United States Department of Agriculture **Chester, PA 19013**
Soil Conservation Service **610-490-6042**

Subject: Ground-Penetrating Radar (GPR) Field Assistance; 19-23 September 1994 Date: 26 September 1994

To: Norman Kallock
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USDA-Soil Conservation Service
Orono, Maine

Purpose:
To provide transect data on the depth to bedrock in various map units in the "Big Woods" soil survey areas of Franklin, Oxford and Somerset counties, Maine.

Participants:
Jim Doolittle, Soil Specialist, SSQAS, SCS, Chester, PA
Wayne Hoar, Soil Scientist, SCS, Rangeley, ME
Jonathan Miller, Soil Party Leader, SCS, Rangeley, ME

Activities:
Ground-penetrating radar activities were targeted on those map units with the least amount of transect data. Over a four-day period, 56 transects, were completed with GPR. These transects provided about 26.6 miles of continuous subsurface data. Along these transects, the depth to bedrock was estimated at 531, equally-spaced, observation points.

Equipment:
The ground-penetrating radar used in this study is the Subsurface Interface Radar (SIR) System-8 manufactured by Geophysical Survey Systems, Inc. Components of the SIR System-8 used in this study were the model 4800 control unit, ADTEK SR 8004H graphic recorder, power distribution unit, transmission cable (30 m), and the model 3110 (120 mHz) antenna. The system was powered by a 12-volt battery.

On 19 September, calibration trials were completed to determine the velocity of signal propagation through tills, depth scale for radar profiles, and the depth of observation. For these trials, a metallic reflector was buried at a depth of 12 inches. The calculated velocity of propagation was 0.116 feet/nanoseconds (ns). With a scanning time

of 140 ns, bedrock investigations used a maximum profiling depth of 16.3 feet (195 inches).

Survey Procedures:
Transect were confined to delineated areas of recognized soil map units. All transects were conducted along access roads. The vehicles odometer was used to measure distances. When appropriate, long transects were subdivided, into 2385 foot units that contained 10 equally-spaced observation points. A 264 foot interval was used between observation points. Though GPR provides a continuous record of subsurface conditions, estimates of the depth to bedrock were restricted to the observation points. At each observation point, soil drainage class was inferred from vegetation and landscape position.

The "start" and "end" locations of each long transects (continuous run made along a roadway and across a soil map unit delineation) were determined with a Magellan GPS NAV 5000 PRO . These locations were not determined for each of the subdivisions of longer transects.

Results:
The following tables summarize observations for each transect according to soil depth and drainage classes. At each observation site, soil depths were estimated from radar interpretations. Depths were measured from the surface to the bedrock interface. A depth of 195 inches signifies that the depth to bedrock exceeded the maximum depth of observation (195 inches). Drainage classes were estimated based on vegetation and landscape position.

Percentages found in the second table for each map unit (extreme right-hand column) are for soil depth class. Areas of very poorly drained soils were combined with areas of poorly drained soils in the second table.

Map unit: 74B Telos-Monarda-Monson Association, 1 to 12 % slopes
Location: 45°19.40′ 69°54.17′ to 45°18.51′ 69°54.42′

Transect 1

Observation	Depth	Drainage
0	38 inches	SWPD
264	35 inches	SWPD
528	97 inches	SWPD
792	136 inches	MWD
1056	78 inches	PD
1320	84 inches	SWPD
1584	195 inches	SWPD
1848	195 inches	PD
2112	195 inches	PD
2376	64 inches	SWPD

9004 6042

Earl 945-5836

	SOIL DRAINAGE CLASS					
DEPTH TO BEDROCK	EX	WD	MWD	SWPD	PD	
00 - 20 inches	0	0	0	0	0	
20 - 40 inches	0	0	0	2	0	----- 20%
40 - 60 inches	0	0	0	0	0	
>60 inches	0	0	1	4	3	----- 80%

Map unit: 74B Telos-Monarda-Monson Association, 1 to 12 % slopes
Location: 45°19.40′ 69°54.17′ to 45°18.51′ 69°54.42′
Transect 2

Observation	Depth	Drainage
0	71 inches	SWPD
264	116 inches	MWD
528	195 inches	PD
792	195 inches	SWPD
1056	78 inches	PD
1320	169 inches	SWPD
1584	110 inches	SWPD
1848	42 inches	SWPD
2112	90 inches	PD
2376	65 inches	SWPD

	SOIL DRAINAGE CLASS					
DEPTH TO BEDROCK	EX	WD	MWD	SWPD	PD	
00 - 20 inches	0	0	0	0	0	
20 - 40 inches	0	0	0	0	0	
40 - 60 inches	0	0	0	1	0	----- 10%
>60 inches	0	0	1	5	3	----- 90%

Map unit: 76C Telos-Chesuncook-Elliotsville Association, 3 to 15 % slopes
Location: 45°18.51′ 69°54.42′ to 45°18.31′ 69°54.53′

Observation	Depth	Drainage
0	53 inches	SWPD
264	88 inches	MWD
528	51 inches	WD
792	128 inches	MWD
1056	103 inches	WD
1320	78 inches	WD
1584	80 inches	MWD
1848	92 inches	SWPD

	SOIL DRAINAGE CLASS					
DEPTH TO BEDROCK	EX	WD	MWD	SWPD	PD	
00 - 20 inches	0	0	0	0	0	
20 - 40 inches	0	0	0	0	0	%
40 - 60 inches	0	1	0	1	0	----- 25%
>60 inches	0	2	3	1	0	----- 75%

Map unit: 74B Telos-Monarda-Monson Association, 1 to 12 % slopes
Location: 45°18.51′ 69°54.42′ to
Transect 1

Observation	Depth	Drainage
0	85 inches	SWPD
264	72 inches	SWPD
528	88 inches	PD
792	18 inches	WD
1056	56 inches	VPD
1320	21 inches	VPD
1584	16 inches	PD
1848	21 inches	SWPD
2112	78 inches	SWPD
2376	55 inches	SWPD

	SOIL DRAINAGE CLASS				
DEPTH TO BEDROCK	EX	WD	MWD	SWPD	PD/VPD
00 - 20 inches	0	1	0	0	1 ----- 20%
20 - 40 inches	0	0	0	1	1 ----- 20%
40 - 60 inches	0	0	0	1	1 ----- 20%
>60 inches	0	0	0	3	1 ----- 40%

Map unit: 74B Telos-Monarda-Monson Association, 1 to 12 % slopes
Location: 45°18.51′ 69°54.42′ to
Transect 2

Observation	Depth	Drainage
0	61 inches	SWPD
264	85 inches	SWPD
528	25 inches	SWPD
792	18 inches	WD
1056	88 inches	SWPD
1320	85 inches	PD
1584	97 inches	SWPD
1848	55 inches	PD
2112	32 inches	SWPD
2376	28 inches	SWPD

	SOIL DRAINAGE CLASS				
DEPTH TO BEDROCK	EX	WD	MWD	SWPD	PD/VPD
00 - 20 inches	0	1	0	0	0 ----- 10%
20 - 40 inches	0	0	0	3	0 ----- 30%
40 - 60 inches	0	0	0	0	1 ----- 10%
>60 inches	0	0	0	4	1 ----- 50%

Map unit: 74B Telos-Monarda-Monson Association, 1 to 12 % slopes
Location: 45°18.51′ 69°54.42′ to
Transect 3

Observation	Depth	Drainage
0	14 inches	PD
264	52 inches	PD
528	56 inches	PD
792	64 inches	PD
1056	64 inches	PD
1320	42 inches	PD
1584	52 inches	PD
1848	68 inches	SWPD
2112	79 inches	PD
2376	64 inches	VPD

	SOIL DRAINAGE CLASS				
DEPTH TO BEDROCK	EX	WD	MWD	SWPD	PD/VPD
00 - 20 inches	0	0	0	0	1 ----- 10%
20 - 40 inches	0	0	0	0	0
40 - 60 inches	0	0	0	0	4 ----- 40%
>60 inches	0	0	0	1	4 ----- 50%

Map unit: 74B Telos-Monarda-Monson Association, 1 to 12 % slopes
Location: 45°18.51′ 69°54.42′ to
Transect 4

Observation	Depth	Drainage
0	66 inches	VPD
264	49 inches	PD
528	56 inches	VPD
792	51 inches	SWPD
1056	28 inches	VPD
1320	78 inches	PD
1584	47 inches	SWPD

	SOIL DRAINAGE CLASS				
DEPTH TO BEDROCK	EX	WD	MWD	SWPD	PD/VPD
00 - 20 inches	0	0	0	0	0
20 - 40 inches	0	0	0	0	1 ----- 14%
40 - 60 inches	0	0	0	2	2 ----- 57%
>60 inches	0	0	0	0	2 ----- 29%

Map unit: 89C Elliotsville-Monson Complex, 5 to 15 % slopes
Location: to 45°18.59′ 69°57.26′

Observation	Depth	Drainage
0	69 inches	MWD
264	77 inches	SWPD
528	94 inches	MWD
792	41 inches	PD
1056	107 inches	MWD
1320	18 inches	SWPD
1584	72 inches	SWPD
1848	25 inches	WD
2112	49 inches	WD
2376	11 inches	WD
2640	82 inches	MWD
2904	155 inches	SWPD

	SOIL DRAINAGE CLASS				
DEPTH TO BEDROCK	EX	WD	MWD	SWPD	PD/VPD
00 - 20 inches	0	1	0	1	0 ----- 17%
20 - 40 inches	0	1	0	0	0 ----- 8%
40 - 60 inches	0	1	0	0	1 ----- 17%
>60 inches	0	0	4	3	0 ----- 58%

Map unit: 34C Danforth-Shirley-Elliotsville Association, 3 to 15 % slopes
Location: 45°22.42′ 69°56.55′ to 45°24.26′ 69°57.22′
Transect 1

Observation	Depth	Drainage
0	71 inches	MWD
264	195 inches	WD
528	195 inches	WD
792	195 inches	WD
1056	195 inches	WD
1320	167 inches	MWD
1584	127 inches	WD
1848	75 inches	PD
2112	109 inches	MWD
2376	88 inches	WD

	SOIL DRAINAGE CLASS				
DEPTH TO BEDROCK	EX	WD	MWD	SWPD	PD/VPD
00 - 20 inches	0	0	0	0	0
20 - 40 inches	0	0	0	0	0
40 - 60 inches	0	0	0	0	0
>60 inches	0	6	3	0	1 ---- 100%

Map unit: 34C Danforth-Shirley-Elliotsville Association, 3 to 15 % slopes
Location: 45°22.42′ 69°56.55′ to 45°24.26′ 69°57.22′
Transect 2

Observation	Depth	Drainage
0	45 inches	WD
264	99 inches	WD
528	17 inches	WD
792	25 inches	MWD
1056	76 inches	WD
1320	95 inches	WD
1584	95 inches	WD
1848	124 inches	WD
2112	31 inches	WD
2376	45 inches	WD

	SOIL DRAINAGE CLASS				
DEPTH TO BEDROCK	EX	WD	MWD	SWPD	PD/VPD
00 - 20 inches	0	1	0	0	0 ----- 10%
20 - 40 inches	0	1	1	0	0 ----- 20%
40 - 60 inches	0	2	0	0	0 ----- 20%
>60 inches	0	5	0	0	0 ----- 50%

Map unit: 34C Danforth-Shirley-Elliotsville Association, 3 to 15 % slopes
Location: 45°22.42′ 69°56.55′ to 45°24.26′ 69°57.22′
Transect 3

Observation	Depth	Drainage
0	64 inches	PD
264	61 inches	WD
528	113 inches	WD
792	40 inches	PD
1056	66 inches	WD
1320	124 inches	MWD
1584	64 inches	WD
1848	56 inches	WD
2112	66 inches	WD
2376	80 inches	MWD

	SOIL DRAINAGE CLASS				
DEPTH TO BEDROCK	EX	WD	MWD	SWPD	PD/VPD
00 - 20 inches	0	0	0	0	0
20 - 40 inches	0	0	0	0	0
40 - 60 inches	0	1	0	0	1 ----- 20%
>60 inches	0	5	2	0	1 ----- 80%

Map unit: 34C Danforth-Shirley-Elliotsville Association, 3 to 15 % slopes
Location: 45°22.42′ 69°56.55′ to 45°24.26′ 69°57.22′
Transect 4

Observation	Depth	Drainage
0	82 inches	WD
264	21 inches	WD
528	86 inches	WD
792	68 inches	WD
1056	64 inches	WD
1320	85 inches	MWD
1584	79 inches	WD
1848	52 inches	WD
2112	48 inches	WD
2376	65 inches	WD

	SOIL DRAINAGE CLASS				
DEPTH TO BEDROCK	EX	WD	MWD	SWPD	PD/VPD
00 - 20 inches	0	0	0	0	0
20 - 40 inches	0	1	0	0	0 ----- 10%
40 - 60 inches	0	2	0	0	0 ----- 20%
>60 inches	0	6	1	0	0 ----- 70%

Map unit: 34C Danforth-Shirley-Elliotsville Association, 3 to 15 % slopes
Location: 45°22.42′ 69°56.55′ to 45°24.26′ 69°57.22′
Transect 5

Observation	Depth	Drainage
0	51 inches	WD
264	51 inches	WD
528	68 inches	WD
792	13 inches	WD
1056	21 inches	WD
1320	22 inches	WD
1584	93 inches	WD
1848	28 inches	MWD

	SOIL DRAINAGE CLASS				
DEPTH TO BEDROCK	EX	WD	MWD	SWPD	PD/VPD
00 - 20 inches	0	1	0	0	0 ----- 12%
20 - 40 inches	0	2	1	0	0 ----- 38%
40 - 60 inches	0	2	0	0	0 ----- 25%
>60 inches	0	2	0	0	0 ----- 25%

Map unit: 69D Surplus-Sisk Association, 12 to 30 % slopes
Location: 44°45.29′ 70°46.38′ to 44°45.21′ 70°47.37′
Transect 1

Observation	Depth	Drainage
0	51 inches	WD
264	64 inches	WD
528	93 inches	MWD
792	58 inches	WD
1056	49 inches	WD
1320	80 inches	WD
1584	147 inches	MWD
1848	31 inches	WD
2112	34 inches	MWD
2376	37 inches	MWD

	SOIL DRAINAGE CLASS				
DEPTH TO BEDROCK	EX	WD	MWD	SWPD	PD/VPD
00 - 20 inches	0	0	0	0	0
20 - 40 inches	0	1	2	0	0 ----- 30%
40 - 60 inches	0	3	0	0	0 ----- 30%
>60 inches	0	2	2	0	0 ----- 40%

Map unit: 69D Surplus-Sisk Association, 12 to 30 % slopes
Location: 44°45.29′ 70°46.38′ to 44°45.21′ 70°47.37′
Transect 2

Observation	Depth	Drainage
0	104 inches	SWPD
264	79 inches	MWD
528	88 inches	SWPD
792	82 inches	MWD
1056	89 inches	WD
1320	141 inches	WD
1584	195 inches	WD

	SOIL DRAINAGE CLASS				
DEPTH TO BEDROCK	EX	WD	MWD	SWPD	PD/VPD
00 - 20 inches	0	0	0	0	0
20 - 40 inches	0	0	0	0	0
40 - 60 inches	0	0	0	0	0
>60 inches	0	3	2	2	0 ---- 100%

Map unit: 48D Marlow-Lyman-Dixfield Association, 12 to 35 % slopes
Location: 44°45.21′ 70°47.37′ to 44°45.41′ 70°48.24′
Transect 1

Observation	Depth	Drainage
0	163 inches	WD
264	103 inches	WD
528	115 inches	WD
792	100 inches	WD
1056	51 inches	MWD
1320	123 inches	MWD
1584	116 inches	MWD
1848	195 inches	WD
2112	195 inches	WD
2376	80 inches	MWD

	SOIL DRAINAGE CLASS				
DEPTH TO BEDROCK	EX	WD	MWD	SWPD	PD/VPD
00 - 20 inches	0	0	0	0	0
20 - 40 inches	0	0	0	0	0
40 - 60 inches	0	0	1	0	0 ----- 10%
>60 inches	0	6	3	0	0 ----- 90%

Map unit: 48D Marlow-Lyman-Dixfield Association, 12 to 35 % slopes
Location: 44°45.21′ 70°47.37′ to 44°45.41′ 70°48.24′
Transect 2

Observation	Depth	Drainage
0	150 inches	MWD
264	150 inches	WD
528	71 inches	MWD
792	103 inches	WD
1056	78 inches	WD
1320	123 inches	WD

	SOIL DRAINAGE CLASS				
DEPTH TO BEDROCK	EX	WD	MWD	SWPD	PD/VPD
00 - 20 inches	0	0	0	0	0
20 - 40 inches	0	0	0	0	0
40 - 60 inches	0	0	0	0	0
>60 inches	0	4	2	0	0 ---- 100%

Map unit: 302D Herman-Tunbridge-Skerry Association, 12 to 30 % slopes
Location: 44°45.33′ 70°48.31′ to 44°46.02′ 70°50.09′
Transect 1

Observation	Depth	Drainage
0	127 inches	WD
264	42 inches	WD
528	110 inches	WD
792	63 inches	WD
1056	104 inches	WD
1320	85 inches	WD
1584	195 inches	WD

	SOIL DRAINAGE CLASS				
DEPTH TO BEDROCK	EX	WD	MWD	SWPD	PD/VPD
00 - 20 inches	0	0	0	0	0
20 - 40 inches	0	0	0	0	0
40 - 60 inches	0	1	0	0	0 ----- 14%
>60 inches	0	6	0	0	0 ----- 86%

Map unit: 302C Herman-Tunbridge-Skerry Association, 5 to 15 % slopes
Location: 44°45.33′ 70°48.31′ to 44°46.02′ 70°50.09′
Transect 1

Observation	Depth	Drainage
0	87 inches	WD
264	195 inches	WD
528	195 inches	WD
792	85 inches	WD
1056	99 inches	WD
1320	93 inches	MWD
1584	88 inches	MWD
1848	90 inches	WD
2112	78 inches	WD
2376	85 inches	WD

	SOIL DRAINAGE CLASS				
DEPTH TO BEDROCK	EX	WD	MWD	SWPD	PD/VPD
00 - 20 inches	0	0	0	0	0
20 - 40 inches	0	0	0	0	0
40 - 60 inches	0	0	0	0	0
>60 inches	0	8	2	0	0 ---- 100%

Map unit: 302C Herman-Tunbridge-Skerry Association, 5 to 15 % slopes
Location: 44°45.33′ 70°48.31′ to 44°46.02′ 70°50.09′
Transect 2

Observation	Depth	Drainage
0	113 inches	WD
264	59 inches	MWD
528	32 inches	WD
792	195 inches	WD
1056	195 inches	WD
1320	195 inches	MWD
1584	37 inches	MWD
1848	31 inches	MWD
2112	41 inches	MWD
2376	35 inches	MWD

	SOIL DRAINAGE CLASS				
DEPTH TO BEDROCK	EX	WD	MWD	SWPD	PD/VPD
00 - 20 inches	0	0	0	0	0
20 - 40 inches	0	1	3	0	0 ----- 40%
40 - 60 inches	0	0	2	0	0 ----- 20%
>60 inches	0	3	1	0	0 ----- 40%

Map unit: 302C Herman-Tunbridge-Skerry Association, 5 to 15 % slopes
Location: 44°45.33′ 70°48.31′ to 44°46.02′ 70°50.09′
Transect 3

Observation	Depth	Drainage
0	44 inches	WD
264	56 inches	WD
528	59 inches	WD
792	69 inches	WD
1056	99 inches	MWD
1320	195 inches	WD
1584	195 inches	WD
1848	93 inches	WD
2112	90 inches	WD
2376	85 inches	WD

	SOIL DRAINAGE CLASS				
DEPTH TO BEDROCK	EX	WD	MWD	SWPD	PD/VPD
00 - 20 inches	0	0	0	0	0
20 - 40 inches	0	0	0	0	0
40 - 60 inches	0	3	0	0	0 ----- 30%
>60 inches	0	6	1	0	0 ----- 70%

Map unit: 302D Herman-Tunbridge-Skerry Association, 12 to 30 % slopes
Location: 44°45.35′ 70°43.49′ to 44°46.13′ 70°44.02′
Transect 1

Observation	Depth	Drainage
0	79 inches	WD
264	195 inches	WD
528	106 inches	MWD
792	110 inches	WD
1056	97 inches	MWD
1320	90 inches	WD
1584	195 inches	WD
1848	102 inches	WD
2112	195 inches	WD
2376	110 inches	MWD

	SOIL DRAINAGE CLASS				
DEPTH TO BEDROCK	EX	WD	MWD	SWPD	PD/VPD
00 - 20 inches	0	0	0	0	0
20 - 40 inches	0	0	0	0	0
40 - 60 inches	0	0	0	0	0
>60 inches	0	7	3	0	0 ---- 100%

Map unit: 302D Herman-Tunbridge-Skerry Association, 12 to 30 % slopes
Location: 44°45.35′ 70°43.49′ to 44°46.13′ 70°44.02′
Transect 2

Observation	Depth	Drainage
0	124 inches	MWD
264	69 inches	WD
528	72 inches	WD
792	64 inches	WD
1056	195 inches	WD
1320	117 inches	WD
1584	49 inches	WD
1848	83 inches	WD

	SOIL DRAINAGE CLASS				
DEPTH TO BEDROCK	EX	WD	MWD	SWPD	PD/VPD
00 - 20 inches	0	0	0	0	0
20 - 40 inches	0	0	0	0	0
40 - 60 inches	0	1	0	0	0 ----- 12%
>60 inches	0	6	1	0	0 ----- 88%

Map unit: 301C Skerry-Herman Association, 12 to 30 % slopes
Location: 44°46.13′ 70°44.02′ to 44°46.18′ 70°43.29′
Transect 1

Observation	Depth	Drainage
0	93 inches	WD
264	102 inches	WD
528	85 inches	WD
792	138 inches	MWD
1056	85 inches	WD
1320	73 inches	MWD
1584	105 inches	PD
1848	93 inches	PD
2112	51 inches	SWPD
2376	44 inches	MWD
2640	**138 inches**	**WD**
2904	**113 inches**	**WD**
3168	**84 inches**	**WD**

	SOIL DRAINAGE CLASS				
DEPTH TO BEDROCK	EX	WD	MWD	SWPD	PD/VPD
00 - 20 inches	0	0	0	0	0
20 - 40 inches	0	0	0	0	0
40 - 60 inches	0	0	1	1	0 ----- 15%
>60 inches	0	7	2	0	2 ----- 85%

Map unit: 94XC Lyman-Tunbridge Association, 4 to 25 % slopes
Location: 44°48.34′ 70°40.51′ to 44°48.34′ 70°41.17′
Transect 1

Observation	Depth	Drainage
0	28 inches	SWPD
264	40 inches	SWPD
528	38 inches	MWD
792	19 inches	SWPD
1056	64 inches	MWD
1320	88 inches	SWPD
1584	87 inches	WD
1848	104 inches	MWD
2112	100 inches	SWPD
2376	93 inches	MWD
2640	**77 inches**	**MWD**
2904	**82 inches**	**SWPD**
3168	**89 inches**	**SWPD**
3432	**47 inches**	**SWPD**

	SOIL DRAINAGE CLASS				
DEPTH TO BEDROCK	EX	WD	MWD	SWPD	PD/VPD
00 - 20 inches	0	0	0	1	0 ----- 7%
20 - 40 inches	0	0	1	1	0 ----- 14%
40 - 60 inches	0	0	0	2	0 ----- 14%
>60 inches	0	1	4	4	0 ----- 65%

Map unit: 34C Danforth-Shirley-Elliotsville Association, 3 to 15 % slopes
Location: 45°19.40′ 69°54.17′ to 45°18.51′ 69°54.42′
Transect 1

Observation	Depth	Drainage
0	26 inches	WD
264	79 inches	WD
528	38 inches	MWD
792	52 inches	WD
1056	49 inches	WD
1320	89 inches	WD
1584	71 inches	WD
1848	37 inches	MWD
2112	52 inches	SWPD
2376	10 inches	WD

	SOIL DRAINAGE CLASS				
DEPTH TO BEDROCK	EX	WD	MWD	SWPD	PD/VPD
00 - 20 inches	0	2	0	0	0 ----- 20%
20 - 40 inches	0	0	2	0	0 ----- 20%
40 - 60 inches	0	2	0	1	0 ----- 30%
>60 inches	0	3	0	0	0 ----- 30%

Map unit: 34C Danforth-Shirley-Elliotsville Association, 3 to 15 % slopes
Location: 45°19.40′ 69°54.17′ to 45°18.51′ 69°54.42′
Transect 2

Observation	Depth	Drainage
0	42 inches	PD
264	51 inches	WD
528	35 inches	WD
792	27 inches	WD
1056	42 inches	MWD
1320	75 inches	WD
1584	82 inches	MWD
1848	75 inches	SWPD
2112	85 inches	WD
2376	35 inches	WD
2640	62 inches	WD
2904	18 inches	WD

	SOIL DRAINAGE CLASS				
DEPTH TO BEDROCK	EX	WD	MWD	SWPD	PD/VPD
00 - 20 inches	0	1	0	0	0 ----- 8%
20 - 40 inches	0	3	0	0	0 ----- 25%
40 - 60 inches	0	1	1	0	1 ----- 25%
>60 inches	0	3	1	1	0 ----- 42%

Map unit: 74B Telos-Monarda-Monson Association, 1 to 12 % slopes
Location: 45°24.15′ 69°57.19′ to 45°25.18′ 69°56.59′
Transect 1

Observation	Depth	Drainage
0	44 inches	WD
264	38 inches	PD
528	65 inches	WD
792	62 inches	PD
1056	38 inches	SWPD
1320	56 inches	SWPD
1584	40 inches	SWPD
1848	25 inches	WD
2112	75 inches	WD
2376	40 inches	WD

	SOIL DRAINAGE CLASS				
DEPTH TO BEDROCK	EX	WD	MWD	SWPD	PD/VPD
00 - 20 inches	0	0	0	0	0
20 - 40 inches	0	1	0	1	1 ----- 30%
40 - 60 inches	0	2	0	2	0 ----- 40%
>60 inches	0	2	0	0	1 ----- 30%

Map unit: 74B Telos-Monarda-Monson Association, 1 to 12 % slopes
Location: 45°24.15′ 69°57.19′ to 45°25.18′ 69°56.59′
Transect 2

Observation	Depth	Drainage
0	28 inches	PD
264	25 inches	WD
528	40 inches	SWPD
792	17 inches	PD
1056	49 inches	SWPD
1320	22 inches	WD
1584	22 inches	SWPD
1848	35 inches	SWPD
2112	30 inches	WD
2376	40 inches	MWD
2640	35 inches	SWPD
2904	35 inches	SWPD

	SOIL DRAINAGE CLASS				
DEPTH TO BEDROCK	EX	WD	MWD	SWPD	PD/VPD
00 - 20 inches	0	0	0	0	1 ----- 8%
20 - 40 inches	0	3	0	5	1 ----- 75%
40 - 60 inches	0	0	1	1	0 ----- 17%
>60 inches	0	0	0	0	0

Map unit: 89C Elliotsville-Monson Association, 5 to 15% slopes

Location: 45°26.19′ 69°56.55′ to 45°26.36′ 69°56.57′

Transect 1

Observation	Depth	Drainage
0	28 inches	MWD
264	51 inches	SWPD
528	42 inches	WD
792	21 inches	SWPD
1056	35 inches	WD
1320	10 inches	WD
1584	30 inches	MWD
1848	56 inches	SWPD
2112	82 inches	SWPD

	SOIL DRAINAGE CLASS				
DEPTH TO BEDROCK	EX	WD	MWD	SWPD	PD/VPD
00 - 20 inches	0	1	0	0	0 ----- 11%
20 - 40 inches	0	1	2	1	0 ----- 45%
40 - 60 inches	0	1	0	2	0 ----- 33%
>60 inches	0	0	0	1	0 ----- 11%

Map unit: 74B Telos-Monarda-Monson Association, 1 to 12 % slopes

Location: 45°26.36′ 69°56.57′ to 45°26.46′ 69°56.43′

Transect 1

Observation	Depth	Drainage
0	41 inches	SWPD
264	35 inches	WD
528	28 inches	PD
792	30 inches	MWD
1056	61 inches	WD
1320	45 inches	PD
1584	22 inches	SWPD

	SOIL DRAINAGE CLASS				
DEPTH TO BEDROCK	EX	WD	MWD	SWPD	PD/VPD
00 - 20 inches	0	0	0	0	0
20 - 40 inches	0	1	1	1	1 ----- 57%
40 - 60 inches	0	0	0	1	1 ----- 29%
>60 inches	0	1	0	0	0 ----- 14%

Map unit: 94C Monson-Elliotsville-Ricker Complex, 4 to 25 % slopes
Location: 45°26.46′ 69°56.43′ to 45°27.05′ 69°56.21′

Transect 1

Observation	Depth	Drainage
0	110 inches	MWD
264	31 inches	MWD
528	21 inches	WD
792	31 inches	WD
1056	35 inches	MWD
1320	38 inches	WD
1584	61 inches	WD
1848	28 inches	WD
2112	42 inches	WD
2376	113 inches	WD

	SOIL DRAINAGE CLASS				
DEPTH TO BEDROCK	EX	WD	MWD	SWPD	PD/VPD
00 - 20 inches	0	0	0	0	0
20 - 40 inches	0	4	2	0	0 ----- 60%
40 - 60 inches	0	1	0	0	0 ----- 10%
>60 inches	0	2	1	0	0 ----- 30%

Map unit: 74B Telos-Monarda-Monson Association, 1 to 12 % slopes
Location: 45°27.05′ 69°56.21′ to 45°27.41′ 69°55.47′

Transect 1

Observation	Depth	Drainage
0	123 inches	PD
264	76 inches	SWPD
528	184 inches	PD
792	195 inches	WD
1056	49 inches	WD
1320	24 inches	SWPD
1584	123 inches	PD
1848	110 inches	SWPD
2112	30 inches	WD
2376	28 inches	WD

	SOIL DRAINAGE CLASS				
DEPTH TO BEDROCK	EX	WD	MWD	SWPD	PD/VPD
00 - 20 inches	0	0	0	0	0
20 - 40 inches	0	2	0	1	0 ----- 30%
40 - 60 inches	0	1	0	0	0 ----- 10%
>60 inches	0	1	0	2	3 ----- 60%

Map unit: 74B Telos-Monarda-Monson Association, 1 to 12 % slopes
Location: 45°27.05′ 69°56.21′ to 45°27.41′ 69°55.47′
Transect 2

Observation	Depth	Drainage
0	48 inches	WD
264	62 inches	WD
528	51 inches	SWPD
792	162 inches	WD
1056	195 inches	WD
1320	66 inches	SWPD
1584	96 inches	PD
1848	130 inches	WD
2112	140 inches	WD
2376	131 inches	WD
2640	31 inches	WD

	SOIL DRAINAGE CLASS				
DEPTH TO BEDROCK	EX	WD	MWD	SWPD	PD/VPD
00 - 20 inches	0	0	0	0	0
20 - 40 inches	0	1	0	0	0 ----- 9%
40 - 60 inches	0	1	0	1	0 ----- 18%
>60 inches	0	6	0	1	1 ----- 73%

Map unit: 89C Elliotsville-Monson Complex, 5 to 15 % slopes
Location: 45°27.41′ 69°55.47′ to 45°28.20′ 69°55.45′
Transect 1

Observation	Depth	Drainage
0	30 inches	WD
264	59 inches	WD
528	31 inches	WD
792	148 inches	MWD
1056	71 inches	MWD
1320	42 inches	WD
1584	25 inches	SWPD
1848	24 inches	MWD
2112	34 inches	WD
2376	76 inches	WD

	SOIL DRAINAGE CLASS				
DEPTH TO BEDROCK	EX	WD	MWD	SWPD	PD/VPD
00 - 20 inches	0	0	0	0	0
20 - 40 inches	0	3	1	1	0 ----- 50%
40 - 60 inches	0	2	0	0	0 ----- 20%
>60 inches	0	1	2	0	0 ----- 30%

Map unit: 89C Elliotsville-Monson Complex, 5 to 15 % slopes
Location: 45°27.41′ 69°55.47′ to 45°28.20′ 69°55.45′
Transect 2

Observation	Depth	Drainage
0	110 inches	MWD
264	103 inches	PD
528	120 inches	WD
792	78 inches	WD
1056	71 inches	WD
1320	75 inches	WD
1584	88 inches	WD
1848	30 inches	WD
2112	85 inches	PD
2376	195 inches	WD
2640	40 inches	WD
2904	44 inches	WD

	SOIL DRAINAGE CLASS					
DEPTH TO BEDROCK	EX	WD	MWD	SWPD	PD/VPD	
00 - 20 inches	0	0	0	0	0	
20 - 40 inches	0	1	0	0	0 -----	8%
40 - 60 inches	0	2	0	0	0 -----	17%
>60 inches	0	6	1	0	2 -----	75%

Map unit: 89C Elliotsville-Monson Complex, 5 to 15 % slopes
Location: 45°26.07′ 69°55.03′ to 45°26.19′ 69°54.50′
Transect 1

Observation	Depth	Drainage
0	176 inches	WD
264	105 inches	WD
528	110 inches	WD
792	130 inches	WD
1056	10 inches	WD
1320	11 inches	WD
1584	14 inches	WD

	SOIL DRAINAGE CLASS					
DEPTH TO BEDROCK	EX	WD	MWD	SWPD	PD/VPD	
00 - 20 inches	0	3	0	0	0 -----	43%
20 - 40 inches	0	0	0	0	0	
40 - 60 inches	0	0	0	0	0	
>60 inches	0	4	0	0	0 -----	57%

Map unit: 94C Monson-Elliotsville-Ricker Complex, 4 to 25 % slopes
Location: 45°26.19′ 69°54.50′ to 45°26.29′ 69°54.38′

Transect 1

Observation	Depth	Drainage
0	10 inches	WD
264	0 inches	WD
528	16 inches	WD
792	47 inches	WD
1056	11 inches	PD
1320	183 inches	WD

	SOIL DRAINAGE CLASS				
DEPTH TO BEDROCK	EX	WD	MWD	SWPD	PD/VPD
00 - 20 inches	0	3	0	0	1 ----- 67%
20 - 40 inches	0	0	0	0	0
40 - 60 inches	0	1	0	0	0 ----- 17%
>60 inches	0	1	0	0	0 ----- 16%

Map unit: 89C Elliotsville-Monson Complex, 5 to 15 % slopes
Location: 45°26.29′ 69°54.38′ to 45°27.17′ 69°54.11′

Transect 1

Observation	Depth	Drainage
0	47 inches	WD
264	128 inches	WD
528	85 inches	WD
792	75 inches	WD
1056	61 inches	WD
1320	99 inches	WD
1584	142 inches	WD
1848	73 inches	WD
2112	143 inches	WD
2376	195 inches	WD

	SOIL DRAINAGE CLASS				
DEPTH TO BEDROCK	EX	WD	MWD	SWPD	PD/VPD
00 - 20 inches	0	0	0	0	0
20 - 40 inches	0	0	0	0	0
40 - 60 inches	0	1	0	0	0 ----- 10%
>60 inches	0	9	0	0	0 ----- 90%

Map unit: 89C Elliotsville-Monson Complex, 5 to 15 % slopes
Location: 45°26.29′ 69°54.38′ to 45°27.17′ 69°54.11′
Transect 2

Observation	Depth	Drainage
0	117 inches	WD
264	93 inches	WD
528	92 inches	WD
792	195 inches	WD
1056	195 inches	WD
1320	195 inches	WD
1584	71 inches	VPD
1848	134 inches	WD
2112	147 inches	WD
2376	195 inches	WD

	SOIL DRAINAGE CLASS				
DEPTH TO BEDROCK	EX	WD	MWD	SWPD	PD/VPD
00 - 20 inches	0	0	0	0	0
20 - 40 inches	0	0	0	0	0
40 - 60 inches	0	0	0	0	0
>60 inches	0	9	0	0	1 ---- 100%

Map unit: 54C Colonel-Dixfield-Brayton Association, 3 to 15 % slopes
Location: 44°50.07′ 70°29.59′ to 44°50.03′ 70°29.42′
Transect 1

Observation	Depth	Drainage
0	73 inches	SWPD
264	103 inches	MWD
528	101 inches	MWD
792	83 inches	MWD
1056	195 inches	MWD
1320	195 inches	WD

	SOIL DRAINAGE CLASS				
DEPTH TO BEDROCK	EX	WD	MWD	SWPD	PD/VPD
00 - 20 inches	0	0	0	0	0
20 - 40 inches	0	0	0	0	0
40 - 60 inches	0	0	0	0	0
>60 inches	0	1	4	1	0 ---- 100%

Map unit: 94XC Lyman-Tunbridge Association, 4 to 25 % slopes
Location: 44°50.03′ 70°29.42′ to 44°49.56′ 70°29.29′

Transect 1

Observation	Depth	Drainage
0	69 inches	WD
264	71 inches	WD
528	49 inches	MWD
792	80 inches	WD
1056	78 inches	WD

	SOIL DRAINAGE CLASS				
DEPTH TO BEDROCK	EX	WD	MWD	SWPD	PD/VPD
00 - 20 inches	0	0	0	0	0
20 - 40 inches	0	0	0	0	0
40 - 60 inches	0	0	1	0	0 ----- 20%
>60 inches	0	4	0	0	0 ----- 80%

Map unit: 48D Marlow-Lyman-Dixfield Association, 12 to 35 % slopes
Location: 44°49.56′ 70°29.29′ to 44°49.55′ 70°29.08′

Transect 1

Observation	Depth	Drainage
0	56 inches	WD
264	38 inches	WD
528	138 inches	WD
792	79 inches	MWD
1056	152 inches	WD
1320	42 inches	WD
1584	38 inches	WD
1848	30 inches	WD

	SOIL DRAINAGE CLASS				
DEPTH TO BEDROCK	EX	WD	MWD	SWPD	PD/VPD
00 - 20 inches	0	0	0	0	0
20 - 40 inches	0	3	0	0	0 ----- 38%
40 - 60 inches	0	2	0	0	0 ----- 25%
>60 inches	0	2	1	0	0 ----- 37%

Map unit: 48C Dixfield-Colonel-Lyman Association, 3 to 15 % slopes
Location: 44°49.55′ 70°29.08′ to 44°49.51′ 70°28.44′
Transect 1

Observation	Depth	Drainage
0	34 inches	WD
264	157 inches	MWD
528	27 inches	MWD
792	25 inches	MWD
1056	94 inches	SWPD
1320	15 inches	WD
1584	49 inches	WD
1848	75 inches	WD
2112	49 inches	WD
2376	28 inches	MWD
2640	**35 inches**	**MWD**

	SOIL DRAINAGE CLASS				
DEPTH TO BEDROCK	EX	WD	MWD	SWPD	PD/VPD
00 - 20 inches	0	1	0	0	0 ----- 9%
20 - 40 inches	0	1	4	0	0 ----- 46%
40 - 60 inches	0	2	0	0	0 ----- 18%
>60 inches	0	1	1	1	0 ----- 27%

Map unit: 94XC Lyman-Tunbridge Association, 4 to 25 % slopes
Location: 44°49.51′ 70°28.44′ to 44°49.27′ 70°28.41′
Transect 1

Observation	Depth	Drainage
0	41 inches	MWD
264	49 inches	MWD
528	41 inches	MWD
792	125 inches	WD
1056	83 inches	WD
1320	28 inches	MWD
1584	34 inches	WD
1848	35 inches	MWD
2112	99 inches	WD
2376	25 inches	MWD
2640	**82 inches**	**WD**
2904	**35 inches**	**SWPD**

	SOIL DRAINAGE CLASS				
DEPTH TO BEDROCK	EX	WD	MWD	SWPD	PD/VPD
00 - 20 inches	0	0	0	0	0
20 - 40 inches	0	1	3	1	0 ----- 42%
40 - 60 inches	0	0	3	0	0 ----- 25%
>60 inches	0	4	0	0	0 ----- 33%

Map unit: 47C Monadnock-Berkshire-Lyman Association, 5 to 16 % slopes
Location: 44°48.53′ 70°30.56′ to 44°49.04′ 70°30.35′
Transect 1

Observation	Depth	Drainage
0	18 inches	WD
264	195 inches	WD
528	195 inches	WD
792	195 inches	WD
1056	195 inches	WD
1320	85 inches	WD
1584	96 inches	WD
1848	195 inches	WD
2112	127 inches	WD

	SOIL DRAINAGE CLASS				
DEPTH TO BEDROCK	EX	WD	MWD	SWPD	PD/VPD
00 - 20 inches	0	1	0	0	0 ----- 11%
20 - 40 inches	0	0	0	0	0
40 - 60 inches	0	0	0	0	0
>60 inches	0	8	0	0	0 ----- 89%

Map unit: 47D Monadnock-Bershire-Lyman Association, 10 to 45 % slopes
Location: 44°49.04′ 70°30.35′ to 44°49.25′ 70°29.52′
Transect 1

Observation	Depth	Drainage
0	195 inches	WD
264	195 inches	WD
528	195 inches	WD
792	71 inches	WD
1056	71 inches	WD
1320	56 inches	WD
1584	141 inches	WD
1848	48 inches	WD

	SOIL DRAINAGE CLASS				
DEPTH TO BEDROCK	EX	WD	MWD	SWPD	PD/VPD
00 - 20 inches	0	0	0	0	0
20 - 40 inches	0	0	0	0	0
40 - 60 inches	0	2	0	0	0 ----- 25%
>60 inches	0	6	0	0	0 ----- 75%

Map unit: 47D Monadnock-Bershire-Lyman Association, 10 to 45 % slopes
Location: 44°49.04′ 70°30.35′ to 44°49.25′ 70°29.52′
Transect 2

Observation	Depth	Drainage
0	86 inches	WD
264	28 inches	WD
528	56 inches	WD
792	105 inches	WD
1056	195 inches	WD
1320	90 inches	WD
1584	61 inches	WD
1848	85 inches	MWD

	SOIL DRAINAGE CLASS				
DEPTH TO BEDROCK	EX	WD	MWD	SWPD	PD/VPD
00 - 20 inches	0	0	0	0	0
20 - 40 inches	0	1	0	0	0 ----- 12%
40 - 60 inches	0	1	0	0	0 ----- 12%
>60 inches	0	5	1	0	0 ----- 76%

Map unit: 302D Hermon-Tunbridge-Skerry Association, 12 to 30 % slopes
Location: 44°45.46′ 70°35.37′ to 44°45.46′ 70°35.11′
Transect 1

Observation	Depth	Drainage
0	123 inches	MWD
264	195 inches	MWD
528	195 inches	WD
792	86 inches	WD
1056	95 inches	MWD
1320	86 inches	MWD
1584	78 inches	WD
1848	63 inches	WD
2112	52 inches	WD
2376	31 inches	WD
2640	**198 inches**	**WD**

	SOIL DRAINAGE CLASS				
DEPTH TO BEDROCK	EX	WD	MWD	SWPD	PD/VPD
00 - 20 inches	0	0	0	0	0
20 - 40 inches	0	1	0	0	0 ----- 9%
40 - 60 inches	0	1	0	0	0 ----- 9%
>60 inches	0	5	4	0	0 ----- 82%

Map unit: 102D Saddleback-Ricker Complex, 10 to 50 % slopes
Location: 44°49.49′ 70°35.22′ to 44°49.40′ 70°34.48′
Transect 1

Observation	Depth	Drainage
0	85 inches	WD
264	117 inches	WD
528	66 inches	WD
792	137 inches	MWD
1056	195 inches	WD
1320	158 inches	SWPD
1584	37 inches	WD
1848	20 inches	WD
2112	99 inches	WD
2376	55 inches	WD

	SOIL DRAINAGE CLASS				
DEPTH TO BEDROCK	EX	WD	MWD	SWPD	PD/VPD
00 - 20 inches	0	1	0	0	0 ----- 10%
20 - 40 inches	0	1	0	0	0 ----- 10%
40 - 60 inches	0	1	0	0	0 ----- 10%
>60 inches	0	5	1	1	0 ----- 70%

Map unit: 48C Dixfield-Colonel-Lyman Association, 3 to 15 % slopes
Location: 44°49.58′ 70°34.05′ to 44°50.16′ 70°34.07′
Transect 1

Observation	Depth	Drainage
0	40 inches	WD
264	92 inches	MWD
528	126 inches	MWD
792	104 inches	WD
1056	195 inches	WD
1320	195 inches	MWD
1584	127 inches	MWD
1848	195 inches	WD
2112	195 inches	WD
2376	96 inches	MWD

	SOIL DRAINAGE CLASS				
DEPTH TO BEDROCK	EX	WD	MWD	SWPD	PD/VPD
00 - 20 inches	0	0	0	0	0
20 - 40 inches	0	0	0	0	0
40 - 60 inches	0	1	0	0	0 ----- 10%
>60 inches	0	4	5	0	0 ----- 90%

Map unit: 48C Dixfield-Colonel-Lyman Association, 3 to 15 % slopes
Location: 44°50.16′ 70°34.07′ to 44°50.32′ 70°33.06′

Transect 1

Observation	Depth	Drainage
0	35 inches	MWD
264	51 inches	MWD
528	52 inches	MWD
792	116 inches	WD
1056	135 inches	WD
1320	127 inches	WD
1584	195 inches	MWD
1848	195 inches	WD
2112	195 inches	WD
2376	195 inches	WD

	SOIL DRAINAGE CLASS				
DEPTH TO BEDROCK	EX	WD	MWD	SWPD	PD/VPD
00 - 20 inches	0	0	0	0	0
20 - 40 inches	0	0	1	0	0 ----- 10%
40 - 60 inches	0	0	2	0	0 ----- 20%
>60 inches	0	6	1	0	0 ----- 70%

Map unit: 48C Dixfield-Colonel-Lyman Association, 3 to 15 % slopes
Location: 44°50.16′ 70°34.07′ to 44°50.32′ 70°33.06′

Transect 2

Observation	Depth	Drainage
0	195 inches	WD
264	195 inches	MWD
528	195 inches	MWD
792	195 inches	MWD
1056	195 inches	WD
1320	195 inches	WD
1584	195 inches	WD
1848	195 inches	WD
2112	79 inches	WD
2376	103 inches	MWD

	SOIL DRAINAGE CLASS				
DEPTH TO BEDROCK	EX	WD	MWD	SWPD	PD/VPD
00 - 20 inches	0	0	0	0	0
20 - 40 inches	0	0	0	0	0
40 - 60 inches	0	0	0	0	0
>60 inches	0	6	4	0	0 ---- 100%

Map unit: 48C Dixfield-Colonel-Lyman Association, 3 to 15 % slopes
Location: 44°50.16′ 70°34.07′ to 44°50.32′ 70°33.06′
Transect 3

Observation	Depth	Drainage
0	24 inches	WD
264	195 inches	WD
528	195 inches	WD
792	195 inches	WD
1056	195 inches	WD
1320	144 inches	WD
1584	195 inches	WD

	SOIL DRAINAGE CLASS					
DEPTH TO BEDROCK	EX	WD	MWD	SWPD	PD/VPD	
00 - 20 inches	0	0	0	0	0	
20 - 40 inches	0	1	0	0	0	----- 14%
40 - 60 inches	0	0	0	0	0	
>60 inches	0	6	0	0	0	----- 86%

Map unit: 34D Danforth-Elliotsville Association, 15 to 30 % slopes
Location: 44°50.39′ 70°33.12′ to 44°50.56′ 70°32.10′
Transect 1

Observation	Depth	Drainage
0	90 inches	WD
264	118 inches	WD
528	73 inches	WD
792	181 inches	WD
1056	195 inches	WD
1320	195 inches	MWD
1584	134 inches	MWD
1848	124 inches	WD
2112	195 inches	WD
2376	195 inches	WD

	SOIL DRAINAGE CLASS					
DEPTH TO BEDROCK	EX	WD	MWD	SWPD	PD/VPD	
00 - 20 inches	0	0	0	0	0	
20 - 40 inches	0	0	0	0	0	
40 - 60 inches	0	0	0	0	0	
>60 inches	0	8	2	0	0	---- 100%

Map unit: 34D Danforth-Elliotsville Association, 15 to 30 % slopes
Location: 44°50.39′ 70°33.12′ to 44°50.56′ 70°32.10′

Transect 2

Observation	Depth	Drainage
0	106 inches	WD
264	130 inches	WD
528	99 inches	WD
792	122 inches	WD
1056	31 inches	WD
1320	78 inches	WD
1584	68 inches	WD
1848	134 inches	WD
2112	182 inches	MWD
2376	99 inches	WD

	SOIL DRAINAGE CLASS					
DEPTH TO BEDROCK	EX	WD	MWD	SWPD	PD/VPD	
00 - 20 inches	0	0	0	0	0	
20 - 40 inches	0	1	0	0	0	----- 10%
40 - 60 inches	0	0	0	0	0	
>60 inches	0	8	1	0	0	----- 90%

It was once again my pleasure to work in your state and with members of your fine staff.

With kind regards,

James A. Doolittle
Soil Specialist

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