam, gravelly fine sandy loam, silt loam.	SM, ML	A-1, A-2, A-4	0-20	55-90	60-90	35-85	20-80	<30	NP-4
	16	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Ud. Udorthents											
Ur*. Urban land											
Wh Wareham	0-6	Loamy fine sand	SM, SP-SM	A-1, A-2	0	85-100	75-100	40-85	10-35	---	NP
	6-18	Loamy coarse sand, loamy fine sand, sand.	SM, SP-SM	A-1, A-2, A-3	0	85-100	75-100	35-85	5-35	---	NP
	18-60	Loamy coarse sand, loamy sand, fine sand.	SM, SP-SM, SP	A-1, A-2, A-3	0	85-100	75-100	25-75	0-30	---	NP
Wy Winooski	0-12	Silt loam	ML, SM	A-4	0	100	95-100	90-100	40-90	<30	NP
	12-60	Silt loam, very fine sandy loam, loamy very fine sand.	ML, SM	A-4	0	100	95-100	90-100	40-90	<30	NP

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

TABLE 14.--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 "Organic matter" apply only to the surface layer. Absence of an entry indicates that data were not available or were not estimated)

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Erosion factors K	Erosion factors T	Organic matter
	In	Pct	G/cc	In/hr	In/in	pH			Pct
AmA, AmB, AmC, AmD------------- Amenia	0-8	5-18	1.10-1.40	0.6-2.0	0.13-0.20	5.6-7.8	0.32	3	2-6
	8-27	5-18	1.30-1.60	0.6-2.0	0.08-0.19	5.6-7.8	0.24		
	27-60	5-18	1.70-1.95	0.06-0.2	0.08-0.12	7.4-8.4	0.24		
AsB, AsC, AsD---- Amenia	0-8	5-18	1.10-1.40	0.6-2.0	0.09-0.16	5.6-7.8	0.24	3	---
	8-27	5-18	1.30-1.60	0.6-2.0	0.08-0.19	5.6-7.8	0.24		
	27-60	5-18	1.70-1.95	0.06-0.2	0.08-0.12	7.4-8.4	0.24		
AvB, AvC, AvD---- Amenia	0-8	5-18	1.10-1.40	0.6-2.0	0.09-0.16	5.6-7.8	0.24	3	---
	8-27	5-18	1.30-1.60	0.6-2.0	0.08-0.19	5.6-7.8	0.24		
	27-60	5-18	1.70-1.95	0.06-0.2	0.08-0.12	7.4-8.4	0.24		
BmE*:									
Berkshire-------	0-2	3-10	1.10-1.15	0.6-6.0	0.06-0.22	3.6-6.0	0.20	3	2-5
	2-27	3-10	1.15-1.30	0.6-6.0	0.10-0.20	3.6-6.0	0.32		
	27-60	1-10	1.30-1.60	0.6-6.0	0.10-0.18	3.6-6.0	0.24		
Marlow----------	0-3	3-10	1.00-1.30	0.6-2.0	0.08-0.15	3.6-6.0	0.20	3	---
	3-32	3-10	1.30-1.60	0.6-2.0	0.06-0.20	3.6-6.0	0.32		
	32-60	3-10	1.70-2.05	0.06-0.6	0.05-0.12	3.6-6.0	0.20		
BrB*------------- Brayton	0-9	4-10	1.00-1.30	0.6-6.0	0.18-0.28	3.6-6.0	0.20	3	---
	9-16	4-10	1.40-1.65	0.6-6.0	0.12-0.28	5.1-6.5	0.32		
	16-60	4-10	1.70-2.00	<0.2	0.01-0.06	5.6-7.3	0.24		
CoA, CoB, CoC, CoD------------- Copake	0-4	4-18	1.10-1.40	0.6-6.0	0.14-0.22	4.5-7.3	0.32	3	2-5
	4-26	4-18	1.25-1.55	0.6-6.0	0.10-0.20	5.1-7.3	0.24		
	26-60	1-10	1.45-1.70	>20	0.01-0.06	6.1-8.4	0.10		
CuC*:									
Copake----------	0-4	4-18	1.10-1.40	0.6-6.0	0.14-0.22	4.5-7.3	0.32	3	2-5
	4-26	4-18	1.25-1.55	0.6-6.0	0.10-0.20	5.1-7.3	0.24		
	26-60	1-10	1.45-1.70	>20	0.01-0.06	6.1-8.4	0.10		
Urban land.									
DeA-------------- Deerfield	0-6	2-7	1.00-1.20	6.0-20	0.07-0.13	4.5-6.0	0.17	5	1-4
	6-48	1-7	1.20-1.45	6.0-20	0.01-0.13	4.5-6.0	0.17		
	48-60	0-5	1.40-1.50	>6.0	0.01-0.08	4.5-6.0	0.17		
FaC*------------- Farmington	0-9	10-27	1.10-1.40	0.6-2.0	0.11-0.19	6.1-6.5	0.32	2	2-6
	9-17	10-27	1.20-1.50	0.6-2.0	0.07-0.18	6.1-7.8	0.32		
	17	---	---	---	---	---	----		
FcC*, FcD*:									
Farmington------	0-9	10-27	1.10-1.40	0.6-2.0	0.11-0.19	6.1-6.5	0.32	2	2-6
	9-17	10-27	1.20-1.50	0.6-2.0	0.07-0.18	6.1-7.8	0.32		
	17	---	---	---	---	---	----		
Rock outcrop.									
FrA-------------- Fredon	0-8	7-20	1.20-1.40	0.6-2.0	0.12-0.20	6.1-7.3	0.28	3	3-5
	8-26	7-20	1.20-1.40	0.2-2.0	0.12-0.20	6.1-7.3	0.24		
	26-60	2-10	1.30-1.50	6.0-20	0.02-0.06	6.1-8.4	0.10		

See footnote at end of table.

TABLE 14.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Erosion factors K	Erosion factors T	Organic matter
	In	Pct	G/cc	In/hr	In/in	pH			Pct
FwC*:									
Fullam	0-7	2-10	1.00-1.20	0.6-2.0	0.10-0.20	4.5-6.0	0.20	3	2-4
	7-20	2-10	1.20-1.40	0.6-2.0	0.10-0.20	4.5-6.0	0.37		
	20-60	2-10	1.80-2.00	0.06-0.2	0.09-0.20	4.5-6.0	0.28		
Lanesboro	0-2	2-12	1.00-1.20	0.6-2.0	0.13-0.20	4.5-6.0	0.20	3	---
	2-29	2-12	1.25-1.50	0.6-2.0	0.13-0.20	4.5-6.0	0.37		
	29-60	1-12	1.75-1.90	0.06-0.2	0.07-0.16	4.5-6.0	0.28		
GrA, GrB, GrC, GrD: Groton	0-6	2-8	1.00-1.30	2.0-6.0	0.07-0.15	5.6-7.3	0.17	3	1-4
	6-15	2-6	1.25-1.50	2.0-6.0	0.04-0.12	5.6-7.3	0.17		
	15-60	0-2	1.40-1.70	>20	0.01-0.06	6.6-8.4	0.10		
GsE*:									
Groton	0-6	2-8	1.00-1.30	2.0-6.0	0.07-0.15	5.6-7.3	0.17	3	1-4
	6-15	2-6	1.25-1.50	2.0-6.0	0.04-0.12	5.6-7.3	0.17		
	15-60	0-2	1.40-1.70	>20	0.01-0.06	6.6-8.4	0.10		
Hinckley	0-9	4-8	1.00-1.20	6.0-20	0.03-0.18	3.6-6.0	0.17	3	2-7
	9-23	1-5	1.20-1.40	6.0-20	0.01-0.10	3.6-6.0	0.17		
	23-60	0-3	1.30-1.50	>20	0.01-0.06	3.6-6.0	0.10		
Ha: Hadley	0-8	4-10	1.20-1.50	0.6-2.0	0.15-0.25	5.1-7.3	0.49	5	2-5
	8-60	2-10	1.20-1.50	2.0-6.0	0.13-0.20	5.1-7.3	0.49		
Hb: Halsey	0-10	7-25	1.10-1.30	0.6-2.0	0.14-0.24	5.6-7.3	0.24	5	3-5
	10-20	7-25	1.20-1.40	0.6-6.0	0.12-0.18	5.6-7.3	0.24		
	20-60	2-10	1.40-1.60	6.0-20	0.02-0.07	6.1-8.4	0.10		
HeA, HeB: Hero	0-8	3-15	1.10-1.40	0.6-6.0	0.15-0.24	5.6-7.3	0.32	3	2-5
	8-32	3-15	1.30-1.55	0.6-6.0	0.10-0.20	5.6-7.8	0.24		
	32-60	0-5	1.40-1.70	>6.0	0.01-0.06	7.4-8.4	0.10		
HgA, HgB: Hero Variant	0-9	3-12	1.10-1.20	0.6-6.0	0.11-0.18	5.6-7.3	0.20	3	2-5
	9-22	3-12	1.30-1.50	0.6-6.0	0.07-0.22	5.6-7.8	----		
	22-60	5-35	1.30-1.60	0.2-0.6	0.14-0.22	6.6-8.4	----		
HkA, HkB, HkC, HkD: Hinckley	0-9	4-8	1.00-1.20	6.0-20	0.03-0.18	3.6-6.0	0.17	3	2-7
	9-23	1-5	1.20-1.40	6.0-20	0.01-0.10	3.6-6.0	0.17		
	23-60	0-3	1.30-1.50	>20	0.01-0.06	3.6-6.0	0.10		
HoA, HoB: Hoosic	0-4	1-10	1.10-1.40	2.0-6.0	0.05-0.12	4.5-5.5	0.17	3-2	2-6
	4-17	1-10	1.25-1.55	2.0-6.0	0.05-0.11	4.5-5.5	0.17		
	17-60	0-5	1.45-1.65	>60	0.01-0.05	4.5-6.0	0.17		
HoC, HoD: Hoosic	0-6	1-10	1.10-1.40	2.0-6.0	0.05-0.12	4.5-5.5	0.17	3-2	2-6
	6-23	1-10	1.25-1.55	2.0-6.0	0.05-0.11	4.5-5.5	0.17		
	23-60	0-5	1.45-1.65	>60	0.01-0.05	4.5-6.0	0.17		
KeA, KeB: Kendaia	0-8	10-27	1.10-1.40	0.6-2.0	0.12-0.19	6.1-7.3	0.32	3	3-10
	8-26	18-27	1.20-1.50	0.6-2.0	0.09-0.18	6.1-7.8	0.24		
	26-60	18-27	1.70-1.95	0.06-0.2	0.05-0.14	7.4-8.4	0.24		
KvA, KvB, KvC: Kendaia	0-8	10-27	1.10-1.40	0.6-2.0	0.10-0.16	6.1-7.3	0.24	3	---
	8-26	18-27	1.20-1.50	0.6-2.0	0.09-0.18	6.1-7.8	0.24		
	26-60	18-27	1.70-1.95	0.06-0.2	0.09-0.14	7.4-8.4	0.24		

See footnote at end of table.

TABLE 14.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Erosion factors K	Erosion factors T	Organic matter
	In	Pct	G/cc	In/hr	In/in	pH			Pct
LdE*:									
Lanesboro	0-2	2-12	1.00-1.20	0.6-2.0	0.13-0.20	4.5-6.0	0.20	3	---
	2-29	2-12	1.25-1.50	0.6-2.0	0.13-0.20	4.5-6.0	0.37		
	29-60	1-12	1.75-1.90	0.06-0.2	0.07-0.16	4.5-6.0	0.28		
Dummerston	0-10	2-10	1.00-1.20	0.6-2.0	0.11-0.21	4.5-6.0	0.28	3	2-4
	10-26	2-10	1.20-1.40	0.6-2.0	0.10-0.21	4.5-6.0	0.28		
	26-60	2-10	1.40-1.60	0.6-2.0	0.07-0.20	4.5-6.0	0.28		
Lm	0-10	4-10	1.10-1.50	0.6-2.0	0.18-0.30	5.6-7.3	0.49	3	2-5
Limerick	10-31	2-10	1.10-1.50	0.6-2.0	0.18-0.26	5.6-7.3	0.49		
	31-60	1-8	1.20-1.50	0.6-2.0	0.18-0.25	5.6-7.3	0.49		
LtE*:									
Lyman	0-3	2-10	0.75-1.20	2.0-6.0	0.11-0.23	3.6-6.0	0.20	2	---
	3-16	2-10	0.90-1.40	2.0-6.0	0.08-0.28	3.6-6.0	0.32		
	16	---	---	---	---	---	----		
Tunbridge	0-1	5-9	0.80-1.20	0.6-6.0	0.10-0.19	3.6-6.0	0.15	2	---
	1-20	3-9	1.20-1.40	0.6-6.0	0.10-0.21	3.6-6.0	0.20		
	20-26	3-7	1.20-1.50	0.6-6.0	0.09-0.15	5.1-6.5	0.20		
	26	---	---	---	---	---	----		
Ly	0-9	15-30	1.10-1.40	0.2-2.0	0.20-0.30	5.6-7.3	0.37	---	---
Lyons	9-36	18-28	1.20-1.50	0.2-2.0	0.08-0.18	6.1-7.8	0.37		
	36-60	18-28	1.70-1.95	<0.2	0.06-0.15	7.4-8.4	0.28		
Lz	0-9	15-30	1.10-1.40	0.2-2.0	0.11-0.16	5.6-7.3	0.28	5	---
Lyons	9-36	18-28	1.20-1.50	0.2-2.0	0.08-0.18	6.1-7.8	0.37		
	36-60	18-28	1.70-1.95	<0.2	0.06-0.15	7.4-8.4	0.28		
MeA, MeB, MeC,									
MeD	0-9	3-7	1.10-1.20	2.0-6.0	0.14-0.19	3.6-6.0	0.24	3	1-5
Merrimac	9-22	1-4	1.20-1.40	2.0-6.0	0.14-0.17	3.6-6.0	0.24		
	22-60	0-3	1.30-1.50	6.0-20	0.01-0.06	3.6-6.0	0.10		
NeB, NeC, NeD	0-7	5-18	1.30-1.60	0.6-2.0	0.13-0.20	5.6-7.3	0.32	3	2-6
Nellis	7-32	5-18	1.40-1.70	0.6-2.0	0.08-0.19	5.6-7.3	0.24		
	32-60	3-18	1.70-1.95	0.2-2.0	0.07-0.19	7.4-8.4	0.24		
NsB, NsC, NsD	0-7	5-18	1.30-1.60	0.6-2.0	0.10-0.19	5.6-7.3	0.24	3	2-6
Nellis	7-32	5-18	1.40-1.70	0.6-2.0	0.08-0.19	5.6-7.3	0.24		
	32-60	3-18	1.70-1.95	0.2-2.0	0.07-0.11	7.4-8.4	0.24		
NvC, NvD	0-7	5-18	1.30-1.60	0.6-2.0	0.10-0.19	5.6-7.3	0.24	3	2-6
Nellis	7-32	5-18	1.40-1.70	0.6-2.0	0.08-0.19	5.6-7.3	0.24		
	32-60	3-18	1.70-1.95	0.2-2.0	0.07-0.11	7.4-8.4	0.24		
OaA, OaB, OaC,									
OaD	0-8	2-14	1.30-1.55	6.0-20	0.09-0.12	5.6-7.3	0.17	5	.5-2
Oakville	8-60	0-10	1.30-1.65	6.0-20	0.06-0.10	5.6-7.3	0.15		
Pc*:									
Palms	0-40	---	0.25-0.45	0.2-6.0	0.35-0.45	5.1-7.3	----	2	>75
	40-60	7-35	1.45-1.75	0.2-2.0	0.14-0.22	6.1-7.3	----		
Carlisle	0-52	---	0.13-0.23	0.2-6.0	0.35-0.45	5.1-7.3	----	2	>70

See footnote at end of table.

TABLE 14.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Erosion factors K	Erosion factors T	Organic matter
	In	Pct	G/cc	In/hr	In/in	pH			Pct
PmC*:									
Peru------------	0-8	3-10	1.00-1.30	0.6-2.0	0.07-0.22	3.6-6.0	0.20	3	---
	8-24	3-10	1.30-1.60	0.6-2.0	0.06-0.20	3.6-6.0	0.32		
	24-60	3-10	1.60-2.05	0.06-0.6	0.05-0.12	3.6-6.0	0.24		
Marlow----------	0-3	3-10	1.00-1.30	0.6-2.0	0.08-0.15	3.6-6.0	0.20	3	---
	3-32	3-10	1.30-1.60	0.6-2.0	0.06-0.20	3.6-6.0	0.32		
	32-60	3-10	1.70-2.05	0.06-0.6	0.05-0.12	3.6-6.0	0.20		
PoB*------------- Pillsbury	0-4	2-10	1.00-1.30	0.6-2.0	0.06-0.21	4.5-5.5	0.20	3	---
	4-22	2-10	1.20-1.60	0.6-2.0	0.04-0.20	4.5-5.5	0.32		
	22-60	2-10	1.80-2.00	0.06-0.2	0.01-0.05	4.5-6.0	0.24		
Pp*, Pq*. Pits									
PrB, PrC, PrD---- Pittsfield	0-9	2-10	1.40-1.60	0.6-6.0	0.13-0.20	4.5-7.3	0.24	3	2-6
	9-32	4-14	1.50-1.80	0.6-6.0	0.11-0.18	5.1-7.3	0.32		
	32-60	1-10	1.60-1.80	2.0-6.0	0.09-0.17	5.6-8.4	0.24		
PsB, PsC, PsD---- Pittsfield	0-9	2-10	1.40-1.60	0.6-6.0	0.11-0.18	4.5-7.3	0.20	3	---
	9-32	4-14	1.50-1.80	0.6-6.0	0.11-0.18	5.1-7.3	0.32		
	32-60	1-10	1.60-1.80	2.0-6.0	0.09-0.17	5.6-8.4	0.24		
PvB, PvC, PvD---- Pittsfield	0-9	2-10	1.40-1.60	0.6-6.0	0.10-0.16	4.5-7.3	0.20	3	---
	9-32	4-14	1.50-1.80	0.6-6.0	0.11-0.18	5.1-7.3	0.32		
	32-60	1-10	1.60-1.80	2.0-6.0	0.09-0.17	5.6-8.4	0.24		
PwE*:									
Pittsfield------	0-9	2-10	1.40-1.60	0.6-6.0	0.10-0.16	4.5-7.3	0.20	3	---
	9-32	4-14	1.50-1.80	0.6-6.0	0.11-0.18	5.1-7.3	0.32		
	32-60	1-10	1.60-1.80	2.0-6.0	0.09-0.17	5.6-8.4	0.24		
Nellis----------	0-7	5-18	1.30-1.60	0.6-2.0	0.10-0.19	5.6-7.3	0.24	3	2-6
	7-32	5-18	1.40-1.70	0.6-2.0	0.08-0.19	5.6-7.3	0.24		
	32-60	3-18	1.70-1.95	0.2-2.0	0.07-0.11	7.4-8.4	0.24		
PyC*:									
Pittsfield------	0-9	2-10	1.40-1.60	0.6-6.0	0.13-0.20	4.5-7.3	0.24	3	2-6
	9-32	4-14	1.50-1.80	0.6-6.0	0.11-0.18	5.1-7.3	0.32		
	32-60	1-10	1.60-1.80	2.0-6.0	0.09-0.17	5.6-8.4	0.24		
Urban land.									
Sa--------------- Saco	0-10	4-15	1.00-1.40	0.6-2.0	0.20-0.30	5.1-7.3	0.49	5	3-10
	10-60	2-15	1.20-1.50	0.6-2.0	0.16-0.26	5.1-7.3	0.64		
StB, StC, StD---- Stockbridge	0-7	5-17	1.00-1.25	0.6-2.0	0.08-0.21	5.1-7.3	0.24	3	2-6
	7-24	5-17	1.40-1.65	0.6-2.0	0.08-0.24	5.6-7.8	0.37		
	24-60	3-17	1.60-1.85	0.06-0.6	0.08-0.22	6.1-8.4	0.24		
SvC, SvD--------- Stockbridge	0-7	5-17	1.00-1.25	0.6-2.0	0.11-0.25	5.1-7.3	0.24	3	---
	7-24	5-17	1.40-1.65	0.6-2.0	0.08-0.24	5.6-7.8	0.43		
	24-60	3-17	1.60-1.85	0.06-0.6	0.08-0.22	6.1-8.4	0.24		

See footnote at end of table.

TABLE 14.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Erosion factors K	Erosion factors T	Organic matter
	In	Pct	G/cc	In/hr	In/in	pH			Pct
TmC*:									
Taconic---------	0-7	10-27	1.10-1.40	0.6-6.0	0.09-0.15	4.5-5.5	0.24	2	2-6
	7-14	10-27	1.20-1.50	0.6-6.0	0.04-0.11	4.5-5.5	0.24		
	14	---	---	---	---	---	----		
Macomber--------	0-9	10-27	1.10-1.40	0.6-2.0	0.09-0.15	4.5-5.5	0.24	3	2-6
	9-24	10-27	1.20-1.50	0.6-2.0	0.04-0.11	4.5-5.5	0.24		
	24	---	---	---	---	---	----		
TmE*:									
Taconic---------	0-3	10-27	1.10-1.40	0.6-6.0	0.09-0.15	4.5-5.5	0.24	2	2-6
	3-14	10-27	1.20-1.50	0.6-6.0	0.04-0.11	4.5-5.5	0.24		
	14	---	---	---	---	---	----		
Macomber--------	0-9	10-27	1.10-1.40	0.6-2.0	0.09-0.15	4.5-5.5	0.24	3	2-6
	9-24	10-27	1.20-1.50	0.6-2.0	0.04-0.11	4.5-5.5	0.24		
	24	---	---	---	---	---	----		
TuC*:									
Tunbridge-------	0-1	5-9	0.80-1.20	0.6-6.0	0.10-0.19	3.6-6.0	0.15	2	---
	1-26	3-9	1.20-1.40	0.6-6.0	0.10-0.21	3.6-6.0	0.20		
	26	---	---	---	---	---	----		
Lyman-----------	0-3	2-10	0.75-1.20	2.0-6.0	0.11-0.23	3.6-6.0	0.20	2	---
	3-16	2-10	0.90-1.40	2.0-6.0	0.08-0.28	3.6-6.0	0.32		
	16	---	---	---	---	---	----		
Ud. Udorthents									
Ur*. Urban land									
Wh--------------- Wareham	0-6	1-3	1.00-1.20	6.0-20	0.06-0.15	3.6-6.5	0.17	5	2-5
	6-18	0-3	1.30-1.50	6.0-20	0.03-0.13	3.6-6.5	0.17		
	18-60	0-2	1.40-1.60	6.0-20	0.01-0.10	3.6-6.0	0.10		
Wy--------------- Winooski	0-12	5-18	1.15-1.35	0.6-6.0	0.15-0.23	4.5-7.3	0.49	5	2-5
	12-60	2-10	1.20-1.50	0.6-6.0	0.13-0.21	4.5-7.3	0.49		

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

TABLE 15.--SOIL AND WATER FEATURES

("Flooding" and "water table" and terms such as "rare," "brief," "apparent," and "perched" are explained in the text. The symbol < means less than; > means more than. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

Soil name and map symbol	Hydro-logic group	Flooding			High water table			Bedrock		Potential frost action
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness	
					Ft			In		
AmA, AmB, AmC, AmD, AsB, AsC, AsD, AvB, AvC, AvD-------------- Amenia	B	None--------	---	---	1.5-3.0	Perched	Nov-May	>60	---	High.
BmE*:										
Berkshire--------	B	None--------	---	---	>6.0	---	---	>60	---	Moderate.
Marlow-----------	C	None--------	---	---	2.0-3.5	Perched	Mar-Apr	>60	---	Moderate.
BrB*-------------- Brayton	C	None--------	---	---	0-1.5	Perched	Nov-May	>60	---	High.
CoA, CoB, CoC, CoD-------------- Copake	B	None--------	---	---	>6.0	---	---	>60	---	Moderate.
CuC*:										
Copake-----------	B	None--------	---	---	>6.0	---	---	>60	---	Moderate.
Urban land.										
DeA--------------- Deerfield	B	None--------	---	---	1.5-3.0	Apparent	Dec-Apr	>60	---	Moderate.
FaC*-------------- Farmington	C	None--------	---	---	>6.0	---	---	10-20	Hard	Moderate.
FcC*, FcD*:										
Farmington-------	C	None--------	---	---	>6.0	---	---	10-20	Hard	Moderate.
Rock outcrop.										
FrA--------------- Fredon	C	None--------	---	---	0-1.5	Apparent	Oct-Jun	>60	---	High.
FwC*:										
Fullam-----------	C	None--------	---	---	1.5-3.0	Perched	Nov-Apr	>60	---	Moderate.
Lanesboro--------	C	None--------	---	---	1.5-2.5	Perched	Feb-Apr	>60	---	Moderate.
GrA, GrB, GrC, GrD-------------- Groton	A	None--------	---	---	>6.0	---	---	>60	---	Low.
GsE*:										
Groton-----------	A	None--------	---	---	>6.0	---	---	>60	---	Low.
Hinckley---------	A	None--------	---	---	>6.0	---	---	>60	---	Low.
Ha---------------- Hadley	B	Occasional	Brief-----	Feb-Apr	4.0-6.0	Apparent	Nov-Apr	>60	---	High.
Hb---------------- Halsey	D	None--------	---	---	0-0.5	Apparent	Sep-Jun	>60	---	High.

See footnote at end of table.

TABLE 15.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding: Frequency	Flooding: Duration	Flooding: Months	High water table: Depth	High water table: Kind	High water table: Months	Bedrock: Depth	Bedrock: Hardness	Potential frost action
					Ft			In		
HeA, HeB: Hero	B	None	---	---	1.5-2.5	Apparent	Nov-Apr	>60	---	High.
HgA, HgB: Hero Variant	B	None	---	---	1.5-3.0	Apparent	Nov-Apr	>60	---	High.
HkA, HkB, HkC, HkD: Hinckley	A	None	---	---	>6.0	---	---	>60	---	Low.
HoA: Hoosic	A	None	---	---	>6.0	---	---	>60	---	Low.
HoB, HoC, HoD: Hoosic	A	None	---	---	>6.0	---	---	>60	---	Low.
KeA, KeB, KvA, KvB, KvC: Kendaia	C	None	---	---	0.5-1.5	Perched	Nov-May	>60	---	High.
LdE*: Lanesboro	C	None	---	---	1.5-2.5	Perched	Feb-Apr	>60	---	Moderate.
Dummerston	B	None	---	---	>6.0	---	---	>60	---	Moderate.
Lm: Limerick	C	Frequent	Brief	Jan-Jun	0.5-1.5	Apparent	Nov-Jun	>60	---	High.
LtE*: Lyman	D	None	---	---	>6.0	---	---	8-20	Hard	Moderate.
Tunbridge	C	None	---	---	>6.0	---	---	20-40	Hard	Moderate.
Ly, Lz: Lyons	D	None	---	---	+1-0.5	Apparent	Nov-Jun	>60	---	High.
MeA, MeB, MeC, MeD: Merrimac	A	None	---	---	>6.0	---	---	>60	---	Low.
NeB, NeC, NeD, NsB, NsC, NsD, NvC, NvD: Nellis	B	None	---	---	>6.0	---	---	>60	---	Moderate.
OaA, OaB, OaC, OaD: Oakville	A	None	---	---	>6.0	---	---	>60	---	Low.
Pc*: Palms	D	None	---	---	+1-1.0	Apparent	Nov-May	>60	---	High.
Carlisle	D	None	---	---	+.5-1.0	Apparent	Sep-Jun	>60	---	High.
PmC*: Peru	C	None	---	---	1.5-2.5	Perched	Nov-May	>60	---	High.
Marlow	C	None	---	---	2.0-3.5	Perched	Mar-Apr	>60	---	Moderate.
PoB*: Pillsbury	C	None	---	---	0-1.5	Perched	Nov-May	>60	---	High.

See footnote at end of table.

TABLE 15.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydro-logic group	Flooding			High water table			Bedrock		Potential frost action
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness	
					Ft			In		
Pp*, Pq*. Pits										
PrB, PrC, PrD, PsB, PsC---------- Pittsfield	B	None---------	---	---	>6.0	---	---	>60	---	Moderate.
PsD, PvB, PvC, PvD--------------- Pittsfield	B	None---------	---	---	>6.0	---	---	>60	---	Moderate.
PwE*:										
Pittsfield--------	B	None---------	---	---	>6.0	---	---	>60	---	Moderate.
Nellis------------	B	None---------	---	---	>6.0	---	---	>60	---	Moderate.
PyC*:										
Pittsfield--------	B	None---------	---	---	>6.0	---	---	>60	---	Moderate.
Urban land.										
Sa----------------- Saco	D	Frequent-----	Brief------	Oct-May	0-0.5	Apparent	Sep-Jun	>60	---	High.
StB, StC, StD, SvC, SvD---------- Stockbridge	C	None---------	---	---	>6.0	---	---	>60	---	Moderate.
TmC*, TmE*:										
Taconic-----------	D	None---------	---	---	>6.0	---	---	10-20	Hard	Moderate.
Macomber----------	C	None---------	---	---	>6.0	---	---	20-40	Hard	Moderate.
TuC*:										
Tunbridge---------	C	None---------	---	---	>6.0	---	---	20-40	Hard	Moderate.
Lyman-------------	D	None---------	---	---	>6.0	---	---	8-20	Hard	Moderate.
Ud. Udorthents										
Ur*. Urban land										
Wh----------------- Wareham	C	None---------	---	---	0-1.5	Apparent	Sep-Jun	>60	---	Moderate.
Wy----------------- Winooski	B	Frequent-----	Brief------	Feb-Apr	1.5-3.0	Apparent	Nov-Apr	>60	---	High.

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

TABLE 16.--CLASSIFICATION OF THE SOILS

Soil name	Family or higher taxonomic class
Amenia	Coarse-loamy, mixed, mesic Aquic Eutrochrepts
Berkshire	Coarse-loamy, mixed, frigid Typic Haplorthods
Brayton	Coarse-loamy, mixed, nonacid fridig Aeric Haplaquepts
Carlisle	Euic, mesic Typic Medisaprists
Copake	Coarse-loamy over sandy or sandy-skeletal, mixed, mesic Dystric Eutrochrepts
Deerfield	Mixed, mesic Aquic Udipsamments
Dummerston	Coarse-loamy, mixed, frigid Typic Dystrochrepts
Farmington	Loamy, mixed, mesic Lithic Eutrochrepts
Fredon	Coarse-loamy over sandy or sandy-skeletal, mixed, nonacid, mesic Aeric Haplaquepts
Fullam	Coarse-loamy, mixed, frigid Aquic Dystrochrepts
Groton	Sandy-skeletal, mixed, mesic Typic Eutrochrepts
Hadley	Coarse-silty, mixed, nonacid, mesic Typic Udifluvents
Halsey	Coarse-loamy over sandy or sandy-skeletal, mixed, nonacid, mesic Mollic Haplaquepts
Hero	Coarse-loamy over sandy or sandy-skeletal, mixed, mesic Aquic Eutrochrepts
Hero Variant	Coarse-loamy, mixed, mesic Aquic Euthrochrepts
Hinckley	Sandy-skeletal, mixed, mesic Typic Udorthents
Hoosic	Sandy-skeletal, mixed, mesic Typic Dystrochrepts
Kendaia	Fine-loamy, mixed, nonacid, mesic Aeric Haplaquepts
Lanesboro	Coarse-loamy, mixed, frigid Typic Dystrochrepts
Limerick	Coarse-silty, mixed, nonacid, mesic Typic Fluvaquents
Lyman	Loamy, mixed, frigid Lithic Haplorthods
Lyons	Fine-loamy, mixed, nonacid, mesic Mollic Haplaquepts
Macomber	Loamy-skeletal, mixed, frigid Typic Dystrochrepts
Marlow	Coarse-loamy, mixed, frigid Typic Haplorthods
Merrimac	Sandy, mixed, mesic Typic Dystrochrepts
Nellis	Coarse-loamy, mixed, mesic Typic Eutrochrepts
Oakville	Mixed, mesic Typic Udipsamments
Palms	Loamy, mixed, euic, mesic Terric Medisaprists
Peru	Coarse-loamy, mixed, frigid Aquic Haplorthods
Pillsbury	Coarse-loamy, mixed, acid, frigid Aeric Haplaquepts
Pittsfield	Coarse-loamy, mixed, mesic Dystric Eutrochrepts
Saco	Coarse-silty, mixed, nonacid, mesic Fluvaquentic Humaquepts
Stockbridge	Coarse-loamy, mixed, mesic Dystric Eutrochrepts
Taconic	Loamy-skeletal, mixed, frigid Lithic Dystrochrepts
Tunbridge	Coarse-loamy, mixed, frigid Typic Haplorthods
Udorthents	Udorthents
Wareham	Mixed, mesic Humaqueptic Psammaquents
Winooski	Coarse-silty, mixed, nonacid, mesic Aquic Udifluvents

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