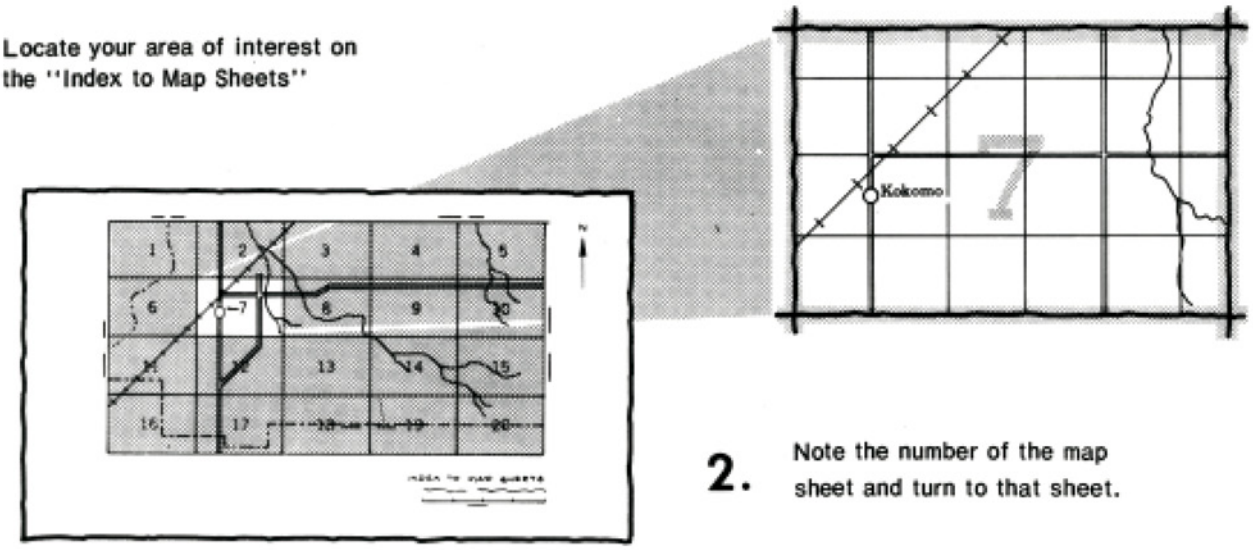
Soil survey of
Hampshire County, Massachusetts
Central part

U.S. Department of Agriculture, Soil Conservation Service
in cooperation with Massachusetts Agricultural Experiment Station

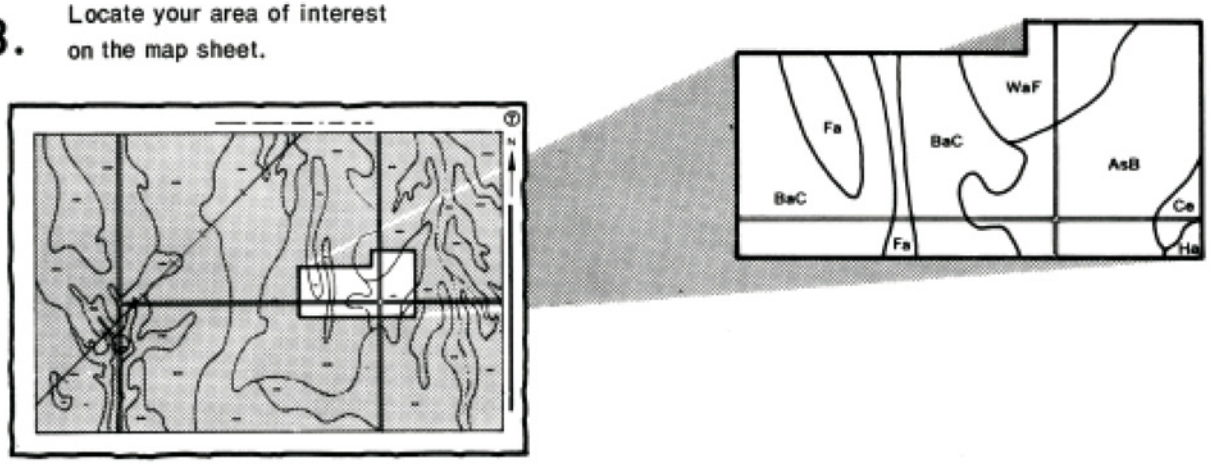
HOW TO USE

1. Locate your area of interest on the "Index to Map Sheets"

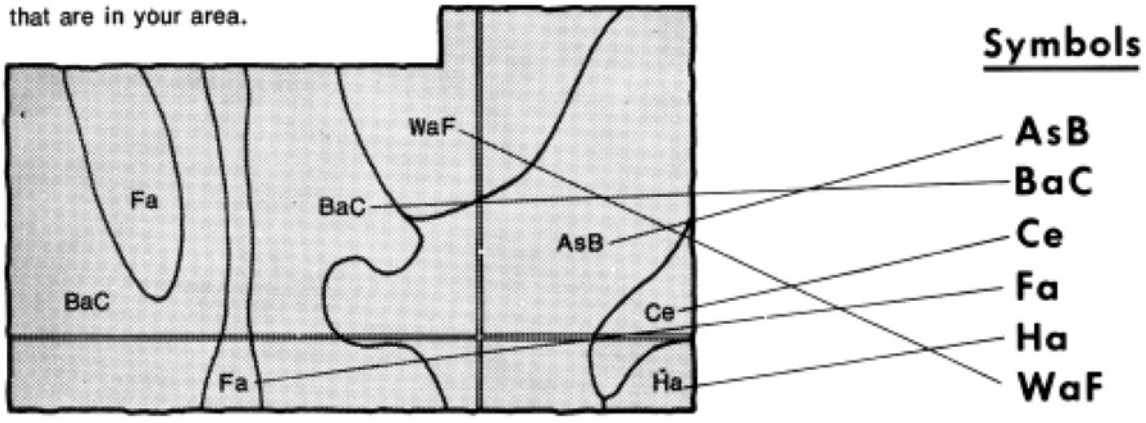


2. Note the number of the map sheet and turn to that sheet.

3. Locate your area of interest on the map sheet.

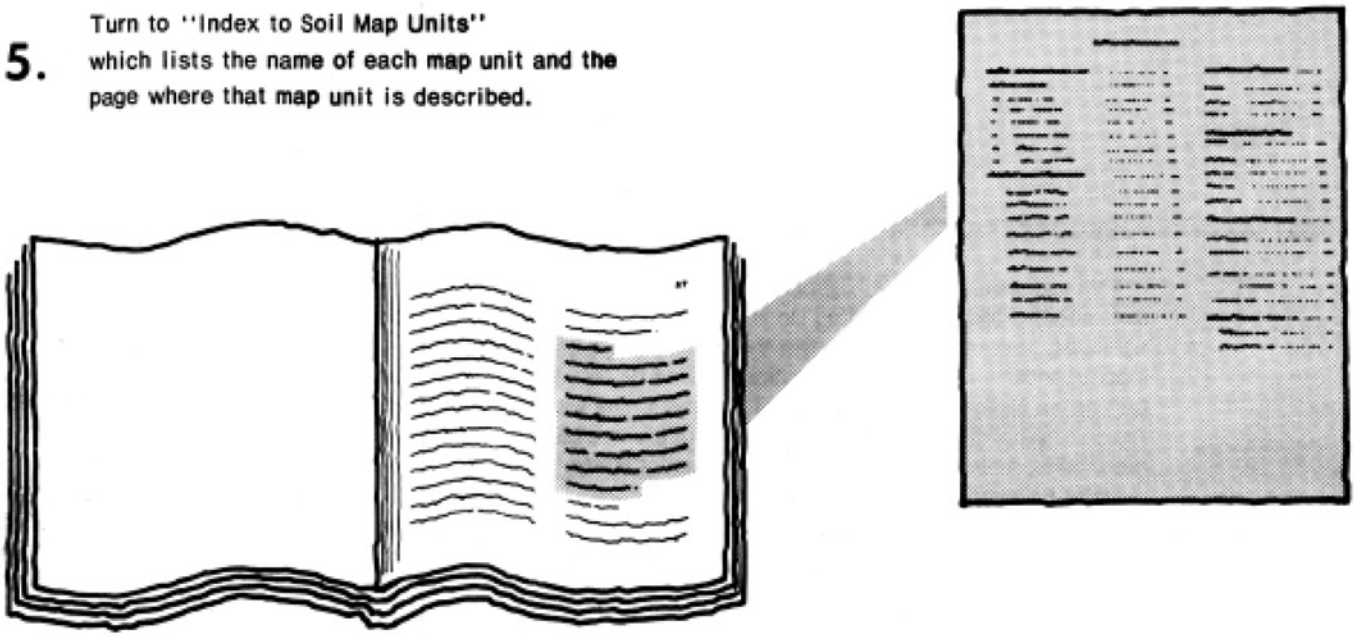


4. List the map unit symbols that are in your area.

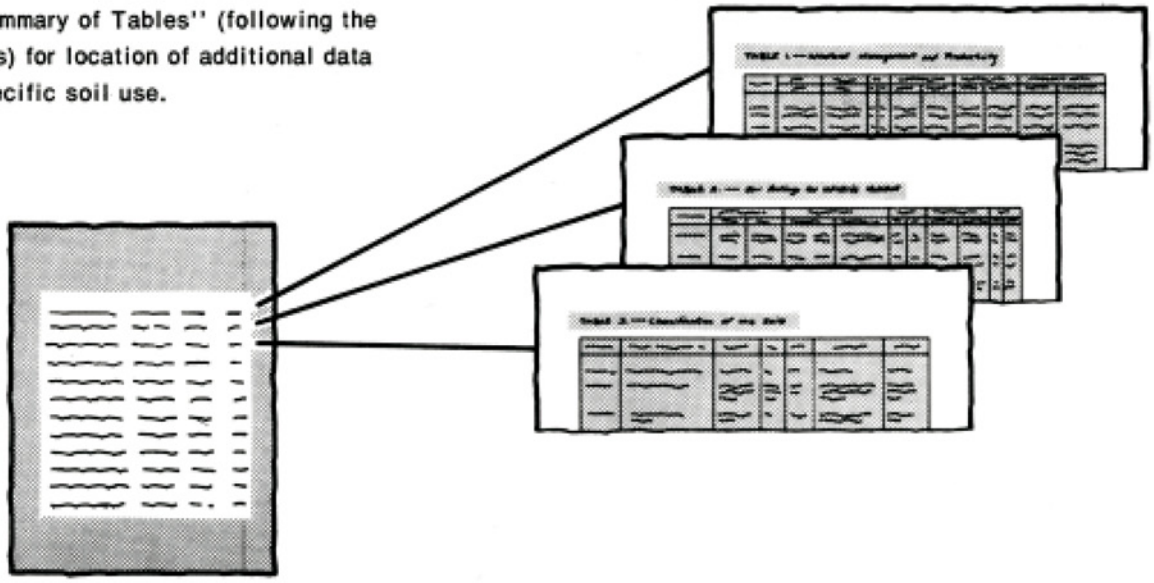


THIS SOIL SURVEY

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 performed in the period 1963-78. Soil names and descriptions were approved in 1980. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1979. This survey was made cooperatively by the Soil Conservation Service and the Massachusetts Agricultural Experiment Station. It is part of the technical assistance furnished to the Hampshire Conservation District.

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: Large areas of Hadley and Winooski soils are farmed in the Connecticut River Valley.

contents

Index to map units iv
Summary of tables vii
Preface ix
General nature of the survey area 1
Climate 1
Natural resources 2
Farming 3
How this survey was made 3
General soil map units 4
Soil descriptions 4
Detailed soil map units 7
Soil descriptions 7
Prime farmland 45
Use and management of the soils 47
Crops and pasture 47
Woodland management and productivity 49
Recreation 50
Wildlife habitat 51
Engineering 53
Soil properties 57
Engineering index properties 57
Physical and chemical properties 58
Soil and water features 59
Classification of the soils 61
Soil series and their morphology 61
References 81
Glossary 83
Tables 89

soil series

Agawam series 61
Amostown series 62
Belgrade series 62
Boxford series 63
Charlton series 63
Deerfield series 64
Enosburg series 64
Freetown series 65
Gloucester series 65
Hadley series 66
Haven series 66
Hinckley series 67
Hollis series 67
Holyoke series 68
Limerick series 68
Maybid series 69
Merrimac series 69
Montauk series 70
Narragansett series 70
Ninigret series 71
Paxton series 71
Pollux series 72
Pootatuck series 72
Raynham series 73
Ridgebury series 73
Rippowam series 74
Saco series 74
Scarboro series 74
Scitico series 75
Scituate series 75
Sudbury series 76
Suncook series 76
Swansea series 77
Udorthents 77
Walpole series 77
Wethersfield series 78
Whitman series 78
Windsor series 79
Winooski series 79
Woodbridge series 80

Issued December 1981

index to map units

AgA—Agawam fine sandy loam, 0 to 3 percent slopes 7
AgB—Agawam fine sandy loam, 3 to 8 percent slopes 7
AgC—Agawam fine sandy loam, 8 to 15 percent slopes 8
AmA—Amostown fine sandy loam, 0 to 3 percent slopes 9
AmB—Amostown fine sandy loam, 3 to 8 percent slopes 9
Au—Amostown-Windsor silty substratum-Urban land complex 9
BaA—Belgrade silt loam, 0 to 3 percent slopes 10
BaB—Belgrade silt loam, 3 to 8 percent slopes 10
BoA—Boxford silt loam, 0 to 3 percent slopes 11
BoB—Boxford silt loam, 3 to 8 percent slopes 11
BoC—Boxford silt loam, 8 to 15 percent slopes 12
CkB—Charlton fine sandy loam, 3 to 8 percent slopes 12
CkC—Charlton fine sandy loam, 8 to 15 percent slopes 13
CmB—Charlton stony fine sandy loam, 3 to 8 percent slopes 13
CmC—Charlton stony fine sandy loam, 8 to 15 percent slopes 13
CnB—Charlton very stony fine sandy loam, 3 to 8 percent slopes 13
CnC—Charlton very stony fine sandy loam, 8 to 15 percent slopes 13
CnD—Charlton very stony fine sandy loam, 15 to 25 percent slopes 13
CoE—Charlton and Gloucester very stony fine sandy loams, steep 14
CpC—Charlton-Hollis fine sandy loams, rocky, 3 to 15 percent slopes 14
CpD—Charlton-Hollis fine sandy loams, rocky, 15 to 25 percent slopes 14
CrC—Charlton-Rock outcrop-Hollis complex, sloping 15
CrE—Charlton-Rock outcrop-Hollis complex, steep 15
DeA—Deerfield loamy fine sand, 0 to 5 percent slopes 15
Du—Dumps 16
EsA—Enosburg fine sandy loam, 0 to 3 percent slopes 16
EsB—Enosburg fine sandy loam, 3 to 8 percent slopes 16
Fm—Freetown muck 17
GfB—Gloucester fine sandy loam, 3 to 8 percent slopes 17
GfC—Gloucester fine sandy loam, 8 to 15 percent slopes 17
GhB—Gloucester stony fine sandy loam, 3 to 8 percent slopes 17
GhC—Gloucester stony fine sandy loam, 8 to 15 percent slopes 17
GxB—Gloucester very stony fine sandy loam, 3 to 8 percent slopes 18
GxC—Gloucester very stony fine sandy loam, 8 to 15 percent slopes 18
GxD—Gloucester very stony fine sandy loam, 15 to 25 percent slopes 18
Ha—Hadley silt loam 18
Hd—Hadley-Winooski-Urban land complex 19
HfB—Haven very fine sandy loam, 3 to 8 percent slopes 20
HfC—Haven very fine sandy loam, 8 to 20 percent slopes 20
HgA—Hinckley loamy sand, 0 to 3 percent slopes 20
HgB—Hinckley loamy sand, 3 to 8 percent slopes 20
HgC—Hinckley loamy sand, 8 to 15 percent slopes 21
HgD—Hinckley loamy sand, 15 to 25 percent slopes 21
HgE—Hinckley loamy sand, 25 to 35 percent slopes 21
Hu—Hinckley-Merrimac-Urban land complex 22
HvC—Holyoke stony very fine sandy loam, 3 to 15 percent slopes 22
Lk—Limerick silt loam 23
Ma—Maybid silt loam 23
MeA—Merrimac fine sandy loam, 0 to 3 percent slopes 24
MeB—Merrimac fine sandy loam, 3 to 8 percent slopes 24
MeC—Merrimac fine sandy loam, 8 to 15 percent slopes 24
MeD—Merrimac fine sandy loam, 15 to 25 percent slopes 24
MoB—Montauk fine sandy loam, 3 to 8 percent slopes 25
MoC—Montauk fine sandy loam, 8 to 15 percent slopes 25
MsC—Montauk stony fine sandy loam, 3 to 15 percent slopes 25
MxB—Montauk very stony fine sandy loam, 3 to 8 percent slopes 26
MxC—Montauk very stony fine sandy loam, 8 to 15 percent slopes 26
MxD—Montauk very stony fine sandy loam, 15 to 25 percent slopes 26

NaC—Narragansett-Holyoke-Rock outcrop complex, 8 to 15 percent slopes 26
NaD—Narragansett-Holyoke-Rock outcrop complex, 15 to 25 percent slopes 26
NgA—Ninigret fine sandy loam, 0 to 3 percent slopes 26
NgB—Ninigret fine sandy loam, 3 to 8 percent slopes 27
PaB—Paxton fine sandy loam, 3 to 8 percent slopes 27
PaC—Paxton fine sandy loam, 8 to 15 percent slopes 27
PaD—Paxton fine sandy loam, 15 to 25 percent slopes 27
PbB—Paxton stony fine sandy loam, 3 to 8 percent slopes 28
PbC—Paxton stony fine sandy loam, 8 to 15 percent slopes 28
PbD—Paxton stony fine sandy loam, 15 to 25 percent slopes 28
PcB—Paxton very stony fine sandy loam, 3 to 8 percent slopes 28
PcC—Paxton very stony fine sandy loam, 8 to 15 percent slopes 28
PcD—Paxton very stony fine sandy loam, 15 to 25 percent slopes 28
PcE—Paxton very stony fine sandy loam, steep 29
Pd—Paxton-Charlton-Urban land complex 29
Pg—Pits, gravel 29
PuA—Pollux fine sandy loam, 0 to 3 percent slopes . 30
PuB—Pollux fine sandy loam, 3 to 8 percent slopes . 30
PuC—Pollux fine sandy loam, 8 to 15 percent slopes 30
Pv—Pootatuck fine sandy loam 30
Qu—Quarries 31
Ra—Raynham silt loam 31
RdA—Ridgebury fine sandy loam, 0 to 3 percent slopes 31
RdB—Ridgebury fine sandy loam, 3 to 8 percent slopes 31
ReA—Ridgebury very stony fine sandy loam, 0 to 3 percent slopes 32
ReB—Ridgebury very stony fine sandy loam, 3 to 8 percent slopes 32
Rm—Rippowam fine sandy loam 32
Ro—Rock outcrop 33
RoC—Rock outcrop-Narragansett-Holyoke complex, sloping 33
RoE—Rock outcrop-Narragansett-Holyoke complex, steep 33
Sa—Saco silt loam 33
Sb—Scarboro muck 34
Sc—Scitico silt loam 35
SgB—Scituate fine sandy loam, 3 to 8 percent slopes 35
ShB—Scituate very stony fine sandy loam, 3 to 8 percent slopes 35
ShC—Scituate very stony fine sandy loam, 8 to 15 percent slopes 35
SrA—Sudbury fine sandy loam, 0 to 3 percent slopes 36
SrB—Sudbury fine sandy loam, 3 to 8 percent slopes 36
Su—Suncook loamy fine sand 36
Sw—Swansea muck 37
Ud—Udorthents, smooth 37
Wa—Walpole fine sandy loam 37
WeB—Wethersfield fine sandy loam, 3 to 8 percent slopes 38
WeC—Wethersfield fine sandy loam, 8 to 15 percent slopes 38
WfB—Wethersfield stony fine sandy loam, 3 to 8 percent slopes 38
WfC—Wethersfield stony fine sandy loam, 8 to 15 percent slopes 38
WgB—Wethersfield very stony fine sandy loam, 3 to 8 percent slopes 39
WgC—Wethersfield very stony fine sandy loam, 8 to 15 percent slopes 39
WhA—Whitman very stony fine sandy loam 39
WnA—Windsor loamy sand, 0 to 3 percent slopes 40
WnB—Windsor loamy sand, 3 to 8 percent slopes 40
WnC—Windsor loamy sand, 8 to 15 percent slopes .. 40
WnD—Windsor loamy sand, 15 to 25 percent slopes 40
WoA—Windsor loamy sand, silty substratum, 0 to 3 percent slopes 40
WoB—Windsor loamy sand, silty substratum, 3 to 8 percent slopes 40
WoC—Windsor loamy sand, silty substratum, 8 to 15 percent slopes 41
Wp—Windsor-Scitico-Amostown complex 41
Ws—Winooski silt loam 42
WtA—Woodbridge fine sandy loam, 0 to 3 percent slopes 42
WtB—Woodbridge fine sandy loam, 3 to 8 percent slopes 42

WtC—Woodbridge fine sandy loam, 8 to 15 percent slopes 43
WvB—Woodbridge stony fine sandy loam, 3 to 8 percent slopes 44
WvC—Woodbridge stony fine sandy loam, 8 to 15 percent slopes 44
WxB—Woodbridge very stony fine sandy loam, 3 to 8 percent slopes 44
WxC—Woodbridge very stony fine sandy loam, 8 to 15 percent slopes 44
WxD—Woodbridge very stony fine sandy loam, 15 to 25 percent slopes 44

summary of tables

Temperature and precipitation (table 1) 90

Freeze dates in spring and fall (table 2) 91
Probability. Temperature.

Growing season (table 3) 91
Probability. Daily minimum temperature.

Acreage and proportionate extent of the soils (table 4) 92
Acres. Percent.

Yields per acre of crops and pasture (table 5) 94
Corn silage. Sweet corn. Tobacco. Alfalfa hay. Grass-legume hay. Grass-clover.

Capability classes and subclasses (table 6) 98
Total acreage. Major management concerns.

Woodland management and productivity (table 7) 99
Ordination symbol. Management concerns. Potential productivity. Trees to plant.

Recreational development (table 8) 105
Camp areas. Picnic areas. Playgrounds. Paths and trails. Golf fairways.

Wildlife habitat (table 9) 114
Potential for habitat elements. Potential as habitat for—Openland wildlife, Woodland wildlife, Wetland wildlife.

Building site development (table 10) 120
Shallow excavations. Dwellings without basements. Dwellings with basements. Small commercial buildings. Local roads and streets. Lawns and landscaping.

Sanitary facilities (table 11) 129
Septic tank absorption fields. Sewage lagoon areas. Trench sanitary landfill. Area sanitary landfill. Daily cover for landfill.

Construction materials (table 12) 138
Roadfill. Sand. Gravel. Topsoil.

Water management (table 13) 145
Limitations for—Pond reservoir areas, Aquifer-fed excavated ponds. Features affecting—Drainage, Irrigation, Terraces and diversions, Grassed waterways.

Engineering index properties (table 14) 152
Depth. USDA texture. Classification—Unified, AASHTO. Fragments greater than 3 inches. Percentage passing sieve—4, 10, 40, 200. Liquid limit. Plasticity index.

Physical and chemical properties of the soils (table 15) 163
Depth. Clay. Moist bulk density. Permeability. Available water capacity. Reaction. Shrink-swell potential. Erosion factors. Organic matter.
Soil and water features (table 16)..... 168
Hydrologic group. Flooding. High water table. Bedrock. Potential frost action. Risk of corrosion.
Classification of the soils (table 17)..... 172
Family or higher taxonomic class.

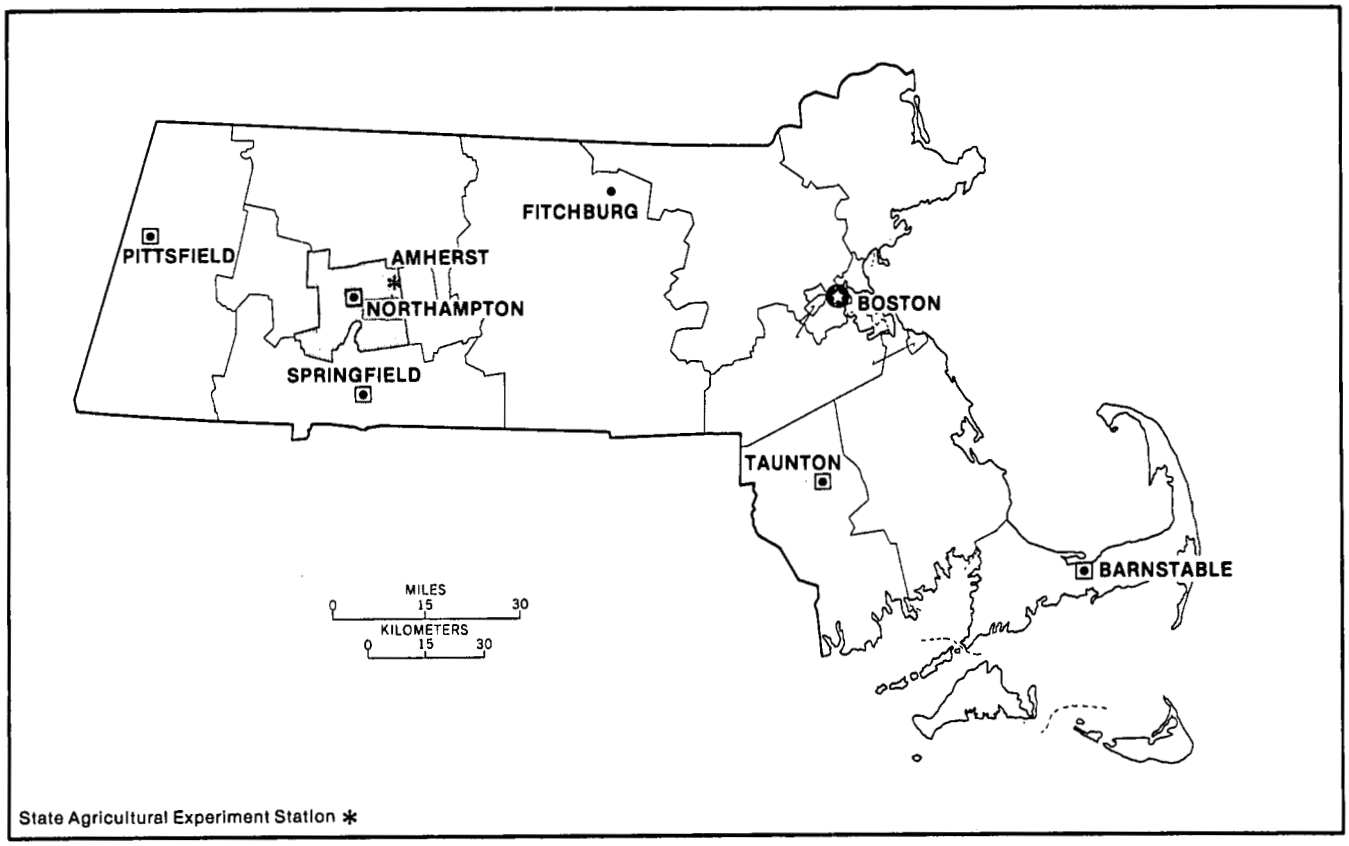
preface

This soil survey contains information that can be used in land-planning programs in Hampshire 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 insure 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 Hampshire County, Central Part, in Massachusetts.

soil survey of
Hampshire County, Massachusetts, Central Part

Communities of Amherst, Easthampton, Granby, Hadley, Hatfield, Northampton, Southampton, South Hadley, and Williamsburg

By Eric I. Swenson, Soil Conservation Service

Fieldwork by John R. Mott, Bruce W. Thompson, Peter C. Fletcher, James T. Krohelski, Richard J. Scanu, Norville E. Barnes, and Eric I. Swenson, Soil Conservation Service

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

HAMPSHIRE COUNTY is in the western part of Massachusetts. The part of the county covered by this soil survey is in the Connecticut River Valley and has a total area of 144,200 acres, or 225.3 square miles. The main topographic features of the area are the nearly level flood plains and level to gently sloping terraces of the Connecticut River and the steep intrusive dikes that rise several hundred feet above the valley floor. The main valley is flanked by undulating to rolling ridges that roughly parallel the valley. The Connecticut River and its major tributaries, the Mill River, the Manhan River, and the Fort River, dominate the drainage system of the area. Elevation of the land ranges from about 50 feet above sea level where the Connecticut River crosses into Hampden County to more than 900 feet on the Holyoke Range between Amherst and Granby.

Soil surveys covering part of and all of Hampshire County were published in 1903 and 1928, respectively. This survey updates those surveys and provides additional information and larger maps that show the soils in greater detail.

general nature of the survey area

This section describes the climate, natural resources, and farming trends in the survey area.

climate

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

Winters in the survey area are cold, and summers are moderately warm with 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 the commonly grown 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 Amherst, Massachusetts, in the period 1951 to 1973. 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 26 degrees F, and the average daily minimum temperature is 16 degrees. The lowest temperature on record, which occurred at Amherst on January 22, 1961, is -30 degrees. In summer the average temperature is 69 degrees, and the average daily maximum temperature is 81 degrees. The highest recorded temperature, which occurred on July 26, 1963, is 99 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 41.4 inches. Of this, 21.7 inches, or 52 percent, usually falls in April through September, which includes the growing season for most crops. In 2 years out of 10, the rainfall in April through September is less than 13 inches. The heaviest 1-day rainfall during the period of record was 4.14 inches at Amherst on August 18, 1955. Thunderstorms occur on about 20 days each year, and most occur in summer.

Average seasonal snowfall is 48 inches. The greatest snow depth at any one time during the period of record was 36 inches. On an average of 38 days, at least 1 inch of snow is on the ground. The number of such days varies greatly from year to year.

The average relative humidity in midafternoon is about 60 percent. Humidity is higher at night, and the average at dawn is about 70 percent. The sun shines 60 percent of the time possible in summer and 50 percent in winter. The prevailing wind is from the west. Average windspeed is highest, 13 miles per hour, in January.

natural resources

The primary use of the soils in this survey area is rapidly shifting from farmland to industrial and residential development.

Mineral resources are limited to basalt, traprock, sandstone, and sand and gravel. The major source of traprock in the area is in the Holyoke Range in Amherst and Granby. Sand and gravel deposits are excavated in many places throughout the area for use as general construction materials.

The water resources are used principally for various types of water-based recreation, as a source of irrigation water, and for some municipal water supplies.

farming

Colonists moved into the Connecticut River Valley in 1630 to farm the flood plains and terraces adjacent to the Connecticut River. Farming later spread into the tributary valleys and then to the hilly uplands.

The early farms in the county mainly produced hay, corn, oats, rye, vegetables, fruit, and livestock. Production reached a peak by the middle of the 19th century and shortly afterward started a rapid decline as farmers migrated west. This decline has continued as the demand for land for residential and industrial development has increased, thus causing a shift to high-value speciality crops such as shade-grown tobacco, onions, potatoes, and asparagus and locally marketed truck crops, fruit, hay, nursery stock, and some dairy products.

how this survey was made

Soil scientists made this survey to learn what soils are in the survey area, where they are, and how they can be used. They observed the steepness, length, and shape of slopes; the size of streams and the general pattern of drainage; the kinds of native plants or crops; and the kinds of rock. They dug many holes to study soil profiles. A profile is the sequence of natural layers, or horizons, in a soil. It extends from the surface down into the parent material, which has been changed very little by leaching or by plant roots.

The soil scientists recorded the characteristics of the profiles they studied and compared those profiles with others in nearby counties and in more distant places. They classified and named the soils according to nationwide uniform procedures. They drew the boundaries of the soils on aerial photographs. These photographs show trees, buildings, fields, roads, and other details that help in drawing boundaries accurately. The soil maps at the back of this publication were prepared from aerial photographs.

The areas shown on a soil map are called map units. Most map units are made up of one kind of soil. Some are made up of two or more kinds. The map units in this survey area are described under "General soil map units" and "Detailed soil map units."

While a soil survey is in progress, samples of some soils are taken for laboratory measurements and for engineering tests. All soils are field tested to determine their characteristics. Interpretations of those characteristics may be modified during the survey. Data are assembled from other sources, such as test results, records, field experience, and state and local specialists. For example, data on crop yields under defined management are assembled from farm records and from field or plot experiments on the same kinds of soil.

But only part of a soil survey is done when the soils have been named, described, interpreted, and delineated on aerial photographs and when the laboratory data and other data have been assembled. The mass of detailed information then needs to be organized so that it can be used by farmers, woodland managers, engineers, planners, developers and builders, home buyers, and others.

general soil map units

The general soil map at the back of this publication shows broad areas, called soil associations, that have a distinctive pattern of soils, relief, and drainage. Each association on the general soil map 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 others 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. Charlton-Paxton-Woodbridge association

Deep, nearly level to steep, well drained and moderately well drained, loamy soils formed in glacial till; on uplands

This association consists of hills and ridges dissected by many small drainageways. The topography is rolling to steep (fig. 1). Most areas have stones and boulders on the surface that are 5 to 50 feet apart.

This association makes up about 22 percent of the survey area. The association consists of about 25 percent Charlton soils, 25 percent Paxton soils, 10 percent Woodbridge soils, and 40 percent minor soils.

The Charlton soils are well drained and have a friable, moderately coarse textured subsoil and substratum. They are typically on the middle part of the slope.

The Paxton soils are well drained. They have a moderately coarse textured, friable subsoil and a moderately coarse textured, firm substratum that restricts root growth and the movement of water. The Paxton soils are typically on the upper part of the slope.

The Woodbridge soils are moderately well drained. They have a moderately coarse textured, friable subsoil and a moderately coarse textured, firm substratum that restricts root growth and the movement of water. The Woodbridge soils are typically in concave areas and on the lower part of the slope.

The minor soils consist of somewhat excessively drained Hollis soils that are shallow to bedrock and areas of exposed rock on the tops and upper parts of hills and ridges; poorly drained and somewhat poorly drained Ridgebury soils and very poorly drained Whitman soils in depressions and along drainageways; and somewhat excessively drained Gloucester soils typically at middle and lower parts of the slope.

Most of this association is in woodland. Some scattered areas have been cleared for farms and residential development.

The soils of this association are suited for trees. The main limitations for most other uses are stones on the surface, slope, slow permeability, and wetness.

2. Wethersfield-Holyoke association

Deep, gently sloping or moderately sloping, well drained, loamy soils formed in glacial till; shallow, moderately sloping, somewhat excessively drained, loamy soils formed in glacial till; on uplands

This association consists of low hills and ridges. The topography is rolling to moderately steep. Most areas have stones and boulders on the surface that are 5 to 50 feet apart.

This association makes up about 4 percent of the survey area. The association consists of about 60 percent Wethersfield soils, 15 percent Holyoke soils, and 25 percent minor soils.

The Wethersfield soils are well drained and have a moderately coarse textured subsoil and substratum. The substratum is firm or very firm and restricts root development and water movement. The soils are typically on the upper part of the slope.

The Holyoke soils are somewhat excessively drained and have a friable, medium textured subsoil. Bedrock is at a depth of 10 to 20 inches. Holyoke soils are on the upper parts of hills and ridges.

The minor soils consist of well drained Charlton soils typically in middle and lower parts of the slope; well drained Paxton soils on the upper part of the slope; moderately well drained Woodbridge soils in depressions and lower parts of the slope; and poorly drained and somewhat poorly drained Ridgebury soils in depressions and along drainageways. Also of minor extent in the association are areas of exposed bedrock on hills and ridges.

Most of this association is in woodland. Some areas have been cleared for farms and residential development.

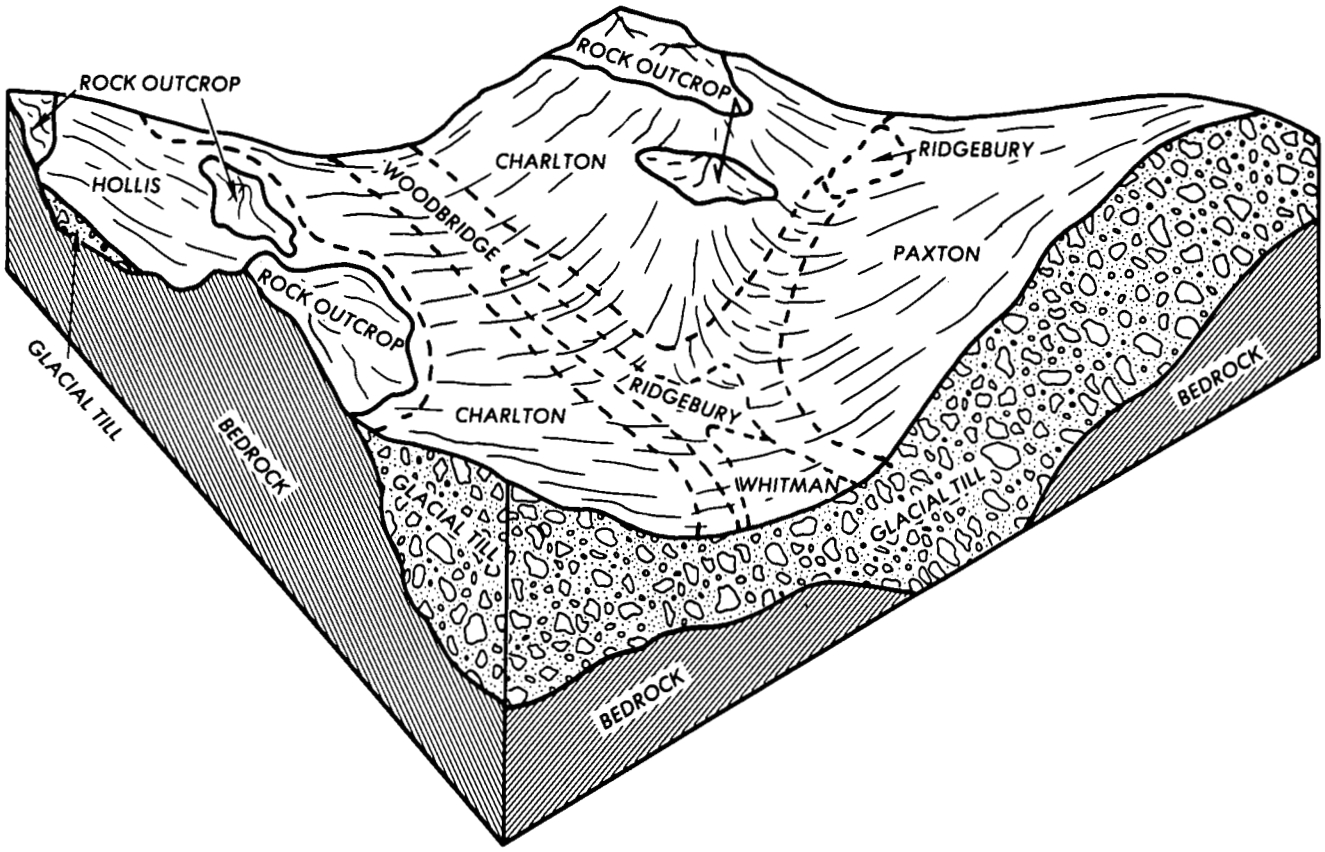


Figure 1.—Soils, topography, and underlying material in the Charlton-Paxton-Woodbridge association.

Most of the soils of this association are suited to trees. The main limitations for other uses are stones on the surface, slow permeability, and shallow depth to bedrock.

3. Rock outcrop-Narragansett-Holyoke association

Rock outcrop; deep, gently sloping to very steep, well drained, loamy soils formed in glacial till; shallow, gently sloping to very steep, somewhat excessively drained, loamy soils formed in glacial till; on uplands

This association consists of high, massive ridges. The topography is gently sloping to very steep. The north-facing slopes are generally much steeper than the south-facing slopes. Most areas have stones and boulders on the surface that are 5 to 50 feet apart.

This association makes up about 6 percent of the survey area. The association consists of about 25 percent exposed bedrock, 15 percent Narragansett soils, 10 percent Holyoke soils, and 50 percent minor soils.

The exposed bedrock is typically at the tops of ridges and hills.

The Narragansett soils are deep and well drained. They have a friable, medium textured subsoil and coarse textured substratum. The soils are typically on the upper parts of hills and ridges.

The Holyoke soils are somewhat excessively drained and have a friable, medium textured subsoil. Bedrock is at a depth of 10 to 20 inches. The soils are on the upper parts of hills and ridges.

The minor soils consist of well drained Paxton and Charlton soils in areas that are deep to bedrock; moderately well drained Woodbridge soils in depressional areas that are deep to bedrock; and poorly drained and somewhat poorly drained Ridgebury soils that are deep to bedrock and are in depressions and along drainageways.

Practically all of this association is in woodland. Most of the acreage is rough, steep land, and many areas are publicly owned.

Most of the soils in this association are suited to trees. The main limitations for other uses are shallow depth to bedrock, slope, and stones on the surface.

4. Gloucester-Montauk-Paxton association

Deep, nearly level to steep, well drained and somewhat excessively drained, sandy and loamy soils formed in glacial till; on uplands

This association consists of low hills and ridges. The topography is rolling to steep. Most areas have stones and boulders on the surface that are 5 to 50 feet apart.

This association makes up about 11 percent of the survey area. The association consists of about 20 percent Gloucester soils, 15 percent Montauk soils, 15 percent Paxton soils, and 50 percent minor soils.

The Gloucester soils are somewhat excessively drained. They have a friable to loose, coarse textured subsoil and substratum. The soils are typically on the lower parts of hills and ridges.

The Montauk soils are well drained. They have a friable, moderately coarse textured subsoil and a firm, coarse textured substratum that restricts root growth and water movement. The soils are typically on the upper parts of hills and ridges.

The Paxton soils are well drained. They have a moderately coarse textured subsoil and substratum. The subsoil is friable, and the substratum is firm and restricts root growth and the movement of water. Paxton soils are typically on the upper parts of hills and ridges.

The minor soils in the association consist of well drained Charlton soils typically at the middle part of the slope; somewhat excessively drained Hollis soils and exposed bedrock on the upper parts and tops of hills and ridges; moderately well drained Woodbridge and Scituate soils in lower slope positions and slight depressions; and poorly drained and somewhat poorly drained Ridgebury soils along drainageways and in depressions.

Most of this association is in woodland. Some areas have been developed for residential and commercial use.

The soils of this association are suited to trees. The main limitations for other uses are stones on the surface, slope, and slow permeability.

5. Hinckley-Merrimac-Windsor association

Deep, nearly level to steep, excessively drained and somewhat excessively drained, sandy and loamy soils formed in outwash deposits; on outwash plains

This association consists of large, broad areas and narrow terraces. Many areas are dissected by drainageways. The large, broad areas are level to rolling. The terraces and drainageways are rolling to steep (fig. 2).

This association makes up about 35 percent of the survey area. The association consists of about 25 percent Hinckley soils, 15 percent Merrimac soils, 10 percent Windsor soils, and 50 percent minor soils.

The Hinckley and Windsor soils are excessively drained and have a loose, coarse textured subsoil and substratum. The soils are droughty, and plant growth commonly is limited by the lack of moisture.

The Merrimac soils are somewhat excessively drained. They have a friable, moderately coarse textured subsoil and a loose, coarse textured substratum.

The minor soils consist of well drained Agawam soils intermingled with the major soils; moderately well drained Sudbury soils at slightly lower positions; and poorly drained Walpole soils along drainageways and in depressions.

Most of this association has been developed for residential and commercial use. Some areas are farmed.

The soils of this association are suited to trees. Droughtiness is a limitation in some years. The main limitations for other uses are rapid permeability and slope.

6. Amostown-Scitico-Boxford association

Deep, nearly level and gently sloping, moderately well drained and poorly drained, loamy and clayey soils formed in outwash or lacustrine sediments; on terraces and old lakebeds

This association consists of broad areas and narrow terraces. The topography is nearly level to rolling and is dissected by many small drainageways.

This association makes up about 10 percent of the survey area. The association consists of about 25 percent Amostown soils, 15 percent Scitico soils, 15 percent Boxford soils, and 45 percent minor soils.

The Amostown soils are moderately well drained and have a friable, moderately coarse textured subsoil and a friable, medium textured to fine textured substratum.

The Scitico soils are poorly drained and have a friable, medium textured to fine textured subsoil and substratum. A seasonal high water table in these soils restricts root development.

The Boxford soils are moderately well drained and have a friable, medium textured to fine textured subsoil and substratum.

The minor soils consist of well drained Pollux and Agawam soils and somewhat excessively drained Merrimac soils; moderately well drained Deerfield and Belgrade soils; poorly drained Enosburg and Raynham soils; and excessively drained Windsor soils. All of these soils are near the sandier outwash terraces and outwash plains.

Most of this association is farmed. Some areas have been developed for residential and commercial use, and some are in woodland.

The soils of this association are suited to trees and cropland. The main limitations for other uses are wetness and slow permeability.

7. Hadley-Winooski-Limerick association

Deep, nearly level, well drained, moderately well drained, and poorly drained, loamy soils formed in alluvial material; on flood plains

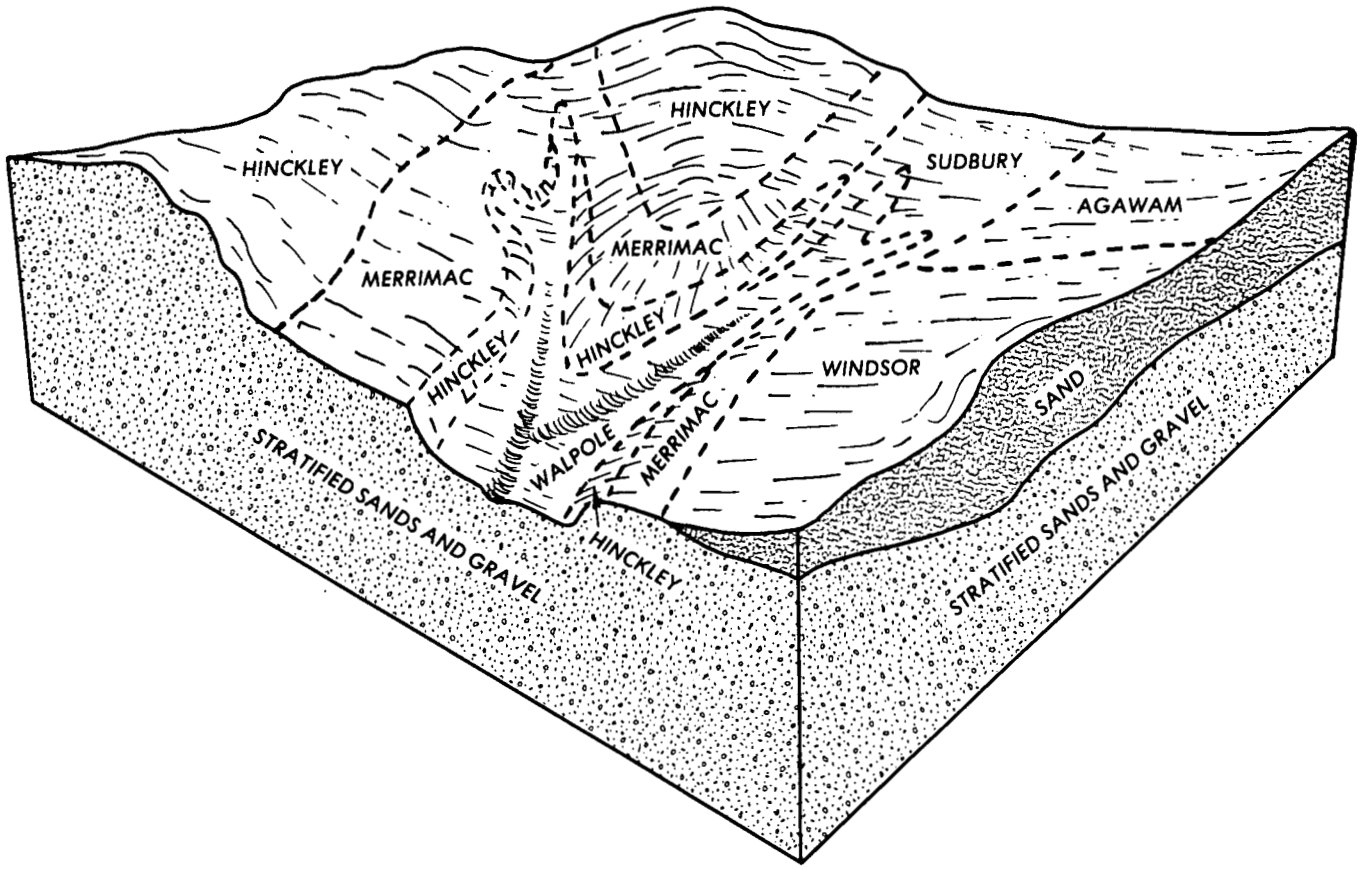


Figure 2.—Soils, topography, and underlying material in the Hinckley-Merrimac-Windsor association.

This association consists of nearly level, broad to narrow areas adjacent to streams and rivers. The areas are dissected by many small drainageways.

This association makes up about 12 percent of the survey area. The association consists of about 35 percent Hadley soils, 15 percent Winooski soils, 10 percent Limerick soils, and 40 percent minor soils.

The Hadley soils are well drained, the Winooski soils are moderately well drained, and the Limerick soils are poorly drained. All have a medium textured substratum. The Hadley soils are typically on slightly higher areas than the Winooski soils. The Limerick soils are typically in concave areas adjacent to drainageways and in depressions. A seasonal high water table in the Limerick soils restricts root development.

The minor soils consist of moderately well drained Pootatuck soils and poorly drained Rippowam soils along small streams; very poorly drained Saco soils in depressions; and excessively drained Suncook soils on streambanks and riverbanks.

Most of this association is farmed. Some areas have been developed for residential and commercial use, and some are in woodland.

The soils of this association are suited to trees and cropland. The main limitations for other uses are flooding and wetness.

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. Some map units in the same series are so alike that the same description has been used for more than one unit. For example, in this survey the units CnB, CnC, and CnD are so similar, except for slope, that one description has been used for all three units. Any differences in the use and management of the units or in their characteristics are noted in the map unit description.

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, *Paxton very stony fine sandy loam, 8 to 15 percent slopes,* is one of several phases in the Paxton series.

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

A *soil complex* consists of two or more soils 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. *Charlton-Rock outcrop-Hollis complex* 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 a mapped area 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. *Charlton and Gloucester very stony fine sandy loams, steep,* 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

AgA—Agawam fine sandy loam, 0 to 3 percent slopes.

AgB—Agawam fine sandy loam, 3 to 8 percent slopes.

These soils are deep and well drained. Map unit AgA consists of a nearly level soil in broad areas, and map unit AgB consists of a gently sloping soil on hills and in long narrow rises. The areas of these units are irregular in shape. The areas of unit AgA range from 5 to 30 acres, and those of unit AgB range from 10 to 50 acres.

Typically, the surface layer of these soils is dark grayish brown fine sandy loam about 11 inches thick. The subsoil is fine sandy loam 15 inches thick. The upper 5 inches of the subsoil is dark yellowish brown, and the lower 10 inches is light olive brown. The substratum extends to a depth of 60 inches or more and

is olive or olive brown. It is loamy fine sand to a depth of 55 inches and loamy sand at a depth of more than 55 inches.

Included with these soils in mapping are a few places where the surface layer is sandy loam. Some units contain small areas of Windsor soils, and some contain areas of Merrimac soils. A few small areas of Walpole soils in small depressions are in unit AgA. Also included are small areas of Ninigret and Deerfield soils which typically are at a lower position than these Agawam soils. Included areas make up about 15 percent of the acreage of these units.

The permeability of these Agawam soils is moderately rapid or rapid in the subsoil and rapid in the substratum. Available water capacity is moderate. The root zone extends into the substratum. Reaction in unlimed areas is very strongly acid or strongly acid.

Many areas of these soils are farmed. Some are in woodland, and the soils are well suited to trees. Some areas have been developed for homesites.

These soils are well suited to cultivated crops and to hay and pasture (fig. 3). Good tilth is easily maintained in cultivated areas. Minimum tillage and the use of cover crops and grasses and legumes in the cropping system help to reduce runoff and improve tilth in cultivated areas. The use of contour tillage in unit AgB helps to control the moderate erosion hazard. Mixing crop residue and manure into the surface layer of these soils improves tilth and increases the organic matter content.

Figure 3.—Cropland on an area of Agawam fine sandy loam, 3 to 8 percent slopes.

Proper stocking rates, deferred grazing, and pasture rotation help to maintain desirable pasture plant species.

These soils have essentially no limitations for homesites, but slope is a limitation for small commercial buildings in unit AgB. The moderately rapid or rapid permeability limits these Agawam soils as a site for septic tank absorption fields and causes a hazard of contamination to ground water and nearby wells.

Unit AgA is in capability class I, and unit AgB is in capability subclass IIe.

AgC—Agawam fine sandy loam, 8 to 15 percent slopes. This soil is deep, moderately sloping, and well drained. It is on hills and in long, narrow areas. Slopes are smooth and convex. The areas of the soil range from 10 to 40 acres.

Typically, the surface layer is dark grayish brown fine sandy loam about 11 inches thick. The subsoil is fine sandy loam 13 inches thick. The upper 3 inches of the subsoil is dark yellowish brown, and the lower 10 inches is light olive brown. The substratum extends to a depth of 60 inches or more and is olive or olive brown. It is loamy fine sand to a depth of 55 inches and loamy sand at a depth of more than 55 inches.

Included with this soil in mapping are a few places where the surface layer is sandy loam. Some map units contain small areas of Windsor soils, and some contain areas of Merrimac soils. Also included are small areas of Ninigret and Deerfield soils which typically are at a lower position than this Agawam soil. Some areas at the edge of the unit have slopes of 15 to 30 percent. Included areas make up about 15 percent of the acreage of this unit.

The permeability of the Agawam soil is moderately rapid or rapid in the subsoil and rapid in the substratum. Available water capacity is moderate. The root zone extends into the substratum. Reaction in unlimed areas is very strongly acid or strongly acid.

Many areas of this soil are farmed. Some are in woodland, and the soil is well suited to trees. Some areas have been developed for homesites.

This soil is suited to cultivated crops and to hay and pasture. Good tilth is easily maintained in cultivated areas, but the erosion hazard is moderate. Minimum tillage, contour tillage, stripcropping, terracing, and using cover crops and grasses and legumes in the cropping system help to reduce runoff and control erosion in cultivated areas. Mixing crop residue and manure into the surface layer improves tilth and increases the organic matter content. Proper stocking rates, deferred grazing, and pasture rotation help to maintain pasture plant species.

Slope is the main limitation of this soil as a site for homesites and small commercial buildings. The moderately rapid or rapid permeability limits the soil as a site for septic tank absorption fields and causes a hazard of contamination to ground water and nearby wells.

The capability subclass is IIIe.

AmA—Amostown fine sandy loam, 0 to 3 percent slopes.

AmB—Amostown fine sandy loam, 3 to 8 percent slopes.

These soils are deep and moderately well drained. The areas are irregular in shape and range from 10 to 50 acres. Map unit AmA consists of broad, nearly level areas, and unit AmB consists of gently sloping hills.

Typically, the surface layer of these soils is very dark grayish brown fine sandy loam about 7 inches thick. The subsoil is light olive brown fine sandy loam 25 inches thick. It is mottled in the lower 8 inches. The substratum is mottled and extends to a depth of 60 inches or more. It is stratified gray and dark yellowish brown very fine sand and silt.

Included with these soils in mapping are a few small areas with more gravel in the subsoil than these Amostown soils and many areas which have loamy sand in the lower part of the subsoil. Some units have small areas of Pollux and Agawam soils. Also included in unit AmB are a few small areas where the slope is 8 to 15 percent. Included areas make up about 25 percent of the acreage of units AmA and AmB.

The permeability of these Amostown soils is moderately rapid in the subsoil and moderate to slow in the substratum. Available water capacity is moderate. The root zone extends into the substratum. These soils have a seasonal high water table which is in the lower part of the subsoil in winter and early spring. Reaction in unlimed areas is very strongly acid or strongly acid in the subsoil and ranges from strongly acid to neutral in the substratum.

Many areas of these soils are farmed. Some areas are in woodland, and the soils are well suited to trees. Some areas have been developed for homesites.

These soils are well suited to cultivated crops and to hay and pasture. Good tilth is easily maintained in cultivated areas. Wetness is the major management concern, and subsurface drains are needed in places. Minimum tillage and the use of cover crops and grasses and legumes in the cropping system help to reduce runoff and improve tilth in cultivated areas. The use of contour tillage in unit AmB helps to control the moderate hazard of erosion. Mixing crop residue and manure into the surface layer improves tilth and increases the organic matter content. Proper stocking rates, deferred grazing, and pasture rotation help to maintain desirable pasture plant species.

The seasonal high water table is the main limitation of these soils as a site for homesites and small commercial buildings and, along with the slow permeability, is a major limitation for septic tank absorption fields. Slope is also a limitation of these soils for small commercial buildings in unit AmB.

The capability subclass is IIw.

Au—Amostown-Windsor silty substratum-Urban land complex. This unit consists of deep, nearly level and gently sloping soils and broad, level areas covered by buildings, sidewalks, parking lots, roads, and railroads (fig. 4). The areas of this unit are irregularly shaped or rectangular and range from 10 to 50 acres. They are about 35 percent moderately well drained Amostown soils, 25 percent excessively drained Windsor soils that have a silty substratum, 25 percent urbanized areas, and 15 percent other soils. The Amostown and Windsor soils and the urbanized areas are so intricately mixed that it was not practical to map them separately.

Typically, the surface layer of the Amostown soils is very dark grayish brown fine sandy loam about 7 inches thick. The subsoil is light olive brown fine sandy loam 25 inches thick. It is mottled in the lower 8 inches. The substratum is mottled and extends to a depth of 60 inches or more. It is stratified gray and yellowish brown very fine sand and silt.

Typically, the surface layer in the Windsor soils is very friable, very dark grayish brown loamy sand about 8 inches thick. The subsoil is loose loamy sand 13 inches thick. It is strong brown in the upper 4 inches and yellowish brown in the lower 9 inches. The substratum extends to a depth of 60 inches or more. It is loose, yellowish brown sand between depths of 21 and 40 inches and friable, grayish brown silt loam at a depth of more than 40 inches.

Included with this complex in mapping are small areas of poorly drained and very poorly drained soils and areas of moderately sloping soils.

The permeability of the Amostown soils is moderately rapid in the subsoil and moderately slow to slow in the substratum. Available water capacity is moderate in the Amostown soils, and the root zone extends into the substratum. A seasonal high water table is in the subsoil of the Amostown soils in winter and early spring. Reaction of the soils is very strongly acid or strongly acid in the subsoil and ranges from strongly acid to neutral in the substratum.

The permeability of the Windsor soils is rapid or very rapid in the subsoil and rapid, very rapid, or moderately slow in the substratum. Available water capacity in the Windsor soils is low, and the root zone extends into the substratum. Reaction of the soils is very strongly acid or strongly acid in the subsoil and ranges from strongly acid to slightly acid in the substratum.

Most areas of these soils have been developed for homesites and small commercial buildings. A few areas are wooded, and a few are in parks.

The lack of open space makes areas of this unit poorly suited or unsuited to farming or woodland. The Windsor soils have essentially no limitations as a building site, but the seasonal water table limits the Amostown soils for this use. Slow permeability and the seasonal high water table of the Amostown soils are the main limitation for septic tank absorption fields.

This unit is not assigned to a capability subclass.

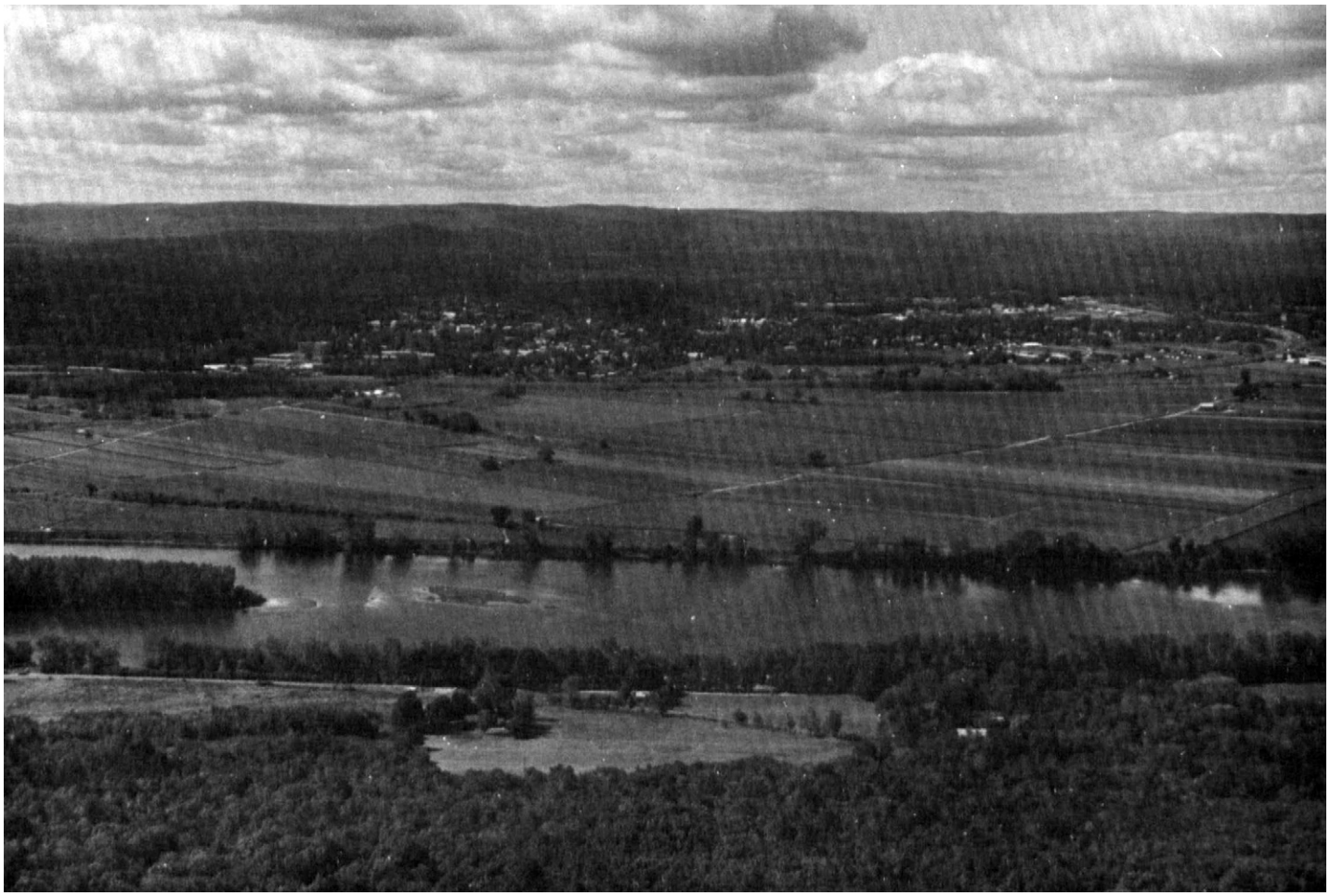


Figure 4.—An area of the Amostown-Windsor silty substratum-Urban land complex in Northampton.

BaA—Belgrade silt loam, 0 to 3 percent slopes.
BaB—Belgrade silt loam, 3 to 8 percent slopes.

These soils are deep and moderately well drained. The areas range from 5 to 50 acres. Map unit BaA consists of nearly level, broad areas or long, narrow areas. Unit BaB consists of gently sloping small hills or long, narrow areas.

Typically, the surface layer of these soils is very dark grayish brown silt loam about 10 inches thick. The subsoil is very fine sandy loam 20 inches thick. It is olive brown in the upper 5 inches, olive colored and mottled in the next 7 inches, and olive gray and mottled in the lower 8 inches. The substratum extends to a depth of 60 inches or more. It is olive gray, mottled very fine sandy loam to a depth of 51 inches and loose, yellowish brown loamy fine sand and fine sand at a depth of more than 51 inches.

Included with these soils in mapping are a few small areas of Raynham soils. Also included are a few small areas in unit BaB of soils with slopes of 8 to 12 percent. Included areas make up about 15 percent of the acreage of these units.

The permeability of these Belgrade soils is moderate in the subsoil and ranges from moderately rapid to slow in the substratum. Available water capacity is high. The root zone extends into the substratum. These soils have a seasonal high water table in the lower part of the subsoil in winter and spring. Reaction in unlimed areas ranges from strongly acid to neutral in the subsoil and from medium acid to neutral in the substratum.

Most areas of these soils are farmed (fig. 5). Some areas are in woodland, and the soils are suited to trees. Some areas have been developed for homesites.

These soils are well suited to cultivated crops and to hay and pasture. The main management concern is wetness caused by the seasonal high water table. Wet spots in these units need drainage, and farming operations must be timely. Minimum tillage helps to reduce soil compaction. Minimum tillage and the use of cover crops and grasses and legumes in the cropping system help to reduce runoff and improve tilth in cultivated areas. The use of contour tillage in unit BaB helps to control the moderate hazard of erosion. Mixing crop residue and manure into the surface layer improves

tilth and increases the organic matter content. Proper stocking rates, deferred grazing, and pasture rotation help to maintain desirable pasture plant species. Restricted grazing when the soils are saturated helps to prevent damage to the sod.

The seasonal high water table is the main limitation of these soils as a building site. Slope is also a limitation of unit BaB as a site for small commercial buildings. The slow permeability of these soils and the seasonal high water table are limitations for septic tank absorption fields.

Unit BaA is in capability subclass IIw, and unit BaB is in capability subclass IIe.

BoA—Boxford silt loam, 0 to 3 percent slopes.
BoB—Boxford silt loam, 3 to 8 percent slopes.

These soils are deep and moderately well drained. The areas range from 5 to 30 acres. Unit BoA consists of nearly level and broad areas or long, narrow areas. Unit BoB consists of gently sloping small hills.

Typically, the surface layer of these soils is friable, very dark grayish brown silt loam about 8 inches thick. The subsoil is 25 inches thick. It is friable, brown silt loam in the upper 6 inches; friable, olive brown silty clay loam in the next 7 inches; and firm, olive, mottled silty clay loam in the lower 12 inches. The substratum consists of firm, olive, mottled layers of silt and clay to a depth of 60 inches or more.

Included with these soils in mapping are a few areas with a surface layer of very fine sandy loam and a few small areas with small amounts of gravel throughout. Also included are a few small areas of Scitico soils. Included areas make up about 15 percent of the acreage of these units.

The permeability of these Boxford soils is slow, and available water capacity is high. The root zone extends

Figure 5.—Harvesting cabbage on Belgrade silt loam, 0 to 3 percent slopes.

into the subsoil. These soils have a seasonal high water table in the lower part of the subsoil in winter and early spring and for short periods after prolonged rains. Reaction in unlimed areas ranges from strongly acid to slightly acid throughout the soil.

Many areas of these soils are farmed. Some areas are in woodland, and the soils are suitable for trees. Some areas have been developed for homesites.

These soils are well suited to cultivated crops and to hay and pasture. Installing surface drains helps to control wetness, which is the main limitation. Minimum tillage, contour tillage, and the use of cover crops reduces runoff and helps to control the moderate erosion hazard in unit BoB. Using grasses and legumes in the cropping system and mixing crop residue and manure into the surface layer improve tilth and increase the organic matter content of these soils. Proper stocking rates, deferred grazing, and pasture rotation help to maintain desirable pasture plant species. Restricted grazing when the soils are wet prevents damage to the sod.

The seasonal high water table and a shrink-swell potential are the main limitations of these soils as a building site. Slope is a further limitation for small commercial buildings in unit BoB. The slow permeability of these soils and seasonal high water table limit the soils as a site for septic tank absorption fields.

Unit BoA is in capability subclass IIw, and unit BoB is in capability subclass IIe.

BoC—Boxford silt loam, 8 to 15 percent slopes. This soil is deep, moderately sloping, and moderately well drained. It is in long, narrow areas that range from 5 to 15 acres.

Typically, the surface layer is friable, very dark grayish brown silt loam about 7 inches thick. The subsoil is 20 inches thick. It is friable, brown silt loam in the upper 2 inches; friable, olive brown silty clay loam in the next 6 inches; and firm, olive brown, mottled silty clay loam in the lower 12 inches. The substratum consists of firm, olive, mottled layers of silt and clay to a depth of 60 inches or more.

Included with this soil in mapping are a few areas with a surface layer of very fine sandy loam and a few small areas with small amounts of gravel throughout. Also included are a few small areas that are not mottled and that are at a higher position on the landscape than this Boxford soil. Included areas make up about 15 percent of the unit.

The permeability of this Boxford soil is slow, and available water capacity is high. The root zone extends into the subsoil. This soil has a seasonal high water table at the lower part of the subsoil in winter and early spring and for short periods after prolonged rains. Reaction in unlimed areas ranges from strongly acid to slightly acid throughout the soil.

Many areas of this soil are farmed. Some areas are in woodland, and some have been developed for homesites.

This soil is suited to cultivated crops and is well suited to hay and pasture. Controlling erosion and wetness are the main management concerns. Installing drainage systems helps to control wetness. Farming on the contour, minimum tillage, stripcropping, terracing, and using cover crops and grasses and legumes in the cropping system help to reduce runoff and control erosion. Mixing crop residue and manure into the surface layer improves tilth and increases the organic matter content of the soil. Proper stocking rates, deferred grazing, and pasture rotation help to maintain desirable pasture plant species. Restricted grazing when the soil is wet prevents damage to the sod.

The soil is suited to trees, but slope limits the use of harvesting equipment. Constructing logging roads on the contour helps to control erosion.

The seasonal high water table and slope are the main limitations of this soil as a building site. The slow permeability and seasonal high water table are limitations for septic tank absorption fields.

The capability subclass is IIIe.

CkB—Charlton fine sandy loam, 3 to 8 percent slopes. This soil is deep, gently sloping, and well drained. It is on ridges and on the lower slopes of hills. The areas of this soil are irregular in shape or rectangular and range from 5 to 25 acres.

Typically, the surface layer is very friable, dark brown fine sandy loam about 7 inches thick. The subsoil is friable and is 15 inches thick. It is yellowish brown fine sandy loam in the upper 6 inches and light olive brown gravelly fine sandy loam in the lower 9 inches. The substratum is firm, olive gravelly sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Paxton and Woodbridge soils that have a dense substratum. The Woodbridge soils typically are in lower positions. Included areas make up about 15 percent of the unit.

The permeability of this Charlton soil is moderate or moderately rapid. Available water capacity is moderate. The root zone extends into the substratum. Reaction in unlimed areas ranges from very strongly acid to medium acid throughout the soil.

Many areas of this soil are farmed. Some areas are in woodland, and the soil is well suited to trees. Some areas have been developed for homesites.

This soil is well suited to cultivated crops and to hay and pasture. Good tilth is easily maintained in cultivated areas. Where this soil is farmed, minimum tillage and use of cover crops and grasses and legumes in the cropping system help to reduce runoff and the moderate hazard of erosion and help to increase the organic matter content. Proper stocking rates and deferred grazing help to maintain desirable pasture plant species.

This soil has essentially no limitations for homesites or septic tank absorption fields, but slope is a limitation for small commercial buildings.

The capability subclass is IIe.

CkC—Charlton fine sandy loam, 8 to 15 percent slopes. This soil is deep, moderately sloping, and well drained. It is on ridges and on the lower slopes of hills. The areas of the soil are irregular in shape or rectangular and range from 5 to 30 acres.

Typically, the surface layer is very friable, dark brown fine sandy loam about 7 inches thick. The subsoil is friable and is 13 inches thick. It is yellowish brown fine sandy loam in the upper 4 inches and light olive brown gravelly fine sandy loam in the lower 9 inches. The substratum is firm, olive gravelly sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are many small areas of Paxton and Woodbridge soils that have a dense substratum. The Woodbridge soils typically are in lower positions. Also included are areas of soils with slopes of 15 to 25 percent. Included areas make up about 15 percent of the unit.

The permeability of this Charlton soil is moderate or moderately rapid. Available water capacity is moderate. The root zone extends into the substratum. Reaction in unlimed areas ranges from very strongly acid to medium acid throughout the soil.

Many areas of this soil are farmed. Some areas are in woodland, and the soil is well suited to trees. Some areas have been developed for homesites.

This soil is suited to cultivated crops and to hay and pasture. Good tilth is easily maintained in cultivated areas. Where this soil is farmed, stripcropping, terracing, minimum tillage, and the use of cover crops and grasses and legumes in the cropping system help to reduce runoff and the moderate hazard of erosion and help to increase the organic matter content. Mixing crop residue and manure into the surface layer improves tilth and increases the organic matter content of this soil. Proper stocking rates, deferred grazing, and pasture rotation help to maintain desirable pasture plant species.

Slope is the main limitation of this soil as a building site or as a site for septic tank absorption fields.

The capability subclass is IIIe.

CmB—Charlton stony fine sandy loam, 3 to 8 percent slopes.

CmC—Charlton stony fine sandy loam, 8 to 15 percent slopes.

These soils are deep and well drained. They are on ridges and on the sides and lower slopes of hills. The areas of these soils are irregular in shape and range from 15 to 150 acres. Stones 20 to 50 feet apart are on the surface.

Typically, the surface layer is very friable, dark brown fine sandy loam about 7 inches thick. The subsoil is friable and is 15 inches thick. It is yellowish brown fine sandy loam in the upper 6 inches and light olive brown gravelly fine sandy loam in the lower 9 inches. The substratum is firm, olive gravelly sandy loam to a depth of 60 inches or more.

Included with these soils in mapping are areas where stones on the surface are less than 20 feet apart. Also included in most units are small areas of Paxton and Woodbridge soils. The Woodbridge soils typically are in lower positions. Included areas make up about 15 percent of the acreage of these units.

The permeability of these Charlton soils is moderate or moderately rapid. Available water capacity is moderate. The root zone extends into the substratum. Reaction in unlimed areas ranges from very strongly acid to medium acid throughout the soils.

Most areas of these soils are in woodland, and the soils are well suited to trees. Some areas have been developed for homesites.

The stones on the surface make these soils poorly suited to cultivated crops, but the soils are suited to hay and pasture. Proper stocking rates, deferred grazing, and pasture rotation help to maintain desirable plant species. Removal of the surface stones improves the suitability for cultivation.

Slope is the main limitation of these soils as a site for small commercial buildings and is a limitation for homesites and septic tank absorption fields in unit CmC.

The capability subclass is VIs.

CnB—Charlton very stony fine sandy loam, 3 to 8 percent slopes.

CnC—Charlton very stony fine sandy loam, 8 to 15 percent slopes.

CnD—Charlton very stony fine sandy loam, 15 to 25 percent slopes.

These soils are deep and well drained. Units CnB and CnC are on ridges and on the sides and lower slopes of hills. Unit CnD is on the moderately steep sides of hills. The areas of these soils are irregular in shape. Units CnB and CnC range from 25 to 150 acres and unit CnD from 30 to 200 acres. Stones and boulders 5 to 20 feet apart are on the surface of the soils.

Typically, the surface layer of these soils is very friable, dark brown fine sandy loam about 5 inches thick. The subsoil is friable and is 15 inches thick. It is yellowish brown fine sandy loam in the upper 6 inches and light olive brown gravelly fine sandy loam in the lower 9 inches. The substratum is firm, olive gravelly sandy loam to a depth of 60 inches or more.

Included with these soils in mapping are areas where the stones on the surface are more than 20 feet apart. Also included, in most units, are small areas of Paxton soils. Small areas of Woodbridge soils typically in

concave areas or in lower positions on slopes are in units CnB and CnC. Included areas make up about 15 percent of the acreage of the three units.

The permeability of these Charlton soils is moderate or moderately rapid. Available water capacity is moderate. The root zone extends into the substratum. Reaction ranges from very strongly acid to medium acid throughout the soils.

Most areas of these soils are in woodland. Some have been developed for homesites.

The stones and boulders on the surface make these soils poorly suited to cultivated crops or hay and pasture. Slope in unit CnD is an additional limitation for the use of equipment. In areas used for pasture, proper stocking rates, deferred grazing, and pasture rotation help to maintain desirable plant species.

These soils are well suited to trees, but stones and boulders on the surface limit the use of harvesting equipment. Slope is an additional limitation for the use of harvesting equipment in unit CnD.

Slope is a limitation of these soils as a site for small commercial buildings and is a limitation for homesites and septic tank absorption fields in units CnC and CnD.

The capability subclass is VIIs.

CoE—Charlton and Gloucester very stony fine sandy loams, steep. This unit consists of deep soils on ridges and on the sides of hills. Areas are irregular in shape and range from 50 to 500 acres. Stones 5 to 20 feet apart are on the surface. Some areas of this unit consist of well drained Charlton soils, some of somewhat excessively drained Gloucester soils, and some of both. The soils were mapped together because there are no major differences in their use and management. About 40 percent of the acreage of this unit is Charlton soils, 40 percent is Gloucester soils, and 20 percent is other soils.

Typically, the Charlton soils have a surface layer of very friable, dark brown fine sandy loam about 5 inches thick. The subsoil is friable and is 15 inches thick. It is yellowish brown fine sandy loam in the upper 6 inches and light olive brown gravelly fine sandy loam in the lower 9 inches. The substratum is firm, olive gravelly sandy loam to a depth of 60 inches or more.

Typically, the Gloucester soils have a surface layer of very friable, dark brown fine sandy loam about 5 inches thick. The subsoil is very friable, yellowish brown, and about 17 inches thick. It is gravelly sandy loam in the upper 9 inches and gravelly loamy sand in the lower 8 inches. The substratum is loose gravelly loamy sand to a depth of 60 inches or more. It is yellowish brown, dark grayish brown, and grayish brown.

Included with this unit in mapping are areas of Paxton and Montauk soils. Also included are small areas of Scituate and Woodbridge soils.

Permeability is moderate or moderately rapid throughout the Charlton soils and rapid throughout the Gloucester soils. Available water capacity is moderate in the Charlton soils and low in the Gloucester soils. The root zone extends into the substratum of both soils. Reaction ranges from very strongly acid to medium acid in the Charlton soils and is strongly acid or very strongly acid in the Gloucester soils.

Slope and the stones on the surface make these soils poorly suited to cultivated crops or to hay and pasture. In areas used for pasture, proper stocking rates, deferred grazing, and pasture rotation help to maintain desirable plant species.

The soils in this unit are suited to trees, and most areas are wooded. However, the slope and the stones and boulders on the surface limit the use of harvesting equipment. Droughtiness in the Gloucester soils causes a high rate of seedling mortality.

Slope is the main limitation of these soils for homesites, small commercial buildings, or septic tank absorption fields. The rapid permeability in the Gloucester soils is also a limitation for septic tank absorption fields and causes a hazard of contamination to ground water and nearby wells.

The capability subclass is VIIs.

CpC—Charlton-Hollis fine sandy loams, rocky, 3 to 15 percent slopes.

CpD—Charlton-Hollis fine sandy loams, rocky, 15 to 25 percent slopes.

These units consist of irregularly shaped areas on hills and ridges. The areas range from 10 to 100 acres. The surface is covered by stones 5 to 20 feet apart and bedrock exposures 100 to 300 feet apart. The areas are about 35 percent deep, well drained Charlton soils; 30 percent shallow, somewhat excessively drained Hollis soils; 5 percent bedrock exposures; and 30 percent other soils. The Charlton soils are between areas of Hollis soils, which are adjacent to the areas of exposed rock. The Charlton and Hollis soils are so intricately mixed that it was not practical to map them separately.

Typically, the Charlton soils have a surface layer of very friable, dark brown fine sandy loam about 5 inches thick. The subsoil is friable and is 15 inches thick. It is yellowish brown fine sandy loam in the upper 6 inches and light olive brown gravelly fine sandy loam in the lower 9 inches. The substratum is firm, olive gravelly sandy loam to a depth of 60 inches or more.

Typically, the Hollis soils have a surface layer of dark brown fine sandy loam about 5 inches thick. The subsoil is brown and is 14 inches thick. It is fine sandy loam in the upper 11 inches and sandy loam in the lower 3 inches. Granite bedrock is at a depth of 19 inches.

Included with these units in mapping are areas, generally smaller than 3 acres, of Woodbridge soils and many small areas of well drained soils with bedrock at a depth of 20 to 60 inches. Small depressional areas of Ridgebury soils are in unit CpC, and a few hilly areas are in unit CpD.

Permeability is moderate or moderately rapid throughout these Charlton and Hollis soils. Available

water is moderate in the Charlton soils and low in the Hollis soils. The root zone extends into the substratum of the Charlton soils. It extends to bedrock in the Hollis soils. Reaction ranges from very strongly acid to medium acid in the Charlton soils and is strongly acid or very strongly acid in the Hollis soils.

Exposed bedrock, slope, and stones on the surface make these soils poorly suited to farming.

The soils in these units are suited to trees, and most areas are wooded. However, the stones and boulders on the surface and the exposed rock restrict the use of harvesting equipment. Slope is an additional limitation for the use of harvesting equipment in unit CpD. Trees on the Hollis soils have a high rate of seedling mortality and are susceptible to uprooting during windy periods.

Slope is the main limitation of these soils for homesites, small commercial buildings, and septic tank absorption fields. These uses are also limited on the Hollis soils by the shallow depth to bedrock.

The capability subclass is VIIs.

CrC—Charlton-Rock outcrop-Hollis complex, sloping.

CrE—Charlton-Rock outcrop-Hollis complex, steep. These units consist of irregularly shaped areas that have stones 5 to 20 feet apart on the surface. The areas of unit CrC are on the tops of ridges and hills and range from 10 to 60 acres. The areas of unit CrE are on hillsides and range from 20 to 200 acres. These units are about 35 percent deep, well drained Charlton soils; 25 percent areas of exposed rock that are about 100 feet apart; 20 percent shallow, somewhat excessively drained Hollis soils; and 20 percent other soils. The Charlton soils are between areas of Hollis soils, which are adjacent to the areas of exposed rock. The Charlton and Hollis soils and the exposed rock are so intricately mixed that it was not practical to map them separately.

Typically, the Charlton soils have a surface layer of very friable, dark brown fine sandy loam about 5 inches thick. The subsoil is friable and is 15 inches thick. It is yellowish brown fine sandy loam in the upper 6 inches and light olive brown gravelly fine sandy loam in the lower 9 inches. The substratum is firm, olive gravelly sandy loam to a depth of 60 inches or more.

Typically, the Hollis soils have a surface layer of friable, dark brown fine sandy loam about 5 inches thick. The subsoil is brown and is 14 inches thick. It is fine sandy loam in the upper 11 inches and sandy loam in the lower 3 inches. Granite bedrock is at a depth of 19 inches.

Included with these units in mapping are areas, generally smaller than 3 acres, of Woodbridge soils. Some units consist of up to 20 percent well drained soils with bedrock at a depth of 20 to 60 inches. Small depressional areas of Ridgebury soils make up about 10 percent of unit CrC.

Permeability is moderate or moderately rapid throughout these Charlton and Hollis soils. Available water capacity is moderate in the Charlton soils and low in the Hollis soils. The root zone extends into the substratum of the Charlton soils. It extends to bedrock in the Hollis soils. Reaction ranges from very strongly acid to medium acid in the Charlton soils and is strongly acid or very strongly acid in the Hollis soils.

Exposed bedrock, slope, and stones on the surface make these soils poorly suited to farming.

The soils in these units are suited to trees, and most areas are wooded. However, the stones and boulders on the surface and the exposed rock limit the use of harvesting equipment. Slope is an additional limitation for the use of harvesting equipment in unit CrE. Trees on the Hollis soils have a high rate of seedling mortality and are susceptible to uprooting during windy periods.

Slope is the main limitation of these soils for homesites, small commercial buildings, and septic tank absorption fields. These uses are also limited on the Hollis soils by the shallow depth to bedrock.

The capability subclass is VIIs.

DeA—Deerfield loamy fine sand, 0 to 5 percent slopes. This soil is deep, nearly level, and moderately well drained. It is in broad and long, narrow areas that range from 5 to 40 acres.

Typically, the surface layer is very friable, dark brown loamy fine sand about 9 inches thick. The subsoil is 16 inches thick. It is very friable, light olive brown loamy fine sand in the upper 6 inches and loose, light olive brown, mottled fine sand in the lower 10 inches. The substratum extends to a depth of 60 inches or more. It is grayish brown and olive gray and is mottled. It consists of stratified, thin layers of loamy sand, sand, fine sand, and loamy fine sand.

Included with this soil in mapping are a few areas with more gravel than this Deerfield soil and a few small areas that are wetter. Also included are a few small areas of Windsor and Ninigret soils. The Windsor soils typically are in higher positions. Included areas make up about 15 percent of the unit.

The permeability of this Deerfield soil is rapid in the subsoil and rapid or very rapid in the substratum. Available water capacity is low. The root zone extends into the substratum. This soil has a seasonal high water table in the lower part of the subsoil in winter and spring. Reaction in unlimed areas ranges from very strongly acid to slightly acid.

Most areas of this soil are in woodland, and the soil is suited to trees. Some areas are farmed, and some have been developed for homesites.

This soil is suited to cultivated crops and to hay and pasture. Good tilth is easily maintained in cultivated areas, and the erosion hazard is slight. The seasonal high water table makes subsurface drainage necessary in places, but the soil is droughty in summer. The main farming management practices include frequently using irrigation and applying fertilizer, adding organic matter to the surface layer, and using cover crops.

The seasonal high water table is the main limitation of this soil for homesites or small commercial buildings. The seasonal high water table and rapid or very rapid permeability limit the soil as a site for septic tank absorption fields, and the permeability causes a hazard of contamination to ground water and nearby wells in areas used for septic tanks.

The capability subclass is IIIw.

Du—Dumps. This unit consists of areas used for residential or commercial trash disposal. Most units are in or near urban areas throughout the survey area and are adjacent to poorly drained and very poorly drained soils. Most areas range from 3 to 50 acres.

Dumps are commonly called landfills or sanitary landfills and consist mostly of paper, metal, plastic, glass, rubble, cinders, and organic debris. The characteristics of each area vary according to the kinds of refuse, the manner in which the refuse has been deposited and packed, and whether the areas have been leveled, covered, or graded. All areas are subject to some degree of subsidence.

Included with this unit in mapping are small areas of Hinckley, Windsor, and Deerfield soils and other soils which have stratified material in the substratum. Also included are a few areas that are subject to flooding.

Onsite investigation and evaluation of these areas are required for land use decisions.

This unit is not assigned to a capability subclass.

EsA—Enosburg fine sandy loam, 0 to 3 percent slopes.

EsB—Enosburg fine sandy loam, 3 to 8 percent slopes.

These soils are deep and poorly drained. The soils in unit EsA are nearly level or depressional, and the soils in unit EsB are gently sloping and slightly convex. Areas of these soils are long and narrow or irregular in shape. The areas of unit EsA range from 5 to 75 acres and unit EsB from 5 to 150 acres.

Typically, the surface layer of these soils is very friable, very dark gray fine sandy loam about 9 inches thick. The substratum is mottled and extends to a depth of 60 inches or more. It is loose, dark gray and grayish brown loamy sand to a depth of 25 inches and very friable, thinly stratified gray silty clay and dark gray loamy sand at a depth of more than 25 inches.

Included with these soils in mapping are a few small areas of Amostown, Raynham, and Maybid soils. The Amostown soils typically are in higher positions, and the Raynham and Maybid soils are in lower positions. Included areas make up about 20 percent of the acreage of these units.

The permeability of these Enosburg soils is rapid in the sandy part of the substratum and moderately slow in the loamy part. Available water capacity is moderate. The root zone extends into the substratum, but root growth is restricted by a seasonal high water table which is within 12 inches of the surface in winter and spring and after prolonged rains. Reaction in unlimed areas ranges from very strongly acid to slightly acid in the sandy part of substratum and slightly acid or neutral in the loamy part.

Most areas of these soils are in woodland. Some areas are farmed, and some have been developed for homesites.

These soils are suitable for cultivated crops and for hay and pasture. The seasonal high water table keeps the soil saturated through late spring. A moderate erosion hazard is a management concern in unit EsB. The main management needs include installing field drains where feasible, proper timing of farming operations, and using water-tolerant plant species (fig. 6). Mixing crop residue and manure into the surface layer improves tilth and increases the organic matter content. Proper stocking rates, deferred grazing, pasture rotation, and restricted grazing when the soil is saturated help to maintain desirable pasture plant species.

These soils are suitable for trees. However, the seasonal high water table causes a high rate of seedling mortality, makes trees susceptible to uprooting during windy periods because of restricted rooting, and restricts the use of harvesting equipment to periods when the soil is frozen or dry. Planting water-tolerant species reduces the rate of seedling mortality, and establishing dense stands helps to protect trees from uprooting.

Figure 6.—This drained area of Enosburg fine sandy loam, 0 to 3 percent slopes, is suitable for cultivated crops.

The seasonal high water table is the main limitation of these soils for homesites and small commercial buildings. The rapid permeability in the upper part of the substratum, the moderately slow permeability in the lower part, and the seasonal high water table limit this soil for septic tank absorption fields.

The capability subclass is IIIw.

Fm—Freetown muck. This soil is deep, nearly level, and very poorly drained. Some areas are in depressions, and some units are on flood plains. The areas of the soil are circular or irregular in shape and range from 10 to 20 acres.

Typically, this soil consists of black, decomposed organic material to a depth of 60 inches or more.

Included with this soil in mapping are a few small areas of Whitman, Scarboro, and Swansea soils. Included areas make up about 20 percent of the unit.

The permeability of this Freetown soil is moderate or moderately rapid. Available water capacity is high. The root zone is restricted by a high water table that is at or near the surface throughout the year. Reaction is extremely acid throughout the soil.

The high water table makes this soil poorly suited to farming. Areas are difficult to drain because of the lack of suitable outlets, and the plant cover is easily cut and dislodged by grazing animals.

Most areas of this soil are wooded, but the soil is poorly suited to the growth of trees. Harvesting is limited by wetness, and unless the soil is frozen, it will not support harvesting equipment. The restricted rooting causes a hazard of uprooting during windy periods, and the rate of seedling mortality is high for trees that are not water tolerant.

The high water table and the low strength of the organic material are the main limitations of this soil as a building site. The high water table is a limitation for septic tank absorption fields.

The capability subclass is Vw.

GfB—Gloucester fine sandy loam, 3 to 8 percent slopes.

GfC—Gloucester fine sandy loam, 8 to 15 percent slopes.

These soils are deep and somewhat excessively drained. They are on ridges and on the sides and lower slopes of hills. The areas of the soils are rectangular or oval or are irregular in shape. They range from 5 to 25 acres.

Typically, the surface layer of these soils is dark brown fine sandy loam about 5 inches thick. The subsoil is yellowish brown and is 17 inches thick. It is gravelly sandy loam in the upper 9 inches and gravelly loamy sand in the lower 8 inches. The substratum is loose gravelly loamy sand to a depth of 60 inches or more. It is yellowish brown, dark grayish brown, and grayish brown.

Included with these soils in mapping are a few small areas of Charlton, Montauk, and Scituate soils. Included areas make up about 20 percent of the acreage of these units.

The permeability of these Gloucester soils is rapid, and available water capacity is low. The root zone extends into the substratum. Reaction in unlimed areas is very strongly acid or strongly acid.

Many areas of these soils are farmed. Many other areas are in woodland, and some have been developed for homesites.

These soils are suited to cultivated crops and to hay or pasture. The low available water capacity makes irrigation necessary in some areas. Where these soils are farmed, minimum tillage and the use of cover crops and grasses and legumes in the cropping system help to reduce runoff and control erosion. Stripcropping is an additional practice that helps to control the moderate hazard of erosion in unit GfC. Mixing crop residue and manure into the surface layer maintains tilth and increases the organic matter content. Proper stocking rates, deferred grazing, and pasture rotation help to maintain desirable pasture plant species.

These soils are suited to the growth and harvesting of trees. Droughtiness causes a high rate of seedling mortality. Reducing plant competition and planting drought-resistant species will help to reduce seedling mortality.

Large stones in the substratum limit these soils as a building site. Slope is an additional limitation for building sites in unit GfC. The rapid permeability limits the soils as a site for septic tank absorption fields and causes a hazard of contamination to ground water and nearby wells.

Unit GfB is in capability subclass IIs, and unit GfC is in capability subclass IIIe.

GhB—Gloucester stony fine sandy loam, 3 to 8 percent slopes.

GhC—Gloucester stony fine sandy loam, 8 to 15 percent slopes.

These soils are deep and somewhat excessively drained. They are in irregularly shaped areas on ridges and on the sides and lower slopes of hills. The areas of unit GhB range from 5 to 20 acres and unit GhC from 10 to 50 acres. Stones 20 to 50 feet apart are on the surface of these units.

Typically, the surface layer of these soils is dark brown fine sandy loam about 5 inches thick. The subsoil is yellowish brown and is 17 inches thick. It is gravelly sandy loam in the upper 9 inches and gravelly loamy sand in the lower 8 inches. The substratum is loose gravelly loamy sand to a depth of 60 inches or more. It is yellowish brown, dark grayish brown, and grayish brown.

Included with these soils in mapping are a few small areas of Charlton, Montauk, and Scituate soils. Included areas make up about 20 percent of the acreage of these units.

The permeability of these Gloucester soils is rapid, and the available water capacity is low. The root zone

extends into the substratum. Reaction in unlimed areas is very strongly acid or strongly acid.

Most areas of these soils are in woodland. Some areas are farmed, and some have been developed for homesites.

The stones on the surface make these soils poorly suited to cultivated crops, but the soils are suited to hay and pasture. The low available water capacity makes irrigation necessary in some areas. Proper stocking rates, deferred grazing, and pasture rotation help maintain desirable plant species. Removal of the surface stones improves the suitability of the soils for cultivation.

These soils are suited to the growth and harvesting of trees. Droughtiness causes a high rate of seedling mortality. Reducing plant competition and planting drought-resistant species will help to reduce seedling mortality.

Large stones in the substratum limit these soils as a building site. Slope is an additional limitation for building sites in unit GhC. The rapid permeability limits this soil as a site for septic tank absorption fields and causes a hazard of contamination to ground water and nearby wells.

The capability subclass is VIs.

GxB—Gloucester very stony fine sandy loam, 3 to 8 percent slopes.

GxC—Gloucester very stony fine sandy loam, 8 to 15 percent slopes.

GxD—Gloucester very stony fine sandy loam, 15 to 25 percent slopes.

These soils are deep and somewhat excessively drained. Map units GxB and GxC consist of soils on ridges and on the sides and lower slopes of hills; map unit GxD consists of a soil on the sides of hills. The areas of these units are irregular in shape and range from 5 to 70 acres. Stones 5 to 20 feet apart are on the surface.

Typically, the surface layer of these soils is dark brown fine sandy loam about 5 inches thick. The subsoil is yellowish brown and is 17 inches thick. It is gravelly sandy loam in the upper 9 inches and gravelly loamy sand in the lower 8 inches. The substratum is loose gravelly loamy sand to a depth of 60 inches or more. It is yellowish brown, dark grayish brown, and grayish brown.

Included with these soils in mapping are a few small areas of Charlton and Montauk soils. Small areas of Scituate soils are in units GxB and GxC and typically are in concave areas or in lower positions on the slope. Included areas make up about 20 percent of the acreage of these units.

The permeability of these Gloucester soils is rapid, and available water capacity is low. The root zone extends into the substratum. Reaction is very strongly acid or strongly acid.

Most areas of these soils are in woodland. Some have been developed for homesites.

The stones on the surface make these soils poorly suited to cultivated crops or to hay and pasture. Slope is an additional limitation for the use of equipment in unit GxD. Proper stocking rates, deferred grazing, and pasture rotation help to maintain desirable pasture plant species.

These soils are suited to trees. Droughtiness causes a high rate of seedling mortality; reducing plant competition and planting drought-resistant species will help to reduce seedling mortality. The stones and boulders on the surface limit the use of harvesting equipment, and its use is further limited by slope in unit GxD.

The stones on the surface are the main limitation to use of these soils as building sites. Slope is also a limitation, especially in units GxC and GxD. The rapid permeability limits the soils as a site for septic tank absorption fields and causes a hazard of contamination to ground water and nearby wells.

The capability subclass is VIIs.

Ha—Hadley silt loam. This soil is deep, nearly level, and well drained. It is on flood plains adjacent to streams and rivers. The areas are irregular in shape and range from 10 to 75 acres.

Typically, the surface layer is very dark grayish brown silt loam about 11 inches thick. The substratum is silt or silt loam to a depth of 72 inches or more. It is olive brown, brown, and light olive brown.

Included with this soil in mapping are a few small areas of Suncook and Winooski soils. The Suncook soils typically are on the streambanks, and the Winooski soils are in lower positions. Included areas make up about 15 percent of the unit.

The permeability of this Hadley soil is moderate or moderately rapid throughout. Available water capacity is high. Root growth extends into the substratum. Flooding for brief periods in winter and spring is common on these soils. Reaction of the soil ranges from very strongly acid to neutral in the upper 40 inches and from medium acid to mildly alkaline at a depth of more than 40 inches.

Most areas of this soil are farmed. Some areas are in woodland, and the soil is well suited to trees. Some areas have been developed for homesites.

This soil is well suited to cultivated crops and to hay and pasture (fig. 7). Good tilth is easily maintained in cultivated areas, and the erosion hazard is slight. In the spring, soil blowing is a hazard on some unprotected fields. The use of cover crops and mixing crop residue and manure into the surface layer help to maintain tilth, minimize soil blowing, and increase the organic matter content in cultivated areas. Proper stocking rates, deferred grazing, and pasture rotation help to maintain desirable pasture plant species.

Flooding in unprotected areas is a limitation of this soil as a building site and as a site for septic tank absorption fields.

The capability class is I.

Figure 7.—Corn on an area of Hadley silt loam.

Hd—Hadley-Winooski-Urban land complex. This unit consists of deep, nearly level soils and areas covered by buildings, sidewalks, parking lots, roads, and railroads. Areas of this unit are irregular in shape or rectangular and range from 10 to 100 acres. They are on flood plains adjacent to streams and rivers. The areas are about 45 percent well drained Hadley soils, 20 percent moderately well drained Winooski soils, 20 percent urbanized areas, and 15 percent other soils. The Hadley and Winooski soils and the urbanized areas are so intricately mixed that it was not practical to map them separately.

Typically, the Hadley soils have a surface layer of very dark grayish brown silt loam about 11 inches thick. The substratum is silt or silt loam to a depth of 72 inches or more. It is olive brown, brown, and light olive brown.

Typically, the Winooski soils have a surface layer of very dark grayish brown silt loam about 17 inches thick. The substratum is mottled and extends to a depth of 60 inches or more. It is olive very fine sandy loam, olive gray silt loam, and olive silt loam.

Included with this unit in mapping are small areas of poorly drained and very poorly drained soils and a few areas of gently sloping and moderately sloping soils.

The permeability of the Hadley and Winooski soils is moderate or moderately rapid throughout. Available water capacity is high. The root zone extends into the substratum. Flooding for brief periods is common on areas that are not protected. The Winooski soils have a seasonal high water table between depths of 1.5 and 3 feet in winter and spring. Reaction of the Hadley soils ranges from very strongly acid to neutral in the upper 40 inches and from medium acid to mildly alkaline at a depth of more than 40 inches. Reaction of the Winooski soils ranges from strongly acid to neutral.

Most areas of these soils have been developed for homesites and small buildings. A few areas are wooded, and a few areas are in parks.

The lack of open space makes this unit poorly suited or unsuited to farming and woodland, but the soils are well suited to gardens.

Flooding is the main limitation of these soils as a building site or as a site for septic tank absorption fields. The high water table limits the Winooski soils for homesites and septic tank absorption fields.

This unit is not assigned to a capability subclass.

HfB—Haven very fine sandy loam, 3 to 8 percent slopes. This soil is deep, gently sloping, and well drained. It is at the base of steeper hills. The areas are irregular in shape and range from 10 to 75 acres.

Typically, the surface layer is brown very fine sandy loam about 5 inches thick. The subsoil is very fine sandy loam 17 inches thick. It is yellowish brown in the upper 10 inches and brown in the lower 7 inches. The substratum is loose sand or sand and gravel to a depth of 60 inches or more. It is yellowish brown in the upper 8 inches and light brownish gray in the lower part.

Included with this soil in mapping are a few small areas of Holyoke, Hinckley, Merrimac, Sudbury, and Ninigret soils. The Sudbury and Ninigret soils typically are in lower positions, and the Holyoke and Hinckley soils in higher positions. Included areas make up about 15 percent of the unit.

The permeability of this Haven soil is moderate in the subsoil and very rapid in the substratum. Available water capacity is high. The root zone extends into the substratum, but root growth is restricted by loose sand and gravel in the substratum. Reaction in unlimed areas is very strongly acid or strongly acid.

Most areas of this soil are in woodland, and the soil is well suited to trees. Some small areas are farmed, and some have been developed for homesites.

This soil is well suited to cultivated crops and to hay and pasture. Good tilth is easily maintained in cultivated areas, but the erosion hazard is moderate. Minimum tillage, contour tillage, and the use of cover crops and grasses and legumes in the cropping system help to reduce runoff and control erosion in cultivated areas. Mixing crop residue and manure into the surface layer improves tilth and increases the organic matter content. Proper stocking rates, deferred grazing, and pasture rotation help to maintain desirable pasture plant species.

This soil has essentially no limitations for homesites, but slope is a limitation for small commercial buildings. The very rapid permeability in the substratum limits the soil as a site for septic tank absorption fields and causes a hazard of contamination to ground water and nearby wells.

The capability subclass is IIe.

HfC—Haven very fine sandy loam, 8 to 20 percent slopes. This soil is deep, moderately sloping, and well drained. It is at the base of steeper hills. The areas are long and narrow or irregular in shape and range from 20 to 100 acres.

Typically, the surface layer is brown very fine sandy loam about 3 inches thick. The subsoil is very fine sandy loam 17 inches thick. It is yellowish brown in the upper 10 inches and brown in the lower 7 inches. The substratum is loose sand or sand and gravel to a depth of 60 inches or more. It is yellowish brown in the upper 8 inches and light brownish gray in the lower part.

Included with this soil in mapping are a few small areas of Holyoke, Hinckley, Merrimac, Sudbury, and Ninigret soils. The Sudbury and Ninigret soils typically are in lower positions, and the Holyoke and Hinckley soils are in higher positions. Also included are a few areas of Haven soils with slopes of 20 to 25 percent. Included areas make up about 15 percent of the unit.

The permeability of this Haven soil is moderate in the subsoil and very rapid in the substratum. Available water capacity is moderate. The root zone extends into the substratum, but root growth is restricted by the loose sand and gravel in the substratum. Reaction in unlimed areas is very strongly acid or strongly acid.

Most areas of this soil are in woodland, and the soil is well suited to trees. Some small areas are farmed, and some have been developed for homesites.

This soil is suited to cultivated crops and to hay and pasture. Good tilth is easily maintained in cultivated areas, but the erosion hazard is moderate. Minimum tillage, contour tillage, stripcropping, terracing, and using cover crops and grasses and legumes in the cropping system help to reduce runoff and control erosion in cultivated areas. Mixing crop residue and manure into the surface layer improves tilth and increases the organic matter content. Proper stocking rates, deferred grazing, and pasture rotation help to maintain desirable pasture plant species.

Slope is the main limitation of this soil as a building site. The very rapid permeability in the substratum limits this soil as a site for septic tank absorption fields and causes a hazard of contamination to ground water and nearby wells.

The capability subclass is IIIe.

HgA—Hinckley loamy sand, 0 to 3 percent slopes.
HgB—Hinckley loamy sand, 3 to 8 percent slopes.

These soils are deep and excessively drained. The areas are irregular in shape and range from 10 to 100 acres. Map unit HgA consists of a nearly level soil in broad areas; map unit HgB consists of a gently sloping soil on hills and ridges and on side slopes of small drainageways.

Typically, the surface layer is very dark grayish brown loamy sand about 8 inches thick. The subsoil is 21 inches thick. It is loose, brown loamy sand in the upper 5 inches and loose, brown gravelly sand in the lower 16 inches. The substratum extends to a depth of 60 inches or more. It is loose, brownish yellow, stratified sand, coarse sand, gravelly sand, and gravel.

Included with these soils in mapping are a few small areas of Windsor and Sudbury soils. Also included are areas that have less gravel in the subsoil and substratum than these Hinckley soils. Included areas make up about 20 percent of the acreage of these units.

The permeability of these Hinckley soils is rapid in the subsoil and very rapid in the substratum. Available water capacity is low. The root zone extends into the substratum, but root growth is restricted by loose, stratified sand and gravel in the substratum. Reaction in unlimed areas ranges from extremely acid to medium acid.

Most areas of these soils are in woodland. Some areas are farmed, and some have been developed for homesites.

These soils are suited to cultivated crops (fig. 8) and to hay and pasture. Droughtiness is a limitation, and irrigation is needed in most years. Erosion is a moderate hazard in unit HgB. Minimum tillage, using cover crops and grasses and legumes in the cropping system, and mixing crop residue into the surface layer help to improve tilth and increase organic matter content in cultivated areas. Proper stocking rates, deferred grazing, and pasture rotation help to maintain desirable pasture plant species.

These soils are suited to the growth and harvesting of trees. Droughtiness causes a high rate of seedling mortality. Reducing plant competition and planting drought-resistant species will help to reduce seedling mortality.

These soils have essentially no limitations as a site for dwellings. Slope is a limitation of the soils as a site for small commercial buildings in unit HgB. The rapid and very rapid permeability limits these soils as a site for septic tank absorption fields and causes a hazard of contamination to ground water and nearby wells.

The capability subclass is IIIs.

HgC—Hinckley loamy sand, 8 to 15 percent slopes.

HgD—Hinckley loamy sand, 15 to 25 percent slopes.

HgE—Hinckley loamy sand, 25 to 35 percent slopes.

Figure 8.—Shade-grown tobacco on Hinckley loamy sand, 0 to 3 percent slopes.

These soils are deep and excessively drained. Map unit HgC consists of a soil on hills and ridges and on the side slopes of small drainageways. Map units HgD and HgE consist of soils on the side slopes of hills and on narrow ridges adjacent to flood plains. The areas of these units are irregular in shape. The areas of unit HgC range from 10 to 100 acres and those of units HgD and HgE from 10 to 70 acres.

Typically, the surface layer of these soils is very dark grayish brown loamy sand about 4 inches thick. The subsoil is 15 inches thick. It is loose, brown loamy sand in the upper 3 inches and loose, brown gravelly sand in the lower 12 inches. The substratum extends to a depth of 60 inches or more. It is loose, brownish yellow stratified sand, coarse sand, gravelly sand, and gravel.

Included with these soils in mapping are a few small areas of Windsor soils. Small areas of Sudbury soils in unit HgC typically are in concave areas or in lower positions on the slope. Small areas of Merrimac soils are in unit HgE. Included areas make up about 20 percent of the acreage of these units.

The permeability of these Hinckley soils is rapid in the subsoil and very rapid in the substratum. Available water capacity is low. The root zone extends into the substratum, but growth is restricted by loose, stratified sand and gravel in the substratum. Reaction in unlimed areas ranges from extremely acid to medium acid.

Most areas of these soils are in woodland. A few areas in units HgC and HgD have been developed for homesites.

Droughtiness and slope make these soils poorly suited to cultivated crops or to hay and pasture. Irrigation, which is needed in most years, is difficult to apply because of the slope. Crop rotations of mostly hay will help to reduce runoff and control erosion. Contour stripcropping and minimum tillage also help to reduce runoff and control erosion in units HgC and HgD.

These soils are suited to trees, but droughtiness causes a high rate of seedling mortality and slope limits the use of harvesting equipment in units HgD and HgE. Planting drought-resistant species and reducing plant competition will help to reduce seedling mortality.

Slope is the main limitation of these soils as a building site or as a site for septic tank absorption fields. The rapid and very rapid permeability also limits these soils as a site for septic tank absorption fields and causes a hazard of contamination to ground water and nearby wells.

Unit HgC is in capability subclass IVs; unit HgD is in capability subclass VIs; and unit HgE is in capability subclass VIIs.

Hu—Hinckley-Merrimac-Urban land complex. This unit consists of deep, nearly level to moderately sloping soils and areas covered by buildings, sidewalks, parking lots, roads, and railroads. The areas of this unit are irregular in shape or rectangular and are typically 10 to 100 acres. The areas are about 30 percent excessively drained Hinckley soils, 25 percent somewhat excessively drained Merrimac soils, 25 percent urbanized areas, and 20 percent other soils. The Hinckley and Merrimac soils and the urbanized areas are so intricately mixed that it was not practical to map them separately.

Typically, the Hinckley soils have a surface layer of very dark grayish brown loamy sand about 8 inches thick. The subsoil is 18 inches thick. It is loose, brown loamy sand in the upper 3 inches and loose, brown gravelly sand in the lower 15 inches. The substratum extends to a depth of 60 inches or more. It is loose, brownish yellow, stratified sand, coarse sand, gravelly sand, and gravel.

Typically, the Merrimac soils have a surface layer of dark brown fine sandy loam about 8 inches thick. The subsoil is yellowish brown and is 14 inches thick. It is fine sandy loam in the upper part and sandy loam in the lower part. The substratum extends to a depth of 60 inches or more. It is loose, stratified grayish brown and light grayish brown sand and gravelly sand.

Included with this complex in mapping are areas of Agawam, Ninigret, Sudbury, Walpole, and Windsor soils and areas of moderately steep soils.

Permeability is rapid in the subsoil of the Hinckley soils and very rapid in the substratum. It is moderately rapid in the subsoil of the Merrimac soils and rapid or very rapid in the substratum. Available water capacity is low in the Hinckley soils and moderate in the Merrimac soils. The root zone extends into the substratum in both soils, but root growth is restricted by loose sand and gravel in the substratum. Reaction in unlimed areas ranges from extremely acid to medium acid.

Most areas of these soils have been developed for homesites and small buildings. A few areas are wooded, and a few areas are in parks.

A lack of open space makes this unit poorly suited or unsuited to farming and woodland.

The soils in this complex have essentially no limitations for homesites, but slope limits the soils as a site for small commercial buildings. The rapid or very rapid permeability limits the soils as a site for septic tank absorption fields and causes a hazard of contamination to ground water and nearby wells.

This unit is not assigned to a capability subclass.

HvC—Holyoke stony very fine sandy loam, 3 to 15 percent slopes. This soil is shallow, gently sloping and moderately sloping, and somewhat excessively drained. It is on hills and ridges. The areas are irregular in shape and range from 10 to 30 acres. The surface is covered by stones that are 30 to 100 feet apart and areas of exposed bedrock that are more than 300 feet apart.

Typically, the surface layer is dark brown very fine sandy loam about 2 inches thick. The subsoil is very fine

sandy loam 15 inches thick. It is dark brown in the upper 3 inches and reddish brown in the lower 12 inches. Basalt bedrock is at a depth of 17 inches.

Included with this soil in mapping are a few small areas of Haven, Narragansett, and Paxton soils and soils that have bedrock 20 to 40 inches below the surface. Also included are areas of Ridgebury soils in depressions. Included areas make up about 35 percent of the unit.

The permeability of this Holyoke soil is moderate, and available water capacity is low. The root zone extends to bedrock. Reaction in unlimed areas is very strongly acid or strongly acid.

Most areas of this soil are in woodland. A few areas are farmed, and some have been developed for homesites.

The stones on the surface make this soil poorly suited to cultivated crops, but the soil is suited to hay and pasture. Proper stocking rates, deferred grazing, and pasture rotation help to maintain desirable pasture plant species. Removal of the surface stones improves the suitability of the soil for cultivation.

This soil is poorly suited to the growth and harvesting of trees. Droughtiness causes a high rate of seedling mortality. The shallow depth to bedrock makes trees on this soil susceptible to uprooting during windy periods.

The depth to bedrock limits this soil as a building site and as a site for septic tank absorption fields. Slope is an additional limitation of the soil as a site for small commercial buildings.

The capability subclass is VIs.

Lk—Limerick silt loam. This soil is deep, nearly level, and poorly drained. It is on flood plains adjacent to streams and rivers. The areas are crescent-shaped or are irregular in shape, and range from 5 to 30 acres.

Typically, the surface layer is dark grayish brown silt loam about 12 inches thick. The substratum is mottled and extends to a depth of 60 inches or more. It is dark grayish brown very fine sandy loam in the upper 8 inches. The lower part is dark gray silt loam with thin bands of fine sand and very fine sand.

Included with this soil in mapping are a few small areas of Winooski and Saco soils that make up about 15 percent of the unit.

The permeability of this Limerick soil is moderate, and available water capacity is high. The root zone extends into the substratum, but root growth is restricted by a seasonal high water table which is within 18 inches of the surface in winter and spring. Flooding is common on the soil for brief periods. Reaction ranges from medium acid to neutral.

Most areas of this soil are in woodland. A few areas are farmed.

This soil is suited to cultivated crops and to hay and pasture. The seasonal high water table keeps the soil saturated through late spring. The main management needs include installing field drains where feasible, proper timing of farming operations, using water-tolerant plant species, and planting after spring flooding. Mixing crop residue and manure into the surface layer improves tilth and increases the organic matter content. Proper stocking rates, deferred grazing, pasture rotation, and restricted grazing when the soil is saturated help to maintain desirable pasture plant species.

This soil is poorly suited to the growth and harvesting of trees. The high water table causes a high rate of seedling mortality, which can be reduced by planting water-tolerant species, and limits the use of harvesting equipment to periods when the soil is frozen or the water table has receded. The shallow rooting depth makes trees on this soil subject to uprooting during windy periods. Uprooting can be reduced by planting trees in a dense stand to reduce the effect of the wind.

The seasonal high water table and flooding hazard are the main limitations of the soil as a building site and as a site for septic tank absorption fields.

The capability subclass is IIIw.

Ma—Maybid silt loam. This soil is deep, nearly level, and very poorly drained. It is in depressions and low-lying areas. The areas are oval to irregular in shape and range from 5 to 25 acres.

Typically, the surface layer is very friable silt loam about 10 inches thick. It is very dark brown in the upper part and very dark gray and mottled in the lower part. The subsurface layer is firm, dark greenish gray silt loam 3 inches thick. The subsoil is firm, dark gray silty clay loam 11 inches thick. The substratum extends to a depth of 60 inches or more. It is firm, dark gray, thinly stratified silty clay, clay, and silt.

Included with this soil in mapping are a few areas of soils with a surface layer and subsoil of very fine sandy loam. Also included are a few small areas of Scitico and Saco soils. Included areas make up about 15 percent of the unit.

The permeability of this Maybid soil is slow or very slow throughout. Available water capacity is high. The root zone is restricted by a high water table that is at or near the surface most of the year. Reaction ranges from medium acid to neutral in the subsoil and slightly acid or neutral in the substratum.

This soil is poorly suited to cultivated crops and to hay and pasture. The high water table, which keeps the soil wet throughout the year, is the major limitation for farming. Installing drainage is difficult because of the clayey texture of the soil and the lack of adequate outlets. Grazing during wet periods causes surface compaction.

The soil is poorly suited to the growth and harvesting of trees. The high water table causes a high rate of seedling mortality, which can be reduced by planting water-tolerant species, and limits the use of equipment to periods when the soil is frozen or dry. The shallow rooting system makes trees on this soil subject to uprooting during windy periods. Uprooting can be reduced by establishing a dense stand.

The high water table is the main limitation of this soil as a building site and, along with the slow or very slow permeability, is a limitation for septic tank absorption fields.

The capability subclass is VIw.

MeA—Merrimac fine sandy loam, 0 to 3 percent slopes.

MeB—Merrimac fine sandy loam, 3 to 8 percent slopes.

These soils are deep and somewhat excessively drained. The soil making up map unit MeA is in broad, nearly level areas. The soil making up unit MeB is on gently sloping hills and in long, narrow areas. The areas of unit MeA range from 5 to 100 acres and MeB from 10 to 150 acres.

Typically, the surface layer of these soils is dark brown fine sandy loam about 8 inches thick. The subsoil is yellowish brown and is 16 inches thick. It is fine sandy loam in the upper part and sandy loam in the lower part. The substratum extends to a depth of 60 inches or more. It is loose, stratified grayish brown and light brownish gray sand and gravelly sand.

Included with these soils in mapping are a few small areas of Agawam, Hinckley, and Sudbury soils. Included areas make up about 15 percent of the acreage of these units.

The permeability of these Merrimac soils is moderately rapid in the subsoil and rapid or very rapid in the substratum. Available water capacity is moderate. The root zone extends into the substratum, but root growth is restricted by loose sand and gravel in the substratum. Reaction in unlimed areas ranges from extremely acid to medium acid.

Many areas of this soil are farmed. Some areas are in woodland, and many have been developed for homesites.

These soils are well suited to cultivated crops and to hay and pasture. Droughtiness is the main limitation. Good tilth is easily maintained in cultivated areas. Minimum tilage and the use of cover crops and grasses and legumes in the cropping system help to reduce runoff and improve tilth. The use of contour tillage in unit MeB helps to control the moderate hazard of erosion. Mixing crop residue and manure into the surface layer improves tilth and increases the organic matter content. Proper stocking rates, deferred grazing, and pasture rotation help to maintain desirable pasture plant species.

These soils are suited to the growth and harvesting of trees, but droughtiness causes a high rate of seedling mortality. Reducing plant competition and planting drought-resistant species will help to reduce seedling mortality.

These soils have essentially no limitations for homesites. Slope is a limitation for small commercial buildings in unit MeB. The rapid or very rapid permeability limits these soils as a site for septic tank absorption fields and causes a hazard of contamination to ground water and nearby wells.

The capability subclass is IIs.

MeC—Merrimac fine sandy loam, 8 to 15 percent slopes.

MeD—Merrimac fine sandy loam, 15 to 25 percent slopes.

These soils are deep and somewhat excessively drained. Map unit MeC is moderately sloping. This soil is on hills and the side slopes of small drainageways. Map unit MeD is moderately steep. This soil is on the side slopes of hills and narrow ridges adjacent to flood plains. The areas of these units are irregular in shape and range from 5 to 75 acres.

Typically, the surface layer of these soils is dark brown fine sandy loam about 8 inches thick. The subsoil is yellowish brown and is 14 inches thick. It is fine sandy loam in the upper part and sandy loam in the lower part. The substratum extends to a depth of 60 inches or more. It is loose, stratified grayish brown and light brownish gray sand and gravelly sand.

Included with these soils in mapping are a few small areas of Hinckley soils. Also included in unit MeC are a few areas of Agawam and Sudbury soils. Included areas make up about 15 percent of the acreage of these units.

The permeability of these Merrimac soils is moderately rapid in the subsoil and rapid or very rapid in the substratum. Available water capacity is moderate. The root zone extends into the substratum, but root growth is restricted by loose sand and gravel in the substratum. Reaction in unlimed areas ranges from extremely acid to medium acid.

Many areas of these soils are farmed. Many areas are in woodland, and a few have been developed for homesites.

These soils are suited to cultivated crops and to hay and pasture. A severe erosion hazard and droughtiness are the main limitations. Minimum tillage, contour cultivation, terracing, and using cover crops and grasses and legumes in the cropping system help to reduce runoff and control erosion. Stripcropping is an additional practice that helps to reduce runoff and control erosion in unit MeC. Mixing crop residue and manure into the surface layer of these soils improves tilth and increases the organic matter content. Proper stocking rates, deferred grazing, and pasture rotation help to maintain desirable pasture plant species.

The soils are suited to the growth and harvesting of trees, but slope limits the use of harvesting equipment in unit MeD. Droughtiness in these soils causes a high rate of seedling mortality. Reducing plant competition and planting drought-resistant species will help to reduce seedling mortality.

Slope limits these soils as a building site and as a site for septic tank absorption fields. The rapid or very rapid permeability also limits these soils as a site for septic tank absorption fields and causes a hazard of contamination to ground water and nearby wells.

Unit MeC is in capability subclass IIIe; unit MeD is in capability subclass IVe.

MoB—Montauk fine sandy loam, 3 to 8 percent slopes. This soil is deep, gently sloping, and well drained. It is on the tops and sides of hills and ridges. The areas are rectangular or oval and range from 5 to 40 acres.

Typically, the surface layer is friable, brown fine sandy loam about 6 inches thick. The subsoil is friable and is 15 inches thick. It is yellowish brown fine sandy loam in the upper 6 inches and brown sandy loam in the lower 9 inches. The substratum is firm, grayish brown loamy sand to a depth of 60 inches or more.

Included with this soil in mapping are a few small areas of Paxton, Scituate, and Gloucester soils. Included areas make up about 15 percent of the unit.

The permeability of this Montauk soil is moderate or moderately rapid in the subsoil and moderately slow or slow in the substratum. Available water capacity is moderate. The root zone extends into the subsoil, and root growth is restricted by the firm substratum. A seasonal high water table is perched above the substratum for brief periods in winter and spring and after prolonged rains. Reaction of the soil in unlimed areas ranges from extremely acid to strongly acid.

Many areas of this soil are farmed. Some areas are in woodland, and the soil is well suited to trees. Some areas have been developed for homesites.

This soil is well suited to cultivated crops, hay, and pasture. Good tilth is easily maintained in cultivated areas. Minimum tillage, contour tillage, and using cover crops and grasses and legumes in the cropping system help to reduce runoff and control the moderate hazard of erosion. Mixing crop residue and manure into the surface layer improves tilth and increases the organic matter content. Proper stocking rates, deferred grazing, and pasture rotation help to maintain desirable pasture plant species.

The seasonal perched water table is the main limitation of the soil as a building site. Slope is a limitation of the soil as a site for small commercial buildings, and the slow or moderately slow permeability is a limitation for septic tank absorption fields.

The capability subclass is IIe.

MoC—Montauk fine sandy loam, 8 to 15 percent slopes. This soil is deep, moderately sloping, and well drained. It is on ridges and the sides of hills. The areas are rectangular to oval and range from 5 to 50 acres.

Typically, the surface layer is friable, brown fine sandy loam about 6 inches thick. The subsoil is friable and is 15 inches thick. It is yellowish brown fine sandy loam in the upper 6 inches and brown sandy loam in the lower 9 inches. The substratum is firm, grayish brown loamy sand to a depth of 60 inches or more.

Included with this soil in mapping are a few small areas of Paxton, Scituate, and Gloucester soils. Included areas make up about 15 percent of the unit.

The permeability of this Montauk soil is moderate or moderately rapid in the subsoil and moderately slow or slow in the substratum. Available water capacity is moderate. The root zone extends into the subsoil, and root growth is restricted by the firm substratum. A seasonal high water table is perched above the substratum for brief periods in winter and spring and after prolonged rains. Reaction of the soil in unlimed areas ranges from extremely acid to strongly acid.

Many areas of this soil are farmed. Some areas are in woodland, and the soil is well suited to trees. Some areas have been developed for homesites.

This soil is suited to cultivated crops and to hay and pasture. Good tilth is easily maintained in cultivated areas. Stripcropping, terracing, minimum tillage, contour tillage, and using cover crops and grasses and legumes in the cropping system help to reduce runoff and control the moderate hazard of erosion. Mixing crop residue and manure into the surface layer improves tilth and increases the organic matter content. Proper stocking rates, deferred grazing, and pasture rotation help to maintain desirable pasture plant species.

Slope and the high water table limit this soil as a building site. The slow or moderately slow permeability limits this soil as a site for septic tank absorption fields.

The capability subclass is IIIe.

MsC—Montauk stony fine sandy loam, 3 to 15 percent slopes. This soil is deep, gently sloping and sloping, and well drained. It is on ridges and the upper parts of hills. The areas are irregular in shape and range from 10 to 40 acres. Stones 20 to 50 feet apart are on the surface.

Typically, the surface layer is friable, brown fine sandy loam about 6 inches thick. The subsoil is friable and is 15 inches thick. It is yellowish brown fine sandy loam in the upper 6 inches and brown sandy loam in the lower 9 inches. The substratum is firm, grayish brown loamy sand to a depth of 60 inches or more.

Included with this soil in mapping are a few small areas of Paxton, Scituate, and Gloucester soils. Included areas make up about 15 percent of the unit.

The permeability of this Montauk soil is moderate or moderately rapid in the subsoil and moderately slow or slow in the substratum. Available water capacity is moderate. The root zone extends into the subsoil, and root growth is restricted by the firm substratum. A seasonal high water table is perched above the substratum for brief periods in winter and spring and after prolonged rains. Reaction of the soil in unlimed areas ranges from extremely acid to strongly acid.

Most areas of this soil are in woodland, and the soil is well suited to trees. A few areas are farmed, and some have been developed for homesites.

The stones on the surface make this soil poorly suited to cultivated crops, but the soil is suited to hay and pasture. In areas used for pasture, proper stocking rates, deferred grazing, and pasture rotation help to maintain desirable pasture plant species. Removal of the surface stones improves the suitability of the soil for cultivation.

Slope and the seasonal perched water table limit this soil as a building site. The slow or moderately slow permeability limits the soil as a site for septic tank absorption fields.

The capability subclass is VIs.

MxB—Montauk very stony fine sandy loam, 3 to 8 percent slopes.

MxC—Montauk very stony fine sandy loam, 8 to 15 percent slopes.

MxD—Montauk very stony fine sandy loam, 15 to 25 percent slopes.

These soils are deep and well drained. The soils making up map units MxB and MxC are on ridges and on the sides and lower slopes of hills. The soil making up map unit MxD is on the sides of hills. The areas are irregular in shape. The areas of units MxB and MxC range from 10 to 75 acres and those of unit MxD from 20 to 150 acres. Stones 5 to 20 feet apart are on the surface.

Typically, the surface layer is friable, brown fine sandy loam about 6 inches thick. The subsoil is friable and is 15 inches thick. It is yellowish brown fine sandy loam in the upper 6 inches and brown sandy loam in the lower 9 inches. The substratum is firm, grayish brown loamy sand to a depth of 60 inches or more.

Included with this soil in mapping are a few small areas of Paxton and Gloucester soils. Small areas of Scituate soils are in units MxB and MxC and typically are in lower positions. Included areas make up about 15 percent of the acreage of these units.

The permeability of these Montauk soils is moderate or moderately rapid in the subsoil and moderately slow or slow in the substratum. Available water capacity is moderate. The root zone extends into the subsoil, and root growth is restricted by the firm substratum. A seasonal high water table is perched above the substratum for brief periods during winter and spring and after prolonged rains. Reaction of the soils in unlimed areas ranges from extremely acid to strongly acid.

Most areas of these soils are in woodland. Some areas have been developed for homesites.

The stones on the surface make these soils poorly suited to cultivated crops or to hay and pasture. Slope in unit MxD is a limitation for the use of equipment. In areas used for pasture, proper stocking rates, deferred grazing, and pasture rotation help to maintain desirable pasture plant species.

These soils are suited to the growth and harvesting of trees, but the stones on the surface limit the use of harvesting equipment.

The seasonal perched water table limits these soils as a building site. Slope is an additional limitation for building sites in units MxC and MxD. The soils are limited as a site for septic tank absorption fields by the slow or moderately slow permeability and by slope in unit MxD.

The capability subclass is VIIs.

NaC—Narragansett-Holyoke-Rock outcrop complex, 8 to 15 percent slopes.

NaD—Narragansett-Holyoke-Rock outcrop complex, 15 to 25 percent slopes.

These units are in irregularly shaped areas on hills and ridges. The areas range from 10 to 75 acres. Stones 5 to 20 feet apart are on the surface. The areas are about 35 percent deep, well drained Narragansett soils; 20 percent shallow, somewhat excessively drained Holyoke soils; 15 percent bedrock exposures 100 to 300 feet apart; and 30 percent other soils. The Narragansett soils are between areas of Holyoke soils, which are adjacent to the areas of exposed rock. The Narragansett and Holyoke soils and the exposed rock are so intricately mixed that it was not practical to map them separately.

Typically, the Narragansett soils have a surface layer of dark grayish brown very fine sandy loam about 1 inch thick. The subsoil is 30 inches thick. It is brown very fine sandy loam in the upper 12 inches and yellowish brown fine sandy loam and sandy loam in the lower 18 inches. The substratum is yellowish brown loamy sand and sand to a depth of 60 inches or more.

Typically, the Holyoke soils have a surface layer of dark brown very fine sandy loam about 2 inches thick. The subsoil is very fine sandy loam about 15 inches thick. It is dark brown in the upper 3 inches and reddish brown in the lower 12 inches. Basalt bedrock is at a depth of 17 inches.

Included with these units in mapping are small areas of Woodbridge soils and several areas of well drained soils where the depth to bedrock is between 20 and 60 inches. Also included in unit NaC are Ridgebury soils in small depressional areas.

Permeability is moderate throughout the Holyoke soils and in the subsoil of the Narragansett soil. It is moderately rapid or rapid in the substratum of the Narragansett soils. Available water capacity is moderate in the Narragansett soils and low in the Holyoke soils. The root zone extends into the substratum of the Narragansett soils and to bedrock in the Holyoke soils. Reaction is very strongly acid or strongly acid in both soils.

The areas of exposed rock, the slope, and the stones on the surface make these soils poorly suited to farming.

The soils in these units are suited to trees, but the exposed rock and stones on the surface and the slope in unit NaD limit the use of timber harvesting equipment. Placing logging roads on the contour of the slope helps to control an erosion hazard. The Holyoke soils in these units have a high rate of seedling mortality, and the restricted rooting depth in the Holyoke soils make trees susceptible to uprooting during windy periods.

The slope in these units and the depth to bedrock in the Holyoke soils are limitations for building sites and septic tank absorption fields.

The capability subclass is VIIs.

NgA—Ninigret fine sandy loam, 0 to 3 percent slopes.

NgB—Ninigret fine sandy loam, 3 to 8 percent slopes.

These soils are deep and moderately well drained. The soil in unit NgA is in broad, nearly level areas. The soil in unit NgB is on gently sloping hills and in long, narrow areas. The areas range from 5 to 40 acres.

Typically, the surface layer is very dark grayish brown fine sandy loam about 10 inches thick. The subsoil is 21 inches thick. It is yellowish brown fine sandy loam in the upper 11 inches; grayish brown, mottled fine sandy loam in the next 7 inches; and olive gray, mottled sandy loam in the lower 3 inches. The substratum is loose, light olive gray, mottled fine sand to a depth of 60 inches or more.

Included with these soils in mapping are a few small areas of Amostown, Deerfield, Windsor, and Agawam soils that make up about 15 percent of the acreage of these units.

The permeability of these Ninigret soils is moderately rapid in the subsoil and rapid in the substratum. Available water capacity is moderate. The root zone extends into the substratum. These soils have a seasonal high water table in winter and early spring. Reaction in unlimed areas ranges from very strongly acid to medium acid.

Many areas of these soils are farmed. Some areas are in woodland, and the soils are well suited to trees. Some areas have been developed for homesites.

These soils are well suited to cultivated crops and to hay and pasture. Good tilth is easily maintained in cultivated areas. The seasonal high water table commonly keeps the soil wet in early spring and delays farming operations. Drainage is needed in areas used for crops but is generally not needed for hay and pasture. Minimum tillage and using cover crops and grasses and legumes in the cropping system help to reduce runoff and improve tilth. The use of contour tillage in unit NgB helps to control the moderate hazard of erosion. Mixing crop residue and manure into the surface layer improves tilth and increases the organic matter content. Proper stocking rates, deferred grazing, and pasture rotation help to maintain desirable pasture plant species.

The seasonal high water table is the main limitation of these soils as a building site. Slope is also a limitation of the soil as a site for small commercial buildings in unit NgB. The rapid permeability and seasonal high water table limit the soils as a site for septic tank absorption fields, and the permeability causes a hazard of contamination to ground water and nearby wells.

The capability subclass is IIw.

PaB—Paxton fine sandy loam, 3 to 8 percent slopes. This soil is deep, gently sloping, and well drained. It is on ridges and on the tops and upper parts of hills. The areas are rectangular or oval and range from 5 to 40 acres.

Typically, the surface layer is friable, very dark grayish brown fine sandy loam about 7 inches thick. The subsoil is friable fine sandy loam 23 inches thick. It is dark yellowish brown in the upper 6 inches, light olive brown in the next 10 inches, and olive brown in the lower 7 inches. The substratum is fine sandy loam to a depth of 60 inches or more. It is firm and olive brown in the upper 10 inches and very firm and dark grayish brown in the lower part.

Included with this soil in mapping are a few small areas of Charlton, Woodbridge, and Ridgebury soils and a few areas of soils with slopes of 0 to 3 percent. Included areas make up about 15 percent of the unit.

The permeability of this Paxton soil is moderate in the subsoil and slow or very slow in the substratum. Available water capacity is low. The root zone extends into the subsoil, but root growth is restricted by the firm substratum. A seasonal high water table is perched above the substratum for brief periods during winter and spring and after prolonged rains. Reaction in unlimed areas ranges from strongly acid to slightly acid.

Many areas of this soil are farmed. Some areas are in woodland, and the soil is well suited to trees. Some areas have been developed for homesites.

This soil is well suited to cultivated crops and to hay and pasture. Good tilth is easily maintained in cultivated areas. Minimum tillage, contour tillage, and using cover crops and grasses and legumes in the cropping system help to reduce runoff and the moderate hazard of erosion. Mixing crop residue and manure into the surface layer improves tilth and increases the organic matter content of the soil. Proper stocking rates, deferred grazing, and pasture rotation help to maintain desirable pasture plant species.

The seasonal perched water table is the main limitation of the soil as a building site. Slope is a limitation of the soil as a site for small commercial buildings, and the slow or very slow permeability is a limitation for septic tank absorption fields.

The capability subclass is IIe.

PaC—Paxton fine sandy loam, 8 to 15 percent slopes.

PaD—Paxton fine sandy loam, 15 to 25 percent slopes.

These soils are deep and well drained. They are in rectangular or oval areas on the sides of hills. The areas range from 5 to 40 acres.

Typically, the surface layer is friable, very dark grayish brown fine sandy loam about 5 inches thick. The subsoil is friable fine sandy loam 16 inches thick. It is light olive brown in the upper 9 inches and olive brown in the lower 7 inches. The substratum is fine sandy loam to a depth of 60 inches or more. It is firm and olive brown in the upper 10 inches and very firm and dark grayish brown in the lower part.

Included with these soils in mapping are a few small areas of Charlton and Woodbridge soils. Also included in unit PaC are Ridgebury soils that typically are in small concave areas or in lower positions on the slope. Included areas make up about 15 percent of the acreage of these units.

The permeability of these Paxton soils is moderate in the subsoil and slow or very slow in the substratum. Available water capacity is low. The root zone extends into the subsoil, but root growth is restricted by the firm substratum. A seasonal high water table is perched above the substratum for brief periods during winter and spring and after prolonged rains. Reaction in unlimed areas ranges from strongly acid to slightly acid.

Many areas of these soils are in woodland. Many areas are farmed, and some have been developed for homesites.

These soils are suited to cultivated crops, to orchards, and to hay and pasture. Good tilth is easily maintained in cultivated areas. Stripcropping, terracing, minimum tillage, and using cover crops and grasses and legumes in the cropping system help to reduce runoff and the severe hazard of erosion. Mixing crop residue and manure into the surface layer improves tilth and increases the organic matter content of the soil. Proper stocking rates, deferred grazing, and pasture rotation help to maintain desirable pasture plant species.

These soils are well suited to trees, but slope limits the use of harvesting equipment in unit PaD.

Slope is a limitation of these soils as a building site. Use of these soils for septic tank absorption fields is limited by the slow or very slow permeability and by slope in unit PaD.

Unit PaC is in capability subclass IIIe, and unit PaD is in capability subclass IVe.

PbB—Paxton stony fine sandy loam, 3 to 8 percent slopes.

PbC—Paxton stony fine sandy loam, 8 to 15 percent slopes.

PbD—Paxton stony fine sandy loam, 15 to 25 percent slopes.

These soils are deep and well drained. The soils in units PbB and PbC are on ridges and the lower slopes of hills. The soil in unit PbD is on hillsides. The areas of these units are irregular in shape. The areas of units PbB and PbC range from 20 to 80 acres and those of unit PbD from 10 to 30 acres. Stones 20 to 50 feet apart are on the surface.

Typically, the surface layer is friable, very dark grayish brown fine sandy loam about 3 inches thick. The subsoil is friable fine sandy loam 23 inches thick. It is dark yellowish brown in the upper 6 inches, light olive brown in the next 10 inches, and olive brown in the lower 7 inches. The substratum is fine sandy loam to a depth of 60 inches or more. It is firm and olive brown in the upper 10 inches and very firm and dark grayish brown in the lower part.

Included with these soils in mapping are a few small areas of Charlton and Woodbridge soils. Also included in units PbB and PbC are small areas of Ridgebury soils in slight depressions. Included areas make up about 15 percent of the acreage of these units.

The permeability of these Paxton soils is moderate in the subsoil and slow or very slow in the substratum. Available water capacity is low. The root zone extends into the subsoil, and root growth is restricted by the firm substratum. A seasonal high water table is perched above the substratum for brief periods during winter and spring and after prolonged rains. Reaction of the soil in unlimed areas ranges from strongly acid to slightly acid.

Most areas of these soils are in woodland. Some areas have been developed for homesites.

The stones on the surface make these soils poorly suited to cultivated crops. Slope in unit PbD limits the use of equipment. The soils are suited to hay and pasture. Proper stocking rates, deferred grazing, and pasture rotation help to maintain desirable plant species.

These soils are suited to trees, but slope limits the use of harvesting equipment in unit PbD.

The seasonal perched water table limits these soils as a building site. Slope is an additional limitation for homesites in units PbC and PbD. The slow or very slow permeability in all units and the slope in unit PbD limit the soils as a site for septic tank absorption fields.

The capability subclass is VIs.

PcB—Paxton very stony fine sandy loam, 3 to 8 percent slopes.

PcC—Paxton very stony fine sandy loam, 8 to 15 percent slopes.

PcD—Paxton very stony fine sandy loam, 15 to 25 percent slopes.

These soils are deep and well drained. The soils in units PcB and PcC are on ridges and the lower slopes of hills. The soil in unit PcD is on hillsides. The areas of these units are irregular in shape and range from 10 to 80 acres. Stones 5 to 20 feet apart are on the surface.

Typically, the surface layer is friable, very dark grayish brown fine sandy loam about 3 inches thick. The subsoil is friable fine sandy loam 21 inches thick. It is dark yellowish brown in the upper 4 inches, light olive brown in the next 10 inches, and olive brown in the lower 7 inches. The substratum is fine sandy loam to a depth of 60 inches or more. It is firm and olive brown in the upper 10 inches and very firm and dark grayish brown in the lower part.

Included with these soils in mapping are a few small areas of Charlton and Woodbridge soils. Also included in units PcB and PcC are small areas of Ridgebury soils in slight depressions. Included areas make up about 15 percent of the acreage of these units.

The permeability of these Paxton soils is moderate in the subsoil and slow or very slow in the substratum. Available water capacity is low. The root zone extends into the subsoil, but root growth is restricted by the firm substratum. A seasonal high water table is perched above the substratum for brief periods during winter and spring and after prolonged rains. Reaction of the soil ranges from strongly acid to slightly acid.

Most areas of these soils are in woodland. Some areas have been developed for homesites.

The stones on the surface make these soils poorly suited to farming. Slope in unit PcD limits the use of equipment.

These soils are suited to trees, but the stones on the surface limit the use of harvesting equipment. Slope is an additional limitation for the use of harvesting equipment in unit PcD.

The seasonal perched water table limits these soils as a building site. Slope is an additional limitation for homesites in units PcC and PcD. The slow or very slow permeability in the Paxton soils and the slope in unit PcD limit the soils as a site for septic tank absorption fields.

The capability subclass is VIIs.

PcE—Paxton very stony fine sandy loam, steep. This soil is deep and well drained. It is on the sides of hills and ridges. The areas are irregular in shape and range from 25 to 150 acres. Stones 5 to 20 feet apart are on the surface.

Typically, the surface layer is friable, very dark grayish brown fine sandy loam about 2 inches thick. The subsoil is friable fine sandy loam 20 inches thick. It is dark yellowish brown in the upper 4 inches, light olive brown in the next 9 inches, and olive brown in the lower 7 inches. The substratum is fine sandy loam to a depth of 60 inches or more. It is firm and olive brown in the upper 10 inches and very firm and dark grayish brown in the lower part.

Included with this soil in mapping are areas of Charlton and Montauk soils that comprise up to 30 percent of some units. Also included are small areas of Woodbridge soils. Wethersfield soils make up much of the acreage of the units in the southern part of the town of Southampton and in the eastern part of the town of Easthampton.

The permeability of this Paxton soil is moderate in the subsoil and slow or very slow in the substratum. Available water capacity is low. The root zone extends into the subsoil, and root growth is restricted by the firm substratum. A seasonal high water table is perched above the substratum for brief periods during winter and spring and after prolonged rains. Reaction of the soil ranges from strongly acid to slightly acid.

Most areas of this soil are in woodland. A few areas have been developed for homesites.

Slope and the stones on the surface make this soil poorly suited to farming. The soil is suited to trees, but the slope and stones on the surface restrict the use of harvesting equipment.

Slope is the main limitation of this soil as a building site and, along with the slow or very slow permeability, is a limitation for septic tank absorption fields.

The capability subclass is VIIs.

Pd—Paxton-Charlton-Urban land complex. This unit consists of deep, gently sloping or moderately sloping soils and areas covered by buildings, sidewalks, parking lots, roads, and railroads. The unit is on hills and ridges that are periodically dissected by small waterways. The areas are irregular in shape or rectangular and range from 20 to 100 acres. They are about 40 percent well drained Paxton soils, 20 percent well drained Charlton soils, 20 percent urbanized, and 20 percent other soils. The Paxton and Charlton soils and the urbanized areas are so intricately mixed that it was not practical to map them separately.

Typically, the Paxton soils have a surface layer of friable, very dark grayish brown fine sandy loam about 7 inches thick. The subsoil is friable fine sandy loam 19 inches thick. It is dark yellowish brown in the upper 2 inches, light olive brown in the next 10 inches, and olive brown in the lower 7 inches. The substratum is fine sandy loam to a depth of 60 inches or more. It is firm and olive brown in the upper 10 inches and very firm and dark grayish brown in the lower part.

Typically, the Charlton soils have a surface layer of very friable, dark brown fine sandy loam about 7 inches thick. The subsoil is friable and is 15 inches thick. It is yellowish brown fine sandy loam in the upper 6 inches and light olive brown gravelly fine sandy loam in the lower 9 inches. The substratum is firm, olive gravelly sandy loam to a depth of 60 inches or more.

Included with this complex in mapping are small areas of poorly drained and very poorly drained soils, nearly level soils, and steep soils.

Permeability is moderate in the subsoil and slow or very slow in the substratum of the Paxton soils. It is moderate or moderately rapid in the Charlton soils. Available water capacity is low in the Paxton soils and moderate in the Charlton soils. The root zone in the Paxton soils extends into the subsoil and is restricted by the firm substratum. The root zone in the Charlton soils extends into the substratum. A seasonal high water table in the Paxton soils is perched above the substratum for brief periods during winter and spring and after prolonged rains. Reaction ranges from strongly acid to slightly acid in the Paxton soils and from very strongly acid to medium acid in the Charlton soils.

Most areas of these soils have been developed for homesites and small buildings. A few areas are wooded, and a few areas are in parks.

A lack of open space makes areas of this unit poorly suited or unsuited to farming and woodland.

The seasonal perched water table limits the Paxton soils as a building site and the slow or very slow permeability as a site for septic tank absorption fields. The Charlton soils have essentially no limitations for homesites or septic tank absorption fields.

This unit is not assigned to a capability subclass.

Pg—Pits, gravel. This unit consists of irregularly shaped areas from which gravel has been removed for construction purposes. The areas range from 2 to 100 acres or more. The pits are 3 to 50 feet deep and mainly have steep sides and a nearly level floor. Piles of stones and boulders are commonly scattered on the pit floor. Some areas have small pools of water.

These pits are generally devoid of vegetation, although some older ones have scattered bushes, grass, and annuals. Most pits are droughty, but some have been excavated to a depth below the seasonal high water table.

Areas of this unit are generally poorly suited to farming, woodland, and residential development. Onsite investigation is necessary for any proposed use.

This unit is not assigned to a capability subclass.

PuA—Pollux fine sandy loam, 0 to 3 percent slopes.

PuB—Pollux fine sandy loam, 3 to 8 percent slopes.

These soils are deep and well drained. Map unit PuA consists of a nearly level soil in broad areas. Map unit PuB consists of a gently sloping soil on low hills and in long, narrow areas. The areas range from 5 to 50 acres.

Typically, the surface layer of these soils is very friable, very dark grayish brown fine sandy loam about 4 inches thick. The subsoil is very friable and is 26 inches thick. It is dark yellowish brown fine sandy loam in the upper 16 inches and olive brown sandy loam in the lower 10 inches. The substratum is firm, olive gray silt loam and very fine sandy loam to a depth of 60 inches or more.

Included with these soils in mapping are a few small areas of Amostown and Enosburg soils that make up about 20 percent of the acreage of these units.

The permeability of these Pollux soils is moderately rapid in the subsoil and slow or moderately slow in the substratum. Available water capacity is high. The root zone extends into the substratum. Reaction in unlimed areas is very strongly acid or strongly acid in the subsoil and ranges from very strongly acid to neutral in the substratum.

Most areas of these soils are farmed. Some areas are in woodland, and the soils are well suited to trees.

These soils are well suited to cultivated crops and to hay and pasture. Good tilth is easily maintained in cultivated areas. Minimum tillage and the use of cover crops and grasses and legumes in the cropping system help to reduce runoff and improve tilth. The use of contour tillage in unit PuB helps to control the moderate hazard of erosion. Mixing crop residue and manure into the surface layer also improves tilth and increases the organic matter content. Proper stocking rates, deferred grazing, and pasture rotation help to maintain desirable pasture plant species.

These soils have essentially no limitations for homesites, but the slow or very slow permeability limits their use for septic tank absorption fields. Slope is a limitation of unit PuB as a site for small commercial buildings.

Unit PuA is in capability class I, and unit PuB is in capability subclass IIe.

PuC—Pollux fine sandy loam, 8 to 15 percent slopes. This soil is deep, moderately sloping, and well drained. It is on the sides and tops of low hills. The areas are irregular in shape and range from 5 to 25 acres.

Typically, the surface layer is very friable, very dark grayish brown fine sandy loam about 4 inches thick. The subsoil is very friable and is 23 inches thick. It is dark yellowish brown fine sandy loam in the upper 13 inches and olive brown sandy loam in the lower 10 inches. The substratum is firm, olive gray silt loam or very fine sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are areas, generally smaller than 3 acres, of Amostown soils that make up about 15 percent of the unit.

The permeability of this Pollux soil is moderately rapid in the subsoil and slow or moderately slow in the substratum. Available water capacity is high. The root zone extends into the substratum. Reaction in unlimed areas is very strongly acid or strongly acid in the subsoil and ranges from very strongly acid to neutral in the substratum.

Most areas of this soil are farmed. Some areas are in woodland, and the soil is well suited to trees.

This soil is suited to cultivated crops and to hay and pasture. Good tilth is easily maintained in cultivated areas, but the erosion hazard is moderate. Minimum tillage, contour tillage, stripcropping, and using cover crops and grasses and legumes in the cropping system help to reduce runoff and control erosion. Mixing crop residue and manure into the surface layer improves tilth and increases the organic matter content. Proper stocking rates, deferred grazing, and pasture rotation help to maintain desirable pasture plant species.

Slope is the limitation of this soil as a building site and slow or very slow permeability as a site for septic tank absorption fields.

The capability subclass is IIIe.

Pv—Pootatuck fine sandy loam. This soil is deep, nearly level, and moderately well drained. It is on flood plains adjacent to streams and rivers. The areas are long and narrow or irregular in shape and range from 5 to 30 acres.

Typically, the surface layer is very dark grayish brown fine sandy loam about 10 inches thick. The subsoil is 24 inches thick. It is yellowish brown fine sandy loam that is mottled in the lower 13 inches. The substratum extends to a depth of 60 inches or more. It is loose loamy fine sand and sand. It is light gray in the upper 8 inches and gray in the lower part.

Included with this soil in mapping are a few areas where the surface layer is silt loam. Also included are a few small areas of Rippowam soils. Included areas make up about 15 percent of the unit.

The permeability of this Pootatuck soil is moderate or moderately rapid in the subsoil and rapid or very rapid in the substratum. Available water capacity is moderate. The root zone extends into the substratum. This soil has a seasonal high water table which is in the lower part of

the subsoil in late fall, in winter, and in spring. Flooding for brief periods is common. Reaction of the soil in unlimed areas ranges from very strongly acid to slightly acid.

Most areas of this soil are farmed. Many areas are in woodland, and the soil is well suited to trees.

This soil is well suited to cultivated crops and to hay and pasture. The main management concern is wetness caused by the seasonal high water table. The main management needs include installing field drains where needed, proper timing of farming operations, and planting after the spring floods. Mixing crop residue and manure into the surface layer improves tilth and increases the organic matter content. Proper stocking rates, deferred grazing, pasture rotation, and restricted grazing when the soil is saturated help to maintain desirable pasture plant species.

Flooding and the seasonal high water table limit this soil as a building site and as a site for septic tank absorption fields.

The capability subclass is IIw.

Qu—Quarries. This unit consists of areas that have been excavated for granite. The areas typically are on the sides and tops of ridges that range from nearly level to vertical. The areas consist of layers of exposed bedrock. The walls are mainly vertical, and the bottom is generally excavated in steps. Small pools of water are at the bottom of many quarries, and some areas have small piles of broken granite at the bottom and along the edges.

These areas are generally idle after mining is completed. The lack of soil material and difficulty of excavation prevent reclamation, and very few areas have been reclaimed. Very little vegetation grows in or around the quarries. The areas have poor potential for most uses because of exposed bedrock, a high percentage of small stone fragments, and very low available water capacity. Onsite investigation is necessary to determine the suitability for any proposed use.

This unit is not assigned to a capability subclass.

Ra—Raynham silt loam. This soil is deep, nearly level, and poorly drained. It is in broad flat areas that range from 5 to 20 acres.

Typically, the surface layer is very dark brown silt loam about 10 inches thick. The subsoil is 20 inches thick. It is dark brown, mottled silt loam in the upper 6 inches and grayish brown, mottled very fine sandy loam in the lower 14 inches. The substratum is mottled and extends to a depth of 60 inches or more. It is grayish brown silt loam in the upper 4 inches, grayish brown very fine sandy loam in the next 3 inches, and gray stratified loamy fine sand, silt, and fine sandy loam in the lower 23 inches.

Included with this soil in mapping are a few areas of soils with slopes of 3 to 8 percent. Also included are a few small areas of Belgrade, Scitico, and Maybid soils. Included areas make up about 15 percent of the unit.

The permeability of this Raynham soil is moderate or moderately slow in the subsoil and slow in the substratum. Available water capacity is high. The root zone extends into the substratum. This soil has a seasonal high water table which is at a depth of less than 2 feet in late fall, in winter, and in spring and for short periods after prolonged rains. Reaction of the soil in unlimed areas ranges from strongly acid to neutral in the subsoil and medium acid to neutral in the substratum.

Most areas of this soil are in woodland. Some areas are farmed.

This soil is suited to cultivated crops and to hay and pasture. Wetness is the main limitation for these uses, and the soil needs drainage. Minimum tillage and the use of cover crops and grasses and legumes in the cropping system help to improve tilth and increase the organic matter content. Proper stocking rates, deferred grazing, and pasture rotation help to maintain desirable pasture plant species.

The seasonal high water table makes this soil poorly suited to trees. The water table causes a high rate of seedling mortality and restricts rooting, making trees susceptible to uprooting during windy periods. It also limits the use of harvesting equipment to periods when the soil is frozen or when the water table has receded. Planting water-tolerant species helps to lower the rate of seedling mortality, and establishing dense stands helps to control uprooting.

The seasonal high water table is the main limitation of this soil as a building site and, along with the moderate or moderately slow permeability, limits the soil as a site for septic tank absorption fields.

The capability subclass is IIIw.

RdA—Ridgebury fine sandy loam, 0 to 3 percent slopes.

RdB—Ridgebury fine sandy loam, 3 to 8 percent slopes.

These soils are deep and poorly drained and somewhat poorly drained. The soil in map unit RdA is nearly level or is in depressions. The soil in unit RdB is gently sloping and is along drainageways or at the base of steeper slopes. The areas are long and narrow or irregular in shape and range from 5 to 15 acres.

Typically, the surface is very friable, very dark gray fine sandy loam about 5 inches thick. The subsoil is mottled and is 13 inches thick. It is very friable, grayish brown fine sandy loam in the upper 5 inches and friable, gray sandy loam in the lower 8 inches. The substratum is firm, olive, mottled fine sandy loam to a depth of 60 inches or more.

Included with these soils in mapping are a few small areas of Whitman, Woodbridge, and Scituate soils. The Whitman soils are at lower positions, and the Woodbridge and Scituate soils typically are at higher positions. Included areas make up about 15 percent of the acreage of these units.

The permeability of these Ridgebury soils is moderate or moderately rapid in the subsoil and slow or very slow in the substratum. Available water capacity is low. The root zone extends to the firm substratum. These soils have a seasonal high water table which is within 18 inches of the surface in late fall, in winter, and in spring and for short periods after prolonged rains. Reaction of the soils in unlimed areas ranges from very strongly acid to medium acid.

Most areas of these soils are in woodland. Some areas are farmed.

These soils are suited to cultivated crops and to hay and pasture. The seasonal high water table keeps the soils saturated through late spring. Thus, the main management needs include installing field drains where feasible, proper timing of farming operations, and using water-tolerant plant species. Use of minimum tillage, contour tillage, and grasses and legumes in the cropping system helps to control a moderate hazard of erosion in unit RdB. Proper stocking rates, deferred grazing, pasture rotation, and restricted grazing when the soil is saturated help to maintain desirable pasture plant species.

The seasonal high water table makes these soils poorly suited to trees. The water table causes a high rate of seedling mortality and restricts rooting, making trees susceptible to uprooting during windy periods. It also limits the use of harvesting equipment to periods when the soils are frozen or dry. Planting water-tolerant species helps to lower the rate of seedling mortality, and establishing dense stands helps to control uprooting.

The seasonal high water table is the main limitation of these soils as a building site and, along with the slow or very slow permeability, limits the soils as a site for septic tank absorption fields.

The capability subclass is IIIw.

ReA—Ridgebury very stony fine sandy loam, 0 to 3 percent slopes.

ReB—Ridgebury very stony fine sandy loam, 3 to 8 percent slopes.

These soils are deep and poorly drained and somewhat poorly drained. The soil in map unit ReA is nearly level or is in slightly depressional areas. The soil in unit ReB is gently sloping and is along drainageways. The areas are long and narrow or irregular in shape and range from 5 to 75 acres. Stones 5 to 20 feet apart are on the surface.

Typically, the surface is very friable, very dark gray fine sandy loam about 2 inches thick. The subsoil is mottled and is 13 inches thick. It is very friable, grayish brown fine sandy loam in the upper 5 inches and friable, gray sandy loam in the lower 8 inches. The substratum is firm, olive, mottled fine sandy loam to a depth of 60 inches or more.

Included with these soils in mapping are a few small areas of Whitman, Woodbridge, and Scituate soils. The Whitman soils are at lower positions, and the Woodbridge and Scituate soils typically are at higher positions. Included areas make up about 15 percent of the acreage of these units.

The permeability of these Ridgebury soils is moderate or moderately rapid in the subsoil and slow or very slow in the substratum. Available water capacity is low. The root zone extends to the firm substratum. These soils have a seasonal high water table which is within 18 inches of the surface in late fall, in winter, and in spring and for short periods after prolonged rains. Reaction of these soils ranges from very strongly acid to medium acid.

The stones on the surface make these soils poorly suited to cultivated crops, but the soils are suited to hay and pasture. In areas used for pasture, proper stocking rates, deferred grazing, and pasture rotation help to maintain desirable plant species.

Most areas of these soils are wooded, but the soils are poorly suited to the growth and harvesting of trees. The seasonal high water table causes a high rate of seedling mortality and restricts rooting, making trees susceptible to uprooting during windy periods. The stones on the surface restrict the use of harvesting equipment, and the water table further limits the use of equipment to periods when the soil is frozen or dry. Planting water-tolerant tree species helps to reduce the rate of seedling mortality, and establishing dense stands protects the trees from uprooting.

The seasonal high water table is the main limitation of these soils as a building site and, along with the slow or very slow permeability, limits the soils as a site for septic tank absorption fields.

The capability subclass is VIIs.

Rm—Rippowam fine sandy loam. This soil is deep, nearly level, and poorly drained. It is in slightly concave areas on flood plains adjacent to streams and rivers. The areas are irregular in shape or crescent-shaped and range from 5 to 30 acres.

Typically, the surface layer is very dark brown fine sandy loam about 5 inches thick. The subsoil is mottled fine sandy loam 19 inches thick. It is dark gray in the upper 4 inches and grayish brown in the lower 15 inches. The substratum is olive gray loamy sand to a depth of 60 inches or more. It is mottled in the upper part.

Included with this soil in mapping are areas, generally smaller than 3 acres, of Pootatuck, Saco, and Limerick soils that make up about 15 percent of the unit.

The permeability of this Rippowam soil is moderate or moderately rapid in the subsoil and rapid or very rapid in the substratum. Available water capacity is high. The root zone is restricted by a seasonal high water table which is within 18 inches of the surface in late fall, in winter, and in spring. Flooding for brief periods is common. Reaction of the soil ranges from very strongly acid to slightly acid.

Most areas of this soil are in woodland. Some areas are farmed.

This soil is suited to cultivated crops and to hay and pasture. The seasonal high water table keeps the soil saturated through late spring. Thus, the main management needs include installing field drains where feasible, proper timing of farming operations, and using water-tolerant plant species. Planting must be done after the spring floods. Mixing crop residue and manure into the surface layer improves tilth and increases the organic matter content. Proper stocking rates, deferred grazing, pasture rotation, and restricted grazing when the soil is saturated help to maintain desirable pasture plant species.

The seasonal high water table makes this soil poorly suited to the growth and harvesting of trees. The water table causes a high rate of seedling mortality and restricts rooting, making trees susceptible to uprooting during windy periods. It also limits the use of harvesting equipment to periods when the soil is frozen or dry. Planting water-tolerant species helps to lower the rate of seedling mortality, and establishing dense stands helps to prevent uprooting.

The seasonal high water table and flooding are limitations of this soil as a building site or as a site for septic tank absorption fields. The rapid and very rapid permeability in the substratum causes a hazard of contamination to ground water and nearby wells in areas used for septic tanks.

The capability subclass is IIIw.

Ro—Rock outcrop. This unit is in irregularly shaped areas on hills and ridges. The areas range from 5 to 30 acres, and about 90 percent of the surface is exposed bedrock.

Included with this unit in mapping are small areas of soils that range widely in drainage and texture and in depth to bedrock.

Most areas of this unit are devoid of vegetation. Some are in sparse brushy woodland. The areas of exposed rock make the unit very poorly suited to most uses.

This unit is not assigned to a capability subclass.

RoC—Rock outcrop-Narragansett-Holyoke complex, sloping.

RoE—Rock outcrop-Narragansett-Holyoke complex, steep.

These map units consist of irregularly shaped areas of soils and areas of exposed bedrock. Unit RoC ranges from 10 to 75 acres and is on sloping hills and ridges. Unit RoE ranges from 20 to 500 acres and is on the sides of steep hills (fig. 9). Both units have stones on the surface 5 to 20 feet apart. The areas of the units are about 40 percent exposed bedrock; 25 percent deep, well drained Narragansett soils; 20 percent shallow, somewhat excessively drained Holyoke soils; and 15 percent other soils. The Narragansett soils are between areas of Holyoke soils, which are adjacent to the areas of exposed rock. The Narragansett and Holyoke soils and the exposed rock are so intricately mixed that it was not practical to map them separately.

Typically, the Narragansett soils have a surface layer of dark grayish brown very fine sandy loam about 1 inch thick. The subsoil is 30 inches thick. It is brown very fine sandy loam in the upper 12 inches and yellowish brown fine sandy loam and sandy loam in the lower 18 inches. The substratum is yellowish brown loamy sand and sand to a depth of 60 inches or more.

Typically, the Holyoke soils have a surface layer of dark brown very fine sandy loam about 1 inch thick. The subsoil is very fine sandy loam about 15 inches thick. It is dark brown in the upper 3 inches and reddish brown in the lower 12 inches. Bedrock is at a depth of 16 inches.

Included with these units in mapping are areas, generally smaller than 3 acres, of Haven and Woodbridge soils. Also included in unit RoC are small depressional areas of Ridgebury soils. Some units consist of up to 15 percent well drained soils that have bedrock at a depth of 20 to 60 inches.

Permeability is moderate throughout the Holyoke soils and in the subsoil of the Narragansett soils. It is moderately rapid or rapid in the substratum of the Narragansett soils. Available water capacity is moderate in the Narragansett soils and low in the Holyoke soils. In the Narragansett soils, the root zone extends into the substratum. It extends to bedrock in the Holyoke soils. Reaction is very strongly acid or strongly acid in these soils.

The areas of exposed bedrock, the slope, and the stones on the surface make these units poorly suited to farming.

Most areas of these units are wooded, and the soils are suited to trees. However, the stones and exposed rock on the surface limit the use of timber harvesting equipment, and equipment use is further limited by slope in unit RoE. The depth to bedrock in the Holyoke soils causes a high rate of seedling mortality and makes trees susceptible to uprooting during windy periods.

Slope and the depth to bedrock in the Holyoke soils limit these units as a building site and as a site for septic tank absorption fields.

The capability subclass is VIIs.

Sa—Saco silt loam. This soil is deep, nearly level, and very poorly drained. It is on flood plains adjacent to streams and rivers. The areas are irregular in shape and crescent-shaped and range from 5 to 30 acres.

Typically, the surface layer is friable, very dark brown silt loam about 12 inches thick. The substratum is dark gray and extends to a depth of 60 inches or more. It is friable silt loam in the upper part and loose fine sand in the lower part.

Included with this soil in mapping are areas, generally smaller than 3 acres, of Limerick and Swansea soils that make up about 15 percent of the unit.

The permeability of this Saco soil is moderate in the upper part of the substratum and rapid or very rapid in

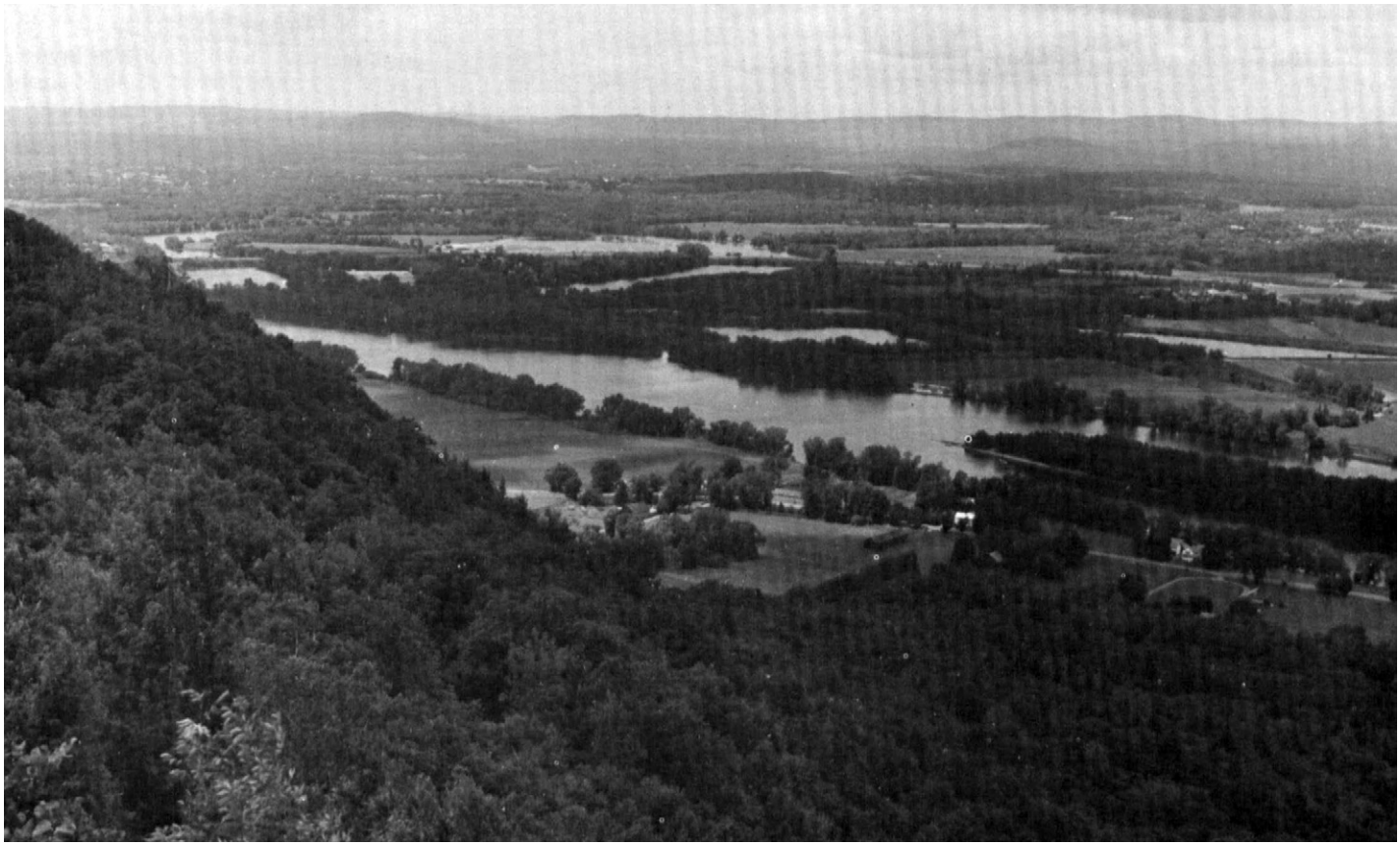


Figure 9.—A typical area of Rock outcrop-Narragansett-Holyoke complex, steep. The cleared areas are Hadley soils near the Connecticut River.

the lower part. Available water capacity is high. The root zone is restricted by a seasonal high water table that is at or near the surface in fall, winter, and spring. Flooding for brief periods is common. Reaction of the soil is strongly acid or medium acid at a depth of less than 30 inches and medium acid to neutral at more than 30 inches.

Most areas of this soil are in woodland or in sedges, grasses, or shrubs.

The hazard of flooding and the seasonal high water table make this soil poorly suited to farming.

The seasonal high water table makes this soil poorly suited to trees. The water table causes a high rate of seedling mortality and restricts rooting, making trees susceptible to uprooting during windy periods. It also restricts the use of harvesting equipment to periods when the soil is frozen or dry. Establishing dense stands helps to prevent uprooting, and planting water-tolerant species helps to reduce seedling mortality.

The seasonal high water table and flooding limit this soil as a building site and, along with the rapid or very rapid permeability, limit the soil as a site for septic tank absorption fields. The permeability causes a hazard of contamination to ground water and nearby wells in areas used for septic tanks.

The capability subclass is VIw.

Sb—Scarboro muck. This soil is deep, nearly level, and very poorly drained. It is in low areas and depressions. The areas are oval or irregular in shape and range from 5 to 40 acres.

Typically, the surface layer is friable, black, and about 13 inches thick. It is muck in the upper 5 inches, fine sandy loam in the next 3 inches, and loamy sand in the lower 5 inches. The substratum is loose, gray, mottled loamy sand to a depth of 60 inches or more.

Included with this soil in mapping are areas, generally smaller than 3 acres, of Walpole and Swansea soils that make up about 15 percent of the unit.

The permeability of this Scarboro soil is rapid or very rapid throughout the soil. Available water capacity is moderate. The root zone is restricted by a high water table that is at or near the surface during most of the year. Reaction of the soil is very strongly acid or strongly acid.

The high water table keeps the soil wet throughout the year and makes the soil poorly suited to farming.

Most areas of this soil are wooded, but the soil is poorly suited to the growth and harvesting of trees. The high water table causes a high rate of seedling mortality and restricts rooting, making trees susceptible to uprooting during windy periods. It also restricts the use of harvesting equipment. Planting water-tolerant species helps to lower the rate of seedling mortality, and establishing dense stands protects the trees from uprooting.

The high water table is the main limitation of this soil as a building site and, along with the rapid or very rapid permeability, limits this soil as a site for septic tank absorption fields. The permeability causes a hazard of contamination to ground water and nearby wells in areas used for septic tanks.

The capability subclass is Vw.

Sc—Scitico silt loam. This soil is deep, nearly level, and poorly drained. It is in broad areas or at the base of slopes. The areas are irregular in shape and range from 5 to 20 acres.

Typically, the surface layer is very friable, grayish brown, mottled silt loam about 10 inches thick. The subsoil is friable, olive gray, mottled silt loam 12 inches thick. The substratum is firm, thinly stratified silt and clay to a depth of 60 inches or more. It is mottled and grayish brown in the upper 14 inches and mottled and dark grayish brown in the lower part.

Included with this soil in mapping are a few areas where the surface layer is sandy loam. Also included are a few small areas of Maybid, Boxford, and Raynham soils. Included areas make up about 15 percent of the unit.

The permeability of this Scitico soil is slow or very slow throughout. Available water capacity is high. The root zone is restricted by a seasonal high water table which is within 12 inches of the surface in late fall, in winter, and in spring and for short periods after prolonged rains. Reaction of the soil ranges from medium acid to neutral.

Most areas of this soil are in woodland. Some areas are farmed, and some have been developed for homesites.

This soil is suited to cultivated crops and to hay and pasture. The seasonal high water table is the main limitation for farming; drainage is difficult to establish because of the slow or very slow permeability and a lack of outlets. Proper stocking rates, deferred grazing, pasture rotation, and restricted grazing when the soil is saturated help to maintain desirable pasture plant species.

The seasonal high water table makes this soil poorly suited to trees. The water table causes a high rate of seedling mortality and restricts rooting, making trees susceptible to uprooting during windy periods. It also restricts the use of equipment to periods when the soil is frozen or dry. Planting water-tolerant species helps to lower the rate of seedling mortality, and establishing dense stands protects the trees from uprooting.

The seasonal high water table is the main limitation of this soil as a building site and, along with the slow or very slow permeability, limits the soil as a site for septic tank absorption fields.

The capability subclass is IVw.

SgB—Scituate fine sandy loam, 3 to 8 percent slopes. This soil is deep, gently sloping, and moderately well drained. It is on ridges and on the lower slopes of hills. The areas are rectangular or oval and range from 5 to 20 acres.

Typically, the surface layer is very friable, dark brown fine sandy loam about 8 inches thick. The subsoil is friable and is 15 inches thick. It is yellowish brown fine sandy loam in the upper 7 inches, dark yellowish brown sandy loam in the next 4 inches, and dark yellowish brown, mottled sandy loam in the lower 4 inches. The substratum is firm, mottled loamy sand to a depth of 60 inches or more. It is grayish brown in the upper 5 inches and olive gray in the lower part.

Included with this soil in mapping are a few small areas of Woodbridge, Montauk, and Ridgebury soils that make up about 15 percent of the unit.

The permeability of the Scituate soil is moderately rapid in the subsoil and slow in the substratum. Available water capacity is moderate. The root zone extends to the firm substratum. The soil has a seasonal perched water table above the substratum in winter and spring and for short periods after prolonged rains. Reaction of the soil in unlimed areas ranges from extremely acid to medium acid.

Many areas of this soil are farmed. Some areas are in woodland, and the soil is suited to trees. Some areas have been developed for homesites.

This soil is well suited to cultivated crops and to hay and pasture. Good tilth is easily maintained in cultivated areas. Wetness is a main limitation, and drainage is a main management need. Minimum tillage, contour tillage, and the use of cover crops and grasses and legumes in the cropping system help to reduce runoff and control the moderate hazard of erosion. Mixing crop residue and manure into the surface layer improves tilth and increases the organic matter content. Proper stocking rates, deferred grazing, and pasture rotation help to maintain desirable pasture plant species.

The seasonal perched water table is the main limitation of the soil as a building site. The water table and the slow permeability limit the soil as a site for septic tank absorption fields.

The capability subclass is IIw.

ShB—Scituate very stony fine sandy loam, 3 to 8 percent slopes.

ShC—Scituate very stony fine sandy loam, 8 to 15 percent slopes.

These soils are deep and moderately well drained. They are on ridges and on the sides and lower slopes of hills. The areas are irregular in shape and range from 10

to 50 acres. Stones 5 to 20 feet apart are on the surface.

Typically, the surface layer of these soils is very friable, dark brown fine sandy loam about 4 inches thick. The subsoil is friable and is 17 inches thick. It is yellowish brown fine sandy loam in the upper 9 inches, dark yellowish brown sandy loam in the next 4 inches, and dark yellowish brown, mottled sandy loam in the lower 4 inches. The substratum is firm, mottled loamy sand to a depth of 60 inches or more. It is grayish brown in the upper 5 inches and gray in the lower part.

Included with these soils in mapping are a few small areas of Woodbridge, Montauk, and Ridgebury soils that make up about 15 percent of the acreage of the units.

The permeability of these Scituate soils is moderately rapid in the subsoil and slow in the substratum. Available water capacity is moderate. The root zone extends to the firm substratum. These soils have a seasonal perched water table above the substratum in winter and spring and for short periods after prolonged rains. Reaction of the soils ranges from extremely acid to medium acid.

Most areas of these soils are in woodland. Some have been developed for homesites.

The stones on the surface make these soils poorly suited to cultivated crops or to hay and pasture. In areas used for pasture, proper stocking rates, deferred grazing, and pasture rotation help to maintain desirable pasture plant species.

These soils are suited to trees, but the stones on the surface limit the use of harvesting equipment.

The seasonal perched water table limits these soils as a building site. Slope is an additional limitation for building sites in unit ShC. The seasonal perched water table and slow permeability limit the soils as a site for septic tank absorption fields.

The capability subclass is VIIs.

SrA—Sudbury fine sandy loam, 0 to 3 percent slopes.

SrB—Sudbury fine sandy loam, 3 to 8 percent slopes.

These soils are deep and moderately well drained. Map unit SrA consists of a nearly level soil in broad areas. Map unit SrB consists of a gently sloping soil on hills. The areas are irregular in shape and range from 5 to 30 acres.

Typically, the surface layer of these soils is very friable, dark brown fine sandy loam about 10 inches thick. The subsoil is brown and is 18 inches thick. It is friable fine sandy loam in the upper 6 inches and loose, mottled gravelly loamy sand in the lower 12 inches. The substratum is loose, light brownish gray, mottled very gravelly loamy sand and gravelly sand to a depth of 60 inches or more.

Included with these soils in mapping are a few small areas of Hinckley, Merrimac, and Walpole soils. The Hinckley and Merrimac soils typically are in higher positions, and the Walpole soils are in lower positions. Included areas make up about 15 percent of the acreage of these units.

The permeability of these Sudbury soils is moderately rapid in the subsoil and rapid in the substratum. Available water capacity is moderate. The root zone extends to the loose substratum. The soils have a seasonal high water table which is in the lower part of the subsoil in winter and spring. Reaction of the soils in unlimed areas ranges from extremely acid to medium acid.

Many areas of these soils are farmed. A few areas are in woodland, and the soils are suited to trees. Some areas have been developed for homesites.

These soils are well suited to cultivated crops and to hay and pasture. Good tilth is easily maintained in cultivated areas. Wetness is the major management concern, and subsurface drains are needed in places. Minimum tillage and the use of cover crops and grasses and legumes in the cropping system help to reduce runoff and improve tilth. The use of contour tillage in unit SrB helps to control the moderate hazard of erosion. Mixing crop residue and manure into the surface layer also improves tilth and increases the organic matter content. Proper stocking rates, deferred grazing, and pasture rotation help to maintain desirable pasture plant species.

The seasonal high water table is the main limitation of these soils as a building site and as a site for septic tank absorption fields. The rapid permeability causes a hazard of contamination to ground water and nearby wells in areas used for septic tanks.

Unit SrA is in capability subclass IIw, and unit SrB is in capability subclass IIe.

Su—Suncook loamy fine sand. This soil is deep, nearly level, and excessively drained. It is on flood plains adjacent to rivers. Most areas of this soil are on low natural levees. The areas are long and narrow and range from 5 to 20 acres.

Typically, the surface layer is loose, dark gray loamy fine sand about 10 inches thick. The underlying layers extend to a depth of 60 inches or more. They consist of stratified loose and friable, dark grayish brown loamy fine sand.

Included with this soil in mapping are a few small areas of Hadley, Winooski, and Pootatuck soils that make up about 15 percent of the unit.

The permeability of this Suncook soil is rapid or very rapid throughout. Available water capacity is low. The root zone extends into the underlying layers. Flooding for brief periods is common. Reaction of the soil in unlimed areas is strongly acid or medium acid.

Most areas of this soil are in woodland. Some areas are farmed.

This soil is suited to cultivated crops and to hay and pasture. The low available water capacity makes irrigation a major management concern. Mixing crop

residue and manure into the surface layer maintains tilth and increases the organic matter content. Proper stocking rates, deferred grazing, and pasture rotation help to maintain desirable pasture plant species.

This soil is suited to the growth and harvesting of trees. Droughtiness causes a high rate of seedling mortality; planting drought-resistant species will help to reduce seedling mortality.

Flooding limits this soil as a building site and as a site for septic tank absorption fields. The rapid or very rapid permeability causes a hazard of contamination to ground water and nearby wells in areas used for septic tanks.

The capability subclass is IIIs.

Sw—Swansea muck. This soil is deep, nearly level, and very poorly drained. It is in depressions or flat areas. The areas are circular or irregular in shape and range from 5 to 20 acres.

Typically, this soil consists of black decomposed organic material 40 inches thick over loose, light gray sand that extends to a depth of 60 inches or more.

Included with this soil in mapping are a few small areas of Whitman, Scarboro, and Freetown soils that make up about 20 percent of the unit. Some units of this soil are on flood plains.

The permeability of this Swansea soil is moderate or moderately rapid in the organic material and very rapid in the underlying layer. Available water capacity is high. The water table is at or near the surface throughout the year. Reaction is extremely acid in the organic material and ranges from extremely acid to very strongly acid in the underlying layer.

The year-round high water table makes this soil poorly suited to farming. Areas of this soil are difficult to drain because of the lack of suitable outlets, and the plant cover is easily cut and dislodged by grazing animals.

This soil is poorly suited to trees. The soft, wet surface layer prevents the use of equipment unless the soil is frozen. The water table causes a high rate of seedling mortality for species that are not water tolerant, and it restricts rooting, making trees susceptible to uprooting during windy periods.

The high water table and low strength of the organic material limit this soil as a building site. The water table and the very rapid permeability limit the soil as a site for septic tank absorption fields. The permeability causes a hazard of contamination to ground water and nearby wells.

The capability subclass is Vw.

Ud—Udorthents, smooth. This unit consists of areas from which soil material has been excavated and areas where the excavated material has been deposited. The original soils were typically excessively drained to moderately well drained and ranged from nearly level to steep. This unit is in elongated, irregularly shaped, and rectangular areas that range from 4 to 200 acres. The depth of the excavation and the thickness of the fill material range from 2 to 20 feet. Some areas of this unit have a level or nearly level central portion and moderately sloping to steep margins. The texture of the soil material in this unit generally ranges from sand and gravel to fine sandy loam, but in some places it is loam or silt loam.

Included with this unit in mapping are a few areas used for trash disposal. Also included are roads, schools, and parking lots. Gravel and cobblestones are abundant in some areas of this unit and stones and boulders in other areas. Included areas make up about 15 percent of the unit.

The permeability of this unit ranges from slow to very rapid, and available water capacity ranges from high to low.

Many areas of this unit are used for athletic fields. Some areas have vegetation, and some have structures on the level portion and vegetation on the slopes.

The characteristics and properties of this unit are variable, and onsite investigation is needed to determine the limitations and suitabilities for specific uses.

This unit is not assigned to a capability subclass.

Wa—Walpole fine sandy loam. This soil is deep, nearly level, and poorly drained. It is in low areas, in depressions, and along drainageways. The areas are long and narrow or irregular in shape and range from 5 to 40 acres.

Typically, the surface layer is very dark gray fine sandy loam about 4 inches thick. The subsoil is fine sandy loam 19 inches thick. It is brown and mottled in the upper 10 inches and grayish brown in the lower 9 inches. The substratum is stratified light brownish gray and brown gravelly sand to a depth of 60 inches or more.

Included with this soil in mapping are a few areas where the surface layer is silt loam and areas with less gravel in the substratum than this Walpole soil. Also included are a few small areas of Sudbury, Scarboro, Ninigret, and Deerfield soils. The Sudbury, Ninigret, and Deerfield soils typically are in higher positions; the Scarboro soils are in lower positions. Included areas make up about 20 percent of the unit.

The permeability of this Walpole soil is moderately rapid in the subsoil and rapid or very rapid in the substratum. Available water capacity is moderate. The root zone is restricted by a seasonal high water table which is within 12 inches of the surface in fall, winter, and spring. Reaction of the soil in unlimed areas ranges from very strongly acid to medium acid.

Most areas of this soil are in woodland. Some areas are farmed.

This soil is suited to cultivated crops and to hay and pasture. The seasonal high water table keeps the soil saturated through late spring. Thus, the main management needs include installing field drains where feasible, proper timing of farming operations, and using water-tolerant plant species. Mixing crop residue and manure into the surface layer improves tilth and

increases the organic matter content. Proper stocking rates, deferred grazing, pasture rotation, and restricted grazing when the soil is saturated help to maintain desirable pasture plant species.

The soil is suited to trees, but the seasonal high water table causes a high rate of seedling mortality and restricts rooting, making trees susceptible to uprooting during windy periods. The water table also restricts the use of equipment to periods when the soil is dry or frozen. Planting water-tolerant species helps to lower the rate of seedling mortality, and establishing dense stands protects trees from uprooting.

The seasonal high water table limits this soil as a building site and, along with the rapid or very rapid permeability, limits this soil as a site for septic tank absorption fields. The permeability causes a hazard of contamination to ground water and nearby wells in areas used for septic tanks.

The capability subclass is IIIw.

WeB—Wethersfield fine sandy loam, 3 to 8 percent slopes. This soil is deep, gently sloping, and well drained. It is on low hills and ridges. The areas are rectangular or oval and range from 5 to 40 acres.

Typically, the surface layer is very friable, dark reddish brown fine sandy loam about 9 inches thick. The subsoil is friable and is 14 inches thick. It is reddish brown fine sandy loam in the upper 7 inches and dark red loam in the lower 7 inches. The substratum is reddish brown and extends to a depth of 60 inches or more. It is firm gravelly loam in the upper 3 inches and very firm gravelly fine sandy loam in the lower part.

Included with this soil in mapping are a few areas with slopes of less than 3 percent and a few small areas of Paxton, Woodbridge, and Ridgebury soils. Included areas make up about 15 percent of the unit.

The permeability of this Wethersfield soil is moderate in the subsoil and slow or very slow in the substratum. Available water capacity is moderate. The root zone extends to the very firm part of the substratum. A seasonal high water table is perched above the substratum for brief periods during winter and spring and after prolonged rains. Reaction of the soil in unlimed areas is strongly acid or very strongly acid in the subsoil and ranges from very strongly acid to medium acid in the substratum.

Many areas of this soil are farmed. Some areas are in woodland, and the soil is well suited to trees.

This soil is well suited to cultivated crops and to hay and pasture. Good tilth is easily maintained in cultivated areas. Minimum tillage, contour tillage, and the use of cover crops and grasses and legumes in the cropping system help to reduce runoff and control the moderate hazard of erosion. Mixing crop residue and manure into the surface layer improves tilth and increases the organic matter content of the soil. Proper stocking rates, deferred grazing, and pasture rotation help to maintain desirable pasture plant species.

The seasonal perched water table is the main limitation of the soil as a building site. The slow or very slow permeability of the soil is a limitation for septic tank absorption fields.

The capability subclass is IIe.

WeC—Wethersfield fine sandy loam, 8 to 15 percent slopes. This soil is deep, moderately sloping, and well drained. It is on low hills and ridges. The areas are rectangular or oval and range from 5 to 25 acres.

Typically, the surface layer is very friable, dark reddish brown fine sandy loam about 9 inches thick. The subsoil is friable and is 12 inches thick. It is reddish brown fine sandy loam in the upper 5 inches and dark red loam in the lower 7 inches. The substratum is reddish brown and extends to a depth of 60 inches or more. It is firm gravelly loam in the upper 3 inches and a very firm gravelly fine sandy loam in the lower part.

Included with this soil in mapping are a few small areas of Paxton, Woodbridge, and Ridgebury soils that make up about 15 percent of the unit.

The permeability of this Wethersfield soil is moderate in the subsoil and slow or very slow in the substratum. Available water capacity is moderate. The root zone extends to the very firm part of the substratum. A seasonal high water table is perched above the substratum for brief periods during winter and spring and after prolonged rains. Reaction of the soil in unlimed areas is strongly acid or very strongly acid in the subsoil and ranges from very strongly acid to medium acid in the substratum.

Many areas of this soil are farmed. Some areas are in woodland, and the soil is well suited to trees.

This soil is suited to cultivated crops and to hay and pasture and is well suited to orchards. Good tilth is easily maintained in cultivated areas. Stripcropping, terracing, minimum tillage, and the use of cover crops and grasses and legumes in the cropping system help to reduce runoff and control the moderate hazard of erosion. Mixing crop residue and manure into the surface layer improves tilth and increases the organic matter content of the soil. Proper stocking rates, deferred grazing, and pasture rotation help to maintain desirable pasture plant species.

Slope is a limitation of this soil as a building site, and the seasonal perched water table especially limits the soil for homesites. The slow or very slow permeability of the soil is a limitation for septic tank absorption fields.

The capability subclass is IIIe.

WfB—Wethersfield stony fine sandy loam, 3 to 8 percent slopes.

WfC—Wethersfield stony fine sandy loam, 8 to 15 percent slopes.

These soils are deep and well drained. Map unit WfB consists of a soil on ridges and hills, and map unit WfC consists of a soil on hillsides. The areas are irregular in shape and range from 10 to 30 acres. Stones 20 to 50 feet apart are on the surface.

Typically, the surface layer of these soils is very friable, dark reddish brown fine sandy loam about 6 inches thick. The subsoil is friable and is 14 inches thick. It is reddish brown fine sandy loam in the upper 7 inches and dark red loam in the lower 7 inches. The substratum is reddish brown and extends to a depth of 60 inches or more. It is firm gravelly loam in the upper 3 inches and very firm gravelly fine sandy loam in the lower part.

Included with these soils in mapping are a few small areas of Paxton, Woodbridge, and Ridgebury soils that make up about 15 percent of the acreage of these units.

The permeability of these Wethersfield soils is moderate in the subsoil and slow or very slow in the substratum. Available water capacity is moderate. The root zone extends to the very firm part of the substratum. A seasonal high water table is perched above the substratum for brief periods during winter and spring and after prolonged rains. Reaction of the soil in unlimed areas is strongly acid or very strongly acid in the subsoil and ranges from very strongly acid to medium acid in the substratum.

Most areas of these soils are in woodland, and the soils are well suited to trees. Some areas have been developed for homesites.

The stones on the surface make these soils poorly suited to cultivated crops, but the soils are suited to hay and pasture. In areas used for pasture, proper stocking rates, deferred grazng, and pasture rotation help to maintain desirable pasture plant species. The suitability of the soils for cultivation can be improved by removal of the surface stones.

The seasonal perched water table is a limitation of these soils as a building site. Slope is an additional limitation for homesites in unit WfC, and slope in units WfB and WfC is also a limitation of the soils as a site for small commercial buildings. The soils are limited for septic tank absorption fields by the slow or very slow permeability.

The capability subclass is VIs.

WgB—Wethersfield very stony fine sandy loam, 3 to 8 percent slopes.

WgC—Wethersfield very stony fine sandy loam, 8 to 15 percent slopes.

These soils are deep and well drained. Map unit WgB consists of a soil on ridges and hills, and map unit WgC consists of a soil on hillsides. The areas are irregular in shape and range from 10 to 60 acres. Stones 5 to 20 feet apart are on the surface.

Typically, the surface layer of these soils is very friable, dark reddish brown fine sandy loam about 4 inches thick. The subsoil is friable and is 18 inches thick. It is reddish brown fine sandy loam in the upper 11 inches and dark red loam in the lower 7 inches. The substratum is reddish brown and extends to a depth of 60 inches or more. It is firm gravelly loam in the upper 3 inches and very firm gravelly fine sandy loam in the lower part.

Included with these soils in mapping are a few small areas of Paxton, Woodbridge, and Ridgebury soils that make up about 15 percent of the acreage of these units.

The permeability of these Wethersfield soils is moderate in the subsoil and slow to very slow in the substratum. Available water capacity is moderate. The root zone extends to the very firm part of the substratum. A seasonal high water table is perched above the substratum for brief periods during winter and spring and after prolonged rains. Reaction of the soils is strongly acid or very strongly acid in the subsoil and ranges from very strongly acid to medium acid in the substratum.

Most areas of these soils are in woodland. Some areas have been developed for homesites.

The stones on the surface make these soils poorly suited to farming. The soils are well suited to trees, but the stones on the surface limit the use of harvesting equipment.

The seasonal perched water table is a limitation of these soils as a building site. Slope is an additional limitation for homesites in unit WgC, and slope in units WfB and WfC is also a limitation of the soils as a site for small commercial buildings. The soils are limited for septic tank absorption fields by the slow or very slow permeability.

The capability subclass is VIIs.

WhA—Whitman very stony fine sandy loam. This soil is deep, nearly level, and very poorly drained. It is in depressions and low areas. The areas are irregular in shape and range from 5 to 20 acres. Stones 5 to 20 feet apart are on the surface.

Typically, the surface layer is friable fine sandy loam about 7 inches thick. It is black in the upper 3 inches and very dark gray in the lower 4 inches. The substratum extends to a depth of 60 inches or more. It is friable, gray gravelly sandy loam in the upper 6 inches and firm, dark gray gravelly fine sandy loam in the lower part.

Included with this soil in mapping are a few areas where the surface layer is loam and areas with very few stones on the surface. Also included are a few small areas of Ridgebury soils. Included areas make up about 15 percent of the unit.

The permeability of this Whitman soil is moderate or moderately rapid in the upper part of the substratum and slow in the lower part of the substratum. Available water capacity is low. The root zone extends to the firm part of the substratum. The soil has a seasonal high water table that is at or near the surface in fall, winter, and spring. Reaction of the soil ranges from very strongly acid to medium acid.

The seasonal high water table keeps the soil wet for most of the year and makes this soil poorly suited to farming. Installing drainage is difficult because of the clayey texture of the soil, and many areas do not have adequate outlets. Grazing during wet periods causes surface compaction.

Most areas of this soil are wooded, but the soil is poorly suited to trees. The seasonal high water table causes a high rate of seedling mortality and restricts rooting, making trees susceptible to uprooting during windy periods. The water table also restricts the use of harvesting equipment, and its use is further restricted by the stones on the surface. Planting water-tolerant species helps to lower the rate of seedling mortality, and establishing dense stands protects trees from uprooting.

The seasonal high water table is the main limitation of this soil as a building site and, along with the slow permeability, limits the soil as a site for septic tank absorption fields.

The capability subclass is VIIs.

WnA—Windsor loamy sand, 0 to 3 percent slopes.
WnB—Windsor loamy sand, 3 to 8 percent slopes.

These soils are deep and excessively drained. Map unit WnA consists of nearly level soil in broad areas. Map unit WnB consists of a gently sloping soil on low hills. The areas are irregular in shape and range from 20 to 100 acres.

Typically, the surface layer of these soils is very dark grayish brown loamy sand about 8 inches thick. The subsoil is loamy sand 13 inches thick. It is strong brown in the upper 4 inches and yellowish brown in the lower 9 inches. The substratum is stratified yellowish brown sand to a depth of 60 inches or more.

Included with these soils in mapping are a few areas where the surface layer is loam or sandy loam. Also included are a few small areas of Hinckley soils and areas that have more coarse sand than these Windsor soils. Included areas make up about 20 percent of the acreage of these units.

The permeability of these Windsor soils is rapid or very rapid throughout. Available water capacity is low. The root zone extends into the substratum. Reaction in unlimed areas is very strongly acid or strongly acid.

Most areas of these soils are in woodland. Some areas are farmed.

These soils are suited to cultivated crops and to hay and pasture. The low available water capacity makes irrigation a major management concern. Minimum tillage, contour tillage, the use of cover crops and grasses and legumes in the cropping system, and mixing crop residue and manure into the surface layer help to maintain tilth and increase the organic matter content. Proper stocking rates, deferred grazing, and pasture rotation help to maintain desirable pasture plant species.

These soils are poorly suited to trees. Droughtiness causes a high rate of seedling mortality; planting drought-resistant species will help to reduce seedling mortality.

These soils have essentially no limitations as a site for dwellings with basements. Slope is a limitation of the soils as a site for small commercial buildings in unit WnB. The rapid or very rapid permeability limits these soils as a site for septic tank absorption fields and causes a hazard of contamination to ground water and nearby wells.

The capability subclass is IIIs.

WnC—Windsor loamy sand, 8 to 15 percent slopes.
WnD—Windsor loamy sand, 15 to 25 percent slopes.

These soils are deep and excessively drained. Map unit WnC is a moderately sloping soil on ridges and low hills. Map unit WnD is a moderately steep soil on the sides of low hills. The areas are irregular in shape and range from 5 to 75 acres.

Typically, the surface layer of these soils is very dark grayish brown loamy sand about 12 inches thick. It is strong brown in the upper 3 inches and yellowish brown in the lower 9 inches. The substratum is stratified yellowish brown sand to a depth of 60 inches or more.

Included with these soils in mapping are a few areas where the surface layer is fine sandy loam or sandy loam. Also included are a few small areas of Hinckley soils and areas that have more coarse sand than these Windsor soils. Included areas make up about 20 percent of the acreage of these units.

The permeability of these Windsor soils is rapid or very rapid throughout. Available water capacity is low. The root zone extends into the substratum. Reaction in unlimed areas is very strongly acid or strongly acid.

Most areas of this soil are in woodland. Some areas are farmed.

Droughtiness and the moderate erosion hazard make these soils poorly suited to farming. Slope limits the use of equipment in unit WnD.

These soils are suited to trees, but droughtiness causes a high rate of seedling mortality. Planting drought-resistant species and reducing plant competition will help to reduce seedling mortality. Slope limits the use of harvesting equipment in unit WnD.

Slope limits these soils as a building site and, along with the rapid or very rapid permeability, limits the soils as a site for septic tank absorption fields. The permeability causes a hazard of contamination to ground water and nearby wells in areas used for septic tanks.

Unit WnC is in capability subclass IVs, and unit WnD is in capability subclass VIs.

WoA—Windsor loamy sand, silty substratum, 0 to 3 percent slopes.
WoB—Windsor loamy sand, silty substratum, 3 to 8 percent slopes.

These soils are deep and excessively drained. Map unit WoA is a nearly level soil in broad areas, and map unit WoB is a gently sloping soil on low hills. The areas are irregular in shape and range from 5 to 35 acres.

Typically, the surface layer of these soils is very dark grayish brown loamy sand about 8 inches thick. The subsoil is loamy sand about 13 inches thick. It is strong brown in the upper 4 inches and yellowish brown in the

lower 9 inches. The substratum is loose, yellowish brown sand in the upper 24 inches and is friable, grayish brown silt loam to a depth of 60 inches or more.

Included with these soils in mapping are a few small areas of Pollux, Amostown, and Enosburg soils. Also included are a few areas where the depth to the silty material is less than 40 inches. Included areas make up about 20 percent of the acreage of these units.

The permeability of these Windsor soils is rapid or very rapid in the subsoil and upper part of the substratum and moderately slow in the lower part of the substratum. Available water capacity is low. The root zone extends into the substratum. Reaction in unlimed areas is very strongly acid or strongly acid in the subsoil and ranges from strongly acid to slightly acid in the substratum.

Many areas of these soils are farmed. Some areas are in woodland, and some have been developed for homesites.

These soils are suited to cultivated crops and to hay and pasture. The low available water capacity makes irrigation a major management concern. Minimum tillage, the use of cover crops and grasses and legumes in the cropping system, and mixing crop residue and manure into the surface layer help to maintain tilth and increase the organic matter content. The use of contour tillage in unit WoB helps to control erosion. Proper stocking rates, deferred grazing, and pasture rotation help to maintain desirable pasture plant species.

These soils are suited to trees. Droughtiness causes a high rate of seedling mortality; planting drought-resistant species will help to reduce seedling mortality.

These soils have essentially no limitations as a site for dwellings. Slope is a limitation of the soil for small commercial buildings in unit WoB. The moderately slow permeability of these soils is a limitation for septic tank absorption fields.

The capability subclass is IIIs.

WoC—Windsor loamy sand, silty substratum, 8 to 15 percent slopes. This soil is deep, moderately sloping, and excessively drained. It is on low hills and in long, narrow areas. The areas range from 5 to 25 acres.

Typically, the surface layer is very friable, very dark grayish brown loamy sand about 8 inches thick. The subsoil is loose loamy sand about 13 inches thick. It is strong brown in the upper 4 inches and yellowish brown in the lower 9 inches. The substratum is loose, yellowish brown sand in the upper 24 inches and is friable, grayish brown silt loam to a depth of 60 inches or more.

Included with this soil in mapping are a few small areas of Pollux and Amostown soils. Also included are a few areas where the depth to the silty material is less than 40 inches. Included areas make up about 20 percent of the unit.

The permeability of this Windsor soil is rapid or very rapid in the subsoil and upper part of the substratum and moderately slow in the lower part of the substratum. Available water capacity is low. The root zone extends into the substratum. Reaction in unlimed areas is very strongly or strongly acid in the subsoil and ranges from strongly acid to slightly acid in the substratum.

Many areas of this soil are farmed. Some areas are in woodland, and some have been developed for homesites.

This soil is suited to cultivated crops and to hay and pasture. The low available water capacity makes irrigation a major concern. Stripcropping, minimum tillage, contour tillage, and the use of cover crops and grasses and legumes in the cropping system help to reduce runoff and control erosion. Mixing crop residue and manure into the surface layer maintains tilth and increases the organic matter content. Proper stocking rates, deferred grazing, and pasture rotation help to maintain desirable pasture plant species.

This soil is poorly suited to trees. Droughtiness causes a high rate of seedling mortality; planting drought-resistant species will help to reduce seedling mortality.

Slope is a limitation of this soil as a building site. The moderately slow permeability is a limitation for septic tank absorption fields.

The capability subclass is IVs.

Wp—Windsor-Scitico-Amostown complex. This unit consists of deep soils. Some areas form an escarpmentlike boundary between soils on the flood plain and those at a higher elevation, and some are in old stabilized gullies. The unit is in long, narrow areas and in large branch-shaped areas. The areas range from 30 to 100 acres.

The unit is about 40 percent gently sloping to steep, excessively drained Windsor soils on side slopes and higher areas; 20 percent nearly level, poorly drained Scitico soils on toe slopes and on narrow bottoms of the gullies; 15 percent gently sloping, moderately well drained Amostown soils on narrow benches and on the higher areas adjacent to the gully bottoms; and 25 percent other soils. The Windsor, Scitico, and Amostown soils are so intricately mixed that it was not practical to map them separately.

Typically, the Windsor soils have a surface layer of very dark grayish brown loamy sand about 8 inches thick. The subsoil is loamy sand 12 inches thick. It is strong brown in the upper 3 inches and yellowish brown in the lower 9 inches. The substratum is stratified yellowish brown sand to a depth of 60 inches or more.

Typically, the Scitico soils have a surface layer of very friable, grayish brown, mottled silt loam about 10 inches thick. The subsoil is friable, olive gray, mottled silt loam 12 inches thick. The substratum is firm and extends to a depth of 60 inches or more. It is mottled and grayish brown in the upper 14 inches and mottled and dark grayish brown in the lower part. It is thinly stratified silt and clay.

Typically, the Amostown soils have a surface layer of very dark grayish brown fine sandy loam about 7 inches thick. The subsoil is light olive brown fine sandy loam 25

inches thick. It is mottled in the lower 8 inches. The substratum is stratified, mottled, gray and yellowish brown very fine sand and silt to a depth of 60 inches or more.

The other soils in this unit have a wide range of textures in the surface layer and subsoil. Some of the soils are as much as 50 percent gravel.

Permeability is rapid or very rapid throughout the Windsor soils and slow or very slow throughout the Scitico soils. It is moderately rapid in the subsoil of the Amostown soils and moderate to slow in the substratum. Available water capacity is low in the Windsor soils, high in the Scitico soils, and moderate in the Amostown soils. The root zone extends into the substratum in all three soils. Reaction is very strongly acid or strongly acid throughout the Windsor soil and in the subsoil of the Amostown soil. It ranges from strongly acid to neutral in the substratum of the Amostown soil and from medium acid to neutral throughout the Scitico soil. The Amostown and Scitico soils have a seasonal high water table in winter and spring.

Slope and the seasonal high water table make this unit poorly suited to farming.

Most areas of this unit are wooded, but the unit is poorly suited to trees. The slope of the Windsor soils and the seasonal high water table in the Amostown and Scitico soils limit the use of harvesting equipment. Droughtiness in the Windsor soils and the seasonal high water table in the other soils cause a high rate of seedling mortality. The water table also restricts rooting, making trees susceptible to uprooting during windy periods.

The slope of the Windsor soil and the seasonal high water table of the Scitico and Amostown soils limit the unit as a building site and as a site for septic tank absorption fields. The use of septic tank absorption fields is further limited by the rapid permeability of the Windsor soils and the slow permeability of the Scitico and Amostown soils. Onsite investigation generally is needed to determine suitable uses.

This unit is not assigned to a capability subclass.

Ws—Winooski silt loam. This soil is deep, nearly level, and moderately well drained. It is on flood plains adjacent to streams and rivers. The areas are irregularly shaped or crescent shaped and range from 5 to 50 acres.

Typically, the surface layer is very dark grayish brown silt loam about 17 inches thick. The substratum is olive, mottled very fine sandy loam in the upper 10 inches; olive gray, mottled silt loam in the next 17 inches; and olive, mottled silt loam to a depth of 60 inches or more.

Included with this soil in mapping are a few small areas of Hadley and Limerick soils. Included areas make up about 15 percent of the unit.

The permeability of this Winooski soil is moderate or moderately rapid throughout. Available water capacity is high. The root zone extends into the substratum. Flooding for brief periods is common. This soil has a seasonal high water table between depths of 1.5 and 3 feet in winter and early spring. Reaction of the soil in unlimed areas ranges from strongly acid to neutral.

Many areas of this soil are farmed. Some areas are in woodland, and the soil is well suited to trees. Some areas have been developed for homesites.

This soil is well suited to cultivated crops, hay, and pasture. Flooding is the main hazard, and the seasonal high water table is the main limitation for farming. Good tilth is easily maintained in cultivated areas. The main management needs include the proper timing of farming operations, providing protection from flooding, and providing drainage. Minimum tillage and the use of cover crops and grasses and legumes in the cropping system help to control flood scouring. Mixing crop residue and manure into the surface layer improves tilth and increases the organic matter content. Proper stocking rates, deferred grazing, and pasture rotation help to maintain desirable pasture plant species.

Flooding and the seasonal high water table are limitations of this soil as a building site and as a site for septic tank absorption fields.

The capability subclass is IIw.

WtA—Woodbridge fine sandy loam, 0 to 3 percent slopes.

WtB—Woodbridge fine sandy loam, 3 to 8 percent slopes.

These soils are deep and moderately well drained. Map unit WtA is a nearly level soil at the base of slopes. Map unit WtB is a gently sloping soil on hills and ridges. The areas are rectangular or oval and range from 5 to 30 acres.

Typically, the surface layer of these soils is very friable, very dark grayish brown fine sandy loam about 7 inches thick. The subsoil is friable fine sandy loam 18 inches thick. It is yellowish brown in the upper 14 inches and light olive brown and mottled in the lower 4 inches. The substratum is very firm, olive fine sandy loam to a depth of 60 inches or more.

Included with these soils in mapping are a few small areas of Paxton, Charlton, and Ridgebury soils that make up about 15 percent of the acreage of these units.

The permeability of these Woodbridge soils is moderate in the subsoil and slow or very slow in the substratum. Available water capacity is moderate. The root zone extends to the very firm substratum. These soils have a seasonal high water table perched above the substratum in winter and spring and for short periods after prolonged rains. Reaction of the soil in unlimed areas ranges from strongly acid to medium acid.

Many areas of these soils are farmed. Some areas are in woodland, and the soils are well suited to trees. Some areas have been developed for homesites.

These soils are well suited to cultivated crops and to

hay and pasture (fig.10). The seasonal perched water table is the main limitation, and providing drainage is a management concern. Minimum tillage, the use of cover crops and grasses and legumes in the cropping system, and mixing crop residue and manure into the surface layer help to improve tilth and increase the organic matter content. The use of contour tillage in unit WtB helps to control the moderate hazard of erosion. Proper stocking rates, deferred grazing, pasture rotation, and restricted grazing when the soil is saturated help to maintain desirable pasture plant species.

The seasonal perched water table is the main limitation of the soils as a building site. Slope is also a limitation for small commercial buildings in unit WtB. The slow or very slow permeability and the seasonal perched water table limit the soils as a site for septic tank absorption fields.

The capability subclass is IIw.

WtC—Woodbridge fine sandy loam, 8 to 15 percent slopes. This soil is deep, moderately sloping, and moderately well drained. It is on hills. The areas are rectangular or oval and range from 5 to 25 acres.

Typically, the surface layer is very friable, very dark grayish brown fine sandy loam about 7 inches thick. The subsoil is friable fine sandy loam 18 inches thick. It is yellowish brown in the upper 14 inches and light olive brown and mottled in the lower 4 inches. The substratum is very firm, olive, fine sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are a few small areas of Paxton, Charlton, and Ridgebury soils that make up about 15 percent of the unit.

The permeability of this Woodbridge soil is moderate in the subsoil and slow or very slow in the substratum. Available water capacity is moderate. The root zone extends to the very firm substratum. This soil has a

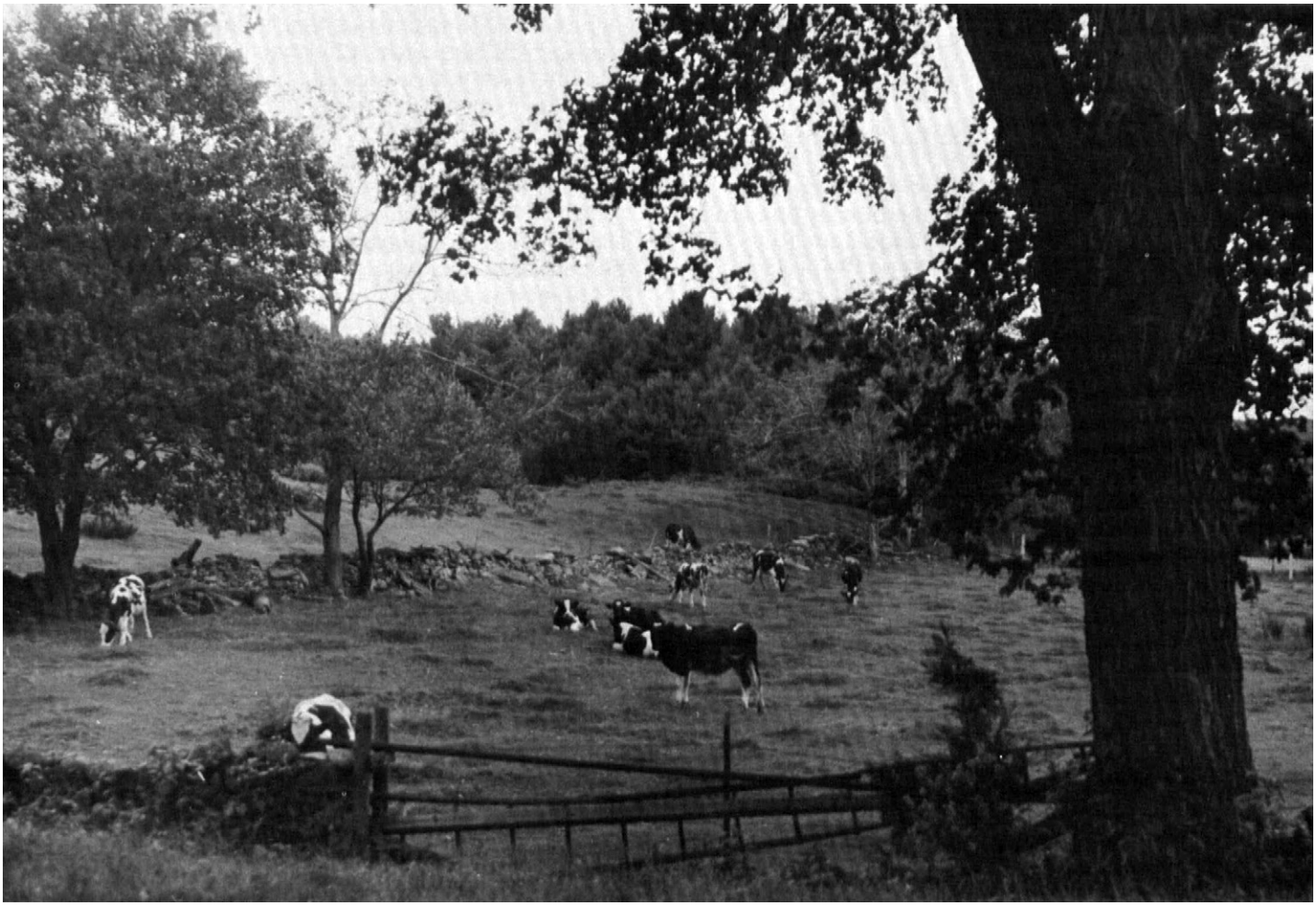


Figure 10.—Pasture on Woodbridge fine sandy loam, 0 to 3 percent slopes.

seasonal high water table perched above the substratum in winter and spring and for short periods after prolonged rains. Reaction of the soil in unlimed areas ranges from strongly acid to medium acid.

Many areas of this soil are farmed. Some areas are in woodland, and the soil is well suited to trees. Some areas have been developed for homesites.

This soil is well suited to cultivated crops and to hay and pasture. The seasonal perched water table is the main limitation, and providing drainage is a major concern. Mixing crop residue and manure into the surface layer improves tilth and increases the organic matter content of the soil. Minimum tillage, contour cultivation, and using grasses and legumes in the cropping system help to reduce runoff and control the moderate hazard of erosion. Proper stocking rates, deferred grazing, and pasture rotation help to maintain desirable pasture plant species.

The seasonal perched water table is the main limitation of this soil for homesites. Slope limits the soil as a site for small commercial buildings, and the slow or very slow permeability and seasonal perched water table limit the soil as a site for septic tank absorption fields.

The capability subclass is IIIe.

WvB—Woodbridge stony fine sandy loam, 3 to 8 percent slopes.

WvC—Woodbridge stony fine sandy loam, 8 to 15 percent slopes.

These soils are deep and moderately well drained. They are on the sides and lower parts of hills. The areas are irregular in shape and typically range from 10 to 100 acres. Stones 20 to 50 feet apart are on the surface.

Typically, the surface layer is very friable, very dark grayish brown fine sandy loam about 7 inches thick. The subsoil is friable fine sandy loam 18 inches thick. It is yellowish brown in the upper 14 inches and light olive brown and mottled in the lower 4 inches. The substratum is very firm, olive fine sandy loam to a depth of 60 inches or more.

Included with these soils in mapping are a few small areas of Paxton, Charlton, and Ridgebury soils that make up about 15 percent of the acreage these units.

The permeability of these Woodbridge soils is moderate in the subsoil and slow or very slow in the substratum. Available water capacity is moderate. The root zone extends to the very firm substratum. These soils have a seasonal high water table perched above the substratum in winter and spring and after prolonged rains. Reaction of the soil in unlimed areas ranges from strongly acid to medium acid.

Most areas of these soils are in woodland, and the soils are well suited to trees. Some areas have been developed for homesites.

The stones on the surface make these soils poorly suited to cultivated crops. The soils are suited to hay and pasture. Proper stocking rates, deferred grazing, and pasture rotation help to maintain desirable pasture plant species.

The seasonal perched water table limits these soils as a building site. Slope is an additional limitation for homesites in unit WvC and is a limitation of units WvB and WvC as a site for small commercial buildings. The slow or very slow permeability is the main limitation of the soils for septic tank absorption fields.

The capability subclass is VIs.

WxB—Woodbridge very stony fine sandy loam, 3 to 8 percent slopes.

WxC—Woodbridge very stony fine sandy loam, 8 to 15 percent slopes.

WxD—Woodbridge very stony fine sandy loam, 15 to 25 percent slopes.

These soils are deep and moderately well drained. The soils in units WxB and WxC are on the sides and lower slopes of hills. The soil in unit WxD is on hillsides. The areas are irregular in shape and range from 5 to 50 acres in units WxB and WxC and from 15 to 100 acres in unit WxD. Stones 5 to 20 feet apart are on the surface.

Typically, the surface layer of these soils is very friable, very dark grayish brown fine sandy loam about 4 inches thick. The subsoil is friable fine sandy loam 16 inches thick. The upper 12 inches is yellowish brown, and the lower 4 inches is light olive brown. The substratum is very firm, olive fine sandy loam to a depth of 60 inches or more.

Included with these soils in mapping are a few small areas of Paxton and Charlton soils. Also included in units WxB and WxC are small areas of Ridgebury soils in slight depressions. Included areas make up about 15 percent of the acreage of these units.

The permeability of these Woodbridge soils is moderate in the subsoil and slow or very slow in the substratum. Available water capacity is moderate. The root zone extends to the very firm substratum. These soils have a seasonal high water table perched above the substratum in winter and spring and after prolonged rains. Reaction of the soil in unlimed areas ranges from strongly acid to medium acid.

Most areas of these soils are in woodland. A few areas have been developed for homesites.

The stones on the surface make these soils poorly suited to farming. Slope in unit WxD limits the use of equipment.

These soils are well suited to trees, but the stones on the surface limit the use of harvesting equipment. Slope is an additional limitation for the use of harvesting equipment in unit WxD.

The seasonal perched water table is a limitation of these soils as a building site. Slope is an additional limitation for homesites in units WxC and WxD and is a limitation of all these units as a site for small commercial buildings. The soils are limited for septic tank absorption fields by the slow or very slow permeability and by slope in unit WxD.

The capability subclass is VIIs.

prime farmland

Prime farmland is one of several kinds of important farmlands defined by the U.S. Department of Agriculture. It is of major importance in providing the nation's short- and long-range needs for food and fiber. The supply of high quality farmland is limited, and the U.S. Department of Agriculture recognizes that responsible levels of government, as well as individuals, must encourage and facilitate the use of our nation's prime farmland with wisdom and foresight.

Prime farmland, as defined by the U.S. Department of Agriculture, is 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 economically produce a sustained high yield of crops when it is treated and managed using acceptable farming methods. Prime farmland produces the highest yields with minimal inputs of energy and economic resources, and farming it results in the least damage to the environment.

Prime farmland may now be in crops, pasture, woodland, or other land, but not urban and built-up land or water areas. It must either be used for producing food or fiber or be available for these uses (fig. 11).

Prime farmland usually has an adequate and dependable supply of moisture from precipitation or irrigation. It also has favorable temperature and growing season and acceptable acidity or alkalinity. It has few or no rocks and is permeable to water and air. Prime farmland is not excessively erodible or saturated with water for long periods and is not flooded during the

Figure 11.—This area of Hadley silt loam is prime farmland used for potatoes.

growing season. The slope ranges 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.

About 43,820 acres, or approximately 30 percent of the survey area, meets the soil requirements for prime farmland. The areas are scattered throughout the survey area but are mainly in map units 6 and 7 of the general soil map. Approximately 16,000 acres of this prime farmland is used for row crops and hay. The main crops are corn and potatoes (*6, 7*).

An increase in urban and industrial land use in some parts of the survey area has caused a loss of some prime farmlands. The loss of prime farmland to other uses puts pressure on marginal lands, which generally are more erodible, droughty, and difficult to cultivate and usually less productive.

The soil map units from the detailed soil map that make up prime farmland in the survey area are listed in this section. This list does not constitute a recommendation for a particular land use. The extent of each listed map unit is shown in table 4. The location is shown on the detailed soil maps in the back of this publication. The soil qualities that affect use and management are described in the section 'Detailed soil map units.

The map units that meet the soil requirements for prime farmland are:

AgA—Agawam fine sandy loam, 0 to 3 percent slopes
AgB—Agawam fine sandy loam, 3 to 8 percent slopes
AmA—Amostown fine sandy loam, 0 to 3 percent slopes
AmB—Amostown fine sandy loam, 3 to 8 percent slopes
BaA—Belgrade silt loam, 0 to 3 percent slopes
BoA—Boxford silt loam, 0 to 3 percent slopes
BoB—Boxford silt loam, 3 to 8 percent slopes
CkB—Charlton fine sandy loam, 3 to 8 percent slopes
Ha—Hadley silt loam
HfB—Haven very fine sandy 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
MoB—Montauk fine sandy loam, 3 to 8 percent slopes
NgA—Ninigret fine sandy loam, 0 to 3 percent slopes
NgB—Ninigret fine sandy loam, 3 to 8 percent slopes
PaB—Paxton fine sandy loam, 3 to 8 percent slopes
PuA—Pollux fine sandy loam, 0 to 3 percent slopes
PuB—Pollux fine sandy loam, 3 to 8 percent slopes
Pv—Pootatuck fine sandy loam
SgB—Scituate fine sandy loam, 3 to 8 percent slopes
SrA—Sudbury fine sandy loam, 0 to 3 percent slopes
SrB—Sudbury fine sandy loam, 3 to 8 percent slopes
WeB—Wethersfield fine sandy loam, 3 to 8 percent slopes
Ws—Winooski silt loam
WtA—Woodbridge fine sandy loam, 0 to 3 percent slopes
WtB—Woodbridge fine sandy loam, 3 to 8 percent slopes

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

Christopher G. Moustakis, resource conservationist, Soil Conservation Service, assisted with 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.

Crops and pasture cover about 20,000 acres in the survey area (*7*). Of this acreage, 55 percent is used for hay and pasture, 40 percent for row crops, mainly silage corn, 2 percent for orchards and nursery plants, and 3 percent for other uses.

Soil erosion is a major concern on much of the cropland and pasture in the survey area. Erosion is a hazard on soils where slope exceeds 3 percent. Some Paxton soils, for example, have slopes of more than 3 percent and are erodible.

Loss of the surface layer through erosion reduces productivity and causes mixing of part of the subsoil into the plow layer. Loss of the surface layer is especially damaging to soils that have a restrictive layer in or below the subsoil that limits the depth of the root zone. Examples of soils that have such a layer are Paxton and Woodbridge soils.

Erosion also causes the pollution of streams by sediment and lowers water quality for municipal use, for recreation, and for fish and wildlife and results in sediment-loading of ponds, road ditches, and culverts.

Using a cropping system that keeps plant cover on the soil for extended periods can hold erosion loss to an amount that will not reduce the productive capacity of the soil. On livestock farms, which consist principally of pasture and hayland, the legume and grass forage crops in the cropping system reduce erosion on sloping land, provide nitrogen, and improve tilth for the succeeding crop in the crop rotation system.

Practices that help to control erosion are terracing and stripcropping. Many parts of the survey area have short, irregular slopes that are not suited to terraces, but using diversions in such areas intercepts runoff water and protects other fields.

Stripcropping, in which alternate strips of row crops and close-growing crops are planted across the slope, is also effective in controlling erosion. Stripcropping is best suited to soils that have long, uniform slopes.

Fields in the survey area that are not suited to structural practices can be protected through the use of

cropping systems that keep plant cover on the soil for extended periods. Minimum tillage or no-till farming of crops that are normally intertilled protects soil from excessive erosion. These systems can be applied to most soils in the area.

Drainage is a major concern for many soils in the survey area. Some soils are so wet that the production of crops common to the area is generally not feasible. Examples of such soils are the very poorly drained Maybid, Saco, Scarboro, and Whitman soils.

Poorly drained soils, such as Ridgebury and Walpole soils, are too wet for good crop production during most years. Random tile drainage, drainage ditches, and use of moisture-tolerant crops are effective measures for farming these soils.

Moderately well drained soils cannot be tilled or worked until late spring or early summer and are not well suited to early-season crops. The Woodbridge, Pittstown, Sudbury, and Deerfield soils are examples of moderately well drained soils.

Natural fertility is low in the soils of the survey area. Most of the soils are naturally strongly acid or very strongly acid. They thus require applications of lime to lower acidity sufficiently for crops that grow best on slightly acid or nearly neutral soils. Available phosphorus and potash levels are naturally low, making the addition of fertilizer necessary.

Tilth is important to the germination of seeds and the infiltration of water into the soil. Soils that have good tilth are granular and porous. Many of the soils used for crops in the survey area are light in color and low in organic matter content. Generally, the surface layer of these soils is granular and has good tilth. Regular additions of green manure, crop residues, and animal manure help to maintain organic matter content, soil structure, and water infiltration rates.

Special crops grown commercially in the survey area are shade tobacco, field tobacco, vegetables, fruits, and nursery plants (fig. 12). The common vegetable crops are squash, potatoes, sweet corn, tomatoes, and asparagus. Strawberries also are common. Apples are the major tree fruit grown in the area.

Deep, friable soils that have good natural drainage are especially well suited to many vegetables. These include the Agawam and Hadley soils that have slopes of less than 8 percent. If irrigated, the Hinckley and Windsor soils that have slopes of less than 8 percent are also suited to vegetables and fruits. Most of the well drained

Figure 12.—Shade-grown tobacco is one of the special crops grown in the survey area.

soils in the survey area are suited to orchards and nursery plants. Soils in low lying areas, where frost is frequent and air drainage is poor, are generally poorly suited to early-season vegetables, small fruits, and orchards.

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 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 insures the smallest possible loss.

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.

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 grouping does not take into account major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor does it consider 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 and 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. These 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.

The acreage of soils in each capability class and subclass is shown in table 6. The capability classification of each map unit is given in the section "Detailed soil map units."

woodland management and productivity

The central part of Hampshire County is about 50 percent woodland, all of which is second-growth stands.

The predominant forest cover is northern hardwoods, mainly upland oaks and red maple, but significant amounts of pine are in some areas. In general, the soils in this survey area are capable of supporting northern red oak, red maple, sugar maple, eastern white pine, and ash.

Table 7 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. The table lists the ordination (woodland suitability) symbol for each 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 important trees. The number 1 indicates very high productivity; 2, high; 3, moderately high; 4, moderate; and 5, low. The second part of the symbol, a letter, indicates the major kind of soil limitation. The letter *x* indicates stoniness or rockiness; *w*, excessive water in or on the soil; *t*, toxic substances in the soil; *d*, restricted root depth; *c*, clay in the upper part of the soil; *s*, sandy texture; *f*, high content of coarse fragments in the soil profile; and *r*, steep slopes. The letter *o* indicates that limitations or restrictions are insignificant. If a soil has more than one limitation, the priority is as follows: x, w, t, d, c, s, f, and r.

In table 7, *slight, moderate,* and *severe* indicate the degree of the major soil limitations to be considered in management.

Ratings of the *erosion hazard* indicate the risk of loss of soil in well managed woodland. The risk is *slight* if the expected soil loss is small, *moderate* if measures are needed to control erosion during logging and road construction, and *severe* if intensive management or special equipment and methods are needed to prevent excessive loss of soil.

Ratings of *equipment limitation* reflect the characteristics and conditions of the soil that restrict use of the equipment generally needed in woodland management or harvesting. A rating of *slight* indicates that use of equipment is not limited to a particular kind of equipment or time of year; *moderate* indicates a short seasonal limitation or a need for some modification in management or in equipment; and *severe* indicates a seasonal limitation, a need for special equipment or management, or a hazard in the use of equipment.

Ratings of *windthrow hazard* are based on soil characteristics that affect the development of tree roots and the ability of the soil to hold trees firmly. A rating of *slight* indicates that a few trees may be blown down by normal winds; *moderate*, that some trees will be blown down during periods of excessive soil wetness and strong winds; and *severe*, that many trees are blown down during periods of excessive soil wetness and moderate or strong winds.

Seedling mortality ratings indicate the degree to which the soil affects the mortality of tree seedlings. Plant competition is not considered in the ratings. The ratings apply to seedlings from good stock that are properly planted during a period of sufficient rainfall. A rating of *slight* indicates that the expected mortality is less than 25 percent; *moderate*, 25 to 50 percent; and *severe*, more than 50 percent.

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 50 years. The site index applies to fully stocked, even-aged, unmanaged stands. Commonly grown trees are those that woodland managers generally favor for wood crop production. They are the most important tree species in regard to growth rate, quality, value, and marketability. Other tree species that are common on the soil are also listed regardless of potential value or growth.

Trees to plant are those that are suited to the soils and to commercial wood production.

recreation

Robert W. Franzen, biologist, Soil Conservation Service, assisted with this section.

Within the survey area are two State parks that are managed by the Massachusetts Division of Forests and Parks. Skinner State Park, with an area of 375 acres, has facilities for picnicking and hiking. The Holyoke Range State Park adjoins Skinner State Park and is 2,250 acres. It includes areas for hiking, horseback riding, and hunting. The Division of Forests and Parks manages 60 acres of the Conway State Forest in the western part of the survey area. Look Park is within and managed by the city of Northampton.

Various other town commissions and municipal departments own and manage land holdings for conservation and watershed protection. Public use of these lands for hiking, nature study, and fishing and hunting is common. Most towns also provide athletic fields and playgrounds.

The soils of the survey area are rated in table 8 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 8, 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 8 can be supplemented by other information in this survey, for example, interpretations for septic tank absorption fields in table 11 and interpretations for dwellings without basements and for local roads and streets in table 10.

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, horseback riding, and bicycling 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

Herman J. Covey, district wildlife manager, Massachusetts Division of Fisheries and Wildlife, and Robert W. Franzen, biologist, Soil Conservation Service, assisted with this section.

Urban development in the survey area has significantly reduced the amount of habitat that was formerly available to wildlife. This development has its greatest effect on those species of wildlife that require a large habitat area and which avoid contact with people.

The typical wildlife species in the densely urbanized areas are pigeon, starling, common nighthawk, and house sparrows. The common species in the suburban areas include mourning dove, bluejay, chickadee, goldfinch, cardinal, cedar waxwing, mockingbird, robin, downy woodpecker, and gray squirrel. Many suburban residents have installed bird feeders and nesting boxes and have planted trees and shrubs of value to wildlife, all of which increase the number and variety of wildlife.

Several large publicly owned lands are in the survey area, and most consist of hardwood forests. Although the primary uses of these areas are for recreation or watershed protection, the areas also provide habitat for a diverse wildlife community. The species that live in these areas and in other large, unaltered parts of the survey area include white-tailed deer, ruffed grouse, gray and red fox, raccoon, opossum, hawk, and owl.

The fertile farmland of the flood plain of the Connecticut River provides habitat for species common to farms or open land. Ringnecked pheasant, eastern cottontail rabbit, killdeer, meadowlark, and field sparrow are a few of the species found on the farmland of the survey area.

The species of wildlife that have recently expanded their habitat into the survey area include the cardinal, tufted titmouse, mockingbird, opossum, coyote, and turkey.

Several meander channels, oxbow ponds, and spring overflow areas along the Connecticut River and the adjoining farmland provide a desirable habitat for waterfowl. Mallard, black duck, and wood duck use the wetlands along the river for nesting habitat. A variety of ducks and geese use the wetlands, river channel, and farmland for resting and feeding during spring and fall migration. Herons and shorebirds live along the river edge. Upland wet areas, many of which were created by beaver dams, provide habitat mainly for wood duck and black duck.

The Connecticut River provides habitat for walleye pike, northern pike, largemouth and smallmouth bass, channel catfish, and many other species and for the endangered shortnose sturgeon. Abundant spawning runs of American shad have been restored on part of the river in the survey area, and major efforts are underway to restore the Atlantic salmon spawning runs in the river and selected major tributaries.

Upland ponds typically support chain pickerel, largemouth bass, yellow perch, and bluegill. Upland

brooks and contributory rivers to the Connecticut River support brook trout and brown trout. The Massachusetts Division of Fisheries and Wildlife stocks public-access streams with brook, brown, and rainbow trout and manages native game fish in all public waters.

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 (*1*). 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 9, 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, rye, oats, and buckwheat.

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 orchardgrass, timothy, reed canarygrass, 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 bluestem, goldenrod, dandelion, milk weed, pokeweed, ragweed, and deertongue.

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, the available water capacity, and wetness. Examples of these plants are oak, aspen, cherry, ash, apple, elderberry, dogwood, hickory, blackberry, and blueberry. Examples of fruit-producing shrubs that are suitable for planting on soils rated *good* are multiflora rose, honeysuckle, autumn-olive, and crabapple.

Coniferous plants furnish browse, seeds, and cones. 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, hemlock, yew, 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, cattail, burreed, arrowarum, rushes, sedges, and phragmites.

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, hayland, 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 killdeer, woodchuck, pheasant, 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 tanager, grosbeak, nuthatch, 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, kingfisher, muskrat, mink, and beaver.

engineering

William P. Annable, civil engineer, Soil Conservation Service, assisted with this section.

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 10 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, 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 11 shows the degree and the 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 11 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 effectively filter the effluent. 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 11 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 11 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 12 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 12, 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 13 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 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, irrigation, 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.

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.

Irrigation is the controlled application of water to supplement rainfall and support plant growth. The design and management of an irrigation system are affected by depth to the water table, the need for drainage, flooding, available water capacity, intake rate, permeability, erosion hazard, and slope. The construction of a system is affected by large stones and depth to bedrock or to a cemented pan. The performance of a system is affected by the depth of the root zone, the amount of salts or sodium, and soil reaction.

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 14 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 a soil contains particles coarser than sand, 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 (*3*) and the system adopted by the American Association of State Highway and Transportation Officials (*2*).

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, SP-SM.

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 oven-dry 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 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 15 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 earth-moving 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.

Shrink-swell potential is the potential for volume change in a soil with a loss or gain in moisture. Volume change occurs mainly because of the interaction of clay minerals with water and varies with the amount and type of clay minerals in the soil. The size of the load on the soil and the magnitude of the change in soil moisture content influence the amount of swelling of soils in place. Laboratory measurements of swelling of undisturbed clods were made for many soils. For others, swelling was estimated on the basis of the kind and amount of clay minerals in the soil and on measurements of similar soils.

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

Shrink-swell potential classes are based on the change in length of an unconfined clod as moisture content is increased from air-dry to field capacity. The change is based on the soil fraction less than 2 millimeters in diameter. The classes are *low*, a change of less than 3 percent; *moderate*, 3 to 6 percent; and *high*, more than 6 percent. *Very high*, greater than 9 percent, is sometimes used.

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

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

Organic matter is the plant and animal residue in the soil at various stages of decomposition.

In table 15, the estimated content of organic matter of the plow layer 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 16 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.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a permanent high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Flooding, the temporary inundation of an area, is caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt and water in swamps and marshes are not considered flooding.

Table 16 gives the frequency and duration of flooding and the time of year when flooding is most likely.

Frequency, duration, and probable dates of occurrence are estimated. Frequency is expressed as none, rare, common, occasional, and frequent. *None* means that flooding is not probable; *rare* that it is unlikely but possible under unusual weather conditions; *common* that it is likely under normal conditions; *occasional* that it occurs on an average of once or less in 2 years; and *frequent* that it occurs on an average of more than once in 2 years. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, and *long* if more than 7 days. Probable dates are expressed in months; November-May, for example, means that flooding can occur during the period November through May.

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and absence of distinctive horizons that form in 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 16 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 high. A water table that is seasonally high for less than 1 month is not indicated in table 16.

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 beneath 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.

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

Depth to bedrock is given if bedrock is within a depth of 5 feet. The depth is based on many soil borings and on observations during soil mapping. The rock is 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 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.

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

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

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

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. In table 17, the soils of the survey area are classified according to the system. 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 Ochrept (*Ochr*, meaning pale, 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 Fragiochrepts (*Frag*, meaning brittle horizon, plus *ochrept*, the suborder of the Inceptisols that have a pale surface).

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

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 coarse-loamy, mixed, mesic Typic Fragiochrepts.

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."

Agawam series

The Agawam series consists of deep, well drained soils on glacial outwash plains and terraces. The soils formed in glacial outwash material. Slopes range from 0 to 15 percent.

Agawam soils are similar to Ninigret soils and in many places are near Deerfield and Windsor soils. Agawam soils do not have the mottles typical of Ninigret and Deerfield soils, which are in more concave positions. Agawam soils have less sand in the upper part of the solum than Deerfield or Windsor soils.

Typical pedon of Agawam fine sandy loam, 0 to 3 percent slopes, in a cultivated field, 700 feet north of

Elm Street and 1,600 feet west of the junction of Elm and Maple Streets, in the town of Hatfield:

Ap—0 to 11 inches; dark grayish brown (10YR 4/2) fine sandy loam; light brownish gray (10YR 6/2) dry; weak medium and coarse subangular blocky structure; very friable; common fine and medium roots; strongly acid; abrupt smooth boundary.
B21—11 to 16 inches; dark yellowish brown (10YR 4/4) fine sandy loam; weak medium and coarse subangular blocky structure; very friable; common fine and medium roots; strongly acid; abrupt smooth boundary.
B22—16 to 26 inches; light olive brown (2.5Y 5/4) fine sandy loam; weak medium subangular blocky structure; very friable; common fine and medium roots; strongly acid; clear smooth boundary.
IIC1—26 to 45 inches; olive (5Y 5/3) loamy fine sand; massive; very friable; few fine roots; strongly acid; clear smooth boundary.
IIC2—45 to 55 inches; olive brown (2.5Y 4/4) loamy fine sand; massive; very friable; strongly acid; abrupt smooth boundary.
IIC3—55 to 60 inches; olive (5Y 5/3) loamy sand; single grain; loose; strongly acid.

The solum ranges from 20 to 35 inches in thickness. The content of coarse fragments ranges from 0 to 10 percent in the surface layer and from 0 to 20 percent in the subsoil and substratum. Reaction of the surface layer and subsoil is strongly acid or very strongly acid in unlimed areas.

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

The B horizon has hue of 7.5YR to 5Y, value of 4 to 6, and chroma of 3 to 6. The B21 horizon is fine sandy loam or very fine sandy loam.

The C horizon has hue of 10YR to 5Y, value of 4 to 7, and chroma of 2 to 4. It is loamy fine sand, loamy sand, fine sand, sand, or their gravelly analogs.

Amostown series

The Amostown series consists of deep, moderately well drained soils on outwash plains, terraces, and deltas. The soils formed in thin glacial outwash material over glaciolacustrine deposits. Slopes range from 0 to 8 percent.

Amostown soils are similar to Pollux soils and in many places are near Agawam soils. Amostown soils have mottles, and Pollux and Agawam soils do not. Amostown soils have more silt in the substratum than Agawam soils.

Typical pedon of Amostown fine sandy loam, 0 to 3 percent slopes, in a cultivated field 825 feet east of the Central Vermont Railroad right-of-way and 3,000 feet southeast of its junction with Southeast Street, in the town of Amherst:

Ap—0 to 7 inches; very dark grayish brown (10YR 3/2) fine sandy loam; weak fine and medium granular structure; friable; neutral; abrupt smooth boundary.
B21—7 to 18 inches; light olive brown (2.5Y 5/4) fine sandy loam; weak fine and medium subangular blocky structure; friable; strongly acid; clear smooth boundary.
B22—18 to 24 inches; light olive brown (2.5Y 5/4) fine sandy loam; weak medium subangular blocky structure; friable; strongly acid; clear wavy boundary.
B3—24 to 32 inches; light olive brown (2.5Y 5/4) fine sandy loam; many fine and medium distinct dark brown (7.5YR 4/4), yellowish brown (10YR 5/4), and gray (5Y 5/1) mottles; massive; friable; strongly acid; abrupt smooth boundary.
IIC—32 to 60 inches; thinly stratified dark gray (5Y 4/1), gray (5Y 5/1), light gray (5Y 6/1), and dark yellowish brown (10YR 4/4) very fine sand and silt; many medium and coarse distinct yellowish brown (10YR 5/6), strong brown (7.5YR 5/8), dark brown (7.5YR 4/4), and light olive brown (2.5Y 5/4) mottles; massive; firm; slightly acid.

The solum is 22 to 38 inches thick and corresponds to the depth to the silty material. The depth to low-chroma mottles is more than 24 inches. The content of coarse fragments in the solum ranges from 0 to 10 percent, and there are no coarse fragments in the substratum. Reaction in the solum is very strongly acid or strongly acid in unlimed areas and ranges from strongly acid to neutral in the IIC horizon.

The Ap horizon has hue of 10YR and value and chroma of 2 to 4. It is fine sandy loam or sandy loam.

The B21 horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 4 to 8. The B22 and B3 horizons have hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 2 to 6. The B horizon is fine sandy loam or sandy loam.

The IIC horizon has hue of 2.5YR to 5Y, value of 4 to 6, and chroma of 1 to 4. It is very fine sandy loam, silt loam, very fine sand, or silt and is typically stratified.

Belgrade series

The Belgrade series consists of deep, moderately well drained soils on glaciolacustrine terraces. The soils formed in water- or wind-deposited material with a high content of silt and very fine sand. They are underlain at a depth of more than 40 inches by glacial outwash material. Slopes range from 0 to 8 percent.

In many places Belgrade soils are near Raynham and Boxford soils. Belgrade soils are browner and less mottled in the upper part of the subsoil than Raynham soils. Belgrade soils have less clay than Boxford soils.

Typical pedon of Belgrade silt loam, 0 to 3 percent slopes, in a cultivated field about 250 feet south of the junction of Meadow Street and Comins Road, in the town of Amherst:

Ap—0 to 10 inches; very dark grayish brown (10YR 3/2) silt loam, light brownish gray (10YR 6/2) dry; weak fine and medium granular structure; friable; slightly acid; abrupt smooth boundary.
B21—10 to 15 inches; olive brown (2.5Y 4/4) very fine sandy loam; weak fine and medium subangular blocky structure; friable; few medium distinct dark yellowish brown (10YR 3/4) stains; slightly acid; clear smooth boundary.
B22—15 to 22 inches; olive (5Y 5/3) and olive brown (2.5Y 4/4) very fine sandy loam; common medium faint pale olive (5Y 6/3) mottles and few fine distinct yellowish brown (10YR 5/8) mottles; weak coarse and medium subangular blocky structure; friable; slightly acid; clear smooth boundary.
B23—22 to 30 inches; olive gray (5Y 5/2) very fine sandy loam grading to light olive brown (2.5Y 5/4) loamy very fine sand; many medium and coarse faint dark yellowish brown (10YR 4/4) mottles; weak medium and coarse subangular blocky structure; friable; slightly acid; clear smooth boundary.
C1—30 to 35 inches; stratified olive gray (5Y 5/2) and light olive brown (2.5Y 5/4) very fine sandy loam; many fine faint olive gray (5Y 4/2) and dark gray (5Y 4/1) mottles and common fine and medium distinct yellowish brown (10YR 5/8) and strong brown (7.5YR 5/8) mottles; massive; friable; slightly acid; abrupt smooth boundary.
C2—35 to 51 inches; stratified olive (5Y 4/3), olive brown (2.5Y 4/4), and light olive gray (5Y 6/2) very fine sandy loam and lenses of silt loam; common fine distinct yellowish brown (10YR 5/8) mottles; massive; friable; slightly acid; abrupt smooth boundary.
IIC—51 to 60 inches; yellowish brown (10YR 5/4) stratified loamy fine sand and fine sand; single grain; loose; many black (10YR 2/1) mica flakes; neutral.

The solum is 20 to 34 inches thick. Reaction ranges from strongly acid to neutral in the solum and from medium acid to neutral in the substratum.

The Ap horizon has hue of 10YR, value of 3 or 4, and chroma of 2 or 3. It is silt loam or very fine sandy loam.

The B21 horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 4 to 6. The B22 and B23 horizons have hue of 10YR to 5Y, value of 4 or 5, and chroma of 2 to 4. The lower part of the B horizon is mottled. The B horizon is silt loam or very fine sandy loam with some thin strata of loamy very fine sand.

The C horizon mainly is stratified very fine sandy loam, loamy fine sand, fine sand, and silt loam. Some pedons have thin layers of silty clay loam.

Boxford series

The Boxford series consists of deep, moderately well drained soils on old lakebeds. The soils formed in glaciolacustrine deposits. Slopes range from 0 to 15 percent.

Boxford soils are similar to Scitico soils and are mainly near Belgrade and Raynham soils. Boxford soils have mottles lower in the profile than Scitico and Raynham soils and have more clay than Belgrade soils.

Typical pedon of Boxford silt loam, 0 to 3 percent slopes, in a cultivated field l00 feet west of North Maple Street, l,000 feet north of its junction with Russell Street, in the town of Hadley:

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) silt loam; moderate fine granular structure; friable; many fine roots; slightly acid; abrupt smooth boundary.
B1—8 to 14 inches; brown (10YR 5/3) silt loam; moderate medium subangular blocky structure; friable; slightly acid; abrupt smooth boundary.
B21—14 to 21 inches; olive brown (2.5Y 4/4) silty clay loam; moderate medium subangular blocky structure; friable; gray (5Y 5/1) silt films; medium acid; abrupt smooth boundary.
B22—21 to 33 inches; olive brown (2.5Y 4/4) silty clay; common medium prominent yellowish red (5YR 4/6) mottles and few fine distinct strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; firm; common gray (10YR 5/1) silt films; medium acid; abrupt smooth boundary.
C1—33 to 37 inches: olive brown (2.5Y 4/4) silty clay; few fine distinct strong brown (7.5YR 5/6) mottles; weak coarse and very coarse platy structure; firm; gray (10YR 5/l) films; medium acid; abrupt smooth boundary.
C2—37 to 60 inches; varved olive (5Y 4/3) silt and clay; weak coarse and very coarse platy structure; firm; medium acid.

The solum is 24 to 36 inches thick. Reaction ranges from strongly acid to slightly acid throughout the soil.

The A horizon has hue of 10YR and value and chroma of 2 or 3.

The B2 horizon has hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 3 to 6. The depth to mottling ranges from 15 to 24 inches. The B2 horizon is silty clay loam or silty clay.

The C horizon has hue of 2.5Y or 5Y, value of 4 or 5, and chroma of 3 or 4. It consists of varved silt and clay with an overall texture of silty clay loam or silty clay.

Charlton series

The Charlton series consists of deep, well drained soils on glaciated uplands. The soils formed in glacial till. Slopes range from 3 to 45 percent.

Charlton soils are similar to Narragansett soils and in many places are near Paxton, Woodbridge, and Hollis soils. Charlton soils do not have the very fine sandy loam typical in the upper part of the solum of Narragansett soils and do not have the fragipan typical of Paxton and Woodbridge soils. Charlton soils are

deeper to bedrock than Hollis soils and do not have mottles typical of Woodbridge soils.

Typical pedon of Charlton fine sandy loam, in a wooded area of Charlton stony fine sandy loam, 3 to 8 percent slopes, 2,500 feet northwest of the intersection of Kennedy Road and Chesterfield Road, in the city of Northampton:

Ap—0 to 7 inches; dark brown (10YR 3/3) fine sandy loam; weak fine granular structure; very friable; many roots; 10 percent coarse fragments; strongly acid; clear smooth boundary.

B21—7 to 13 inches; yellowish brown (10YR 5/6) fine sandy loam; weak medium subangular blocky structure; friable; many roots; 10 percent coarse fragments; strongly acid; clear smooth boundary.

B22—13 to 22 inches; light olive brown (2.5Y 5/4) gravelly fine sandy loam; weak medium subangular blocky structure; friable; many roots; 30 percent coarse fragments; strongly acid; gradual smooth boundary.

C—22 to 60 inches: olive (5Y 4/3) gravelly sandy loam; massive; firm; 30 percent coarse fragments; medium acid.

The solum is 20 to 34 inches thick. The content of rock fragments ranges from 5 to 35 percent. Reaction ranges from very strongly acid to medium acid in unlimed areas.

The Ap horizon has hue of 10YR, value of 3 or 4, and chroma of 2 to 4. It is fine sandy loam or sandy loam.

The B21 horizon has hue of 7.5YR or 10YR and value and chroma of 4 to 6. The B22 horizon has hue of 10YR to 5Y and value and chroma of 4 to 6. The B horizon is fine sandy loam, loam, or sandy loam and their gravelly analogs. It has weak granular or subangular blocky structure.

The C horizon has hue of 2.5Y or 5Y, value of 4 to 6, and chroma of 2 to 4. It is fine sandy loam or sandy loam and their gravelly analogs. Thin, horizontally discontinuous layers or pockets of loamy sand 1 to 6 inches thick are in some pedons.

Deerfield series

The Deerfield series consists of deep, moderately well drained soils on glacial outwash plains and terraces. The soils formed in sandy glacial outwash. Slopes range from 0 to 8 percent.

Deerfield soils are similar to Windsor soils and in many places are near Ninigret and Agawam soils. Deerfield soils have mottles, but Windsor and Agawam soils are not mottled. Deerfield soils have more sand in the solum than Ninigret or Agawam soils.

Typical pedon of Deerfield loamy fine sand, 0 to 5 percent slopes, in a cultivated field 600 feet west of Route 116 and 2,200 feet north of its intersection with Sunderland Road, in the town of Amherst:

Ap—0 to 9 inches; dark brown (10YR 3/3) loamy fine sand; weak fine and medium granular structure; very friable; many roots; strongly acid; abrupt smooth boundary.

B21—9 to 15 inches; light olive brown (2.5Y 5/4) loamy fine sand grading with depth to fine sand; weak medium granular structure; very friable; common fine roots; slightly acid; clear smooth boundary.

B22—15 to 25 inches; light olive brown (2.5Y 5/4) fine sand; common fine distinct yellowish red (5YR 4/8) and strong brown (7.5YR 5/6) mottles and few medium distinct light brownish gray (2.5Y 6/2) mottles; single grain; loose; few fine roots; slightly acid; clear smooth boundary.

C1g—25 to 33 inches; stratified grayish brown (2.5Y 5/2) loamy sand; common fine prominent yellowish red (5YR 5/8) mottles; single grain; loose; slightly acid; clear smooth boundary.

C2g—33 to 43 inches; stratified olive gray (5Y 5/2) and olive (5Y 5/4) sand and fine sand; many medium distinct yellowish brown (10YR 5/8) mottles; massive; friable; slightly acid; clear smooth boundary.

C3g—43 to 55 inches; gray (5Y 5/1) and light olive gray (5Y 6/2) loamy fine sand; thin bands of fine sandy loam; many fine to coarse prominent yellowish red (5YR 5/8) and reddish yellow (5YR 6/8) mottles; massive; very friable; common strong brown (7.5YR 5/8) streaks and bands; medium acid; clear smooth boundary.

C4g—55 to 60 inches; olive gray (5Y 4/2) fine sand; massive; very friable; many olive (5Y 5/3) streaks; medium acid.

The solum is 20 to 30 inches thick. The content of coarse fragments is typically less than 5 percent, but some strata are 20 percent fine gravel. Reaction ranges from very strongly acid to slightly acid in unlimed areas.

The Ap horizon has hue of 10YR, value of 2 to 4, and chroma of 1 to 3.

The B horizon has hue of 7.5YR to 2.5Y, value of 3 to 6, and chroma of 2 to 6. It ranges from loamy fine sand to coarse sand.

The C horizon has hue of 10YR to 5Y, value of 4 to 6, and chroma of 1 to 4. It ranges from coarse sand to loamy fine sand.

Enosburg series

The Enosburg series consists of deep, poorly drained soils on glacial outwash plains and deltas. The soils formed in a thin layer of glacial outwash material over glaciolacustrine deposits. Slopes range from 0 to 8 percent.

Enosburg soils are similar to Amostown soils and in many places are near Deerfield and Windsor soils. Enosburg soils have a grayer subsoil than any of these soils, and they have more silt in the substratum than Deerfield or Windsor soils.

Typical pedon of Enosburg fine sandy loam, 0 to 3 percent slopes, in a wooded area 400 feet south of the intersection of College Street and South Whitney Street, in the town of Amherst:

O1—3 inches to 1 inch; loose litter.
O2—1 inch to 0; very dusky red (2.5YR 2/2) well decomposed and partially decomposed leaves and twigs; extremely acid; abrupt smooth boundary.
A1—0 to 9 inches; very dark gray (10YR 3/1) fine sandy loam, gray (10YR 5/1) dry; weak fine and medium subangular blocky structure; very friable; many fine and medium and few coarse tree roots; very strongly acid; abrupt wavy boundary.
IIC1—9 to 18 inches; dark gray (10YR 4/1) loamy sand; few fine distinct strong brown (7.5YR 5/6) and brownish yellow (10YR 6/6) mottles; massive; loose; many fine and medium tree roots; strongly acid; abrupt smooth boundary.
IIC2—18 to 25 inches; grayish brown (10YR 5/2) loamy sand; single grain; loose; medium acid; abrupt smooth boundary.
IIIC3—25 to 60 inches; thinly stratified gray (5Y 5/1) silty clay and dark gray (10YR 4/1) loamy sand; many medium prominent gray (10YR 5/1) and yellowish red (5YR 5/8) mottles; massive; very friable; medium acid.

The depth to the fine sediments ranges from 16 to 34 inches. The content of coarse fragments ranges from 0 to 5 percent. Reaction ranges from very strongly acid to slightly acid in the outwash material and from medium acid to neutral in the underlying glaciolacustrine deposits.

The A horizon has hue of 10YR, value of 2 or 3, and chroma of 1 or 2. It is fine sandy loam or sandy loam.

The C horizon has hue of 10YR to 5Y, value of 4 to 6, and chroma of 1 or 2. It ranges from coarse sand to loamy fine sand in the upper part and is very fine sandy loam, silt, silt loam, or light silty clay loam in the lower part.

Freetown Series

The Freetown series consists of deep very poorly drained soils on uplands and outwash plains. They formed in highly decomposed organic material. Slopes are 0 or 1 percent.

Freetown soils are similar to Swansea soils and in many areas are near Scarboro and Walpole soils. Freetown soils have thicker organic layers than Swansea, Scarboro, and Walpole soils.

Typical pedon of Freetown muck in a wooded area 350 feet south of Plain Road and 200 feet east of the railroad crossing, in the town of Hatfield:

Oa1—0 to 6 inches; black (10YR 2/1) broken face and rubbed muck (sapric material); 5 percent fiber, 2 percent fiber rubbed; weak fine and medium granular structure; very friable; many coarse and medium tree roots; 20 percent mineral; extremely acid; abrupt smooth boundary.
Oa2—6 to 12 inches; black (10YR 2/1) broken face and rubbed muck (sapric material); 20 percent fiber, 1 percent fiber rubbed; weak medium granular structure; very friable; 10 percent mineral; extremely acid abrupt smooth boundary.
Oa3—12 to 24 inches; black (N 2/0) broken face and rubbed muck (sapric material); 30 percent fiber, 1 percent fiber rubbed; massive; very friable; 10 percent mineral; extremely acid; gradual smooth boundary.
Oa4—24 to 30 inches; black (10YR 2/1) broken face and rubbed muck (sapric material); 10 percent fiber, 1 percent fiber rubbed; massive; very friable; 20 percent woody coarse fragments; 10 percent mineral; extremely acid; gradual smooth boundary.
Oa5—30 to 60 inches; black (10YR 2/1) broken face and rubbed muck (sapric material); 10 percent fiber, 2 percent fiber rubbed; massive; very friable; 10 percent mineral; extremely acid.

The organic material extends to a depth of 51 inches or more. Woody fragments are throughout most pedons and comprise up to 25 percent of some horizons. Reaction is extremely acid throughout.

The surface tier has hue of 5YR through 10YR, value of 2 or 3, and chroma of 0 to 2.

The subsurface and bottom tiers have hue of 5YR to 10YR, value of 2 to 4, and chroma of 0 to 3.

Gloucester series

The Gloucester series consists of deep, somewhat excessively drained soils on glaciated uplands. The soils formed in sandy glacial till. Slopes range from 3 to 45 percent.

Gloucester soils are similar to Charlton soils and in many places are near Scituate and Montauk soils. Gloucester soils have more sand in the subsoil and substratum than Charlton soils and do not have a fragipan typical of Scituate and Montauk soils. Gloucester soils have less silt in the solum than Montauk or Charlton soils and do not have the mottles typical of Scituate soils.

Typical pedon of Gloucester fine sandy loam, in a wooded area of Gloucester stony fine sandy loam, 3 to 8 percent slopes, 1,700 feet east of the intersection of Westhampton Road and Easthampton Road, 500 feet south of Westhampton Road along a road in the woods, and 50 feet east of the road in the woods, in the city of Northampton:

O1—3 to 2 inches; litter of leaves, needles, and twigs.
O2—2 inches to 0; well decomposed and partially decomposed leaves, needles, and twigs.

A1—0 to 5 inches; dark brown (l0YR 3/3) fine sandy loam; weak medium granular structure; very friable; many fine and medium roots; 5 percent gravel, 10 percent cobblestones, 5 percent stones; very strongly acid; abrupt smooth boundary.
B21—5 to 14 inches; yellowish brown (10YR 5/6) gravelly sandy loam; weak medium granular structure; very friable; common fine and medium roots, few coarse roots; 15 percent gravel, 10 percent cobblestones, 5 percent stones; very strongly acid; abrupt wavy boundary.
B22—14 to 22 inches; yellowish brown (10YR 5/6) gravelly loamy sand; weak medium granular structure; very friable; common fine and medium roots, few coarse roots; 30 percent gravel, 15 percent cobblestones, 5 percent stones; very strongly acid, abrupt wavy boundary.
C1—22 to 30 inches; yellowish brown (10YR 5/4) gravelly loamy sand; single grain; loose; common fine and medium roots, few coarse roots; 30 percent gravel, 15 percent cobblestones, 5 percent stones; very strongly acid; clear wavy boundary.
C3—30 to 48 inches; dark grayish brown (10YR 4/2) gravelly loamy sand; single grain; loose; few fine roots; 30 percent gravel, 15 percent cobblestones, 5 percent stones; few to common silt caps up to 4 millimeters thick and increasing with depth; very strongly acid; clear wavy boundary.
C4—48 to 60 inches; grayish brown (2.5Y 5/2) gravelly loamy sand; single grain; loose; few fine roots; 30 percent gravel, 15 percent cobblestones, 5 percent stones; few silt caps; strongly acid.

The solum is 20 to 30 inches thick. The content of rock fragments ranges from 5 to 40 percent in the surface layer, 20 to 50 percent in the upper part of the B horizon, and 35 to 70 percent in the lower part of the B horizon and in the C horizon. Reaction is strongly acid or very strongly acid in unlimed areas.

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

The B21 horizon has hue of 7.5YR or 10YR and value and chroma of 4 to 6. The B22 horizon has hue of 10YR or 2.5Y and value and chroma of 4 to 6. The B21 horizon is sandy loam, fine sandy loam, or their gravelly analogs. The B22 horizon is sandy loam, loamy sand, loamy coarse sand, or their gravelly analogs.

The C horizon has hue of 10YR to 5Y, value of 4 to 6, and chroma of 1 to 4. It is gravelly loamy sand or gravelly loamy fine sand.

Hadley series

The Hadley series consists of deep, well drained soils on flood plains. The soils formed in medium textured alluvium. Slopes range from 0 to 3 percent.

Hadley soils are similar to Winooski soils and in many places are near Limerick and Suncook soils. Hadley soils do not have the mottles typical of Winooski and Limerick soils. Hadley soils have more silt in the solum than Suncook soils.

Typical pedon of Hadley silt loam, in a cultivated field about 1 mile southeast of the west end of Coolidge Memorial Bridge on Route 9. 0.75 mile northeast of the Northampton Sewage Treatment Plant, in the city of Northampton:

Ap—0 to 11 inches; very dark grayish brown (2.5Y 3/2) silt loam, light gray (2.5Y 7/2) dry; weak and moderate fine and very fine granular structure; friable; slightly sticky, plastic; many fine roots; strongly acid; abrupt smooth boundary.
C1—11 to 28 inches; olive brown (2.5Y 4/4) silt; massive; evidence of fine stratification; friable; slightly sticky, slightly plastic; common fine roots; few fine pores; strongly acid; gradual irregular boundary.
C2—28 to 40 inches; brown (10YR 4/3) and grayish brown (2.5Y 5/2) silt loam; massive; friable, slightly sticky, slightly plastic; few fine roots; common fine pores; medium acid; abrupt smooth boundary.
C3—40 to 54 inches; light olive brown (2.5Y 5/4) and brown (10YR 4/3) silt loam; massive; friable, slightly sticky, slightly plastic; few very fine roots; common very fine and fine pores; strongly acid; abrupt wavy boundary.
C4—54 to 68 inches; olive brown (2.5Y 4/4) silt loam; massive; friable, nonsticky, slightly plastic; few very fine and fine pores; medium acid; abrupt wavy boundary.
IIC5—68 to 72 inches; olive brown (2.5Y 4/4) and light brownish gray (2.5Y 6/2) loamy fine sand; massive; very friable, nonsticky, nonplastic; medium acid.

The thickness and number of subsurface horizons correspond closely to the thickness and texture of the alluvial deposits. Reaction to a depth of 40 inches ranges from very strongly acid through neutral, but a subhorizon in each pedon is medium acid to neutral. Reaction below a depth of 40 inches ranges from strongly acid to mildly alkaline. The content of coarse fragments ranges from 0 to 5 percent.

The Ap 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 C horizon has hue of 10YR to 5Y, value of 3 to 6, and chroma of 2 to 4. It ranges from silt to very fine sand above a depth of 40 inches and from silt loam to sand below a depth of 40 inches.

Haven series

The Haven series consists of deep, well drained soils on glacial outwash plains. The soils formed in a thin mantle of water- or wind-laid deposits over glacial outwash material. Slopes range from 3 to 15 percent.

Haven soils are similar to Agawam and Merrimac soils and in many places are near Hinckley and Holyoke soils. Haven soils are finer textured in the solum than Agawam, Merrimac, or Hinckley soils. Haven soils are deeper to bedrock than Holyoke soils.

Typical pedon of Haven very fine sandy loam, 3 to 8 percent slopes, in a wooded area 175 feet south of Hockanum Road and 6,200 feet west of its junction with Chmura Road, in the town of Hadley:

O1—3 inches to 1 inch; needles, leaves, and twigs.
O2—1 inch to 0; well decomposed and partially decomposed needles, leaves, and twigs.
A1—0 to 5 inches; brown (10YR 4/3) very fine sandy loam; weak medium granular structure; very friable; many fine roots; 2 percent fine gravel; very strongly acid; abrupt smooth boundary.
B21—5 to 15 inches; yellowish brown (10YR 5/4) very fine sandy loam; weak medium subangular blocky structure; friable; many fine roots, few medium roots; 2 percent fine gravel; very strongly acid; abrupt smooth boundary.
B22—15 to 22 inches; brown (7.5YR 4/4) very fine sandy loam; weak medium subangular blocky structure; friable; many fine roots, few medium roots; 2 percent fine gravel; very strongly acid; abrupt smooth boundary.
IIC1—22 to 30 inches; yellowish brown (10YR 5/4) sand; single grain; loose; 10 percent gravel; very strongly acid; abrupt wavy boundary.
IIC2—30 to 44 inches; light brownish gray (10YR 6/2) sand; single grain; loose; 10 percent gravel; very strongly acid; abrupt smooth boundary.
IIC3—44 to 60 inches; light brownish gray (10YR 6/2) stratified sand and gravel; single grain; loose; 50 percent gravel; strongly acid.

The solum is 18 to 36 inches thick and corresponds to the depth to sand or sand and gravel. The content of coarse fragments ranges from 2 to 5 percent in the solum and 10 to 65 percent in the IIC horizon. Reaction throughout the soil is very strongly acid or strongly acid in unlimed areas.

The A horizon has hue of 10YR, value of 3 or 4, and chroma of 2 or 3.

The B horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 3 to 6.

The C horizon has hue of 7.5YR to 2.5Y, value of 5 or 6, and chroma of 2 to 6. It is sand, sand and gravel, or gravelly sand.

Hinckley series

The Hinckley series consists of deep, excessively drained soils on glacial outwash plains, kames, and terraces. The soils formed in glacial outwash deposits. Slopes range from 0 to 35 percent.

Hinckley soils are similar to Merrimac soils and in many places are near Sudbury and Windsor soils. Hinckley soils have less silt in the subsoil than Merrimac or Sudbury soils and more gravel than Windsor soils.

Typical pedon of Hinckley loamy sand, 0 to 3 percent slopes, at the edge of a gravel pit adjacent to Breckenridge Road, in the town of Hadley:

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) loamy sand; weak fine granular structure; very friable; common fine and medium roots; 10 percent gravel; very strongly acid; abrupt smooth boundary.
B2—8 to 13 inches; brown (7.5YR 5/4) loamy sand; single grain; loose; common fine and medium roots; l0 percent gravel; very strongly acid; abrupt smooth boundary.
B3—13 to 29 inches; brown (7.5YR 5/4) gravelly sand; single grain; loose; common fine and medium roots; 30 percent gravel; very strongly acid; abrupt smooth boundary.
C—29 to 60 inches; brownish yellow (10YR 6/6) stratified sand, coarse sand, gravelly sand, and gravel; single grain; loose; few very coarse roots to a depth of 42 inches; up to 70 percent gravel in individual strata; medium acid.

The solum is 12 to 30 inches thick. The content of gravel and cobblestones ranges from 10 to 50 percent in the solum and 35 to 70 percent in the C horizon. Reaction ranges from extremely acid to medium acid in unlimed areas.

The Ap horizon has hue of 10YR, value of 3 or 4, and chroma of 2 or 3. It ranges from loamy sand to very fine sandy loam.

The B horizon has hue of 7.5YR or 10YR and value and chroma of 4 to 5. The texture to a depth of 10 inches is loamy sand, loamy coarse sand, fine sandy loam, or their gravelly analogs. The texture below 10 inches is loamy sand, loamy coarse sand, sand, coarse sand, or their gravelly analogs.

The C horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 2 to 8. It ranges from gravelly loamy sand to cobbly coarse sand and is stratified.

Hollis series

The Hollis series consists of shallow, somewhat excessively drained soils on glaciated uplands. The soils formed in thin deposits of glacial till over bedrock. Slopes range from 3 to 45 percent.

Hollis soils are similar to Holyoke soils and in many places are near Charlton and Woodbridge soils. Hollis soils have less silt in the surface layer than Holyoke soils. Hollis soils are shallow to bedrock; Charlton and Woodbridge soils are deep. Hollis soils do not have the mottles or fragipan typical of Woodbridge soils.

Typical pedon of Hollis fine sandy loam, in a wooded area of Charlton-Rock outcrop-Hollis complex, sloping, 200 feet east of a forest road and 1,800 feet south of its junction with Mountain Street, in the town of Hatfield:

O1—4 to 2 inches; litter of needles, leaves, and twigs.
O2—2 inches to 0; well decomposed and partially decomposed needles, leaves, and twigs.
A11—0 to 3 inches; very dark brown (10YR 2/2) fine sandy loam; weak fine and medium granular structure; friable; many very fine and fine roots; 5 percent coarse fragments; very strongly acid; abrupt wavy boundary.
A12—3 to 5 inches; dark brown (10YR 3/3) fine sandy loam; weak fine and medium granular structure; very friable; common fine roots, few medium roots; 5 percent coarse fragments; very strongly acid; clear smooth boundary.
B21—5 to 16 inches; brown (7.5YR 4/4) fine sandy loam; weak fine subangular blocky structure; very friable; common fine roots, few medium roots; 5 percent coarse fragments; very strongly acid; gradual wavy boundary.
B22—16 to 19 inches; brown (7.5YR 4/4) sandy loam; weak fine subangular blocky structure; very friable; few medium roots; 5 percent coarse fragments; strongly acid; abrupt wavy boundary.
R—19 inches; granite bedrock.

The depth to bedrock ranges from 10 to 20 inches. The content of coarse fragments ranges from 5 to 25 percent. Reaction is strongly acid or very strongly acid in unlimed areas.

The A horizon has hue of 10YR, value of 3 or 4, and chroma of 2 or 3.

The B horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 or 6. It is fine sandy loam or sandy loam.

Holyoke series

The Holyoke series consists of shallow, somewhat excessively drained soils on glaciated uplands. The soils formed in a thin mantle of silty, wind-laid material mixed with glacial till. Slopes range from 3 to 45 percent.

Holyoke soils are similar to Hollis soils and in many places are near Narragansett and Haven soils. Holyoke soils have more silt in the solum than Hollis soils and are shallower to bedrock than Narragansett or Haven soils.

Typical pedon of Holyoke very fine sandy loam, in a wooded area of Rock outcrop-Narragansett-Holyoke complex, steep, 100 feet east of Skinner Park Road and 2,200 feet below the Summit House, in the town of South Hadley:

O1—1 inch to 0; well decomposed and partially decomposed leaves, needles, and twigs.
A1—0 to 1 inch; dark brown (7.5YR 3/2) very fine sandy loam; weak fine granular structure; friable; many fine and medium roots, common coarse roots; 10 percent gravel, 3 percent cobblestones; very strongly acid; abrupt smooth boundary.
B21—1 to 4 inches; dark brown (7.5YR 3/2) very fine sandy loam; massive; friable; many fine and medium roots, common coarse roots; 10 percent gravel, 3 percent cobblestones; very strongly acid; clear smooth boundary.
B22—4 to 16 inches; reddish brown (5YR 4/4) very fine sandy loam; massive; friable; many fine and medium roots, common coarse roots; 10 percent gravel, 3 percent cobblestones; very strongly acid; abrupt smooth boundary.
R—16 inches; basalt bedrock.

The depth to bedrock ranges from 10 to 20 inches. The content of small angular rock fragments ranges from 5 to 20 percent. Reaction is very strongly acid or strongly acid in unlimed areas.

Limerick series

The Limerick series consists of deep, poorly drained soils on flood plains. The soils formed in medium textured alluvium. Slopes range from 0 to 3 percent.

Limerick soils are similar to Winooski soils and in many places are near Saco and Hadley soils. Limerick soils are grayer than Winooski or Hadley soils and have a lighter colored surface layer than Saco soils.

Typical pedon of Limerick silt loam, 1,100 feet south-southeast of the intersection of West Street and Bay Road, in the town of Hadley:

Ap—0 to 12 inches; dark grayish brown (2.5Y 4/2) silt loam; few medium distinct greenish gray (5GY 5/1) and brown (10YR 4/3) mottles; weak medium granular structure; friable; medium acid; clear smooth boundary.
C1g—12 to 20 inches; dark grayish brown (2.5Y 4/2) very fine sandy loam; common medium distinct olive gray (5Y 4/2), olive (5Y 5/4), and dark brown (10YR 3/3) mottles with very dark brown (10YR 2/2) centers; massive; friable; medium acid; clear smooth boundary.
C2g—20 to 41 inches; dark gray (5Y 4/1) silt loam; thin strata of fine sand and very fine sand; many medium prominent dark brown (7.5YR 3/2) and black (5YR 2/1) mottles; massive; friable; medium acid; gradual smooth boundary.
C4g—41 to 60 inches; dark gray (5Y 4/1) silt loam; thin strata of fine sand and very fine sand; many medium prominent dark reddish brown (5YR 4/4) mottles; massive; friable; medium acid.

Reaction ranges from medium acid through neutral.

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 C horizon has hue of 2.5Y or 5Y, value of 4 or 5, and chroma of 1 or 2. It is silt loam or very fine sandy loam and has thin strata of very fine sand or fine sand.

Maybid series

The Maybid series consists of deep, very poorly drained soils on old lakebeds. The soils formed in glaciolacustrine deposits. Slopes range from 0 to 3 percent.

Maybid soils are similar to Scitico soils and in many places are near Raynham and Boxford soils. Maybid soils are grayer than those soils and have more clay than Raynham soils.

Typical pedon of Maybid silt loam, in a wooded area 100 feet south of Station Road and 500 feet west of the railroad crossing, in the town of Amherst:

A11—0 to 4 inches; very dark brown (10YR 2/2) silt loam; weak fine and medium granular structure; very friable; many fine and medium roots; strongly acid; clear wavy boundary.

A12—4 to 10 inches; very dark gray (10YR 3/1) silt loam; few fine prominent gray (5Y 5/1) and yellowish brown (10YR 5/8) mottles; weak medium granular structure; very friable; many fine and medium roots; strongly acid; abrupt smooth boundary.

A2g—10 to 13 inches; dark greenish gray (5BG 4/1) silt loam; massive; firm; few fine roots; olive (5Y 5/6) stains in root channels; pockets of clean white medium coarse and very coarse sand; medium acid; abrupt smooth boundary.

B21g—13 to 18 inches; dark gray (5Y 4/1) silty clay loam; common coarse prominent brown (7.5YR 4/4), strong brown (7.5YR 5/8), and olive (5Y 4/3) mottles; massive; firm, slightly plastic; few fine roots; strong brown (7.5YR 5/8) stains in root channels; few clay films in pores and channels; medium acid; clear smooth boundary.

B22g—18 to 24 inches; dark gray (N 4/0) silty clay loam; massive; firm; slightly plastic; few fine roots; few medium distinct olive (5Y 5/3) and yellowish brown (10YR 5/6) mottles; medium acid; clear smooth boundary.

C1g—24 to 48 inches; dark gray (N 4/0) silty clay; many coarse distinct olive (5Y 5/4) mottles and common coarse prominent strong brown (7.5YR 5/8) mottles; massive; firm; plastic; slightly acid; gradual smooth boundary.

C2g—48 to 60 inches; varved dark gray (N 4/0) clay and olive gray (5Y 4/2) silt; massive; firm; slightly acid.

The solum is 20 to 30 inches thick. Reaction ranges from strongly acid to medium acid in the A horizon, medium acid to neutral in the B horizon, and slightly acid to neutral in the C horizon.

The A horizon is neutral or has hue of 10YR to 5BG, value of 2 or 3, and chroma of 0 to 2.

The B horizon is neutral or has hue of 5Y or 5GY, value of 4 or 5, and chroma of 0 to 2. It is silty clay or silty clay loam.

The C horizon is neutral or has hue of 5Y, 5GY, 5G, or 5BG; value of 4 or 5; and chroma of 0 or 1. The C horizon is mottled in some pedons.

Merrimac series

The Merrimac series consists of deep, somewhat excessively drained soils on glacial outwash plains. The soils formed in glacial outwash deposits. Slopes range from 0 to 25 percent.

Merrimac soils are similar to Agawam and Sudbury soils and in many places are near Hinckley and Walpole soils. Merrimac soils do not have the mottles typical of Sudbury and Walpole soils or the thick mantle of fine sandy loam typical of Agawam soils. Merrimac soils have more silt in the solum than Hinckley soils.

Typical pedon of Merrimac fine sandy loam, 3 to 8 percent slopes, in a field 1,000 feet northwest of the intersection of Harris Road and Bachelor Street, and 100 feet west of Harris Road, in the town of Granby;

Ap—0 to 8 inches; dark brown (10YR 3/3) fine sandy loam; massive; very friable; many fine roots; 15 percent gravel; medium acid; abrupt wavy boundary.

B21—8 to 16 inches; yellowish brown (10YR 5/6) fine sandy loam; massive; very friable; common fine roots; 15 percent gravel; medium acid; clear smooth boundary.

B22—16 to 24 inches; yellowish brown (10YR 5/4) sandy loam; massive; friable; few to common fine roots; 15 percent gravel; medium acid; clear smooth boundary.

IIC—24 to 60 inches; grayish brown (10YR 5/2) and light brownish gray (10YR 6/2) stratified sand and gravelly sand; single grain; loose; 40 percent gravel; few fine roots; medium acid.

The solum is 18 to 30 inches thick. The content of coarse fragments ranges from 5 to 30 percent in the solum and 30 to 70 percent in the substratum. Reaction ranges from extremely acid to medium acid in unlimed areas.

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

The B21 horizon has hue of 7.5YR or 10YR, value of 3 to 6, and chroma of 3 to 8. It is fine sandy loam, sandy loam, or their gravelly analogs. The B22 horizon has hue of 10YR or 2.5Y, value of 3 to 6, and chroma of 3 to 8. It is sandy loam, loamy sand, or their gravelly analogs. The sandy loam does not extend to a depth of more than 27 inches.

The C horizon has hue of 10YR to 5Y and has a wide range in value and chroma. The overall texture is gravelly sand or very gravelly sand.

Montauk series

The Montauk series consists of deep, well drained soils on glaciated uplands. The soils formed in glacial till. Slopes range from 3 to 25 percent.

Montauk soils are similar to Paxton soils and in many places are near Scituate and Gloucester soils. Montauk soils have more silt in the solum than Gloucester soils and do not have the mottles typical of Scituate soils. Montauk soils have more sand in the substratum than Paxton soils.

Typical pedon of Montauk fine sandy loam, in a wooded area of Montauk stony fine sandy loam, 3 to 15 percent slopes, 150 feet south of the Amherst College Observatory, in the town of Amherst:

O1—3 inches to 1 inch; litter of needles and twigs.
O2—1 inch to 0; well decomposed and partially decomposed needles and twigs.
A1—0 to 6 inches; brown (10YR 4/3) fine sandy loam; weak medium granular structure; friable; common fine and medium roots; 5 percent gravel and 5 percent cobblestones; very strongly acid; abrupt smooth boundary.
B21—6 to 12 inches; yellowish brown (10YR 5/4) fine sandy loam; weak medium subangular blocky structure; friable; common fine and medium roots; 5 percent gravel and 5 percent cobblestones; very strongly acid; abrupt smooth boundary.
B22—12 to 21 inches; brown (10YR 5/3) sandy loam; weak medium subangular blocky structure; friable; common fine and medium roots; 5 percent gravel and 5 percent cobblestones; very strongly acid; abrupt wavy boundary.
IIC1x—21 to 38 inches; grayish brown (2.5Y 5/2) loamy sand; weak medium and thick platy structure; firm and brittle; common fine and medium roots in vertical crack of B22 material 2 inches wide; 10 percent gravel and 5 percent cobblestones; very strongly acid; abrupt wavy boundary.
IIC2x—38 to 60 inches; grayish brown (10YR 5/2) gravelly loamy sand; weak medium and thick platy structure; firm and brittle; common fine and medium roots in vertical crack of B22 material 2 inches wide; 10 percent gravel and 10 percent cobblestones; few coatings; very strongly acid.

The solum is 18 to 30 inches thick and corresponds closely to the depth to the underlying coarse textured till. The content of coarse fragments ranges from 5 to 20 percent in the solum and 10 to 30 percent in the substratum. Reaction ranges from extremely acid to strongly acid in unlimed areas.

The Ap horizon has hue of 10YR, value of 3 or 4, and chroma of 2 or 3. It is fine sandy loam or sandy loam.

The B21 horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 8. The B22 horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 3 to 6. The B horizon has granular or subangular blocky structure, or it is massive.

The C horizon has hue of 10YR to 5Y, value of 4 to 6, and chroma of 1 to 3. It is loamy sand, loamy fine sand, loamy coarse sand, or their gravelly analogs. It has weak, thin to thick platy structure, or it is massive. It is firm or very firm.

Narragansett series

The Narragansett series consists of deep, well drained soils on glacial uplands. The soils formed in glacial till. Slopes range from 3 to 45 percent. The Narragansett soils in this survey area are a taxadjunct to the Narragansett series because parts of the B horizon are fine sandy loam and sandy loam and loamy sand is at a depth of less than 40 inches. These differences do not significantly affect the use and management of the soils.

Narragansett soils are similar to Charlton soils and in most places are near Holyoke soils. Narragansett soils have more sand in the substratum than Charlton soils and are deeper to bedrock than Holyoke soils.

Typical pedon of Narragansett very fine sandy loam, in a wooded area of Narragansett-Holyoke-Rock outcrop complex, 8 to 15 percent slopes, 50 feet north of Lithia Springs Road and 400 feet north of the power line crossing, in the town of South Hadley:

A1—0 to 1 inch; dark grayish brown (10YR 4/2) very fine sandy loam; weak fine and medium granular structure; friable; many fine and medium roots; 5 percent coarse fragments; very strongly acid; abrupt smooth boundary.
B21—1 to 13 inches; brown (7.5YR 4/4) very fine sandy loam; weak medium and coarse subangular blocky structure; friable; many fine and medium roots; 5 percent coarse fragments; very strongly acid; clear smooth boundary.
B22—13 to 19 inches; yellowish brown (10YR 5/6) fine sandy loam; weak medium subangular blocky structure; friable; common fine and medium roots; 10 percent coarse fragments; very strongly acid; gradual smooth boundary.
B23—19 to 31 inches; yellowish brown (10YR 5/6) sandy loam; massive; friable; few fine and medium roots; 15 percent coarse fragments; very strongly acid; clear smooth boundary.
IIC1—31 to 45 inches; yellowish brown (10YR 5/4) loamy sand; massive; very friable; few fine and medium roots; 10 percent coarse fragments; strongly acid; gradual wavy boundary.
IIC2—45 to 60 inches; yellowish brown (10YR 5/4) sand; single grain; loose; 10 percent coarse fragments; strongly acid.

The solum is 16 to 36 inches thick. The content of coarse fragments throughout the soil ranges from 2 to 20 percent. Reaction throughout the soil is very strongly acid or strongly acid.

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 or silt loam.

The B horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 8. The B21 horizon is very fine sandy loam or silt loam. The B22 horizon is fine sandy loam or sandy loam.

The IIC horizon has hue of 7.5YR to 2.5Y, value of 3 to 5, and chroma of 4 to 6. It ranges from loamy sand to sand.

Ninigret series

The Ninigret series consists of deep, moderately well drained soils on glacial outwash plains and terraces. The soils formed in glacial outwash material. Slopes range from 0 to 8 percent.

Ninigret soils are similar to Agawam soils and in many places are near Deerfield and Windsor soils. Ninigret soils are grayer than Agawam or Windsor soils and have more silt in the solum than Deerfield soils.

Typical pedon of Ninigret fine sandy loam, 0 to 3 percent slopes, in an area 2,800 feet south of the center of the village of North Amherst and 1,100 feet west of North Pleasant Street, in the town of Amherst:

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

B21—10 to 21 inches; yellowish brown (10YR 5/4) fine sandy loam; weak medium subangular blocky structure; very friable; strongly acid; gradual smooth boundary.

B22—21 to 28 inches; grayish brown (2.5Y 5/2) fine sandy loam; common coarse prominent strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; very friable; strongly acid; gradual smooth boundary.

B23—28 to 31 inches; olive gray (5Y 5/2) sandy loam; common coarse prominent strong brown (7.5YR 5/8) mottles; weak medium subangular blocky structure; very friable; strongly acid; gradual smooth boundary.

IIC—31 to 60 inches; light olive gray (5Y 6/2) fine sand; common coarse prominent strong brown (7.5YR 5/8) mottles; single grain; loose; medium acid.

The solum is 20 to 34 inches thick. The content of coarse fragments ranges from 0 to 10 percent throughout. Reaction ranges from very strongly acid to medium acid in unlimed areas.

The Ap horizon has hue of 10YR and value and chroma of 2 or 3. It is fine sandy loam or very fine sandy loam.

The upper part of the B horizon has hue of 7.5YR to 10YR, value of 4 or 5, and chroma of 4 to 6. The lower part has hue of 10YR to 5Y, value of 4 to 6, and chroma of 2 to 6. The B horizon is fine sandy loam or sandy loam.

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

Paxton series

The Paxton series consists of deep, well drained soils on glaciated uplands. The soils formed in glacial till. Slopes range from 3 to 35 percent.

Paxton soils are similar to Woodbridge soils and in many places are near Ridgebury and Charlton soils. Paxton soils do not have the mottles typical of Woodbridge and Ridgebury soils. Paxton soils have a fragipan, which is not typical of Charlton soils.

Typical pedon of Paxton fine sandy loam, in a wooded area of Paxton stony fine sandy loam, 3 to 8 percent slopes, 15 feet west of the forest road, 500 feet north of Old Stage Road, and 2,000 feet west of its junction with the telephone cable crossing, in the town of Hatfield:

O1—4 to 2 inches; litter of needles, leaves, and twigs.

O2—2 inches to 0; well decomposed and partially decomposed needles, leaves, and twigs.

A1—0 to 3 inches; very dark grayish brown (10YR 3/2) fine sandy loam; weak medium granular structure; friable; many fine and very fine roots; 5 percent coarse fragments; very strongly acid; abrupt smooth boundary.

B21—3 to 9 inches; dark yellowish brown (10YR 4/4) fine sandy loam; weak medium subangular blocky structure; very friable; common fine and very fine roots, few medium roots; 5 percent coarse fragments; very strongly acid; clear smooth boundary.

B22—9 to 19 inches; light olive brown (2.5Y 5/4) fine sandy loam; weak medium subangular blocky structure; friable; common fine and very fine roots, few medium roots; 5 percent coarse fragments; very strongly acid; clear smooth boundary.

B23—19 to 26 inches; olive brown (2.5Y 4/4) fine sandy loam; weak medium and coarse subangular blocky structure; friable; few fine and medium roots; 5 percent coarse fragments; strongly acid; abrupt smooth boundary.

C1x—26 to 36 inches; olive brown (2.5Y 4/4) fine sandy loam; moderate medium and thick platy structure; firm and brittle; few fine and very fine roots in cracks; 10 percent coarse fragments; medium acid; abrupt smooth boundary.

C2x—36 to 60 inches; dark grayish brown (2.5Y 4/2) fine sandy loam; moderate medium and thick platy structure; very firm and brittle; few thin discontinuous silt coatings; 10 percent coarse fragments; medium acid.

The depth to the fragipan ranges from 20 to 38 inches. The content of coarse fragments ranges from 5 to 25 percent. The soils are loam, fine sandy loam, or sandy loam. Reaction ranges from very strongly acid to slightly acid in unlimed areas.

The A horizon has hue of 10YR, value of 3 or 4, and chroma of 1 to 3.

The B21 horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 or 6. The B22 and B23 horizons have hue of 10YR or 2.5Y, value of 4 or 5, and a chroma of 3 to 6. In some pedons few fine mottles are in the upper few inches of the fragipan or just above it.

The Cx horizon has hue of 2.5Y or 5Y, value of 4 or 5, and chroma of 2 to 4.

Pollux series

The Pollux series consists of deep, well drained soils on glacial outwash plains and deltas. The soils formed in glacial outwash material over glaciolacustrine deposits. Slopes range from 0 to 15 percent.

Pollux soils are similar to Amostown soils and in many places are near Ninigret and Agawam soils. Pollux soils do not have the mottles typical of Amostown and Ninigret soils. Pollux soils have more silt in the substratum than Agawam or Ninigret soils.

Typical pedon of Pollux fine sandy loam, 0 to 3 percent slopes, in a wooded area 1,500 feet northwest of Route 9 and 2,700 feet east of its junction with Spruce Hill Road, in the town of Hadley:

O1—3 inches to 1 inch; litter of needles, leaves, and twigs.

O2—1 inch to 0; very dusky red (2.5YR 2/2) well decomposed and partially decomposed needles, leaves, and twigs; many fine roots; extremely acid.

A1—0 to 4 inches; very dark grayish brown (10YR 3/2) fine sandy loam, grayish brown (10YR 5/2) dry; weak fine and medium granular structure; very friable; many fine and medium roots, few coarse roots; very strongly acid; abrupt smooth boundary.

B21—4 to 12 inches; dark yellowish brown (10YR 4/4) fine sandy loam; weak medium and coarse subangular blocky structure; very friable; many fine and medium roots, few coarse roots; very strongly acid; abrupt smooth boundary.

B22—12 to 20 inches; dark yellowish brown (10YR 4/4) fine sandy loam; weak very coarse subangular blocky structure; very friable; common fine and medium roots, few coarse roots; very strongly acid; clear smooth boundary.

B23—20 to 30 inches; olive brown (2.5Y 4/4) sandy loam; massive; very friable; few coarse roots; strongly acid; abrupt smooth boundary.

IIC—30 to 60 inches; olive gray (5Y 5/2) stratified silt loam and very fine sandy loam; massive; firm; strongly acid.

The solum is 22 to 38 inches thick. The depth to the IIC horizon ranges from 25 to 40 inches. The content of coarse fragments ranges from 0 to 10 percent throughout the profile. Reaction to a depth of 30 inches is very strongly acid or strongly acid in unlimed areas. Reaction below 30 inches ranges from very strongly acid to neutral.

The A horizon has hue of 10YR or 2.5Y and value and chroma of 2 to 4.

The upper part of the B horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 6. The lower part has hue of 7.5YR to 2.5Y and value and chroma of 4 to 6. The B horizon is sandy loam, fine sandy loam, or very fine sandy loam.

The IIC horizon has hue of 2.5YR to 5Y, value of 3 to 6, and chroma of 2 to 4. It is mainly silt loam, silt, very fine sand, or very fine sandy loam in thin strata or varves. Thin varves of clay are in some pedons.

Pootatuck series

The Pootatuck series consists of deep, moderately well drained soils on flood plains. The soils formed in alluvial material. Slopes range from 0 to 3 percent. The Pootatuck soils in this survey area are a taxadjunct to the Pootatuck series because they do not have a layer of sandy loam at least 5 inches thick above the IIC horizon. This difference does not significantly affect the use and management of the soils.

Pootatuck soils are similar to Rippowam soils and in many places are near Windsor and Saco soils. Pootatuck soils are browner than Rippowam or Saco soils, are grayer in the substratum than Windsor soils, and have less silt than Saco soils.

Typical pedon of Pootatuck fine sandy loam, in a wooded area 250 feet northwest of the intersection of Kennedy Road and Chesterfield Road, in the city of Northampton:

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

B21—10 to 21 inches; yellowish brown (10YR 5/4) fine sandy loam; weak medium subangular blocky structure; friable; strongly acid; clear smooth boundary.

B22—21 to 34 inches; yellowish brown (10YR 5/4) fine sandy loam; many coarse faint yellowish brown (10YR 5/8) mottles and few fine distinct light brownish gray (2.5Y 6/2) mottles; weak medium subangular blocky structure; friable; medium acid; clear smooth boundary.

IIC1—34 to 42 inches; light gray (10YR 6/1) loamy fine sand; common medium distinct yellowish brown (10YR 5/8) mottles; single grain; loose; medium acid; clear smooth boundary.

IIC2—42 to 60 inches; gray (5Y 5/1) sand; single grain; loose; medium acid.

The solum is 20 to 40 inches thick. Reaction ranges from very strongly acid to slightly acid in unlimed areas.

The Ap horizon has hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 2 to 4.

The B horizon has hue of 10YR to 5Y and value and chroma of 3 to 6. Low-chroma mottles are at a depth of less than 24 inches.

The IIC horizon has hue of 10YR to 5Y, value of 4 to 6, and chroma of 1 to 4. It ranges mainly from loamy fine sand to sand. Thin strata of sandy loam, silt loam, or gravel are in some pedons.

Raynham series

The Raynham series consists of deep, poorly drained soils on old lakebeds. The soils formed in glaciolacustrine deposits. Slopes range from 0 to 3 percent.

Raynham soils are similar to Belgrade soils and in many places are near Boxford soils. Raynham soils have grayer colors than those soils and have less clay than Boxford soils.

Typical pedon of Raynham silt loam, 0 to 3 percent slopes, in a cultivated field 3,200 feet northwest of the center of the village of North Amherst, in the town of Amherst:

Ap—0 to 10 inches; very dark brown (10YR 2/2) silt loam; moderate fine and medium granular structure; friable; slightly acid; abrupt smooth boundary.

B21—10 to 16 inches; dark brown (10YR 4/3) silt loam; few fine distinct strong brown (7.5YR 5/6) and grayish brown (10YR 5/2) mottles; weak coarse subangular blocky structure; friable; strongly acid; clear smooth boundary.

B22g—16 to 30 inches; grayish brown (2.5Y 5/2) very fine sandy loam; few to common fine and medium faint light olive brown (2.5Y 5/4) mottles and few fine distinct yellowish brown (10YR 5/4) mottles; weak medium and coarse subangular blocky structure; friable; strongly acid; abrupt smooth boundary.

C1g—30 to 34 inches; grayish brown (2.5Y 5/2) silt loam; many medium prominent yellowish brown (10YR 5/4) mottles; massive; friable; medium acid; clear smooth boundary.

C2g—34 to 37 inches; grayish brown (2.5Y 5/2) very fine sandy loam; few medium prominent brown (7.5YR 5/4) mottles; massive; friable; medium acid; clear smooth boundary.

C3g—37 to 60 inches; gray (5Y 5/1) stratified loamy fine sand, silt, and fine sandy loam; few medium prominent strong brown (7.5YR 5/6) mottles and few medium distinct light olive brown (2.5Y 5/4) mottles; massive; friable; medium acid.

The solum is 18 to 36 inches thick. Reaction in unlimed areas ranges from strongly acid to neutral in the solum and from medium acid to neutral in the substratum.

The Ap horizon has hue of 10YR or 2.5Y, value of 2 to 4, and chroma of 1 to 3. It is silt loam or very fine sandy loam.

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

The C horizon has hue of 2.5Y or 5Y, value of 4 to 6, and chroma of 1 or 2. It is stratified silt, silt loam, very fine sandy loam, loamy fine sand, and very fine sand.

Ridgebury series

The Ridgebury series consists of deep, poorly drained and somewhat poorly drained soils on glaciated uplands. The soils formed in glacial till. Slopes range from 0 to 8 percent.

Ridgebury soils are similar to Whitman soils and in many places are near Woodbridge and Scituate soils. Ridgebury soils have a thinner, lighter colored surface layer than Whitman soils and are grayer in the upper part of the subsoil than Woodbridge or Scituate soils.

Typical pedon of Ridgebury fine sandy loam, in a wooded area of Ridgebury very stony fine sandy loam, 3 to 8 percent slopes, 150 feet north of Crooked Ledge Road and 3,200 feet east of its junction with Delisle Road, in the town of Southampton:

O1—4 inches to 1 inch; litter of leaves and twigs.

O2—1 inch to 0; reddish black (2.5YR 2/1) well decomposed and partially decomposed leaves and twigs.

A1—0 to 2 inches; very dark gray (10YR 3/1) fine sandy loam; weak medium granular structure; very friable; many fine to coarse roots; 15 percent coarse fragments; very strongly acid; clear smooth boundary.

B21—2 to 7 inches; grayish brown (10YR 5/2) fine sandy loam; few fine faint yellowish brown (10YR 5/4) mottles; weak fine and medium subangular blocky structure; very friable; many fine to coarse roots; 15 percent coarse fragments; very strongly acid; abrupt smooth boundary.

B22g—7 to 15 inches; gray (10YR 5/1) sandy loam; common medium distinct light yellowish brown (2.5Y 6/4) mottles; weak medium and coarse subangular blocky structure; friable; many fine to coarse roots; 15 percent coarse fragments; strongly acid; abrupt smooth boundary.

Cx—15 to 60 inches; olive (5Y 5/3) fine sandy loam; many medium prominent reddish yellow (7.5YR 6/8), yellowish red (5YR 5/6), and grayish brown (2.5Y 5/2) mottles; massive; firm; 15 percent coarse fragments; strongly acid.

Depth to the fragipan ranges from 10 to 25 inches. The content of coarse fragments ranges from 5 to 35

percent. Reaction ranges from very strongly acid to medium acid in unlimed areas.

The A horizon has hue of 10YR or 2.5Y, value of 2 or 3, and chroma of 1 or 2. It is fine sandy loam or sandy loam.

The B horizon is neutral or has hue of 10YR to 5Y, value of 4 to 6, and chroma of 0 to 3. Chroma of 3 is restricted to subhorizons. The B horizon ranges from sandy loam to loam and their gravelly analogs. It is massive or has weak platy or weak subangular blocky structure.

The Cx horizon has hue of 10YR to 5Y, value of 3 to 6, and chroma of 1 to 4. It ranges from coarse sandy loam to loam and their gravelly analogs. It has prismatic or platy structure, or it is massive.

Rippowam series

The Rippowam series consists of deep, poorly drained soils on flood plains. The soils formed in alluvial material. Slopes range from 0 to 3 percent. The Rippowam soils in this survey area are a taxadjunct to the Rippowam series because they do not have a layer of sandy loam at least 5 inches thick above the IIC horizon. This difference does not significantly affect the use and management of the soils.

Rippowam soils are similar to Pootatuck soils and in many places are near Sudbury and Saco soils. Rippowam soils are grayer than Pootatuck or Sudbury soils and have less silt than Saco soils.

Typical pedon of Rippowam fine sandy loam, in a wooded area 975 feet west of Plain Road and 4,000 feet north of its junction with Chestnut Street, in the town of Hatfield:

A1—0 to 5 inches; very dark brown (10YR 2/2) fine sandy loam; very dark grayish brown (10YR 3/2) dry; weak medium granular structure; friable; many fine and medium roots, few coarse roots; very strongly acid; abrupt smooth boundary.

B21g—5 to 9 inches; dark gray (10YR 4/1) fine sandy loam; weak medium granular structure; friable; few fine faint yellowish brown (10YR 5/4) mottles; many fine and medium roots, few coarse roots; very strongly acid; abrupt smooth boundary.

B22g—9 to 24 inches; grayish brown (2.5Y 5/2) fine sandy loam; many fine and medium distinct reddish brown (5YR 5/4) and strong brown (7.5YR 5/6) mottles; massive; friable; medium acid; gradual smooth boundary.

IIC1g—24 to 38 inches; olive gray (5Y 5/2) loamy sand; many grading with depth to few fine and medium distinct reddish brown (5YR 5/4) and strong brown (7.5YR 5/6) mottles; massive; friable; 10 percent gravel; medium acid; abrupt smooth boundary.

IIC2g—38 to 60 inches; gray (5Y 5/1) loamy sand; massive; very friable; 10 percent gravel; slightly acid.

The solum is 20 to 40 inches thick. Reaction is very strongly acid to slightly acid in unlimed areas.

The A horizon has hue of 10YR or 2.5Y, value of 2 or 3, and chroma of 1 or 2. It is fine sandy loam or sandy loam.

The B horizon has hue of 10YR to 5Y, value of 3 to 5, and chroma of 1 or 2. It is fine sandy loam or sandy loam.

The IIC horizon has hue of 10YR through 5Y, value of 3 to 6, and chroma of 1 or 2. It is mainly loamy sand or loamy fine sand. Some pedons have thin strata of sandy loam or silt loam.

Saco series

The Saco series consists of deep, very poorly drained soils on flood plains. The soils formed in alluvial material. Slopes range from 0 to 3 percent slopes.

Saco soils are similar to Limerick soils and in many places are near Winooski and Hadley soils. Saco soils are grayer than Limerick, Winooski, or Hadley soils.

Typical pedon of Saco silt loam, in a wooded area 300 feet west of Spruce Hill Road and 475 feet north of the railroad bridge, in the town of Hadley:

A1—0 to 12 inches; very dark brown (10YR 2/2) silt loam, dark grayish brown (10YR 4/2) dry; weak medium granular structure; friable; many fine and medium tree and grass roots; strongly acid; abrupt smooth boundary.

C1g—12 to 15 inches; dark gray (10YR 4/1) silt loam; common medium faint dark brown (7.5YR 3/2) mottles; massive; friable; few fine tree and grass roots; medium acid; abrupt smooth boundary.

C2g—15 to 44 inches; dark gray (5Y 4/1) silt loam; massive; friable; medium acid; abrupt smooth boundary.

IIC3g—44 to 60 inches; dark gray (5Y 4/1) fine sand; strata of silt loam, very fine sandy loam, and very fine sand; single grain; loose; slightly acid.

Reaction is strongly acid or medium acid at a depth of less than 30 inches and medium acid to neutral at more than 30 inches.

The A horizon has hue of 7.5YR to 2.5Y, value of 2 or 3, and chroma of 1 to 3. It is silt loam or very fine sandy loam.

The C horizon has hue of 10YR to 5Y, value of 3 to 5, and chroma of 0 or 1. It is silt loam or very fine sandy loam at a depth of less than 40 inches and sand or fine sand and thin strata of finer material at more than 40 inches.

Scarboro series

The Scarboro series consists of deep, very poorly drained soils on glacial outwash plains and terraces. The soils formed in sandy glacial outwash deposits. Slopes range from 0 to 3 percent.

Scarboro soils are similar to Walpole soils and in many places are near Merrimac and Sudbury soils. Scarboro soils are grayer than Walpole, Merrimac, or Sudbury soils.

Typical pedon of Scarboro muck, in a wooded area 500 feet west of Hatfield Road and 2,800 feet north of its junction with Straits Road, in the town of Hatfield:

O2—5 inches to 0; black (10YR 2/1) muck; weak fine granular structure; friable; many fine and medium roots; very strongly acid; abrupt smooth boundary.
A11—0 to 3 inches; black (10YR 2/1) fine sandy loam; weak fine granular structure; friable; common fine roots; very strongly acid; abrupt smooth boundary.
A12—3 to 8 inches; black (10YR 2/1) loamy sand; weak fine granular structure; friable; common fine roots; very strongly acid; gradual smooth boundary.
C1g—8 to 14 inches; gray (5Y 5/1) loamy sand; few fine distinct yellowish brown (10YR 5/6) and brownish yellow (10YR 6/6)mottles; single grain; loose; few medium and fine roots; very strongly acid; gradual smooth boundary.
C2g—14 to 60 inches; gray (5Y 5/1) loamy sand; single grain; loose; few fine roots in upper part; very strongly acid.

Reaction is very strongly acid or strongly acid.

The A1 horizon has hue of 7.5YR or 10YR, value of 2 or 3, and chroma of 0 to 2.

The C horizon has hue of 10YR to 5Y, value of 4 to 6, and chroma of 0 to 3. The amount of mottles ranges from none to many. The horizon is loamy fine sand, fine sand, loamy sand, sand, or their gravelly analogs.

Scitico series

The Scitico series consists of deep, poorly drained soils on outwash plains and old lakebeds. The soils formed in glaciolacustrine deposits. Slopes range from 0 to 3 percent.

Scitico soils are similar to Maybid soils and in many places are near Boxford and Raynham soils. Scitico soils do not have the thick, dark surface layer typical of Maybid soils and are grayer in the upper part of the subsoil than Boxford soils. Scitico soils contain more clay than Raynham soils.

Typical pedon of Scitico silt loam, in a cultivated field 175 feet north of Station Road and 250 feet east of Hop Brook, in the town of Amherst:

Ap—0 to 10 inches; grayish brown (2.5Y 5/2) silt loam; few fine prominent yellowish red (5YR 5/8) mottles; weak fine subangular blocky structure; very friable; few medium roots; slightly acid; abrupt smooth boundary.
B2—10 to 22 inches; olive gray (5Y 5/2) silt loam; common medium prominent yellowish red (5YR 5/8) and reddish yellow (5YR 6/8) mottles; weak fine subangular blocky structure; friable; slightly acid; abrupt smooth boundary.
C1—22 to 36 inches; varved grayish brown (2.5Y 5/2) silt and clay; combined texture of silty clay loam; common medium prominent brownish yellow (10YR 6/8) and strong brown (7.5YR 5/8) mottles; massive, firm; slightly acid; abrupt smooth boundary.
C2—36 to 60 inches; varved dark grayish brown (2.5Y 4/2) silt and clay; combined texture of silty clay; few medium prominent brownish yellow (10YR 6/8) and strong brown (7.5YR 5/8) mottles; firm; neutral; abrupt smooth boundary.

The solum is 20 to 30 inches thick. Reaction ranges from medium acid to neutral.

The A horizon has hue of 10YR to 5Y, value of 2 to 5, and chroma of 1 or 2. It has granular or subangular blocky structure.

The B horizon has hue of 2.5Y or 5Y, value of 4 to 6, and chroma of 1 or 2 and is mottled. It is silt loam or silty clay loam. It has subangular blocky or platy structure and is friable or firm.

The C horizon is neutral or has hue of 2.5Y or 5Y, value of 4 to 6, and chroma of 0 to 2. It is silty clay loam, silty clay, or clay. In some pedons it does not have mottles.

Scituate series

The Scituate series consists of deep, moderately well drained soils on glaciated uplands. The soils formed in glacial till. Slopes range from 3 to 15 percent.

Scituate soils are similar to Montauk soils and in many places are near Whitman and Ridgebury soils. Scituate soils have mottles, which Montauk soils do not have, and are browner than Ridgebury or Whitman soils.

Typical pedon of Scituate fine sandy loam, in a wooded area of Scituate very stony fine sandy loam, 3 to 8 percent slopes, 100 feet north of Crooked Ledge Road and 5,700 feet east of its junction with Delisle Road, in the town of Southampton:

O1—3 inches to 1 inch; litter of leaves and twigs.
O2—1 inch to 0; black (5YR 2/1) well decomposed and partially decomposed leaves and twigs.
A1—0 to 4 inches; dark brown (7.5YR 3/2) fine sandy loam; weak medium granular structure; very friable; many very fine and fine roots; 10 percent gravel, 5 percent cobblestones; extremely acid; clear wavy boundary.
B21—4 to 13 inches; yellowish brown (10YR 5/4) fine sandy loam; weak medium granular structure; very friable; common fine and medium roots; 10 percent gravel, 5 percent cobblestones; very strongly acid; clear wavy boundary.
B22—13 to 17 inches; dark yellowish brown (10YR 4/4) sandy loam; weak medium granular structure; friable; common medium and fine roots, few coarse roots;

10 percent gravel, 5 percent cobblestones; very strongly acid; abrupt smooth boundary.

B23—17 to 21 inches; dark yellowish brown (10YR 4/4) sandy loam; few fine distinct yellowish red (5YR 5/6) and grayish brown (10YR 5/2) mottles and common fine and medium distinct strong brown (7.5YR 5/8) mottles; weak medium granular structure; friable; common medium and fine roots, few coarse roots; 10 percent gravel, 5 percent cobblestones; very strongly acid; abrupt smooth boundary.

IIC1x—21 to 26 inches; grayish brown (2.5Y 5/2) loamy sand; common medium distinct strong brown (7.5YR 5/6) mottles; massive; firm; few coarse roots; 15 percent gravel, 5 percent cobblestones; strongly acid; abrupt smooth boundary.

IIC2x—26 to 60 inches; olive gray (5Y 5/2) loamy sand; common medium distinct strong brown (7.5YR 5/6) mottles; weak medium thick and very thick platy structure; firm; 15 percent gravel, 5 percent cobblestones; strongly acid.

The solum is 18 to 30 inches thick. The content of coarse fragments ranges from 5 to 20 percent above the fragipan and from 15 to 50 percent in the fragipan. Reaction ranges from medium acid to extremely acid in unlimed areas.

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

The B21 horizon has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 4 or 5. The B22 and B23 horizons have hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 4 or 5. The B horizon is sandy loam or fine sandy loam.

The C horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 2 to 4. It is loamy sand, loamy fine sand, loamy coarse sand, or their gravelly analogs.

Sudbury series

The Sudbury series consists of deep, moderately well drained soils on glacial outwash plains and terraces. The soils formed in glacial outwash deposits. Slopes range from 0 to 8 percent.

Sudbury soils are similar to Merrimac soils and in many places are near Hinckley and Walpole soils. Sudbury soils have mottles except in the upper part of the subsoil. Merrimac and Hinckley soils do not have mottles. Sudbury soils have more silt in the solum than Hinckley soils.

Typical pedon of Sudbury fine sandy loam, 0 to 3 percent slopes, in a cultivated field 1,200 feet east of North Pleasant Street and 2,400 feet north of its junction with Eastman Lane, in the town of Amherst:

Ap—0 to 10 inches; dark brown (7.5YR 3/2) fine sandy loam; weak fine and medium granular structure; very friable; 5 percent gravel; slightly acid; abrupt smooth boundary.

B21—10 to 16 inches; brown (10YR 4/3) fine sandy loam; weak medium and coarse subangular blocky structure; friable; 5 percent gravel, 5 percent cobblestones; medium acid; clear wavy boundary.

IIB3—16 to 28 inches; brown (10YR 4/3) gravelly loamy sand; common medium distinct yellowish red (5YR 5/8) and grayish brown (10YR 5/2) mottles; single grain; loose; 20 percent gravel, 5 percent cobblestones; medium acid; abrupt smooth boundary.

IIC1—28 to 36 inches; light brownish gray (2.5Y 6/2) very gravelly loamy sand; common medium prominent yellowish red (5YR 4/8) mottles and few fine prominent red (2.5YR 5/8) mottles; single grain; loose; 50 percent gravel, 5 percent cobblestones; medium acid; abrupt smooth boundary.

IIC2—36 to 60 inches; light grayish brown (10YR 6/2) gravelly sand; few fine distinct strong brown (7.5YR 5/6) mottles and common medium distinct yellowish red (5YR 4/8) and reddish yellow (7.5YR 6/8) mottles; single grain; loose; 25 percent gravel, 10 percent cobblestones; strongly acid.

The solum is 18 to 30 inches thick and corresponds to the depth to the IIC horizon. The solum is 5 to 25 percent coarse fragments and the substratum 30 to 70 percent coarse fragments. The depth to mottles ranges from 14 to 24 inches. Reaction ranges from extremely acid to medium acid in unlimed areas.

The A horizon has hue of 7.5YR or 10YR, value of 3 or 4, and chroma of 2 to 4. It is fine sandy loam, sandy loam, or very fine sandy loam.

The B horizon has hue of 7.5YR or 10YR and value and chroma of 3 to 5. It is fine sandy loam or sandy loam in the upper part and ranges from sandy loam to coarse sand in the lower part.

The IIC horizon has hue of 10YR to 5Y, value of 5 or 6, and chroma of 2 or 3. It is stratified sand, gravel, or cobbles and ranges from loamy sand to very gravelly sand.

Suncook series

The Suncook series consists of deep, excessively drained soils on flood plains. The soils formed in sandy alluvial material. Slopes range from 0 to 3 percent.

Suncook soils are similar to Hadley soils and in many places are near Winooski and Limerick soils. Suncook soils do not have the mottles typical of Winooski and Limerick soils and have less silt in the solum.

Typical pedon of Suncook loamy fine sand, in a field 1,400 feet northeast of the southeast end of LaFleur Airport runway, on the bank of the Connecticut River, in the city of Northampton:

Ap—0 to 10 inches; dark gray (10YR 4/1) loamy fine sand; single grain; loose; common fine and medium roots; medium acid; abrupt smooth boundary.
C1—10 to 27 inches; grayish brown (10YR 5/2) loamy fine sand; single grain; loose; common fine and medium roots; medium acid; abrupt smooth boundary.
A11b—27 to 32 inches; very dark grayish brown (10YR 3/2) loamy fine sand; massive; very friable; few fine roots; medium acid; abrupt smooth boundary.
C2—32 to 42 inches; grayish brown (2.5Y 5/2) loamy fine sand; single grain; loose; few fine roots; medium acid; abrupt smooth boundary.
A12b—42 to 53 inches; very dark grayish brown (10YR 3/2) loamy fine sand; massive; very friable; medium acid; abrupt smooth boundary.
C3—53 to 60 inches; grayish brown (2.5Y 5/2) loamy fine sand; single grain; loose; medium acid.

Reaction is strongly acid or medium acid.

The A horizon has hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 1 to 3. The buried A horizon has hue of 10YR, value of 2 or 3, and chroma of 2. The A horizon is loamy fine sand or loamy sand.

The C horizon has hue of 10YR or 2.5Y, value of 3 to 6, and chroma of 1 to 4. It ranges from loamy fine sand to sand.

Swansea series

The Swansea series consists of deep, very poorly drained organic soils on uplands and outwash plains. The soils formed in 16 to 51 inches of highly decomposed organic material over sandy mineral material. Slopes are 0 or 1 percent.

Swansea soils are similar to Freetown soils and in many places are near Scarboro and Walpole soils. Swansea soils formed in thinner organic deposits than Freetown soils and have thicker organic layers than Scarboro, Walpole, or Whitman soils.

Typical pedon of Swansea muck, in a wooded area 100 feet north of U.S. Route 202 and 50 feet east of Ingraham Brook, in the town of Granby:

Oa1—0 to 4 inches; black (5YR 2/1) broken face and rubbed muck (sapric material); 20 percent fiber, 5 percent rubbed; massive; very friable; many fine and medium roots; less than 5 percent mineral; extremely acid; gradual smooth boundary.
Oa2—4 to 21 inches; black (5YR 2/1) broken face and rubbed muck (sapric material); 30 percent fiber, 5 percent rubbed; massive; very friable; common coarse roots; 3 percent woody coarse fragments about 1 centimeter in diameter; less than 5 percent mineral; extremely acid; gradual smooth boundary.
Oa3—21 to 40 inches; black (N 2/0) broken face and rubbed muck (sapric material); 5 percent fiber, 0 percent rubbed; massive; very friable; less than 5 percent mineral; extremely acid; gradual smooth boundary.
IIC1—40 to 60 inches; light gray (5Y 6/1) sand; loose; single grain; extremely acid.

The depth to the IIC horizon is 16 to 51 inches. In most places woody fragments are in some part of the profile or throughout and comprise up to 25 percent of some horizons. Reaction is extremely acid throughout the organic material and ranges from extremely acid to strongly acid in the IIC horizon.

The organic material is neutral or has hue of 5YR to 10YR, value or 2 or 3, and chroma of 0 to 2.

The IIC horizon has hue of 2.5Y or 5Y, value of 4 to 6, and chroma of 1 to 3. It is mottled in some pedons. It ranges from coarse sand to loamy fine sand. The gravel content ranges from 0 to 40 percent.

Udorthents

Udorthents consist of soils formed by the cutting or filling of areas in the process of constructing nonfarm projects such as athletic fields and highways.

Udorthents are near or adjacent to most of the soils of the survey area.

Because of the extreme variability of these areas, a reference pedon is not given.

The A horizon in Udorthents ranges in thickness from 0 to 8 inches. It has hue of 10YR or 7.5YR, value of 3 to 6, and chroma of 1 to 4. It is loam, silt loam, fine sandy loam, sandy loam, and loamy fine sand.

The C horizon has hue of 5YR to 5Y, value of 3 to 6, and chroma of 1 to 6. It is silty clay loam, silt loam, loam, fine sandy loam, sandy loam, loamy sand, sand, coarse sand, and their gravelly and cobbly analogs.

Walpole series

The Walpole series consists of deep, poorly drained soils on glacial outwash plains and terraces. The soils formed in sandy glacial outwash deposits. Slopes range from 0 to 3 percent.

Walpole soils are similar to Sudbury soils and in many places are near Merrimac and Scarboro soils. Walpole soils have mottles in the upper part of the subsoil, which neither the Sudbury nor Merrimac soils have. Walpole soils do not have the thick organic surface layer typical of Scarboro soils.

Typical pedon of Walpole fine sandy loam, in a wooded area 50 feet west of Morgan Street and 15 feet north of the fence on the boundary of Westover Air Force Base, in the town of Granby:

O1—7 to 2 inches; litter of leaves and twigs.
O2—2 inches to 1 inch; partially decomposed leaves and twigs.
O3—1 inch to 0; very dusky red (2.5YR 2/2) well decomposed leaves and twigs.

A1—0 to 4 inches; very dark gray (10YR 3/1) fine sandy loam; massive; very friable; many fine and medium roots; very strongly acid; abrupt smooth boundary.
B22—4 to 14 inches; brown (10YR 4/3) fine sandy loam; few fine distinct yellowish and (5YR 4/6) and few medium faint dark brown (7.5YR 4/2) mottles; massive; very friable; common medium and fine roots, few coarse roots; 5 percent gravel; strongly acid; abrupt smooth boundary.
B23—14 to 23 inches; grayish brown (10YR 5/2) sandy loam; massive; very friable; common medium and fine roots, few coarse roots; 5 percent gravel; very strongly acid; abrupt smooth boundary.
IIC1—23 to 27 inches; brown (10YR 5/3) loamy sand; single grain; loose; few coarse roots; 10 percent gravel; very strongly acid; abrupt smooth boundary.
IIC2—27 to 60 inches; stratified light brownish gray (10YR 6/2) sand and brown (10YR 5/3) gravelly sand; single grain; loose; few coarse roots above 40 inches; up to 65 percent gravel, average of 25 percent gravel; medium acid.

The solum is 18 to 28 inches thick. Reaction ranges from very strongly acid to medium acid.

The A horizon has hue of 10YR, value of 2 or 3, and chroma of 1 or 2. It is fine sandy loam or silt loam.

The B horizon has hue of 10YR to 5Y, value of 4 to 6, and chroma of 1 to 3. It is fine sandy loam or sandy loam.

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

Wethersfield series

The Wethersfield series consists of deep, well drained soils on glaciated uplands. The soils formed in glacial till derived mainly from reddish sandstone and shale of Triassic age. Slopes range from 3 to 25 percent.

Wethersfield soils are similar to Paxton soils and in many places are near Woodbridge and Ridgebury soils. Wethersfield soils have a redder subsoil and substratum than those soils and do not have the mottles typical of Woodbridge and Ridgebury soils.

Typical pedon of Wethersfield fine sandy loam, 3 to 8 percent slopes, 2,000 feet east of the intersection of East Pleasant Street and Eastman Lane, in the town of Amherst:

Ap—0 to 9 inches; dark reddish brown (5YR 3/3) fine sandy loam; moderate medium granular structure; very friable; many medium roots; 10 percent gravel; slightly acid; abrupt smooth boundary.
B21—9 to 16 inches; reddish brown (5YR 4/4) fine sandy loam; moderate fine granular structure; friable; common fine roots; 10 percent gravel; strongly acid; clear smooth boundary.
B22—16 to 23 inches; dark red (2.5YR 3/6) loam; weak medium subangular blocky structure; friable; common fine roots; 10 percent gravel; very strongly acid; abrupt smooth boundary.
Cx1—23 to 26 inches; reddish brown (5YR 4/4) gravelly loam; massive; firm; few very fine roots; 25 percent gravel; very strongly acid; abrupt smooth boundary.
Cx2—26 to 60 inches; reddish brown (5YR 5/3) gravelly fine sandy loam; massive; very firm; 35 percent gravel; very strongly acid.

The solum is 20 to 32 inches thick. The content of coarse fragments ranges from 5 to 25 percent in the solum and from 10 to 35 percent in the substratum. In unlimed areas, reaction is strongly acid to very strongly acid in the solum and ranges from medium acid to very strongly acid in the substratum.

The A horizon has hue of 5YR to 10YR and value and chroma of 2 or 3. It is fine sandy loam or silt loam.

The B horizon has hue of 5YR or 2.5YR, value of 3 to 5, and chroma of 3 to 6. It is silt loam, fine sandy loam, or loam.

The C horizon has hue of 10R to 5YR and value and chroma of 3 to 5. It is loam or fine sandy loam or the gravelly analogs.

Whitman series

The Whitman series consists of deep, very poorly drained soils on uplands. The soils formed in glacial till. Slopes range from 0 to 5 percent.

Whitman soils are similar to Ridgebury soils and in many places are near Woodbridge and Scituate soils. Whitman soils are grayer than these soils.

Typical pedon of Whitman fine sandy loam, in a wooded area of Whitman very stony fine sandy loam, 500 feet north of Crooked Ledge Road and 3,300 feet east of its junction with Delisle Road, in the town of Southampton:

O1—8 to 4 inches; litter of leaves and twigs.
O2—4 to 2 inches; partially decomposed leaves and twigs.
O3—2 inches to 0; dusky red (2.5YR 3/2) well decomposed leaves and twigs.
A11—0 to 3 inches; black (N 2/0) fine sandy loam; weak medium granular structure; friable; many fine to coarse roots; 5 percent gravel; very strongly acid; abrupt smooth boundary.
A12—3 to 7 inches; very dark gray (10YR 3/1) fine sandy loam; weak medium granular structure; friable; many fine to coarse roots; 10 percent gravel, 5 percent cobblestones; very strongly acid; abrupt smooth boundary.
C1g—7 to 13 inches; gray (5Y 5/1) gravelly sandy loam; many medium and coarse prominent strong brown (7.5YR 5/6) mottles; massive; friable; many fine to coarse roots in upper 2 inches; 20 percent gravel, 5 percent cobblestones; strongly acid; abrupt smooth boundary.

C2x—13 to 60 inches; dark gray (N 4/0) gravelly fine sandy loam; many prominent yellowish red (5YR 5/6), dark reddish brown (2.5YR 3/4), strong brown (7.5YR 5/6), and light gray (N 7/0) mottles; massive; firm and brittle; 25 percent gravel, 5 percent cobblestones; medium acid.

The depth to the fragipan ranges from 10 to 24 inches. The content of coarse fragments ranges from 5 to 35 percent. Reaction ranges from very strongly acid to medium acid in unlimed areas.

The A horizon is neutral or has hue of 10YR, value of 2 or 3, and chroma of 0 to 2. It is fine sandy loam or sandy loam.

The C horizon is neutral or has hue of 10YR to 5Y, value of 4 to 6, and chroma of 0 to 1. The Cx horizon is neutral or has hue of 10YR to 5Y, value of 4 to 6, and chroma of 0 to 3. The C horizon is sandy loam or fine sandy loam or their gravelly analogs.

Windsor series

The Windsor series consists of deep, excessively drained soils on glacial outwash plains and terraces. The soils formed in sandy glacial outwash. Slopes range from 0 to 35 percent.

Windsor soils are similar to Deerfield soils and in many places are near Hinckley and Agawam soils. Windsor soils do not have the mottles typical of Deerfield soils, have less silt in the solum than Agawam soils, and have less gravel than Hinckley soils.

Typical pedon of Windsor loamy sand, 0 to 3 percent slopes, 1,000 feet northeast of the Junior-Senior High School, in the town of Granby:

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) loamy sand; weak medium granular structure; very friable; common fine roots; less than 5 percent gravel; medium acid; abrupt wavy boundary.

B21—8 to 12 inches; strong brown (7.5YR 5/6) loamy sand; single grain; loose; common fine roots; less than 5 percent gravel; strongly acid; clear wavy boundary.

B22—12 to 21 inches; yellowish brown (10YR 5/6) loamy sand; single grain; loose; common fine roots; less than 5 percent gravel; strongly acid; clear smooth boundary.

C—21 to 60 inches; stratified yellowish brown (10YR 5/4) sand; single grain; loose; few fine roots in the upper part; 5 percent gravel; strongly acid.

The solum is 20 to 30 inches thick. The gravel content mainly ranges from 0 to 5 percent in the solum and 0 to 10 percent in the substratum. Some thin strata are as much as 35 percent gravel. Reaction is strongly acid or very strongly acid in unlimed areas.

The A horizon has hue of 10YR, value of 3 or 4, and chroma of 2 to 4. It is loamy sand or loamy fine sand.

The B horizon has hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 4 to 8. It is loamy sand, loamy fine sand, sand, and fine sand.

The C horizon has hue of 10YR to 5Y, value of 5 to 7, and chroma of 1 to 4. It is sand or fine sand.

Some pedons have layers of silt loam, very fine sandy loam, or silty clay loam between depths of 40 and 60 inches. These layers have hue of 10YR to 5Y, value of 4 to 6, and chroma of 1 to 4. Their structure is weak or moderate, thin to thick, platy or varved, and the consistence is friable, firm, or slightly plastic.

Winooski series

The Winooski series consists of deep, moderately well drained soils on flood plains. The soils formed in alluvial material. Slopes range from 0 to 3 percent.

Winooski soils are similar to Hadley soils and in many places are near Limerick and Saco soils. Winooski soils have more mottles than Hadley soils and fewer mottles than Limerick or Saco soils.

Typical pedon of Winooski silt loam, in a cultivated field 100 feet west of Old Springfield Road and 2,500 feet north of its junction with Clapp Street, in the city of Northampton:

Ap1—0 to 10 inches; very dark grayish brown (2.5Y 3/2) silt loam; light brownish gray (2.5Y 6/2) dry; weak fine and medium granular structure; friable; slightly acid; abrupt smooth boundary.

Ap2—10 to 17 inches; very dark grayish brown (2.5Y 3/2) silt loam; light brownish gray (2.5Y 6/2) dry; weak medium platy structure; friable; medium acid; abrupt smooth boundary.

C1—17 to 27 inches; olive (5Y 4/3) very fine sandy loam; many medium distinct olive gray (5Y 5/2) and dark yellowish brown (10YR 4/4) mottles; massive; friable; medium acid; abrupt smooth boundary.

C2—27 to 44 inches; olive gray (5Y 5/2) silt loam; many medium prominent dark yellowish brown (10YR 4/4) and dark reddish brown (5YR 3/3) mottles; massive; friable; medium acid; abrupt smooth boundary.

C3—44 to 60 inches; olive (5Y 5/3) silt loam; many medium prominent greenish gray (5GY 5/1), dark yellowish brown (10YR 4/4), and dark reddish brown (5YR 3/2) mottles; massive; friable; medium acid.

The content of coarse fragments ranges from 0 to 5 percent. The depth to mottles with a chroma of 2 or less ranges from 14 to 20 inches. The texture to a depth of 40 inches or more is silt loam, very fine sandy loam, or loamy very fine sand. Reaction in unlimed areas ranges from strongly acid to neutral.

The A horizon has hue of 10YR to 5Y, value of 3 or 4 and chroma of 2 or 3. It is silt loam or very fine sandy loam.

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

Woodbridge series

The Woodbridge series consists of deep, moderately well drained soils on glaciated uplands. The soils formed in glacial till. Slopes range from 0 to 25 percent.

Woodbridge soils are similar to Paxton soils and in many places are near Charlton and Ridgebury soils. Woodbridge soils have mottles, which Paxton and Charlton soils do not have, have more brown in the subsoil than Ridgebury soils, and have a fragipan that is not typical of the Charlton soils.

Typical pedon of Woodbridge fine sandy loam, in an area of Woodbridge stony fine sandy loam, 3 to 8 percent slopes, 3,000 feet east of East Pleasant Street and 900 feet south of its junction with Eastman Lane, in the town of Amherst:

Ap—0 to 7 inches; very dark grayish brown (10YR 3/2) fine sandy loam; moderate medium granular structure; very friable; many medium roots; 15 percent coarse fragments; slightly acid; abrupt smooth boundary.

B21—7 to 14 inches; yellowish brown (10YR 5/6) fine sandy loam; weak fine and medium subangular blocky structure; friable; many medium roots; 15 percent coarse fragments; medium acid; clear smooth boundary.

B22—14 to 21 inches; yellowish brown (10YR 5/4) fine sandy loam; weak fine and medium subangular blocky structure; friable; many medium roots in upper part; 15 percent coarse fragments; medium acid; clear smooth boundary.

B23—21 to 25 inches; light olive brown (2.5Y 5/4) fine sandy loam; many medium prominent strong brown (7.5YR 5/8) and olive (5Y 5/3) mottles; massive; friable; 15 percent coarse fragments; medium acid; clear smooth boundary.

Cx—25 to 60 inches; olive (5Y 5/3) fine sandy loam; many medium prominent strong brown (7.5YR 5/8) and gray (N 5/0) mottles; massive; very firm and brittle; 15 percent coarse fragments; medium acid.

The solum is 18 to 36 inches thick. The content of coarse fragments ranges from 5 to 30 percent. Reaction ranges from strongly acid to medium acid in unlimed areas.

The A horizon has hue of 10YR, value of 3 or 4, and chroma of 2 or 3. It is fine sandy loam or sandy loam.

The B21 horizon has hue of 10YR or 7.5YR, value of 3 to 5, and chroma of 3 to 6. The B22 and B23 horizons have hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 3 to 6. The B horizon is fine sandy loam, sandy loam, loam, or their gravelly analogs.

The Cx horizon has hue of 2.5Y or 5Y, value of 4 to 6, and chroma of 2 to 4. It is fine sandy loam, sandy loam, loam, or their gravelly analogs.

references

(1) Allan, P.F., L.E. Garland, and R. Dugan. 1963. Rating northeastern soils for their suitability for wildlife habitat. 28th North Am. Wildl. Nat. Resour. Conf., Wildl. Manage. Inst., pp 247-261, illus.

(2) American Association of State Highway and Transportation Officials. 1970. Standard specifications for highway materials and methods of sampling and testing. Ed. 10, 2 vol., illus.

(3) American Society for Testing and Materials. 1974. Method for classification of soils for engineering purposes. ASTM Stand. D 2487-69. *In* 1974 Annual Book of ASTM Standards, Part 19, 464 pp., illus.

(4) United States Department of Agriculture. 1951. Soil survey manual. U.S. Dep. Agric. Handb. 18, 503 pp., illus. (Supplements replacing pp. 173-188 issued May 1962)

(5) United States Department of Agriculture. 1975. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. Soil Conserv. Serv., U.S. Dep. Agric. Handb. 436, 754 pp., illus.

(6) United States Department of Agriculture. 1978. Water and related land resources of the Connecticut River region of Massachusetts. Econ. Stat., and Coop. Serv., For. Serv., and Soil Conserv. Serv. 323 pp., illus.

(7) United States Department of Commerce. 1977. 1974 census of agriculture, Massachusetts state and county data. Bur. of Cens. Part 21, 1 vol., 303 pp.

glossary

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.

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

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

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

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

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.

Coarse fragments. If round, mineral or rock particles 2 millimeters to 25 centimeters (10 inches) in diameter; if flat, mineral or rock particles (flagstone) 15.2 to 38.1 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.

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.

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

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

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

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

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

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

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

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

Cemented.—Hard; little affected by moistening.

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

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

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

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Deferred grazing. Postponing grazing or arresting grazing for a prescribed period.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors

responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Glacial 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.

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 7.5 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 (7.5 centimeters) in diameter.

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.

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 upper case letter represents the major horizons. Numbers or lower case letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the *Soil Survey Manual*. The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue at the surface of a mineral soil.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these. The combined A and B horizons are generally called the solum, or true soil. If a soil does not have a B horizon, the A horizon alone is the solum.

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 A or B 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, the Roman numeral II precedes the letter C.

R layer.—Consolidated rock beneath the soil. The rock 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.

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

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

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

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

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

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

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.

Drip.—Application of water directly to the root zone of plants by means of applicators (orrices,

emitters, porous tubing, perforated pipe, etc.) operated under low pressure. The applicators may be placed on or below the surface of the ground.

Large stones (in tables). Rock fragments 3 inches (7.5 centimeters) or more across. Large stones adversely affect the specified use of the soil.

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

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

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

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

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

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

Moderately coarse textured soil. 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.

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.)

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The downward movement of water through the soil.

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

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

Very slow	less than 0.06 inch
Slow	0.06 to 0.20 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.

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

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

Ponding. Standing water on soils in closed depressions. The water can be removed only by percolation or evapotranspiration.

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

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction

because it is neither acid nor alkaline. The degree of acidity or alkalinity is expressed as—

	pH
Extremely acid	Below 4.5
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Medium acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Mildly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

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.

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

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

Sapric soil material (muck). The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

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

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer or of the 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.

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

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

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

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

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

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 (7.5 centimeters) in diameter. Small stones adversely affect the specified use of the soil.

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

Soil separates. Mineral particles less than 2 mm 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 and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the underlying material. The living roots and plant and animal activities are largely confined to the solum.

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter.

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

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

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

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

Substratum. The part of the soil below the solum.

Subsurface layer. Technically, the A2 horizon. Generally refers to a leached horizon lighter in color and lower in content of organic matter than the overlying surface layer.

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

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.

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. A terrace in a field is generally built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay.* The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Thin layer (in tables). Otherwise suitable soil material too thin for the specified use.

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

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

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.

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.

tables

TABLE 1.--TEMPERATURE AND PRECIPITATION

[Recorded in the period 1951-73 at Amherst, 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[1]	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----	33.1	13.4	23.3	55	-18	14	2.62	1.36	3.65	6	10.7
February---	36.1	15.9	26.0	56	-15	9	2.82	1.95	3.61	5	12.2
March------	44.3	25.3	34.8	68	1	32	3.49	2.19	4.66	7	10.1
April------	58.5	34.9	46.7	83	18	221	3.65	2.43	4.74	7	1.7
May--------	69.7	44.4	57.1	89	28	530	3.39	1.96	4.56	7	.0
June-------	78.7	54.7	66.8	94	37	804	3.99	2.25	5.41	6	.0
July-------	83.0	59.5	71.3	96	43	970	3.52	1.95	4.80	6	.0
August-----	81.2	57.1	69.2	93	40	905	3.88	1.68	5.65	6	.0
September--	74.1	49.7	61.9	91	29	657	3.26	1.80	4.44	6	.0
October----	63.9	39.5	51.7	83	20	363	3.07	1.40	4.41	5	.0
November---	49.5	31.2	40.4	71	13	87	3.72	2.31	4.98	7	2.1
December---	36.7	19.2	28.0	63	-10	25	3.95	2.18	5.39	7	11.2
Yearly:											
Average--	59.1	37.1	48.1	---	---	---	---	---	---	---	---
Extreme--	---	---	---	96	-20	---	---	---	---	---	---
Total----	---	---	---	---	---	4,617	41.36	35.02	47.43	75	48.0

[1]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 1951-73 at Amherst, 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--	April 26	May 11	May 28
2 years in 10 later than--	April 20	May 5	May 22
5 years in 10 later than--	April 9	April 23	May 10
First freezing temperature in fall:			
1 year in 10 earlier than--	October 13	September 27	September 16
2 years in 10 earlier than--	October 18	October 2	September 21
5 years in 10 earlier than--	October 28	October 12	September 30

TABLE 3.--GROWING SEASON

[Recorded in the period 1951-73 at Amherst, Massachusetts]

Probability	Daily minimum temperature during growing season		
	Higher than 24° F	Higher than 28° F	Higher than 32° F
	Days	Days	Days
9 years in 10	179	148	116
8 years in 10	187	156	125
5 years in 10	202	172	142
2 years in 10	217	188	159
1 year in 10	225	196	168

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

Map symbol	Soil name	Acres	Percent
AgA	Agawam fine sandy loam, 0 to 3 percent slopes	1,350	0.9
AgB	Agawam fine sandy loam, 3 to 8 percent slopes	1,167	0.8
AgC	Agawam fine sandy loam, 8 to 15 percent slopes	373	0.3
AmA	Amostown fine sandy loam, 0 to 3 percent slopes	1,700	1.2
AmB	Amostown fine sandy loam, 3 to 8 percent slopes	1,831	1.3
Au	Amostown-Windsor silty substratum-Urban land complex	2,352	1.6
BaA	Belgrade silt loam, 0 to 3 percent slopes	697	0.5
BaB	Belgrade silt loam, 3 to 8 percent slopes	1,437	1.0
BoA	Boxford silt loam, 0 to 3 percent slopes	484	0.3
BoB	Boxford silt loam, 3 to 8 percent slopes	1,490	1.0
BoC	Boxford silt loam, 8 to 15 percent slopes	554	0.4
CkB	Charlton fine sandy loam, 3 to 8 percent slopes	306	0.2
CkC	Charlton fine sandy loam, 8 to 15 percent slopes	280	0.2
CmB	Charlton stony fine sandy loam, 3 to 8 percent slopes	276	0.2
CmC	Charlton stony fine sandy loam, 8 to 15 percent slopes	234	0.2
CnB	Charlton very stony fine sandy loam, 3 to 8 percent slopes	433	0.3
CnC	Charlton very stony fine sandy loam, 8 to 15 percent slopes	1,039	0.7
CnD	Charlton very stony fine sandy loam, 15 to 25 percent slopes	1,283	0.9
CoE	Charlton and Gloucester very stony fine sandy loams, steep	671	0.5
CpC	Charlton-Hollis fine sandy loams, rocky, 3 to 15 percent slopes	1,818	1.3
CpD	Charlton-Hollis fine sandy loams, rocky, 15 to 25 percent slopes	342	0.2
CrC	Charlton-Rock outcrop-Hollis complex, sloping	2,794	1.9
CrE	Charlton-Rock outcrop-Hollis complex, steep	8,687	6.0
DeA	Deerfield loamy fine sand, 0 to 5 percent slopes	1,369	0.9
Du	Dumps	105	0.1
EsA	Enosburg fine sandy loam, 0 to 3 percent slopes	1,527	1.1
EsB	Enosburg fine sandy loam, 3 to 8 percent slopes	496	0.3
Fm	Freetown muck	1,593	1.1
GfB	Gloucester fine sandy loam, 3 to 8 percent slopes	218	0.1
GfC	Gloucester fine sandy loam, 8 to 15 percent slopes	139	0.1
GhB	Gloucester stony fine sandy loam, 3 to 8 percent slopes	371	0.3
GhC	Gloucester stony fine sandy loam, 8 to 15 percent slopes	246	0.2
GxB	Gloucester very stony fine sandy loam, 3 to 8 percent slopes	876	0.6
GxC	Gloucester very stony fine sandy loam, 8 to 15 percent slopes	954	0.7
GxD	Gloucester very stony fine sandy loam, 15 to 25 percent slopes	704	0.5
Ha	Hadley silt loam	6,111	4.2
Hd	Hadley-Winooski-Urban land complex	398	0.3
HfB	Haven very fine sandy loam, 3 to 8 percent slopes	177	0.1
HfC	Haven very fine sandy loam, 8 to 20 percent slopes	417	0.3
HgA	Hinckley loamy sand, 0 to 3 percent slopes	3,352	2.3
HgB	Hinckley loamy sand, 3 to 8 percent slopes	4,176	2.9
HgC	Hinckley loamy sand, 8 to 15 percent slopes	2,171	1.5
HgD	Hinckley loamy sand, 15 to 25 percent slopes	1,684	1.2
HgE	Hinckley loamy sand, 25 to 35 percent slopes	1,056	0.7
Hu	Hinckley-Merrimac-Urban land complex	2,804	1.9
HvC	Holyoke stony very fine sandy loam, 3 to 15 percent slopes	916	0.6
Lk	Limerick silt loam	2,330	1.6
Ma	Maybid silt loam	694	0.5
MeA	Merrimac fine sandy loam, 0 to 3 percent slopes	3,101	2.1
MeB	Merrimac fine sandy loam, 3 to 8 percent slopes	3,494	2.4
MeC	Merrimac fine sandy loam, 8 to 15 percent slopes	1,478	1.0
MeD	Merrimac fine sandy loam, 15 to 25 percent slopes	510	0.4
MoB	Montauk fine sandy loam, 3 to 8 percent slopes	147	0.1
MoC	Montauk fine sandy loam, 8 to 15 percent slopes	121	0.1
MsC	Montauk stony fine sandy loam, 3 to 15 percent slopes	261	0.2
MxB	Montauk very stony fine sandy loam, 3 to 8 percent slopes	584	0.4
MxC	Montauk very stony fine sandy loam, 8 to 15 percent slopes	958	0.7
MxD	Montauk very stony fine sandy loam, 15 to 25 percent slopes	290	0.2
NaC	Narragansett-Holyoke-Rock outcrop complex, 8 to 15 percent slope	396	0.3
NaD	Narragansett-Holyoke-Rock outcrop complex, 15 to 25 percent slopes	794	0.5
NgA	Ninigret fine sandy loam, 0 to 3 percent slopes	1,250	0.9
NgB	Ninigret fine sandy loam, 3 to 8 percent slopes	486	0.3
PaB	Paxton fine sandy loam, 3 to 8 percent slopes	1,120	0.8
PaC	Paxton fine sandy loam, 8 to 15 percent slopes	728	0.5
PaD	Paxton fine sandy loam, 15 to 25 percent slopes	218	0.1
PbB	Paxton stony fine sandy loam, 3 to 8 percent slopes	541	0.4
PbC	Paxton stony fine sandy loam, 8 to 15 percent slopes	494	0.3
PbD	Paxton stony fine sandy loam, 15 to 25 percent slopes	229	0.2
PcB	Paxton very stony fine sandy loam, 3 to 8 percent slopes	1,307	0.9
PcC	Paxton very stony fine sandy loam, 8 to 15 percent slopes	3,390	2.3

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

Map symbol	Soil name	Acres	Percent
PcD	Paxton very stony fine sandy loam, 15 to 25 percent slopes	2,973	2.1
PcE	Paxton very stony fine sandy loam, steep	415	0.3
Pd	Paxton-Charlton-Urban land complex	795	0.6
Pg	Pits, gravel	1,093	0.8
PuA	Pollux fine sandy loam, 0 to 3 percent slopes	402	0.3
PuB	Pollux fine sandy loam, 3 to 8 percent slopes	657	0.5
PuC	Pollux fine sandy loam, 8 to 15 percent slopes	279	0.2
Pv	Pootatuck fine sandy loam	1,599	1.1
Qu	Quarries	15	*
Ra	Raynham silt loam	2,287	1.6
RdA	Ridgebury fine sandy loam, 0 to 3 percent slopes	173	0.1
RdB	Ridgebury fine sandy loam, 3 to 8 percent slopes	133	0.1
ReA	Ridgebury very stony fine sandy loam, 0 to 3 percent slopes	832	0.6
ReB	Ridgebury very stony fine sandy loam, 3 to 8 percent slopes	1,965	1.4
Rm	Rippowam fine sandy loam	1,315	0.9
Ro	Rock outcrop	412	0.3
RoC	Rock outcrop-Narragansett-Holyoke complex, sloping	667	0.5
RoE	Rock outcrop-Narragansett-Holyoke complex, steep	3,939	2.7
Sa	Saco silt loam	841	0.6
Sb	Scarboro muck	772	0.5
Sc	Scitico silt loam	2,235	1.5
SgB	Scituate fine sandy loam, 3 to 8 percent slopes	243	0.2
ShB	Scituate very stony fine sandy loam, 3 to 8 percent slopes	515	0.4
ShC	Scituate very stony fine sandy loam, 8 to 15 percent slopes	137	0.1
SrA	Sudbury fine sandy loam, 0 to 3 percent slopes	1,620	1.1
SrB	Sudbury fine sandy loam, 3 to 8 percent slopes	885	0.6
Su	Suncook loamy fine sand	464	0.3
Sw	Swansea muck	983	0.7
Ud	Udorthents, smooth	286	0.2
Wa	Walpole fine sandy loam	3,446	2.4
WeB	Wethersfield fine sandy loam, 3 to 8 percent slopes	615	0.4
WeC	Wethersfield fine sandy loam, 8 to 15 percent slopes	550	0.4
WfB	Wethersfield stony fine sandy loam, 3 to 8 percent slopes	499	0.3
WfC	Wethersfield stony fine sandy loam, 8 to 15 percent slopes	686	0.5
WgB	Wethersfield very stony fine sandy loam, 3 to 8 percent slopes	504	0.3
WgC	Wethersfield very stony fine sandy loam, 8 to 15 percent slopes	665	0.5
WhA	Whitman very stony fine sandy loam	525	0.4
WnA	Windsor loamy sand, 0 to 3 percent slopes	1,292	0.9
WnB	Windsor loamy sand, 3 to 8 percent slopes	2,825	2.0
WnC	Windsor loamy sand, 8 to 15 percent slopes	1,050	0.7
WnD	Windsor loamy sand, 15 to 25 percent slopes	409	0.3
WoA	Windsor loamy sand, silty substratum, 0 to 3 percent slopes	258	0.2
WoB	Windsor loamy sand, silty substratum, 3 to 8 percent slopes	488	0.3
WoC	Windsor loamy sand, silty substratum, 8 to 15 percent slopes	373	0.3
Wp	Windsor-Scitico-Amostown complex	1,123	0.8
Ws	Winooski silt loam	2,702	1.9
WtA	Woodbridge fine sandy loam, 0 to 3 percent slopes	196	0.1
WtB	Woodbridge fine sandy loam, 3 to 8 percent slopes	614	0.4
WtC	Woodbridge fine sandy loam, 8 to 15 percent slopes	329	0.2
WvB	Woodbridge stony fine sandy loam, 3 to 8 percent slopes	176	0.1
WvC	Woodbridge stony fine sandy loam, 8 to 15 percent slopes	166	0.1
WxB	Woodbridge very stony fine sandy loam, 3 to 8 percent slopes	1,182	0.8
WxC	Woodbridge very stony fine sandy loam, 8 to 15 percent slopes	1,413	1.0
WxD	Woodbridge very stony fine sandy loam, 15 to 25 percent slopes	286	0.2
W	Water	4,517	3.1
	Total	144,200	100.0

* Less than 0.1 percent.

TABLE 5.--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	Corn silage	Sweet corn	Tobacco	Alfalfa hay	Grass-legume hay	Grass-clover
	Ton	Ton	Lb	Ton	Ton	AUM*
AgA---- Agawam	24	6.3	1,500	5	4.5	8.5
AgB---- Agawam	24	6.1	1,450	4.5	4.0	7.6
AgC---- Agawam	22	5.9	1,400	4.5	4.0	7.6
AmA---- Amostown	22	5.9	---	4.0	3.5	6.6
AmB---- Amostown	20	5.5	---	4.0	3.5	6.6
Au---- Amostown-Windsor-Urban land	---	---	---	---	---	---
BaA---- Belgrade	24	6.3	---	4.5	4.0	7.5
BaB---- Belgrade	22	6.0	---	4.0	3.5	6.7
BoA---- Boxford	22	---	---	---	3.0	5.7
BoB---- Boxford	20	---	---	---	3.5	6.7
BoC---- Boxford	18	---	---	---	3.5	6.7
CkB---- Charlton	24	5.9	---	5.0	4.5	8.6
CkC---- Charlton	22	5.3	---	4.0	3.5	6.6
CmB, CmC---- Charlton	---	---	---	---	---	---
CnB, CnC, CnD---- Charlton	---	---	---	---	---	---
CoE---- Charlton and Gloucester	---	---	---	---	---	---
CpC, CpD---- Charlton-Hollis	---	---	---	---	---	---
CrC---- Charlton-Rock outcrop-Hollis	---	---	---	---	---	---
CrE---- Charlton-Rock outcrop-Hollis	---	---	---	---	---	---
DeA---- Deerfield	22	5.0	1,400	3.5	3.0	5.8

See footnote at end of table.

TABLE 5.--YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Corn silage	Sweet corn	Tobacco	Alfalfa hay	Grass-legume hay	Grass-clover
	Ton	Ton	Lb	Ton	Ton	AUM*
Du**---------- Dumps	---	---	---	---	---	---
EsA, EsB---------- Enosburg	18	---	---	---	3.0	5.7
Fm---------- Freetown	---	---	---	---	---	---
GfB---------- Gloucester	16	---	---	4.0	3.0	5.7
GfC---------- Gloucester	14	---	---	4.0	3.0	5.7
GhB, GhC---------- Gloucester	---	---	---	---	---	---
GxB, GxC, GxD---------- Gloucester	---	---	---	---	---	---
Ha---------- Hadley	28	6.3	---	5.0	4.5	8.5
Hd---------- Hadley-Winooski-Urban land	---	---	---	---	---	---
HfB---------- Haven	24	6.0	---	4.5	4.0	7.6
HfC---------- Haven	22	5.0	---	4.0	3.5	6.7
HgA, HgB---------- Hinckley	14	4.5	---	3.5	3.0	5.7
HgC---------- Hinckley	12	---	---	3.0	2.5	4.8
HgD---------- Hinckley	---	---	---	---	1.5	2.8
HgE---------- Hinckley	---	---	---	---	---	---
Hu---------- Hinckley-Merrimac-Urban land	---	---	---	---	---	---
HvC---------- Holyoke	---	---	---	---	---	---
Lk---------- Limerick	20	4.9	---	---	3.5	6.6
Ma---------- Maybid	---	---	---	---	---	---
MeA, MeB---------- Merrimac	18	6.1	1,200	4.0	3.0	5.7
MeC---------- Merrimac	16	6.0	---	4.0	3.0	5.7
MeD---------- Merrimac	14	---	---	3.5	2.5	4.8

See footnotes at end of table.

TABLE 5.--YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Corn silage	Sweet corn	Tobacco	Alfalfa hay	Grass-legume hay	Grass-clover
	Ton	Ton	Lb	Ton	Ton	AUM*
MoB---------- Montauk	22	---	---	4.0	3.5	6.5
MoC---------- Montauk	20	---	---	4.0	3.5	6.5
MsC---------- Montauk	---	---	---	---	---	---
MxB, MxC, MxD---------- Montauk	---	---	---	---	---	---
NaC---------- Narragansett-Holyoke-Rock outcrop	---	---	---	---	---	---
NaD---------- Narragansett-Holyoke-Rock outcrop	---	---	---	---	---	---
NgA, NgB---------- Ninigret	22	5.9	---	4.0	3.5	6.7
PaB---------- Paxton	24	5.9	---	4.5	4.0	7.5
PaC---------- Paxton	22	---	---	4.0	3.5	6.7
PaD---------- Paxton	20	---	---	3.5	3.0	5.7
PbB, PbC, PbD---------- Paxton	---	---	---	---	---	---
PcB, PcC, PcD, PcE-------- Paxton	---	---	---	---	---	---
Pd---------- Paxton-Charlton-Urban land	---	---	---	---	---	---
Pg**---------- Pits	---	---	---	---	---	---
PuA---------- Pollux	24	6.3	---	4.5	4.0	7.6
PuB---------- Pollux	24	6.3	---	4.5	4.0	7.6
PuC---------- Pollux	22	5.6	---	4.0	3.5	6.7
Pv---------- Pootatuck	24	6.3	---	4.0	4.5	8.6
Qu**---------- Quarries	---	---	---	---	---	---
Ra---------- Raynham	18	---	---	---	3.5	6.7
RdA, RdB---------- Ridgebury	16	---	---	---	3.5	6.7

See footnotes at end of table.

TABLE 5.--YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Corn silage	Sweet corn	Tobacco	Alfalfa hay	Grass-legume hay	Grass-clover
	Ton	Ton	Lb	Ton	Ton	AUM*
ReA, ReB---- Ridgebury	---	---	---	---	---	---
Rm---- Rippowam	20	---	---	---	3.5	6.7
Ro**---- Rock outcrop	---	---	---	---	---	---
RoC---- Rock outcrop-Narragansett-Holyoke	---	---	---	---	---	---
RoE---- Rock outcrop-Narragansett-Holyoke	---	---	---	---	---	---
Sa---- Saco	---	---	---	---	---	---
Sb---- Scarboro	---	---	---	---	---	---
Sc---- Scitico	16	---	---	---	3.5	6.7
SgB---- Scituate	24	---	---	4.0	3.5	6.7
ShB, ShC---- Scituate	---	---	---	---	---	---
SrA---- Sudbury	18	5.9	---	4.0	3.5	6.7
SrB---- Sudbury	18	5.9	---	4.0	3.5	6.7
Su---- Suncook	12	3.0	---	2.5	2.0	3.8
Sw---- Swansea	---	---	---	---	---	---
Ud**---- Udorthents	---	---	---	---	---	---
Wa---- Walpole	18	---	---	---	3.0	5.7
WeB---- Wethersfield	22	5.9	---	4.5	4.0	7.6
WeC---- Wethersfield	20	5.6	---	4.0	3.5	6.6
WfB, WfC---- Wethersfield	---	---	---	---	---	---
WgB, WgC---- Wethersfield	---	---	---	---	---	---
WhA---- Whitman	---	---	---	---	---	---
WnA, WnB---- Windsor	14	---	---	3.0	2.5	4.8

See footnotes at end of table.

TABLE 5.--YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Corn silage	Sweet corn	Tobacco	Alfalfa hay	Grass-legume hay	Grass-clover
	Ton	Ton	Lb	Ton	Ton	AUM*
WnC---------- Windsor	12	---	---	3.0	2.5	4.8
WnD---------- Windsor	---	---	---	2.5	2.0	3.8
WoA, WoB---------- Windsor	15	---	---	3.5	3.0	5.7
WoC---------- Windsor	14	---	---	3.5	3.0	5.7
Wp---------- Windsor-Scitico-Amostown	---	---	---	---	---	---
Ws---------- Winooski	26	---	---	4.5	4.0	7.6
WtA---------- Woodbridge	24	5.6	---	4.0	4.0	7.6
WtB---------- Woodbridge	24	5.6	---	4.0	4.0	7.6
WtC---------- Woodbridge	22	---	---	3.5	3.5	6.7
WvB, WvC---------- Woodbridge	---	---	---	---	---	---
WxB, WxC, WxD---------- Woodbridge	---	---	---	---	---	---

* Animal-unit-month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.
** See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 6.--CAPABILITY CLASSES AND SUBCLASSES

[Miscellaneous areas are excluded. Absence of an entry indicates no acreage]

Class	Total acreage	Major management concerns (Subclass)			
		Erosion (e)	Wetness (w)	Soil problem (s)	Climate (c)
		Acres	Acres	Acres	Acres
I	7,863	---	---	---	---
II	28,236	8,001	13,422	6,813	---
III	30,211	4,280	13,076	12,855	---
IV	7,525	1,696	2,235	3,594	---
V	3,348	---	3,348	---	---
VI	8,723	---	1,535	7,188	---
VII	44,394	---	---	44,394	---
VIII	---	---	---	---	---

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY

[Only the soils suitable for production of commercial trees are listed. Absence of an entry indicates that information was not available]

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Windthrow hazard	Seedling mortality	Common trees	Site index	
AgA, AgB, AgC---- Agawam	4o	Slight	Slight	Slight	Slight	Eastern white pine-- Northern red oak---- Sugar maple----------	70 65 60	Eastern white pine, white spruce, Norway spruce.
AmA, AmB---------- Amostown	3o	Slight	Slight	Slight	Slight	Eastern white pine-- Northern red oak---- Sugar maple----------	75 70 65	Eastern white pine, white spruce, eastern hemlock.
Au*:								
Amostown----------	3o	Slight	Slight	Slight	Slight	Eastern white pine-- Northern red oak---- Sugar maple----------	75 70 65	Eastern white pine, white spruce, eastern hemlock.
Windsor----------	4s	Slight	Slight	Slight	Severe	Eastern white pine-- Northern red oak---- Sugar maple----------	60 55 60	Eastern white pine.
Urban land.								
BaA, BaB---------- Belgrade	3o	Slight	Slight	Slight	Slight	Eastern white pine-- Northern red oak----	75 62	Eastern white pine, white spruce.
BoA, BoB---------- Boxford	4o	Slight	Slight	Slight	Slight	Eastern white pine-- Northern red oak----	65 55	Eastern white pine, white spruce.
BoC---------- Boxford	4r	Moderate	Moderate	Slight	Slight	Eastern white pine-- Northern red oak----	65 55	Eastern white pine, white spruce.
CkB, CkC---------- Charlton	4o	Slight	Slight	Slight	Slight	Northern red oak---- Eastern white pine-- Red maple---------- Shagbark hickory---- Sugar maple----------	65 65 55 60 55	Eastern white pine, white spruce, eastern hemlock.
CmB, CmC---------- Charlton	4o	Slight	Slight	Slight	Slight	Northern red oak---- Eastern white pine-- Red maple---------- Shagbark hickory----	65 65 55 60	Eastern white pine, white spruce, eastern hemlock.
CnB, CnC, CnD---- Charlton	4x	Slight	Moderate	Slight	Slight	Northern red oak---- Eastern white pine-- Red maple---------- Shagbark hickory----	65 65 55 60	Eastern white pine, white spruce, eastern hemlock.
CoE*:								
Charlton----------	4x	Moderate	Severe	Slight	Slight	Northern red oak---- Eastern white pine-- Red maple---------- Shagbark hickory----	65 65 55 60	Eastern white pine, white spruce, eastern hemlock.
Gloucester--------	4x	Moderate	Severe	Slight	Moderate	Northern red oak---- Eastern white pine--	60 61	Eastern white pine.
CpC*, CpD*:								
Charlton----------	4x	Slight	Moderate	Slight	Slight	Northern red oak---- Eastern white pine-- Red maple---------- Shagbark hickory----	65 65 55 60	Eastern white pine, white spruce, eastern hemlock.
Hollis----------	5x	Slight	Moderate	Moderate	Severe	Northern red oak---- Eastern white pine-- Sugar maple----------	47 55 56	Eastern white pine.

See footnote at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Windthrow hazard	Seedling mortality	Common trees	Site index	
CrC*:								
Charlton	4x	Slight	Moderate	Slight	Slight	Northern red oak	65	Eastern white pine, white spruce, eastern hemlock.
						Eastern white pine	65	
						Red maple	55	
						Shagbark hickory	60	
Rock outcrop.								
Hollis	5x	Slight	Moderate	Moderate	Severe	Northern red oak	47	Eastern white pine.
						Eastern white pine	55	
						Sugar maple	56	
CrE*:								
Charlton	4x	Moderate	Severe	Slight	Slight	Northern red oak	65	Eastern white pine, white spruce, eastern hemlock.
						Eastern white pine	65	
						Red maple	55	
						Shagbark hickory	60	
Rock outcrop.								
Hollis	5x	Moderate	Severe	Moderate	Severe	Northern red oak	47	Eastern white pine.
						Eastern white pine	55	
						Sugar maple	56	
DeA	4s	Slight	Slight	Slight	Slight	Eastern white pine	65	Eastern white pine.
Deerfield						Northern red oak	55	
EsA, EsB	4w	Slight	Severe	Severe	Severe	Eastern white pine	65	Eastern white pine, white spruce.
Enosburg						Northern red oak	60	
						Sugar maple	50	
Fm	5w	Slight	Severe	Severe	Severe	Red maple	50	White spruce, eastern hemlock, balsam fir.
Freetown						Eastern hemlock	55	
						Green ash	35	
GfB, GfC	4s	Slight	Slight	Slight	Moderate	Northern red oak	60	Eastern white pine.
Gloucester						Eastern white pine	61	
						Sugar maple	53	
GhB, GhC	4s	Slight	Slight	Slight	Moderate	Northern red oak	60	Eastern white pine.
Gloucester						Eastern white pine	61	
GxB, GxC	4x	Slight	Moderate	Slight	Moderate	Northern red oak	60	Eastern white pine.
Gloucester						Eastern white pine	61	
GxD	4x	Slight	Moderate	Slight	Moderate	Northern red oak	60	Eastern white pine.
Gloucester						Eastern white pine	61	
Ha	3o	Slight	Slight	Slight	Slight	Eastern white pine	70	Eastern white pine, black walnut.
Hadley						Sugar maple	63	
Hd*:								
Hadley	3o	Slight	Slight	Slight	Slight	Eastern white pine	70	Eastern white pine, black walnut.
						Sugar maple	63	
Winooski	3o	Slight	Slight	Slight	Slight	Northern red oak	70	Eastern white pine.
						Eastern white pine	75	
						Sugar maple	65	
Urban land.								
HfB, HfC	3o	Slight	Slight	Slight	Slight	Eastern white pine	75	Eastern white pine, Norway spruce.
Haven						Northern red oak	55	
						Sugar maple	65	

See footnote at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Windthrow hazard	Seedling mortality	Common trees	Site index	
HgA, HgB, HgC----- Hinckley	5s	Slight	Slight	Slight	Severe	Northern red oak----	49	Eastern white pine.
						Eastern white pine--	60	
						Sugar maple---------	57	
HgD, HgE---------- Hinckley	5s	Slight	Moderate	Slight	Severe	Northern red oak----	49	Eastern white pine.
						Eastern white pine--	60	
						Sugar maple---------	57	
Hu*:								
Hinckley----------	5s	Slight	Slight	Slight	Severe	Northern red oak----	49	Eastern white pine.
						Eastern white pine--	60	
						Sugar maple---------	57	
Merrimac----------	4s	Slight	Slight	Slight	Moderate	Northern red oak----	51	Eastern white pine.
						Eastern white pine--	64	
						Sugar maple---------	58	
Urban land.								
HvC---------- Holyoke	5d	Slight	Slight	Moderate	Severe	Northern red oak----	47	Eastern white pine.
						Eastern white pine--	55	
						White ash-----------	60	
Lk---------- Limerick	4w	Slight	Severe	Severe	Severe	Eastern white pine--	65	Eastern white pine, white spruce.
						Red maple-----------	60	
Ma---------- Maybid	5w	Slight	Severe	Severe	Severe	Red maple-----------	55	
MeA, MeB, MeC------ Merrimac	4s	Slight	Slight	Slight	Moderate	Northern red oak----	51	Eastern white pine.
						Eastern white pine--	64	
						Sugar maple---------	58	
MeD---------- Merrimac	4s	Slight	Moderate	Slight	Moderate	Northern red oak----	51	Eastern white pine.
						Eastern white pine--	64	
						Sugar maple---------	58	
MoB, MoC---------- Montauk	3o	Slight	Slight	Slight	Slight	Sugar maple---------	65	Norway spruce, white spruce.
						Northern red oak----	70	
						Eastern white pine--	75	
MsC---------- Montauk	3o	Slight	Slight	Slight	Slight	Sugar maple---------	65	Norway spruce, white spruce.
						Northern red oak----	70	
MxB, MxC---------- Montauk	3x	Slight	Moderate	Slight	Slight	Eastern white pine--	75	Eastern white pine.
MxD---------- Montauk	3x	Slight	Moderate	Slight	Slight	Eastern white pine--	75	Eastern white pine.
NaC*:								
Narragansett------	4x	Moderate	Moderate	Slight	Slight	Northern red oak----	60	Eastern white pine, eastern hemlock.
						Eastern white pine--	68	
						Sugar maple---------	55	
Holyoke-----------	5x	Slight	Moderate	Moderate	Severe	Northern red oak----	47	Eastern white pine.
						Eastern white pine--	55	
						White ash-----------	60	
Rock outcrop.								
NaD*:								
Narragansett------	4x	Severe	Moderate	Slight	Slight	Northern red oak----	60	Eastern white pine, eastern hemlock.
						Eastern white pine--	68	
						Sugar maple---------	55	

See footnote at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Windthrow hazard	Seedling mortality	Common trees	Site index	
NaD*:								
Holyoke	5x	Moderate	Moderate	Moderate	Severe	Northern red oak Eastern white pine White ash	47 55 60	Eastern white pine.
Rock outcrop.								
NgA, NgB Ninigret	3o	Slight	Slight	Slight	Slight	Eastern white pine Red maple Northern red oak Sugar maple	75 60 65 55	Eastern white pine, white spruce.
PaB, PaC Paxton	3o	Slight	Slight	Slight	Slight	Northern red oak Eastern white pine Sugar maple	65 66 75	Eastern white pine, Norway spruce.
PaD Paxton	3r	Slight	Moderate	Slight	Slight	Northern red oak Eastern white pine Sugar maple	65 66 75	Eastern white pine, Norway spruce.
PbB, PbC Paxton	3o	Slight	Slight	Slight	Slight	Northern red oak Eastern white pine Sugar maple	65 66 75	Eastern white pine, Norway spruce.
PbD Paxton	3r	Slight	Moderate	Slight	Slight	Northern red oak Eastern white pine Sugar maple	65 66 75	Eastern white pine, Norway spruce.
PcB, PcC Paxton	3x	Slight	Moderate	Slight	Slight	Northern red oak Eastern white pine Sugar maple	65 66 75	Eastern white pine, Norway spruce.
PcD Paxton	3x	Slight	Moderate	Slight	Slight	Northern red oak Eastern white pine Sugar maple	65 66 75	Eastern white pine, Norway spruce.
Pd*:								
Paxton	3o	Slight	Slight	Slight	Slight	Northern red oak Eastern white pine Sugar maple	65 66 75	Eastern white pine, Norway spruce.
Charlton	4o	Slight	Slight	Slight	Slight	Northern red oak Eastern white pine Red maple Shagbark hickory Sugar maple	65 65 55 60 55	Eastern white pine, white spruce, eastern hemlock.
Urban land.								
PuA, PuB, PuC Pollux	4o	Slight	Slight	Slight	Slight	Eastern white pine Northern red oak Sugar maple	70 65 60	Eastern white pine, white spruce.
Pv Pootatuck	3o	Slight	Slight	Slight	Slight	Eastern white pine Red maple Yellow birch	75 60 60	Eastern white pine, white spruce.
Ra Raynham	4w	Slight	Severe	Severe	Severe	Eastern white pine Red maple	65	Eastern white pine, white spruce.
RdA, RdB Ridgebury	4w	Slight	Severe	Severe	Severe	Northern red oak Eastern white pine Sugar maple	57 63 52	Eastern white pine, white spruce.
ReA, ReB Ridgebury	4x	Slight	Severe	Severe	Severe	Northern red oak Eastern white pine Sugar maple	57 63 52	Eastern white pine, white spruce.

See footnote at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Windthrow hazard	Seedling mortality	Common trees	Site index	
Rm---------- Rippowam	4w	Slight	Severe	Severe	Severe	Red maple---------- Eastern white pine--	75 65	Eastern white pine, white spruce.
RoC*: Rock outcrop.								
Narragansett------	4x	Moderate	Moderate	Slight	Slight	Northern red oak---- Eastern white pine-- Sugar maple---------	60 68 55	Eastern white pine, eastern hemlock.
Holyoke-----------	5x	Slight	Moderate	Moderate	Severe	Northern red oak---- Eastern white pine-- White ash----------	47 55 60	Eastern white pine.
RoE*: Rock outcrop.								
Narragansett------	4x	Severe	Moderate	Slight	Slight	Northern red oak---- Eastern white pine-- Sugar maple---------	60 68 55	Eastern white pine, eastern hemlock.
Holyoke-----------	5x	Moderate	Moderate	Moderate	Severe	Northern red oak---- Eastern white pine-- White ash----------	47 55 60	Eastern white pine.
Sa---------- Saco	5w	Slight	Severe	Severe	Severe	Eastern white pine-- Red maple----------	50 50	White spruce, eastern hemlock, balsam fir.
Sb---------- Scarboro	5w	Slight	Severe	Severe	Severe	Eastern white pine-- Red maple----------	55 55	White spruce, eastern hemlock, balsam fir.
Sc---------- Scitico	5w	Slight	Severe	Severe	Severe	Eastern white pine-- Red maple---------- White ash----------	55 55 67	Eastern white pine, white spruce.
SgB---------- Scituate	4o	Slight	Slight	Slight	Slight	Northern red oak---- Eastern white pine-- Sugar maple---------	61 65 55	Eastern white pine, white spruce.
ShB, ShC---------- Scituate	4x	Slight	Moderate	Slight	Slight	Northern red oak---- Eastern white pine-- Sugar maple---------	61 65 55	Eastern white pine, white spruce.
SrA, SrB---------- Sudbury	4o	Slight	Slight	Slight	Slight	Eastern white pine-- Northern red oak----	60 45	Eastern white pine, white spruce, Norway spruce.
Su---------- Suncook	5s	Slight	Slight	Slight	Severe	Eastern white pine-- Black oak---------- Northern red oak---- Red maple----------	55 50 50 50	Eastern white pine.
Sw---------- Swansea	4w	Slight	Severe	Severe	Severe	Red maple---------- Eastern hemlock----- Green ash----------	50 55 35	White spruce, eastern hemlock, balsam fir.
Wa---------- Walpole	4w	Slight	Severe	Severe	Severe	Eastern white pine-- Red maple----------	68 43	Eastern white pine, white spruce, Norway spruce.
WeB, WeC, WfB, WfC- Wethersfield	3o	Slight	Slight	Slight	Slight	Northern red oak---- Eastern white pine-- Sugar maple---------	74 75 63	Eastern white pine.

See footnote at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Windthrow hazard	Seedling mortality	Common trees	Site index	
WgB, WgC---------- Wethersfield	3x	Slight	Moderate	Slight	Slight	Northern red oak----	74	Eastern white pine.
						Eastern white pine--	75	
						Sugar maple---------	63	
WhA---------- Whitman	5w	Slight	Severe	Severe	Severe	Eastern white pine--	56	White spruce, eastern hemlock, balsam fir.
						Red maple----------	55	
WnA, WnB, WnC------ Windsor	5s	Slight	Slight	Slight	Severe	Eastern white pine--	57	Eastern white pine.
						Northern red oak----	52	
						Sugar maple---------	55	
WnD---------- Windsor	5s	Slight	Moderate	Slight	Severe	Eastern white pine--	57	Eastern white pine.
						Northern red oak----	52	
						Sugar maple---------	55	
WoA, WoB, WoC------ Windsor	4s	Slight	Slight	Slight	Severe	Eastern white pine--	60	Eastern white pine.
						Northern red oak----	55	
						Sugar maple---------	60	
Wp*:								
Windsor----------	5s	Slight	Moderate	Slight	Severe	Eastern white pine--	57	Eastern white pine.
						Northern red oak----	52	
						Sugar maple---------	55	
Scitico----------	5w	Slight	Severe	Severe	Severe	Eastern white pine--	55	Eastern white pine, white spruce.
						Red maple----------	55	
						White ash----------	67	
Amostown----------	3o	Slight	Slight	Slight	Slight	Eastern white pine--	75	Eastern white pine, white spruce, eastern hemlock. hemlock.
						Northern red oak----	70	
						Sugar maple---------	65	
Ws---------- Winooski	3o	Slight	Slight	Slight	Slight	Northern red oak----	70	Eastern white pine.
						Eastern white pine--	75	
						Sugar maple---------	65	
WtA, WtB, WtC------ Woodbridge	3o	Slight	Slight	Slight	Slight	Eastern white pine--	67	Eastern white pine.
						Northern red oak----	72	
						Sugar maple---------	65	
WvB, WvC---------- Woodbridge	3o	Slight	Slight	Slight	Slight	Eastern white pine--	67	Eastern white pine.
						Northern red oak----	72	
						Sugar maple---------	65	
WxB, WxC, WxD------ Woodbridge	3x	Moderate	Moderate	Slight	Slight	Eastern white pine--	67	Eastern white pine.
						Northern red oak----	72	
						Sugar maple---------	65	

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

TABLE 8.--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
AgA---- Agawam	Slight	Slight	Slight	Slight	Slight.
AgB---- Agawam	Slight	Slight	Moderate: slope.	Slight	Slight.
AgC---- Agawam	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.
AmA---- Amostown	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.
AmB---- Amostown	Moderate: wetness.	Moderate: wetness.	Moderate: slope, wetness.	Moderate: wetness.	Moderate: wetness.
Au*:					
Amostown----	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.
Windsor----	Slight	Slight	Slight	Slight	Moderate: droughty.
Urban land.					
BaA---- Belgrade	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Severe: erodes easily.	Moderate: wetness.
BaB---- Belgrade	Moderate: wetness.	Moderate: wetness.	Moderate: slope, wetness.	Severe: erodes easily.	Moderate: wetness.
BoA, BoB---- Boxford	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness, percs slowly.	Moderate: wetness.	Moderate: wetness.
BoC---- Boxford	Severe: wetness, percs slowly.	Severe: wetness.	Severe: slope, wetness, percs slowly.	Moderate: wetness.	Moderate: wetness, slope.
CkB---- Charlton	Slight	Slight	Moderate: slope, small stones.	Slight	Slight.
CkC---- Charlton	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.
CmB---- Charlton	Moderate: large stones.	Moderate: large stones.	Severe: large stones.	Slight	Moderate: large stones.
CmC---- Charlton	Moderate: slope, large stones.	Moderate: slope, large stones.	Severe: slope, large stones.	Slight	Moderate: slope, large stones.
CnB---- Charlton	Severe: large stones.	Severe: large stones.	Severe: large stones.	Slight	Moderate: large stones.
CnC---- Charlton	Severe: large stones.	Severe: large stones.	Severe: slope, large stones.	Slight	Moderate: slope, large stones.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
CnD---------- Charlton	Severe: large stones, slope.	Severe: slope, large stones.	Severe: slope, large stones.	Moderate: slope.	Severe: slope.
CoE*: Charlton----------	Severe: large stones, slope.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope.	Severe: slope.
Gloucester----------	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones, small stones.	Severe: slope.	Severe: slope, large stones.
CpC*: Charlton----------	Severe: large stones.	Severe: large stones.	Severe: slope, large stones.	Slight----------	Moderate: slope, large stones.
Hollis----------	Severe: large stones, depth to rock.	Severe: large stones, depth to rock.	Severe: slope, depth to rock, large stones.	Slight----------	Severe: depth to rock, thin layer.
CpD*: Charlton----------	Severe: large stones, slope.	Severe: slope, large stones.	Severe: slope, large stones.	Moderate: slope.	Severe: slope.
Hollis----------	Severe: slope, large stones, depth to rock.	Severe: slope, large stones, depth to rock.	Severe: slope, depth to rock, large stones.	Moderate: slope.	Severe: slope, depth to rock, thin layer.
CrC*: Charlton----------	Severe: large stones.	Severe: large stones.	Severe: slope, large stones.	Slight----------	Moderate: slope, large stones.
Rock outcrop.					
Hollis----------	Severe: large stones, depth to rock.	Severe: large stones, depth to rock.	Severe: slope, depth to rock, large stones.	Slight----------	Severe: depth to rock, thin layer.
CrE*: Charlton----------	Severe: large stones, slope.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope.	Severe: slope.
Rock outcrop.					
Hollis----------	Severe: slope, large stones, depth to rock.	Severe: slope, large stones, depth to rock.	Severe: slope, depth to rock, large stones.	Severe: slope.	Severe: slope, depth to rock, thin layer.
DeA---------- Deerfield	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Slight----------	Moderate: wetness.
Du*. Dumps					
EsA, EsB---------- Enosburg	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
Fm Freetown	Severe: wetness, excess humus.	Severe: wetness, excess humus.	Severe: wetness, excess humus.	Severe: wetness, excess humus.	Severe: wetness, excess humus.
GfB Gloucester	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Slight	Moderate: small stones, droughty.
GfC Gloucester	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.	Slight	Moderate: slope, small stones, droughty.
GhB Gloucester	Moderate: large stones.	Moderate: large stones.	Severe: large stones, small stones.	Slight	Moderate: small stones, droughty.
GhC Gloucester	Moderate: slope, large stones.	Moderate: slope, large stones.	Severe: slope, large stones, small stones.	Slight	Moderate: slope, small stones, droughty.
GxB Gloucester	Severe: large stones.	Severe: large stones.	Severe: large stones, small stones.	Moderate: large stones.	Severe: large stones.
GxC Gloucester	Severe: large stones.	Severe: large stones.	Severe: slope, large stones, small stones.	Moderate: large stones.	Severe: large stones.
GxD Gloucester	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones, small stones.	Moderate: large stones, slope.	Severe: slope, large stones.
Ha Hadley	Severe: flooding.	Slight	Moderate: flooding.	Slight	Moderate: flooding.
Hd*: Hadley	Severe: flooding.	Slight	Moderate: flooding.	Slight	Moderate: flooding.
Winooski	Severe: flooding.	Moderate: wetness.	Moderate: flooding, wetness.	Slight	Moderate: flooding.
Urban land.					
HfB Haven	Slight	Slight	Moderate: slope, small stones.	Moderate: erodes easily.	Slight.
HfC Haven	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
HgA Hinckley	Slight	Slight	Moderate: small stones.	Slight	Moderate: small stones, droughty.
HgB Hinckley	Slight	Slight	Moderate: slope, small stones.	Slight	Moderate: small stones, droughty.
HgC Hinckley	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: small stones, droughty, slope.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
HgD---------- Hinckley	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
HgE---------- Hinckley	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Hu*: Hinckley----------	Slight----------	Slight----------	Moderate: slope, small stones.	Slight----------	Moderate: small stones, droughty.
Merrimac----------	Slight----------	Slight----------	Moderate: slope, small stones.	Slight----------	Slight.
Urban land.					
HvC---------- Holyoke	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, large stones, depth to rock.	Slight----------	Severe: thin layer.
Lk---------- Limerick	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.	Severe: flooding, wetness.
Ma---------- Maybid	Severe: ponding, percs slowly.	Severe: ponding, percs slowly.	Severe: ponding, percs slowly.	Severe: ponding.	Severe: ponding.
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.
MoB---------- Montauk	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, small stones.	Slight----------	Slight.
MoC---------- Montauk	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Slight----------	Moderate: slope.
MsC---------- Montauk	Moderate: slope, large stones.	Moderate: slope, large stones.	Severe: large stones, slope, small stones.	Slight----------	Moderate: small stones, large stones, slope.
MxB---------- Montauk	Severe: large stones.	Severe: large stones.	Severe: large stones, small stones.	Slight----------	Moderate: small stones, large stones.
MxC---------- Montauk	Severe: large stones.	Severe: large stones.	Severe: large stones, slope, small stones.	Slight----------	Moderate: small stones, large stones, slope.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
MxD Montauk	Severe: slope, large stones.	Severe: slope, large stones.	Severe: large stones, slope, small stones.	Moderate: slope.	Severe: slope.
NaC*: Narragansett	Severe: large stones.	Moderate: slope, large stones.	Severe: slope, large stones.	Slight	Severe: large stones.
Holyoke	Severe: depth to rock, large stones.	Severe: depth to rock, large stones.	Severe: slope, large stones, depth to rock.	Slight	Severe: thin layer.
Rock outcrop.					
NaD*: Narragansett	Severe: slope, large stones.	Severe: slope.	Severe: slope, large stones.	Moderate: slope.	Severe: slope, large stones.
Holyoke	Severe: slope, depth to rock, large stones.	Severe: slope, depth to rock, large stones.	Severe: slope, large stones, depth to rock.	Moderate: slope.	Severe: slope, thin layer.
Rock outcrop.					
NgA Ninigret	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.
NgB Ninigret	Moderate: wetness.	Moderate: wetness.	Moderate: slope, wetness.	Moderate: wetness.	Moderate: wetness.
PaB Paxton	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, percs slowly, small stones.	Slight	Slight.
PaC Paxton	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Slight	Moderate: slope.
PaD Paxton	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
PbB Paxton	Moderate: percs slowly, large stones.	Moderate: large stones, percs slowly.	Severe: large stones.	Slight	Moderate: large stones.
PbC Paxton	Moderate: slope, large stones, percs slowly.	Moderate: slope, large stones, percs slowly.	Severe: slope, large stones.	Slight	Moderate: slope, large stones.
PbD Paxton	Severe: slope.	Severe: slope.	Severe: slope, large stones.	Moderate: slope.	Severe: slope.
PcB Paxton	Severe: large stones.	Severe: large stones.	Severe: large stones.	Slight	Moderate: large stones.
PcC Paxton	Severe: large stones.	Severe: large stones.	Severe: slope, large stones.	Slight	Moderate: slope, large stones.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
PcD---------- Paxton	Severe: slope, large stones.	Severe: large stones, slope.	Severe: slope, large stones.	Moderate: slope.	Severe: slope.
PcE---------- Paxton	Severe: slope, large stones.	Severe: large stones, slope.	Severe: slope, large stones.	Severe: slope.	Severe: slope.
Pd*: Paxton----------	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, percs slowly, small stones.	Slight----------	Slight.
Charlton----------	Slight----------	Slight----------	Moderate: slope, small stones.	Slight----------	Slight.
Urban land.					
Pg*. Pits					
PuA---------- Pollux	Slight----------	Slight----------	Slight----------	Slight----------	Slight.
PuB---------- Pollux	Slight----------	Slight----------	Moderate: slope.	Slight----------	Slight.
PuC---------- Pollux	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight----------	Moderate: slope.
Pv---------- Pootatuck	Severe: flooding.	Moderate: flooding, wetness.	Severe: flooding.	Moderate: wetness, flooding.	Severe: flooding.
Qu*. Quarries					
Ra---------- Raynham	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, erodes easily.	Severe: wetness.
RdA, RdB---------- Ridgebury	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.
ReA, ReB---------- Ridgebury	Severe: large stones, wetness, percs slowly.	Severe: large stones, wetness, percs slowly.	Severe: wetness, large stones, small stones.	Severe: wetness.	Severe: wetness.
Rm---------- Rippowam	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness, flooding.
Ro*. Rock outcrop					
RoC*: Rock outcrop.					
Narragansett---------	Severe: large stones.	Moderate: slope, large stones.	Severe: slope, large stones.	Slight----------	Severe: large stones.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
RoC*: Holyoke	Severe: depth to rock, large stones.	Severe: depth to rock, large stones.	Severe: slope, large stones, depth to rock.	Slight	Severe: thin layer.
RoE*: Rock outcrop.					
Narragansett	Severe: slope, large stones.	Severe: slope.	Severe: slope, large stones.	Severe: slope.	Severe: slope, large stones.
Holyoke	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.
Sa Saco	Severe: flooding, wetness, excess humus.	Severe: wetness, excess humus.	Severe: flooding, wetness, excess humus.	Severe: wetness, excess humus.	Severe: flooding, wetness.
Sb Scarboro	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: ponding, excess humus.
Sc Scitico	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.
SgB Scituate	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, small stones, wetness.	Moderate: wetness.	Moderate: wetness.
ShB Scituate	Severe: large stones.	Severe: large stones.	Severe: large stones, small stones.	Moderate: wetness.	Moderate: small stones, large stones.
ShC Scituate	Severe: large stones.	Severe: large stones.	Severe: slope, large stones, small stones.	Moderate: wetness.	Moderate: slope, small stones, large stones.
SrA Sudbury	Moderate: wetness.	Moderate: wetness.	Moderate: wetness, small stones.	Slight	Slight.
SrB Sudbury	Moderate: wetness.	Moderate: wetness.	Moderate: slope, wetness, small stones.	Slight	Slight.
Su Suncook	Severe: flooding.	Slight	Moderate: flooding.	Slight	Moderate: flooding, droughty.
Sw Swansea	Severe: wetness, excess humus.	Severe: wetness, excess humus.	Severe: wetness, excess humus.	Severe: wetness, excess humus.	Severe: wetness, excess humus.
Ud*. Udorthents					
Wa Walpole	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
WeB--- Wethersfield	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, percs slowly, small stones.	Slight---	Slight.
WeC--- Wethersfield	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Slight---	Moderate: slope.
WfB--- Wethersfield	Moderate: percs slowly, large stones.	Moderate: large stones, percs slowly.	Severe: large stones.	Slight---	Moderate: large stones.
WfC--- Wethersfield	Moderate: slope, percs slowly, large stones.	Moderate: slope, large stones, percs slowly.	Severe: slope, large stones.	Slight---	Moderate: slope, large stones.
WgB--- Wethersfield	Severe: large stones.	Severe: large stones.	Severe: large stones.	Slight---	Moderate: large stones.
WgC--- Wethersfield	Severe: large stones.	Severe: large stones.	Severe: slope, large stones.	Slight---	Moderate: slope, large stones.
WhA--- Whitman	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
WnA--- Windsor	Slight---	Slight---	Slight---	Slight---	Moderate: droughty.
WnB--- Windsor	Slight---	Slight---	Moderate: slope.	Slight---	Moderate: droughty.
WnC--- Windsor	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight---	Moderate: slope, droughty.
WnD--- Windsor	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
WoA--- Windsor	Slight---	Slight---	Slight---	Slight---	Moderate: droughty.
WoB--- Windsor	Slight---	Slight---	Moderate: slope.	Slight---	Moderate: droughty.
WoC--- Windsor	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight---	Moderate: droughty, slope.
Wp*:					
Windsor---	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Scitico---	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.
Amostown---	Moderate: wetness.	Moderate: wetness.	Moderate: slope, wetness.	Moderate: wetness.	Moderate: wetness.
Ws--- Winooski	Severe: flooding.	Moderate: wetness.	Moderate: flooding, wetness.	Slight---	Moderate: flooding.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
WtA---------- Woodbridge	Moderate: percs slowly, wetness.	Moderate: percs slowly, wetness.	Moderate: percs slowly, wetness.	Moderate: wetness.	Moderate: wetness.
WtB---------- Woodbridge	Moderate: percs slowly, wetness.	Moderate: percs slowly, wetness.	Moderate: slope, percs slowly, wetness.	Moderate: wetness.	Moderate: wetness.
WtC---------- Woodbridge	Moderate: slope, percs slowly, wetness.	Moderate: slope, percs slowly, wetness.	Severe: slope.	Moderate: wetness.	Moderate: slope, wetness.
WvB---------- Woodbridge	Moderate: wetness, large stones.	Moderate: wetness, large stones.	Severe: large stones.	Moderate: wetness.	Moderate: large stones, wetness.
WvC---------- Woodbridge	Moderate: slope, wetness, large stones.	Moderate: slope, wetness, large stones.	Severe: slope, large stones.	Moderate: wetness.	Moderate: slope, large stones, wetness.
WxB---------- Woodbridge	Severe: large stones.	Severe: large stones.	Severe: large stones.	Moderate: wetness.	Moderate: large stones, wetness.
WxC---------- Woodbridge	Severe: large stones.	Severe: large stones.	Severe: slope, large stones.	Moderate: wetness.	Moderate: slope, large stones, wetness.
WxD---------- Woodbridge	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Moderate: slope, wetness.	Severe: slope.

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

TABLE 9.--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	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
AgA---- Agawam	Good	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.
AgB---- Agawam	Fair	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.
AgC---- Agawam	Fair	Good	Good	Good	Good	---	Very poor.	Very poor.	Good	Good	Very poor.
AmA---- Amostown	Fair	Good	Good	Good	Good	---	Poor	Poor	Good	Good	Poor.
AmB---- Amostown	Fair	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.
Au*:											
Amostown----	Fair	Good	Good	Good	Good	---	Poor	Poor	Good	Good	Poor.
Windsor----	Poor	Fair	Fair	Poor	Poor	---	Poor	Very poor.	Fair	Poor	Very poor.
Urban land.											
BaA---- Belgrade	Good	Good	Good	Good	Good	---	Poor	Poor	Good	Good	Poor.
BaB---- Belgrade	Fair	Good	Good	Good	Good	---	Very poor.	Very poor.	Good	Good	Very poor.
BoA---- Boxford	Good	Good	Good	Good	Good	---	Poor	Poor	Good	Good	Poor.
BoB---- Boxford	Fair	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.
BoC---- Boxford	Fair	Good	Good	Good	Good	---	Very poor.	Very poor.	Good	Good	Very poor.
CkB---- Charlton	Fair	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.
CkC---- Charlton	Fair	Good	Good	Good	Good	---	Very poor.	Very poor.	Good	Good	Very poor.
CmB---- Charlton	Very poor.	Poor	Good	Good	Good	---	Poor	Very poor.	Poor	Good	Very poor.
CmC---- Charlton	Very poor.	Poor	Good	Good	Good	---	Very poor.	Very poor.	Poor	Good	Very poor.
CnB---- Charlton	Very poor.	Very poor.	Good	Good	Good	---	Poor	Very poor.	Poor	Fair	Very poor.
CnC, CnD---- Charlton	Very poor.	Very poor.	Good	Good	Good	---	Very poor.	Very poor.	Poor	Fair	Very poor.
CoE*:											
Charlton----	Very poor.	Very poor.	Good	Good	Good	---	Very poor.	Very poor.	Poor	Fair	Very poor.
Gloucester----	Very poor.	Very poor.	Poor	Poor	Poor	---	Very poor.	Very poor.	Very poor	Poor	Very poor.

See footnote at end of table.

TABLE 9.--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	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
CpC*, CpD*:											
Charlton	Very poor.	Very poor.	Good	Good	Good	---	Very poor.	Very poor.	Poor	Fair	Very poor.
Hollis	Very poor.	Very poor.	Fair	Poor	Poor	---	Very poor.	Very poor.	Very poor	Poor	Very poor.
CrC*, CrE*:											
Charlton	Very poor.	Very poor.	Good	Good	Good	---	Very poor.	Very poor.	Poor	Fair	Very poor.
Rock outcrop.											
Hollis	Very poor.	Very poor.	Fair	Poor	Poor	---	Very poor.	Very poor.	Very poor	Poor	Very poor.
DeA. Deerfield											
Du*. Dumps											
EsA. Enosburg	Poor	Fair	Fair	Fair	Fair	---	Fair	Fair	Fair	Fair	Fair.
EsB. Enosburg	Poor	Fair	Fair	Fair	Fair	---	Poor	Very poor.	Fair	Fair	Very poor.
Fm. Freetown	Very poor.	Poor	Poor	Poor	Poor	---	Good	Good	Poor	Poor	Good.
GfB, GfC. Gloucester	Poor	Fair	Fair	Poor	Poor	---	Very poor.	Very poor.	Poor	Poor	Very poor.
GhB, GhC. Gloucester	Very poor.	Poor	Poor	Poor	Poor	---	Very poor.	Very poor.	Poor	Poor	Very poor.
GxB, GxC, GxD. Gloucester	Very poor.	Very poor.	Poor	Poor	Poor	---	Very poor.	Very poor.	Very poor	Poor	Very poor.
Ha. Hadley	Good	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.
Hd*:											
Hadley	Good	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.
Winooski	Good	Good	Good	Good	Good	---	Poor	Poor	Good	Good	Poor.
Urban land.											
HfB. Haven	Fair	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.
HfC. Haven	Fair	Good	Good	Good	Good	---	Very poor.	Very poor.	Good	Good	Very poor.
HgA, HgB, HgC, HgD. Hinckley	Poor	Poor	Poor	Poor	Poor	---	Very poor.	Very poor.	Poor	Poor	Very poor.
HgE. Hinckley	Very poor.	Poor	Poor	Poor	Poor	---	Very poor.	Very poor.	Poor	Poor	Very poor.
Hu*:											
Hinckley	Poor	Poor	Poor	Poor	Poor	---	Very poor.	Very poor.	Poor	Poor	Very poor.

See footnote at end of table.

TABLE 9.--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	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
Hu*:											
Merrimac	Fair	Fair	Fair	Fair	Fair	---	Very poor.	Very poor.	Fair	Fair	Very poor.
Urban land.											
HvC---- Holyoke	Very poor.	Poor	Fair	Poor	Poor	---	Very poor.	Very poor.	Poor	Poor	Very poor.
Lk---- Limerick	Poor	Fair	Fair	Fair	Fair	---	Good	Good	Fair	Fair	Good.
Ma---- Maybid	Very poor.	Poor	Poor	Poor	Poor	---	Good	Poor	Poor	Poor	Fair.
MeA, MeB, 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.
MoB---- Montauk	Fair	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.
MoC---- Montauk	Fair	Good	Good	Good	Good	---	Very poor.	Very poor.	Good	Good	Very poor.
MsC---- Montauk	Very poor.	Poor	Good	Good	Good	---	Very poor.	Very poor.	Poor	Good	Very poor.
MxB---- Montauk	Very poor.	Very poor.	Good	Good	Good	---	Poor	Very poor.	Poor	Fair	Very poor.
MxC, MxD---- Montauk	Very poor.	Very poor.	Good	Good	Good	---	Very poor.	Very poor.	Poor	Fair	Very poor.
NaC*, NaD*:											
Narragansett----	Very poor.	Very poor.	Good	Good	Good	---	Very poor.	Very poor.	Poor	Fair	Very poor.
Holyoke----	Very poor.	Very poor.	Fair	Poor	Poor	---	Very poor.	Very poor.	Very poor	Poor	Very poor.
Rock outcrop.											
NgA---- Ninigret	Good	Good	Good	Good	Good	---	Poor	Poor	Good	Good	Poor.
NgB---- Ninigret	Fair	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.
PaB---- Paxton	Fair	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.
PaC---- Paxton	Fair	Good	Good	Good	Good	---	Very poor.	Very poor.	Good	Good	Very poor.
PaD---- Paxton	Poor	Fair	Good	Good	Good	---	Very poor.	Very poor.	Fair	Good	Very poor.
PbB---- Paxton	Very poor.	Poor	Good	Good	Good	---	Poor	Very poor.	Poor	Good	Very poor.
PbC, PbD---- Paxton	Very poor.	Poor	Good	Good	Good	---	Very poor.	Very poor.	Poor	Good	Very poor.

See footnote at end of table.

TABLE 9.--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	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
PcB---- Paxton	Very poor.	Very poor.	Good	Good	Good	---	Poor	Very poor.	Poor	Fair	Very poor.
PcC, PcD, PcE---- Paxton	Very poor.	Very poor.	Good	Good	Good	---	Very poor.	Very poor.	Poor	Fair	Very poor.
Pd*:											
Paxton----	Fair	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.
Charlton----	Fair	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.
Urban land.											
Pg*. Pits											
PuA, PuB---- Pollux	Good	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.
PuC---- Pollux	Fair	Good	Good	Good	Good	---	Very poor.	Very poor.	Good	Good	Very poor.
Pv---- Pootatuck	Poor	Fair	Fair	Good	Good	---	Poor	Poor	Fair	Good	Poor.
Qu*. Quarries											
Ra---- Raynham	Fair	Fair	Fair	Fair	Fair	---	Good	Fair	Fair	Fair	Fair.
RdA---- Ridgebury	Poor	Poor	Fair	Fair	Fair	---	Good	Fair	Fair	Fair	Fair.
RdB---- Ridgebury	Poor	Poor	Fair	Fair	Fair	---	Poor	Very poor.	Fair	Fair	Very poor.
ReA---- Ridgebury	Very poor.	Very poor.	Fair	Fair	Fair	---	Good	Fair	Poor	Fair	Fair.
ReB---- Ridgebury	Very poor.	Very poor.	Fair	Fair	Fair	---	Poor	Very poor.	Poor	Fair	Very poor.
Rm---- Rippowam	Poor	Fair	Fair	Fair	Fair	---	Good	Good	Fair	Fair	Good.
Ro*. Rock outcrop											
RoC*, RoE*: Rock outcrop.											
Narragansett----	Very poor.	Very poor.	Good	Good	Good	---	Very poor.	Very poor.	Poor	Fair	Very poor.
Holyoke----	Very poor.	Very poor.	Fair	Poor	Poor	---	Very poor.	Very poor.	Very poor.	Poor	Very poor.
Sa---- Saco	Very poor.	Poor	Poor	Poor	Poor	---	Good	Good	Poor	Poor	Good.
Sb---- Scarboro	Very poor.	Poor	Poor	Poor	Poor	---	Good	Fair	Poor	Poor	Fair.

See footnote at end of table.

TABLE 9.--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	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
Sc---------- Scitico	Poor	Fair	Fair	Fair	Fair	---	Good	Fair	Fair	Fair	Fair.
SgB---------- Scituate	Fair	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.
ShB---------- Scituate	Very poor.	Very poor.	Good	Good	Good	---	Poor	Very poor.	Poor	Fair	Very poor.
ShC---------- Scituate	Very poor.	Very poor.	Good	Good	Good	---	Very poor.	Very poor.	Poor	Fair	Very poor.
SrA---------- Sudbury	Fair	Good	Good	Good	Good	---	Poor	Poor	Good	Good	Poor.
SrB---------- Sudbury	Fair	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.
Su---------- Suncook	Poor	Fair	Fair	Poor	Poor	---	Very poor.	Very poor.	Fair	Poor	Very poor.
Sw---------- Swansea	Very poor.	Poor	Poor	Poor	Poor	---	Good	Good	Poor	Poor	Good.
Ud*. Udorthents											
Wa---------- Walpole	Poor	Fair	Fair	Fair	Fair	---	Good	Good	Fair	Fair	Good.
WeB---------- Wethersfield	Fair	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.
WeC---------- Wethersfield	Fair	Good	Good	Good	Good	---	Very poor.	Very poor.	Good	Good	Very poor.
WfB---------- Wethersfield	Very poor.	Poor	Good	Good	Good	---	Poor	Very poor.	Poor	Good	Very poor.
WfC---------- Wethersfield	Very poor.	Poor	Good	Good	Good	---	Very poor.	Very poor.	Poor	Good	Very poor.
WgB---------- Wethersfield	Very poor.	Very poor.	Good	Good	Good	---	Poor	Very poor.	Poor	Fair	Very poor.
WgC---------- Wethersfield	Very poor.	Very poor.	Good	Good	Good	---	Very poor.	Very poor.	Poor	Fair	Very poor.
WhA---------- Whitman	Very poor.	Poor	Poor	Poor	Poor	---	Good	Fair	Poor	Poor	Fair.
WnA, WnB, WnC, WnD- Windsor	Poor	Poor	Fair	Poor	Poor	---	Very poor.	Very poor.	Poor	Poor	Very poor.
WoA, WoB, WoC------ Windsor	Poor	Fair	Fair	Poor	Poor	---	Poor	Very poor.	Fair	Poor	Very poor.
Wp*: Windsor----------	Very poor.	Poor	Fair	Poor	Poor	---	Very poor.	Very poor.	Poor	Poor	Very poor.
Scitico----------	Poor	Fair	Fair	Fair	Fair	---	Good	Fair	Fair	Fair	Fair.
Amostown----------	Fair	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.

See footnote at end of table.

TABLE 9.--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	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
Ws---------- Winooski	Good	Good	Good	Good	Good	---	Poor	Poor	Good	Good	Poor.
WtA---------- Woodbridge	Fair	Good	Good	Good	Fair	---	Poor	Poor	Good	Good	Poor.
WtB---------- Woodbridge	Fair	Good	Good	Good	Fair	---	Poor	Very poor.	Good	Good	Very poor.
WtC---------- Woodbridge	Fair	Good	Good	Good	Fair	---	Very poor.	Very poor.	Good	Good	Very poor.
WvB---------- Woodbridge	Very poor.	Poor	Good	Good	Fair	---	Poor	Very poor.	Poor	Good	Very poor.
WvC---------- Woodbridge	Very poor.	Poor	Good	Good	Fair	---	Very poor.	Very poor.	Poor	Good	Very poor.
WxB---------- Woodbridge	Very poor.	Very poor.	Good	Good	Fair	---	Poor	Very poor.	Poor	Good	Very poor.
WxC, WxD---------- Woodbridge	Very poor.	Very poor.	Good	Good	Fair	---	Very poor.	Very poor.	Poor	Good	Very poor.

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

TABLE 10.--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]

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
AgA---------- Agawam	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Slight---------	Slight.
AgB---------- Agawam	Severe: cutbanks cave.	Slight---------	Slight---------	Moderate: slope.	Slight---------	Slight.
AgC---------- Agawam	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
AmA---------- Amostown	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: frost action, low strength, wetness.	Moderate: wetness.
AmB---------- Amostown	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: slope, wetness.	Moderate: frost action, low strength, wetness.	Moderate: wetness.
Au*: Amostown---------	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: frost action, low strength, wetness.	Moderate: wetness.
Windsor----------	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Slight---------	Moderate: droughty.
Urban land.						
BaA---------- Belgrade	Severe: wetness, cutbanks cave.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Severe: frost action.	Moderate: wetness.
BaB---------- Belgrade	Severe: wetness, cutbanks cave.	Moderate: wetness.	Severe: wetness.	Moderate: slope, wetness.	Severe: frost action.	Moderate: wetness.
BoA---------- Boxford	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: low strength, frost action.	Moderate: wetness.
BoB---------- Boxford	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, slope, shrink-swell.	Severe: low strength, frost action.	Moderate: wetness.
BoC---------- Boxford	Severe: wetness.	Moderate: wetness, slope.	Severe: wetness.	Severe: slope.	Severe: low strength, frost action.	Moderate: wetness, slope.
CkB---------- Charlton	Slight---------	Slight---------	Slight---------	Moderate: slope.	Slight---------	Slight.
CkC---------- Charlton	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
CmB---------- Charlton	Slight---------	Slight---------	Slight---------	Moderate: slope.	Slight---------	Moderate: large stones.
CmC---------- Charlton	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope, large stones.
CnB---------- Charlton	Slight---------	Slight---------	Slight---------	Moderate: slope.	Slight---------	Moderate: large stones.

See footnote at end of table.

TABLE 10.--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
CnC---------- Charlton	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope, large stones.
CnD---------- Charlton	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
CoE*: Charlton---------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Gloucester-------	Severe: slope, cutbanks cave.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, large stones.
CpC*: Charlton---------	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope, large stones.
Hollis----------	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: depth to rock, thin layer.
CpD*: Charlton---------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Hollis----------	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, depth to rock, thin layer.
CrC*: Charlton---------	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope, large stones.
Rock outcrop.						
Hollis----------	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: depth to rock, thin layer.
CrE*: Charlton---------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Rock outcrop.						
Hollis----------	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, depth to rock, thin layer.
DeA---------- Deerfield	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: frost action, wetness.	Moderate: wetness.
Du*. Dumps						
EsA, EsB---------- Enosburg	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Fm---------- Freetown	Severe: wetness, excess humus.	Severe: wetness, low strength.	Severe: wetness, low strength.	Severe: wetness, low strength.	Severe: wetness, low strength, frost action.	Severe: wetness, excess humus.

See footnote at end of table.

TABLE 10.--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
GfB---------- Gloucester	Severe: cutbanks cave.	Moderate: large stones.	Moderate: large stones.	Moderate: slope, large stones.	Moderate: large stones.	Moderate: small stones, droughty.
GfC---------- Gloucester	Severe: cutbanks cave.	Moderate: slope, large stones.	Moderate: slope, large stones.	Severe: slope.	Moderate: slope, large stones.	Moderate: slope, small stones, droughty.
GhB---------- Gloucester	Severe: cutbanks cave.	Moderate: large stones.	Moderate: large stones.	Moderate: large stones, slope.	Moderate: large stones.	Moderate: small stones, droughty.
GhC---------- Gloucester	Severe: cutbanks cave.	Moderate: large stones, slope.	Moderate: large stones, slope.	Severe: slope.	Moderate: slope, large stones.	Moderate: slope, small stones, droughty.
GxB---------- Gloucester	Severe: cutbanks cave.	Moderate: large stones.	Moderate: large stones.	Moderate: large stones, slope.	Moderate: large stones.	Severe: large stones.
GxC---------- Gloucester	Severe: cutbanks cave.	Moderate: large stones, slope.	Moderate: large stones, slope.	Severe: slope.	Moderate: slope, large stones.	Severe: large stones.
GxD---------- Gloucester	Severe: slope, cutbanks cave.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, large stones.
Ha---------- Hadley	Moderate: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding, frost action.	Moderate: flooding.
Hd*: Hadley----------	Moderate: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding, frost action.	Moderate: flooding.
Winooski---------	Moderate: flooding.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding, frost action.	Moderate: flooding, wetness.
Urban land.						
HfB---------- Haven	Severe: cutbanks cave.	Slight---------	Slight---------	Moderate: slope.	Moderate: frost action.	Slight.
HfC---------- Haven	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: slope.
HgA---------- Hinckley	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Slight---------	Moderate: small stones, droughty.
HgB---------- Hinckley	Severe: cutbanks cave.	Slight---------	Slight---------	Moderate: slope.	Slight---------	Moderate: small stones, droughty.
HgC---------- Hinckley	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: small stones, droughty, slope.
HgD, HgE---------- Hinckley	Severe: slope, cutbanks cave.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.

See footnote at end of table.

TABLE 10.--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
Hu*:						
Hinckley	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Moderate: small stones, droughty.
Merrimac	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Slight.
Urban land.						
HvC: Holyoke	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: thin layer.
Lk: Limerick	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness, frost action.	Severe: flooding, wetness.
Ma: Maybid	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding, low strength, frost action.	Severe: ponding.
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.
MeD: Merrimac	Severe: slope, cutbanks cave.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
MoB: Montauk	Moderate: dense layer, wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness, slope.	Moderate: wetness, frost action.	Slight.
MoC: Montauk	Moderate: dense layer, wetness, slope.	Moderate: wetness, slope.	Moderate: wetness, slope.	Severe: slope.	Moderate: wetness, slope, frost action.	Moderate: slope.
MsC: Montauk	Moderate: dense layer, wetness, slope.	Moderate: wetness, slope.	Moderate: wetness, slope.	Severe: slope.	Moderate: wetness, slope, frost action.	Moderate: small stones, large stones, slope.
MxB: Montauk	Moderate: dense layer, wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness, slope.	Moderate: wetness, frost action.	Moderate: small stones, large stones.
MxC: Montauk	Moderate: dense layer, wetness, slope.	Moderate: wetness, slope.	Moderate: wetness, slope.	Severe: slope.	Moderate: wetness, slope, frost action.	Moderate: small stones, large stones, slope.
MxD: Montauk	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
NaC*: Narragansett	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: slope.

See footnote at end of table.

TABLE 10.--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
NaC*: Holyoke	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: thin layer.
Rock outcrop.						
NaD*: Narragansett	Severe: slope, cutbanks cave.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Holyoke	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.
Rock outcrop.						
NgA--- Ninigret	Severe: wetness, cutbanks cave.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: frost action, wetness.	Moderate: wetness.
NgB--- Ninigret	Severe: wetness, cutbanks cave.	Moderate: wetness.	Severe: wetness.	Moderate: slope, wetness.	Moderate: frost action, wetness.	Moderate: wetness.
PaB--- Paxton	Moderate: dense layer, wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: slope, wetness.	Moderate: frost action, wetness.	Slight.
PaC--- Paxton	Moderate: slope, dense layer, wetness.	Moderate: slope, wetness.	Moderate: slope, wetness.	Severe: slope.	Moderate: slope, frost action, wetness.	Moderate: slope.
PaD--- Paxton	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
PbB--- Paxton	Moderate: dense layer, wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: slope, wetness.	Moderate: frost action, wetness.	Moderate: large stones.
PbC--- Paxton	Moderate: slope, dense layer, wetness.	Moderate: slope, wetness.	Moderate: slope, wetness.	Severe: slope.	Moderate: slope, frost action, wetness.	Moderate: slope, large stones.
PbD--- Paxton	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
PcB--- Paxton	Moderate: dense layer, wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: slope, wetness.	Moderate: frost action, wetness.	Moderate: large stones.
PcC--- Paxton	Moderate: slope, dense layer, wetness.	Moderate: slope, wetness.	Moderate: slope, wetness.	Severe: slope.	Moderate: slope, frost action, wetness.	Moderate: slope, large stones.
PcD, PcE--- Paxton	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Pd*: Paxton	Moderate: dense layer, wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: slope, wetness.	Moderate: frost action, wetness.	Slight.
Charlton	Slight---	Slight---	Slight---	Moderate: slope.	Slight---	Slight.
Urban land.						

See footnote at end of table.

TABLE 10.--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
Pg*. Pits						
PuA---------- Pollux	Slight---------	Slight---------	Slight---------	Slight---------	Moderate: low strength, frost action.	Slight.
PuB---------- Pollux	Slight---------	Slight---------	Slight---------	Moderate: slope.	Moderate: low strength, frost action.	Slight.
PuC---------- Pollux	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope, frost action.	Moderate: slope.
Pv---------- Pootatuck	Severe: cutbanks cave, wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding.	Severe: flooding.
Qu*. Quarries						
Ra---------- Raynham	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: frost action, wetness.	Severe: wetness.
RdA, RdB, ReA, ReB---------- Ridgebury	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness.
Rm---------- Rippowam	Severe: wetness, cutbanks cave.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness, frost action.	Severe: wetness, flooding.
Ro*. Rock outcrop						
RoC*: Rock outcrop.						
Narragansett----- 	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: slope.
Holyoke---------- 	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: thin layer.
RoE*: Rock outcrop.						
Narragansett----- 	Severe: slope, cutbanks cave.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Holyoke---------- 	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.
Sa---------- Saco	Severe: wetness, cutbanks cave.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness, frost action.	Severe: flooding, wetness.
Sb---------- Scarboro	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding, frost action.	Severe: ponding, excess humus.

See footnote at end of table.

TABLE 10.--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
Sc---------- Scitico	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, wetness, frost action.	Severe: wetness.
SgB---------- Scituate	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: slope, wetness.	Moderate: frost action, wetness.	Moderate: wetness.
ShB---------- Scituate	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Moderate: frost action, wetness.	Moderate: small stones, large stones.
ShC---------- Scituate	Severe: wetness.	Moderate: wetness, slope.	Severe: wetness.	Severe: slope.	Moderate: wetness, slope, frost action.	Moderate: slope, small stones, large stones.
SrA---------- Sudbury	Severe: wetness, cutbanks cave.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness, frost action.	Slight.
SrB---------- Sudbury	Severe: wetness, cutbanks cave.	Moderate: wetness.	Severe: wetness.	Moderate: slope, wetness.	Moderate: wetness, frost action.	Slight.
Su---------- Suncook	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding, droughty.
Sw---------- Swansea	Severe: wetness, excess humus, cutbanks cave.	Severe: wetness, low strength.	Severe: wetness.	Severe: wetness, low strength.	Severe: wetness, low strength, frost action.	Severe: wetness, excess humus.
Ud*. Udorthents						
Wa---------- Walpole	Severe: wetness, cutbanks cave.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness.
WeB---------- Wethersfield	Moderate: dense layer, wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness, slope.	Moderate: wetness, frost action.	Slight.
WeC---------- Wethersfield	Moderate: dense layer, slope, wetness.	Moderate: wetness, slope.	Moderate: wetness, slope.	Severe: slope.	Moderate: wetness, slope, frost action.	Moderate: slope.
WfB---------- Wethersfield	Moderate: dense layer, wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: slope, wetness.	Moderate: frost action, wetness.	Moderate: large stones.
WfC---------- Wethersfield	Moderate: slope, dense layer, wetness.	Moderate: slope, wetness.	Moderate: slope, wetness.	Severe: slope.	Moderate: slope, frost action, wetness.	Moderate: slope, large stones.
WgB---------- Wethersfield	Moderate: dense layer, wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: slope, wetness.	Moderate: frost action, wetness.	Moderate: large stones.
WgC---------- Wethersfield	Moderate: slope, dense layer, wetness.	Moderate: slope, wetness.	Moderate: slope, wetness.	Severe: slope.	Moderate: slope, frost action, wetness.	Moderate: slope, large stones.

See footnote at end of table.

TABLE 10.--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
WhA---------- Whitman	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding, frost action.	Severe: ponding.
WnA---------- Windsor	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Slight---------	Moderate: droughty.
WnB---------- Windsor	Severe: cutbanks cave.	Slight---------	Slight---------	Moderate: slope.	Slight---------	Moderate: droughty.
WnC---------- Windsor	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope, droughty.
WnD---------- Windsor	Severe: slope, cutbanks cave.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
WoA---------- Windsor	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Slight---------	Moderate: droughty.
WoB---------- Windsor	Severe: cutbanks cave.	Slight---------	Slight---------	Moderate: slope.	Slight---------	Moderate: droughty.
WoC---------- Windsor	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
Wp*: Windsor----------	Severe: slope, cutbanks cave.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Scitico----------	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, slope.	Severe: low strength, wetness, frost action.	Severe: wetness.
Amostown---------	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Severe: slope, wetness.	Moderate: frost action, low strength, wetness.	Moderate: wetness.
Ws---------- Winooski	Severe: flooding.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding, frost action.	Moderate: flooding, wetness.
WtA---------- Woodbridge	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Severe: frost action.	Moderate: wetness.
WtB---------- Woodbridge	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: slope, wetness.	Severe: frost action.	Moderate: wetness.
WtC---------- Woodbridge	Severe: wetness.	Moderate: slope, wetness.	Severe: wetness.	Severe: slope.	Severe: frost action.	Moderate: slope, wetness.
WvB---------- Woodbridge	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: slope, wetness.	Severe: frost action.	Moderate: large stones, wetness.
WvC---------- Woodbridge	Severe: wetness.	Moderate: slope, wetness.	Severe: wetness.	Severe: slope.	Severe: frost action.	Moderate: slope, large stones, wetness.
WxB---------- Woodbridge	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: slope, wetness.	Severe: frost action.	Moderate: large stones, wetness.

See footnote at end of table.

TABLE 10.--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
WxC---------- Woodbridge	Severe: wetness.	Moderate: slope, wetness.	Severe: wetness.	Severe: slope.	Severe: frost action.	Moderate: slope, large stones, wetness.
WxD---------- Woodbridge	Severe: slope, wetness.	Severe: slope.	Severe: slope, wetness.	Severe: slope.	Severe: slope, frost action.	Severe: slope.

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

TABLE 11.--SANITARY FACILITIES

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," "good," "fair," and other terms. Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
AgA, AgB---------- Agawam	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
AgC---------- Agawam	Severe: poor filter.	Severe: slope, seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
AmA, AmB---------- Amostown	Severe: wetness, percs slowly.	Severe: seepage, wetness.	Severe: wetness.	Severe: wetness, seepage.	Fair: wetness.
Au*: Amostown----------	Severe: wetness, percs slowly.	Severe: seepage, wetness.	Severe: wetness.	Severe: wetness, seepage.	Fair: wetness.
Windsor----------	Severe: percs slowly.	Severe: seepage.	Severe: too sandy.	Severe: seepage.	Poor: seepage.
Urban land.					
BaA, BaB---------- Belgrade	Severe: wetness, percs slowly.	Severe: wetness, seepage.	Severe: wetness, seepage.	Severe: wetness, seepage.	Fair: wetness.
BoA---------- Boxford	Severe: wetness, percs slowly.	Slight----------	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, wetness.
BoB---------- Boxford	Severe: wetness, percs slowly.	Moderate: slope.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, wetness.
BoC---------- Boxford	Severe: wetness, percs slowly.	Severe: slope.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, wetness.
CkB---------- Charlton	Slight----------	Severe: seepage.	Severe: seepage.	Severe: seepage.	Fair: small stones.
CkC---------- Charlton	Moderate: slope.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Fair: slope, small stones.
CmB---------- Charlton	Slight----------	Severe: seepage.	Severe: seepage.	Severe: seepage.	Fair: small stones.
CmC---------- Charlton	Moderate: slope.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Fair: slope, small stones.
CnB---------- Charlton	Slight----------	Severe: seepage.	Severe: seepage.	Severe: seepage.	Fair: small stones.
CnC---------- Charlton	Moderate: slope.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Fair: slope, small stones.
CnD---------- Charlton	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: slope.

See footnote at end of table.

TABLE 11.--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
CoE*:					
Charlton	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: slope.
Gloucester	Severe: slope, poor filter.	Severe: seepage, slope.	Severe: slope, seepage.	Severe: slope, seepage.	Poor: slope, small stones, seepage.
CpC*:					
Charlton	Moderate: slope.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Fair: slope, small stones.
Hollis	Severe: depth to rock.	Severe: slope, depth to rock, seepage.	Severe: depth to rock, seepage.	Severe: seepage, depth to rock.	Poor: thin layer, area reclaim.
CpD*:					
Charlton	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: slope.
Hollis	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, area reclaim.
CrC*:					
Charlton	Moderate: slope.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Fair: slope, small stones.
Rock outcrop.					
Hollis	Severe: depth to rock.	Severe: slope, depth to rock, seepage.	Severe: depth to rock, seepage.	Severe: seepage, depth to rock.	Poor: thin layer, area reclaim.
CrE*:					
Charlton	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: slope.
Rock outcrop.					
Hollis	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, area reclaim.
DeA Deerfield	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: too sandy, seepage.
Du*. Dumps					
EsA, EsB Enosburg	Severe: wetness, percs slowly, poor filter.	Severe: wetness, seepage.	Severe: wetness.	Severe: seepage, wetness.	Poor: wetness.

See footnote at end of table.

TABLE 11.--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
Fm Freetown	Severe: wetness.	Severe: wetness, excess humus, seepage.	Severe: wetness, excess humus, seepage.	Severe: wetness, seepage.	Poor: excess humus, wetness.
GfB Gloucester	Severe: poor filter.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Poor: seepage, small stones.
GfC Gloucester	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Poor: seepage, small stones.
GhB Gloucester	Severe: poor filter.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Poor: small stones, seepage.
GhC Gloucester	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Poor: small stones, seepage.
GxB Gloucester	Severe: poor filter.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Poor: small stones, seepage.
GxC Gloucester	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Poor: small stones, seepage.
GxD Gloucester	Severe: slope, poor filter.	Severe: seepage, slope.	Severe: slope, seepage.	Severe: slope, seepage.	Poor: slope, small stones, seepage.
Ha Hadley	Severe: flooding.	Severe: flooding, seepage.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage.	Good.
Hd*: Hadley	Severe: flooding.	Severe: flooding, seepage.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage.	Good.
Winooski	Severe: flooding, wetness.	Severe: flooding, wetness, seepage.	Severe: flooding, wetness, seepage.	Severe: flooding, wetness, seepage.	Good.
Urban land.					
HfB Haven	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, small stones, too sandy.
HfC Haven	Severe: poor filter.	Severe: slope, seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, small stones, too sandy.
HgA, HgB Hinckley	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: too sandy, seepage, small stones.

See footnote at end of table.

TABLE 11.--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
HgC---------- Hinckley	Severe: poor filter.	Severe: slope, seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: too sandy, seepage, small stones.
HgD, HgE---------- Hinckley	Severe: slope, poor filter.	Severe: slope, seepage.	Severe: slope, seepage, too sandy.	Severe: slope, seepage.	Poor: slope, too sandy, seepage.
Hu*: Hinckley---------- Merrimac---------- Urban land.	Severe: poor filter. Severe: poor filter.	Severe: seepage. Severe: seepage.	Severe: seepage, too sandy. Severe: seepage, too sandy.	Severe: seepage. Severe: seepage.	Poor: too sandy, seepage, small stones. Poor: seepage, too sandy, small stones.
HvC---------- Holyoke	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Poor: thin layer, area reclaim.
Lk---------- Limerick	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
Ma---------- Maybid	Severe: ponding, percs slowly.	Moderate: slope.	Severe: ponding, too clayey.	Severe: ponding.	Poor: ponding, too clayey.
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.
MoB---------- Montauk	Severe: percs slowly.	Moderate: slope.	Slight----------	Severe: seepage.	Poor: seepage.
MoC, MsC---------- Montauk	Severe: percs slowly.	Severe: slope.	Moderate: slope.	Severe: seepage.	Poor: seepage.
MxB---------- Montauk	Severe: percs slowly.	Moderate: slope.	Slight----------	Severe: seepage.	Poor: seepage.
MxC---------- Montauk	Severe: percs slowly.	Severe: slope.	Moderate: slope.	Severe: seepage.	Poor: seepage.
MxD---------- Montauk	Severe: percs slowly, slope.	Severe: slope.	Severe: slope.	Severe: slope, seepage.	Poor: seepage, slope.

See footnote at end of table.

TABLE 11.--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
NaC*:					
Narragansett	Moderate: slope.	Severe: slope, seepage.	Severe: seepage.	Severe: seepage.	Fair: small stones, slope, thin layer.
Holyoke	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Poor: thin layer, area reclaim.
Rock outcrop.					
NaD*:					
Narragansett	Severe: slope.	Severe: slope, seepage.	Severe: seepage, slope.	Severe: slope, seepage.	Poor: slope.
Holyoke	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Poor: slope, thin layer, area reclaim.
Rock outcrop.					
NgA, NgB Ninigret	Severe: wetness, poor filter.	Severe: wetness, seepage.	Severe: wetness, seepage, too sandy.	Severe: wetness, seepage.	Poor: seepage, too sandy, small stones.
PaB Paxton	Severe: percs slowly.	Moderate: slope.	Moderate: wetness.	Moderate: wetness.	Fair: small stones, wetness.
PaC Paxton	Severe: percs slowly.	Severe: slope.	Moderate: wetness, slope.	Moderate: wetness, slope.	Fair: slope, small stones, wetness.
PaD Paxton	Severe: slope, percs slowly.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
PbB Paxton	Severe: percs slowly.	Moderate: slope.	Moderate: wetness.	Moderate: wetness.	Fair: small stones, wetness.
PbC Paxton	Severe: percs slowly.	Severe: slope.	Moderate: wetness, slope.	Moderate: wetness, slope.	Fair: slope, small stones, wetness.
PbD Paxton	Severe: slope, percs slowly.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
PcB Paxton	Severe: percs slowly.	Moderate: slope.	Moderate: wetness.	Moderate: wetness.	Fair: small stones, wetness.
PcC Paxton	Severe: percs slowly.	Severe: slope.	Moderate: wetness, slope.	Moderate: wetness, slope.	Fair: slope, small stones, wetness.
PcD, PcE Paxton	Severe: slope, percs slowly.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.

See footnote at end of table.

TABLE 11.--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
Pd*:					
Paxton	Severe: percs slowly.	Moderate: slope.	Moderate: wetness.	Moderate: wetness.	Fair: small stones, wetness.
Charlton	Slight	Severe: seepage.	Severe: seepage.	Severe: seepage.	Fair: small stones.
Urban land.					
Pg*. Pits					
PuA, PuB Pollux	Severe: percs slowly.	Severe: seepage.	Slight	Severe: seepage.	Good.
PuC Pollux	Severe: percs slowly.	Severe: slope, seepage.	Moderate: slope.	Severe: seepage.	Fair: slope.
Pv Pootatuck	Severe: flooding, wetness, poor filter.	Severe: seepage, wetness, flooding.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Poor: too sandy, seepage, thin layer.
Qu*. Quarries					
Ra Raynham	Severe: percs slowly, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
RdA Ridgebury	Severe: percs slowly, wetness.	Slight	Severe: wetness.	Severe: wetness.	Poor: wetness.
RdB Ridgebury	Severe: percs slowly, wetness.	Moderate: slope.	Severe: wetness.	Severe: wetness.	Poor: wetness.
ReA Ridgebury	Severe: percs slowly, wetness.	Slight	Severe: wetness.	Severe: wetness.	Poor: wetness.
ReB Ridgebury	Severe: percs slowly, wetness.	Moderate: slope.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Rm Rippowam	Severe: flooding, wetness, poor filter.	Severe: wetness, flooding, seepage.	Severe: wetness, flooding, seepage.	Severe: wetness, flooding, seepage.	Poor: wetness, too sandy, seepage.
Ro*. Rock outcrop					
RoC*: Rock outcrop.					
Narragansett	Moderate: slope.	Severe: slope, seepage.	Severe: seepage.	Severe: seepage.	Fair: small stones, slope, thin layer.
Holyoke	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Poor: thin layer, area reclaim.

See footnote at end of table.

TABLE 11.--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
RoE*: Rock outcrop.					
Narragansett	Severe: slope.	Severe: slope, seepage.	Severe: slope, seepage.	Severe: slope, seepage.	Poor: slope.
Holyoke	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Poor: slope, thin layer, area reclaim.
Sa Saco	Severe: flooding, wetness, poor filter.	Severe: flooding, wetness, seepage.	Severe: flooding, wetness, seepage.	Severe: flooding, wetness.	Poor: wetness.
Sb Scarboro	Severe: ponding, poor filter.	Severe: seepage, excess humus, ponding.	Severe: seepage, ponding, too sandy.	Severe: seepage, ponding.	Poor: seepage, too sandy, ponding.
Sc Scitico	Severe: wetness, percs slowly.	Slight	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
SgB, ShB Scituate	Severe: percs slowly, wetness.	Severe: seepage.	Severe: wetness.	Severe: seepage.	Fair: small stones, wetness.
ShC Scituate	Severe: percs slowly, wetness.	Severe: slope, seepage.	Severe: wetness.	Severe: seepage.	Fair: small stones, wetness.
SrA, SrB Sudbury	Severe: wetness, poor filter.	Severe: wetness, seepage.	Severe: wetness, seepage, too sandy.	Severe: wetness, seepage.	Poor: seepage, too sandy, small stones.
Su Suncook	Severe: flooding, poor filter.	Severe: flooding, seepage.	Severe: flooding, seepage, too sandy.	Severe: seepage, flooding.	Poor: seepage, too sandy.
Sw Swansea	Severe: wetness, poor filter.	Severe: wetness, excess humus, seepage.	Severe: wetness, too sandy, seepage.	Severe: wetness, seepage.	Poor: wetness, excess humus, seepage.
Ud*. Udorthents					
Wa Walpole	Severe: wetness, poor filter.	Severe: wetness, seepage.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: wetness, seepage, too sandy.
WeB Wethersfield	Severe: percs slowly.	Moderate: slope.	Moderate: wetness.	Moderate: wetness.	Fair: small stones, wetness.
WeC Wethersfield	Severe: percs slowly.	Severe: slope.	Moderate: wetness, slope.	Moderate: wetness, slope.	Fair: small stones, slope, wetness.

See footnote at end of table.

TABLE 11.--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
WfB---------- Wethersfield	Severe: percs slowly.	Moderate: slope.	Moderate: wetness.	Moderate: wetness.	Fair: small stones.
WfC---------- Wethersfield	Severe: percs slowly.	Severe: slope.	Moderate: slope, wetness.	Moderate: wetness, slope.	Moderate: slope, small stones.
WgB---------- Wethersfield	Severe: percs slowly.	Moderate: slope.	Moderate: wetness.	Moderate: wetness.	Fair: small stones.
WgC---------- Wethersfield	Severe: percs slowly.	Severe: slope.	Moderate: slope, wetness.	Moderate: wetness, slope.	Moderate: slope, small stones.
WhA---------- Whitman	Severe: percs slowly, ponding.	Slight----------	Severe: ponding.	Severe: ponding.	Poor: ponding.
WnA, WnB---------- Windsor	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: too sandy, seepage.
WnC---------- Windsor	Severe: poor filter.	Severe: slope, seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: too sandy, seepage.
WnD---------- Windsor	Severe: slope, poor filter.	Severe: slope, seepage.	Severe: slope, seepage, too sandy.	Severe: slope, seepage.	Poor: slope, too sandy, seepage.
WoA, WoB---------- Windsor	Severe: percs slowly.	Severe: seepage.	Severe: too sandy.	Severe: seepage.	Poor: seepage.
WoC---------- Windsor	Severe: percs slowly.	Severe: seepage, slope.	Severe: too sandy.	Severe: seepage.	Poor: seepage.
Wp*:					
Windsor----------	Severe: slope, poor filter.	Severe: slope, seepage.	Severe: slope, seepage, too sandy.	Severe: slope, seepage.	Poor: slope, too sandy, seepage.
Scitico----------	Severe: wetness, percs slowly.	Slight----------	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
Amostown----------	Severe: wetness, percs slowly.	Severe: seepage, wetness.	Severe: wetness.	Severe: wetness, seepage.	Fair: wetness.
Ws---------- Winooski	Severe: flooding, wetness.	Severe: flooding, wetness, seepage.	Severe: flooding, wetness, seepage.	Severe: flooding, wetness, seepage.	Good.
WtA---------- Woodbridge	Severe: percs slowly, wetness.	Slight----------	Severe: wetness.	Moderate: wetness.	Fair: small stones, wetness.
WtB---------- Woodbridge	Severe: percs slowly, wetness.	Moderate: slope.	Severe: wetness.	Moderate: wetness.	Fair: small stones, wetness.

See footnote at end of table.

TABLE 11.--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
WtC---------- Woodbridge	Severe: percs slowly, wetness.	Severe: slope.	Severe: wetness.	Moderate: slope, wetness.	Fair: slope, small stones, wetness.
WvB---------- Woodbridge	Severe: percs slowly, wetness.	Moderate: slope.	Severe: wetness.	Moderate: wetness.	Fair: small stones.
WvC---------- Woodbridge	Severe: percs slowly, wetness.	Severe: slope.	Severe: wetness.	Moderate: slope, wetness.	Fair: slope, small stones.
WxB---------- Woodbridge	Severe: percs slowly, wetness.	Moderate: slope.	Severe: wetness.	Moderate: wetness.	Fair: small stones.
WxC---------- Woodbridge	Severe: percs slowly, wetness.	Severe: slope.	Severe: wetness.	Moderate: slope, wetness.	Fair: slope, small stones.
WxD---------- Woodbridge	Severe: slope, percs slowly, wetness.	Severe: slope.	Severe: slope, wetness.	Severe: slope.	Poor: slope.

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

TABLE 12.--CONSTRUCTION MATERIALS

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," "poor," "probable," and "improbable." Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
AgA, AgB, AgC--------- Agawam	Good----------	Probable----------	Probable----------	Poor: too sandy, area reclaim.
AmA, AmB--------- Amostown	Fair: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
Au*: Amostown----------	Fair: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
Windsor----------	Good----------	Probable----------	Improbable: excess fines.	Poor: too sandy.
Urban land.				
BaA, BaB--------- Belgrade	Fair: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
BoA, BoB, BoC--------- Boxford	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
CkB---------- Charlton	Good----------	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
CkC---------- Charlton	Good----------	Improbable: excess fines.	Improbable: excess fines.	Fair: slope, small stones.
CmB, CmC, CnB, CnC---- Charlton	Good----------	Improbable: excess fines.	Improbable: excess fines.	Poor: large stones.
CnD---------- Charlton	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope, large stones.
CoE*: Charlton----------	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope, large stones.
Gloucester----------	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope, small stones, area reclaim.
CpC*: Charlton----------	Good----------	Improbable: excess fines.	Improbable: excess fines.	Poor: large stones.
Hollis----------	Poor: thin layer, area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: large stones, area reclaim.
CpD*: Charlton----------	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope, large stones.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
CpD*:				
Hollis	Poor: thin layer, area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope, large stones, area reclaim.
CrC*:				
Charlton	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: large stones.
Rock outcrop.				
Hollis	Poor: thin layer, area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: large stones, area reclaim.
CrE*:				
Charlton	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope, large stones.
Rock outcrop.				
Hollis	Poor: slope, thin layer, area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope, large stones, area reclaim.
DeA	Fair: wetness.	Probable	Improbable: excess fines.	Poor: too sandy, thin layer.
Deerfield				
Du*.				
Dumps				
EsA, EsB	Poor: wetness, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy, wetness.
Enosburg				
Fm	Poor: wetness, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess humus, wetness.
Freetown				
GfB, GfC, GhB, GhC, GxB, GxC	Fair: large stones.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
Gloucester				
GxD	Fair: slope, large stones.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope, small stones, area reclaim.
Gloucester				
Ha	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
Hadley				
Hd*:				
Hadley	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
Winooski	Fair: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
Urban land.				
HfB, HfC	Good	Probable	Probable	Poor: too sandy, area reclaim.
Haven				

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
HgA, HgB, HgC--------- Hinckley	Good----------	Probable----------	Probable----------	Poor: too sandy, area reclaim, small stones.
HgD--------- Hinckley	Fair: slope.	Probable----------	Probable----------	Poor: slope, too sandy, small stones.
HgE--------- Hinckley	Poor: slope.	Probable----------	Probable----------	Poor: slope, too sandy, small stones.
Hu*: Hinckley----------	Good----------	Probable----------	Probable----------	Poor: too sandy, area reclaim, small stones.
Merrimac----------	Good----------	Probable----------	Probable----------	Poor: small stones, area reclaim.
Urban land.				
HvC--------- Holyoke	Poor: thin layer, area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: large stones, area reclaim.
Lk--------- Limerick	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Ma--------- Maybid	Poor: wetness, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
MeA, MeB, MeC--------- Merrimac	Good----------	Probable----------	Probable----------	Poor: small stones, area reclaim.
MeD--------- Merrimac	Fair: slope.	Probable----------	Probable----------	Poor: slope, small stones, area reclaim.
MoB, MoC, MsC, MxB, MxC--------- Montauk	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
MxD--------- Montauk	Fair: wetness, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope, small stones.
NaC*: Narragansett---------	Good----------	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, area reclaim, slope.
Holyoke----------	Poor: thin layer, area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: large stones, area reclaim.
Rock outcrop.				

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
NaD*:				
Narragansett	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Holyoke	Poor: thin layer, area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope, large stones, area reclaim.
Rock outcrop.				
NgA, NgB Ninigret	Fair: wetness.	Probable	Probable	Poor: area reclaim.
PaB Paxton	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, area reclaim.
PaC Paxton	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: slope, small stones, area reclaim.
PaD Paxton	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
PbB, PbC Paxton	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: large stones.
PbD Paxton	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope, large stones.
PcB, PcC Paxton	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: large stones.
PcD Paxton	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope, large stones.
PcE Paxton	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope, large stones.
Pd*:				
Paxton	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, area reclaim.
Charlton	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
Urban land.				
Pg*. Pits				
PuA, PuB Pollux	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
PuC Pollux	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope, small stones.
Pv Pootatuck	Fair: wetness.	Probable	Improbable: too sandy.	Fair: thin layer.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
Qu*. Quarries				
Ra---------- Raynham	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
RdA, RdB, ReA, ReB---- Ridgebury	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness, small stones, area reclaim.
Rm---------- Rippowam	Poor: wetness.	Probable----------	Improbable: too sandy.	Poor: wetness.
Ro*. Rock outcrop				
RoC*: Rock outcrop.				
Narragansett----------	Good----------	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, area reclaim, slope.
Holyoke----------	Poor: thin layer, area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: large stones, area reclaim.
RoE*: Rock outcrop.				
Narragansett----------	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Holyoke----------	Poor: slope, thin layer, area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope, large stones, area reclaim.
Sa---------- Saco	Poor: wetness.	Probable----------	Improbable: too sandy.	Poor: wetness.
Sb---------- Scarboro	Poor: wetness.	Probable----------	Improbable: too sandy.	Poor: too sandy, ponding.
Sc---------- Scitico	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness, too clayey.
SgB---------- Scituate	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, area reclaim.
ShB, ShC---------- Scituate	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
SrA, SrB---------- Sudbury	Fair: wetness.	Probable----------	Probable----------	Poor: small stones, too sandy, area reclaim.
Su---------- Suncook	Good----------	Probable----------	Improbable: too sandy.	Poor: too sandy.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
Sw---------- Swansea	Poor: wetness.	Probable----------	Improbable: excess fines.	Poor: wetness, excess humus.
Ud*. Udorthents				
Wa---------- Walpole	Poor: wetness.	Probable----------	Probable----------	Poor: wetness, small stones.
WeB---------- Wethersfield	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, area reclaim.
WeC---------- Wethersfield	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope, small stones, area reclaim.
WfB---------- Wethersfield	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, area reclaim.
WfC---------- Wethersfield	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, area reclaim, slope.
WgB---------- Wethersfield	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, area reclaim.
WgC---------- Wethersfield	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, area reclaim, slope.
WhA---------- Whitman	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness, small stones, area reclaim.
WnA, WnB, WnC--------- Windsor	Good----------	Probable----------	Improbable: excess fines.	Poor: too sandy.
WnD---------- Windsor	Fair: slope.	Probable----------	Improbable: excess fines.	Poor: slope, too sandy.
WoA, WoB, WoC--------- Windsor	Good----------	Probable----------	Improbable: excess fines.	Poor: too sandy.
Wp*: Windsor----------	Poor: slope.	Probable----------	Improbable: excess fines.	Poor: slope, too sandy.
Scitico----------	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness, too clayey.
Amostown----------	Fair: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
Ws---------- Winooski	Fair: wetness, low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
WtA, WtB---------- Woodbridge	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, area reclaim.
WtC---------- Woodbridge	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope, small stones, area reclaim.
WvB, WvC, WxB, WxC---- Woodbridge	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: large stones.
WxD---------- Woodbridge	Fair: slope, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope, large stones.

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

TABLE 13.--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]

Soil name and map symbol	Limitations for--		Features affecting--			
	Pond reservoir areas	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
AgA---------- Agawam	Severe: seepage.	Severe: no water.	Deep to water	Favorable------	Too sandy------	Favorable.
AgB---------- Agawam	Severe: seepage.	Severe: no water.	Deep to water	Slope----------	Too sandy------	Favorable.
AgC---------- Agawam	Severe: slope, seepage.	Severe: no water.	Deep to water	Slope----------	Slope, too sandy.	Slope.
AmA---------- Amostown	Slight---------	Severe: slow refill.	Favorable------	Wetness, percs slowly.	Erodes easily, wetness, percs slowly.	Erodes easily, percs slowly.
AmB---------- Amostown	Moderate: slope.	Severe: slow refill.	Slope----------	Wetness, percs slowly, slope.	Erodes easily, wetness, percs slowly.	Erodes easily, percs slowly.
Au*:						
Amostown---------	Slight---------	Severe: slow refill.	Favorable------	Wetness, percs slowly.	Erodes easily, wetness, percs slowly.	Erodes easily, percs slowly.
Windsor----------	Severe: seepage.	Severe: no water.	Deep to water	Droughty, fast intake, percs slowly.	Too sandy------	Droughty.
Urban land.						
BaA---------- Belgrade	Severe: seepage.	Severe: cutbanks cave, slow refill.	Percs slowly, frost action.	Wetness, percs slowly.	Erodes easily, wetness.	Erodes easily, percs slowly.
BaB---------- Belgrade	Severe: seepage.	Severe: cutbanks cave, slow refill.	Percs slowly, frost action, slope.	Wetness, percs slowly, slope.	Erodes easily, wetness.	Erodes easily, percs slowly.
BoA---------- Boxford	Slight---------	Severe: slow refill.	Percs slowly, frost action.	Wetness, percs slowly.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.
BoB---------- Boxford	Moderate: slope.	Severe: slow refill.	Percs slowly, frost action, slope.	Wetness, percs slowly, slope.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.
BoC---------- Boxford	Severe: slope.	Severe: slow refill.	Percs slowly, frost action, slope.	Wetness, percs slowly, slope.	Slope, erodes easily, wetness.	Wetness, slope, erodes easily.
CkB---------- Charlton	Severe: seepage.	Severe: no water.	Deep to water	Slope----------	Favorable------	Favorable.
CkC---------- Charlton	Severe: slope, seepage.	Severe: no water.	Deep to water	Slope----------	Slope----------	Slope.
CmB---------- Charlton	Severe: seepage.	Severe: no water.	Deep to water	Slope, large stones.	Large stones---	Large stones.
CmC---------- Charlton	Severe: slope, seepage.	Severe: no water.	Deep to water	Slope, large stones.	Slope, large stones.	Slope, large stones.
CnB---------- Charlton	Severe: seepage.	Severe: no water.	Deep to water	Slope, large stones.	Large stones---	Large stones.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--			
	Pond reservoir areas	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
CnC, CnD---------- Charlton	Severe: slope, seepage.	Severe: no water.	Deep to water	Slope, large stones.	Slope, large stones.	Slope, large stones.
CoE*: Charlton---------	Severe: slope, seepage.	Severe: no water.	Deep to water	Slope, large stones.	Slope, large stones.	Slope, large stones.
Gloucester-------	Severe: slope, seepage.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, too sandy.	Slope, large stones, droughty.
CpC*: Charlton---------	Severe: slope, seepage.	Severe: no water.	Deep to water	Slope, large stones.	Slope, large stones.	Slope, large stones.
Hollis-----------	Severe: depth to rock, slope.	Severe: no water.	Deep to water	Slope, droughty, depth to rock.	Slope, large stones, depth to rock.	Slope, large stones, depth to rock.
CpD*: Charlton---------	Severe: slope, seepage.	Severe: no water.	Deep to water	Slope, large stones.	Slope, large stones.	Slope, large stones.
Hollis-----------	Severe: slope, depth to rock.	Severe: no water.	Deep to water	Slope, droughty, depth to rock.	Slope, large stones, depth to rock.	Slope, large stones, depth to rock.
CrC*: Charlton---------	Severe: slope, seepage.	Severe: no water.	Deep to water	Slope, large stones.	Slope, large stones.	Slope, large stones.
Rock outcrop.						
Hollis-----------	Severe: depth to rock, slope.	Severe: no water.	Deep to water	Slope, droughty, depth to rock.	Slope, large stones, depth to rock.	Slope, large stones, depth to rock.
CrE*: Charlton---------	Severe: slope, seepage.	Severe: no water.	Deep to water	Slope, large stones.	Slope, large stones.	Slope, large stones.
Rock outcrop.						
Hollis-----------	Severe: slope, depth to rock.	Severe: no water.	Deep to water	Slope, droughty, depth to rock.	Slope, large stones, depth to rock.	Slope, large stones, depth to rock.
DeA---------- Deerfield	Severe: seepage.	Severe: cutbanks cave.	Cutbanks cave	Fast intake, wetness, droughty.	Wetness, too sandy.	Droughty.
Du*. Dumps						
EsA---------- Enosburg	Severe: seepage.	Severe: slow refill, cutbanks cave.	Cutbanks cave	Wetness--------	Erodes easily, wetness.	Wetness, erodes easily.
EsB---------- Enosburg	Severe: seepage.	Severe: slow refill, cutbanks cave.	Slope, cutbanks cave.	Wetness, slope.	Erodes easily, wetness.	Wetness, erodes easily.
Fm---------- Freetown	Severe: seepage.	Slight---------	Frost action---	Wetness--------	Wetness--------	Wetness.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--			
	Pond reservoir areas	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
GfB---------- Gloucester	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, large stones.	Large stones, too sandy.	Large stones, droughty.
GfC---------- Gloucester	Severe: slope, seepage.	Severe: no water.	Deep to water	Slope, droughty, large stones.	Slope, large stones, too sandy.	Slope, large stones, droughty.
GhB---------- Gloucester	Severe: seepage.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Large stones, too sandy.	Large stones, droughty.
GhC---------- Gloucester	Severe: slope, seepage.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, too sandy.	Slope, large stones, droughty.
GxB---------- Gloucester	Severe: seepage.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Large stones, too sandy.	Large stones, droughty.
GxC, GxD---------- Gloucester	Severe: slope, seepage.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, too sandy.	Slope, large stones, droughty.
Ha---------- Hadley	Severe: seepage.	Moderate: deep to water.	Deep to water	Flooding, erodes easily.	Erodes easily	Erodes easily.
Hd*:						
Hadley----------	Severe: seepage.	Moderate: deep to water.	Deep to water	Flooding, erodes easily.	Erodes easily	Erodes easily.
Winooski---------	Severe: seepage.	Moderate: deep to water.	Frost action---	Wetness, erodes easily, flooding.	Erodes easily, wetness.	Erodes easily.
Urban land.						
HfB---------- Haven	Severe: seepage.	Severe: no water.	Deep to water	Slope, erodes easily.	Erodes easily, too sandy.	Erodes easily.
HfC---------- Haven	Severe: seepage, slope.	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily, too sandy.	Slope, erodes easily.
HgA---------- Hinckley	Severe: seepage.	Severe: no water.	Deep to water	Droughty, fast intake.	Large stones, too sandy.	Large stones, droughty.
HgB---------- Hinckley	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Large stones, too sandy.	Large stones, droughty.
HgC, HgD, HgE----- Hinckley	Severe: slope, seepage.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Slope, large stones, too sandy.	Large stones, droughty, slope.
Hu*:						
Hinckley---------	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Large stones, too sandy.	Large stones, droughty.
Merrimac---------	Severe: seepage.	Severe: no water.	Deep to water	Slope----------	Too sandy------	Favorable.
Urban land.						
HvC---------- Holyoke	Severe: slope, depth to rock.	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, erodes easily, depth to rock.	Slope, erodes easily, depth to rock.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--			
	Pond reservoir areas	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
Lk---------- Limerick	Moderate: seepage.	Moderate: slow refill.	Flooding, frost action.	Wetness, flooding, erodes easily.	Wetness, erodes easily.	Wetness, erodes easily.
Ma---------- Maybid	Slight---------	Severe: slow refill.	Percs slowly, ponding, frost action.	Ponding, percs slowly.	Ponding, erodes easily, percs slowly.	Wetness, percs slowly, erodes easily.
MeA---------- Merrimac	Severe: seepage.	Severe: no water.	Deep to water	Favorable------	Too sandy------	Favorable.
MeB---------- Merrimac	Severe: seepage.	Severe: no water.	Deep to water	Slope----------	Too sandy------	Favorable.
MeC, MeD---------- Merrimac	Severe: slope, seepage.	Severe: no water.	Deep to water	Slope----------	Slope, too sandy.	Slope.
MoB---------- Montauk	Severe: seepage.	Severe: no water.	Deep to water	Percs slowly, rooting depth, slope.	Rooting depth, percs slowly.	Rooting depth, percs slowly.
MoC, MsC---------- Montauk	Severe: seepage, slope.	Severe: no water.	Deep to water	Percs slowly, rooting depth, slope.	Slope, rooting depth, percs slowly.	Slope, rooting depth, percs slowly.
MxB---------- Montauk	Severe: seepage.	Severe: no water.	Deep to water	Percs slowly, rooting depth, slope.	Rooting depth, percs slowly.	Rooting depth, percs slowly.
MxC, MxD---------- Montauk	Severe: seepage, slope.	Severe: no water.	Deep to water	Percs slowly, rooting depth, slope.	Slope, rooting depth, percs slowly.	Slope, rooting depth, percs slowly.
NaC*, NaD*: Narragansett-----	Severe: seepage, slope.	Severe: no water.	Deep to water	Slope----------	Slope, too sandy.	Slope.
Holyoke----------	Severe: slope, depth to rock.	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, erodes easily, depth to rock.	Slope, erodes easily, depth to rock.
Rock outcrop.						
NgA---------- Ninigret	Severe: seepage.	Severe: cutbanks cave.	Cutbanks cave	Wetness--------	Wetness, too sandy.	Favorable.
NgB---------- Ninigret	Severe: seepage.	Severe: cutbanks cave.	Slope, cutbanks cave.	Slope, wetness.	Wetness, too sandy.	Favorable.
PaB---------- Paxton	Moderate: slope.	Severe: no water.	Deep to water	Slope, percs slowly, rooting depth.	Percs slowly, rooting depth.	Percs slowly, rooting depth.
PaC, PaD---------- Paxton	Severe: slope.	Severe: no water.	Deep to water	Slope, percs slowly, rooting depth.	Slope, percs slowly, rooting depth.	Slope, percs slowly, rooting depth.
PbB---------- Paxton	Moderate: slope.	Severe: no water.	Deep to water	Slope, large stones, percs slowly.	Rooting depth, percs slowly.	Rooting depth, percs slowly.
PbC, PbD---------- Paxton	Severe: slope.	Severe: no water.	Deep to water	Slope, large stones, percs slowly.	Slope, rooting depth, percs slowly.	Slope, rooting depth, percs slowly.
PcB---------- Paxton	Moderate: slope.	Severe: no water.	Deep to water	Slope, large stones, percs slowly.	Rooting depth, percs slowly.	Rooting depth, percs slowly.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--			
	Pond reservoir areas	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
PcC, PcD, PcE----- Paxton	Severe: slope.	Severe: no water.	Deep to water	Slope, large stones, percs slowly.	Slope, rooting depth, percs slowly.	Slope, rooting depth, percs slowly.
Pd*:						
Paxton----------	Moderate: slope.	Severe: no water.	Deep to water	Slope, percs slowly, rooting depth.	Percs slowly, rooting depth.	Percs slowly, rooting depth.
Charlton---------	Severe: seepage.	Severe: no water.	Deep to water	Slope----------	Favorable------	Favorable.
Urban land.						
Pg*. Pits						
PuA---------- Pollux	Slight---------	Severe: no water.	Deep to water	Percs slowly---	Erodes easily, percs slowly.	Erodes easily, percs slowly.
PuB---------- Pollux	Moderate: slope.	Severe: no water.	Deep to water	Percs slowly, slope.	Erodes easily, percs slowly.	Erodes easily, percs slowly.
PuC---------- Pollux	Severe: slope.	Severe: no water.	Deep to water	Percs slowly, slope.	Slope, erodes easily, percs slowly.	Slope, erodes easily, percs slowly.
Pv---------- Pootatuck	Severe: seepage.	Severe: cutbanks cave.	Flooding, cutbanks cave.	Wetness, flooding.	Wetness, too sandy.	Favorable.
Qu*. Quarries						
Ra---------- Raynham	Slight---------	Severe: slow refill.	Percs slowly, frost action.	Wetness, percs slowly, erodes easily.	Wetness, percs slowly, erodes easily.	Wetness, percs slowly, erodes easily.
RdA---------- Ridgebury	Slight---------	Severe: no water.	Percs slowly, frost action.	Wetness, percs slowly, rooting depth.	Wetness, percs slowly, rooting depth.	Wetness, percs slowly, rooting depth.
RdB---------- Ridgebury	Moderate: slope.	Severe: no water.	Slope, percs slowly, frost action.	Slope, wetness, percs slowly.	Wetness, percs slowly, rooting depth.	Wetness, percs slowly, rooting depth.
ReA---------- Ridgebury	Slight---------	Severe: no water.	Percs slowly, frost action.	Wetness, percs slowly, rooting depth.	Wetness, percs slowly, rooting depth.	Wetness, percs slowly, rooting depth.
ReB---------- Ridgebury	Moderate: slope.	Severe: no water.	Slope, percs slowly, frost action.	Slope, wetness, percs slowly.	Wetness, percs slowly, rooting depth.	Wetness, percs slowly, rooting depth.
Rm---------- Rippowam	Severe: seepage.	Severe: cutbanks cave.	Flooding, cutbanks cave, frost action.	Wetness, flooding.	Wetness, too sandy.	Wetness.
Ro*. Rock outcrop						
RoC*, RoE*: Rock outcrop.						
Narragansett-----	Severe: seepage, slope.	Severe: no water.	Deep to water	Slope----------	Slope, too sandy.	Slope.
Holyoke----------	Severe: slope, depth to rock.	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, erodes easily, depth to rock.	Slope, erodes easily, depth to rock.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--			
	Pond reservoir areas	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
Sa---- Saco	Moderate: seepage.	Severe: cutbanks cave.	Flooding, frost action, cutbanks cave.	Wetness, flooding.	Wetness----	Wetness.
Sb---- Scarboro	Severe: seepage.	Severe: cutbanks cave.	Cutbanks cave, frost action.	Ponding, fast intake, droughty.	Ponding, too sandy.	Wetness, droughty.
Sc---- Scitico	Slight----	Severe: slow refill.	Percs slowly, frost action.	Wetness, percs slowly, erodes easily.	Wetness, percs slowly, erodes easily.	Wetness, percs slowly, erodes easily.
SgB---- Scituate	Severe: seepage.	Severe: no water.	Percs slowly, slope.	Wetness, percs slowly, slope.	Wetness, rooting depth, percs slowly.	Rooting depth, percs slowly.
ShB---- Scituate	Severe: seepage.	Severe: no water.	Percs slowly, slope.	Percs slowly, wetness, slope.	Wetness, rooting depth, percs slowly.	Rooting depth, percs slowly.
ShC---- Scituate	Severe: seepage, slope.	Severe: no water.	Percs slowly, slope.	Percs slowly, wetness, slope.	Slope, wetness, percs slowly.	Slope, rooting depth, percs slowly.
SrA---- Sudbury	Severe: seepage.	Severe: cutbanks cave.	Cutbanks cave	Wetness----	Too sandy, wetness.	Favorable.
SrB---- Sudbury	Severe: seepage.	Severe: cutbanks cave.	Slope, cutbanks cave.	Wetness, slope.	Too sandy, wetness.	Favorable.
Su---- Suncook	Severe: seepage.	Severe: no water.	Deep to water	Droughty, fast intake, flooding.	Too sandy----	Too sandy.
Sw---- Swansea	Severe: seepage.	Severe: cutbanks cave.	Cutbanks cave, frost action.	Wetness----	Wetness, too sandy.	Wetness.
Ud*. Udorthents						
Wa---- Walpole	Severe: seepage.	Severe: cutbanks cave.	Frost action, cutbanks cave.	Wetness----	Wetness, too sandy.	Wetness.
WeB---- Wethersfield	Moderate: slope.	Severe: no water.	Deep to water	Percs slowly, rooting depth, slope.	Percs slowly, rooting depth.	Percs slowly, rooting depth.
WeC---- Wethersfield	Severe: slope.	Severe: no water.	Deep to water	Percs slowly, rooting depth, slope.	Slope, percs slowly, rooting depth.	Slope, percs slowly, rooting depth.
WfB---- Wethersfield	Moderate: slope.	Severe: no water.	Deep to water	Percs slowly, rooting depth, slope.	Rooting depth, percs slowly.	Percs slowly, rooting depth.
WfC---- Wethersfield	Severe: slope.	Severe: no water.	Deep to water	Percs slowly, rooting depth, slope.	Slope, rooting depth, percs slowly.	Percs slowly, slope, rooting depth.
WgB---- Wethersfield	Moderate: slope.	Severe: no water.	Deep to water	Percs slowly, rooting depth, slope.	Rooting depth, percs slowly.	Percs slowly, rooting depth.
WgC---- Wethersfield	Severe: slope.	Severe: no water.	Deep to water	Percs slowly, rooting depth, slope.	Slope, rooting depth, percs slowly.	Percs slowly, slope, rooting depth.
WhA---- Whitman	Slight----	Severe: slow refill.	Percs slowly, frost action.	Ponding, percs slowly, rooting depth.	Wetness, percs slowly, rooting depth.	Wetness, percs slowly, rooting depth.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--			
	Pond reservoir areas	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
WnA---------- Windsor	Severe: seepage.	Severe: no water.	Deep to water	Droughty, fast intake.	Too sandy------	Droughty.
WnB---------- Windsor	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Too sandy------	Droughty.
WnC, WnD---------- Windsor	Severe: slope, seepage.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Slope, too sandy.	Slope, droughty.
WoA---------- Windsor	Severe: seepage.	Severe: no water.	Deep to water	Droughty, fast intake, percs slowly.	Too sandy------	Droughty.
WoB---------- Windsor	Severe: seepage.	Severe: no water.	Deep to water	Droughty, fast intake, percs slowly.	Too sandy------	Droughty.
WoC---------- Windsor	Severe: seepage.	Severe: no water.	Deep to water	Droughty, fast intake, percs slowly.	Slope, too sandy.	Slope, droughty.
Wp*: Windsor----------	Severe: slope, seepage.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Slope, too sandy.	Slope, droughty.
Scitico----------	Severe: slope.	Severe: slow refill.	Percs slowly, frost action, slope.	Wetness, percs slowly, erodes easily.	Wetness, percs slowly, erodes easily.	Wetness, percs slowly, erodes easily.
Amostown---------	Severe: slope.	Severe: slow refill.	Slope----------	Wetness, percs slowly, slope.	Erodes easily, wetness, percs slowly.	Erodes easily, percs slowly.
Ws---------- Winooski	Severe: seepage.	Moderate: deep to water.	Flooding, frost action.	Wetness: erodes easily, flooding.	Erodes easily, wetness.	Erodes easily.
WtA---------- Woodbridge	Slight---------	Severe: no water.	Percs slowly, frost action.	Percs slowly, wetness.	Percs slowly, wetness.	Percs slowly, rooting depth.
WtB---------- Woodbridge	Moderate: slope.	Severe: no water.	Slope, percs slowly, frost action.	Slope, percs slowly, wetness.	Percs slowly, wetness.	Percs slowly, rooting depth.
WtC---------- Woodbridge	Severe: slope.	Severe: no water.	Slope, percs slowly, frost action.	Slope, percs slowly, wetness.	Slope, percs slowly, wetness.	Slope, percs slowly, rooting depth.
WvB---------- Woodbridge	Moderate: slope.	Severe: no water.	Percs slowly, slope, frost action.	Slope, percs slowly, wetness.	Wetness, percs slowly.	Percs slowly, rooting depth.
WvC---------- Woodbridge	Severe: slope.	Severe: no water.	Percs slowly, slope, frost action.	Slope, percs slowly, wetness.	Slope, wetness, percs slowly.	Slope, percs slowly, rooting depth.
WxB---------- Woodbridge	Moderate: slope.	Severe: no water.	Percs slowly, slope, frost action.	Slope, percs slowly, wetness.	Wetness, percs slowly.	Percs slowly, rooting depth.
WxC, WxD---------- Woodbridge	Severe: slope.	Severe: no water.	Percs slowly, slope, frost action.	Slope, percs slowly, wetness.	Slope, wetness, percs slowly.	Slope, percs slowly, rooting depth.

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

TABLE 14.--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		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
AgA, AgB, AgC---- Agawam	0-11	Fine sandy loam	SM, ML	A-4	0	95-100	90-100	65-95	40-65	<25	NP-3
	11-16	Fine sandy loam, very fine sandy loam, loam.	SM, ML	A-4	0	95-100	85-100	65-95	40-65	<25	NP-3
	16-26	Fine sandy loam	SM, SP-SM	A-2, A-3, A-4	0	90-100	85-100	60-95	5-45	<20	NP-3
	26-55	Fine sand, loamy fine sand, loamy sand.	SM, SP-SM	A-2, A-1	0	90-100	85-100	40-90	5-35	---	NP
	55-60	Stratified fine sand to very gravelly loamy sand.	SM, SP-SM, GM, GP-GM	A-1, A-2, A-3	0-5	50-100	30-100	15-80	5-35	---	NP
AmA, AmB--------- Amostown	0-7	Fine sandy loam	SM, ML	A-2, A-4	0	95-100	90-100	55-95	30-70	<25	NP-10
	7-32	Fine sandy loam, sandy loam.	SM, ML	A-2, A-4	0	90-100	85-100	50-95	25-65	<25	NP-10
	32-60	Stratified silt loam to very fine sandy loam.	ML, SM	A-4, A-2	0	100	100	65-100	25-90	<25	NP-10
Au*: Amostown--------	0-7	Fine sandy loam	SM, ML	A-2, A-4	0	95-100	90-100	55-95	30-70	<25	NP-10
	7-32	Fine sandy loam, sandy loam.	SM, ML	A-2, A-4	0	90-100	85-100	50-95	25-65	<25	NP-10
	32-60	Stratified silt loam to very fine sandy loam.	ML, SM	A-4, A-2	0	100	100	65-100	25-90	<25	NP-10
Windsor---------	0-8	Loamy sand-------	SM	A-1, A-2	0	95-100	85-100	35-85	20-35	---	NP
	8-21	Loamy sand, loamy fine sand, sand.	SW-SM, SM, SP-SM	A-1, A-2	0	95-100	85-100	45-85	10-30	---	NP
	21-45	Sand, fine sand	SP-SM, SM, SW-SM	A-1, A-2, A-3	0	90-100	75-100	40-95	5-20	---	NP
	45-60	Silt loam, very fine sandy loam, silty clay loam.	ML, CL, CL-ML	A-4, A-6	0	95-100	90-100	75-90	55-80	20-40	NP-25
Urban land.											
BaA, BaB--------- Belgrade	0-10	Silt loam--------	ML	A-4	0	100	95-100	90-100	60-95	<35	NP-8
	10-51	Silt loam, very fine sandy loam, loamy very fine sand.	ML	A-4	0	100	95-100	85-100	50-90	<35	NP-8
	51-60	Silt loam, loamy very fine sand, sand and gravel.	ML, SM, CL-ML	A-1, A-2, A-4	0	75-100	55-100	35-100	15-90	<35	NP-8
BoA, BoB, BoC---- Boxford	0-8	Silt loam--------	ML, CL	A-4, A-5, A-6, A-7	0	98-100	95-100	90-100	85-95	30-45	5-15
	8-21	Silt loam, silty clay loam.	ML, CL	A-4, A-5, A-6, A-7	0	98-100	95-100	90-100	85-95	30-45	5-15
	21-37	Silty clay loam, silty clay.	ML, CL	A-4, A-6	0	98-100	95-100	90-100	85-95	20-40	5-18
	37-60	Silty clay loam, silty clay, clay.	ML, CL	A-4, A-6	0	98-100	95-100	90-100	80-95	20-35	5-18

See footnote at end of table.

TABLE 14.--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	
CkB, CkC--------- Charlton	0-7	Fine sandy loam	SM, ML	A-2, A-4	0-10	85-95	75-90	50-85	25-65	<25	NP-5
	7-22	Fine sandy loam, gravelly fine sandy loam, gravelly loam.	SM, ML	A-2, A-4	5-15	65-90	60-90	40-80	20-65	<25	NP-3
	22-60	Gravelly sandy loam, gravelly fine sandy loam, loam.	SM	A-2, A-4	5-15	60-90	60-85	40-75	20-50	---	NP
CmB, CmC--------- Charlton	0-7	Stony fine sandy loam.	SM, ML	A-2, A-4	10-20	75-95	70-90	60-85	30-70	<25	NP-5
	7-22	Fine sandy loam, gravelly fine sandy loam, gravelly loam.	SM, ML	A-2, A-4	5-15	65-90	60-90	50-80	20-65	<25	NP-3
	22-60	Fine sandy loam, gravelly fine sandy loam, gravelly sandy loam.	SM	A-2, A-4	5-15	60-90	60-85	40-75	20-50	---	NP
CnB, CnC, CnD---- Charlton	0-7	Very stony fine sandy loam.	SM, ML	A-2, A-4	15-25	75-95	70-90	60-85	30-70	<25	NP-5
	7-22	Fine sandy loam, gravelly fine sandy loam, gravelly loam.	SM, ML	A-2, A-4	5-15	65-90	60-90	50-80	20-65	<25	NP-3
	22-60	Fine sandy loam, gravelly fine sandy loam, gravelly sandy loam.	SM	A-2, A-4	5-15	60-90	60-85	40-75	20-50	---	NP
CoE*: Charlton---------	0-7	Very stony fine sandy loam.	SM, ML	A-2, A-4	15-25	75-95	70-90	60-85	30-70	<25	NP-5
	7-22	Fine sandy loam, gravelly fine sandy loam, gravelly loam.	SM, ML	A-2, A-4	5-15	65-90	60-90	50-80	20-65	<25	NP-3
	22-60	Fine sandy loam, gravelly fine sandy loam, gravelly sandy loam.	SM	A-2, A-4	5-15	60-90	60-85	40-75	20-50	---	NP
Gloucester-------	0-5	Very stony fine sandy loam.	SM, SW-SM	A-1, A-2, A-4	15-35	60-90	55-90	25-75	10-45	---	NP
	5-14	Gravelly sandy loam, sandy loam, fine sandy loam.	SM, SW-SM	A-1, A-2, A-4	5-30	60-75	40-75	20-50	10-40	---	NP
	14-60	Very gravelly loamy coarse sand, gravelly loamy sand, gravelly sandy loam.	SM, SW-SM, GM, GW-GM	A-1, A-2	15-40	40-70	20-60	10-40	5-25	---	NP

See footnote at end of table.

TABLE 14.--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	
CpC*, CpD*:											
Charlton	0-7	Very stony fine sandy loam.	SM, ML	A-2, A-4	15-25	75-95	70-90	60-85	30-70	<25	NP-5
	7-22	Fine sandy loam, gravelly fine sandy loam, gravelly loam.	SM, ML	A-2, A-4	5-15	65-90	60-90	50-80	20-65	<25	NP-3
	22-60	Fine sandy loam, gravelly fine sandy loam, gravelly sandy loam.	SM	A-2, A-4	5-15	60-90	60-85	40-75	20-50	---	NP
Hollis	0-5	Very stony fine sandy loam.	SM, ML	A-2, A-4	10-25	75-100	65-95	40-85	25-70	<20	NP-3
	5-19	Fine sandy loam, sandy loam, gravelly loam.	SM, ML	A-2, A-4	0-15	75-95	65-95	40-80	20-65	---	NP
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
CrC*, CrE*:											
Charlton	0-7	Very stony fine sandy loam.	SM, ML	A-2, A-4	15-25	75-95	70-90	60-85	30-70	<25	NP-5
	7-22	Fine sandy loam, gravelly fine sandy loam, gravelly loam.	SM, ML	A-2, A-4	5-15	65-90	60-90	50-80	20-65	<25	NP-3
	22-60	Fine sandy loam, gravelly fine sandy loam, gravelly sandy loam.	SM	A-2, A-4	5-15	60-90	60-85	40-75	20-50	---	NP
Rock outcrop.											
Hollis	0-5	Very stony fine sandy loam.	SM, ML	A-2, A-4	10-25	75-100	65-95	40-85	25-70	<20	NP-3
	5-19	Fine sandy loam, sandy loam, gravelly loam.	SM, ML	A-2, A-4	0-15	75-95	65-95	40-80	20-65	---	NP
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
DeA	0-9	Loamy fine sand	SP-SM, SM	A-1, A-2, A-3, A-4	0	95-100	80-100	40-75	5-40	---	NP
Deerfield	9-60	Sand, fine sand, coarse sand.	SP, SM	A-1, A-2, A-3	0	95-100	65-100	30-75	3-30	---	NP
Du*.											
Dumps											
EsA, EsB	0-9	Loamy fine sand	SM, SP-SM	A-2, A-1	0-5	95-100	90-100	45-80	10-35	---	NP
Enosburg	9-25	Sand, coarse sand, loamy fine sand.	SP-SM, SM	A-2	0-5	95-100	90-100	50-80	10-35	---	NP
	25-60	Silt, very fine sandy loam, silty clay loam.	ML, CL-ML	A-4	0	100	100	85-100	50-100	<30	NP-5
Fm	0-60	Sapric material	Pt	A-8	---	---	---	---	---	---	---
Freetown											

See footnote at end of table.

TABLE 14.--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	
GfB, GfC--------- Gloucester	0-5	Fine sandy loam	SM	A-1, A-2, A-4	0-15	80-95	70-90	35-75	15-45	---	NP
	5-14	Gravelly sandy loam, sandy loam, fine sandy loam.	SM, SW-SM	A-1, A-2, A-4	5-30	60-85	40-75	20-50	10-40	---	NP
	14-60	Very gravelly loamy coarse sand, gravelly loamy sand, gravelly sandy loam.	SM, SW-SM, GM, GW-GM	A-1, A-2	15-40	40-70	20-60	10-40	5-25	---	NP
GhB, GhC--------- Gloucester	0-5	Stony fine sandy loam.	SM, SW-SM	A-1, A-2, A-4	10-20	70-95	60-90	30-75	10-45	---	NP
	5-14	Gravelly sandy loam, sandy loam, fine sandy loam.	SM, SW-SM	A-1, A-2, A-4	5-30	60-75	40-75	20-50	10-40	---	NP
	14-60	Very gravelly loamy coarse sand, gravelly loamy sand, gravelly sandy loam.	SM, SW-SM, GM, GW-GM	A-1, A-2	15-40	40-70	20-60	10-40	5-25	---	NP
GxB, GxC, GxD---- Gloucester	0-5	Very stony fine sandy loam.	SM, SW-SM	A-1, A-2, A-4	15-35	60-90	55-90	25-75	10-45	---	NP
	5-14	Gravelly sandy loam, sandy loam, fine sandy loam.	SM, SW-SM	A-1, A-2, A-4	5-30	60-75	40-75	20-50	10-40	---	NP
	14-60	Very gravelly loamy coarse sand, gravelly loamy sand, gravelly sandy loam.	SM, SW-SM, GM, GW-GM	A-1, A-2	15-40	40-70	20-60	10-40	5-25	---	NP
Ha--------------- Hadley	0-11	Silt loam--------	ML, CL-ML	A-4	0	100	95-100	85-100	60-90	<30	NP-9
	11-68	Silt loam, very fine sandy loam, very fine sand.	ML, CL-ML	A-4	0	100	95-100	80-100	50-90	<39	NP-10
	68-72	Loamy fine sand, silt loam, sand.	ML, CL-ML, SM, SP-SM	A-4, A-2	0	100	95-100	50-100	5-90	<30	NP-10
Hd*: Hadley----------	0-11	Silt loam--------	ML, CL-ML	A-4	0	100	95-100	85-100	60-90	<30	NP-9
	11-68	Silt loam, very fine sandy loam, very fine sand.	ML, CL-ML	A-4	0	100	95-100	80-100	50-90	<39	NP-10
	68-72	Loamy fine sand, silt loam, sand.	ML, CL-ML, SM, SP-SM	A-4, A-2	0	100	95-100	50-100	5-90	<30	NP-10
Winooski--------	0-17	Silt loam--------	ML, SM	A-4	0	100	95-100	90-100	40-90	---	NP
	17-60	Silt loam, very fine sandy loam, loamy very fine sand.	ML, SM	A-4	0	100	95-100	90-100	40-90	---	NP
Urban land.											
HfB, HfC--------- Haven	0-22	Very fine sandy loam.	ML, SM	A-4	0	80-100	75-100	65-100	40-90	<25	NP-4
	22-60	Stratified loamy fine sand to gravel.	SP, SW, GP, SM	A-1, A-3, A-2	0-20	30-90	25-85	10-60	1-25	---	NP

See footnote at end of table.

TABLE 14.--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	
HgA, HgB, HgC, HgD, HgE-------- Hinckley	0-8	Loamy sand--------	SM, SP-SM	A-1, A-2, A-4	0-5	80-95	75-85	30-80	5-50	---	NP
	8-13	Gravelly loamy sand, loamy fine sand, very gravelly loamy coarse sand.	SM, SP-SM	A-1, A-2, A-3	0-20	50-95	30-85	15-70	2-30	---	NP
	13-60	Stratified very gravelly loamy fine sand to cobbly coarse sand.	SP, SP-SM, GP, GP-GM	A-1, A-2	5-30	20-65	20-50	10-40	0-20	---	NP
Hu*: Hinckley--------	0-8	Loamy sand--------	SM, SP-SM	A-1, A-2, A-4	0-5	80-95	75-85	30-80	5-50	---	NP
	8-13	Gravelly loamy sand, loamy fine sand, very gravelly loamy coarse sand.	SM, SP-SM	A-1, A-2, A-3	0-20	50-95	30-85	15-70	2-30	---	NP
	13-60	Stratified very gravelly loamy fine sand to cobbly coarse sand.	SP, SP-SM, GP, GP-GM	A-1, A-2	5-30	20-65	20-50	10-40	0-20	---	NP
Merrimac--------	0-16	Fine sandy loam	SM, ML	A-2, A-4	0	85-95	70-90	40-85	20-55	---	NP
	16-24	Sandy loam--------	SM	A-2, A-1	0	75-95	70-90	40-60	20-35	---	NP
	24-60	Stratified sand to very gravelly coarse sand.	GP, SP, SP-SM, GP-GM	A-1, A-2	5-25	40-65	30-60	15-40	0-10	---	NP
Urban land.											
HvC----------	0-4	Stony silt loam.	ML, SM	A-2, A-4	5-15	75-95	55-90	45-85	25-75	<25	NP-5
Holyoke	4-16	Silt loam, loam, gravelly fine sandy loam.	ML, SM	A-2, A-4	0-15	75-95	55-90	45-85	25-75	<25	NP-3
	16	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Lk----------	0-12	Silt loam--------	ML	A-4	0	100	100	95-100	80-95	---	NP
Limerick	12-20	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	80-95	---	NP
	20-60	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	80-95	---	NP
Ma----------	0-13	Silt loam--------	ML, CL	A-4, A-6, A-7	0	100	100	90-100	75-95	30-50	4-26
Maybid	13-24	Silty clay, silty clay loam, clay.	CL, ML	A-6, A-7	0	100	100	95-100	85-95	30-50	10-26
	24-60	Silty clay loam, silty clay, clay.	CL, ML	A-6, A-7	0	100	100	95-100	85-95	30-50	10-26
MeA, MeB, MeC, MeD---------- Merrimac	0-16	Fine sandy loam	SM, ML	A-2, A-4	0	85-95	70-90	40-85	20-55	---	NP
	16-24	Sandy loam--------	SM	A-2, A-1	0	75-95	70-90	40-60	20-35	---	NP
	24-60	Stratified sand to very gravelly coarse sand.	GP, SP, SP-SM, GP-GM	A-1, A-2	5-25	40-65	30-60	15-40	0-10	---	NP

See footnote at end of table.

TABLE 14.--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	
MoB, MoC--------- Montauk	0-6	Fine sandy loam	ML, SM	A-4, A-2, A-1	0	80-100	75-95	45-95	20-85	<20	NP-4
	6-21	Fine sandy loam, gravelly sandy loam, silt loam.	SM, ML	A-2, A-4, A-1	0-5	60-100	55-95	35-90	15-80	<20	NP-4
	21-60	Sandy loam, loamy sand, gravelly sandy loam.	SM, SP-SM	A-2, A-1, A-4	0-5	60-100	55-95	20-80	10-50	<15	NP-2
MsC-------------- Montauk	0-6	Stony fine sandy loam.	SM, ML	A-1, A-2, A-4	5-10	65-80	60-75	30-75	15-70	<20	NP-4
	6-21	Fine sandy loam, silt loam, gravelly sandy loam.	SM, ML	A-1, A-2, A-4	0-5	60-100	55-95	35-90	15-80	<20	NP-4
	21-60	Sandy loam, loamy sand, gravelly sandy loam.	SM, SP-SM	A-1, A-2, A-4	0-5	60-100	55-95	20-80	10-50	<15	NP-2
MxB, MxC, MxD---- Montauk	0-6	Very stony fine sandy loam.	SM, ML	A-2, A-4, A-1	5-25	65-80	60-75	30-75	15-70	<20	NP-4
	6-21	Fine sandy loam, silt loam, gravelly sandy loam.	SM, ML	A-1, A-2, A-4	0-5	60-100	55-95	35-90	15-80	<20	NP-4
	21-60	Sandy loam, loamy sand, gravelly sandy loam.	SM, SP-SM	A-1, A-2, A-4	0-5	60-100	55-95	20-80	10-50	<15	NP-2
NaC*, NaD*: Narragansett----	0-13	Very stony very fine sandy loam.	ML, CL-ML	A-4	15-35	90-100	80-95	70-95	50-85	<35	NP-6
	13-31	Silt loam, very fine sandy loam, loam.	ML, SM	A-4	5-15	90-100	75-85	65-85	40-75	<35	NP-4
	31-60	Gravelly coarse sandy loam, gravelly fine sandy loam.	SM, SP	A-1, A-2	5-15	55-80	50-70	20-60	2-35	---	NP
Holyoke----------	0-4	Very stony silt loam.	ML, SM, CL-ML	A-2, A-4	10-25	75-95	50-90	45-85	25-75	<25	NP-5
	4-16	Silt loam, loam, gravelly fine sandy loam.	ML, SM	A-2, A-4	0-15	75-95	55-90	45-85	25-75	<25	NP-3
	16	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
NgA, NgB----------	0-10	Fine sandy loam	SM, ML	A-4	0	95-100	90-100	70-95	40-65	<25	NP-3
Ninigret	10-31	Fine sandy loam, sandy loam, very fine sandy loam.	SM	A-2, A-4	0	95-100	90-100	65-85	20-50	<25	NP-3
	31-60	Loamy sand, sand, gravelly sand.	SP, SM, GP	A-1, A-2, A-3	0-20	45-100	30-90	25-65	0-30	---	NP
PaB, PaC, PaD---- Paxton	0-3	Fine sandy loam	SM, ML, SM-SC	A-2, A-4	0-10	80-95	75-90	60-85	30-65	<30	NP-10
	3-26	Fine sandy loam, loam, gravelly sandy loam.	SM, ML, SM-SC	A-2, A-4	0-15	70-90	65-90	50-85	25-65	<30	NP-10
	26-60	Fine sandy loam, loam, gravelly sandy loam.	SM, ML, SM-SC	A-2, A-4	0-15	70-90	60-85	50-75	20-60	<30	NP-10

See footnote at end of table.

TABLE 14.--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	
PbB, PbC, PbD---- Paxton	0-3	Stony fine sandy loam.	SM, ML, SM-SC	A-2, A-4	5-20	80-95	75-90	60-85	30-65	<30	NP-10
	3-26	Fine sandy loam, loam, gravelly sandy loam.	SM, ML, SM-SC	A-2, A-4	5-20	70-90	65-90	50-85	25-65	<30	NP-10
	26-60	Fine sandy loam, loam, gravelly sandy loam.	SM, ML, SM-SC	A-2, A-4	5-15	70-90	60-85	50-75	20-60	<30	NP-10
PcB, PcC, PcD, PcE---------- Paxton	0-3	Very stony fine sandy loam.	SM, ML, SM-SC	A-2, A-4	10-25	80-90	70-85	60-80	30-65	<30	NP-10
	3-26	Fine sandy loam, loam, gravelly sandy loam.	SM, ML, SM-SC	A-2, A-4	5-20	70-90	65-90	50-85	25-65	<30	NP-10
	26-60	Fine sandy loam, loam, gravelly sandy loam.	SM, ML, SM-SC	A-2, A-4	5-15	70-90	60-85	50-75	20-60	<30	NP-10
Pd*:											
Paxton----------	0-3	Fine sandy loam	SM, ML, SM-SC	A-2, A-4	0-10	80-95	75-90	60-85	30-65	<30	NP-10
	3-26	Fine sandy loam, loam, gravelly sandy loam.	SM, ML, SM-SC	A-2, A-4	0-15	70-90	65-90	50-85	25-65	<30	NP-10
	26-60	Fine sandy loam, loam, gravelly sandy loam.	SM, ML, SM-SC	A-2, A-4	0-15	70-90	60-85	50-75	20-60	<30	NP-10
Charlton--------	0-7	Fine sandy loam	SM, ML	A-2, A-4	0-10	85-95	75-90	50-85	25-65	<25	NP-5
	7-22	Fine sandy loam, gravelly fine sandy loam, gravelly loam.	SM, ML	A-2, A-4	5-15	65-90	60-90	40-80	20-65	<25	NP-3
	22-60	Gravelly sandy loam, gravelly fine sandy loam, loam.	SM	A-2, A-4	5-15	60-90	60-85	40-75	20-50	---	NP
Urban land.											
Pg*. Pits											
PuA, PuB, PuC---- Poilux	0-4	Fine sandy loam	SM, ML	A-4, A-2	0	95-100	85-100	55-95	30-75	<25	NP-10
	4-30	Sandy loam, fine sandy loam.	SM, ML	A-2, A-4	0	90-100	85-100	55-95	25-65	<25	NP-10
	30-60	Stratified silt loam to very fine sand.	ML, SM, CL, CL-ML	A-4, A-2, A-6	0	100	100	65-100	25-90	<25	NP-20
Pv---------- Pootatuck	0-10	Fine sandy loam	SM, ML	A-2, A-4	0	95-100	80-100	55-95	30-75	<25	NP-4
	10-34	Sandy loam, fine sandy loam.	SM	A-2, A-4	0	95-100	80-100	55-85	30-50	<20	NP-2
	34-60	Sand, loamy sand, gravelly sand.	SP-SM, SM	A-1, A-2	0	70-100	50-100	30-45	5-20	---	NP
Qu*. Quarries											
Ra---------- Raynham	0-10	Silt loam--------	ML, CL-ML	A-4	0	100	95-100	80-100	55-95	<25	NP-10
	10-37	Silt loam, silt, very fine sandy loam.	ML, CL-ML	A-4	0	100	95-100	80-100	55-95	<25	NP-10
	37-60	Silt loam, silt, very fine sandy loam.	ML, CL-ML	A-4	0	100	95-100	90-100	70-95	<25	NP-10

See footnote at end of table.

TABLE 14.--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	
RdA, RdB--------- Ridgebury	0-2	Fine sandy loam	SM, ML	A-1, A-2, A-4	0-5	80-100	75-90	40-90	20-70	---	NP
	2-15	Sandy loam, gravelly loam.	SM, ML	A-1, A-2, A-4	0-15	65-95	55-90	40-80	20-60	---	NP
	15-60	Sandy loam, gravelly loam.	SM, ML	A-1, A-2, A-4	0-15	65-95	55-90	35-80	20-60	---	NP
ReA, ReB--------- Ridgebury	0-2	Very stony fine sandy loam.	SM, ML	A-2, A-4	10-30	70-100	50-85	30-80	15-65	---	NP
	2-15	Sandy loam, gravelly loam.	SM, ML	A-1, A-2, A-4	0-15	65-95	55-90	40-80	20-60	---	NP
	15-60	Sandy loam, gravelly loam.	SM, ML	A-1, A-2, A-4	0-15	65-95	55-90	35-80	20-60	---	NP
Rm--------------- Rippowam	0-5	Fine sandy loam	SM, ML	A-2, A-4	0	95-100	80-100	55-95	30-75	<25	NP-4
	5-24	Fine sandy loam, sandy loam.	SM	A-2, A-4	0	95-100	80-100	55-85	30-50	<20	NP-2
	24-60	Loamy sand, coarse sand, gravelly sand.	SP-SM, SM	A-1, A-2	0	70-100	50-100	30-45	5-20	---	NP
Ro*. Rock outcrop											
RoC*, RoE*: Rock outcrop.											
Narragansett----	0-13	Very stony very fine sandy loam.	ML, CL-ML	A-4	15-35	90-100	80-95	70-95	50-85	<35	NP-6
	13-31	Silt loam, very fine sandy loam, loam.	ML, SM	A-4	5-15	90-100	75-85	65-85	40-75	<35	NP-4
	31-60	Gravelly coarse sandy loam, gravelly fine sandy loam.	SM, SP	A-1, A-2	5-15	55-80	50-70	20-60	2-35	---	NP
Holyoke---------	0-4	Very stony silt loam.	ML, SM	A-2, A-4	10-25	75-95	50-90	45-85	25-75	<25	NP-5
	4-16	Silt loam, loam, gravelly fine sandy loam.	ML, SM	A-2, A-4	0-15	75-95	55-90	45-85	25-75	<25	NP-3
	16	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Sa--------------- Saco	0-12	Silt loam--------	ML, OL	A-4	0	100	100	95-100	70-95	<40	NP-10
	12-44	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	70-95	<40	NP-10
	44-60	Stratified fine sand to gravelly coarse sand.	SP, SM, SP-SM	A-1, A-2, A-3	0	80-100	35-100	10-70	0-20	---	NP
Sb--------------- Scarboro	5-0	Muck-------------	Pt	A-8	---	---	---	---	---	---	---
	0-8	Loamy sand, sand, fine sandy loam.	SM, SP-SM	A-1, A-2, A-3, A-4	0	95-100	85-100	45-85	5-50	---	NP
	8-60	Loamy sand, sand, coarse sand.	SM, SP-SM, SP	A-1, A-2, A-3	0	95-100	70-100	30-80	2-35	---	NP
Sc--------------- Scitico	0-10	Silt loam--------	ML, CL	A-4, A-5, A-6, A-7	0	100	95-100	90-100	70-95	30-50	5-25
	10-36	Silt loam, silty clay loam, silty clay.	CL, CL-ML, ML	A-4, A-5, A-6, A-7	0	100	95-100	90-100	75-100	25-50	5-25
	36-60	Silty clay loam, silty clay, clay.	CL, CL-ML, ML	A-4, A-5, A-6, A-7	0	100	95-100	90-100	80-100	25-50	5-25

See footnote at end of table.

TABLE 14.--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	
SgB---------- Scituate	0-4	Fine sandy loam	SM, ML	A-2, A-4, A-1	0-5	80-95	70-90	40-85	20-65	<20	NP-4
	4-21	Fine sandy loam, sandy loam, loam.	SM, ML	A-2, A-4, A-1	0-15	70-95	60-90	35-85	20-65	<20	NP-4
	21-60	Loamy fine sand, loamy sand.	SM, SP-SM	A-2, A-1	0-10	70-95	50-85	20-65	5-25	<15	NP-2
ShB, ShC--------- Scituate	0-4	Very stony fine sandy loam.	SM, ML	A-2, A-4, A-1	15-35	60-90	55-85	35-80	20-65	<20	NP-4
	4-21	Fine sandy loam, loam, sandy loam.	SM, ML	A-2, A-4, A-1	0-15	70-95	60-90	35-85	20-65	<20	NP-4
	21-60	Loamy fine sand, loamy sand.	SM, SP-SM	A-2, A-1	0-10	70-95	50-85	20-65	5-25	<15	NP-2
SrA, SrB--------- Sudbury	0-10	Fine sandy loam	SM, ML	A-2, A-4, A-1	0-5	85-100	70-100	40-90	20-55	---	NP
	10-16	Sandy loam, fine sandy loam, gravelly sandy loam.	SM	A-2, A-4, A-1	0-5	85-100	60-100	40-80	20-50	---	NP
	16-28	Gravelly coarse sand, loamy sand, sandy loam.	SM, SP-SM	A-1, A-2, A-3	0-5	70-100	60-100	30-70	5-35	---	NP
	28-60	Stratified sand and gravel.	SP, SP-SM, GP, GP-GM	A-1, A-2	10-40	35-70	25-65	15-45	0-10	---	NP
Su----------	0-10	Loamy fine sand	SM	A-2	0	95-100	85-100	65-70	15-35	---	NP
Suncook	10-60	Stratified loamy fine sand to coarse sand.	SP, SM, SP-SM	A-2, A-3, A-1	0	90-100	70-100	20-80	0-35	---	NP
Sw----------	0-21	Sapric material	PT	A-8	---	---	---	---	---	---	---
Swansea	21-40	Sapric material, hemic material.	PT	A-8	---	---	---	---	---	---	---
	40-60	Sand, loamy coarse sand, gravelly loamy coarse sand.	SM, SP-SM	A-1, A-2, A-3	0	55-100	45-100	30-70	5-30	---	NP
Ud*. Udorthents											
Wa----------	0-4	Fine sandy loam	SM	A-2, A-4	0-5	90-100	85-100	70-100	30-50	<25	NP-3
Walpole	4-23	Fine sandy loam, sandy loam, gravelly sandy loam.	SM	A-2, A-4	0-5	85-100	60-100	40-95	25-50	---	NP
	23-60	Gravelly loamy sand, gravelly sand, coarse sand.	SP, SM, SP-SM	A-1, A-2, A-3	0-20	55-100	50-100	25-90	0-25	---	NP
WeB, WeC--------- Wethersfield	0-9	Fine sandy loam	ML, CL-ML	A-4	0-5	80-95	75-95	65-85	55-70	<40	NP-8
	9-23	Loam, silt loam, fine sandy loam.	ML, CL-ML	A-4	0-5	80-95	75-95	65-85	55-70	<40	NP-8
	23-60	Gravelly loam, loam, gravelly fine sandy loam.	SM, ML, CL-ML, SM-SC	A-4	0-10	75-95	70-90	60-80	40-65	<40	NP-8

See footnote at end of table.

TABLE 14.--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	
WfB, WfC--------- Wethersfield	0-9	Stony fine sandy loam.	ML, CL-ML	A-4	5-15	80-95	75-95	65-85	55-70	<40	NP-8
	9-23	Loam, silt loam, fine sandy loam.	ML, CL-ML	A-4	5-15	80-95	75-95	65-85	55-70	<40	NP-8
	23-60	Loam, gravelly loam, gravelly fine sandy loam.	SM, ML, CL-ML, SM-SC	A-4	0-10	75-95	70-90	60-80	40-65	<40	NP-8
WgB, WgC--------- Wethersfield	0-9	Very stony fine sandy loam.	ML, CL-ML	A-4	10-25	80-95	75-95	65-85	55-70	<40	NP-8
	9-23	Loam, silt loam, fine sandy loam.	ML, CL-ML	A-4	5-15	80-95	75-95	65-85	55-70	<40	NP-8
	23-60	Loam, gravelly loam, gravelly fine sandy loam.	SM, ML, CL-ML, SM-SC	A-4	0-10	75-95	70-90	60-80	40-65	<40	NP-8
WhA-------------- Whitman	0-7	Very stony fine sandy loam.	ML, SM, CL-ML	A-2, A-4	0-5	80-100	75-95	45-90	25-85	16-35	NP-10
	7-13	Sandy loam, gravelly fine sandy loam, gravelly silt loam.	ML, SM, CL-ML	A-1, A-2, A-4	0-10	65-95	60-90	35-85	20-60	16-35	NP-10
	13-60	Sandy loam, gravelly fine sandy loam, loam.	ML, SM, CL-ML	A-1, A-2, A-4	0-10	65-95	60-90	35-85	20-60	16-32	NP-8
WnA, WnB, WnC, WnD---------- Windsor	0-8	Loamy sand--------	SM	A-2, A-1	0	95-100	85-100	35-85	20-35	---	NP
	8-21	Loamy sand, loamy fine sand, sand.	SW-SM, SM, SP-SM	A-2, A-1	0	95-100	85-100	45-95	10-30	---	NP
	21-60	Sand, fine sand	SP-SM, SM, SW-SM	A-2, A-3, A-1	0	90-100	75-100	40-95	5-20	---	NP
WoA, WoB, WoC---- Windsor	0-8	Loamy sand--------	SM	A-1, A-2	0	95-100	85-100	35-85	20-35	---	NP
	8-21	Loamy sand, loamy fine sand, sand.	SW-SM, SM, SP-SM	A-1, A-2	0	95-100	85-100	45-95	10-30	---	NP
	21-45	Sand, fine sand	SP-SM, SM, SW-SM	A-1, A-2, A-3	0	90-100	75-100	40-95	5-20	---	NP
	45-60	Silt loam, very fine sandy loam, silty clay loam.	ML, CL, CL-ML	A-4, A-6	0	95-100	90-100	75-90	55-80	20-40	NP-25
Wp*: Windsor---------	0-8	Loamy sand--------	SM	A-2, A-1	0	95-100	85-100	35-85	20-35	---	NP
	8-21	Loamy sand, loamy fine sand, sand.	SW-SM, SM, SP-SM	A-2, A-1	0	95-100	85-100	45-95	10-30	---	NP
	21-60	Sand, fine sand	SP-SM, SM, SW-SM	A-2, A-3, A-1	0	90-100	75-100	40-95	5-20	---	NP
Scitico----------	0-10	Silt loam--------	ML, CL	A-4, A-5, A-6, A-7	0	100	95-100	90-100	70-95	30-50	5-25
	10-36	Silt loam, silty clay loam, silty clay.	CL, CL-ML, ML	A-4, A-5, A-6, A-7	0	100	95-100	90-100	75-100	25-50	5-25
	36-60	Silty clay loam, silty clay, clay.	CL, CL-ML, ML	A-4, A-5, A-6, A-7	0	100	95-100	90-100	80-100	25-50	5-25
Amostown---------	0-7	Fine sandy loam	SM, ML	A-2, A-4	0	95-100	90-100	55-95	30-70	<25	NP-10
	7-32	Fine sandy loam, sandy loam.	SM, ML	A-2, A-4	0	90-100	85-100	50-95	25-65	<25	NP-10
	32-60	Stratified silt loam to very fine sandy loam.	ML, SM	A-4, A-2	0	100	100	65-100	25-90	<25	NP-10

See footnote at end of table.

TABLE 14.--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	
Ws---------- Winooski	0-17	Silt loam--------	ML, SM	A-4	0	100	95-100	90-100	40-90	---	NP
	17-60	Silt loam, very fine sandy loam, loamy very fine sand.	ML, SM	A-4	0	100	95-100	90-100	40-90	---	NP
WtA, WtB, WtC---- Woodbridge	0-7	Fine sandy loam	SM, ML, SM-SC	A-2, A-4	0-10	85-95	70-90	60-85	30-65	<30	NP-10
	7-25	Fine sandy loam, loam, gravelly fine sandy loam.	SM, ML, SM-SC	A-2, A-4	0-15	75-90	65-90	50-85	25-65	<30	NP-10
	25-60	Fine sandy loam, loam, gravelly fine sandy loam.	SM, ML, SM-SC	A-2, A-4	5-15	70-90	60-85	50-75	20-60	<30	NP-10
WvB, WvC---------- Woodbridge	0-7	Stony fine sandy loam.	SM, ML, SM-SC	A-2, A-4	5-20	85-95	70-90	60-85	30-65	<30	NP-10
	7-25	Fine sandy loam, loam, gravelly fine sandy loam.	SM, ML, SM-SC	A-2, A-4	5-15	75-95	65-90	50-85	25-60	<30	NP-10
	25-60	Fine sandy loam, loam, gravelly fine sandy loam.	SM, ML, SM-SC	A-2, A-4	5-15	70-90	60-90	50-75	25-60	<30	NP-10
WxB, WxC, WxD---- Woodbridge	0-7	Very stony fine sandy loam.	SM, ML, SM-SC	A-2, A-4	10-25	85-95	70-90	60-85	30-65	<30	NP-10
	7-25	Fine sandy loam, loam, gravelly fine sandy loam.	SM, ML, SM-SC	A-2, A-4	5-15	75-95	65-90	50-85	25-60	<30	NP-10
	25-60	Fine sandy loam, loam, gravelly fine sandy loam.	SM, ML, SM-SC	A-2, A-4	5-15	70-90	60-90	50-75	25-60	<30	NP-10

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

TABLE 15.--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	Shrink-swell potential	Erosion factors		Organic matter
								K	T	
	In	Pct	G/cm³	In/hr	In/in	pH				Pct
AgA, AgB, AgC----	0-11	4-10	1.10-1.20	2.0-6.0	0.13-0.25	4.5-6.5	Low----------	0.28	3	1-5
Agawam	11-16	1-10	1.20-1.40	2.0-6.0	0.11-0.21	4.5-6.5	Low----------	0.37		
	16-26	1-3	1.30-1.40	2.0-20	0.11-0.18	4.5-6.5	Low----------	0.28		
	26-55	1-2	1.30-1.40	6.0-20	0.01-0.09	4.5-6.5	Low----------	0.17		
	55-60	0-2	1.30-1.50	6.0-20	0.01-0.09	4.5-6.5	Low----------	0.10		
AmA, AmB---------	0-7	4-10	1.00-1.20	2.0-6.0	0.11-0.18	4.5-7.3	Low----------	0.28	3	2-5
Amostown	7-32	1-5	1.20-1.40	2.0-6.0	0.10-0.15	4.5-6.0	Low----------	0.28		
	32-60	1-3	1.30-1.50	0.06-0.6	0.15-0.21	4.5-7.3	Low----------	0.64		
Au*:										
Amostown--------	0-7	4-10	1.00-1.20	2.0-6.0	0.11-0.18	4.5-7.3	Low----------	0.28	3	2-5
	7-32	1-5	1.20-1.40	2.0-6.0	0.10-0.15	4.5-6.0	Low----------	0.28		
	32-60	1-3	1.30-1.50	0.06-0.6	0.15-0.21	4.5-7.3	Low----------	0.64		
Windsor---------	0-8	1-3	1.00-1.20	>6.0	0.08-0.12	4.5-5.5	Low----------	0.17	5	2-4
	8-21	0-3	1.30-1.55	>6.0	0.02-0.12	4.5-5.5	Low----------	0.17		
	21-45	0-2	1.40-1.65	>6.0	0.01-0.08	4.5-5.5	Low----------	0.17		
	45-60	5-35	1.30-1.60	0.2-0.6	0.15-0.20	5.1-6.5	Low----------	0.43		
Urban land.										
BaA, BaB---------	0-10	4-15	0.95-1.15	0.6-2.0	0.18-0.25	4.5-7.3	Low----------	0.49	3	1-5
Belgrade	10-51	4-15	1.10-1.40	0.6-2.0	0.16-0.20	4.5-7.3	Low----------	0.64		
	51-60	2-20	1.20-1.40	0.06-6.0	0.06-0.20	5.1-7.3	Low----------	0.64		
BoA, BoB, BoC----	0-8	20-40	1.05-1.25	0.2-0.6	0.16-0.24	4.6-6.5	Low----------	0.32	3	2-6
Boxford	8-21	25-50	1.20-1.45	0.06-0.2	0.15-0.22	4.6-6.5	Low----------	0.49		
	21-37	35-50	1.40-1.60	<0.2	0.13-0.15	5.1-7.3	Moderate-----	0.49		
	37-60	35-50	1.40-1.60	<0.2	0.11-0.15	5.1-7.3	Moderate-----	0.49		
CkB, CkC---------	0-7	3-8	1.00-1.25	0.6-6.0	0.08-0.23	4.5-6.0	Low----------	0.24	3	2-5
Charlton	7-22	3-8	1.40-1.65	0.6-6.0	0.05-0.20	4.5-6.0	Low----------	0.32		
	22-60	1-8	1.45-1.70	0.6-6.0	0.05-0.16	4.5-6.0	Low----------	0.24		
CmB, CmC---------	0-7	3-8	1.00-1.25	0.6-6.0	0.08-0.23	4.5-6.0	Low----------	0.20	3	2-5
Charlton	7-22	3-8	1.40-1.65	0.6-6.0	0.05-0.20	4.5-6.0	Low----------	0.32		
	22-60	1-8	1.45-1.70	0.6-6.0	0.05-0.16	4.5-6.0	Low----------	0.24		
CnB, CnC, CnD----	0-7	3-8	1.00-1.25	0.6-6.0	0.05-0.15	4.5-6.0	Low----------	0.20	3	2-5
Charlton	7-22	3-8	1.40-1.65	0.6-6.0	0.05-0.20	4.5-6.0	Low----------	0.32		
	22-60	1-8	1.45-1.70	0.6-6.0	0.05-0.16	4.5-6.0	Low----------	0.24		
CoE*:										
Charlton--------	0-7	3-8	1.00-1.25	0.6-6.0	0.05-0.15	4.5-6.0	Low----------	0.20	3	2-5
	7-22	3-8	1.40-1.65	0.6-6.0	0.05-0.20	4.5-6.0	Low----------	0.32		
	22-60	1-8	1.45-1.70	0.6-6.0	0.05-0.16	4.5-6.0	Low----------	0.24		
Gloucester------	0-5	1-8	1.00-1.30	6.0-20	0.07-0.16	3.6-6.0	Low----------	0.17	3	1-2
	5-14	1-8	1.20-1.50	6.0-20	0.06-0.10	3.6-6.0	Low----------	0.17		
	14-60	0-5	1.50-1.75	6.0-20	0.03-0.08	3.6-6.0	Low----------	0.17		
CpC*, CpD*:										
Charlton--------	0-7	3-8	1.00-1.25	0.6-6.0	0.05-0.15	4.5-6.0	Low----------	0.20	3	2-5
	7-22	3-8	1.40-1.65	0.6-6.0	0.05-0.20	4.5-6.0	Low----------	0.32		
	22-60	1-8	1.45-1.70	0.6-6.0	0.05-0.16	4.5-6.0	Low----------	0.24		
Hollis----------	0-5	3-10	1.10-1.40	0.6-6.0	0.10-0.21	4.5-6.0	Low----------	0.17	2	2-5
	5-19	1-8	1.30-1.55	0.6-6.0	0.06-0.18	4.5-6.0	Low----------	0.32		
	19	---	---	---	---	---	----------	----		

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Organic matter
								K	T	
	In	Pct	G/cm³	In/hr	In/in	pH				Pct
CrC*, CrE*:										
Charlton	0-7	3-8	1.00-1.25	0.6-6.0	0.05-0.15	4.5-6.0	Low	0.20	3	2-5
	7-22	3-8	1.40-1.65	0.6-6.0	0.05-0.20	4.5-6.0	Low	0.32		
	22-60	1-8	1.45-1.70	0.6-6.0	0.05-0.16	4.5-6.0	Low	0.24		
Rock outcrop.										
Hollis	0-5	3-10	1.10-1.40	0.6-6.0	0.10-0.21	4.5-6.0	Low	0.17	2	2-5
	5-19	1-8	1.30-1.55	0.6-6.0	0.06-0.18	4.5-6.0	Low	0.32		
	19	---	---	---	---	---	---	---		
DeA	0-9	2-7	1.00-1.20	6.0-20	0.07-0.13	4.5-6.5	Low	0.17	5	1-4
Deerfield	9-60	0-5	1.40-1.50	>6.0	0.01-0.08	4.5-6.5	Low	0.15		
Du*.										
Dumps										
EsA, EsB	0-9	1-5	1.20-1.50	6.0-20	0.10-0.18	4.5-6.5	Low	0.17	3	3-6
Enosburg	9-25	1-5	1.30-1.50	6.0-20	0.04-0.08	4.5-7.3	Low	0.17		
	25-60	3-16	1.30-1.70	0.2-0.6	0.18-0.31	6.1-7.3	Low	0.43		
Fm	0-60	---	0.10-0.30	0.6-6.0	0.35-0.45	3.6-4.4	Low	---	---	>50
Freetown										
GfB, GfC	0-5	1-8	1.00-1.20	6.0-20	0.08-0.16	3.6-6.0	Low	0.24	3	1-2
Gloucester	5-14	1-8	1.20-1.50	6.0-20	0.06-0.10	3.6-6.0	Low	0.17		
	14-60	0-5	1.50-1.75	6.0-20	0.03-0.09	3.6-6.0	Low	0.17		
GhB, GhC	0-5	1-8	1.00-1.30	6.0-20	0.07-0.16	3.6-6.0	Low	0.17	3	1-2
Gloucester	5-14	1-8	1.20-1.50	6.0-20	0.06-0.10	3.6-6.0	Low	0.17		
	14-60	0-5	1.50-1.75	6.0-20	0.03-0.08	3.6-6.0	Low	0.17		
GxB, GxC, GxD	0-5	1-8	1.00-1.30	6.0-20	0.07-0.16	3.6-6.0	Low	0.17	3	1-2
Gloucester	5-14	1-8	1.20-1.50	6.0-20	0.06-0.10	3.6-6.0	Low	0.17		
	14-60	0-5	1.50-1.75	6.0-20	0.03-0.08	3.6-6.0	Low	0.17		
Ha	0-11	4-10	1.20-1.50	0.6-2.0	0.15-0.25	4.5-7.3	Low	0.49	5	2-5
Hadley	11-68	2-10	1.20-1.50	0.6-6.0	0.13-0.20	4.5-7.8	Low	0.49		
	68-72	1-8	1.20-1.50	0.6-6.0	0.10-0.20	5.1-7.8	Low	0.49		
Hd*:										
Hadley	0-11	4-10	1.20-1.50	0.6-2.0	0.15-0.25	4.5-7.3	Low	0.49	5	2-5
	11-68	2-10	1.20-1.50	0.6-6.0	0.13-0.20	4.5-7.8	Low	0.49		
	68-72	1-8	1.20-1.50	0.6-6.0	0.10-0.20	5.1-7.8	Low	0.49		
Winooski	0-17	5-10	1.15-1.35	0.6-6.0	0.15-0.23	4.5-7.3	Low	0.49	5	2-5
	17-60	2-10	1.20-1.50	0.6-6.0	0.13-0.21	4.5-7.3	Low	0.49		
Urban land.										
HfB, HfC	0-22	5-18	1.10-1.40	0.6-2.0	0.15-0.25	4.5-6.0	Low	0.43	3	2-6
Haven	22-60	0-3	1.45-1.65	>20	0.01-0.03	4.5-6.0	Low	0.17		
HgA, HgB, HgC, HgD, HgE	0-8	4-8	0.90-1.10	6.0-20	0.05-0.20	3.6-6.0	Low	0.20	3	2-7
Hinckley	8-13	1-5	1.20-1.40	6.0-20	0.01-0.10	3.6-6.0	Low	0.17		
	13-60	0-3	1.30-1.50	>20	0.01-0.06	3.6-6.0	Low	0.10		
Hu*:										
Hinckley	0-8	4-8	0.90-1.10	6.0-20	0.05-0.20	3.6-6.0	Low	0.20	3	2-7
	8-13	1-5	1.20-1.40	6.0-20	0.01-0.10	3.6-6.0	Low	0.17		
	13-60	0-3	1.30-1.50	>20	0.01-0.06	3.6-6.0	Low	0.10		
Merrimac	0-16	3-7	1.10-1.20	2.0-6.0	0.14-0.19	3.6-6.0	Low	0.24	3	1-5
	16-24	1-4	1.20-1.40	2.0-6.0	0.14-0.17	3.6-6.0	Low	0.24		
	24-60	0-3	1.30-1.50	>6.0	0.01-0.06	3.6-6.0	Low	0.10		
Urban land.										

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Organic matter
								K	T	
	In	Pct	G/cm³	In/hr	In/In	pH				Pct
HvC----------	0-4	1-8	1.10-1.25	0.6-2.0	0.12-0.22	3.6-6.0	Low----------	0.20	2	2-5
Holyoke	4-16	1-8	1.30-1.55	0.6-2.0	0.11-0.22	3.6-6.0	Low----------	0.43		
	16	---	---	---	---	---	----------	----		
Lk----------	0-12	4-10	1.10-1.50	0.6-2.0	0.18-0.30	5.1-7.3	Low----------	0.49	3	2-5
Limerick	12-20	2-10	1.10-1.50	0.6-2.0	0.18-0.26	5.6-7.3	Low----------	0.49		
	20-60	1-8	1.20-1.50	0.6-2.0	0.18-0.25	5.6-7.3	Low----------	0.49		
Ma----------	0-13	20-35	1.00-1.30	0.2-0.6	0.12-0.30	5.1-6.0	Low----------	0.32	5	3-10
Maybid	13-24	20-55	1.40-1.60	<0.2	0.09-0.17	5.6-7.3	Moderate-----	0.43		
	24-60	35-55	1.40-1.60	<0.2	0.09-0.18	6.1-7.3	Moderate-----	0.49		
MeA, MeB, MeC, MeD----------	0-16	3-7	1.10-1.20	2.0-6.0	0.14-0.19	3.6-6.0	Low----------	0.24	3	1-5
Merrimac	16-24	1-4	1.20-1.40	2.0-6.0	0.14-0.17	3.6-6.0	Low----------	0.24		
	24-60	0-3	1.30-1.50	>6.0	0.01-0.06	3.6-6.0	Low----------	0.10		
MoB, MoC----------	0-6	6-18	1.00-1.25	0.6-6.0	0.16-0.20	3.6-6.0	Low----------	0.32	3	2-6
Montauk	6-21	6-18	1.30-1.60	0.6-6.0	0.10-0.16	3.6-6.0	Low----------	0.24		
	21-60	1-18	1.70-1.90	0.06-0.6	0.02-0.08	3.6-6.0	Low----------	0.24		
MsC----------	0-6	6-18	1.00-1.25	0.6-6.0	0.11-0.15	3.6-6.0	Low----------	0.17	3	2-6
Montauk	6-21	6-18	1.30-1.60	0.6-6.0	0.10-0.16	3.6-6.0	Low----------	0.24		
	21-60	1-18	1.70-1.90	0.06-0.6	0.02-0.16	3.6-6.0	Low----------	0.24		
MxB, MxC, MxD----	0-6	6-18	1.00-1.25	0.6-6.0	0.11-0.15	3.6-6.0	Low----------	0.17	3	2-6
Montauk	6-21	6-18	1.30-1.60	0.6-6.0	0.10-0.16	3.6-6.0	Low----------	0.24		
	21-60	1-18	1.70-1.90	0.06-0.6	0.02-0.16	3.6-6.0	Low----------	0.24		
NaC*, NaD*:										
Narragansett----	0-13	3-10	1.00-1.25	0.6-2.0	0.13-0.20	4.5-6.0	Low----------	0.32	3	2-5
	13-31	3-10	1.35-1.55	0.6-2.0	0.12-0.20	4.5-6.0	Low----------	0.43		
	31-60	2-6	1.40-1.60	2.0-20.0	0.02-0.12	4.5-6.0	Low----------	0.28		
Holyoke---------	0-4	1-8	1.10-1.25	0.6-2.0	0.12-0.22	3.6-6.0	Low----------	0.20	2	2-5
	4-16	1-8	1.30-1.55	0.6-2.0	0.11-0.22	3.6-6.0	Low----------	0.43		
	16	---	---	---	---	---	----------	----		
Rock outcrop.										
NgA, NgB----------	0-10	3-7	1.00-1.25	2.0-6.0	0.13-0.25	4.5-6.0	Low----------	0.28	3	2-8
Ninigret	10-31	3-7	1.35-1.60	2.0-6.0	0.06-0.18	4.5-6.0	Low----------	0.32		
	31-60	0-2	1.45-1.70	6.0-20	0.01-0.13	4.5-6.0	Low----------	0.10		
PaB, PaC, PaD----	0-3	3-12	1.00-1.25	0.6-2.0	0.08-0.23	4.5-6.5	Low----------	0.24	3	2-5
Paxton	3-26	3-12	1.35-1.60	0.6-2.0	0.06-0.20	4.5-6.5	Low----------	0.32		
	26-60	3-12	1.70-2.00	<0.2	0.05-0.12	4.5-6.5	Low----------	0.24		
PbB, PbC, PbD----	0-3	3-12	1.00-1.25	0.6-6.0	0.08-0.23	4.5-6.5	Low----------	0.20	3	2-5
Paxton	3-26	3-12	1.35-1.60	0.6-6.0	0.06-0.20	4.5-6.5	Low----------	0.32		
	26-60	3-12	1.70-2.00	<0.2	0.05-0.12	4.5-6.5	Low----------	0.24		
PcB, PcC, PcD, PcE----------	0-3	3-12	1.00-1.25	0.6-6.0	0.05-0.15	4.5-6.5	Low----------	0.20	3	2-5
Paxton	3-26	3-12	1.35-1.60	0.6-6.0	0.06-0.20	4.5-6.5	Low----------	0.32		
	26-60	3-12	1.70-2.00	<0.2	0.05-0.12	4.5-6.5	Low----------	0.24		
Pd*:										
Paxton----------	0-3	3-12	1.00-1.25	0.6-2.0	0.08-0.23	4.5-6.5	Low----------	0.24	3	2-5
	3-26	3-12	1.35-1.60	0.6-2.0	0.06-0.20	4.5-6.5	Low----------	0.32		
	26-60	3-12	1.70-2.00	<0.2	0.05-0.12	4.5-6.5	Low----------	0.24		
Charlton--------	0-7	3-8	1.00-1.25	0.6-6.0	0.08-0.23	4.5-6.0	Low----------	0.24	3	2-5
	7-22	3-8	1.40-1.65	0.6-6.0	0.05-0.20	4.5-6.0	Low----------	0.32		
	22-60	1-8	1.45-1.70	0.6-6.0	0.05-0.16	4.5-6.0	Low----------	0.24		
Urban land.										

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Organic matter
								K	T	
	In	Pct	G/cm³	In/hr	In/in	pH				Pct
Pg*. Pits										
PuA, PuB, PuC---- Pollux	0-4	4-10	1.00-1.20	2.0-6.0	0.11-0.16	4.5-7.3	Low----------	0.28	3	2-5
	4-30	4-10	1.20-1.50	2.0-6.0	0.12-0.15	4.5-6.0	Low----------	0.28		
	30-60	2-15	1.30-1.60	0.06-0.6	0.16-0.21	4.5-7.3	Low----------	0.64		
Pv---------- Pootatuck	0-10	2-6	1.10-1.35	0.6-6.0	0.11-0.24	4.5-6.5	Low----------	0.20	3	2-6
	10-34	1-6	1.20-1.45	0.6-6.0	0.09-0.18	4.5-6.5	Low----------	0.20		
	34-60	0-2	1.25-1.50	>6.0	0.01-0.13	4.5-6.5	Low----------	0.17		
Qu*. Quarries										
Ra---------- Raynham	0-10	3-16	1.20-1.50	0.6-2.0	0.20-0.30	5.1-7.3	Low----------	0.49	3	3-10
	10-37	3-16	1.20-1.50	0.2-2.0	0.18-0.26	5.1-7.3	Low----------	0.64		
	37-60	3-16	1.20-1.50	0.06-0.2	0.18-0.22	5.6-7.8	Low----------	0.64		
RdA, RdB--------- Ridgebury	0-2	3-10	1.00-1.30	0.6-6.0	0.06-0.24	4.5-6.0	Low----------	0.24	3	4-7
	2-15	2-8	1.60-1.90	0.6-6.0	0.04-0.20	4.5-6.0	Low----------	0.32		
	15-60	2-8	1.80-2.00	<0.2	0.01-0.05	4.5-6.0	Low----------	0.24		
ReA, ReB--------- Ridgebury	0-2	3-10	1.00-1.30	0.6-6.0	0.06-0.21	4.5-6.0	Low----------	0.20	3	4-7
	2-15	2-8	1.60-1.90	0.6-6.0	0.04-0.20	4.5-6.0	Low----------	0.32		
	15-60	2-8	1.80-2.00	<0.2	0.01-0.05	4.5-6.0	Low----------	0.24		
Rm---------- Rippowam	0-5	2-6	1.10-1.35	0.6-6.0	0.11-0.24	4.5-6.5	Low----------	0.20	3	3-8
	5-24	1-6	1.20-1.45	0.6-6.0	0.09-0.18	4.5-6.5	Low----------	0.20		
	24-60	0-2	1.25-1.50	>6.0	0.01-0.13	4.5-6.5	Low----------	0.17		
Ro*. Rock outcrop										
RoC*, RoE*: Rock outcrop.										
Narragansett----	0-13	3-10	1.00-1.25	0.6-2.0	0.13-0.20	4.5-6.0	Low----------	0.32	3	2-5
	13-31	3-10	1.35-1.55	0.6-2.0	0.12-0.20	4.5-6.0	Low----------	0.43		
	31-60	2-6	1.40-1.60	2.0-20.0	0.02-0.12	4.5-6.0	Low----------	0.28		
Holyoke---------	0-4	1-8	1.10-1.25	0.6-2.0	0.12-0.22	3.6-6.0	Low----------	0.20	2	2-5
	4-16	1-8	1.30-1.55	0.6-2.0	0.11-0.22	3.6-6.0	Low----------	0.43		
	16	---	---	---	---	---	----------	----		
Sa---------- Saco	0-12	4-10	1.00-1.40	0.6-2.0	0.17-0.30	5.1-6.5	Low----------	0.49	5	3-20
	12-44	2-10	1.20-1.50	0.6-2.0	0.15-0.26	5.1-6.5	Low----------	0.64		
	44-60	1-8	1.30-1.60	>6.0	0.01-0.13	5.6-7.3	Low----------	0.10		
Sb---------- Scarboro	5-0	---	0.55-0.75	6.0-20.0	0.20-0.45	4.5-6.0	Low----------	----	5	---
	0-8	1-7	1.00-1.20	>6.0	0.05-0.20	4.5-6.0	Low----------	0.17		
	8-60	0-2	1.35-1.55	>6.0	0.02-0.13	4.5-6.0	Low----------	0.10		
Sc---------- Scitico	0-10	10-40	1.05-1.25	0.2-2.0	0.14-0.30	5.1-7.3	Low----------	0.49	3	2-7
	10-36	20-60	1.40-1.70	<0.2	0.11-0.21	5.1-7.3	Moderate-----	0.43		
	36-60	35-60	1.50-1.75	<0.2	0.09-0.21	5.6-7.3	Moderate-----	0.28		
SgB---------- Scituate	0-4	4-10	1.00-1.30	2.0-6.0	0.11-0.21	3.6-6.0	Low----------	0.24	3	2-6
	4-21	2-9	1.25-1.50	2.0-6.0	0.09-0.16	3.6-6.0	Low----------	0.24		
	21-60	2-9	1.75-2.05	0.06-0.2	0.01-0.07	3.6-6.0	Low----------	0.24		
ShB, ShC--------- Scituate	0-4	4-10	1.00-1.30	2.0-6.0	0.08-0.15	3.6-6.0	Low----------	0.17	3	2-6
	4-21	2-9	1.25-1.50	2.0-6.0	0.09-0.16	3.6-6.0	Low----------	0.24		
	21-60	2-9	1.75-2.05	0.06-0.2	0.01-0.07	3.6-6.0	Low----------	0.24		
SrA, SrB--------- Sudbury	0-10	2-6	1.10-1.40	2.0-6.0	0.10-0.25	3.6-6.0	Low----------	0.24	3	2-6
	10-16	2-7	1.15-1.45	2.0-6.0	0.07-0.18	3.6-6.0	Low----------	0.24		
	16-28	0-4	1.25-1.45	2.0-20	0.01-0.15	3.6-6.0	Low----------	0.17		
	28-60	0-3	1.30-1.45	6.0-20	0.01-0.06	3.6-6.0	Low----------	0.10		

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Organic matter
								K	T	
	In	Pct	G/cm³	In/hr	In/in	pH				Pct
Su	0-10	1-3	1.10-1.30	>6.0	0.07-0.15	4.5-6.5	Low	0.12	5	2-5
Suncook	10-60	0-3	1.20-1.50	>6.0	0.01-0.13	4.5-6.5	Low	0.17		
Sw	0-21	---	0.10-0.30	0.6-6.0	0.35-0.45	3.6-4.4	Low	----	---	>50
Swansea	21-40	---	0.15-0.30	0.6-6.0	0.35-0.45	3.6-4.4	Low	----		
	40-60	1-5	1.15-1.40	>20	0.01-0.08	3.6-5.5	Low	----		
Ud* Udorthents										
Wa	0-4	2-6	1.00-1.25	2.0-6.0	0.10-0.23	4.5-6.0	Low	0.20	3	2-8
Walpole	4-23	2-6	1.30-1.55	2.0-6.0	0.07-0.18	4.5-6.0	Low	0.24		
	23-60	0-2	1.40-1.65	>6.0	0.01-0.13	4.5-6.0	Low	0.10		
WeB, WeC	0-9	5-15	1.10-1.25	0.6-2.0	0.13-0.24	4.5-5.5	Low	0.28	3	2-5
Wethersfield	9-23	5-15	1.20-1.50	0.6-2.0	0.12-0.20	4.5-5.5	Low	0.37		
	23-60	3-15	1.70-2.00	<0.2	0.05-0.12	4.5-6.0	Low	0.24		
WfB, WfC	0-9	5-15	1.10-1.25	0.6-2.0	0.13-0.24	4.5-5.5	Low	0.20	3	2-5
Wethersfield	9-23	5-15	1.20-1.50	0.6-2.0	0.12-0.20	4.5-5.5	Low	0.37		
	23-60	5-15	1.70-2.00	<0.2	0.05-0.12	4.5-6.0	Low	0.24		
WgB, WgC	0-9	5-15	1.10-1.25	0.6-2.0	0.13-0.24	4.5-5.5	Low	0.20	3	2-5
Wethersfield	9-23	5-15	1.20-1.50	0.6-2.0	0.12-0.20	4.5-5.5	Low	0.37		
	23-60	5-15	1.70-2.00	<0.2	0.05-0.12	4.5-6.0	Low	0.24		
WhA	0-7	5-8	1.10-1.30	0.6-6.0	0.13-0.23	4.5-7.3	Low	0.28	3	2-8
Whitman	7-13	2-4	1.60-1.80	0.6-6.0	0.10-0.17	4.5-6.5	Low	0.32		
	13-60	1-3	1.80-2.00	<0.2	0.03-0.04	4.5-6.5	Low	0.24		
WnA, WnB, WnC, WnD	0-8	1-3	1.00-1.20	>6.0	0.08-0.12	4.5-6.0	Low	0.17	5	2-4
Windsor	8-21	0-3	1.30-1.55	>6.0	0.02-0.12	4.5-6.0	Low	0.17		
	21-60	0-2	1.40-1.65	>6.0	0.01-0.08	4.5-6.5	Low	0.17		
WoA, WoB, WoC	0-8	1-3	1.00-1.20	>6.0	0.08-0.12	4.5-5.5	Low	0.17	5	2-4
Windsor	8-21	0-3	1.30-1.55	>6.0	0.02-0.12	4.5-5.5	Low	0.17		
	21-45	0-2	1.40-1.65	>6.0	0.01-0.08	4.5-5.5	Low	0.17		
	45-60	5-35	1.30-1.60	0.2-0.6	0.15-0.20	5.1-6.5	Low	0.43		
Wp*:										
Windsor	0-8	1-3	1.00-1.20	>6.0	0.08-0.12	4.5-6.0	Low	0.17	5	2-4
	8-21	0-3	1.30-1.55	>6.0	0.02-0.12	4.5-6.0	Low	0.17		
	21-60	0-2	1.40-1.65	>6.0	0.01-0.08	4.5-6.5	Low	0.17		
Scitico	0-10	10-40	1.05-1.25	0.2-2.0	0.14-0.30	5.1-7.3	Low	0.49	3	2-7
	10-36	20-60	1.40-1.70	<0.2	0.11-0.21	5.1-7.3	Moderate	0.43		
	36-60	35-60	1.50-1.75	<0.2	0.09-0.21	5.6-7.3	Moderate	0.28		
Amostown	0-7	4-10	1.00-1.20	2.0-6.0	0.11-0.18	4.5-7.3	Low	0.28	3	2-5
	7-32	1-5	1.20-1.40	2.0-6.0	0.10-0.15	4.5-6.0	Low	0.28		
	32-60	1-3	1.30-1.50	0.06-0.6	0.15-0.21	4.5-7.3	Low	0.64		
Ws	0-17	5-10	1.15-1.35	0.6-6.0	0.15-0.23	4.5-7.3	Low	0.49	3	2-5
Winooski	17-60	2-10	1.20-1.50	0.6-6.0	0.13-0.21	4.5-7.3	Low	0.49		
WtA, WtB, WtC, WvB, WvC, WxB, WxC, WxD	0-7	3-12	1.00-1.25	0.6-2.0	0.08-0.23	4.5-6.0	Low	0.24	3	2-6
Woodbridge	7-25	3-12	1.35-1.60	0.6-2.0	0.06-0.20	4.5-6.0	Low	0.32		
	25-60	3-12	1.70-2.00	<0.2	0.05-0.12	4.5-6.5	Low	0.24		

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

TABLE 16.--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]

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness		Uncoated steel	Concrete
					Ft			In				
AgA, AgB, AgC----- Agawam	B	None--------	---	---	>6.0	---	---	>60	---	Low------	Low------	High.
AmA, AmB---------- Amostown	C	None--------	---	---	1.5-3.0	Apparent	Dec-Apr	>60	---	Moderate	Moderate	Moderate.
Au*:												
Amostown----------	C	None--------	---	---	1.5-3.0	Apparent	Dec-Apr	>60	---	Moderate	Moderate	Moderate.
Windsor----------	A	None--------	---	---	>6.0	---	---	>60	---	Low------	Low------	High.
Urban land.												
BaA, BaB---------- Belgrade	B	None--------	---	---	1.5-3.5	Apparent	Nov-Apr	>60	---	High-----	Moderate	Moderate.
BoA, BoB, BoC----- Boxford	C	None--------	---	---	1.5-3.0	Apparent	Nov-Apr	>60	---	High-----	High-----	Moderate.
CkB, CkC, CmB, CmC, CnB, CnC, CnD---------- Charlton	B	None--------	---	---	>6.0	---	---	>60	---	Low------	Low------	High.
CoE*:												
Charlton----------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	Low------	High.
Gloucester-------	A	None--------	---	---	>6.0	---	---	>60	---	Low------	Low------	High.
CpC*, CpD*:												
Charlton----------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	Low------	High.
Hollis----------	C/D	None--------	---	---	>6.0	---	---	10-20	Hard	Moderate	Low------	High.
CrC*, CrE*:												
Charlton----------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	Low------	High.
Rock outcrop.												
Hollis----------	C/D	None--------	---	---	>6.0	---	---	10-20	Hard	Moderate	Low------	High.
DeA---------- Deerfield	B	None--------	---	---	1.5-3.0	Apparent	Dec-Apr	>60	---	Moderate	Low------	High.
Du* Dumps												
EsA, EsB---------- Enosburg	D	None--------	---	---	0-1.0	Apparent	Nov-May	>60	---	Moderate	High-----	Moderate.

See footnote at end of table.

TABLE 16.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness		Uncoated steel	Concrete
					Ft			In				
Fm---------- Freetown	D	None--------	---	---	0-1.0	Apparent	Jan-Dec	>60	---	High-----	High-----	High.
GfB, GfC, GhB, GhC, GxB, GxC, GxD---------- Gloucester	A	None--------	---	---	>6.0	---	---	>60	---	Low------	Low------	High.
Ha---------- Hadley	B	Occasional	Brief-----	Feb-Apr	4.0-6.0	Apparent	Nov-Apr	>60	---	High-----	Low------	Moderate.
Hd*: Hadley----------	B	Occasional	Brief-----	Feb-Apr	4.0-6.0	Apparent	Nov-Apr	>60	---	High-----	Low------	Moderate.
Winooski---------	B	Occasional	Brief-----	Feb-Apr	1.5-3.0	Apparent	Nov-Apr	>60	---	High-----	Moderate	Moderate.
Urban land.												
HfB, HfC---------- Haven	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Low------	High.
HgA, HgB, HgC, HgD, HgE--------- Hinckley	A	None--------	---	---	>6.0	---	---	>60	---	Low------	Low------	High.
Hu*: Hinckley---------	A	None--------	---	---	>6.0	---	---	>60	---	Low------	Low------	High.
Merrimac---------	A	None--------	---	---	>6.0	---	---	>60	---	Low------	Low------	High.
Urban land.												
HvC---------- Holyoke	C/D	None--------	---	---	>6.0	---	---	10-20	Hard	Moderate	Low------	High.
Lk---------- Limerick	C	Frequent----	Brief-----	Jan-Jun	0.5-1.5	Apparent	Nov-Jun	>60	---	High-----	High-----	Low.
Ma**---------- Maybid	D	None--------	---	---	+1-0.5	Apparent	Oct-Aug	>60	---	High-----	High-----	Moderate.
MeA, MeB, MeC, MeD---------- Merrimac	A	None--------	---	---	>6.0	---	---	>60	---	Low------	Low------	High.
MoB, MoC, MsC, MxB, MxC, MxD---- Montauk	C	None--------	---	---	2.0-2.5	Perched	Feb-May	>60	---	Moderate	Low------	High.
NaC*, NaD*: Narragansett-----	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Low------	Moderate.
Holyoke----------	C/D	None--------	---	---	>6.0	---	---	10-20	Hard	Moderate	Low------	High.

See footnotes at end of table.

TABLE 16.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness		Uncoated steel	Concrete
					Ft			In				
NaC*, NaD*: Rock outcrop.												
NgA, NgB---------- Ninigret	B	None--------	---	---	1.5-3.0	Apparent	Nov-Apr	>60	---	Moderate	Low------	High.
PaB, PaC, PaD, PbB, PbC, PbD, PcB, PcC, PcD, PcE---------- Paxton	C	None--------	---	---	1.5-2.5	Perched	Feb-Mar	>60	---	Moderate	Low------	Moderate.
Pd*: Paxton----------	C	None--------	---	---	1.5-2.5	Perched	Feb-Mar	>60	---	Moderate	Low------	Moderate.
Charlton----------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	Low------	High.
Urban land.												
Pg*. Pits												
PuA, PuB, PuC----- Pollux	C	None--------	---	---	>6.0	---	---	>60	---	Moderate	Low------	High.
Pv---------- Pootatuck	B	Frequent----	Brief-----	Nov-Apr	1.5-3.0	Apparent	Nov-Apr	>60	---	Moderate	Moderate	Moderate.
Qu*. Quarries												
Ra---------- Raynham	C	None--------	---	---	0.5-2.0	Apparent	Nov-May	>60	---	High-----	High-----	Moderate.
RdA, RdB, ReA, ReB---------- Ridgebury	C	None--------	---	---	0-1.5	Perched	Nov-May	>60	---	High-----	High-----	High.
Rm---------- Rippowam	C	Frequent----	Brief-----	Nov-Apr	0-1.5	Apparent	Nov-May	>60	---	High-----	High-----	High.
Ro*. Rock outcrop												
RoC*, RoE*: Rock outcrop.												
Narragansett-----	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Low------	Moderate.
Holyoke----------	C/D	None--------	---	---	>6.0	---	---	10-20	Hard	Moderate	Low------	High.
Sa---------- Saco	D	Frequent----	Brief-----	Nov-May	0-0.5	Apparent	Sep-Jun	>60	---	High-----	Low------	Moderate.

See footnote at end of table.

TABLE 16.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness		Uncoated steel	Concrete
					Ft			In				
Sb**---------- Scarboro	D	None--------	---	---	+1-1.0	Apparent	Jan-Dec	>60	---	High-----	High-----	High.
Sc---------- Scitico	C	None--------	---	---	0-1.0	Apparent	Nov-May	>60	---	High-----	High-----	Moderate.
SgB, ShB, ShC----- Scituate	C	None--------	---	---	1.5-3.0	Perched	Nov-May	>60	---	Moderate	Low------	High.
SrA, SrB---------- Sudbury	B	None--------	---	---	1.5-3.0	Apparent	Dec-Apr	>60	---	Moderate	Low------	High.
Su---------- Suncook	A	Common------	Brief-----	Mar-May	4.0-6.0	Apparent	Jan-Apr	>60	---	Low------	Low------	High.
Sw---------- Swansea	D	None--------	---	---	0-1.0	Apparent	Jan-Dec	>60	---	High-----	High-----	High.
Ud*. Udorthents												
Wa---------- Walpole	C	None--------	---	---	0-1.0	Apparent	Nov-Apr	>60	---	High-----	Low------	High.
WeB, WeC, WfB, WfC, WgB, WgC---- Wethersfield	C	None--------	---	---	1.5-2.5	Perched	Feb-Mar	>60	---	Moderate	Low------	Moderate.
WhA**---------- Whitman	D	None--------	---	---	+1-0.5	Perched	Sep-Jun	>60	---	High-----	High-----	High.
WnA, WnB, WnC, WnD---------- Windsor	A	None--------	---	---	>6.0	---	---	>60	---	Low------	Low------	High.
WoA, WoB, WoC----- Windsor	A	None--------	---	---	>6.0	---	---	>60	---	Low------	Low------	High.
Wp*: Windsor----------	A	None--------	---	---	>6.0	---	---	>60	---	Low------	Low------	High.
Scitico----------	C	None--------	---	---	0-1.0	Apparent	Nov-May	>60	---	High-----	High-----	Moderate.
Amostown---------	C	None--------	---	---	1.5-3.0	Apparent	Dec-Apr	>60	---	Moderate	Moderate	Moderate.
Ws---------- Winooski	B	Occasional	Brief-----	Feb-Apr	1.5-3.0	Apparent	Nov-Apr	>60	---	High-----	Moderate	Moderate.
WtA, WtB, WtC, WvB, WvC, WxB, WxC, WxD--------- Woodbridge	C	None--------	---	---	1.5-3.0	Perched	Nov-May	>60	---	High-----	Low------	Moderate.

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

** In the "High water table--Depth" column, a plus sign preceding the range in depth indicates that the water table is above the surface of the soil. The first numeral in the range indicates how high the water rises above the surface. The second numeral indicates the depth below the surface.

TABLE 17.--CLASSIFICATION OF THE SOILS

Soil name	Family or higher taxonomic class
Agawam	Coarse-loamy over sandy or sandy-skeletal, mixed, mesic Typic Dystrochrepts
Amostown	Coarse-loamy, mixed, mesic Typic Dystrochrepts
Belgrade	Coarse-silty, mixed, mesic Aquic Dystric Eutrochrepts
Boxford	Fine, mixed, mesic Aquic Dystric Eutrochrepts
Charlton	Coarse-loamy, mixed, mesic Typic Dystrochrepts
Deerfield	Mixed, mesic Aquic Udipsamments
Enosburg	Sandy over loamy, mixed, nonacid, mesic Mollic Haplaquents
Freetown	Dysic, mesic Typic Medisaprists
Gloucester	Sandy-skeletal, mixed, mesic Typic Dystrochrepts
Hadley	Coarse-silty, mixed, nonacid, mesic Typic Udifluvents
Haven	Coarse-loamy over sandy or sandy-skeletal, mixed, mesic Typic Dystrochrepts
Hinckley	Sandy-skeletal, mixed, mesic Typic Udorthents
Hollis	Loamy, mixed, mesic Lithic Dystrochrepts
Holyoke	Loamy, mixed, mesic Lithic Dystrochrepts
Limerick	Coarse-silty, mixed, nonacid, mesic Typic Fluvaquents
Maybid	Fine, illitic, nonacid, mesic Typic Humaquepts
Merrimac	Sandy, mixed, mesic Typic Dystrochrepts
Montauk	Coarse-loamy, mixed, mesic Typic Fragiochrepts
*Narragansett	Coarse-loamy, mixed, mesic Typic Dystrochrepts
Ninigret	Coarse-loamy over sandy or sandy-skeletal, mixed, mesic Aquic Dystrochrepts
Paxton	Coarse-loamy, mixed, mesic Typic Fragiochrepts
Pollux	Coarse-loamy, mixed, mesic Typic Dystrochrepts
*Pootatuck	Coarse-loamy, mixed, mesic Fluvaquentic Dystrochrepts
Raynham	Coarse-silty, mixed, nonacid, mesic Aeric Haplaquepts
Ridgebury	Coarse-loamy, mixed, mesic Aeric Fragiaquepts
*Rippowam	Coarse-loamy, mixed, nonacid, mesic Aeric Fluvaquents
Saco	Coarse-silty, mixed, nonacid, mesic Fluvaquentic Humaquepts
Scarboro	Sandy, mixed, mesic Histic Humaquepts
Scitico	Fine, mixed, nonacid, mesic Typic Haplaquepts
Scituate	Coarse-loamy, mixed, mesic Typic Fragiochrepts
Sudbury	Sandy, mixed, mesic Aquic Dystrochrepts
Suncook	Mixed, mesic Typic Udipsamments
Swansea	Sandy or sandy-skeletal, mixed, dysic, mesic Terric Medisaprists
Walpole	Sandy, mixed, mesic Aeric Haplaquepts
Wethersfield	Coarse-loamy, mixed, mesic Typic Fragiochrepts
Whitman	Coarse-loamy, mixed, mesic Humic Fragiaquepts
Windsor	Mixed, mesic Typic Udipsamments
Winooski	Coarse-silty, mixed, nonacid, mesic Aquic Udifluvents
Woodbridge	Coarse-loamy, mixed, mesic Typic Fragiochrepts

* The soil is a taxadjunct to the series. See text for a description of those characteristics of the soil that are outside the range of the series.

☆ U.S. GOVERNMENT PRINTING OFFICE: 1981-336-686/1059

NRCS Accessibility Statement

This document is not accessible by screen-reader software. The Natural Resources Conservation Service (NRCS) is committed to making its information accessible to all of its customers and employees. If you are experiencing accessibility issues and need assistance, please contact our Helpdesk by phone at 1-800-457-3642 or by e-mail at ServiceDesk-FTC@ftc.usda.gov. For assistance with publications that include maps, graphs, or similar forms of information, you may also wish to contact our State or local office. You can locate the correct office and phone number at http://offices.sc.egov.usda.gov/locator/app.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.