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NORMAN R. PAQUETTE, P.E.
1921-1985

New England Construction
Attn: Leo Hudon
293 Bourne Ave
Rumford, RI

**RE: Soil Review & Evaluation
Wellesley Country Club
Wellesley, MA**

Mr. Hudon,

At your request our office witnessed and reviewed the excavation at the above referenced project in order to determine the suitability of various on-site soils for structural bearing. Three test pits were excavated, one in the footprint of each of the proposed structures. At each test pit, an overlying layer of fill material covered the native soils. The native soils, including subsoil, were uniformly acceptable for structural bearing.

In the area of the wash pad, the test pit was excavated near the center of the pad, in-line with the ridge of the existing structure. At this location, there was a 1.3' thick layer of crushed stone and sand resting atop a 1.2' thick layer of native subsoil (Sample A). Beneath this subsoil, at a total depth below grade of 2.5', a native substratum was encountered (Sample B). This substratum was composed of a fine to coarse sand, containing trace gravel and trace fines.

In the area of the existing mulched plantings to the north of the paddle court, there was a 6.1' thick layer of mixed loamy fill, comprised of blended sands, organics and rubbish. This fill is resting atop a 1.3' thick layer of native subsoil. Beneath this subsoil, at a total depth below grade of 7.4', a native substratum was encountered. This substratum was identical to that found in the area of the wash pad.

The final test pit was performed near the west end of the proposed turf center. At this location, there was a +/-3.5' thick layer of mixed loamy fill, comprised of blended sands, organics and rubbish. This fill is directly resting atop a native substratum. This substratum was very similar to that found at the other locations, though the grain size distribution tended towards finer particles, and the color was a slightly lighter brown.

The blended loamy fill should be stripped down to the native subsoil or native substrata. This native substratum is excellent material for structural bearing purposes, and should be allowed a design bearing capacity of 5,500 psf if fully compacted. Once the loamy fill is stripped, the native material should be compacted with a heavy vibratory plate compactor or a vibratory roller in order to re-consolidate the soil disturbed during excavation. The soil may then be brought back up to the required grade by placing and compacting 8" lifts of structural fill. The fill must be compacted to 95% of the maximum dry density. The native sub-strata may be used as structural fill. The native subsoil may be used as a bearing stratum if prepared in the manner described above; however an allowable bearing capacity of 4,000 psf should be used in design if bearing on the subsoil.

If you have any questions, or require any additional information, please do not hesitate to contact our office.

Sincerely,

Geisser Engineering Corporation

Asa Bender

Project Engineer
ADB

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Geisser Engineering Corporation
Consulting Engineers

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(401) 438-7711
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December 13, 2011

Test Pit Results

December 2011

Equipment Service Center:

TP-1

Fill	0-27"	Asphalt / Gravel fill
C	27" – 91"	Sand / LS, Trace gravel

Perc Test Results: 1.45 min/in → use 2 min/in.

Environmental Management Center

TP-2

Fill	0-37"	Blended Fill, Fine course sand, Rubbish
B	37" –73"	LS, Trace gravel
C	73-88"	Sand

Perc Test Results: No perc test performed. Material was consistent with TP-1

Maintenance Building

TP-3

Fill	0-36"	Asphalt / Gravel fill
C	27" – 54"	Loamy Sand (LS)

Perc Test Results: No Perc test performed.

TP-4

A	0-12"	Loam
B	12"-60"	Loamy Sand (LS)
C	60" – 120"	Loamy Sand (LS)

Perc Test Results: 0.88 min/in → Use 2 min/in.

Test Pit Results

July 2, 2012

All tests conducted adjacent to existing environmental management center (see sketch)

Environmental Management Center

TP-2 (Conducted in December 2011)

Fill	0-37"	Blended Fill, Fine course sand, Rubbish
B	37" -73"	LS, Trace gravel
C	73-88"	Sand

Perc Test Results: No perc test performed. Material was consistent with TP-1 performed in December 2011 (use 2 min/in.)

TP-2A (Conducted on July 2, 2012)

Location: Range line intersection of east paddle ball court stairs and propane tank

Fill		Blended Fill, Fine course sand, Rubbish
B		Coarse sand
C		Gravelly Coarse Sand

Perc Test Results: Less than 2 minutes per inch

TP-2B (Conducted on July 2, 2012)

Location: Approximately 75' north of TP-2A located on gravel cart path

Fill		Blended Fill, Fine course sand, Rubbish
B		Coarse sand with cobbles and boulders
C1		Coarse sand
C2		Gravelly Coarse Sand

Perc Test Results: 2 minutes per inch (No perc test performed. Material was consistent with TP-2A)

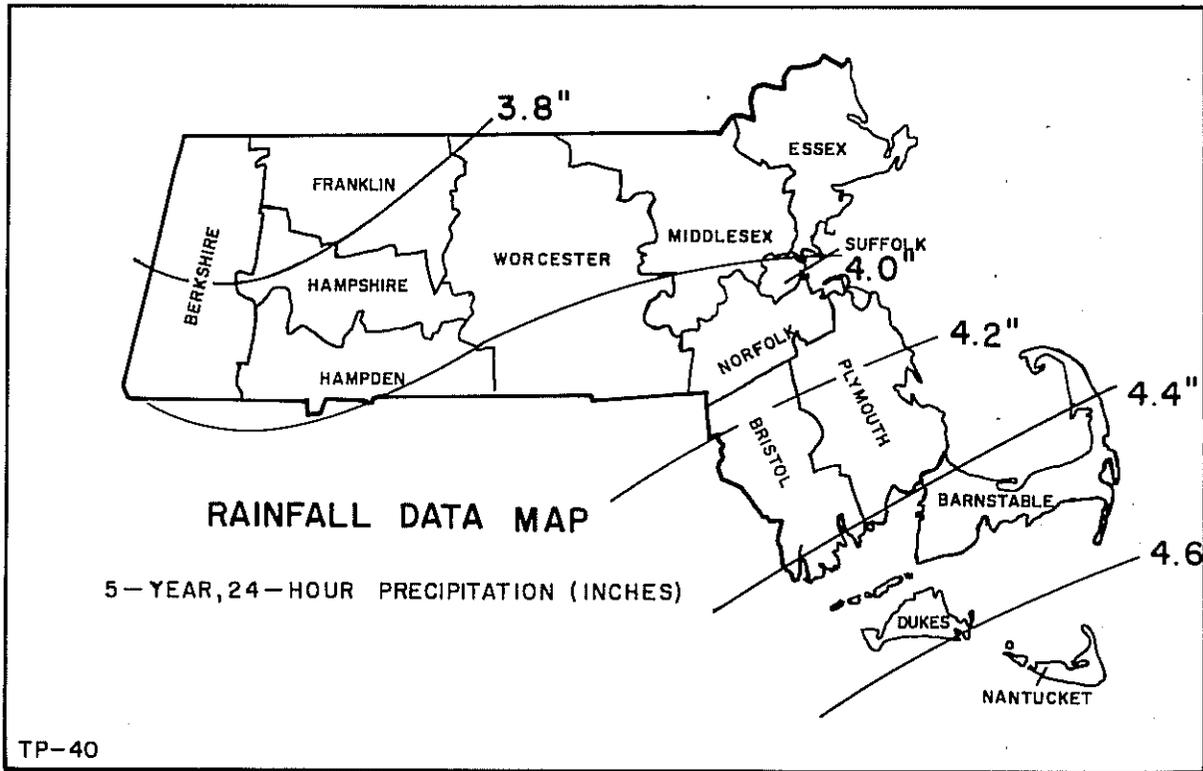
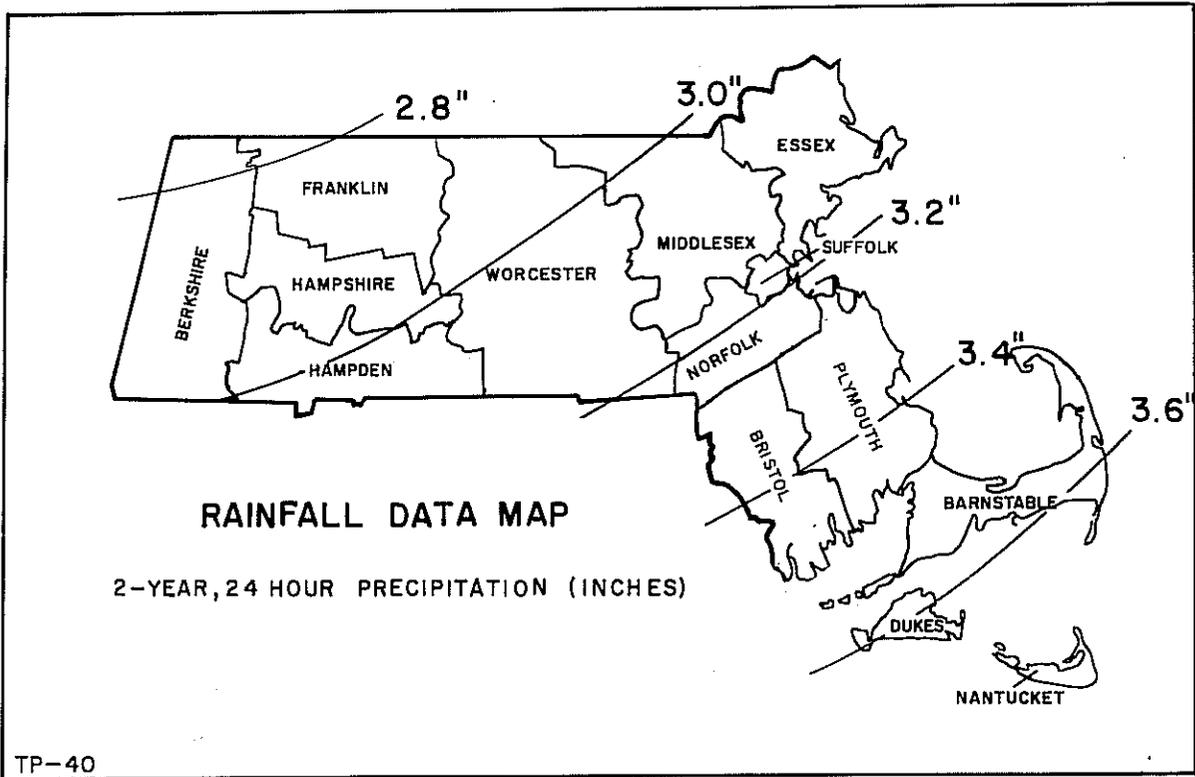


FIGURE B-1, SHEET 1 OF 3

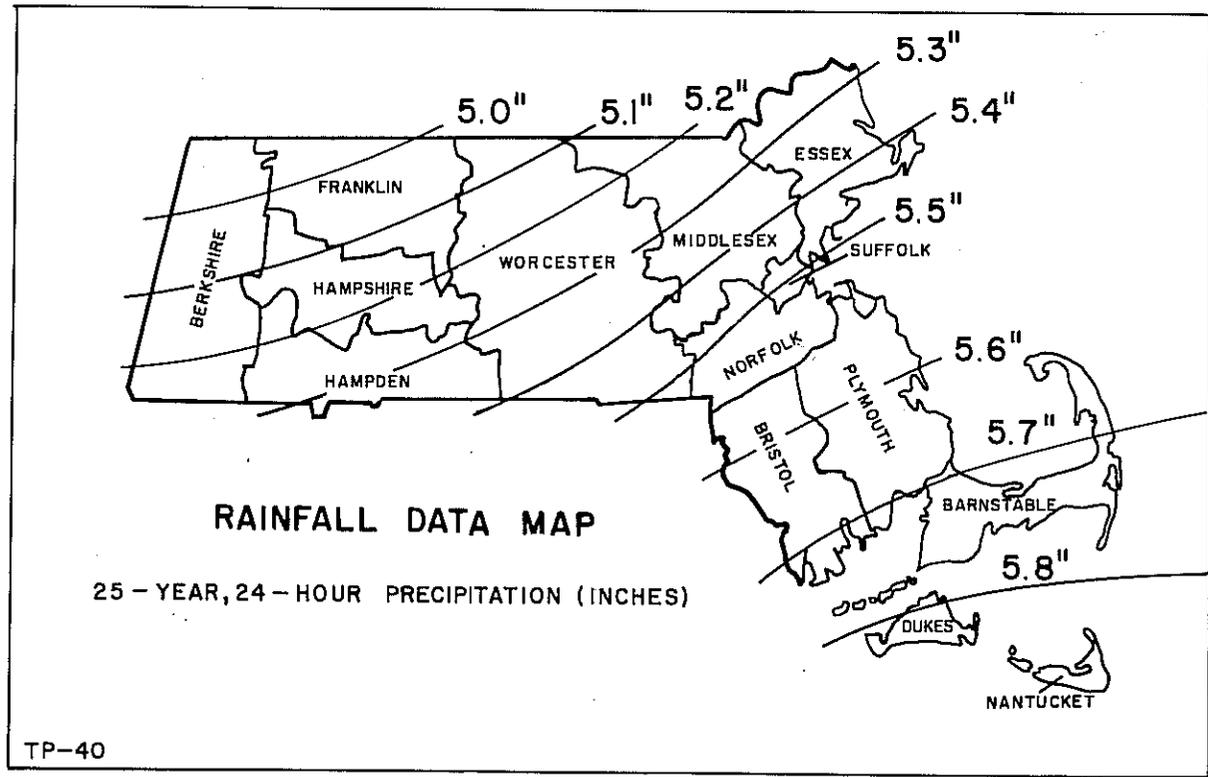
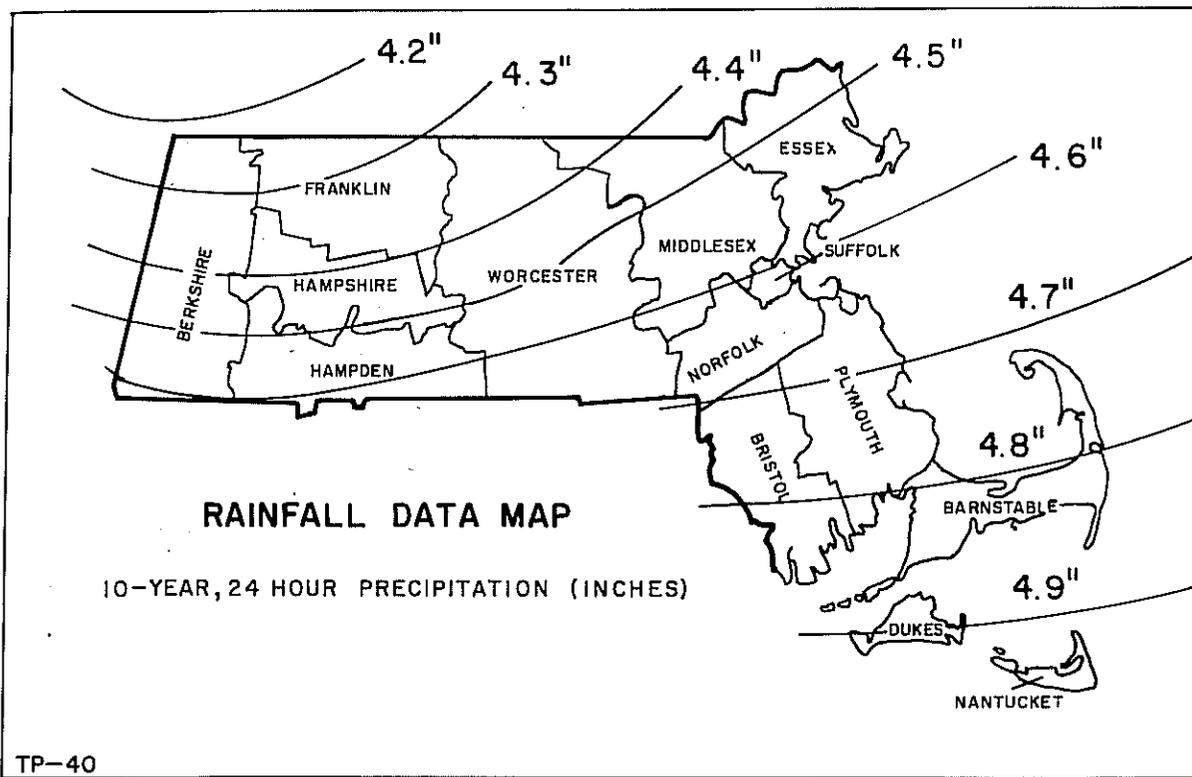


FIGURE B-1, SHEET 2 OF 3

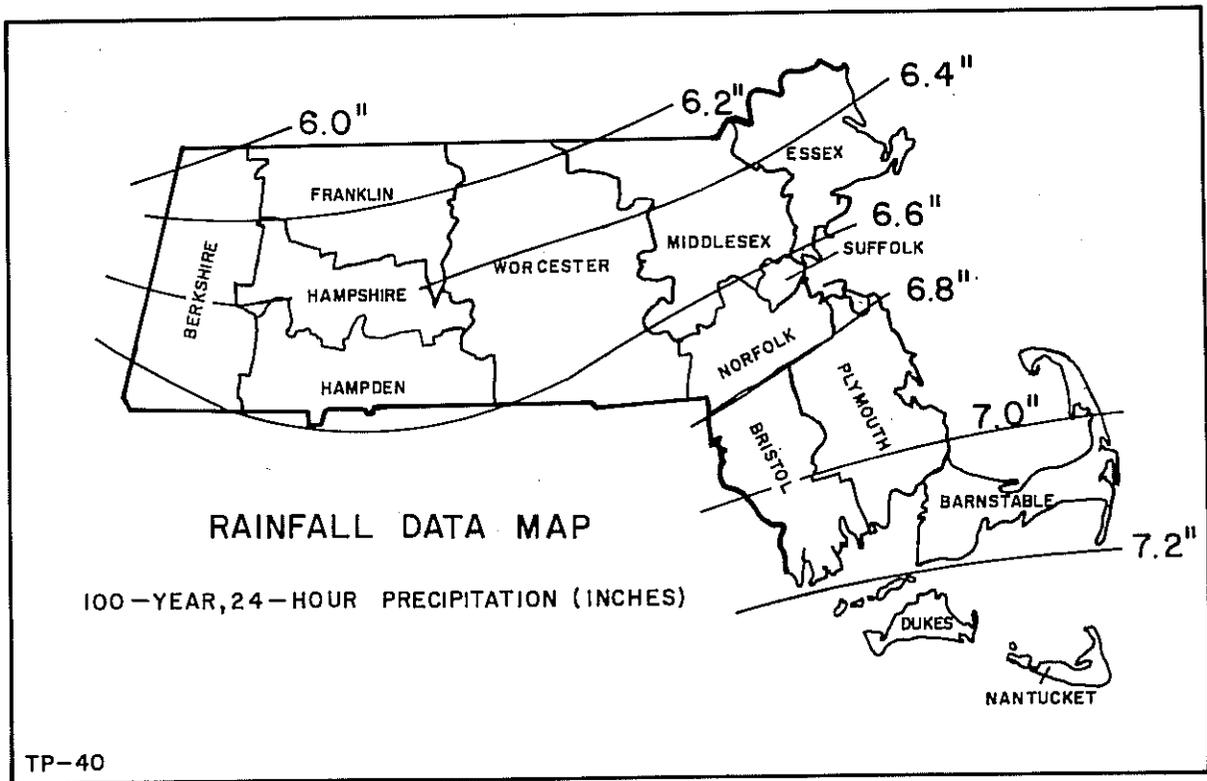
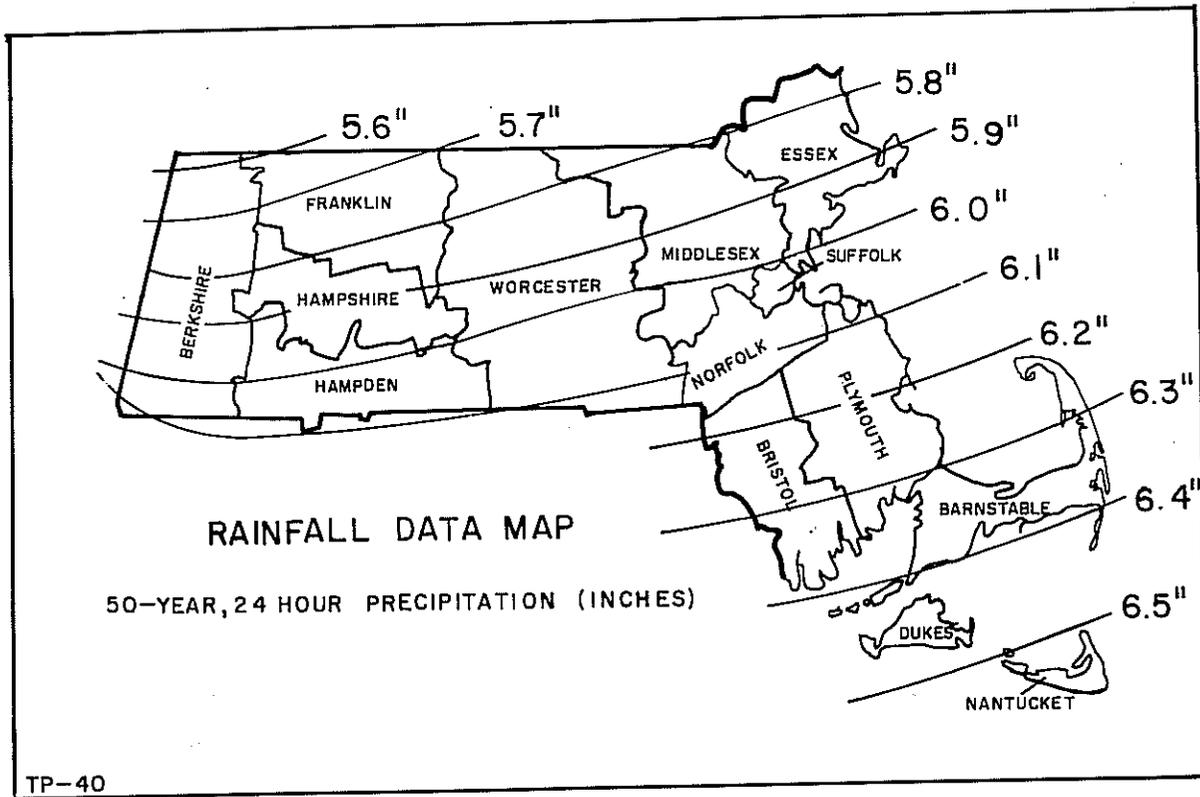


FIGURE B-1, SHEET 3 OF 3

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Units

Soil Ratings

 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Political Features

 Cities

Water Features

 Streams and Canals

Transportation

 Rails
 Interstate Highways
 US Routes
 Major Roads
 Local Roads

MAP INFORMATION

Map Scale: 1:8,630 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:25,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
Coordinate System: UTM Zone 19N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Norfolk and Suffolk Counties, Massachusetts
Survey Area Data: Version 8, Jul 23, 2010

Date(s) aerial images were photographed: 7/10/2003

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Hydrologic Soil Group— Summary by Map Unit — Norfolk and Suffolk Counties, Massachusetts (MA616)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
1	Water		1.2	0.6%
30	Raynham silt loam, 0 to 3 percent slopes	C	10.7	5.8%
51	Swansea muck, 0 to 1 percent slopes	D	0.2	0.1%
223B	Scio very fine sandy loam, 2 to 5 percent slopes	B	5.4	2.9%
245B	Hinckley sandy loam, 3 to 8 percent slopes	A	25.7	13.8%
245C	Hinckley sandy loam, 8 to 15 percent slopes	A	63.4	34.1%
253D	Hinckley loamy sand, 15 to 35 percent slopes	A	15.1	8.1%
254B	Merrimac fine sandy loam, 3 to 8 percent slopes	A	15.2	8.2%
260B	Sudbury fine sandy loam, 2 to 8 percent slopes	B	26.7	14.4%
305C	Paxton fine sandy loam, 8 to 15 percent slopes	C	0.2	0.1%
310B	Woodbridge fine sandy loam, 3 to 8 percent slopes	C	0.5	0.2%
420B	Canton fine sandy loam, 3 to 8 percent slopes	B	0.5	0.3%
602	Urban land, 0 to 15 percent slopes		4.8	2.6%
626B	Merrimac-Urban land complex, 0 to 8 percent slopes	A	7.7	4.1%
653	Udorthents, sandy	B	8.8	4.7%
Totals for Area of Interest			186.0	100.0%

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

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 high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher