Soil Survey Investigations Report No. 26

Soil Survey Laboratory Data and Descriptions for Some Soils of...

NEW JERSEY

SOIL CONSERVATION SERVICE · U.S. DEPARTMENT OF AGRICULTURE
In cooperation with
NEW JERSEY AGRICULTURAL EXPERIMENT STATION · RUTGERS UNIVERSITY

Soil survey investigations reports already published:

SSIR No. 1 Soil Survey Laboratory Methods and Procedures for Collecting Soil Samples

Soil Survey Laboratory Data and Descriptions for Some Soils of:

SSIR No. 2 North Dakota
SSIR No. 3 Iowa
SSIR No. 4 Kansas
SSIR No. 5 Nebraska
SSIR No. 6 Arkansas, Louisiana, and Missouri
SSIR No. 7 Montana
SSIR No. 8 Wyoming
SSIR No. 9 Minnesota
SSIR No. 10 Colorado
SSIR No. 11 Oklahoma
SSIR No. 12 Puerto Rico and the Virgin Islands
SSIR No. 13 Mississippi
SSIR No. 14 Kentucky
SSIR No. 15 Tennessee
SSIR No. 16 North Carolina, South Carolina, and Georgia
SSIR No. 17 Wisconsin
SSIR No. 18 Indiana
SSIR No. 19 Illinois
SSIR No. 20 New England States

SSIR No. 21 A Toposequence of Soils in Tonalite Grus in the Southern California Peninsular Range

Soil Survey Laboratory Data and Descriptions for Some Soils of:

SSIR No. 22 Alabama and Florida
SSIR No. 23 Nevada
SSIR No. 24 California
SSIR No. 25 New York

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August 1974

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METHODS CODE SYMBOLS, SOIL SURVEY LABORATORIES

1. SAMPLE COLLECTION AND PREPARATION
   - A. Field sampling
     - 1. Site selection
     - 2. Soil sampling
       - a. Stony soils
   - B. Laboratory preparation
     - 1. Standard (airdry)
       - a. Square-hole 2-mm sieve
       - b. Round-hole 2-mm sieve
     - 2. Field moist
2. CONVENTIONS
   - A. Size-fraction base for reporting
     - 1. <2-mm
     - 2. < size specified
   - B. Data sheet symbols
     - tr: trace, not measurable by quantitative procedure used or less than reportable amount
     - - : analysis run but none detected
     - blank: analysis not run
     - nd: analysis not run
     - < : less than reported amount or none present
3. PARTICLE-SIZE ANALYSES
   - A. Particles <2-mm (pipet method)
     - 1. Airdry samples
       - a. Carbonate and noncarbonate clay
     - 2. Moist samples
       - a. Carbonate and noncarbonate clay
   - B. Particles >2-mm
     - 1. Weight estimates
       - a. By field and laboratory weighing
4. FABRIC-RELATED ANALYSES
   - A. Bulk density
     - 1. Saran-coated clods
       - a. Field state
       - b. Airdry
       - f. 1/3-bar desorption III
       - g. 1/10-bar desorption
       - h. Ovendry
     - 3. Cores
       - a. Field moist
   - B. Water retention
     - 1. Pressure-plate extraction
4. FABRIC RELATED ANALYSES (con.)
   - (1/3 or 1/10-bar)
     - a. Sieved samples
     - b. Soil pieces
     - c. Natural clods
     - d. Cores
   - 2. Pressure membrane extraction (15-bars)
     - a. Field-moist samples
   - 4. Field state
   - C. Water-retention difference
     - 1. 1/3-bar to 15-bars
     - 2. 1/10-bar to 15-bars
   - D. Linear extensibility
     - 1. Dry to moist
5. ION-EXCHANGE ANALYSES
   - A. Cation-exchange capacity
     - 1. NH_4OAc, pH 7.0
       - a. Direct distillation
       - b. Displacement distillation
     - 3. Sum of cations
       - a. Acidity by $BaCl_2$-TEA, pH 8.2; bases by NH_4OAc, pH 7.0
   - B. Extractable bases
     - 1. NH_4OAc extraction
       - a. Uncorrected
     - 4. NH_4OAc, pH 7.0 (modified)
       - a. Uncorrected
   - C. Base saturation
     - 3. Sum of cations
6. CHEMICAL ANALYSES
   - A. Organic carbon
     - 1. Acid-dichromate digestion
       - a. $FeSO_4$ titration
   - B. Nitrogen
     - 1. Kjeldahl digestion
       - a. Ammonia distillation
     - 2. Semimicro Kjeldahl
       - a. Ammonia distillation
   - C. Iron
     - 1. Dithionite extraction
       - a. Dichromate titration
     - 5. Sodium pyrophosphate extraction
       - a. Atomic absorption
   - E. Calcium carbonate
     - 1. HCl treatment
       - a. Gas volumetric
6. CHEMICAL ANALYSES (con.)
   - c. Weight loss
   - G. Aluminum
     - 5. Sodium pyrophosphate extraction
       - a. Atomic absorption
   - H. Extractable acidity
     - 1. $BaCl_2$- triethanolamine I
       - a. Back-titration with HCl
     - 2. $BaCl_2$- triethanolamine II
       - a. Back-titration with HCl
   - N. Calcium
     - 2. NH_4OAc extraction
       - b. Oxalate-permanganate I
       - d. Oxalate-cerate
   - O. Magnesium
     - 2. NH_4OAc extraction
       - a. EDTA-alcohol separation
       - b. Phosphate titration
       - c. Gravimetric, $Mg_2P_2O_7$
   - P. Sodium
     - 2. NH_4OAc extraction
       - a. Flame photometry
   - Q. Potassium
     - 2. NH_4OAc extraction
       - a. Flame photometry
7. MINERALOGY
   - A. Instrumental analysis
     - 1. Preparation
       - b. Organic-matter removal
       - c. Iron removal
       - d. Particle-size fractionation
     - 2. X-ray diffration
       - a. Thin film on glass, solution
     - 3. Differential thermal analysis
8. MISCELLANEOUS
   - C. pH
     - 1. Soil suspensions
       - a. Water dilution
       - b. Saturated paste
       - c. KCl
       - e. $CaCl_2$
   - D. Ratios and estimates
     - 1. To total clay
     - 3. Ca to Mg (extractable)

UNCODED METHODS, RUTGERS UNIVERSITY

Property	Units	Method	Ref.--Am. Soc. of Agron., No. 9, Methods of Soil Analysis
Bulk density	g/cc	Soil cores, 3x3 in. taken at or slightly below field capacity as in 4A3a above.	Part 1, Chapter 40
Water retention bars or atmos.	Pct. oven dry (105° C) wt.	Saturated soil cores equilibrated at indicated suction.	
0.02,0.06,0.10,0.33		On tension table using asbestos membrane,	Part 1, Chapters 8 and 21
1.0		In pressure membrane apparatus.	Part 1, Chapter 8
		Saturated crushed soil sample equilibrated at indicated suction.	
2.0,6.0,15		In pressure membrane apparatus.	Part 1, Chapter 8
Available water	In. of water per in. of soil	(Pct. water at field capacity − Pct. water at 15 bar) x bulk density	Part 1, Chapter 19
Field capacity	Pct. (wt.)	Water content of field samples 24 to 48 hrs. after wetting of whole soil profile by rainfall.	Part 1, Chapter 19
Hydraulic conductivity	In. per hr.	Constant head (1 in. water) "permeameter" using saturated cores and 30 min. measurement periods until rate (V/T) becomes constant.	Part 1, Chapter 19
Porosity:	Pct. (vol.)		Part 1, Chapter 21
Noncapillary		Pct. (vol.) total pore space—pct. (vol.) water at 0.06 bar tension	
Capillary		Pct. (vol.) total pore space—pct. (vol.) noncapillary porosity	
Total		Pct. (vol.) water retained at 0 bars suction: saturated	
Aggregate stability		Yoder method, 0.5 mm lower limit	Soil Sci. 1949. Vol. 68(1)

PREFACE

The Soil Survey Investigations Report (SSIR) series was established to preserve and make available technical information resulting from soil survey investigations. SSIR No. 1, "Soil Survey Laboratory Methods and Procedures for Collecting Soil Samples," revised April 1972, describes in detail the methods used in the soil survey laboratories. One report involves a single specific study. Other reports in the series contain pedon descriptions and data from the individual states and Puerto Rico and the Virgin Islands. The entire series is listed on the inside front cover.

This report contains pedon descriptions and data obtained principally from 1955 to 1965. The majority of laboratory analyses were conducted at soil survey laboratories in Beltsville, Maryland, and Lincoln, Nebraska. An additional large number of field and laboratory physical analyses were done by the Soils and Crops Department, New Jersey Agricultural Experiment Station, Rutgers University, New Brunswick.

Laboratory data for different soils cannot always be compared without allowance for the method. Methods are indexed by code or footnote in data sheet column headings and are identified briefly on the page opposite this Preface. Detailed explanations of coded procedures are in SSIR No. 1. Procedures used at Rutgers University can be found in cited publications.

Many of the soil descriptions published herein were prepared as working documents, not necessarily for publication. Some contain unusually detailed information pertinent to specific soil survey investigations. Such information, including older concepts of soil series, relationships among pedons, and field estimates of properties, is useful in a publication of this type. Editing is, therefore, minimal with emphasis toward preservation of descriptive data.

Many pedons no longer represent the soil series with which they were originally identified. All were classified during the period 1970 to 1974 and were checked against series classification as of December 1973. Some series names changed and are footnoted where the original name carries useful connotations. Pedons barely exceeding the limits of recognized series are designated as taxadjuncts but those with large departures are classified only to the family level. The latter are listed with the most closely related series in the geographical and series indexes. In the taxonomic index and in the body of the text, they are arranged by taxonomic unit.

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	Evesboro	S58NJ-3-5	Quartzipsamment	29
	Not designated (sampled as Freehold) 2/	S59NJ-3-1	Hapludalf	3
	Freehold	S56NJ-3-2	Hapludult	75
	Freehold taxadjunct	S56NJ-3-1	Hapludult	41
	Galestown	S58NJ-3-1	Hapludult	101
	Galestown	S58NJ-3-2	Hapludult	103
	Not designated (sampled as Galestown) 2/	S58NJ-3-3	Hapludalf	13
	Hammonton	S61NJ-3-1	Hapludult	87
	Westphalia taxadjunct	S59NJ-3-2	Hapludult	97
amden	Not designated (sampled as Downer) 3/	S60NJ-4-3	Eutrochrept	33
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	Westphalia taxadjunct	S59NJ-4-1	Hapludult	63
	Not designated (sampled as Westphalia) 2/	S60NJ-4-1	Hapludalf	5
	Not designated (sampled as Westphalia) 2/	S60NJ-4-2	Hapludalf	7
ape May	Downer	S58NJ-5-1	Hapludult	51
	Downer	S58NJ-5-2	Hapludult	53
	Downer	S59NJ-5-1	Hapludult	57
	Downer taxadjunct	S58NJ-5-4	Hapludult	99
	Evesboro	S58NJ-5-3	Quartzipsamment	25
umberland	Downer	S59NJ-6-1	Hapludult	59
	Sassafras taxadjunct	S58NJ-6-1	Hapludult	61
loucester	Aura	S58NJ-8-2	Hapludult	65
	Aura	S58NJ-8-3	Hapludult	67
	Aura	S58NJ-8-5	Hapludult	69
	Aura taxadjunct	S58NJ-8-1	Hapludult	39
	Not designated (sampled as Aura) 2/	S58NJ-8-4	Hapludalf	17
Gloucester	Not designated (sampled as Aura) 2/	S58NJ-8-6	Hapludalf	19
	Downer	S57NJ-8-1	Hapludult	45
	Downer	S57NJ-8-2	Hapludult	47
	Downer	S57NJ-8-3	Hapludult	49
	Downer	S58NJ-8-7	Hapludult	55
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	Not designated (sampled as Westphalia) 2/	S60NJ-8-1	Hapludalf	9
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	Collington	S61NJ-13-2	Hapludult	73
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	Colts Neck taxadjunct	S59NJ-13-4	Rhodudult	35
	Not designated (sampled as Colts Neck) 2/	S59NJ-13-2	Hapludalf	15
	Not designated (sampled as Colts Neck) 2/	S59NJ-13-6	Hapludalf	21
	Freehold	S57NJ-13-1	Hapludult	77
	Freehold	S59NJ-13-5	Hapludult	79
	Not designated (sampled as Freehold)	S59NJ-13-1	Hapludalf	11

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Aura	S58NJ-8-3	Hapludult	67
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Aura taxadjunct	S58NJ-8-1	Hapludult	39
Not designated (sampled as Aura) 2/	S58NJ-8-4	Hapludalf	17
Not designated (sampled as Aura) 2/	S58NJ-8-6	Hapludalf	19
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Downer	S57NJ-8-2	Hapludult	47
Downer	S57NJ-8-3	Hapludult	49
Downer	S58NJ-8-7	Hapludult	55
Downer taxadjunct	S58NJ-5-4	Hapludult	99
Not designated (sampled as Downer) 3/	S60NJ-4-3	Eutrochrept	33
Evesboro	S58NJ-5-3	Quartzipsamment	25
Evesboro	S58NJ-3-4	Quartzipsamment	27
Evesboro	S58NJ-3-5	Quartzipsamment	29
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Freehold	S57NJ-13-1	Hapludult	77
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Not designated (sampled as Freehold) 2/	S59NJ-3-1	Hapludalf	3
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Matapeake taxadjunct	S57NJ-12-1	Hapludult	43
Matapeake taxadjunct	S57NJ-12-3	Hapludult	83
Mattapex taxadjunct	S57NJ-12-2	Hapludult	89
Mattapex taxadjunct	S57NJ-12-4	Hapludult	91
Mattapex taxadjunct	S58NJ-12-2	Hapludult	93
Sassafras taxadjunct	S58NJ-6-1	Hapludult	61
Westphalia taxadjunct	S59NJ-3-2	Hapludult	97
Westphalia taxadjunct	S59NJ-4-1	Hapludult	63
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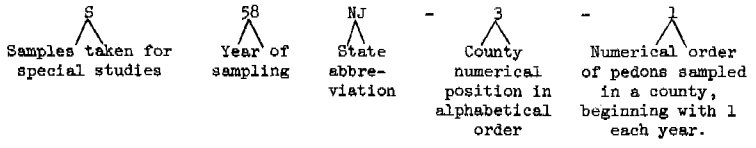
Not designated (sampled as Westphalia) 2/	S60NJ-4-1	Hapludalf	5
Not designated (sampled as Westphalia) 2/	S60NJ-4-2	Hapludalf	7
Not designated (sampled as Westphalia) 2/	S60NJ-8-1	Hapludalf	9
Not designated (sampled as Woodstown) 2/	S60NJ-11-1	Hapludalf	23

1/ Soil numbers are coded as follows:



2/ Several New Jersey cultivated soils, sampled in old farming areas, have higher base saturation than morphologically similar Ultisols in adjacent woodlands. Difference in base status is attributed to heavy, protracted use of agricultural lime and fertilizers. The cultivated soils are now Alfisols and presumably were once Ultisols. They are arranged with the morphologically similar Ultisols and are listed without series names in this report. This footnote identifies them in the indexes.

3/ Pedons that are classified only to the family level because of major departures from current series, other than or in addition to the well documented cultural base status departures of New Jersey.

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

PEDON CLASSIFICATION: Typic Hapludalf; coarse-loamy, mixed, mesic
SOIL Series not designated SOIL Nos. 859NJ-3-1 LOCATION Burlington County, New Jersey

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 60125 - 60131

Depth (In.)	Horizon	1B1b Total Sand (2–0.05)	Total Silt (0.05–0.002)	Total Clay (< 0.002)	Size class and particle diameter (mm) 3A1 Sand: Very coarse (2–1)	Sand: Coarse (1–0.5)	Sand: Medium (0.5–0.25)	Sand: Fine (0.25–0.1)	Sand: Very fine (0.1–0.05)	Silt: 0.05–0.02	Silt: Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)		3B2 Cm	Coarse fragments 3B1: 2A2 > 2 Pct.	2 – 19 Pct. of < 76mm	19 – 76 Pct. of < 76mm
		Pct. of < 2 mm																
0-11	Ap	60.9	25.3	13.8	0.2	3.9	12.3	31.3	13.2	11.0	14.3	41.8	47.7		1.00	-		
11-14	A2	65.1	25.2	9.7	0.2	4.0	12.5	34.1	14.3	11.8	13.4	45.4	50.8		1.00	-		
14-22	B21t	60.9	20.2	18.9	0.3	3.2	11.0	32.6	13.8	9.6	10.6	42.1	47.1		1.00	-		
22-30	B22t	69.7	13.8	16.5	0.4	4.4	13.8	38.3	12.8	7.3	6.5	42.0	56.9		1.00	-		
30-35	B23t	69.7	10.4	14.6	0.4	5.6	15.4	41.9	11.7	5.7	4.7	41.7	58.0		1.00	-		
35-41	IIC1	89.0	4.7	6.3	0.7	5.1	15.2	54.5	13.5	2.6	2.1	48.6	75.5		1.00	tr.		
41-47	IIIC2	80.4	8.2	11.4	0.2	5.6	17.6	44.5	12.5	4.8	3.4	42.3	67.9		1.00	tr.		

Depth (In.)	6A1a Organic carbon	6B2a Nitrogen	C/N		Carbonate as $CaCO_3$	Analyses by New Jersey Agr. Exp. Sta., Rutgers University a/ Bulk density	Water retained at suctions of: 0.02 bar	0.06 bar	0.10 bar	0.33 bar	1 bar	2 bar	6 bar	15 bar	Available water	Field capacity	pH 8C1c (1:1) KCl	8C1a (1:1) H_2O
	Pct.	Pct.			Pct.	g/cc	Pct.								in/in	Pct.		
0-11	1.00	0.101	10			1.60	18.3	17.4	14.2	12.9	12.4	9.1	6.7	5.6	0.18	16.9		5.5
11-14	0.20	0.030				1.65	19.5	15.0	14.5	12.6	11.5	6.5	4.7	3.9	0.19	15.3		6.0
14-22	0.25					1.59	21.9	20.4	19.1	17.6	15.6	10.4	8.6	7.6	0.18	19.0		6.0
22-30	0.08					1.67	20.6	18.7	17.3	15.4	13.7	8.8	7.6	6.7	0.20	18.8		6.0
30-35	0.06					1.62	20.1	17.2	14.4	11.6	9.2	7.9	6.8	5.8	0.18	16.7		5.8
35-41	0.06					1.55	19.2	13.3	11.8	9.2	7.0	3.5	3.0	2.6	0.16	13.2		5.9
41-47	0.06					1.63	19.2	16.3	15.6	14.3	12.3	6.2	5.8	4.9	0.17	15.4		5.8

Depth (In.)	Extractable bases 5B1a: 6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	Sum	6H2a Ext. acidity	CEC: 5A3a Sum cations		6G1d Ext. Al			Ratios to clay 8D1: CEC Sum	Ext iron	15-bar water	8D3 Ca/Mg		Base saturation: 5C3 Sum cations Pct.	5C1 NH_4OAc Pct.
	meq/100 g																	
0-11	5.0	1.2	0.1	0.3	6.6	4.6	11.2					0.81		0.41			59	
11-14	3.2	1.0	0.1	0.1	4.4	1.9	6.3					0.65		0.40			70	
14-22	5.7	1.5	0.1	0.2	7.5	3.0	10.5					0.55		0.40			71	
22-30	4.8	1.2	0.1	0.2	6.3	2.7	9.0					0.03		0.40			70	
30-35	4.2	1.3	0.1	0.1	5.7	2.5	8.2					0.56		0.41			70	
35-41	1.9	0.7	0.1	0.1	2.8	1.0	3.8					0.60		0.40			74	
41-47	2.8	1.1	0.1	0.1	4.1	1.6	5.7					0.50		0.41			72	

Depth (In.)	Clay Fraction Analysis 7A1b-d: Mt.	Chl.	Vm.	Mi.	Int.	Qtz.	Kl.	Gibbsite	Analyses by New Jersey Agr. Exp. Sta., Rutgers a/: Hydraulic conductivity in/hr	Porosity a/: Non-capillary Pct.	Capillary Pct.	Total Pct.	Plastic index Pct.	Aggregate stability Pct.
	7A2 X-ray						7A3							
0-11									0.7	18.7	19.2	37.9		83
11-14									0.06	12.4	24.6	37.0		14
14-22									0.2	9.3	32.5	41.8		9
22-30									0.1	9.3	31.1	40.4		10
30-35									0.4	9.5	28.0	37.5		14
35-41									3.3	19.2	21.8	41.0		11
41-47									0.8	15.3	26.7	42.0		8

a/ Methods referenced on methods code sheet.

Pedon Classification: Typic Hapludalf; coarse-loamy, mixed, mesic
Soil: Series not designated 1/
Soil No.: S59NJ-3-1
Location: Burlington County, New Jersey. 300 feet west of Cropwell Road about 500 feet south of Highway S-73; long. 74°56'22"; lat. 39°54'15"; on photo CMU-7-49; orchard of Byron Roberts.
Vegetation and land use: Peach orchard.
Slope and land form: 1 percent.
Drainage: Good.
Permeability: Estimated, moderate.
Parent material: Mt. Laurel-Wenonah formation of sands.
Described by: Marco Markley

Horizon and Beltsville Lab. No.	
Ap 60125	0 to 11 inches. Dark grayish brown (2.5Y 4/2) sandy loam; moderate medium subangular blocky structure; friable; many earthworm holes; abrupt smooth boundary. 10 to 12 inches thick.
A2 60126	11 to 14 inches. Light olive brown (2.5Y 5/4) sandy loam with a few blotches of dark yellowish brown (10YR 4/4); weak medium subangular blocky structure with weak platiness in lower few inches; very friable; many roots; many wormholes filled with material from Ap; abrupt smooth boundary. 4 to 6 inches thick.
B21t 60127	14 to 22 inches. Dark yellowish brown (10YR 4/4) fine sandy loam; moderate medium subangular blocky structure; friable, slightly sticky and plastic; many roots; some wormholes filled with Ap material; gradual wavy boundary. 6 to 8 inches thick.
B22t 60128	22 to 30 inches. Dark yellowish brown (10YR 4/4) sandy loam; moderate subangular blocky structure; very friable, slightly sticky and plastic; many roots; few wormholes filled with Ap material; gradual wavy boundary. 6 to 8 inches thick.
B23t 60129	30 to 35 inches. Dark yellowish brown (10YR 4/4) sandy loam with dark brown (7.5YR 4/4) interspersed; weak medium subangular blocky structure; very friable except the more reddish material which is slightly firm, nonsticky, nonplastic; common roots; abrupt smooth boundary. 4 to 6 inches thick.
IIC1 60130	35 to 41 inches. Light olive brown (2.5Y 5/4) and dark brown (7.5YR 4/4) sand; single grain and stratified; loose, except dark brown lenses and spheres which are slightly firm; few roots; abrupt smooth boundary.
IIIC2 60131	41 to 47 inches. Olive brown (2.5Y 4/4) and dark yellowish brown (10YR 4/4) sandy loam; weak medium subangular blocky structure; friable; few roots; stratified; abrupt smooth boundary.
IVC3 Not sampled	47 to 90 inches. Olive (5Y 5/3 to 5Y 4/3) fine and medium sand underlain by olive clay below 90 inches.

Notes: Colors refer to moist soil.

1/This pedon was sampled as Freehold, but the base saturation is raised to the Alfisol range by long term agricultural liming and fertilization. In other respects it is like the Freehold series except that the weighted clay content is 0.6 percent too low in the control section. Freehold is in the fine-loamy, mixed, mesic family of Typic Hapludults.

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

PEDON CLASSIFICATION: Typic Hapludalf; coarse-loamy, siliceous, mesic
SOIL Series not designated SOIL Nos. S60NJ-4-1 LOCATION Camden County, New Jersey

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 60389 - 60395

Depth (In.)	Horizon	1B1b Size class and particle diameter (mm) 3A1												3B2	Coarse fragments 3B1		
		Total			Sand					Silt		Int. II			2A2		
		Sand (2–0.05)	Silt (0.05–0.002)	Clay (< 0.002)	Very coarse (2–1)	Coarse (1–0.5)	Medium (0.5–0.25)	Fine (0.25–0.1)	Very fine (0.1–0.05)	0.05–0.02	Int. III (0.02–0.002)	(0.2–0.02)	(2–0.1)		> 2	2 – 19	19 – 76
		Pct. of < 2 mm												Cm	Pct.	Pct. of < 76mm	
0-8	Ap	87.7	8.4	3.9	1.7	2.2	2.0	26.9	54.9	5.2	3.2	83.6	32.8	1.00	tr.		
8-14	A2	87.6	7.8	4.6	1.2	1.6	1.3	27.7	55.8	4.2	3.6	84.8	31.8	1.00	tr.		
14-22	B2t	74.7	6.4	18.9	0.8	1.4	1.1	23.3	48.1	3.8	2.6	73.2	26.6	1.00	tr.		
22-27	B3t	79.0	5.1	15.9	0.9	1.2	1.1	26.0	49.8	3.9	1.2	76.9	29.2	1.00	tr.		
27-32	C1	91.9	2.9	5.2	0.1	0.4	1.0	35.3	55.1	2.6	0.3	89.7	36.8	1.00	tr.		
32-42	IIC2	75.3	12.8	11.9	-	0.6	0.8	22.5	51.4	6.4	6.4	77.9	23.9	1.00	tr.		
42-60	IIIC3	94.5	2.9	2.6	-	0.5	1.3	35.1	57.6	2.6	0.3	91.0	36.9	1.00	tr.		

Depth (In.)	6A1a Organic carbon	6B2a Nitrogen	C/N		Carbonate as $CaCO_3$	Analyses by New Jersey Agr. Exp. Sta., Rutgers University a/ Bulk density	Water retained at suctions of 0.02 bar	0.06 bar	0.10 bar	0.33 bar	1 bar	2 bar	6 bar	15 bar	Available water	Field capacity	pH 8C1c (1:1) KCl	8C1a (1:1) H_2O
	Pct.	Pct.			Pct.	g/cc	Pct.								in/in	Pct.		
0-8	0.56	0.062	9			1.47	25.8	21.5	20.1	15.4	13.4	3.5	22.9	2.6	0.21	17.2		6.9
8-14	0.08	0.023				1.54	19.1	15.7	14.6	11.2	9.4	3.0	1.8	1.5	0.24	16.9		6.2
14-22	0.12					1.54	22.2	20.3	18.8	16.4	15.0	9.9	8.6	7.3	0.17	18.2		6.2
22-27	0.10					1.49	24.5	20.7	18.4	14.3	12.9	8.9	7.8	6.6	0.15	16.9		6.1
27-32	0.04					1.37	29.2	21.7	19.7	14.6	11.2	2.9	2.6	2.1	0.14	12.4		6.2
32-42	0.04					1.46	24.4	21.8	19.2	12.2	19.5	7.9	6.6	5.6	0.13	14.1		6.1
42-60						1.39	29.9	23.8	20.5	12.7	8.8	1.8	1.4	1.2	0.11	8.9		5.4

Depth (In.)	Extractable bases 5B1a 6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	Sum	6H2a Ext. acidity	CEC 5A3a Sum cations	6G1d Ext. Al	Ratios to clay 8D1 CEC Sum	Ext. iron	15-bar water	8D3 Ca/Mg	Base saturation 5C3 Sum cations	5C1 NH_4OAc
	meq/100 g												Pct.	Pct.
0-8	4.8	0.1	tr.	0.1	5.0	1.2	6.2		1.59		0.67		81	
8-14	1.0	0.1	tr.	0.1	1.2	0.6	1.8		0.39		0.33		67	
14-22	3.5	0.2	tr.	0.1	3.8	2.3	6.1		0.32		0.39		62	
22-27	2.6	0.4	tr.	0.1	3.1	1.4	4.5		0.28		0.42		69	
27-32	1.0	0.2	tr.	tr.	1.2	0.4	1.6		0.31		0.40		75	
32-42	2.0	0.4	tr.	0.1	2.5	1.0	3.5		0.29		0.47		71	
42-60	0.6	0.2	tr.	tr.	0.8	0.4	1.2				0.46		67	

Depth (In.)	Clay Fraction Analysis 7A1b-d Mt.	Chl.	Vm.	Mi.	Int.	Qtz.	Kl.	Gibbsite	Analyses by New Jersey Agr. Exp. Sta., Rutgers a/ Hydraulic conductivity in/hr	Porosity a/ Non-capillary Pct.	Capillary Pct.	Total Pct.	Plastic index a/ Pct.	Aggregate stability a/ Pct.
	7A2 X-ray						7A3							
0-8									1.6	8.2	31.6	39.8		76
8-14									0.5	7.4	24.1	31.5		15
14-22									0.2	7.5	31.2	38.7		10
22-27									0.5	8.9	30.3	39.2		9
27-32									3.7	13.8	29.7	43.5		5
32-42									1.2	9.4	31.9	41.3		8
42-60									5.5	10.4	33.6	44.0		7

a/ Methods referenced on methods code sheet.

Pedon Classification: Typic Hapludalf; coarse-loamy, siliceous, mesic
Soil: Series not designated[1/]
Soil No.: S60NJ-4-1
Location: Camden County, New Jersey. 250 feet southwest of Turnerville-Blackwood Terrace Road along Camden County line and 75 feet at right angles to hedgerow (approximately southeast); Camden County farms.
Vegetation and land use: Alfalfa, orchard grass.
Slope and land form: 3 to 4 percent.
Drainage: Well drained.
Permeability: Moderate.
Parent material: Kirkwood formation, fine sand.
Described by: Marco Markley

Horizon and Beltsville Lab. No.	
Ap 60389	0 to 8 inches. Very dark grayish brown (2.5Y 3/2) very fine sand, light gray (10YR 6/1) dry; weak fine granular structure; friable; many roots; less than 1 percent rounded quartzose pebbles; 2 to 5 percent glauconite, common mica, few earthworms; pH 6.0; abrupt smooth boundary. 7 to 8 inches thick.
A2 60390	8 to 14 inches. Pale brown (10YR 6/3) very fine sand; single grain; loose; containing discontinuous bands 1/4 to 1/2 inch thick, darker in color (10YR 5/8) and slightly finer textured; pH 6.8. 5 to 7 inches thick.
AB Not sampled	13 to 17 inches. Mixed A2 and B1 material, discontinuous over about 1/2 the pit.
B2t 60391	17 to 22 inches. Yellowish brown (10YR 5/8) very fine sandy loam; moderate medium subangular blocky structure; friable; many roots; less than 1 percent of gravel; pH 6.8; clear smooth boundary. 6 to 12 inches thick.
B3t 60392	22 to 27 inches. Yellowish brown (10YR 5/8) very fine sandy loam; weak medium subangular blocky structure; very friable; common roots; generally less than 1 percent of gravel but containing up to 3 inches strata of sand or gravel in places; clear smooth boundary. 4 to 6 inches thick.
C1 60393	27 to 32 inches. Yellowish brown (10YR 5/6) very fine sand; mixed with paler colors; single grain; loose; few roots; less than 1 percent of gravel; pH 6.8; clear smooth boundary. 0 to 6 inches thick.
IIC2 60394	32 to 42 inches. Yellowish brown (10YR 5/6) very fine sandy loam; massive; friable; few roots; less than 1 percent of gravel; pH 6.4; clear smooth boundary.
IIIC3 60395	42 to 60 inches. Light brownish gray (10YR 6/2) very fine sand; single grain; loose; few roots; pH 4.6.

Notes: Colors refer to moist soil.

[1/] This pedon was sampled as a representative of the Westphalia series which is in the coarse-loamy, siliceous, mesic family of Ochreptic Hapludults. It differs in base saturation which has been raised by agricultural liming and fertilization, and in a slightly thicker argillic horizon.

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

PEDON CLASSIFICATION: Typic Hapludalf; coarse-loamy, siliceous, mesic
SOIL Series not designated SOIL Nos. S60NJ-4-2 LOCATION Camden County, New Jersey

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 60396 - 60401

Depth (In.)	Horizon	1B1b Total Sand (2–0.05)	Total Silt (0.05–0.002)	Total Clay (< 0.002)	Size class and particle diameter (mm) 3A1 Sand: Very coarse (2–1)	Sand: Coarse (1–0.5)	Sand: Medium (0.5–0.25)	Sand: Fine (0.25–0.1)	Sand: Very fine (0.1–0.05)	Silt (0.05–0.02)	Silt: Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)	3B2 Cm	Coarse fragments 3B1: 2A2 > 2 < 76 Pct.	2 – 19 Pct. of < 76mm	19 – 76 Pct. of < 76mm
		Pct. of < 2 mm															
0-10	Ap	81.7	11.9	6.4	0.9	3.3	4.0	35.6	37.9	7.6	4.3	76.7	43.8	0.98	4		
10-18	A2	80.2	15.1	4.7	0.8	3.4	3.2	29.3	43.5	8.5	6.6	77.3	36.7	1.00	tr.		
18-22	B1t	74.8	13.6	11.6	0.8	2.8	2.7	29.0	39.5	7.7	5.9	72.5	35.3	0.98	4		
22-28	B2t	76.7	12.5	10.8	0.7	2.7	2.5	32.8	38.0	6.9	5.6	74.1	38.7	1.00	tr.		
28-33	B3t	78.2	11.0	10.8	0.6	1.7	1.4	40.3	34.2	5.7	5.3	76.6	44.0	0.98	3		
33-43	C1	88.4	9.2	2.4	-	0.1	0.4	51.0	36.9	5.0	4.2	88.9	51.5	1.00	tr.		

Depth (In.)	6A1a Organic carbon Pct.	6B2a Nitrogen Pct.	C/N	Carbonate as $CaCO_3$ Pct.	Analyses by New Jersey Agr. Exp. Sta., Rutgers University a/: Bulk density g/cc	Water retained at suctions of: 0.02 bar Pct.	0.06 bar Pct.	0.10 bar Pct.	0.33 bar Pct.	1 bar Pct.	2 bar Pct.	6 bar Pct.	15 bar Pct.	Available water in/in	Field capacity Pct.	pH 8C1c (1:1) KCl	8C1a (1:1) H_2O
0-10	0.55	0.061	9		1.46	27.3	24.0	22.7	16.3	13.7	5.0	3.7	3.3	0.23	19.5		6.0
10-18	0.08	0.028			1.59	20.3	16.6	15.2	11.7	8.2	3.1	2.0	1.6	0.21	15.0		6.4
18-22	0.10				1.54	22.1	18.3	17.0	14.3	11.5	6.2	5.0	4.2	0.19	16.6		6.4
22-28	0.06				1.48	23.3	18.1	15.1	11.1	9.5	6.1	5.2	4.2	0.17	15.4		6.4
28-33	0.04				1.43	22.4	13.5	16.2	12.3	10.4	6.0	4.9	4.1	0.15	14.9		6.5
33-43	0.04				1.33	25.4	21.4	17.6	10.1	8.4	2.1	1.5	1.2	0.14	11.6		6.2

Depth (In.)	Extractable bases 5B1a: 6N2d Ca meq/100 g	6O2b Mg meq/100 g	6P2a Na meq/100 g	6Q2a K meq/100 g	Sum meq/100 g	6H2a Ext. acidity meq/100 g	CEC: 5A3a Sum cations meq/100 g	6G1d Ext. Al meq/100 g	Ratios to clay 8D1: CEC Sum	Ext. iron	15-bar water	8D3 Ca/Mg	Base saturation: 5C3 Sum cations Pct.	5C1 NH_4OAc Pct.
0-10	3.2	0.7	0.1	0.2	4.2	2.5	6.7		1.05		0.52		63	
10-18	1.4	0.3	0.1	0.1	1.9	0.4	2.2		0.47		0.34		82	
18-22	2.0	0.7	0.1	0.2	3.0	1.4	4.4		0.38		0.36		68	
22-28	1.8	0.7	tr.	0.2	2.7	1.2	3.9		0.36		0.39		69	
28-33	1.8	0.8	tr.	0.1	2.7	1.0	3.8		0.35		0.38		74	
33-43	1.1	0.1	tr.	tr.	1.2	0.2	1.5						87	

Depth (In.)	Clay Fraction Analysis 7A1b-d, 7A2 X-ray: Mt.	Chl.	Vm.	Mi.	Int	Qtz.	7A3: Kl.	Gibbsite	Analyses by New Jersey Agr. Exp. Sta., Rutgers a/: Hydraulic conductivity a/ in/hr	Porosity a/: Non-capillary Pct.	Capillary Pct.	Total Pct.	Plastic index a/ Pct.	Aggregate stability a/ Pct.
0-10									0.8	6.8	35.0	41.8		73
10-18									0.1	9.5	26.1	35.6		9
18-22									0.1	10.4	28.2	38.6		12
22-28									0.6	11.7	26.9	38.6		10
28-33									0.9	13.4	26.5	39.9		7
33-43									1.9	17.4	28.2	45.6		6

a/ Methods referenced on methods code sheet.

Pedon Classification: Typic Hapludalf; coarse-loamy, siliceous, mesic
Soil: Series not designated[1/]
Soil No.: S60NJ-4-2
Location: Camden County, New Jersey. 75 feet from Blackwood Road, 100 feet from dirt road, northwest of Laurel Springs Road; Sam Bastianelli farm.
Vegetation and land use: Used for vegetables; in winter cover crop at time of sampling.
Slope and land form: 2 to 3 percent.
Drainage: Well drained.
Permeability: Moderate.
Parent material: Kirkwood formation, fine sand.
Described by: Marco Markley

Horizon and Beltsville Lab. No.	
Ap 60396	0 to 10 inches. Very dark grayish brown (2.5Y 3/2) loamy fine sand, light gray (10YR 6/1) dry; weak fine granular structure; very friable; many roots; few earthworms; 3 percent rounded quartzose pebbles; some glauconite; abrupt smooth boundary. 9 to 11 inches thick.
A2 60397	10 to 18 inches. Pale brown (10YR 6/3) loamy fine sand; weak medium granular structure; very friable; common roots; less than 1 percent rounded quartzose pebbles up to 2 inches in diameter; containing irregular bands 1/8 inch thick and several spheroidal balls, of material colored like the B horizon; abrupt smooth boundary. 5 to 10 inches thick.
B1t 60398	18 to 22 inches. Yellowish brown (10YR 5/4) and pale brown (10YR 5/3) very fine sandy loam; weak medium granular structure; very friable; many roots; 3 percent quartzose pebbles; clear wavy boundary. 3 to 5 inches thick.
B2t 60399	22 to 28 inches. Yellowish brown (10YR 5/6) very fine sandy loam; weak medium subangular blocky structure; friable; many roots; mica common; few quartzose pebbles, few cobbles; clear wavy boundary. 3 to 7 inches thick.
B3t 60400	28 to 33 inches. Yellowish brown (10YR 5/6) very fine sandy loam; weak fine granular structure; very friable; many roots; mica common; abrupt wavy boundary. 3 to 12 inches thick.
C1 60401	33 to 43 inches. Pale brown (10YR 6/3) fine sand; single grain; loose; common roots; mica common; 5 percent rounded quartzose pebbles and cobbles in pockets; numerous small yellowish brown spheres; abrupt wavy boundary. 2 to 12 inches thick.
C2 Not sampled	43 to 46 inches. Yellowish brown (10YR 5/4) fine sandy loam; massive; friable; few roots; mica common; abrupt discontinuous boundary.
C3 Not sampled	46 to 80 inches. Pale brown (10YR 6/3) fine sand; single grain; loose.

Notes: Colors refer to moist soil.

[1/] This pedon was sampled as a representative of the Westphalia series which is in the coarse-loamy, siliceous, mesic family of Ochreptic Hapludults. It differs in base saturation which has been raised by agricultural liming and fertilization, and in a slightly thicker argillic horizon.

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

PEDON CLASSIFICATION: Typic Hapludalf; coarse-loamy, siliceous, mesic
SOIL Series not designated SOIL Nos. S60NJ-8-1 LOCATION Gloucester County, New Jersey

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 60402 - 60407

Depth (in.)	Horizon	1B1b Total Sand (2-0.05)	Total Silt (0.05-0.002)	Total Clay (< 0.002)	Sand: Very coarse (2-1)	Sand: Coarse (1-0.5)	Sand: Medium (0.5-0.25)	Sand: Fine (0.25-0.1)	Sand: Very fine (0.1-0.05)	Silt: 0.05-0.02	Silt: Int. III (0.02-0.002)	Int. II (0.2-0.02)	(2-0.1)	3B2 Cm	Coarse fragments 3B1: 2A2 >= 2 < 76 Pct.	2 - 19 Pct. of < 76mm	19 - 76 Pct. of < 76mm
		Pct. of < 2 mm															
0-8	Ap	79.3	15.3	5.4	1.7	3.4	4.0	15.2	55.0	8.7	6.6	76.6	24.3	1.00	tr.		
8-18	A2	73.1	19.7	7.2	0.3	1.1	1.1	11.2	59.4	9.6	10.1	79.5	13.7	1.00	tr.		
18-27	B2t	66.6	17.4	16.0	0.2	0.8	0.9	10.6	54.1	8.0	9.4	72.1	12.5	1.00	tr.		
27-33	B3t	71.2	14.4	14.4	0.1	0.5	0.5	8.3	61.8	7.1	7.3	76.8	9.4	1.00	tr.		
33-44	C1	89.0	6.4	4.6	-	0.1	0.1	6.9	81.9	4.0	2.4	92.5	7.1	1.00	tr.		
44-60	C2	86.8	7.0	6.2	-	-	0.1	2.8	83.9	4.5	2.5	90.9	2.9	1.00	tr.		

Depth (in.)	6A1a Organic carbon Pct.	6B2a Nitrogen Pct.	C/N	Carbonate as $CaCO_3$ Pct.	Analyses by New Jersey Agr. Exp. Sta., Rutgers University a/: Bulk density g/cc	Water retained at suctions of: 0.02 bar Pct.	0.06 bar Pct.	0.10 bar Pct.	0.33 bar Pct.	1 bar Pct.	2 bar Pct.	6 bar Pct.	15 bar Pct.	Available water in/in	Field capacity Pct.	pH 8C1c (1:1) KCl	pH 8C1a (1:1) H_2O
0-8	0.74	0.086	9		1.49	22.0	20.4	19.0	15.5	14.4	5.4	3.8	3.2	0.22	18.0		4.9
8-18	0.10	0.031			1.56	19.9	17.0	16.5	14.4	12.1	5.1	3.7	2.8	0.22	17.5		5.8
18-27	0.10				1.46	24.0	21.5	20.9	18.5	17.0	9.8	8.0	6.6	0.17	18.1		6.0
27-33	0.08				1.42	25.9	23.1	21.7	17.6	15.9	8.5	6.9	6.3	0.14	16.1		5.8
33-44	0.04				1.34	33.2	31.0	29.5	24.6	22.3	3.6	2.4	2.1	0.14	12.3		5.8
44-60	0.12				1.39	32.1	29.9	28.7	24.0	18.4	4.4	3.4	2.8	0.14	12.8		5.8

Depth (in.)	Extractable bases 5B1a: 6N2d Ca meq/100 g	6O2b Mg meq/100 g	6P2a Na meq/100 g	6Q2a K meq/100 g	Sum meq/100 g	6H2a Ext. acidity meq/100 g	CEC: 5A3a Sum cations meq/100 g	6G1d Ext. Al meq/100 g	Ratios to clay 6D1: CEC Sum	Ext. iron	15-bar water	8D3 Ca/Mg	Base saturation: 5C3 Sum cations Pct.	5C1 NH_4OAc Pct.
0-8	1.3	0.2	0.1	0.4	2.0	4.7	6.7		1.24		0.59		30	
8-18	1.6	0.3	0.1	0.1	2.1	1.0	3.1		0.43		0.39		68	
18-27	2.9	0.7	tr.	0.1	3.7	2.1	6.0		0.37		0.41		63	
27-33	2.6	0.8	tr.	tr.	3.4	1.8	5.3		0.37		0.44		66	
33-44	1.2	0.3	tr.	-	1.5	0.2	1.7		0.37		0.46		88	
44-60	1.2	0.3	tr.	tr.	1.5	0.2	1.7		0.27		0.45		88	

Depth (in.)	Clay Fraction Analysis 7A1b-d, 7A2 X-ray: Mt.	Chl.	Vm.	Mi.	Int.	Qtz.	7A3: Kl.	Gibbsite	Analyses by New Jersey Agr. Exp. Sta., Rutgers a/: Hydraulic conductivity in/hr	Porosity a/: Non-capillary Pct.	Capillary Pct.	Total Pct.	Plastic index a/ Pct.	Aggregate stability a/ Pct.
0-8									0.4	10.5	30.0	40.5		86
8-18									0.1	8.8	26.6	35.4		10
18-27									0.3	9.5	31.4	40.9		6
27-33									0.9	7.9	32.7	40.6		6
33-44									1.5	5.9	41.3	47.2		6
44-60									1.4	6.1	41.5	57.6		5

a/ Methods referenced on methods code sheet.

Pedon Classification: Typic Hapludalf; coarse-loamy, siliceous, mesic
Soil: Series not designated 1/
Soil No.: 860NJ-8-1
Location: Gloucester County, New Jersey. 100 feet east and 500 feet north of Damminger house.
Vegetation and land use: Peach orchard, about 10 years old; no cover crop.
Slope and land form: 1 percent.
Drainage: Well drained.
Permeability: Moderate.
Parent material: Kirkwood formation, fine sand.
Described by: Marco Markley

Horizon and Beltsville Lab. No.	
Ap 60402	0 to 8 inches. Very dark grayish brown (2.5Y 3/2) loamy very fine sand, light gray (10YR 6/1) dry; weak fine granular structure, in places weak thin platy between 5 and 6 inches; friable; many roots; 1 percent rounded quartzose pebbles; about 3 percent glauconite; mica common; few earthworms; clear smooth boundary. 7 to 9 inches thick.
A2 60403	8 to 14 inches. Light olive brown (2.5Y 5/4) very fine sandy loam; massive; very friable; common roots; less than 1 percent rounded quartzose pebbles; glauconite content low; mica common; two discontinuous bands 1/4 to 1/2 inch thick, of slightly darker color and slightly finer texture; abrupt wavy boundary. 6 to 11 inches thick.
B1 Not sampled	14 to 18 inches. Light olive brown (2.5Y 5/4) very fine sandy loam; weak fine granular structure; very friable; abrupt smooth boundary. 0 to 6 inches thick.
B2t 60404	18 to 27 inches. Yellowish brown (10YR 5/8) very fine sandy loam; weak medium subangular blocky structure; friable; many roots; scattered fragments of ironstone; little glauconite; mica common; clear smooth boundary. 8 to 16 inches thick.
B3t 60405	27 to 33 inches. Yellowish brown (10YR 5/6) very fine sandy loam; very weak subangular blocky structure; very friable; many roots; little glauconite; mica common; abrupt smooth boundary. 4 to 6 inches thick.
C1 60406	33 to 44 inches. Pale yellow (2.5Y 7/4) finely banded very fine sand; single grain; loose; few roots; little glauconite; mica common. 12 to 16 inches thick.
C2 60407	44 to 60 inches. Brownish yellow (10YR 6/8) finely banded, loamy very fine sand; single grain; very friable; few roots; little glauconite; mica common.
C3 Not sampled	60 to 98 inches. Yellowish brown (10YR 5/8) finely banded, loamy very fine sand; single grain; very friable; few roots.

Notes: Colors refer to moist soil.

1/ This pedon was sampled as a representative of the Westphalia series which is in the coarse-loamy, siliceous, mesic family of Ochreptic Hapludults. It differs in base saturation which has been raised by long term agricultural liming and fertilization, and in slightly thicker argillic horizon.

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

PEDON CLASSIFICATION: Typic Hapludalf; fine-loamy, mixed, mesic
SOIL Series not designated SOIL Nos. S59NJ-13-1 LOCATION Monmouth County, New Jersey

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 60330 - 60336

Depth (in.)	Horizon	1B1b Total Sand (2–0.05)	Total Silt (0.05–0.002)	Total Clay (< 0.002)	Very coarse sand (2–1)	Sand (1–0.5)	Sand (0.5–0.25)	Sand (0.25–0.1)	Sand (0.1–0.05)	Silt (0.05–0.02)	Silt Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)		3B2 Cm	Coarse fragments 3B1 2A2 ≥ 2 Pct.	2–19 Pct. of < 76mm	19–76 Pct. of < 76mm
		Pct. of < 2 mm																
0-9	Ap	65.0	27.3	7.7	0.3	8.5	26.7	22.0	7.5	15.0	12.3	31.6	57.5		1.00	tr.		
9-12	B1t	53.5	30.3	16.2	0.2	6.5	20.6	19.2	7.0	13.7	16.6	28.5	46.5		1.00	tr.		
12-18	B21t	58.8	20.8	20.4	0.2	6.4	21.9	22.5	7.8	9.5	11.3	27.4	51.0		1.00	-		
18-25	B22t	58.7	21.4	19.9	0.2	5.6	21.3	23.0	8.6	11.3	10.1	29.7	50.1		1.00	-		
25-29	B31t	77.6	8.2	14.2	0.2	9.4	33.7	28.7	5.6	5.2	3.0	21.1	72.0		1.00	-		
29-35	B32	80.9	7.4	11.7	0.2	9.3	33.5	31.2	6.7	4.1	3.3	22.6	74.2		1.00	-		
35-81	C	82.7	8.9	8.4	0.5	14.0	37.0	26.4	4.8	4.3	4.6	18.2	77.9		1.00	-		

Depth (in.)	6A1a Organic carbon Pct.	6B2a Nitrogen Pct.	C/N		Carbonate as $CaCO_3$ Pct.	Analyses by New Jersey Agr. Exp. Sta., Rutgers University a/ Bulk density g/cc	Water retained at suctions of 0.02 bar Pct.	0.06 bar	0.10 bar	0.33 bar	1 bar	2 bar	6 bar	15 bar	Available water in/in	Field capacity Pct.	pH 8C1c (1:1) KCl	8C1a (1:1) H_2O
0-9	0.39	0.047	8			1.63	19.1	17.1	15.7	14.0	12.6	6.7	5.0	4.5	0.18	15.8		5.2
9-12	0.24	0.041				1.70	19.4	18.0	17.2	16.3	15.4	10.4	8.3	7.1	0.18	17.5		5.4
12-18	0.15					1.62	21.1	19.0	18.3	17.1	15.9	11.5	9.5	8.4	0.18	19.7		5.5
18-25	0.12					1.64	19.6	18.1	17.3	16.1	15.4	11.0	9.0	8.1	0.17	18.4		5.4
25-29	0.06					1.60	19.9	15.1	14.2	12.9	12.1	7.1	6.6	5.1	0.18	16.6		5.0
29-35	0.06					1.57	20.9	20.5	17.8	13.2	12.1	6.3	5.3	5.0	0.13	13.3		4.8
35-81	0.04					1.53	21.8	12.4	11.5	10.0	9.3	4.4	3.4	3.0	0.12	11.1		4.6

Depth (in.)	Extractable bases 5B1a 6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	Sum	6H2a Ext acidity	CEC 5A3a Sum cations	6G1d Ext Al			Ratios to clay 8D1 CEC Sum	Ext. iron	15-bar water	8D3 Ca/Mg		Base saturation 5C3 Sum cations Pct.	5C1 NH_4OAc Pct.
	meq/100 g																
0-9	2.5	0.5	0.1	0.3	3.4	4.8	8.2				1.06		0.58			41	
9-12	4.6	0.7	0.1	0.2	5.6	4.2	9.8				0.60		0.44			57	
12-18	6.0	1.0	0.1	0.2	7.3	5.1	11.5				0.56		0.41			56	
18-25	5.6	1.0	0.2	0.1	6.9	4.4	10.4				0.52		0.41			58	
25-29	2.8	0.5	0.1	0.1	3.5	3.5	7.0				0.49		0.36			50	
29-35	2.8	0.5	0.2	0.1	3.6	4.1	7.7				0.66		0.43			47	
35-81	1.6	0.3	0.1	0.1	2.1	3.1	5.2				0.62		0.36			40	

Depth (in.)	Clay Fraction Analysis 7A1b-d Mt	Chl	Vm.	Mi.	Int.	Qtz.	Kl.	Gibbsite	Analyses by New Jersey Agr. Exp. Sta., Rutgers a/ Porosity a/ Hydraulic conductivity in/hr	Non-capillary Pct.	Capillary Pct.	Total Pct.	Plastic index Pct.	Aggregate stability Pct.
	7A2 X-ray						7A3							
0-9									0.1	5.3	28.7	34.0		12
9-12									0.1	5.5	30.4	35.9		12
12-18									0.7	7.0	30.6	37.6		9
18-25									0.4	5.8	29.7	35.5		8
25-29									1.6	10.6	24.8	35.4		9
29-35									1.2	4.1	31.9	36.0		13
35-81									4.5	18.8	17.9	36.7		11

a/ Methods referenced on methods code sheet.

Pedon Classification: Typic Hapludalf; fine-loamy, mixed, mesic
Soil: Series not designated[1/]
Soil No.: S59NJ-13-1
Location: Monmouth County, New Jersey. Peter Kolb vegetable field; 1/4 mile north of West Freehold, N.J. 200 feet west of blacktop road to Wemrock and 200 feet south of lane leading to Kolb farmhouse, in edge of parsnip field.
Vegetation and land use: Site presently planted to parsnips. Was planted to white potatoes continuously to 1933, then white potatoes, cover and vegetables to 1949. Since then vegetables with no crop cover. No lime for past 2 years.
Slope and land form: 1 percent.
Drainage: Well drained.
Permeability: Moderate.
Parent material: Reworked material probably belonging to Red Bank formation.
Sampled by: N. A. Willits and K. P. Wilson

Horizon and Beltsville Lab. No.	
Ap 60330	0 to 9 inches. Dark yellowish brown (10YR 4/4) sandy loam; weak subangular blocky structure parting to very weak fine granular; firm in place, friable when removed; few fine roots and pores; pH 5.4; clear smooth boundary. 8 to 12 inches thick.
B1t 60331	9 to 12 inches. Dark brown (7.5YR 4/4) sandy loam; slightly variegated by Ap and A2 mixture; weak medium or coarse subangular blocky structure; firm in place, friable when removed; few fine roots and pores; pH 5.8; clear smooth boundary. 2 to 3 inches thick.
B21t 60332	12 to 18 inches. Dark brown (7.5YR 4/4) sandy clay loam; moderate medium subangular blocky structure parting to weak fine granular structure; firm in place, moderately plastic; slight coatings or filling of ped surfaces, slightly redder; pH 5.6; clear smooth boundary. 5 to 8 inches thick.
B22t 60333	18 to 25 inches. Dark brown (7.5YR 4/4) fine sandy loam, grading toward reddish brown, but with more green than B21, slightly variegated; weak coarse subangular blocky structure; glauconite grains more noticeable than in B21 horizon; pH 5.8; clear smooth boundary. 6 to 10 inches thick.
B31t 60334	25 to 29 inches. Brown (7.5YR 5/4) sandy loam, grading toward reddish brown; massive, with few sandier lamellae; slightly firm in place but very friable when removed; fine to medium sand-size glauconite grains quite noticeable; pH 5.2; gradual wavy boundary. 3 to 6 inches thick.
B32 60335	29 to 35 inches. Brown (7.5YR 5/4) to strong brown (7.5YR 5/8) sandy loam variegated with dark green splotches; massive; friable; many 1/4 to 1/2 inch lamellae of more reddish, firmer, slightly finer textured sandy loam; glauconite grains evident; pH 5.0; clear smooth boundary. 4 to 8 inches thick.
C 60336	35 to 81 inches. Strong brown (7.5YR 5/8) to yellowish brown (10YR 5/8) loamy sand; massive, loose; glauconite evident; pH 5.0. Lens or ball of highly glauconitic clay loam encountered by boring at 6 feet. At from 8 to 9 feet, the glauconitic clay loam was fairly consistent with sand lenses minor.

Notes: Colors refer to moist soil unless indicated otherwise.

[1/] This pedon is within the range of the Freehold series in all respects except base saturation which is elevated to the Alfisol range by heavy agricultural liming and fertilization. Freehold is in the fine-loamy, mixed, mesic family of Typic Hapludults.

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

PEDON CLASSIFICATION: Psammentic Hapludalf; sandy, siliceous, mesic

SOIL Series not designated SOIL Nos. 858NJ-3-3 LOCATION Burlington County, New Jersey

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 59211 - 59217

Depth (in.)	Horizon	1B1b Total Sand (2–0.05)	Total Silt (0.05–0.002)	Total Clay (< 0.002)	Sand: Very coarse (2–1)	Sand: Coarse (1–0.5)	Sand: Medium (0.5–0.25)	Sand: Fine (0.25–0.1)	Sand: Very fine (0.1–0.05)	Silt: 0.05–0.02	Silt: Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)		3B2 Cm	Coarse fragments 3B1: 2A2 ≥ 2 Pct.	2 – 19 Pct. of < 76mm	19 – 76 Pct. of < 76mm
		Pct. of < 2 mm																
0–10	Ap	89.7	6.0	4.3	0.7	11.7	30.2	36.2	10.9	3.7	2.3	32.6	78.8		1.00	-		
10–23	A2	91.7	4.2	4.1	0.7	13.9	33.9	35.2	8.0	2.3	1.9	25.8	83.7		1.00	-		
23–30	B2t	89.3	3.1	7.6	0.6	9.9	30.6	39.4	8.8	2.1	1.0	29.5	80.5		1.00	tr.		
30–38	B3	91.8	2.8	5.4	0.6	8.8	30.0	43.1	9.3	1.4	1.4	30.6	82.5		1.00	tr.		
38–42	C1	91.2	4.5	4.3	0.8	11.3	31.1	38.1	9.9	2.4	2.1	29.8	81.3		1.00	tr.		
42–48	IIC2	83.2	8.4	8.4	1.0	13.0	27.0	32.2	10.0	3.8	4.6	29.1	73.2		1.00	-		
48–52	IIIC3	Not sampled																
52–60	IVC4	94.3	2.7	3.0	1.8	15.5	35.4	32.8	8.8	1.7	1.0	25.4	85.5		1.00	tr.		

Depth (in.)	6A1a Organic carbon Pct.	6B2a Nitrogen Pct.	C/N		6C1a Ext. iron as Fe Pct.	Analyses by New Jersey Agr. Exp. Sta., Rutgers University a/ Bulk density g/cc	Water retained at suctions of: 0.02 bar Pct.	0.06 bar	0.10 bar	0.33 bar	1 bar	2 bar	6 bar	15 bar	Available water in/in	Field capacity Pct.	pH 8C1c (1:1) KCl	8C1a (1:1) H_2O
0–10	0.38	0.056	7		0.5	1.57	22.2	14.4	9.8	8.8	7.7	3.7	2.5	1.8	0.14	11.0		6.1
10–23	0.07	0.018			0.6	1.63	21.0	11.3	6.7	5.6	5.0	2.9	2.1	1.5	0.15	10.8		6.0
23–30	0.07	0.036			0.8	1.53	23.2	12.9	7.5	6.7	6.1	4.8	3.3	3.1	0.11	10.4		5.8
30–38	0.05	0.034			0.7	1.49	23.1	11.7	6.8	5.2	4.6	3.3	2.8	2.4	0.11	9.7		4.6
38–42	0.05				0.6	1.51	21.6	14.1	8.4	5.9	4.9	4.1	2.3	2.0	0.15	11.5		5.7
42–48	0.09				1.0	1.54	20.3	13.2	9.8	7.9	6.0	5.7	4.4	3.5	0.12	11.3		5.7
48–52	Not sampled																	
52–60	0.06				0.7	1.54	20.2	10.4	6.3	4.4	3.4	2.3	2.1	1.7	0.09	7.6		5.7

Depth (in.)	Extractable bases 5B1a: 6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	Sum	6H2a Ext. acidity	CEC: 5A3a Sum cations		6G1d Ext. Al			Ratios to clay 8D1: CEC Sum	Ext. Iron	15-bar water	8D3 Ca/Mg		Base saturation: 5C3 Sum cations Pct.	5C1 NH_4OAc Pct.
	meq/100 g																	
0–10	1.7	0.8	tr.	0.3	2.8	0.6	3.4					0.79	0.12	0.42			82	
10–23	1.0	0.7	tr.	0.1	1.8	0.4	2.2					0.54	0.15	0.37			82	
23–30	1.4	0.7	tr.	0.2	2.3	1.1	3.4					0.45	0.11	0.41			68	
30–38	1.2	0.6	tr.	0.2	2.0	0.6	2.6					0.48	0.13	0.44			77	
38–42	1.0	0.4	tr.	0.2	1.6	0.4	2.0					0.46	0.14	0.47			80	
42–48	1.4	0.8	tr.	0.2	2.4	1.1	3.5					0.42	0.12	0.42			68	
48–52	Not sampled																	
52–60	0.8	0.5	tr.	0.2	1.5	0.6	2.1					0.70	0.23	0.57			71	

Depth (in.)	Clay Fraction Analysis 7A1b-d: Mt.	Chl.	Vm.	Mi.	Int.	Qtz.	Kl.	Gibbsite	Analyses by New Jersey Agr. Exp. Sta., Rutgers: Hydraulic conductivity a/ in/hr	Porosity a/: Non-capillary Pct.	Capillary Pct.	Total Pct.	Plastic index a/ Pct.	Aggregate stability a/ Pct.
	7A2 X-ray						7A3							
0–10									1.0	17.6	14.1	31.7	N.P.	31
10–23									0.6	18.7	18.3	37.0	N.P.	20
23–30									1.3	21.7	19.8	41.5	N.P.	17
30–38									3.8	21.9	17.5	39.4	N.P.	17
38–42									1.2	15.3	21.3	36.6	N.P.	20
42–48									1.3	16.1	20.4	36.5	N.P.	18
48–52	Not sampled													
52–60									7.2	20.7	15.5	36.2	N.P.	24

a/ Methods refer-

Pedon Classification: Psammentic Hapludalf; sandy, siliceous, mesic
Soil: Series not designated 1/
Soil No.: S58NJ-3-3
Location: Burlington County, New Jersey. Just south of Beverly, across road from the National cemetery; Versaci farm out from southeast corner of family garden.
Vegetation and land use: Vegetable growing.
Slope and land form: About 1 percent.
Drainage: Somewhat excessively drained.
Permeability: Rapid to very rapid.
Parent material: Deep sands of the coastal plain.
Physiographic position: Undulating Delaware River terrace, the site probably a wind deposit; elevation slightly under 30 feet.
Described by: G. A. Quakenbush

Horizon and Beltsville Lab. No.	
Ap 59211	0 to 10 inches. Very dark grayish brown (10YR 4/2) sand, grayish brown (10YR 5/2) dry; structureless; very friable; abrupt boundary.
A2 59212	10 to 23 inches. Yellowish brown (10YR 5/4) sand, light yellowish brown (10YR 6/4) dry; single grain; very friable; four strong brown (7.5YR 4/6) wavy bands present about 1/2 inch wide; sand grains darker than matrix color, sprinkled the soil; clear smooth boundary. 12 to 14 inches thick.
B2t 59213	23 to 30 inches. Strong brown (7.5YR 5/6) sand, yellowish brown (10YR 5/6) dry; massive with uneven fracture giving way to very weak subangular blocks; friable, nonsticky and nonplastic; sprinkling of darker grains present; gradual smooth boundary. 6 to 9 inches thick.
B3 59214	30 to 38 inches. Strong brown (7.5YR 5/6) with evident grayer grains and yellowish brown (10YR 5/6) dry; single grain; loose; gradual smooth boundary. 5 to 10 inches thick.
C1 59215	38 to 42 inches. Strong brown (7.5YR 5/6) with 40 percent (10YR) sand, yellowish brown (10YR 5/6) dry; single grain; loose; clear smooth boundary.
IIC2	42 to 48 inches. Variegated, moist about 50 percent (7.5YR) and 50 percent yellowish brown (10YR 5/6) loamy sand, brown (7.5YR 5/4) dry; uneven fracture; friable; clear wavy boundary.
IIIC3 Not sampled	48 to 52 inches. Mixed grains about 70 percent strong brown (7.5YR 5/6) and 30 percent dark brown (7.5YR 4/4) sand, strong brown (7.5YR 5/6) dry; single grain; loose; clear broken boundary. May be absent.
IVC4 59217	52 to 60 inches. Yellowish brown (10YR 5/6) sand, grading with depth to (2.5Y); single grain; loose.

Notes: Colors refer to moist soil unless indicated otherwise.

1/ This pedon was sampled as Galestown. Agricultural fertilization and liming are credited with raising the base saturation into the range of Alfisols. The Galestown series is in the sandy, siliceous, mesic family of Psammentic Hapludults. In properties other than base saturation this pedon is like Galestown.

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

PEDON CLASSIFICATION: Ultic Hapludalf; coarse-loamy, mixed, mesic
SOIL Series not designated SOIL Nos. S59NJ-13-2 LOCATION Monmouth County, New Jersey

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 60148 - 60152

Depth (In.)	Horizon	1B1b Size class and particle diameter (mm) 3A1												3B2	Coarse fragments 3B1		
		Total			Sand					Silt					2A2		
		Sand (2–0.05)	Silt (0.05–0.002)	Clay (< 0.002)	Very coarse (2–1)	Coarse (1–0 5)	Medium (0.5–0.25)	Fine (0.25–0.1)	Very fine (0.1–0.05)	0.05–0.02	Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)	Cm	> 2	2 - 19	19 - 76
		Pct. of < 2 mm													Pct.	Pct. of < 76mm	
0-9	Ap	71.5	7.7	10.8	4.8	27.6	36.4	10.4	2.3	2.0	5.7	7.3	69.2	1.00			
9-21	B21t	77.8	7.5	14.7	5.3	25.8	34.8	9.8	2.1	1.8	5.7	6.5	75.7	1.00			
21-27	B22t	75.1	9.6	15.3	4.7	24.0	34.1	10.1	2.2	2.9	6.7	7.9	72.9	1.00			
27-37	B23t	72.9	10.0	17.1	3.9	20.4	34.6	11.1	2.9	3.5	6.5	9.8	70.0	1.00			
37-66	C1	76.9	9.1	14.0	4.4	22.3	34.9	12.5	2.8	3.2	5.9	9.8	74.1	1.00			

Depth (In.)	6A1a Organic carbon	6B2a Nitrogen	C/N		Analyses by New Jersey Agr. Exp. Sta., Rutgers University a/											pH	
						Water retained at suctions of								Available water	Field capacity	8C1c (1:1)	8C1e (1:1)
				Ext. iron as Fe	Bulk density	0.02 bar	0.06 bar	0.10 bar	0.33 bar	1 bar	2 bar	6 bar	15 bar			KCl	H_2O
	Pct.	Pct.		Pct.	g/cc	Pct.								in/in	Pct.		
0-9	0.64	0.074	9		1.59	20.6	14.1	13.7	12.6	11.7	7.8	6.4	5.5	0.15	15.0	3.5	
9-21	0.22	0.041			1.50	23.1	15.4	15.0	14.1	13.3	9.2	8.1	7.3	0.10	14.2	3.5	
21-27	0.14				1.34	25.9	21.9	20.2	19.8	18.6	11.1	9.2	8.6	0.11	17.0	4.8	
27-37	0.11				1.37	26.4	22.2	21.0	20.8	20.3	11.5	10.2	9.1	0.10	17.1	3.8	
37-66	0.09				1.38	25.9	17.7	17.2	15.8	14.7	9.6	8.6	7.3	0.13	16.9	5.2	

Depth (In.)	Extractable bases 5B1a					6H2a	CEC		6G1d			Ratios to clay 8D1			8D3		Base saturation	
	6N2d	6O2b	6P2a	6Q2a		Ext.	5A3a Sum cations		Ext.			CEC Sum	Ext. iron	15-bar water	Ca/Mg		5C3 Sum cations	5C1 NH_4OAc
	Ca	Mg	Na	K	Sum	acidity			Al									
	meq/100 g																Pct.	Pct.
0-9	1.6	0.5	0.2	0.4		9.6	12.3					1.14		0.51			22	
9-21	2.8	0.6	0.1	0.2		6.2	9.9					0.67		0.50			37	
21-27	4.1	0.6	0.2	0.2		6.8	11.9					0.78		0.56			43	
27-37	4.5	0.6	0.2	0.1		7.0	12.4					0.72		0.53			44	
37-66	4.2	0.7	0.2	0.1		6.4	11.6					0.83		0.52			45	

Depth (In.)	Clay Fraction Analysis 7A1b-d								Analyses by New Jersey Agr. Exp. Sta., Rutgers a/					
	Mt.	Chl.	Vm.	Mi.	Int.	Qtz.	Kl.	Gibbsite	Hydraulic conductivity a/	Porosity a/ Non-capillary	Capillary	Total	Plastic index a/	Aggregate stability a/
	7A2 X-ray						7A3		in/hr	Pct.	Pct.	Pct.	Pct.	Pct.
0-9									3.5	14.5	22.3	36.8		64
9-21									3.5	16.5	23.1	39.6		32
21-27									4.8	16.8	29.4	46.2		34
27-37									3.8	14.0	31.8	45.8		32
37-66									5.2	18.7	24.3	43.0		30

a/ Methods referenced on methods code sheet.

Pedon Classification: Ultic Hapludalf; coarse-loamy, mixed, mesic
Soil: Series not designated[1/]
Soil No.: S59NJ-13-2
Location: Monmouth County, New Jersey; 100 feet west of gravel road 1/4 mile south of Route NJ No. 33 about 3-1/2 miles ENE of Freehold, N.J. Tunis Denise peach orchard; along second row of peach trees, about 50 feet south of old apple orchard on opposite side of road.
Vegetation and land use: Peach orchard, vetch ground cover disked down.
Slope and land form: 2 to 3 percent.
Drainage: Well drained.
Permeability: Moderately rapid.
Parent material: Material from near the top of the Red Bank (Cretaceous) formation and beneath the Tinton formation.
Sampled by: N. A. Willits and K. P. Wilson

Horizon and Beltsville Lab. No.	
Ap 60148	0 to 9 inches. Dark reddish brown (5YR 3/3) loamy sand, dark brown (7.5YR 4/4) dry; weak medium crumb structure; loose; abundant free roots; pH 5.0; abrupt smooth boundary. 9 to 10 inches thick.
B21t 60149	9 to 21 inches. Dark reddish brown (5YR 3/4) sandy loam, yellowish red (5YR 5/8) dry; weak coarse subangular blocky structure breaking to weak fine granular; slightly firm in place but friable when removed, slightly brittle; many fine roots; clay bridging between grains; one root or worm channel every 2 to 3 inches; pH 5.4; clear smooth boundary. 10 to 12 inches thick.
B22t 60150	21 to 27 inches. Yellowish red (5YR 4/6) to red (2.5YR 4/6) sandy loam, yellowish red (5YR 4/8) dry; very weak medium subangular blocky structure breaking to moderate fine granules; less firm in place than horizon above and friable when removed; a few large roots, some old root channels filled with A1 material; pH 5.4; clear smooth boundary. 5 to 6 inches thick.
B23t 60151	27 to 37 inches. Yellowish red (5YR 4/6) sandy loam, yellowish red (5YR 5/8) to strong brown (7.5YR 4/6) dry; very weak medium subangular blocky structure breaking to weak fine granules; very friable; a very few roots at top; cuts greenish where glauconite grains smeared; pH 5.7; gradual wavy boundary. 8 to 12 inches thick.
C1 60152	27 to 66 inches. Dark brown (7.5YR 4/4) sandy loam, strong brown (7.5YR 5/6) dry; single grain; slightly firm in place, friable when removed; very few roots; appears quite greenish on cut faces, sand grains red coated; pH 6.2; clear smooth boundary. 30 to 36 inches thick.
C2 Not sampled	66 to 78 inches. Dark brown (7.5YR 4/4) sandy loam, yellowish brown (10YR 5/6) dry; massive; firm; no roots; low glauconite content; pH 5.0; clear smooth boundary. 10 to 14 inches thick.
C3 Not sampled	78 to 86 inches. Dark yellowish brown (10YR 4/4) loamy sand, yellowish brown (10YR 5/8) dry; single grain; loose; very thinly coated sand grains; low glauconite content; pH 5.2.

Notes: Colors refer to moist soils unless indicated otherwise.

[1/] This pedon was sampled as a representative of the Colts Neck series, but is in the Alfisols. Long term agricultural liming and fertilization are credited with raising the base saturation from original low levels. The control section clay content is slightly lower than in the Colts Neck series, which is in the fine-loamy, mixed, mesic family of Typic Hapludults.

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

PEDON CLASSIFICATION: Ultic Hapludalf; fine-loamy, mixed, mesic
SOIL Series not designated SOIL Nos. 858MJ-8-4 LOCATION Gloucester County, New Jersey

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 59166 - 59169

Depth (in.)	Horizon	1B1b Total: Sand (2-0.05)	Silt (0.05-0.002)	Clay (< 0.002)	Size class and particle diameter (mm) 3A1: Sand: Very coarse (2-1)	Coarse (1-0.5)	Medium (0.5-0.25)	Fine (0.25-0.1)	Very fine (0.1-0.05)	Silt: 0.05-0.02	Int. III (0.02-0.002)	Int. II (0.2-0.02)	(2-0.1)		3B2 Cm	Coarse fragments 3B1: 2A2 ≥ 2 < 76 Pct.	2 - 19	19 - 76
		Pct. of < 2 mm														Pct. of < 76mm		
0-8	Ap	68.6	24.8	6.6	9.4	24.1	17.7	11.2	6.2	10.4	14.4	21.4	62.4		0.83	27		
8-14	A2	75.2	19.1	5.7	14.2	34.2	14.4	8.0	4.4	7.0	12.1	14.9	70.8		0.68	42		
14-24	B21t	Not sampled																
24-36	IIB22t	69.7	5.7	24.6	19.6	35.8	9.7	3.0	1.6	1.7	4.0	4.5	68.1		0.78	31		
36-96	IIB23t	65.9	3.7	30.4	46.0	16.3	2.3	0.8	0.5	1.5	2.2	2.3	65.4		0.93	30		

Depth (in.)	6A1a Organic carbon	6B2a Nitrogen	C/N		6C1a Ext. iron as Fe	Analyses by New Jersey Agr. Exp. Sta., Rutgers University a/: Bulk density	Water retained at suctions of: 0.02 bar	0.06 bar	0.10 bar	0.33 bar	1 bar	2 bar	6 bar	15 bar	Available water	Field capacity	pH: 8C1c (1:1) KCl	8C1a (1:1) H_2O
	Pct.	Pct.			Pct.	g/cc	Ftt.								in/in	Pct.		
0-8	1.46	0.072	20		0.5	1.49	21.1	16.8	14.7	13.3	11.4	6.7	4.7	4.2	0.13	12.0		5.1
8-14	0.24	0.018			0.7	1.70	13.3	9.3	7.9	7.0	6.0	4.2	4.4	2.6	0.11	8.3		5.0
14-24	Not sampled																	
24-36	0.18	0.035			2.0	1.66	14.6	12.8	11.5	10.8	10.4	11.2	9.7	8.7	0.12	13.8		5.2
36-96	0.08	0.031			4.1	1.74	15.1	13.0	12.6	11.8	10.8	14.0	13.1	11.1	0.10	14.6		4.3

Depth (in.)	Extractable bases 5B1a: 6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	Sum	6H2a Ext. acidity	CEC: 5A3a Sum cations	6G1d Ext. Al	Ratios to clay 8D1: CEC Sum	Ext. iron	15-bar water	8D3 Ca/Mg	Base saturation: 5C3 Sum cations	5C1 NH_4OAc
	meq/100 g												Pct.	Pct.
0-8	2.0	0.7	tr.	0.2	2.9	4.9	7.8		1.18	0.08	0.64		32	
8-14	1.2	0.5	tr.	0.1	1.8	1.5	3.3		0.58	0.12	0.46		54	
14-24	Not sampled													
24-36	1.9	0.4	tr.	0.1	2.4	3.9	6.3		0.26	0.08	0.33		38	
36-96	1.5	0.9	0.1	0.1	2.6	3.2	6.0		0.20	0.13	0.37		47	

Depth (in.)	Clay Fraction Analysis 7A1b-d: Mt.	Chl.	Vm.	Mi.	Int.	Qtz.	Kl.	Gibbsite	Analyses by New Jersey Agr. Exp. Sta., Rutgers a/: Hydraulic conductivity	Porosity a/: Non-capillary	Capillary	Total	Plastic index	Aggregate stability
	7A2 X-ray						7A3		in/hr	Pct.	Pct.	Pct.	Pct.	Pct.
0-8									3.0	15.9	24.6	40.5		88
8-14									0.7	17.3	15.6	32.9		49
14-24	Not sampled													
24-36									1.8	17.2	20.6	37.8		41
36-96									1.6	12.1	23.0	35.1		44

a/ Methods referenced on methods code sheet.

Pedon Classification: Ultic Hapludalf; fine-loamy, mixed, mesic
Soil: Series not designated[1/]
Soil No.: S58NJ-8-4
Location: Gloucester County, New Jersey. South edge of Richwood (lat. 39°43'12", long. 75°09'48"), 400 feet north of railroad, east of cemetery and east of gravel pit about 90 feet east of edge of the pit in orchard; property of Carlton Heritage.
Vegetation and land use: Peach orchard.
Slope and land form: 0 to 10 percent.
Drainage: Well drained.
Permeability: Estimated moderate in B22t, moderately slow below.
Parent material: Coastal plain medium textured sediments with brown sola.
Described by: M. Markley

Horizon and Beltsville Lab. No.	
Ap 59166	0 to 8 inches. Very dark grayish brown (2.5Y 3/2) gravelly sandy loam; weak medium granular structure; very friable; 15 percent rounded quartzose pebbles up to 1/2 inch diameter; pH 6.4; clear smooth boundary. 8 to 9 inches thick.
A2 59167	8 to 14 inches. Yellowish brown (10YR 5/4) gravelly sandy loam; weak fine granular structure; friable to firm in place; 15 percent rounded quartzose pebbles; pH 6.4; gradual wavy boundary. 6 to 10 inches thick.
B21t Not sampled	14 to 24 inches. Dark yellowish brown (10YR 4/4) gravelly sandy clay loam; weak medium subangular blocky structure; friable; 20 percent rounded pebbles; many clay films; pH 6.2; clear broken boundary. 0 to 10 inches thick.
IIB22t 59168	24 to 36 inches. Dark brown (7.5YR 4/4) gravelly sandy clay loam; some sandier pockets; moderate medium subangular blocky structure; firm in place but variable; 20 percent rounded pebbles, many rotted; clay films abundant, all pebbles coated by and embedded in clay; Ap material in channels; pH 5.4; gradual broken boundary. 0 to 24 inches thick.
IIB23t 59169	36 to 96 inches. Strong brown (7.5YR 5/8) gravelly sandy clay loam; massive; firm; 20 percent rounded quartzose pebbles many rotted; pH 4.6.

Notes: Colors are for moist soil.

[1/] This pedon was sampled as Aura, but the base saturation is in the Alfisol range. Long term agricultural liming and fertilization is credited with changing this pedon from an Ultisol. The Aura series is in the fine-loamy, mixed, mesic family of Typic Hapludults.

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

PEDON CLASSIFICATION: Ultic Hapludalf; fine-loamy, mixed, mesic

SOIL Series not designated SOIL Nos. 858NJ-8-6 LOCATION Gloucester County, New Jersey

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 59174 - 59178

Depth (In)	Horizon	1B1b Total Sand (2–0.05)	Total Silt (0.05–0.002)	Total Clay (< 0.002)	Sand Very coarse (2–1)	Sand Coarse (1–0.5)	Sand Medium (0.5–0.25)	Sand Fine (0.25–0.1)	Sand Very fine (0.1–0.05)	Silt 0.05–0.02	Silt Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)		3B2 Cm	Coarse fragments 3B1 2A2 > 2 < 76 Pct.	2–19 Pct. of < 76mm	19–76 Pct. of < 76mm
		Pct. of < 2 mm																
0-6	Ap	73.0	20.8	6.2	5.9	20.2	20.5	17.5	8.9	10.0	10.8	27.9	64.1		0.95	8		
6-9	A2	64.5	26.4	9.1	5.6	18.3	18.1	15.1	7.4	10.7	15.7	25.8	57.1		0.94	9		
9-18	B21t	65.6	19.3	15.1	10.9	20.2	15.7	12.2	6.6	7.9	11.4	20.4	59.0		0.87	19		
18-28	IIB22t	67.5	5.6	26.9	19.5	24.6	15.4	6.2	1.8	1.7	3.9	5.5	65.7		0.84	22		
28-60	IIB23t	67.2	3.5	29.3	17.8	31.2	14.2	3.0	1.0	1.1	2.4	3.1	66.2		0.86	21		

Depth (In.)	6A1a Organic carbon Pct.	6B2a Nitrogen Pct.	C/N		6C1a Ext. iron as Fe Pct.	Analyses by New Jersey Agr. Exp. Sta., Rutgers University a/ Bulk density g/cc	Water retained at suctions of 0.02 bar Pct.	0.06 bar Pct.	0.10 bar Pct.	0.33 bar Pct.	1. bar Pct.	2 bar Pct.	6 bar Pct.	15 bar Pct.	Available water in/in	Field capacity Pct.	pH 8C1c (1:1) KCl	8C1a (1:1) H_2O
0-6	0.56	0.050	11		0.4	1.52	18.9	15.2	14.1	12.9	11.5	4.7	3.1	2.6	0.14	11.7		5.8
6-9	0.25	0.022	11		0.7	1.75	15.4	13.2	12.2	11.4	9.9	5.9	4.3	3.3	0.12	10.0		6.3
9-18	0.18	0.035			1.3	1.70	15.7	13.2	11.9	11.1	10.1	8.0	6.7	6.3	0.10	11.5		6.1
18-28	0.12				2.3	1.73	15.1	13.0	12.2	11.3	10.3	11.0	9.9	8.7	0.09	12.6		6.0
28-60	0.08				2.9	1.68	16.2	14.5	13.4	12.3	11.4	12.0	10.6	9.7	0.09	13.3		5.6

Depth (In.)	Extractable bases 5B1a 6N2d Ca meq/100 g	6O2b Mg meq/100 g	6P2a Na meq/100 g	6Q2a K meq/100 g	Sum meq/100 g	6H2a Ext acidity meq/100 g	CEC 5A3a Sum cations meq/100 g	6G1d Ext. Al	Ratios to clay 8D1 CEC Sum	Ext. iron	15-bar water	8D3 Ca/Mg	Base saturation 5C3 Sum cations Pct	5C1 NH_4OAc Pct.
0-6	1.8	0.6	tr.	0.3	2.7	1.5	4.2		0.68	0.06	0.42		64	
6-9	1.7	0.6	0.8	0.3	3.4	1.1	3.8		0.41	0.08	0.36		71	
9-18	2.2	0.9	tr.	0.2	3.3	1.3	4.6		0.30	0.09	0.42		72	
18-28	3.5	1.0	0.1	0.1	4.7	2.2	6.9		0.26	0.09	0.32		67	
28-60	2.5	1.3	0.1	0.1	4.0	2.8	6.8		0.23	0.10	0.33		59	

Depth (In.)	Clay Fraction Analysis 7A1b-d Mt 7A2 X-ray	Chl. 7A2 X-ray	Vm 7A2 X-ray	Mi. 7A2 X-ray	Int 7A2 X-ray	Qtz. 7A2 X-ray	Kl. 7A3	Gibbsite 7A3	Analyses by New Jersey Agr. Exp. Sta., Rutgers a/ Hydraulic conductivity in/hr	Porosity a/ Non-capillary Pct.	Capillary Pct.	Total Pct.	Plastic index a/ Pct.	Aggregate stability a/ Pct.
0-6									0.5	14.9	23.6	38.5		59
6-9									0.2	9.7	23.0	32.7		30
9-18									0.4	13.6	22.4	36.0		32
18-28									0.7	12.3	20.9	33.2		40
28-60									0.5	11.2	24.3	35.5		42

a/ Methods referenced on methods code sheet.

Pedon Classification: Ultic Hapludalf: fine-loamy, mixed, mesic
Soil: Series not designated[1/]
Soil No.: S58NJ-8-6
Location: Gloucester County, New Jersey. West of Glassboro (lat. 39°,42',12"; long. 75°,08',18"), field east of gravel pit, 285 feet north of abandoned railroad, 30 feet west of field border; DiEugenic farm.
Vegetation and land use: Asparagus field for at least 12 years.
Slope and land form: 10 percent.
Drainage: Well drained.
Permeability: Moderately slow.
Parent material: Coastal plain medium textured sediments with brown sola.
Described by: M. Markley

Horizon and Beltsville Lab. No.	
Ap 59174	0 to 6 inches. Dark grayish brown (2.5Y 4/2) sandy loam; weak thin platy structure; very friable, nonsticky; roots concentrated at bottom of Ap over apparent traffic pan; pH 6.2; abrupt smooth boundary. 3 to 6 inches thick.
A2 59175	6 to 9 inches. Yellowish brown (10YR 5/4) sandy loam; moderate thick to very thick platy structure; very friable, nonsticky. 5 percent chert pebbles; pH 6.4; gradual wavy boundary. 0 to 4 inches thick.
B21t 59176	9 to 18 inches. Dark yellowish brown (10YR 4/4) sandy loam; moderate medium and coarse subangular blocky structure; friable, slightly firm, sticky; discontinuous clay films on peds; 10 percent rounded quartzose pebbles; pebbles coated with clay and bedded in clay; pH 6.4; gradual broken boundary. 0 to 10 inches thick.
IIB22t 59177	18 to 28 inches. Strong brown (7.5YR 5/8) sandy clay loam with 6 to 12 inch sandy pockets; massive; very sticky; 10 percent fine pebbles; pH 6.4; gradual wavy boundary. 8 to 20 inches thick.
IIB23t 59178	28 to 60 inches. Strong brown (7.5YR 5/8) sandy clay loam with sandier strata; massive; firm, sticky; common quartzose pebbles; pH 6.4.

Notes: Colors are for moist soil.

[1/] This pedon was sampled as Aura. Fertilization and liming are credited with raising the base saturation into the range of Alfisols. The Aura series is in the fine-loamy, mixed, mesic family of Typic Hapludults.

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

PEDON CLASSIFICATION: Ultic Hapludalf: fine-loamy, mixed, mesic
SOIL Series not designated SOIL Nos. S59NJ-13-6 LOCATION Monmouth County, New Jersey

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 60170 - 60175

Depth (In.)	Horizon	1B1b Total Sand (2-0.05)	Silt (0.05-0.002)	Clay (< 0.002)	Sand: Very coarse (2-1)	Coarse (1-0.5)	Medium (0.5-0.25)	Fine (0.25-0.1)	Very fine (0.1-0.05)	Silt: 0.05-0.02	Int. III (0.02-0.002)	Int. II (0.2-0.02)	(2-0.1)		3B2 Cm	Coarse fragments 3B1: 2A2 >2 <76 Pct.	2-19 Pct of <76mm	19-76 Pct of <76mm
		Pct. of < 2 mm																
0-10	Ap	73.8	13.4	13.5	1.0	16.2	37.0	15.4	3.5	6.0	7.4	13.1	70.3		0.98	3		
10-15	B1	72.1	14.4	13.5	0.4	13.7	37.4	16.7	3.9	7.3	7.1	14.3	68.2		1.00			
15-24	B21t	66.4	13.3	20.3	1.0	14.6	34.5	13.0	3.3	6.8	6.5	12.7	63.1		1.00			
24-35	B22t	73.0	10.2	16.8	0.7	14.2	38.2	16.4	3.5	5.3	4.9	12.3	69.5		1.00			
35-42	B3	84.6	5.3	10.1	1.0	17.2	43.8	19.5	3.1	3.3	2.0	10.5	81.5		1.00			
42-60	C	87.2	3.8	9.0	1.4	24.4	43.9	15.2	2.3	2.5	1.3	7.5	84.9		1.00			

Depth (In.)	6A1a Organic carbon	6B2a Nitrogen	C/N		Carbonate as $CaCO_3$	Analyses by New Jersey Agr. Exp. Sta., Rutgers University a/ Bulk density	Water retained at suctions of: 0.02 bar	0.06 bar	0.10 bar	0.33 bar	1 bar	2 bar	6 bar	15 bar	Available water	Field capacity	pH 8C1c (1:1) KCl	8C1a (1:1) H_2O
	Pct	Pct.			Pct	g/cc	Pct.								in/in	Pct.		
0-10	0.57	0.068	8			1.54	21.9	17.3	15.5	14.1	12.6	7.3	6.1	5.6	0.17	16.9		
10-15	0.25	0.041	6			1.60	20.8	15.9	14.2	12.0	11.0	7.0	5.5	5.2	0.12	12.6		
15-24	0.17					1.41	25.2	19.1	16.4	13.0	11.1	11.2	9.4	8.5	0.11	16.4		
24-35	0.11					1.47	23.7	16.6	15.7	14.2	13.3	8.7	8.0	7.1	0.13	15.9		
35-42	0.05					1.47	21.5	14.0	13.2	12.0	11.1	5.8	5.0	4.9	0.13	13.9		
42-60	0.05					1.47	21.1	11.5	10.3	8.6	8.0	6.2	5.1	4.9	0.10	11.5		

Depth (In.)	Extractable bases 5B1a: 6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	Sum	6H2a Ext. acidity	CEC: 5A3a Sum cations	6G1d Ext. Al	Ratios to clay 8D1: CEC Sum	Ext. iron	15-bar water	8D3 Ca/Mg	Base saturation: 5C3 Sum cations Pct.	5C1 NH_4OAc Pct
	meq/100 g													
0-10	5.9	0.7	0.1	0.1		5.6	12.4		0.92		0.41		55	
10-15	3.1	0.3	tr.	0.1		4.9	9.2		0.68		0.39		39	
15-24	4.2	0.5	0.1	0.2		5.9	10.9		0.54		0.42		46	
24-35	4.1	0.4	0.1	0.1		5.0	9.7		0.58		0.42		48	
35-42	2.9	0.2	tr.	0.1		3.5	6.8		0.67		0.49		49	
42-60	3.5	0.2	tr.	0.2		4.0	7.9		0.88		0.54		49	

Depth (In.)	Clay Fraction Analysis 7A1b-d: Mt	Chl	Vm.	Mi	Int.	Qtz.	Kl.	Gibbsite	Analyses by New Jersey Agr. Exp. Sta., Rutgers a/: Hydraulic conductivity	Porosity a/: Non-capillary	Capillary	Total	Plastic index a/	Aggregate stability a/
	7A2 X-ray						7A3		in/hr	Pct.	Pct.	Pct.	Pct.	Pct.
0-10									4.3	11.1	26.6	37.7		74
10-15									1.6	10.1	26.4	36.5		27
15-24									6.3	16.2	27.4	43.6		18
24-35									3.2	16.9	24.4	41.3		19
35-42									7.7	20.4	20.3	40.7	N.P.	25
42-60									14.2	24.9	14.7	39.6	N.P.	64

a/ Methods referenced on methods code sheet.

Pedon Classification: Ultic Hapludalf; fine-loamy, mixed, mesic
Soil: Series not designated[1/]
Soil No.: S59NJ-13-6
Location: Monmouth County, New Jersey. 25 feet into hay field on south side of Prothero Road, 100 feet from intersection with Hyers Mill Road. Gemmel farm.
Vegetation and land use: Alfalfa-grass hay mixture.
Slope and land form: 2 to 3 percent.
Drainage: Well drained.
Permeability: Moderately rapid.
Parent material: Red sand from Red Bank Formation (Cretaceous).
Sampled by: N. A. Willits and K. P. Wilson

Horizon and Beltsville Lab. No.	
Ap 60170	0 to 10 inches. Dark reddish brown (5YR 3/2) sandy loam, dark brown (7.5YR 4/2) dry; weak fine granular structure; firm when dry; abundant fine roots; pH 5.6; abrupt smooth boundary. 9 to 10 inches thick.
B1 60171	10 to 15 inches. Dark reddish brown (5YR 3/4) sandy loam, yellowish red (5YR 4/6) dry; very weak coarse platy structure breaking to weak fine granular structure; firm and slightly brittle when dry; many fine roots; abundant root and worm channels filled with Ap material; pH 5.4; clear smooth boundary. 5 to 6 inches thick.
B21t 60172	15 to 24 inches. Reddish brown (5YR 4/4) sandy clay loam, cuts yellowish, yellowish red (5YR 4/6) dry; weak fine granular structure; slightly firm in place, friable when removed; few coarse and fine roots; many root and worm channels filled with Ap material; pH 5.4; gradual smooth boundary. 9 to 10 inches thick.
B22t 60173	24 to 35 inches. Reddish brown (5YR 4/4) sandy loam, cuts yellowish, yellowish red (5YR 4/8) dry; very weak subangular blocky structure; slightly firm in place, friable when removed; few coarse and fine roots; discontinuous clay films on peds; many root and worm channels filled with organic matter; pH 5.6; gradual wavy boundary. 9 to 15 inches thick.
B3 60174	35 to 42 inches. Reddish brown (5YR 4/4) loamy sand, yellowish red (5YR 4/6) dry; massive or single grain; slightly firm in place, friable when removed; few roots; grains slightly aggregated; pH 6.2; gradual smooth boundary. 7 inches thick.
C 60175	42 to 60 inches. Reddish brown (5YR 4/4) loamy sand, yellowish red (5YR 4/6) or yellower, dry; single grain; loose; many scattered 1/8 to 1/2 inch fragments of iron concretions; pH 6.2. Becomes somewhat looser and yellower with depth; pH 5.0 at 60 inches.

Notes: Colors refer to moist soil unless indicated otherwise.

[1/] This pedon was sampled as a representative of the Colts Neck series but is an Alfisol. Long-term agricultural liming and fertilization are credited with raising the base saturation from original low levels. Colts Neck series is in the fine-loamy mixed, mesic family of Typic Hapludults.

U. S. DEPARTMENT OF AGRICULTURE
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PEDON CLASSIFICATION: Ultic Hapludalf; fine-loamy, siliceous, mesic

SOIL Series not designated SOIL Nos. S60NJ-11-1 LOCATION Mercer County, New Jersey

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 60408 - 60413

Depth (In.)	Horizon	1B1b Total Sand (2–0.05)	Silt (0.05–0.002)	Clay (< 0.002)	Sand: Very coarse (2–1)	Coarse (1–0.5)	Medium (0.5–0.25)	Fine (0.25–0.1)	Very fine (0.1–0.05)	Silt: 0.05–0.02	Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)		3B2 Cm	Coarse fragments 3B1: 2A2 > 2 < 76	2 – 19	19 – 76
		Pct. of < 2 mm														Pct.	Pct. of < 76mm	
0-11	Ap	48.6	41.5	9.9	2.6	14.7	13.0	11.5	6.8	22.8	18.7	34.3	41.8		0.98	3		
11-14	AB	47.0	37.9	15.1	2.8	16.2	13.3	9.4	5.3	16.0	21.9	25.3	41.7		0.99	2		
14-21	B2t	51.6	29.9	18.5	2.8	17.7	15.2	10.6	5.3	13.7	16.2	23.3	46.3		0.98	4		
21-28	B31	65.5	18.8	15.7	3.8	27.2	19.0	11.0	4.5	8.6	10.2	17.4	61.0		0.96	6		
28-34	B32,B33	61.8	22.5	15.7	3.5	22.5	17.3	12.9	5.6	11.8	10.7	22.8	56.2		0.97	5		
34-42	IIC	85.8	6.3	7.9	1.4	30.3	36.3	14.3	3.5	2.6	3.7	10.6	82.3		0.96	6		

Analyses by New Jersey Agr. Exp. Sta., Rutgers University a/

Depth (In.)	6A1a Organic carbon	6B2a Nitrogen	C/N		Carbonate as $CaCO_3$	Bulk density	Water retained at suctions of: 0.02 bar	0.06 bar	0.10 bar	0.33 bar	1 bar	2 bar	6 bar	15 bar	Available water	Field capacity	pH 8C1c (1:1) KCl	pH 8C1a (1:1) H_2O
	Pct.	Pct.			Pct.	g/cc	Pct.								in/in	Pct.		
0-11	0.69	0.093	7			1.58	20.5	18.4	17.7	16.6	15.3	9.6	6.0	4.3	0.19	16.3		5.0
11-14	0.18	0.064				1.69	18.3	17.4	16.7	15.7	15.2	11.2	8.2	6.8	0.17	16.6		5.0
14-21	0.12					1.62	19.0	17.6	16.6	15.0	13.2	11.6	9.4	7.9	0.05	17.3		5.5
21-28	0.06					1.72	16.7	15.2	14.2	13.1	11.4	9.7	8.2	6.7	0.18	16.8		6.0
28-34	0.04					1.75	15.3	14.2	13.7	12.4	11.1	10.0	8.0	6.9	0.14	14.5		6.0
34-42	-					1.58	13.4	10.3	9.7	8.7	7.4	7.1	5.9	5.2	0.13	13.5		5.8

Depth (In.)	Extractable bases 5B1a: 6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	Sum	6H2a Ext. acidity	CEC: 5A3a Sum cations		6G1d Ext. Al			Ratios to clay: CEC Sum	Ext. iron	8D1 15-bar water	8D3 Ca/Mg		Base saturation: 5C3 Sum cations Pct.	5C1 NH_4OAc Pct.
	meq/100 g																	
0-11	2.1	0.4	tr.	0.4	2.9	6.0	8.9					0.90		0.43			32	
11-14	2.7	0.7	tr.	0.2	3.6	3.9	7.5					0.50		0.45			48	
14-21	3.6	0.8	tr.	0.2	4.6	3.5	8.2					0.44		0.43			57	
21-28	3.3	0.5	tr.	0.1	3.9	2.7	6.7					0.43		0.43			58	
28-34	3.3	0.5	tr.	0.1	3.9	2.3	6.2					0.39		0.44			63	
34-42	1.5	0.2	tr.	0.1	1.8	1.8	3.6					0.45		0.66			50	

Depth (In.)	Clay Fraction Analysis 7A1b-d: Mt.	Chl.	Vm. (7A2 X-ray)	Mi	Int.	Qtz.	Kl. (7A3)	Gibbsite (7A3)		Analyses by New Jersey Agr. Exp. Sta., Rutgers: a/ Hydraulic conductivity	Porosity a/: Non-capillary	Capillary	Total	a/ Plastic index	a/ Aggregate stability
										in/hr	Pct.	Pct.	Pct.	Pct.	Pct.
0-11										0.3	9.1	28.7	37.8		
11-14										0.5	5.7	29.3	35.0		25
14-21										0.4	9.0	28.4	37.4		
21-28										0.3	7.8	26.1	33.9		
28-34										0.1	8.1	24.7	32.8		25
34-42										2.7	19.7	16.2	35.9		

a/ Methods referenced on methods code sheet.

Pedon Classification: Ultic Hapludalf; fine-loamy, siliceous, mesic
Soil: Series not designated[1/]
Soil No.: S60NJ-11-1
Location: Mercer County, New Jersey. Approximately 1 mile southeast of Dutch Neck, on LeRoy Grover farm, east of farm barns approximately 300 feet and south of farm lane about 125 feet.
Vegetation and land use: Cultivated annual crops, potatoes, with winter cover crop of wheat at the time of sampling.
Slope and land form: 2 percent.
Drainage: Moderately well drained.
Permeability: Moderate.
Parent material: Developed in silt to very fine sand deposits ranging from about 18 inches to more than 5 feet in thickness.
Described by: G. A. Quakenbush

Horizon and Beltsville Lab. No.	
Ap 60408	0 to 11 inches. Dark grayish brown (10YR 4/2) loam; massive; very weak coarse platiness in the lower 4 inches; friable in upper part, firm in lower 4 inches; abrupt smooth boundary. 10 to 11 inches thick.
AB 60409	11 to 14 inches. Brown (10YR 5/3) loam, splotched 40 percent with brown (7.5YR 5/4); massive; under careful pressure yielding very weak, coarse platiness; very firm; heavily splotched with material in burrows from overlying horizons; clear, slightly wavy boundary. 2 to 4 inches thick.
B2t 60410	14 to 21 inches. Dark brown (7.5YR 4/4) loam; very weak medium subangular blocky structure; firm, slightly sticky, slightly plastic; clear slightly wavy boundary. 7 to 10 inches thick.
B31 60411	21 to 28 inches. Dark brown (7.5YR 4/4) fine sandy loam; massive; friable, slightly sticky; some pale colored sand grains resembling those in the C horizon; gradual boundary. 3 to 8 inches thick.
B32	28 to 31 inches. Strong brown (7.5YR 5/6) fine sandy loam; very few, fine distinct light brownish gray (2.5YR 6/2) mottles and faint to distinct bands of reddish brown (5YR 4/4); massive; friable, slightly sticky, some parts slightly firm and very slightly brittle; clear slightly wavy boundary. 2 to 3 inches thick.
B33 60412	31 to 34 inches. Strong brown (7.5YR 5/6) and yellowish brown (10YR 5/6) fine sandy loam; common, medium, distinct mottles toward 2.5Y; massive; friable, slightly sticky; pebbles distinctly clay coated. 0 to 4 inches thick.
IIC 60413	34 to 42 inches. Strong brown (7.5YR 5/6) sand; single grained; loose, except for upper 2 to 6 inches which are firm and slightly brittle; sand grains are clay bridged.

Notes: B32t and B33t combined into sample no. 60412.
Colors refer to moist soil.

1/ Similar to Woodstown series except in base saturation. Long term agricultural liming and fertilization has raised the base saturation to the Alfisol range. The Woodstown series is in the fine-loamy, siliceous, mesic family of Aquic Hapludults.

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PEDON CLASSIFICATION: Typic Quartzipsamment; mesic, coated

SOIL Evesboro sand SOIL Nos. 850NJ-5-3 LOCATION Cape May County, New Jersey

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 59231 - 59235

Depth (In.)	Horizon	1B1b Total Sand (2–0.05)	Total Silt (0.05–0.002)	Total Clay (< 0.002)	Size class and particle diameter (mm) 3A1 Sand: Very coarse (2–1)	Sand: Coarse (1–0.5)	Sand: Medium (0.5–0.25)	Sand: Fine (0.25–0.1)	Sand: Very fine (0.1–0.05)	Silt (0.05–0.02)	Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)		3B2 Cm	Coarse fragments 3B1: 2A2 ≥ 2 Pct.	2 – 19 Pct. of < 76mm	19 – 76 Pct. of < 76mm
		Pct. of < 2 mm																
0-3	A1,A2,B2	95.2	3.6	1.2	1.2	36.3	37.7	19.3	0.7	1.6	2.0	7.5	94.5		1.00	-		
3-14	A'2	94.1	3.9	2.0	0.8	32.4	36.0	23.8	1.1	1.3	2.6	11.5	93.0		1.00	-		
14-25	B'1	92.7	4.5	2.8	1.0	26.9	34.7	28.4	1.7	1.4	3.1	14.5	91.0		1.00	-		
25-36	B'2	90.9	4.7	4.4	1.3	29.5	34.4	24.6	1.1	1.2	3.5	11.6	89.8		1.00	tr.		
36-48	C	97.1	1.4	1.5	1.7	31.8	36.0	26.1	1.5	0.7	0.7	12.3	95.6		1.00	tr.		

Depth (In.)	6A1a Organic carbon Pct.	6B2a Nitrogen Pct.	C/N		6C1a Ext. iron as Fe Pct.	Analyses by New Jersey Agr. Exp. Sta., Rutgers University a/ Bulk density g/cc	Water retained at suctions of: 0.02 bar Pct.	0.06 bar Pct.	0.10 bar Pct.	0.33 bar Pct.	1 bar Pct.	2 bar Pct.	6 bar Pct.	15 bar Pct.	Available water in/in	Field capacity Pct.	pH 8C1c (1:1) KCl	8C1a (1:1) H_2O
0-3	0.81	0.023	35		0.1	1.40	26.4	12.2	9.2	7.2	6.2	2.1	1.6	1.5	0.10	9.1		4.1
3-14	0.34	0.029	12		0.2	1.38	27.8	11.5	9.0	7.5	6.3	2.4	1.9	1.3	0.09	7.8		4.7
14-25	0.08	0.027			0.2	1.52	20.6	7.4	5.2	3.8	3.0	2.2	1.9	1.5	0.07	6.3		4.6
25-36	0.08				0.3	1.57	18.9	7.0	4.8	4.1	3.4	2.5	2.1	1.8	0.06	5.9		4.6
36-48	0.02				0.1	1.61	19.0	6.2	3.0	2.4	1.8	1.0	1.0	0.7	0.06	4.8		4.7

Depth (In.)	Extractable bases 5B1a: 6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	Sum	6H2a Ext. acidity	CEC: 5A3a Sum cations	6G1d Ext. Al	Ratios to clay 8D1: CEC Sum	Ext. iron	15-bar water	8D3 Ca/Mg	Base saturation: 5C3 Sum cations Pct.	5C1 NH_4OAc Pct.
	meq/100 g													
0-3	0.6	0.2	0.1	tr.	0.9	2.4	3.3						27	
3-14	0.3	0.1	tr.	tr.	0.4	3.7	4.1						10	
14-25	0.3	0.2	tr.	tr.	0.5	2.7	3.2						16	
25-36	0.2	0.2	0.1	0.1	0.6	3.5	4.1		0.93	0.07	0.41		15	
36-48	0.4	0.1	tr.	tr.	0.5	1.6	2.1						24	

Depth (In.)	Clay Fraction Analysis 7A1b-d: Mt. (7A2 X-ray)	Chl.	Vm.	Mi.	Int.	Qtz.	Kl. (7A3)	Gibbsite (7A3)	Analyses by New Jersey Agr. Exp. Sta., Rutgers a/: Hydraulic conductivity a/ in/hr	Porosity a/: Non-capillary Pct.	Capillary Pct.	Total Pct.	Plastic index a/ Pct.	Aggregate stability a/ Pct.
0-3									32.8	28.6	16.8	45.4	N.P.	76
3-14									32.7	29.2	15.9	45.1	N.P.	-
14-25									34.3	28.3	11.1	39.4	N.P.	-
25-36									14.7	25.7	11.0	36.7	N.P.	75
36-48									27.8	27.0	9.9	36.9	N.P.	-

Methods referenced on methods code sheet.

Pedon Classification: Typic Quartzipsamment; mesic, coated
Soil: Evesboro sand[1/]
Soil No.: S58NJ-5-3
Location: Cape May County, New Jersey. About 3 miles southeast of South Dennis along route 38 west of railroad overpass slightly around a curve, south side of road, about 50 feet west of cut through a sand ridge.
Vegetation and land use: Forest, mainly oak with some holly and sassafras.
Slope and land form: 2 percent.
Drainage: Excessively drained.
Permeability: Rapid.
Parent material: Deep sands of the coastal plain.
Described by: G. A. Quakenbush

Horizon and Beltsville Lab. No.	
O1 Not sampled	3 inches to 1/2. Last years leaves, mainly oak.
O2 Not sampled	1/2 inch to 0. Dark reddish brown (5YR 2/2) disintegrated organic residue in a weak mat with some colorless sand grains.
A1, A2, B2 59231	0 to 3 inches. Very dark brown (10YR 2/2) sand, (10YR 3/1) dry; dark gray (10YR 4/1) sand, (10YR 6/1) dry; dark brown (7.5YR 3/2) sand, (10YR 5/3) dry; single grain; loose; clear broken boundary. 0 to 4 inches thick.
A'2 59232	3 to 14 inches. Yellowish brown (10YR 5/4) sand, light yellowish brown (10YR 6/4) dry; single grain; loose; diffuse wavy boundary. 10 to 15 inches thick.
B'1 59233	14 to 25 inches. Yellowish brown (10YR 5/6) sand, light yellowish brown (10YR 6/4) dry; single grain; loose; gradual smooth boundary. 10 to 12 inches thick.
B'2 59234	25 to 36 inches. Strong brown (7.5YR 5/6) sand, light yellowish brown (10YR 6/4) dry; single grain; loose; gradual wavy boundary. 8 to 11 inches thick.
C 59235	36 to 48 inches. Brownish yellow (10YR 6/6) sand, yellow (10YR 7/5) dry; single grain; loose.

Notes: Colors are for moist soil unless indicated otherwise.

[1/] The lower B horizon colors are redder than described for the Evesboro series, but not suitably divergent for a taxadjunct.

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PEDON CLASSIFICATION: Typic Quartzipsamment; mesic, coated
SOIL Evesboro sand SOIL Nos. S58NJ-3-4 LOCATION Burlington County, New Jersey
SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 59218 - 59223

Depth (in.)	Horizon	1B1b Total Sand (2–0.05)	Total Silt (0.05–0.002)	Total Clay (< 0.002)	Sand very coarse (2–1)	Sand coarse (1–0.5)	Sand medium (0.5–0.25)	Sand fine (0.25–0.1)	Sand very fine (0.1–0.05)	Silt int. III (0.05–0.02)	Silt int. III (0.02–0.002)	Silt int. II (0.2–0.02)	Silt (2–0.1)	3B2 Cm	Coarse fragments 3B1 2A2 >= 2 Pct.	Coarse fragments 3B1 2–19 Pct. of < 76mm	Coarse fragments 3B1 19–76 Pct. of < 76mm
		Pct. of < 2 mm															
0-11	Ap	93.9	2.9	3.2	3.3	30.8	29.8	25.4	4.6	0.8	2.1	16.9	89.3	1.00	tr.		
11-15	A21	92.9	3.5	3.6	2.9	23.2	27.9	32.0	6.9	1.0	2.5	23.6	86.0	1.00	tr.		
15-18	A22	93.2	2.9	3.9	2.5	20.0	28.1	35.2	7.4	0.8	2.1	25.8	85.8	1.00	tr.		
18-29	B2	92.5	2.1	5.4	2.8	21.8	27.9	33.3	6.7	0.6	1.5	23.6	85.8	1.00	tr.		
29-33	B3	95.1	0.9	4.0	3.8	19.2	27.6	37.3	7.2	0.5	0.4	26.4	87.9	1.00	tr.		
33-50	C	96.9	0.5	2.6	3.2	21.9	31.0	34.1	6.7	0.1	0.4	23.2	90.2	1.00	tr.		

Depth (in.)	6A1a Organic carbon Pct.	6B2a Nitrogen Pct.	C/N	6C1a Ext. iron as Fe Pct.	Analyses by New Jersey Agr. Exp. Sta., Rutgers University a/ Bulk density g/cc	Water retained at suctions of 0.02 bar Pct.	0.06 bar	0.10 bar	0.33 bar	1 bar	2 bar	6 bar	15 bar	Available water in/in	Field capacity Pct.	pH 8C1c (1:1) KCl	pH 8C1a (1:1) H_2O
0-11	0.50	0.047	11	0.5	1.56	25.5	16.8	13.0	11.7	9.9	3.3	2.3	2.1	0.073	6.8		5.4
11-15	0.11	0.022		0.6	1.62	22.6	10.2	6.2	5.0	3.8	2.9	2.4	2.1	0.068	6.3		5.9
15-18	0.11			0.4	1.57	22.2	9.9	5.4	4.6	3.9	2.6	1.9	1.9	0.072	6.5		5.6
18-29	0.10			0.6	1.54	23.5	8.4	5.9	5.4	4.3	3.0	2.3	2.4	0.069	6.9		5.1
29-33	0.05			0.6	1.56	22.7	8.5	4.7	3.9	2.8	2.3	1.9	1.7	0.075	6.5		4.8
33-50	0.03			0.5	1.53	21.9	9.3	4.1	3.5	2.7	1.8	1.5	1.4	0.067	5.8		4.6

Depth (in.)	Extractable bases 5B1a 6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	Sum	6H2a Ext. acidity	CEC 5A3a Sum cations	6G1d Ext. Al	Ratios to clay 8D1 CEC Sum	Ext. iron	15-bar water	8D3 Ca/Mg	Base saturation 5C3 Sum cations Pct.	5C1 NH_4OAc Pct.
	meq/100 g													
0-11	1.7	0.1	tr.	0.3	2.1	2.4	4.5		1.41	0.16	0.66		47	
11-15	1.8	0.6	tr.	0.2	2.6	1.3	3.9		1.08	0.17	0.58		67	
15-18	1.1	0.7	tr.	0.1	1.9	1.1	3.0		0.77	0.10	0.49		63	
18-29	1.1	0.6	tr.	0.1	1.8	1.7	3.5		0.65	0.11	0.44		51	
29-33	0.6	0.4	tr.	0.1	1.1	1.7	2.8		0.70	0.15	0.43		39	
33-50	1.3	0.4	tr.	0.1	1.8	1.5	3.3			0.19	0.54		54	

Depth (in.)	Clay Fraction Analysis 7A1b-d Mt.	Chl.	Vm.	Mi.	Int.	Qtz.	Kl.	Gibbsite	Analyses by New Jersey Agr. Exp. Sta., Rutgers a/ Hydraulic conductivity in/hr	Porosity a/ Non-capillary Pct.	Capillary Pct.	Total Pct.	Plastic index a/ Pct.	Aggregate stability a/ Pct.
	7A2 X-ray						7A3							
0-11									3.8	17.3	26.0	43.3	N.P.	-
11-15									6.2	22.9	16.4	39.3	N.P.	-
15-18									8.6	22.7	15.5	38.2	N.P.	-
18-29									8.9	26.0	13.0	29.0	N.P.	-
29-33									11.4	26.9	13.2	40.1	N.P.	-
33-50									13.0	24.6	14.3	38.9	N.P.	-

a/ Methods referenced on methods code sheet.

Pedon Classification: Typic Quartzipsamment; mesic, coated
Soil: Evesboro sand 1/
Soil No.: 858NJ-3-4
Location: Burlington County, New Jersey. 2 1/4 miles, by road, east of Riverton, north side of Millside farm, east of entrance from side road, west from Route 130, north of farm lane leading from that entrance after a 90° curve, midway up slope and about 70 feet into the field.
Vegetation and land use: Cultivated, in alfalfa, part of dairy farm.
Slope and land form: 4 percent.
Drainage: Excessively drained.
Permeability: Rapid.
Parent material: Deep sands of the coastal plain.
Described by: G. A. Quakenbush

Horizon and Beltsville Lab. No.	
Ap 59218	0 to 11 inches. Dark grayish brown (10YR 4/2) sand, brown (10YR 5/3) dry; single grain; very friable; abrupt wavy boundary.
A21 59219	11 to 15 inches. Dark brown (7.5YR 4/4) sand with 30 to 40 percent of the grains strong brown (7.5YR 5/6) light yellowish brown (10YR 6/4) dry; single grain; very friable; very few scattered firm, concretionary nodules; clear smooth boundary. 4 inches thick.
A22 59220	15 to 18 inches. Strong brown (7.5YR 5/6) sand with 20 to 30 percent of the grains brown (7.5YR 4/4), light yellowish brown (10YR 6/4) dry; single grain; very friable; clear smooth boundary. 3 to 7 inches thick.
B2 59221	18 to 29 inches. Strong brown (7.5YR 5/6) sand, reddish yellow (7.5YR 7/6) dry; friable; clear smooth boundary. 5 to 11 inches thick.
B3 59222	29 to 33 inches. Yellowish brown (10YR 5/6) sand, reddish yellow (7.5YR 7/6) dry; single grain; loose; gradual wavy boundary. 4 to 9 inches thick.
C 59223	33 to 50 inches. Yellowish brown (10YR 5/6) sand, light yellowish brown (10YR 6/4) single grain; loose.

Notes: Colors refer to moist soil unless indicated otherwise.

1/ The B horizon colors are redder than described for the Evesboro series but not suitably divergent for a taxadjunct. Base saturation has been elevated by heavy agricultural liming and fertilization.

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

PEDON CLASSIFICATION: Typic Quartzipsamment; mesic, coated

SOIL Evesboro sand SOIL Nos. S58NJ-3-5 LOCATION Burlington County, New Jersey

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 59224 - 59230

Depth (In)	Horizon	1B1b Size class and particle diameter (mm) 3A1													3B2	Coarse fragments 3B1		
		Total			Sand					Silt		Int. II (0.2-0.02)	(2-0.1)			2A2	2 - 19	19 - 76
		Sand (2-0.05)	Silt (0.05-0.002)	Clay (< 0.002)	Very coarse (2-1)	Coarse (1-0.5)	Medium (0.5-0.25)	Fine (0.25-0.1)	Very fine (0.1-0.05)	0.05-0.02	Int. III (0.02-0.002)				Cm	≥ 2	Pct. of < 76mm	
		Pct. of < 2 mm														Pct.		
0-7	Ap	92.9	4.3	2.8	0.4	12.2	33.0	40.1	7.2	1.8	2.5	26.5	85.7		1.00	tr.		
7-12	A21	91.2	5.4	3.4	0.4	8.0	28.2	46.0	8.6	2.1	3.3	32.3	82.6		1.00	-		
12-24	A22	94.2	2.8	3.0	0.4	7.8	30.1	48.5	7.4	0.9	1.9	30.6	86.8		1.00	tr.		
24-37	B2	94.2	2.2	3.6	0.1	5.9	27.5	52.8	7.9	0.8	1.4	32.6	86.3		1.00	-		
37-44	B & C1	94.0	3.2	2.8	0.4	12.7	28.5	40.8	11.6	2.1	1.1	33.8	82.4		1.00	-		
44-53	IIC2	88.4	5.9	5.7	0.8	11.7	27.4	37.2	11.3	3.2	2.7	31.9	77.1		1.00	-		
53-70	IIC3	95.5	2.2	2.3	1.6	12.9	33.1	38.6	9.3	1.5	0.7	28.6	86.2		1.00	-		

Depth (In.)	6A1a Organic carbon	6B2a Nitrogen	C/N		6C1a Ext. iron as Fe	Analyses by New Jersey Agr. Exp. Sta., Rutgers University a/										pH	
						Bulk density	Water retained at suctions of								Available water	Field capacity	8C1c (1:1)	8C1a (1:1)
							0.02 bar	0.06 bar	0.10 bar	0.33 bar	1 bar	2 bar	6 bar	15 bar				
	Pct	Pct.			Pct.	g/cc	Pct.								in/in	Pct.	KCl	H_2O
0-7	0.31	0.028	11		0.6	1.54	23.3	15.2	9.5	7.7	6.1	3.0	2.3	1.6	0.089	7.4		6.4
7-22	0.13	0.016			0.6	1.61	22.7	15.4	8.1	6.0	4.7	3.0	2.3	1.8	0.103	8.2		5.7
12-24	0.08	0.034			0.7	1.48	25.1	13.2	6.9	5.4	4.3	2.6	2.3	1.7	0.096	8.2		4.7
24-37	0.06	0.032			0.7	1.48	26.3	12.2	7.2	5.9	5.1	2.4	2.3	1.9	0.084	7.6		4.6
37-44	0.04				0.6	1.53	23.3	9.9	3.9	3.3	2.8	2.1	2.0	1.7	0.081	7.0		4.6
44-53	0.04				0.8	1.54	21.5	10.9	5.4	4.9	3.7	2.8	2.3	2.1	0.106	9.0		4.6
53-70	0.02				0.6	1.58	19.0	11.1	5.9	4.6	3.4	2.0	1.7	1.2	0.076	6.0		4.8

Depth (In.)	Extractable bases 5B1a					6H2a Ext. acidity	CEC		6G1d Ext. Al	Ratios to clay 8D1			8D3 Ca/Mg	Base saturation	
	6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	Sum		5A3a Sum cations			CEC Sum	Ext. iron	15-bar water		5C3 Sum cations	5C1 NH_4OAc
	meq/100 g													Pct.	Pct.
0-7	1.8	0.4	tr.	0.3	2.5	0.6	3.1				0.21	0.57		81	
7-12	1.9	0.4	tr.	0.2	2.5	0.9	3.4			1.00	0.18	0.53		74	
12-24	0.7	0.4	tr.	0.1	1.2	1.1	2.3			0.77	0.23	0.57		52	
24-37	0.7	0.3	tr.	0.1	1.1	1.5	2.6			0.72	0.19	0.53		42	
37-44	0.4	0.2	tr.	tr.	0.6	2.3	2.9				0.21	0.61		21	
44-53	0.7	0.4	tr.	tr.	1.1	3.7	4.8			0.84	0.14	0.37		23	
53-70	0.6	0.4	tr.	tr.	1.0	1.3	2.3				0.26	0.52		43	

Depth (In.)	Clay Fraction Analysis 7A1b-d								Analyses by New Jersey Agr. Exp. Sta., Rutgers a/					
	Mt.	Chl.	Vm.	Mi.	Int.	Qtz.	Kl.	Gibbsite	Hydraulic conductivity a/	Porosity a/ Non-capillary	Capillary	Total	Plastic index a/	Aggregate stability a/
	7A2 X-ray						7A3		in/hr	Pct.	Pct.	Pct.	Pct.	Pct.
0-7									3.7	19.3	23.5	42.8	N.P.	-
7-12									4.7	14.6	24.7	39.3	N.P.	-
12-24									8.9	24.4	19.4	43.8	N.P.	-
24-37									10.0	25.1	18.0	43.1	N.P.	-
37-44									7.2	24.4	15.0	39.4	N.P.	22
44-53									3.0	20.2	16.8	37.0	N.P.	-
53-70									8.0	19.2	17.8	37.0	N.P.	17

a/ Methods referenced on methods code sheet.

Pedon Classification: Typic Quartzipsamment; mesic, coated
Soil: Evesboro sand[1/]
Soil No.: S58NJ-3-5
Location: Burlington County, New Jersey. South of the town of Burlington, along road going east from Cooperstown, few hundred feet east of intersection of Burlington Charleston Road, north of Cooperstown Road about 60 feet; in peach orchard of Hugh Farmer and Sons.
Vegetation and land use: Cultivated, in peaches.
Slope and land form: 3 percent.
Drainage: Excessively drained.
Permeability: Rapid.
Parent material: Deep sands of the coastal plain.
Described by: G. A. Quakenbush

Horizon and Beltsville Lab. No.	
Ap 59224	0 to 7 inches. Dark brown (10YR 4/3) sand; weak fine granular structure; very friable; abrupt smooth boundary. 6 to 7 inches thick.
A21 59225	7 to 12 inches. Yellowish brown (10YR 5/4) sand, light yellowish brown (10YR 6/4) dry; single grain; loose; gradual smooth boundary. 5 to 6 inches thick.
A22 59226	12 to 24 inches. Dark yellowish brown (10YR 4/4) sand, light yellowish brown (10YR 6/4) dry; single grain; loose; clear wavy boundary. 10 to 15 inches thick.
B2 59227	24 to 37 inches. Strong brown (7.5YR 5/6) sand, light yellowish brown (10YR 6/5) dry; single grain; loose; clear wavy boundary. 10 to 15 inches thick.
B and C1 59228	37 to 44 inches. Varicolored, 40 percent dark yellowish brown (10YR 4/4), 45 percent strong brown (7.5YR 5/6), 10 percent yellowish red (5YR 5/6), with wavy bands 1/4 inch to 1/2 inch thick yellowish red (5YR 3/6) sand with bands of loamy sand; mostly single grain; loose to very friable, bands firm; some bands are elongated nodules. 5 to 8 inches thick.
IIC2 59229	44 to 53 inches. Varicolored, dominant colors: 60 percent yellowish brown (10YR 5/4) and 40 percent reddish brown (5YR 4/4) sand with sandy loam in some redder masses; single grain with massive bands and nodules; 50 percent friable, 10 percent firm, 30 percent loose; firmness goes with redness and finer textures. 8 to 12 inches thick.
IIC3 59230	53 to 70 inches. Generally yellowish brown (10YR 5/6) sand sprinkled with 15 percent darker values and 25 percent toward 7.5YR; single grain; loose; some very minor bands and nodules.

Notes: Colors are for moist soil unless indicated otherwise.

1/ The B horizon colors are redder than described for the Evesboro series but not suitably divergent for a taxadjunct. Base saturation has been elevated by heavy agricultural liming and fertilization.

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

PEDON CLASSIFICATION: Aquic Dystrochrept; coarse-loamy, siliceous, mesic

SOIL Series not designated SOIL Nos. S61NJ-4-3 LOCATION Camden County, New Jersey

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 62209-62213

Depth (in.)	Horizon	1B1b Total Sand (2–0.05)	Total Silt (0.05–0.002)	Total Clay (< 0.002)	Sand: Very coarse (2–1)	Sand: Coarse (1–0.5)	Sand: Medium (0.5–0.25)	Sand: Fine (0.25–0.1)	Sand: Very fine (0.1–0.05)	Silt: 0.05–0.02	Silt: Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)		3B2 Cm	Coarse fragments 3B1: 2A2 ≥ 2 <76 Pct.	2 – 19	19 – 76
		Pct. of < 2 mm														Pct. of < 76mm		
0-5	Ap1	61.2	28.3	10.5	1.3	9.2	10.6	24.3	15.8	13.1	15.2	42.8	45.4			2		
5-10	Ap2	66.8	23.6	9.6	1.5	8.9	11.1	27.6	17.7	10.3	13.3	44.0	49.1			2		
10-14	A2	73.3	19.4	7.3	2.1	9.3	12.3	33.5	16.1	9.1	10.3	45.0	57.2			10		
14-19	B1t	73.8	17.3	8.9	2.8	8.4	11.6	35.2	15.8	8.7	8.6	45.1	58.0			17		
19-26	B2g	61.6	30.0	8.4	1.3	7.5	9.0	22.5	21.3	14.9	15.1	49.8	40.3			2		
26-60	IICg	92.1	4.8	3.1	10.0	23.9	23.4	30.2	4.6	2.0	2.8	19.9	87.5			47		

Depth (in.)	6A1a Organic carbon Pct.	6B2a Nitrogen Pct.	C/N		Carbonate as $CaCO_3$ Pct.	Ext. iron as Fe Pct.	Bulk density: 4A1e ⅓ bar g/cc	Bulk density: 4A1h Oven dry g/cc	4D1 COLE	Water content: Pct.	Water content: 4B1c ⅓ bar Pct.	Water content: 4B2 15 bar Pct.		4C1 WRD in/in	pH: 8C1c (1:1) KCl	pH: 8C1e (1:1) H_2O
0-5	1.88	0.114	16													
5-10	1.14	0.077	15													
10-14	0.25															
14-19	0.13															
19-26	0.06															
26-60	0.04															

Depth (in.)	Extractable bases 5B1a: 6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	Sum	6H2a Ext. acidity	CEC: 5A3a Sum cations	CEC	6G1d Ext. Al		Ratios to clay 5D1: CEC Sum	Ratios to clay 5D1: Ext. iron	Ratios to clay 5D1: 15-bar water	8D3 Ca/Mg		Base saturation: 5C3 Sum cations Pct.	Base saturation: 5C1 NH_4OAc Pct.
	meq/100 g																
0-5	4.0	0.7	0.1	0.6	5.4	7.7	13.1				1.25					41	
5-10	3.2	0.6	0.1	0.2	4.1	5.1	9.2				0.96					44	
10-14	1.1	0.3	0.1	0.1	1.6	2.3	3.9				0.53					41	
14-19	1.3	0.4	0.1	0.1	1.9	2.3	4.2				0.47					45	
19-26	0.8	0.4	tr.	tr.	1.2	1.9	3.1				0.37					39	
26-60	0.4	0.2	tr.	tr.	0.6	0.8	1.4				0.45					43	

Depth (in.)	Clay Fraction Analysis 7A1b-d: Mt.	Chl.	Vm.	Mi.	Int.	Qtz.	Kl.	Gibbsite
	7A2 X-ray						7A3	

Mt. = Montmorillonite, Chl. = chlorite, Vm. = Vermiculite, mi = mica, Int. = interstratified layer, Qtz. = quartz, Kl. = Kaolinite

Relative amounts: blank = not determined, dash = not detected, tr. = trace, x = small, xx = moderate, xxx = abundant, xxxx = dominant.

Pedon Classification: Aquic Dystrochrept; coarse-loamy, siliceous, mesic
Soil: Series not designated[1/]
Soil No.: S61NJ-4-3
Location: Camden County, New Jersey. Southwest of Berlin 1-1/4 mile, northeast of road intersection, north of Watsontown—New Freedom Road.
Vegetation and land use: Asparagus; cultivated crops.
Slope and land form: Lower section of gentle slope, grade about 1 percent.
Drainage: Somewhat poorly drained.
Permeability: Moderately rapid.
Ground water: Free water encountered at 40 inches (July 26, 1961).
Described by: Marco Markley

Horizon and Beltsville Lab. No.	
Ap1 62209	0 to 5 inches. Very dark grayish brown (2.5Y 3/2) sandy loam, grayish brown (2.5Y 5/2) dry; weak to moderate medium granular structure; very friable; less than 2 percent rounded quartz pebbles; most asparagus roots dead in sample area; abrupt smooth boundary.
Ap2 62210	5 to 10 inches. Very dark grayish brown (2.5Y 3/2) sandy loam; common fine distinct dark brown to brown (7.5YR 4/4) mottles; massive with platy tendency; firm in place, friable when removed; less than 2 percent rounded quartz pebbles; abrupt smooth boundary.
A2 62211	10 to 14 inches. Light olive brown (2.5Y 5/4) sandy loam; few fine faint mottles; weak fine granular structure; very friable; 10 percent rounded quartz pebbles; abrupt smooth boundary. 0 to 4 inches thick.
B1t 62212	14 to 19 inches. Light olive brown (2.5Y 5/4) sandy loam; common fine and medium prominent brownish gray (2.5Y 6/2) and yellowish brown (10YR 5/8) mottles; weak fine subangular blocky structure; friable; 10 percent rounded quartz pebbles; gradual smooth boundary. 3 to 5 inches thick.
B2g 62213	19 to 26 inches. Light brownish gray (2.5Y 6/2) sandy loam; common medium prominent mottles; moderate medium subangular blocky structure; friable or slightly firm; 2 percent rounded quartz pebbles; clay films darker gray, in pores; abrupt smooth boundary. 6 to 10 inches thick.
IICg 62214	26 to 60 inches. Grayish brown (2.5Y 5/2) gravelly sand; single grained; loose; 10 to 35 percent rounded quartz pebbles stratified.

Notes: Color readings are for moist soil except where exception is specified. Soil moist at time of sampling. Sampling pit revealed considerable variation in depth of soil, color, and gravel in other places prominent mottling occupied up to 40 percent. In parts of the Cg horizon there was no gravel, but in most parts it was abundant enough to give a gravelly sand texture. Colors are for moist soil.

[1/] This pedon is similar in most respects to the Hammonton series but lacks an argillic horizon. Hammonton is in the coarse-loamy, siliceous, mesic family of Aquic Hapludults.

U S DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

PEDON CLASSIFICATION: Dystric Eutrochrept; sandy, siliceous, mesic
SOIL Series not designated SOIL Nos. S60NJ-4-3 LOCATION Camden County, New Jersey

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 61124 - 61127

Size class and particle diameter (mm) 3A1

Depth (In)	Horizon	1B1b Total Sand (2–0.05)	Total Silt (0.05–0.002)	Total Clay (< 0.002)	Sand: Very coarse (2–1)	Sand: Coarse (1–0.5)	Sand: Medium (0.5–0.25)	Sand: Fine (0.25–0.1)	Sand: Very fine (0.1–0.05)	Silt: (0.05–0.002)	Silt: Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)		3B2 Cm	Coarse fragments 3B1: 2A2 ≥ 2 < 76 Pct	2 – 19 Pct. of < 76mm	19 – 76 Pct. of < 76mm
		Pct of < 2 mm																
0-10	Ap	69.9	19.5	10.6	3.5	19.7	17.7	20.1	8.9	6.5	13.0	25.7	61.0		0.98	3		
10-16	B2	73.7	16.4	9.9	5.1	19.2	18.2	21.1	10.1	6.7	9.7	27.9	63.6		0.94	8		
16-22	B3	80.5	10.0	9.5	9.6	27.0	20.2	16.3	7.4	3.8	6.2	19.2	73.1		0.84	23		
22-60	C	91.2	3.0	5.8	8.3	35.2	31.9	11.9	3.9	1.7	1.3	9.5	87.3		0.87	19		

Analyses by New Jersey Agr. Exp. Sta., Rutgers University a/

Depth (In.)	6A1a Organic carbon Pct.	Nitrogen Pct.	C/N		Ext. iron as Fe Pct	Bulk density g/cc	Water retained at suctions of: 0.02 bar Pct.	0.06 bar Pct.	0.10 bar Pct.	0.33 bar Pct.	1 bar Pct.	2 bar Pct.	6 bar Pct.	15 bar Pct.	Available water in/in	Field capacity Pct.	pH 8C1c (1:1) KCl	pH 8C1a (1:1) H_2O
0-10	0.95					1.62	17.6	14.2	12.4	10.6	9.4	8.3	5.5	4.6				5.8
10-16	0.22					1.81	13.8	10.6	9.8	8.8	8.0	6.2	4.3	3.9				6.2
16-22	0.14					1.75	15.3	9.8	8.9	8.4	7.8	5.1	4.0	3.4				6.2
22-60	0.04					1.69	13.2	4.9	4.6	4.2	3.9	2.6	2.1	1.8				6.9

Depth (In)	Extractable bases 5B1a: 6N2d Ca meq/100 g	6O2b Mg meq/100 g	6P2a Na meq/100 g	6Q2a K meq/100 g	Sum meq/100 g	6H2a Ext acidity meq/100 g	CEC: 5A3a Sum cations meq/100 g	CEC: (blank)	6G1d Ext Al meq/100 g	(blank)	(blank)	Ratios to clay 8D1: CEC Sum	Ext. iron	15 bar water	8D3 Ca/Mg	(blank)	Base saturation: 5C3 Sum cations Pct	5C1 NH_4OAc Pct.
0-10	4.0	0.4	0.1	0.2	4.7	3.9	8.6					0.81		0.43			55	
10-16	2.2	0.2	tr.	0.1	2.5	1.8	4.4					0.44		0.39			59	
16-22	1.8	0.2	tr.	0.1	2.1	1.8	4.0					0.42		0.36			55	
22-60	2.1	0.1	tr.	0.1	2.3	0.5	2.8					0.48		0.31			82	

Clay Fraction Analysis 7A1b-d (7A2 X-ray; 7A3)

Depth (In)	Mt.	Chl.	Vm	Mi	Int.	Qtz.	Kl.	Gibbsite
0-10								
10-16								
16-22								
22-60								

Analyses by New Jersey Agr. Exp. Sta., Rutgers a/

Depth (In)	Hydraulic conductivity a/ in/hr	Porosity a/: Non-capillary Pct.	Capillary Pct.	Total Pct.	Plastic index a/ Pct.	Aggregate stability a/ Pct.
0-10	2.1	10.6	22.7	33.3		82
10-16	0.4	7.5	19.2	26.7		30
16-22	1.1	12.5	17.1	29.6	N.P.	28
22-60	9.0	21.9	8.2	30.1	N.P.	45

a/ Methods referenced on methods code sheet.

Pedon Classification: Dystric Eutrochrept; sandy, siliceous, mesic
Soil: Series not designated[1/]
Soil No.: S60NJ-4-3
Location: Camden County, New Jersey. 160 feet south of Erial-New Brooklyn Road and 100 feet west of road from Erial-New Brooklyn Road to Sicklerville, George Young farm.
Vegetation and land use: Improved pasture, of orchard grass and ladino clover.
Slope and land form: Nearly level, 0 to 1 percent.
Drainage: Well drained.
Permeability: Moderate.
Described by: Marco L. Markley

Horizon and Beltsville Lab. No.	
Ap 61124	0 to 10 inches. Dark grayish brown (2.5Y 4/2) sandy loam; weak fine granular structure tending toward weak platy; friable; common roots; 0 to 2 percent rounded quartzose pebbles. 9 to 11 inches thick.
B2 61125	10 to 16 inches. Dark yellowish brown (10YR 4/4) sandy loam; massive; friable, slightly firm in the upper three inches; common roots; 3 to 5 percent rounded quartzose pebbles; gradual, wavy boundary. 5 to 8 inches thick.
B3 61126	16 to 22 inches. Dark yellowish brown (10YR 4/4) sandy loam; massive; very friable; common roots; 3 to 15 percent quartzose pebbles; gradual, wavy boundary. 5 to 8 inches thick.
C 61127	22 to 60 inches. Yellowish brown (10YR 5/6) loamy coarse sand; single grain and stratified; loose; 5 to 15 percent rounded quartz pebbles averaging 1/2 inch diameter but ranging to 3 inches; with bands of (10YR 4/4) color and sandy loam, 1 to 3 inches thick.

[1/] This pedon was sampled as a representative of the Downer series but lacks an argillic horizon, has base saturation elevated by agricultural liming and fertilization, and has weighted average control texture finer than this pedon. Downer is in the coarse-loamy, siliceous, mesic family of Typic Hapludults.

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

PEDON CLASSIFICATION: Typic Rhodudult: coarse-loamy, mixed, mesic
SOIL Colts Neck taxadjunct SOIL Nos. S59NJ-13-4 LOCATION Monmouth County, New Jersey

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 60158 - 60162

Depth (in.)	Horizon	1B1b Total Sand (2–0.05)	Silt (0.05–0.002)	Clay (< 0.002)	Size class and particle diameter (mm) 3A1 Sand: Very coarse (2–1)	Coarse (1–0.5)	Medium (0.5–0.25)	Fine (0.25–0.1)	Very fine (0.1–0.05)	Silt: 0.05–0.02	Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)	3B2 Cm	Coarse fragments 3B1: 2A2 ≥ 2 < 76 Pct.	2 – 19	19 – 76 Pct. of < 76mm
		Pct. of < 2 mm															
0-7	A1, A2	68.2	17.9	13.9	1.5	23.5	32.9	8.1	2.2	6.6	11.3	10.4	66.0	0.99	2		
7-18	B1	71.2	16.2	12.6	1.7	25.0	34.4	7.9	2.2	5.7	10.5	9.6	69.0	0.99	2		
18-27	B2t	71.1	10.3	18.6	2.4	26.6	32.9	7.3	1.9	3.6	6.7	7.1	69.2	0.98	3		
27-33	B3t	76.9	8.5	14.6	1.5	23.8	39.9	9.6	2.1	2.5	6.0	6.8	74.8	0.98	3		
33-48	C	82.7	5.9	11.4	2.1	29.4	41.2	8.6	1.4	2.2	3.7	5.2	81.3	0.98	3		

Depth (in.)	6A1a Organic carbon Pct.	6B2a Nitrogen Pct.	C/N	Carbonate as $CaCO_3$ Pct.	Analyses by New Jersey Agr. Exp. Sta., Rutgers University a/ Bulk density g/cc	Water retained at suctions of: 0.02 bar	0.06 bar	0.10 bar	0.33 bar	1 bar	2 bar	6 bar	15 bar Pct.	Available water in/in	Field capacity Pct.	pH 8C1c (1:1) KCl	8C1a (1:1) H_2O
0-7	1.53	0.109	14		1.08	41.3	28.8	26.6	24.4	22.2	.0.8	9.2	7.4	0.14	20.3		
7-18	0.55	0.046	12		1.27	28.7	18.0	17.5	16.2	14.5	10.3	7.9	6.8	0.14	18.1		
18-27	0.14	0.035			1.36	27.1	20.4	20.2	18.7	17.4	12.6	11.9	10.6	0.14	20.7		
27-33	0.10				1.38	26.7	19.0	18.5	15.8	13.9	12.0	10.8	10.0	0.12	18.8		
33-48	0.07				1.37	26.4	18.4	17.5	15.5	13.8	10.6	10.0	9.0	0.12	17.5		

Depth (in.)	Extractable bases 5B1a: 6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	Sum meq/100 g	6H2a Ext. acidity	CEC: 5A3a Sum cations	6G1d Ext. Al	Ratios to clay 8D1: CEC Sum	Ext. iron	15-bar water	8D3 Ca/Mg	Base saturation: 5C3 Sum cations Pct.	5C1 NH_4OAc Pct.
0-7	0.3	0.2	0.1	0.3	0.9	18.6	19.5		1.40		0.53		5	
7-18	tr.	0.1	tr.	0.2	0.3	10.3	10.7		0.85		0.54		4	
18-27	0.1	0.4	tr.	0.1	0.6	13.6	14.3		0.77		0.57		5	
27-33	0.2	1.1	tr.	0.2	1.5	13.0	14.6		1.00		0.68		11	
33-48	tr.	1.2	tr.	0.1	1.3	13.3	14.7		1.29		0.79		10	

Depth (in.)	Clay Fraction Analysis 7A1b-d: Mt.	Chl.	Vm.	Mi.	Int.	Qtz.	Kl.	Gibbsite (7A2 X-ray; 7A3)	Analyses by New Jersey Agr. Exp. Sta., Rutgers: Hydraulic conductivity a/ in/hr	Porosity a/: Non-capillary Pct.	Capillary Pct.	Total Pct.	Plastic index a/ Pct.	Aggregate stability a/ Pct.
0-7									18.3	23.2	31.9	55.1		77
7-18									14.2	27.4	22.9	50.3		77
18-27									7.3	18.3	27.9	46.2		43
27-33									7.6	18.7	26.8	45.5		81
33-48									8.7	19.0	25.6	44.6	N.P.	83

a/ Methods referenced on methods code sheet.

Pedon Classification: Typic Rhodudult; coarse-loamy, mixed, mesic
Soil: Colts Neck taxadjunct 1/
Soil No.: S59NJ-13-4
Location: Monmouth County, New Jersey. One mile north of Colts Neck, 500 feet north of Flock Road, 100 feet into woodlot on east side of road.
Vegetation and land use: White oak, beech, maple, viburnum.
Slope and land form: 6 percent.
Drainage: Rapid.
Permeability: Rapid.
Parent material: Developed from the coarse glauconitic sands of the upper part of the Red Band formation (Cretaceous).
Sampled by: N. A. Willits and K. P. Wilson

Horizon and Beltsville Lab. No.	
O1 Not sampled	2 inches to 1/2. Loose leaves, oak, beech, maple, white oak. Not noticeably tied together.
O2 Not sampled	1/2 inch to 0. Dark reddish brown (2.5YR 2/4) matted leaves, granular to fibrous with fine roots and mycelia; 20 percent mineral matter; abrupt smooth boundary.
A1 60158	0 to 2 inches. Dusky red (2.5YR 3/2) to dark reddish brown (2.5YR 2/4) sandy loam; weak fine granular structure; loose; abundant roots; silt dust cemented to sand grains; pH 5.1; clear smooth boundary. 1/2 to 2 inches thick.
A2	2 to 7 inches. Dark reddish brown (2.5YR 3/4) sandy loam, yellowish red (5YR 4/6) dry; weak fine granular structure; loose; abundant roots; pH 5.1; gradual wavy boundary. 4 to 6 inches thick.
B1 60159	7 to 18 inches. Dark reddish brown (2.5YR 3/4) sandy loam with a little more fines than above, yellowish red (5YR 5/8) dry; very weak medium subangular blocky structure; loose; many roots; pH 5.2; clear smooth boundary. 7 to 12 inches thick.
B2t 60160	18 to 27 inches. Red (2.5YR 4/6) sandy loam, yellowish red (5YR 4/8) to red (2.5YR 4/8) dry; moderate medium subangular blocky structure breaking to moderate fine granular; firmer in place than horizon above, friable when removed; many coarse roots; up to 25 percent concretionary iron fragments 1/4 to 1/2 inch diameter in thin bands; sand grains coated throughout; pH 5.4; gradual wavy boundary. 9 to 13 inches thick.
B3t 60161	27 to 33 inches. Red (2.5YR 4/6) fine sandy loam, yellowish red (5YR 4/8) dry; weak coarse subangular blocky structure breaking to moderate fine granular; firm in place, fractures easily; 5 percent coarse skeleton; some coarse roots; sand grains coated; pH 5.2; clear wavy boundary. 3 to 6 inches thick.
C 60162	33 to 80 inches. Reddish brown (2.5YR 4/4) loamy sand, yellowish red (5YR 4/6 to 4/8) dry; massive; firm in place, friable when removed; few if any roots; 15 percent hematite and glauconite concretions; pH 5.2; abrupt irregular boundary. 36 to 48 inches thick.
R Not sampled	At 6 to 7 feet hard concretionary glauconitic sandstone; pH 5.0.

Notes: Colors refer to moist soil unless indicated otherwise.

1/ This pedon is a taxadjunct because of solum color and control section texture. The Colts Neck series is in the fine-loamy, mixed, mesic family of Typic Hapludults.

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

PEDON CLASSIFICATION: Typic Rhodudult; fine-loamy, mixed, mesic

SOIL Colts Neck taxadjunct SOIL Nos. 859NJ-13-3 LOCATION Monmouth County, New Jersey

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 60153 - 60157

Depth (in.)	Horizon	1B1b Total Sand (2-0.05)	Total Silt (0.05-0.002)	Total Clay (< 0.002)	Size class and particle diameter (mm) 3A1 Sand: Very coarse (2-1)	Sand: Coarse (1-0.5)	Sand: Medium (0.5-0.25)	Sand: Fine (0.25-0.1)	Sand: Very fine (0.1-0.05)	Silt: 0.05-0.02	Silt: Int III (0.02-0.002)	Int. II (0.2-0.02)	(2-0.1)		3B2 Cm	Coarse fragments 3B1: 2A2 >2 Pct.	2-19 Pct. of <76mm	19-76 Pct. of <76mm
		Pct. of < 2 mm																
1-3	A2	80.0	10.1	9.9	6.9	28.2	35.3	8.2	1.4	2.6	7.5	5.9	78.6		1.00			
3-8	B1	76.8	10.4	12.8	8.1	26.3	32.7	7.9	1.8	2.5	7.9	6.3	75.0		1.00			
8-17	B21t	69.3	8.7	22.0	10.0	24.0	26.6	6.6	2.1	2.0	6.7	6.0	67.2		1.00			
17-25	B22t	62.2	9.2	28.6	7.5	19.9	25.1	6.9	2.8	2.8	6.4	7.8	59.4		1.00	tr.		
25-48	C1	69.0	8.3	22.7	8.8	21.9	27.1	8.1	3.1	2.4	5.9	8.0	65.9		1.00	tr.		
48-72	C2	Not sampled																

Depth (in.)	6A1a Organic carbon	6B2a Nitrogen	C/N		Carbonate as $CaCO_3$	Analyses by New Jersey Agr. Exp. Sta., Rutgers University a/: Bulk density	Water retained at suctions of: 0.02 bar	0.06 bar	0.10 bar	0.33 bar	1 bar	2 bar	6 bar	15 bar	Available water	Field capacity	pH 8C1c (1.1) KCl	8C1a (1:1) H_2O
	Pct.	Pct.			Pct.	g/cc	Pct.								in/in	Pct.		
1-3	1.20	0.083	14			1.17	37.4	21.9	20.3	19.2	17.0	10.5	8.2	7.4	0.15	19.9		
3-8	0.78	0.070	11			1.26	29.4	27.9	27.0	20.2	16.9	10.3	8.1	7.2	0.14	18.0		
8-17	0.41	0.046	9			1.29	29.8	27.5	26.4	23.1	20.8	17.3	14.8	13.8	0.13	24.0		
17-25	0.28					1.33	30.0	28.3	27.8	26.8	25.7	19.2	17.7	16.4	0.13	26.4		
25-48	0.19					1.51	24.5	23.9	23.5	22.9	22.3	17.9	15.3	14.2	0.17	25.6		

Depth (in.)	Extractable bases 5B1a: 6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	Sum	6H2a Ext. acidity	CEC: 5A3a Sum cations	6G1d Ext. Al			Ratios to clay 8D1: CEC Sum	Ext. iron	15-bar water	8D3 Ca/Mg		Base saturation: 5C3 Sum cations Pct	5C1 NH_4OAc Pct.
	meq/100 g																
1-3	0.1	0.3	tr.	0.2		12.6	13.2				1.33		0.75			4	
3-8	tr.	0.2	tr.	0.2		12.0	12.4				0.97		0.56			3	
8-17	0.2	1.1	0.1	0.2		14.1	14.7				0.67		0.63			11	
17-25	0.1	2.7	0.1	0.2		15.3	18.4				0.64		0.57			17	
25-48	tr.	2.1	0.1	0.2		13.8	16.2				0.71		0.63			15	

Depth (in.)	Clay Fraction Analysis 7A1b-d: Mt.	Chl.	Vm.	Mi.	Int.	Qtz.	Kl.	Gibbsite	Analyses by New Jersey Agr. Exp. Sta., Rutgers a/: Hydraulic conductivity	Porosity: Non-capillary	Capillary	Total	Plastic index	Aggregate stability
	7A2 X-ray						7A3		in/hr	Pct.	Pct.	Pct.	Pct.	Pct.
1-3									23.6	26.1	26.7	52.8		64
3-8									16.2	14.2	34.9	49.1		90
8-17									7.2	13.0	35.8	48.8		63
17-25									4.7	11.3	37.2	48.5		61
25-48									2.0	8.1	29.6	37.7		74

a/ Methods referenced on methods code sheet.

Pedon Classification: Typic Rhodudult; fine-loamy, mixed, mesic
Soil: Colts Neck taxadjunct 1/
Soil No.: S59NJ-13-3
Location: Monmouth County, New Jersey. Dutch Lane Road, 1/2 mile west of Montrose; 300 feet north along abandoned roadway; 100 feet west on gentle upper slope of long hill; 50-100 feet south of crest; 20 feet above steeper slope break. Safrano woodlot.
Vegetation and land use: Woodland; white and chestnut oak, shag-bark hickory.
Slope and land form: 5 percent.
Drainage: Well drained.
Permeability: Rapid.
Parent material: Material of the Tinton sandstone (Cretaceous).
Sampled by: N. A. Willits and K. P. Wilson

Horizon and Beltsville Lab. No.	
O1 Not sampled	2 inches to 1/2. Oak and hickory leaves, very loosely tied together.
O2 Not sampled	1/2 inch to 0. Dark reddish gray (10R 3/1) decayed leaf mat; greasy; matted fine roots; abundant microfauna feces; 20 percent mineral; abrupt smooth boundary. 0 to 1 inch thick.
A1 Not sampled	0 to 1 inch. Dark red (2.5YR 3/6) sandy loam; weak fine granular structure; loose; common roots of all sizes; clear smooth boundary. 0 to 1 inch thick.
A2 60153	1 to 3 inches. Dark red (2.5YR 3/6) sandy loam, red (2.5YR 4/6) dry; weak fine granular structure; very friable; many roots of all sizes; clear smooth boundary. 2 to 4 inches thick.
B1 60154	3 to 8 inches. Dark reddish brown (2.5YR 3/4) sandy loam, red (2.5YR 4/6) dry; weak fine subangular blocky structure breaking to weak fine granules; very friable; many roots; few 1/2 to 1 inch hematite concretions and fragments; gradual smooth boundary. 2 to 5 inches thick.
B21t 60155	8 to 17 inches. Dark reddish brown (2.5YR 3/4) sandy clay loam, crushes to dark red (2.5YR 3/6), red (2.5YR 4/6) dry; moderate or weak medium subangular blocky structure breaking to moderate fine granular; slightly firmer than horizon above, very friable when removed; many roots; 10 percent 1/8 to 1/2 inch hematite concretions; pH 5.0; clear smooth boundary. 9 to 10 inches thick.
B22t 60156	17 to 25 inches. Dark red (2.5YR 3/6) sandy clay loam, crushes to dark reddish brown (2.5YR 3/4) ped surfaces, red (2.5YR 4/8) dry; moderate medium subangular blocky structure parting to moderate fine granules; hard when dry; few roots; 20 percent 1/4 to 1 inch hematite and limonite concretions and fragments; pH 5.3; abrupt wavy boundary. 5 to 9 inches thick.
C1 60157	25 to 48 inches. Dark reddish brown to dark red (2.5YR 3/4 to 3/6) sandy clay loam, becoming reddish yellow (5YR 6/8) and red (2.5YR 4/6) dry; stratified glauconitic and fossiliferous sandstone bedrock; hard in place, fragments cemented; no roots; many large rock fragments; pH 5.0. 20 to 30 inches thick.
C2 Not sampled	48 to 72 inches. Reddish brown (5YR 4/4) gravelly sandy loam, partially cemented as above.

Notes: Colors refer to moist soil unless indicated otherwise.

1/ This pedon is a taxadjunct because the solum colors are darker than in the Colts Neck series which is in the fine-loamy, mixed, mesic family of Typic Hapludults.

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

PEDON CLASSIFICATION: Typic Hapludult; coarse-loamy, mixed, mesic
SOIL Aura taxadjunct SOIL Nos. 858NJ-8-1 LOCATION Gloucester County, New Jersey

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 59152 - 59156

Depth (In.)	Horizon	181b Total Sand (2–0 05)	Total Silt (0.05–0 002)	Total Clay (< 0 002)	Size class and particle diameter (mm) 3AI Sand: Very coarse (2–1)	Sand: Coarse (1–0 5)	Sand: Medium (0.5–0.25)	Sand: Fine (0.25–0.1)	Sand: Very fine (0.1–0.05)	Silt: 0.05–0 02	Silt: Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)		382 Cm	Coarse fragments 3BI: 2A2 ≥ 2 < 76 Pct.	Coarse fragments 3BI: 2 - 19 Pct. of < 76mm	Coarse fragments 3BI: 19 - 76 Pct. of < 76mm
		Pct of < 2 mm																
0-1½	A1,A2,B	70.8	24.7	4.5	3.7	16.6	22.7	21.8	6.8	11.5	13.2	26.9	64.0		0.99	2		
1½-11	A'2	64.2	27.0	8.8	3.9	14.9	20.0	18.8	6.6	11.9	15.1	25.9	57.6		0.95	10		
11-16	B'21t	60.8	26.9	12.3	4.8	15.8	18.3	16.1	5.8	11.4	15.5	23.5	55.0		0.97	5		
16-30	B'22t	58.5	23.2	18.3	3.3	14.2	18.2	16.4	6.4	10.5	12.7	23.7	52.1		0.94	10		
20-30	IIB'23	discontinuous, not sampled.																
30	IIIB'24t	66.0	6.8	27.2	7.7	19.6	24.8	11.5	2.4	2.6	4.2	8.5	63.6		0.97	5		

Depth (In.)	6Ala Organic carbon Pct	6B2a Nitrogen Pct.	C/N		6Cla Ext. iron as Fe Pct.	Analyses by New Jersey Agr. Exp. Sta., Rutgers University a/ Bulk density g/cc	Water retained at suctions of: 0.02 bar Pct.	0.06 bar Pct.	0.10 bar Pct.	0.33 bar Pct.	1 bar Pct.	2 bar Pct.	6 bar Pct.	15 bar Pct.	Available water in/in	Field capacity Pct.	pH 8Clc (1:1) KCl	pH 8Cla (1:1) H_2O
0-1½	1.89	0.070	27		0.4	1.09	42.6	34.7	28.5	25.3	22.4	6.5	3.9	3.5	0.231	24.7		3.7
1½-11	0.72	0.037	19		0.6	1.23	33.6	24.8	19.8	16.3	12.9	8.1	6.1	4.8	0.160	17.4		4.3
11-16	0.32	0.034	10		1.4	1.51	22.4	17.4	15.8	13.4	11.7	8.3	6.5	4.9	0.151	14.8		4.4
16-30	0.27				1.3	1.65	19.2	12.9	11.7	9.7	8.2	4.1	4.9	4.0	0.165	13.6		4.4
30	0.12				1.8	1.70	17.9	14.7	12.0	11.1	10.0	9.3	9.1	8.6	0.083	13.1		4.4

Depth (In.)	Extractable bases 5Bla: 6N2d Ca meq/100 g	6O2b Mg meq/100 g	6P2a Na meq/100 g	6Q2a K meq/100 g	Sum meq/100 g	6H2a Ext. acidity meq/100 g	CEC: 5A3a Sum cations meq/100 g	CEC: (blank)	6G1d Ext. Al meq/100 g			Ratios to clay 8D1: CEC Sum	Ratios to clay 8D1: Ext. iron	Ratios to clay 8D1: 15-bar water	8D3 Ca/Mg		Base saturation: 5C3 Sum cations Pct.	Base saturation: 5C1 NH_4OAc Pct.
0-1½	tr.	0.1	tr.	0.1	0.2	8.0	8.2					1.82	0.09	0.78			2	
1½-11	tr.	tr.	tr.	0.1	0.1	5.2	5.3					0.60	0.07	0.55			2	
11-16	tr.	tr.	tr.	0.1	0.1	4.7	4.8					0.39	0.11	0.40			2	
16-30	0.1	0.1	0.1	0.1	0.4	6.2	6.6					0.36	0.07	0.22			6	
30	0.3	0.4	tr.	0.1	0.8	5.2	6.0					0.22	0.07	0.32			13	

Depth (In.)	Clay Fraction Analysis 7Alb-d: Mt.	Chl.	Vm.	Mi.	Int.	Qtz.	Kl.	Gibbsite	Analyses by New Jersey Agr. Exp. Sta., Rutgers a/: Hydraulic conductivity a/ in/hr	Porosity a/: Non-capillary Pct.	Porosity a/: Capillary Pct.	Porosity a/: Total Pct.	Plastic index a/ Pct.	Aggregate stability a/ Pct.
	X-ray 7A2						7A3							
0-1½									12.0	18.6	37.6	56.2		-
1½-11									5.7	20.0	30.6	50.6		90
11-16									1.3	15.8	26.1	41.9		84
16-30									0.8	15.0	21.1	36.1		56
30									0.7	10.5	25.0	35.5		41

a/ Methods referenced on methods code sheet.

Pedon Classification: Typic Hapludult; coarse-loamy, mixed, mesic
Soil: Aura taxadjunct[1]
Soil No : S58NJ-8-1
Location: Gloucester County, New Jersey. About 3,300 feet west of Janvier Church by way of dirt road to right angle intersecting dirt road, 400 feet south on latter; 20 feet east from the latter dirt road.
Vegetation and land use: White, black, red, chestnut oaks, and hickory. Suppressed trees included sassafras and post oak. Shrubs common at the site were blueberry, huckleberry, and scrub oak. Green briar and bracken fern were abundant.
Drainage: Well drained.
Permeability: Moderate.
Parent material: Coastal plain medium textured sediments with brown sola.
Described by: M. Markley and C. Quakenbush.

Horizon and Beltsville Lab. No.	
O1 Not sampled	1 to 1/2 inch. Undecomposed oak leaves. 0 to 1 inch thick.
O2 Not sampled	1/2 inch to 0. Very dusky red (2.5YR 2/2) decomposed leaves mixed with gray sand grains in the lower part; mycelia extending to 2 inches in places. 0 to 2 inches thick.
A1	0 to 1/2 inch. Very dark gray (10YR 3/1) sandy loam; weak fine granular structure; friable; mycelia common. 0 to 1 inch thick.
A2	1/2 to 1 inch. Dark gray (10YR 4/1) sandy loam; weak fine granular structure; friable; less than 3 percent of 1/2 to 1 inch rounded quartz pebbles; mycelia common; clear wavy boundary. 1/2 to 2 inches thick.
B 59152	1 to 1-1/2 inches. Dark brown to very dark grayish brown (7.5YR 3/2 to 10YR 3/2) sandy loam; massive; friable; some mycelia; clear wavy boundary. 1/2 to 4 inches thick.
A'2	1-1/2 to 11 inches. Yellowish brown (10YR 5/4) sandy loam; weak fine granular structure; friable, nonsticky; 3 percent of 1/2 to 2 inch rounded quartz pebbles; many large roots; clear smooth boundary. 6 to 10 inches thick.
B'21t 59154	11 to 16 inches. Yellowish brown (10YR 5/4) sandy loam; weak fine subangular blocky structure; slightly sticky; many fine roots; thin patchy clay films on peds and grains; clear wavy boundary. 4 to 6 inches thick.
B'22t	16 to 20 inches. Yellowish brown (10YR 5/4) sandy loam; weak fine subangular blocky structure; friable; very slightly brittle in place; 5 to 10 percent 1/2 to 1 inch rounded quartz gravel; thin patchy clay films on peds and grains; clear wavy boundary. 4 to 6 inches thick.
IIB'23 Not sampled	20 to 30 inches. Lightly variegated, yellowish brown (10YR 5/6) brown (7.5YR 5/4) and strong brown (7.5YR 5/6) loamy sand with bodies of sandy loam; single grain; loose; few roots; 3 percent of rounded quartz gravel; clear broken boundary. 0 to 10 inches thick.
IIIB'24t	30 inches plus. Yellowish red (5YR 4/8) sandy clay loam; massive; very firm in place, sticky; sand grains and pebbles coated with clay, clay bridges grains; white specks of decayed minerals; 10 percent fine gravel.

Notes: Colors are for moist soil.

[1]This pedon is a taxadjunct because clay content in the control section averages slightly less than 18 percent. The Aura series is in the fine-loamy family particle size class.

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

PEDON CLASSIFICATION: Typic Hapludult; coarse-loamy, mixed, mesic
SOIL Freehold taxadjunct SOIL Nos. S56NJ-3-1 LOCATION Burlington County, New Jersey

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 59236 - 59242

Depth (in.)	Horizon	1B1b Total Sand (2–0.05)	Total Silt (0.05–0.002)	Total Clay (< 0.002)	Sand: Very coarse (2–1)	Sand: Coarse (1–0.5)	Sand: Medium (0.5–0.25)	Sand: Fine (0.25–0.1)	Sand: Very fine (0.1–0.05)	Silt (0.05–0.02)	Silt: Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)		3B2 Cm	Coarse fragments 3B1: 2A2 > 2 Pct.	2 – 19 Pct. of < 76mm	19 – 76 Pct. of < 76mm
		Pct. of < 2 mm																
0–4½	A1	62.7	29.4	7.9	0.8	7.1	17.5	27.3	10.0	13.8	15.6	36.4	52.7		1.00	tr.		
4½–12	A2	68.1	25.8	6.1	0.6	6.7	17.7	29.5	13.6	13.0	12.8	40.9	54.5		1.00	tr.		
12–20	B1	65.3	26.7	8.0	0.6	5.5	16.7	28.4	14.1	13.2	13.5	41.0	51.2		1.00	-		
20–30	B2t	54.6	28.5	16.9	0.3	4.7	13.5	22.8	13.3	14.8	13.7	39.0	41.3		1.00	tr.		
30–36	B3t	71.1	15.8	13.1	0.4	4.8	17.6	33.2	15.1	9.0	6.8	40.7	56.0		1.00	-		
36–38	IIC1	Not sampled																
38–42	IIC2	84.5	8.1	7.4	0.5	6.2	21.6	40.2	16.0	5.5	2.6	41.0	68.5		1.00	tr.		
42–63	IIIC3	74.3	13.7	12.0	0.4	5.5	17.6	32.6	18.2	9.1	4.6	44.3	56.1		1.00	-		

Depth (in.)	6A1a Organic carbon Pct.	6B2a Nitrogen Pct.	C/N		6C1a Ext. iron as Fe Pct.	Analyses by New Jersey Agr. Exp. Sta., Rutgers University a/: Bulk density g/cc	Water retained at suctions of: 0.02 bar Pct.	0.06 bar Pct.	0.10 bar Pct.	0.33 bar Pct.	1 bar Pct.	2 bar Pct.	6 bar Pct.	15 bar Pct.	Available water in/in	Field capacity Pct.	pH 8C1c (1:1) KCl	pH 8C1a (1:1) H_2O
0–4½	3.80	0.267	14		1.3	0.91	55.9	44.7	35.5	31.8	27.9	15.3	13.7	12.2	0.12	25.8		4.4
4½–12	0.98	0.052	19		1.1	1.42	26.5	21.9	17.9	15.3	13.4	7.4	5.4	4.3	0.21	19.3		4.4
12–20	0.17				1.3	1.55	24.3	18.7	16.7	15.1	13.4	7.3	5.2	4.3	0.21	17.8		4.4
20–30	0.17				2.1	1.49	26.1	22.2	20.2	18.7	16.8	11.7	9.7	7.9	0.18	20.2		4.4
30–36	0.06				2.0	1.66	20.7	18.8	16.2	15.0	13.7	8.9	7.5	6.2	0.19	17.9		4.4
36–38	Not sampled																	
38–42	0.04				1.4	1.56	23.4	19.7	11.7	9.9	7.7	4.8	3.9	3.4	0.19	15.3		4.4
42–63	0.04				1.8	1.59	24.0	20.6	17.0	14.4	13.0	7.4	6.3	5.2	0.17	16.0		4.4

Depth (in.)	Extractable bases 5B1a: 6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	Sum	6H2a Ext. acidity	CEC: 5A3a Sum cations		6G1d Ext. Al			Ratios to clay 6D1: CEC Sum	Ext. iron	15-bar water	6D3 Ca/Mg		Base saturation: 5C3 Sum cations Pct.	5C1 NH_4OAc Pct.
	meq/100 g																	
0–4½	1.6	0.9	tr.	0.4	2.9	18.6	21.5					2.72	0.16	1.54			13	
4½–12	0.2	0.1	tr.	0.2	0.5	8.3	8.8					1.44	0.18	0.70			6	
12–20	0.2	0.2	tr.	0.1	0.5	5.6	6.1					0.76	0.16	0.54			8	
20–30	0.2	0.3	0.1	0.2	0.8	9.5	10.3					0.61	0.12	0.47			8	
30–36	0.9	0.5	0.1	0.2	1.7	7.4	9.1					0.69	0.15	0.47			19	
36–38	Not sampled																	
38–42	0.7	0.5	0.1	0.1	1.4	5.0	6.4					0.86	0.19	0.46			22	
42–63	0.3	1.2	0.1	0.2	1.8	7.2	9.0					0.75	0.15	0.43			20	

Depth (in.)	Clay Fraction Analysis 7A1b-d: Mt.	Chl.	Vm.	Mi.	Int.	Qtz.	Kl.	Gibbsite	Analyses by New Jersey Agr. Exp. Sta., Rutgers a/: Hydraulic conductivity in/hr	Porosity: Non-capillary Pct.	Capillary Pct.	Total Pct.	Plastic index Pct.	Aggregate stability Pct.
	7A2 X-ray						7A3							
0–4½									12.5	17.0	39.6	56.6		86
4½–12									2.4	10.6	31.1	41.7		81
12–20									0.4	10.9	28.9	37.8		71
20–30									0.6	9.3	32.8	42.1		14
30–36									0.2	4.4	31.0	36.5		10
36–38	Not sampled													
38–42									2.1	8.2	30.7	38.9		12
42–63									2.4	5.9	32.4	38.3		12

a/ Methods referenced on methods code sheet.

Pedon Classification: Typic Hapludult; coarse-loamy, mixed, mesic
Soil: Freehold taxadjunct 1/
Soil No.: S56NJ-3-1
Location: Burlington County, New Jersey. 1/2 mile north of Jacksonville. 100 feet east of road and 50 feet north of field into woods. Photo CMU-27-149.
Vegetation and land use: Hardwood woodland, mostly yellow poplar with some red oak, occasional beech. Some dogwood and red maple.
Drainage: Well drained.
Permeability: Moderate.
Sampled by and date: N. A. Willits and M. L. Markley. December 26, 1956.

Horizon and Beltsville Lab. No.	
O1 Not sampled	3 inches to 1. Leaves of the past season, dominantly yellow poplar, red oak, covering the ground.
O2 Not sampled	1 inch to 0. Decayed leaves, black.
A1 59236	0 to 4-1/2 inches. Very dark grayish brown to dark brown (10YR 3/2 to 3/3) sandy loam; very fluffy, weak fine granular structure; very friable; one earthworm and cast observed; and holes and old root cavities common; thick roots concentrated in this horizon; abrupt smooth boundary. 3 to 6 inches thick.
A2 59237	4-1/2 to 12 inches. Yellowish brown (10YR 5/4 to 5/6) sandy loam; massive; slightly firm in place but friable; glauconite apparent but not abundant; roots most common at top of A2; pores common; very faint mottles in circles 2 to 3 inches in diameter just above B horizon; old root channels filled with A1 material. 6 to 8 inches thick.
B1 59238	12 to 20 inches. Yellowish brown (10YR 5/8) sandy loam, slightly redder than A2; weak medium subangular blocky structure; friable, sticky; contains some mica; thick roots concentrated in this horizon; clear wavy boundary. 7 to 9 inches thick.
B2t 59239	20 to 30 inches. Yellowish brown (10YR 5/8) fine sandy loam, slightly redder than B1; moderate medium subangular blocky structure; friable, sticky; contains glauconite; small roots common; clear wavy lower boundary. 10 to 12 inches thick.
B3t 59240	30 to 36 inches. Yellowish brown (10YR 5/8) sandy loam, slightly darker than B2; weak medium subangular blocky structure; slightly firm in place, friable when removed; glauconite common; small roots less abundant than in B2; clear wavy lower boundary; 4 to 5 inches thick.
IIC1 Not sampled	36 to 38 inches. Yellowish brown (10YR 5/6) loamy sand, dark grains give peppery appearance; single grain; loose.
IIC2 59241	38 to 42 inches. Dark yellowish brown (10YR 4/6) loamy sand, redder than IIC1; friable; roots still present; clear wavy boundary.
IIIC3 59242	42 to 63 inches. Alternating horizons of loamy sand and sandy loam; slightly mottled. Fragments of ironstone prohibited boring beyond 63 inches.

Notes: Colors refer to moist soil.

1/ This pedon is a taxadjunct because it is in the coarse-loamy family particle size class, whereas the Freehold series is in the fine-loamy class. The divergence is by 2.5 percent clay.

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

PEDON CLASSIFICATION: Typic Hapludult; coarse-loamy, mixed, mesic
SOIL Matapeake taxadjunct SOIL Nos. S57NJ-12-1 LOCATION Middlesex County, New Jersey

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 57454 - 57458

Depth (In.)	Horizon	1B1b Total Sand (2–0.05)	Total Silt (0.05–0.002)	Total Clay (< 0.002)	Sand: Very coarse (2–1)	Sand: Coarse (1–0.5)	Sand: Medium (0.5–0.25)	Sand: Fine (0.25–0.1)	Sand: Very fine (0.1–0.05)	Silt (0.05–0.002)	Silt: Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)	3B2 Cm	Coarse fragments 3B1: 2A2 ≥ 2 < 76	2–19	19–76
		Pct. of < 2 mm													Pct.	Pct. of < 76mm	
0-5	A11-A13	26.9	62.4	10.7	0.8	4.0	5.3	8.0	8.8	30.0	32.4	42.7	18.1	0.97	9		
5-13	A2	18.9	69.3	11.8	0.6	2.7	3.2	4.9	7.5	31.9	37.4	42.0	11.4	0.93	14		
13-21	B21t	15.9	62.8	21.3	0.5	1.9	2.4	3.9	7.2	28.2	34.6	37.4	8.7	0.99	2		
21-31	B22tg	38.3	46.6	15.1	1.2	6.4	7.7	11.9	11.1	24.1	22.5	41.4	27.2	0.98	4		
31-63	IIC	58.5	26.7	14.8	7.9	13.7	15.9	14.4	6.6	14.1	12.6	26.8	51.9	0.68	40		

Depth (In.)	6A1a Organic carbon	6B2a Nitrogen	C/N		6C1a Ext. iron as Fe	Analyses by New Jersey Agr. Exp. Sta., Rutgers University a/: Bulk density	Water retained at suctions of: 0.02 bar	0.06 bar	0.10 bar	0.33 bar	1 bar	2 bar	6 bar	15 bar	Available water	Field capacity	pH: 8C1c (1:1) KCl	8C1a (1:1) H_2O
	Pct.	Pct.			Pct.	g/cc	Pct.								in/in	Pct.		
0-5	6.7	0.271	25		1.1	0.78	73.7	57.9	53.7	48.1	41.5	15.3	11.1	5.5	0.28	41.0		4.0
5-13	0.62	0.047	13		1.1	1.20	36.8	29.2	28.7	23.6	21.6	13.2	7.8	6.1	0.25	26.6		4.3
13-21	0.31				2.0	1.38	29.4	25.5	24.8	22.9	21.5	15.4	11.0	9.2	0.21	24.1		4.3
21-31	0.10				1.5	1.61	23.1	21.6	20.8	19.6	18.4	13.0	9.8	8.6	0.20	21.0		4.0
31-63	0.06				2.1	1.86	13.3	11.4	10.9	10.0	9.2	6.8	5.2	4.3	0.14	10.5		4.9

Depth (In.)	Extractable bases 5B1a: 6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	Sum	6H2a Ext. acidity	CEC: 5A3a Sum cations		6G1d Ext. Al	Ratios to clay 8D1: CEC Sum	Ext. iron	15-bar water	8D3 Ca/Mg	Base saturation: 5C3 Sum cations Pct.	5C1 NH_4OAc Pct.
	meq/100 g														
0-5	0.4	0.4	0.1	0.4	1.3	29.1	30.4			2.84	0.10	0.51		4	
5-13	tr.	tr.	0.1	0.3	0.4	9.3	9.7			0.82	0.09	0.52		4	
13-21	tr.	tr.	tr.	0.2	0.2	11.3	11.6			0.54	0.09	0.43		2	
21-31	tr.	tr.	tr.	0.1	0.1	8.5	8.6			0.57	0.10	0.57		1	
31-63	tr.	0.8	tr.	0.1	0.9	5.8	6.7			0.45	0.14	0.29		13	

Depth (In.)	Clay Fraction Analysis 7A1b-d: Mt.	Chl.	Vm.	Mi.	Int.	Qtz.	Kl.	Gibbsite	Analyses by New Jersey Agr. Exp. Sta., Rutgers a/: Hydraulic conductivity a/	Porosity a/: Non-capillary	Capillary	Total	Plastic index a/	Aggregate stability a/
	7A2 X-ray						DTA 7A3		in/hr	Pct.	Pct.	Pct.	Pct.	Pct.
0-5									11.8	21.1	45.3	66.4		83
5-13			xxx	xx			10	3	1.1	15.9	34.9	50.8		56
13-21									0.3	10.7	35.4	46.1		43
21-31	x		xx	xx			20	0	0.1	6.5	34.2	40.7		31
31-63			xx	xx			xx		0.2	9.7	21.2	30.9		21

a/ Methods referenced on methods code sheet.

Mt. = Montmorillonite, Chl. = chlorite, Vm. = Vermeculite, mi = mica, Int. = interstratified layer, Qtz. = quartz, Kl. = Kaolinite

Relative amounts: blank = not determined, dash = not detected, tr. = trace, x = small, xx = moderate, xxx = abundant, xxxx = dominant.

Pedon Classification: Typic Hapludult; coarse-loamy, mixed, mesic
Soil: Matapeake taxadjunct [1/]
Soil No.: S57NJ-12-1
Location: Middlesex County, New Jersey. Hunkele woodlot, 1 mile east of Dayton, on Dayton-Jamesburg Road. North side of road, 100 feet west of eastern boundary of woodlot, 200 feet into woodland.
Vegetation and land use: Woodland of white oak, red oak, occasional beech and hickory, light understory of sassafras, maple leaf viburnum.
Slope and land form: 1 percent.
Drainage: Moderately well drained to well drained.
Permeability: Moderate.
Parent material: Silty mantle overlying (post-Jerseyan, pre-Wisconsin) gravelly and sandy, cross bedded deposits.
Sampled by and date: N. A. Willets and K. P. Wilson. March 25, 1957.

Horizon and Beltsville Lab. No.	
O1 Not sampled	2 inches to 1/2. Loose leaves from last leaf fall, undecayed; almost entirely oak leaves, not tied to underlying layer.
O2 Not sampled	1/2 inch to 0. Leaves from previous fall, moist, matted, partially decomposed. Tied together and to underlying A11 by mycelia and fine rootlets; these leaves can be easily ground up by fingers.
A11 57454	0 to 1/2 inch. Black (10YR 2/1) silt loam; weak fine granular structure; loose, fluffy when dry; matted with fine roots; this layer has been disturbed and mixed with the A12 and A13 in spots on about 1 foot centers approximately 2 inches in diameter; pH 4.2; abrupt irregular boundary. 1/2 to 1/4 inch thick.
A12	1/2 to 2 inches. Dark brown to dark yellowish brown (10YR 4/3 to 4/4) silt loam; weak medium crumb structure parting to weak fine crumb; very friable to loose; abundant fine roots; only very fine quartz sand and organic matter visible; scattered very fine white mica; many fine to coarse pores; clear irregular boundary. 1 to 3 inches thick.
A13	2 to 5 inches. Dark yellowish brown (10YR 4/4) silt loam; weak medium or coarse crumb structure parting to weak fine crumb; loose to very friable; scattered 1/2 to 1 inch quartz pebbles; only very fine, clean quartz sand visible; scattered very fine white mica; less organic matter than above; many pores; clear wavy boundary. 1 to 4 inches thick.
A2 57455	5 to 13 inches. Yellowish brown (10YR 5/6) slightly finer textured silt loam; weak medium subangular blocky structure; friable; many fine pores, 0.5 mm average, many 1 mm; mainly fine sand size, clean to clear quartz grains with scattered fine white mica are only minerals identified; 15 percent quartz pebbles up to 1 inch in diameter; all peds appear coated with finely divided silica particles; fine roots and root hairs common; pH 4.7; gradual smooth boundary. 6 to 8 inches thick.
B21t 57456	13 to 21 inches. Strong brown (7.5YR 5/6) silt loam; few medium faint mottles; moderate medium subangular blocky structure; friable, slightly sticky; many 0.5 to 1 mm pores; continuous clay films redder than ped interiors; about 1 percent fine white mica and a very few grains which are dark, the rest are medium to fine quartz sand, rounded, frosted, and not clay coated; roots common; 1/2 to 1 inch quartz pebbles; pH 4.4; gradual wavy boundary. 5 to 8 inches thick.
B22tg 57457	21 to 31 inches. Yellowish brown (10YR 5/6) loam with common medium faint brown (10YR 5/3) mottles; moderate medium or strong subangular blocky structure; slightly firm; rounded sand grains not coated with oxides; less than 1 percent dark, dull rounded fine sand grains; 1 percent fine to medium, white mica; very few fine roots penetrate peds; clay films continuous on peds; pH 3.4; clear broken boundary. 0 to 12 inches thick.
IIC 57458	31 to 63 inches. Strong brown (7.5YR 5/6) gravelly sandy loam; massive; 30 percent 1/2 to 2 inch quartz pebbles which mask structure; coarse to medium sand, rounded, frosted, and coated with clay; some grains clear and angular; firm in place, friable when removed; scattered (less than 1 percent), fine white mica; clay bridges between sand grains; 1 to 2 percent dark minerals and a few dull botryoidal, dark grains; some oxide filling of small cavities; many 0.5 to 1.0 mm pores; few coarse roots; clay films on bottoms of pebbles; pH 4.3.

Notes: Colors are for moist soil.

[1/] This pedon is a taxadjunct because it is in a coarse-loamy family particle size class whereas the Matapeake series is in fine-silty. The textural deviation is in the B22tg horizon.

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

PEDON CLASSIFICATION: Typic Hapludult; coarse-loamy, siliceous, mesic
SOIL - Downer sandy loam SOIL Nos. 85TNJ-8-1 LOCATION Gloucester County, New Jersey

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 59179 - 59184

Depth (in.)	Horizon	1B1b Total Sand (2-0.05)	Total Silt (0.05-0.002)	Total Clay (< 0.002)	Sand: Very coarse (2-1)	Sand: Coarse (1-0.5)	Sand: Medium (0.5-0.25)	Sand: Fine (0.25-0.1)	Sand: Very fine (0.1-0.05)	Silt: 0.05-0.02	Silt: Int. III (0.02-0.002)	Int. II (0.2-0.02)	(2-0.1)		3B2 Cm	Coarse fragments 3B1: 2A2 ≥ 2 < 76 Pct.	2-19 Pct. of < 76mm	19-76 Pct. of < 76mm
		Pct. of < 2 mm																
½-1	A2	71.5	25.0	3.5	3.7	19.4	19.9	20.7	7.8	12.1	12.9	29.7	63.7		1.00	tr.		
1-1½	B2	Not sampled																
1½-11	A'2	70.1	25.1	4.8	3.8	18.5	18.2	20.0	9.6	11.7	13.4	30.8	60.5		0.97	6		
11-18	B'21t	66.0	27.4	6.6	2.8	15.6	17.4	20.2	10.0	12.9	14.5	32.6	56.0		0.95	8		
18-25	B'22t	69.6	21.7	8.7	3.0	17.0	17.0	21.0	11.6	10.6	11.1	33.1	58.0		0.83	24		
25-32	B'23t	83.3	10.3	6.4	9.2	24.1	17.9	21.3	10.8	7.0	3.3	29.1	72.5		0.66	43		
32-54	IIC1	94.4	1.8	3.8	10.8	29.6	23.1	28.4	2.5	1.3	0.5	12.7	91.9		0.95	8		

Depth (in.)	6A1a Organic carbon	Nitrogen	C/N		Carbonate as $CaCO_3$	Bulk density	Analyses by New Jersey Agr. Exp. Sta., Rutgers University a/ Water retained at suctions of: 0.02 bar	0.06 bar	0.10 bar	0.33 bar	1 bar	2 bar	6 bar	15 bar	Available water	Field capacity	pH 8C1c (1:1) KCl	8C1a (1:1) H_2O
	Pct.	Pct.			Pct.	g/cc	Pct.								in/in	Pct.		
½-1	3.54	0.138	26			1.21	32.2	23.8	22.2	19.6	16.6	5.9	3.5	2.8	0.23	22.2		
1-1½	Not sampled																	
1½-11	0.56	0.032	18			1.44	23.9	15.7	14.2	11.5	8.9	6.2	3.6	2.9	0.15	13.1		
11-18	0.17					1.57	18.7	14.0	12.6	11.1	9.1	6.3	3.6	2.8	0.16	12.9		
18-25	0.12					1.72	13.6	10.0	8.9	7.4	5.2	6.4	4.4	3.7	0.12	10.1		
25-32	0.08					1.78	11.1	7.1	6.3	5.6	4.6	3.7	3.2	2.7	0.09	6.7		
32-54	0.04					1.73	15.0	7.8	5.5	4.3	8.7	1.9	1.6	1.4	0.08	6.1		

Depth (in.)	Extractable bases 5B1a: 6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	Sum	6H2a Ext. acidity	CEC: 5A3a Sum cations	6Q1d Ext. Al	Ratios to clay 8D1: CEC Sum	Ext. Iron	15-bar water	8D3 Ca/Mg	Base saturation: 5C3 Sum cations Pct.	5C1 NH_4OAc Pct.
	meq/100 g													
½-1	0.4	0.2	0.1	0.1	0.8	1.2	2.0		0.57		0.80			
1-1½	Not sampled													
1½-11	0.6	tr.	0.1	0.1	0.8	3.6	4.4		0.92		0.60			
11-18	0.4	tr.	tr.	0.1	0.5	2.4	2.9		0.44		0.42			
18-25	0.3	0.2	tr.	0.1	0.6	3.2	3.8		0.44		0.43			
25-32	0.1	0.1	tr.	tr.	0.2	2.8	3.0		0.33		0.42			
32-54											0.37			

Depth (in.)	Clay Fraction Analysis 7A1b-d (7A2 X-ray): Mt.	Chl.	Vm.	Mi.	Int.	Qtz.	(7A3): Kl.	Gibbsite	Analyses by New Jersey Agr. Exp. Sta., Rutgers a/: Hydraulic conductivity a/ in/hr	Porosity a/: Non-capillary Pct.	Capillary Pct.	Total Pct.	Plastic index a/ Pct.	Aggregate stability a/ Pct.
½-1									11.2	25.6	20.2	45.8		
1-1½	Not sampled													
1½-11									5.1	17.0	22.7	39.7		92
11-18									3.5	12.7	21.2	33.9		78
18-25									1.4	10.6	17.8	28.4		63
25-32									2.5	12.1	12.9	25.0	N.P.	60
32-54									8.7	15.8	13.5	29.3	N.P.	-

a/ Methods referenced in Methods Code Section.

Pedon Classification: Typic Hapludult; coarse-loamy, siliceous, mesic
Soil: Downer sandy loam
Soil No.: S57NJ-8-1
Location: Gloucester County, New Jersey. 2 miles south east of Williamstown, 600 feet north of South Branch of Whitehall Creek, 110 feet east of New Brooklen-Malaga Road; property of Charles Faubel.
Vegetation and land use: Woodland chiefly of red and white oak.
Drainage: Well drained.
Permeability: Estimated moderately rapid or moderate.
Parent material: Coastal plain very sandy sediments lacking or without ordinarily field-recognizable glauconite.
Described by: M. Markley

Horizon and Beltsville Lab. No.	
O1 Not sampled	3 inches to 1. Undecayed, partly matted oak leaves.
O2 Not sampled	1 inch to 0. Broken, matted leaf material, fibrous.
A1 Not sampled	0 to 1/2 inch. Black (10YR 2/1) sandy loam, very dark with organic matter; abrupt wavy boundary.
A2 59179	1/2 to 1 inch. Gray (10YR 5/1) sandy loam; abrupt wavy boundary.
B2 Not sampled	1 to 1-1/2 inches. Dark yellowish brown (10YR 4/4) sandy loam; weak fine granular structure; very friable; abrupt wavy boundary. 1/2 to 1 inch in thickness.
A'2 59180	1-1/2 to 11 inches. Yellowish brown (10YR 5/4) sandy loam; massive; very friable; 3 percent quartz pebbles to 1/2 inch in diameter; clear wavy boundary. 10 to 14 inches thick.
B'21t 59181	11 to 18 inches. Yellowish brown (10YR 5/4) sandy loam; weak medium subangular blocky structure; friable; 5 percent quartz pebbles to 1/2 inch in diameter; clear wavy boundary. 6 to 9 inches thick.
B'22t 59182	18 to 25 inches. Dark yellowish brown (10YR 4/4) gravelly sandy loam; weak medium subangular blocky structure; friable; 25 percent quartzose gravel; clear wavy boundary. 6 to 8 inches thick.
B'23t 59183	25 to 32 inches. Strong brown (7.5YR 5/8) to dark yellowish brown (10YR 4/4) gravelly loamy sand; single grain; firm; 1 to 2 inch bands massive and firmer than the matrix; 25 percent quartzose gravel coated clay films; gradual wavy boundary. 0 to 10 inches thick.
IIC1 59184	32 to 54 inches. Yellowish brown (10YR 5/6) sand with 1 to 2 inch bands dark brown (7.5YR 4/4) loamy sand; single grain; generally firm, in places loose; gradual wavy boundary. 10 to 40 inches thick.
IIC2 Not sampled	54 to 96 inches. Varicolored brown to gray (10YR 5/3 to 10YR 6/1) loamy sand with lenses of sandy loam; generally single grain; loose with firm bands.

Notes: Roots commonly to 25 inches through the B22 horizon; some continue to 10 feet. Colors refer to moist soil.

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

PEDON CLASSIFICATION: Typic Hapludult; coarse-loamy, siliceous, mesic
SOIL: Downer sandy loam SOIL Nos. S57NJ-8-2 LOCATION Gloucester County, New Jersey

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 59185 - 59189

Depth (in.)	Horizon	1B1b Size class and particle diameter (mm) 3A1 — Total: Sand (2–0.05)	Total: Silt (0.05–0.002)	Total: Clay (< 0.002)	Sand: Very coarse (2–1)	Sand: Coarse (1–0.5)	Sand: Medium (0.5–0.25)	Sand: Fine (0.25–0.1)	Sand: Very fine (0.1–0.05)	Silt: 0.05–0.02	Silt: Int. III (0.02–0.002)	Int II (0.2–0.02)	(2–0.1)	3B2 Cm	Coarse fragments 3B1: 2A2 > 2 < 76 Pct.	2 - 19	19 - 76
		Pct. of < 2 mm													Pct. of < 76mm		
0-1½	a/	71.0	25.5	3.5	4.5	19.7	20.3	19.5	7.0	11.6	13.9	27.7	64.0	0.99	2		
1½-14	A'2	63.0	29.9	7.1	6.0	16.1	15.2	16.1	9.6	12.7	17.2	30.6	53.4	0.98	3		
14-24	B'21t	61.9	27.2	10.9	4.7	15.4	14.9	16.8	10.1	11.7	15.5	30.4	51.8	0.95	9		
24-32	B'22t	78.4	13.6	8.0	13.0	22.9	16.0	16.1	10.4	6.4	7.2	25.6	68.0	0.77	31		
32-66	IIC2	87.2	8.0	4.8	21.4	32.5	18.2	9.2	5.9	4.3	3.7	14.0	81.3	0.63	47		

Depth (in.)	6A1a Organic carbon	6B2a Nitrogen	C/N		Carbonate as $CaCO_3$	Analyses by New Jersey Agr. Exp. Sta., Rutgers University b/ — Bulk density	Water retained at suctions of: 0.02 bar	0.06 bar	0.10 bar	0.33 bar	1 bar	2 bar	6 bar	15 bar	Available water	Field capacity	pH: 8C1c (1:1) KCl	8C1a (1:1) H_2O
	Pct.	Pct.			Pct.	g/cc	Pct.								in/in	Pct.		
0-1½	2.60	0.097	27			1.33	26.6	17.8	15.7	14.4	12.3	6.7	4.9	3.7	0.19	18.3		5.6
1½-14	0.64	0.039	16			1.37	24.2	20.3	15.5	14.2	13.4	7.4	5.1	4.2	0.15	15.0		5.2
14-24	0.20					1.55	18.3	13.5	13.0	12.2	11.0	7.2	6.5	4.5	0.11	11.5		5.0
24-32	0.12					1.73	12.6	8.0	5.9	5.3	4.6	4.3	3.6	3.1	0.11	8.6		5.0
32-66	0.04					1.77	10.5	5.7	5.3	5.0	4.2	3.1	2.5	2.1	0.08	6.0		4.0

Depth (in.)	Extractable bases 5B1a: 6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	Sum	6H2a Ext. acidity	CEC: 5A3a Sum cations		6G1d Ext. Al			Ratios to clay 8D1: CEC Sum	Ext. iron	15-bar water	8D3 Ca/Mg		Base saturation: 5C3 Sum cations Pct.	5C1 NH_4OAc Pct.
	meq/100 g																	
0-1½	0.2	0.2	0.1	0.1	0.6	9.2	9.8					2.80		1.06			6	
1½-14	0.1	0.1	tr.	0.1	0.3	6.0	6.3					0.89		0.59			5	
14-24	tr.	0.1	0.1	0.1	0.3	5.8	6.1					0.56		0.41			5	
24-32	tr.	0.1	0.1	0.1	0.3	3.8	4.1					0.51		0.39			7	
32-66	tr.	0.2	tr.	0.1	0.3	1.7	2.0					0.24		0.44			15	

Depth (in.)	Clay Fraction Analysis 7A1b-d — Mt.	Chl.	Vm.	Mi.	Int.	Qtz.	Kl.	Gibbsite	Analyses by New Jersey Agr. Exp. Sta., Rutgers — Hydraulic conductivity b/	Porosity b/: Non-capillary	Capillary	Total	Plastic index b/	Aggregate stability b/
	7A2 X-ray						7A3		in/hr	Pct.	Pct.	Pct.	Pct.	Pct.
0-1½									6.9	16.8	23.7	40.5		90
1½-14									6.6	13.1	27.8	40.9		94
14-24									3.2	13.2	21.7	34.9		90
24-32									4.5	11.8	15.7	27.5	N.P.	83
32-66									2.0	15.6	10.3	25.9	N.P.	60

a/ Micro Podsol.
b/ Methods referenced on methods code sheet.

Pedon Classification: Typic Hapludult; coarse-loamy, siliceous, mesic
Soil: Downer sandy loam
Soil No.: S57NJ-8-2
Location: Gloucester County, New Jersey. Southwest of Williamstown, about 400 feet north of Hell Branch, 150 feet northwest of road; George Wilson property.
Vegetation and land use: Good stand of white oak, red oak, pitch pine, and black oak.
Drainage: Well drained.
Permeability: Moderately rapid.
Parent material: Coastal plain sandy sediments.
Described by: M. Markley

Horizon and Beltsville Lab. No.	
O1 Not sampled	3 inches to 0. Last year's leaves, broken and matted in the lower inch.
A1[1] 59185	0 to 1/2 inch. Black (10YR 2/1) sandy loam; weak fine granular structure; very friable; clear wavy boundary. 0 to 1 inch thick.
A2 Not sampled	½ to 1 inch. Gray (10YR 5/1) sandy loam; weak fine granular structure; very friable; clear wavy boundary. ½ to 1 inch thick.
B2 Not sampled	1 to 1½ inches. Dark yellowish brown (10YR 4/4) sandy loam; weak fine granular structure; very friable; abrupt broken boundary. 0 to 1 inch thick.
A'2 59186	1½ to 14 inches. Yellowish brown (10YR 5/4) sandy loam; weak fine granular structure; very friable; considerable mycelia; 1 percent quartz pebbles up to ½ inch diameter; clear smooth boundary. 12 to 13 inches thick.
B'21t 59187	14 to 24 inches. Dark yellowish brown (10YR 4/4) sandy loam but with more clay than horizon above; becoming sandier in lower part; weak medium or coarse subangular blocky structure; friable and nonsticky; 3 percent quartz pebbles; gradual wavy boundary. 9 to 13 inches thick.
B'22t 59188	24 to 32 inches. Dark brown (7.5YR 4/4) gravelly loamy sand; single grain; friable to loose; 20 percent pebbles; gradual wavy boundary. 0 to 20 inches thick.
IIC1[2] Not sampled	32 to 42 inches. Dark yellowish brown (10YR 4/4) gravelly loamy sand, single grain; firm, slightly brittle; 20 percent pebbles; clay coating around pebbles; gradual irregular boundary. 5 to 40 inches thick.
IIC2 59189	42 to 66 inches. Yellowish brown (10YR 5/6) loamy sand becoming coarse loamy sand below 60 inches; single grained; 10 percent quartz pebbles.

Notes: [1] A1, A2, and B2 from 0 to 1½ inches combined in one sample.
[2] IIC1 and IIC2 from 32 to 66 inches combined in one sample.
Roots freely developed throughout to 32 inches diminishing below that depth in the B23. Colors refer to moist soil.

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

PEDON CLASSIFICATION: Typic Hapludult; coarse-loamy, siliceous, mesic
SOIL Downer loamy sand SOIL Nos. S57NJ-8-3 LOCATION Gloucester County, New Jersey

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 59190 - 59194

Depth (In.)	Horizon	1B1b Total Sand (2–0.05)	Total Silt (0.05–0.002)	Total Clay (< 0.002)	Size class and particle diameter (mm) 3A1 Sand: Very coarse (2–1)	Sand: Coarse (1–0.5)	Sand: Medium (0.5–0.25)	Sand: Fine (0.25–0.1)	Sand: Very fine (0.1–0.05)	Silt: 0.05–0.02	Silt: Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)		3B2 Cm	Coarse fragments 3B1: 2A2 ≥ 2 < 76 Pct.	2 – 19 Pct. of < 76mm	19 – 76 Pct. of < 76mm
		Pct. of < 2 mm																
1/2-3	A2	81.0	17.0	2.0	1.7	14.9	24.8	31.0	8.6	8.0	9.0	29.6	72.4			2		
3-4	B2	75.0	21.2	3.8	4.3	16.8	19.8	24.3	9.8	9.8	11.4	30.7	65.2		0.99	2		
4-13	A'2	79.7	16.1	4.2	3.2	18.2	24.3	26.1	7.9	7.6	8.5	26.4	71.8		0.98	3		
13-24	B't	75.6	15.7	8.7	3.5	16.9	22.2	24.2	8.8	6.4	9.3	26.0	66.8		0.94	10		
24-30	IIC1	Not sampled																
30-46	IIC2	93.2	3.2	3.6	5.4	24.2	24.6	29.0	10.0	2.1	1.1	26.2	83.2		0.88	17		
46-84	IIC3	Not sampled																

Depth (In.)	6A1a Organic carbon Pct.	6B2a Nitrogen Pct.	C/N		Carbonate as $CaCO_3$ Pct	Analyses by New Jersey Agr. Exp. Sta., Rutgers University a/: Bulk density g/cc	Water retained at suctions of: 0.02 bar Pct.	0.06 bar Pct.	0.10 bar Pct.	0.33 bar Pct.	1 bar Pct.	2 bar Pct.	6 bar Pct.	15 bar Pct.	Available water in/in	Field capacity Pct.	pH 8C1c (1:1) KCl	pH 8C1a (1:1) H_2O
1/2-3	1.34	0.040	34											4.8		16.4		3.7
3-4	1.02	0.048	21			1.28	29.3	21.8	15.6	13.9	12.5							3.6
4-13	0.28					1.49	22.8	20.2	14.3	11.3	9.6	3.7	2.5	2.0	0.15	12.0		4.4
13-24	0.20					1.54	18.7	12.6	10.1	9.3	7.8	5.5	4.1	3.5	0.12	10.9		4.3
24-30	Not sampled																	
30-46	0.04					1.69	16.2	11.3	5.1	4.5	3.4	1.9	1.6	1.5	0.09	6.7		4.3
46-84	Not sampled																	

Depth (In.)	Extractable bases 5B1a: 6N2d Ca meq/100 g	6O2b Mg meq/100 g	6P2a Na meq/100 g	6Q2a K meq/100 g	Sum meq/100 g	6H2a Ext. acidity meq/100 g	CEC: 5A3a Sum cations meq/100 g	6G1d Ext. Al meq/100 g	Ratios to clay 8D1: CEC Sum	Ext. Iron	15-bar water	8D3 Ca/Mg	Base saturation: 5C3 Sum cations Pct	5C1 NH_4OAc Pct.
1/2-3	tr.	0.1	0.1	0.1	0.3	4.7	4.9						4	
3-4	tr.	tr.	tr.	0.1	0.1	7.2	7.3		1.92		1.26		1	
4-13	tr.	0.1	0.1	0.1	0.3	3.0	3.3		0.01		0.48		9	
13-24	tr.	0.1	0.1	0.1	0.3	4.0	4.3		0.49		0.40		7	
24-30	Not sampled													
30-46	tr.	tr.	tr.	0.1	0.1	1.9	2.0		0.55		0.42		5	
46-84	Not sampled													

Depth (In.)	Clay Fraction Analysis 7A1b-d, 7A2 X-ray: Mt.	Chl.	Vm.	Mi.	Int.	Qtz.	7A3: Kl.	Gibbsite	Analyses by New Jersey Agr. Exp. Sta., Rutgers a/: Hydraulic conductivity in/hr	Porosity a/: Non-capillary Pct.	Capillary Pct.	Total Pct.	Plastic index Pct.	Aggregate stability Pct.
1/2-3														
3-4									6.1	15.0	28.8	43.8		87
4-13									3.9	10.5	29.8	40.3		89
13-24									4.1	16.6	19.4	36.0		74
24-30	Not sampled													
30-46									8.6	12.9	19.1	32.0	N.P.	-
46-84	Not sampled													

a/ Methods referenced on methods code sheet.

Pedon Classification: Typic Hapludult; coarse-loamy, siliceous, mesic
Soil: Downer loamy sand
Soil No.: 857NJ-8-3
Location: Gloucester County, New Jersey. About 2 miles southeast of Aura, 2,100 feet southeast of intersection of county road 538 and Aura-Porchtown Road; 100 feet east of Aura-Porchtown Road; property of Mrs. Earl Gant.
Vegetation and land use: Hardwood forest, white oak, red oak, pitch pine, black oak, black gum, holly, hickory, sassafras, red cedar, dogwood, mountain laurel and some sheep laurel.
Drainage: Well drained.
Permeability: Generally rapid (estimate).
Parent material: Coastal plain very sandy sediments.
Described by: M. Markley

Horizon and Beltsville Lab. No.		
O1 Not sampled	4 inches to 1.	Matted, undecayed oak leaves.
O2 Not sampled	1 inch to 0.	Decayed leaves.
A1 Not sampled	0 to 1/2 inch.	Black (10YR 2/1) loamy sand; very dark with organic matter.
A2 59190	1/2 to 3 inches. 2 to 4 inches thick.	Gray (10YR 5/1) loamy sand; single grain; loose; clear wavy boundary.
B2 59191	3 to 4 inches. 0 to 1 inch thick.	Dark gray (10YR 4/1) loamy sand; single grain; friable; abrupt wavy boundary.
A'2	4 to 13 inches. 8 to 10 inches thick.	Yellowish brown (10YR 5/6) loamy sand; very weak fine granular structure; very friable; less than 5 percent quartz pebbles; some mycelia; clear smooth boundary.
B't 59193	13 to 24 inches. pebbles; clear smooth boundary. 10 to 13 inches thick.	Yellowish brown (10YR 5/6) sandy loam; massive; friable; 10 percent quartz
IIC1 Not sampled	24 to 30 inches. quartz pebbles less than 1/2 inch in diameter; clear smooth boundary. 3 to 40 inches thick.	Yellowish brown (10YR 5/6) loamy sand; single grain; loose; 10 percent
IIC2 59194	30 to 46 inches. lenses and balls; 5 percent quartz pebbles; clear wavy boundary. 0 to 20 inches thick.	Yellowish brown (10YR 5/6) sand with balls and 1 to 2 inch discontinuous bands of dark yellowish brown (10YR 4/4) loamy sand; single grain; loose, firm and brittle in
IIC3 Not sampled	46 to 84 inches.	Yellowish brown (10YR 5/4) sand; single grain; loose; 5 percent pebbles.

Notes: Colors are for moist soil.

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

PEDON CLASSIFICATION: Typic Hapludult; coarse-loamy, siliceous, mesic

SOIL Downer loamy sand SOIL Nos. 858NJ-5-1 LOCATION Cape May County, New Jersey

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 59269 - 59276

Depth (In.)	Horizon	1B1b Total Sand (2–0.05)	Total Silt (0.05–0.002)	Total Clay (< 0.002)	Size class and particle diameter (mm) 3A1 Sand: Very coarse (2–1)	Sand: Coarse (1–0.5)	Sand: Medium (0.5–0.25)	Sand: Fine (0.25–0.1)	Sand: Very fine (0.1–0.05)	Silt (0.05–0.02)	Silt: Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)	3B2 Cm	Coarse fragments 3B1: 2A2 > 2 < 76 Pct.	2 – 19 Pct. of < 76mm	19 – 76 Pct. of < 76mm
		Pct. of < 2 mm															
0-2	A1	77.9	19.1	3.0	2.3	19.2	27.5	26.2	2.7	8.5	10.6	21.2	75.2	1.00	tr.		
2-13	A2	73.1	23.2	3.7	2.0	16.2	24.0	26.8	4.1	10.3	12.9	26.5	69.0	1.00	tr.		
13-19	A3	70.2	24.9	4.9	1.6	15.8	22.9	25.4	4.5	10.6	14.3	26.4	65.7	1.00	tr.		
19-21	B1	67.1	26.1	6.8	1.5	14.5	21.7	24.9	4.5	10.7	15.4	26.3	62.6	1.00	tr.		
21-28	B2t	61.6	22.5	15.9	0.9	12.2	19.6	24.3	4.6	9.4	13.1	25.3	57.0	0.99	1		
28-32	B3t	75.4	12.1	12.5	1.8	11.3	21.5	33.5	7.3	6.1	6.0	30.2	68.1	0.96	7		
32-38	C1	93.3	2.9	3.8	3.2	18.6	28.5	36.6	6.4	2.1	0.8	25.9	86.9	0.98	3		
38-43	C2	82.5	14.3	3.2	0.8	9.5	22.7	39.7	9.8	10.5	3.8	39.0	42.8	1.00	tr.		

Depth (In.)	6A1a Organic carbon	6B2a Nitrogen	C/N		6C1a Ext. iron as Fe	Analyses by New Jersey Agr. Exp. Sta., Rutgers University a/ Bulk density	Water retained at suctions of: 0.02 bar	0.06 bar	0.10 bar	0.33 bar	1 bar	2 bar	6 bar	15 bar	Available water	Field capacity	pH 8C1c (1:1) KCl	8C1a (1:1) H_2O
	Pct.	Pct.			Pct.	g/cc	Pct.								in/in	Pct.		
0-2	3.08	0.129	24		0.3	1.26	33.0	26.4	22.3	20.1	18.7					21.0		3.9
2-13	0.80	0.055	14		0.4	1.40	28.0	20.6	18.3	17.1	15.6	5.1	3.5	2.5	0.140	12.2		4.7
13-19	0.16				0.4	1.60	19.0	14.1	12.1	10.4	9.9	4.9	2.8	1.7	0.150	11.4		4.7
19-21	0.11				0.6	1.63	18.5	13.5	12.2	11.1	10.5	5.6	3.3	2.3	0.158	12.1		4.7
21-28	0.16				1.2	1.60	18.2	16.0	14.1	13.1	11.8	8.4	6.4	5.5	0.125	13.5		4.1
28-32	0.08				0.8	1.64	18.5	13.3	10.5	9.6	8.6	6.1	4.8	7.1	0.115	10.5		4.6
32-38	0.00				0.4	1.67	17.8	10.0	8.1	5.7	4.4	1.9	1.5	1.2	0.197	7.6		4.7
38-43	0.04				0.3	1.66	18.9	13.1	11.2	9.0	8.6	1.9	1.4	1.4	0.075	6.3		5.0

Depth (In.)	Extractable bases 5B1a: 6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	Sum	6H2a Ext. acidity	CEC: 5A3a Sum cations		6G1d Ext. Al			Ratios to clay 8D1: CEC Sum	Ext. iron	15-bar water	8D3 Ca/Mg		Base saturation: 5C3 Sum cations Pct.	5C1 NH_4OAc Pct.
	meq/100 g																	
0-2	0.7	tr.	0.1	0.2	1.0	9.4	10.3					3.43	0.10				9	
2-13	0.2	0.4	tr.	0.1	0.7	5.6	6.3					1.70	0.11	0.68			11	
13-19	0.4	0.1	0.1	0.1	0.7	2.5	3.2					0.65	0.08	0.35			22	
19-21	0.2	0.1	0.1	0.2	0.6	3.3	3.9					1.74	0.09	0.34			15	
21-28	tr.	0.2	tr.	0.1	0.3	7.5	7.8					0.49	0.08	0.35			4	
28-32	tr.	0.6	tr.	0.1	0.7	4.6	5.3					0.42	0.06	0.57			13	
32-38	tr.	0.2	tr.	0.1	0.3	1.4	1.7					0.53	0.11	0.32			18	
38-43	tr.	0.2	tr.	0.1	0.3	1.4	1.7						0.09	0.44			18	

Depth (In.)	Clay Fraction Analysis 7A1b-d: Mt.	Chl.	Vm.	Mi.	Int.	Qtz.	Kl.	Gibbsite	Analyses by New Jersey Agr. Exp. Sta., Rutgers a/: Porosity a/: Hydraulic conductivity	Non-capillary	Capillary	Total	Plastic index a/	Aggregate stability a/
	7A2 X-ray						7A3		in/hr	Pct.	Pct.	Pct.	Pct.	Pct.
0-2									7.5	15.5	34.7	50.2		-
2-13									3.2	16.7	28.2	44.9		90
13-19									0.8	14.6	22.4	37.0		57
19-21									0.6	14.7	22.0	36.7		49
21-28									0.8	13.1	25.7	38.8		43
28-32									2.5	13.7	20.9	34.6		31
32-38									6.1	15.9	16.6	32.5	N.P.	38
38-43									1.3	10.6	21.8	32.4	N.P.	57

a/ Methods referenced on methods code sheet.

Pedon Classification: Typic Hapludult; coarse-loamy, siliceous, mesic
Soil: Downer loamy sand
Soil No.: S58NJ-5-1
Location: Cape May County, New Jersey. Approximately 1-1/2 miles west of Bennett where two generally westward roads fork and intersect a generally north-south road, the one western road swinging northward in a short distance; in woods northwest of the intersection, about 100 feet in the woods.
Vegetation and land use: Forested with hardwoods predominant--by oak, some hickory, dogwood, sassafras, and holly.
Slope and land form: 0 to 1 percent.
Drainage: Well drained.
Permeability: moderate.
Parent material: Quaternary coastal plain sediments.
Described by: G. A. Quakenbush

Horizon and Beltsville Lab. No.	
O1 Not sampled	4 inches to 1. Last year's leaves, hardwoods, mostly oak.
O2 Not sampled	1 inch to 0. Dark reddish brown (5YR 2/2) decayed organic matter, aggregated and matted by roots, containing a sprinkling of sand grains.
A1 59269	0 to 2 inches. Pale brown (10YR 6/3) loamy sand; single grain; friable; clear irregular boundary.
A2 59270	2 to 13 inches. Yellowish brown (10YR 5/4) sandy loam, light olive brown (2.5Y 5/4) dry; massive; friable; clear wavy boundary.
A3 59271	13 to 19 inches. Variegated 30 percent yellowish brown (10YR 5/4) and 70 percent strong brown (7.5YR 4/6) sandy loam, pale brown (10YR 6/3) dry; massive; friable, 80 percent firm in place; noticeably vesicular; the redder hue goes with the firmer soil; clear smooth boundary.
B1 59272	19 to 21 inches. Variegated over 90 percent strong brown (7.5YR 4/6) with yellowish brown (10YR 5/4) sandy loam, light yellowish brown (10YR 6/4) dry; massive; slightly sticky, about 90 percent firm in place; slightly vesicular; clear smooth boundary.
B2t 59273	21 to 28 inches. Strong brown (7.5YR 4/6) sandy loam, brown (10YR 5/3) dry; massive; friable; slightly sticky, slightly plastic; occasional quartz pebble; occasional irregular-shaped firm lumps over an inch in diameter; bridging between grains but no coats on pebbles; clear smooth boundary.
B3t 59274	28 to 32 inches. Strong brown (7.5YR 4/8) sandy loam, dark brown (7.5YR 4/4) dry; massive; friable; 5 percent small quartz pebbles; clear smooth boundary.
C1 59275	32 to 38 inches. Strong brown (7.5YR 4/8) sand; single grain; loose; occasional pebbles; clear smooth boundary.
C2 59276	38 to 43 inches plus. Yellowish brown (10YR 5/6) loamy sand, light yellowish brown (10YR 6/4) dry; single grain; loose.

Notes: Colors refer to moist soils unless indicated otherwise.

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

PEDON CLASSIFICATION: Typic Hapludult; coarse-loamy, siliceous, mesic

SOIL Downer loamy sand SOIL Nos. S58NJ-5-2 LOCATION Cape May County, New Jersey

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 59277 - 59282

Depth (In.)	Horizon	1B1b Total Sand (2–0.05)	Total Silt (0.05–0.002)	Total Clay (< 0.002)	Sand: Very coarse (2–1)	Sand: Coarse (1–0.5)	Sand: Medium (0.5–0.25)	Sand: Fine (0.25–0.1)	Sand: Very fine (0.1–0.05)	Silt: 0.05–0.02	Silt: Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)		3B2 Cm	Coarse fragments 3B1: 2A2 > 2 < 76 Pct.	2 – 19	19 – 76
		Pct. of < 2 mm														Pct.	Pct. of < 76mm	
0-7	Ap1,Ap2	78.6	17.3	4.1	2.3	8.2	14.8	48.6	4.7	5.8	11.5	38.5	73.9		1.00	tr.		
7-16	A2	77.5	17.7	4.8	2.9	6.1	13.2	51.0	4.3	4.7	13.0	37.9	73.2		0.97	6		
16-19	B1	71.9	19.5	8.6	3.7	5.7	13.1	45.8	3.6	6.1	13.4	36.0	68.3		0.92	12		
19-27	B2t	65.4	16.5	18.1	2.6	4.5	10.7	44.4	3.2	5.3	11.2	34.7	62.2		0.90	16		
27-37	B3t	80.6	5.9	13.5	1.5	4.4	12.1	58.5	4.1	2.0	3.9	42.9	76.5		0.96	6		
37	IIC	94.7	0.3	5.0	0.6	2.2	10.5	75.9	5.5	0.3	0.0	53.5	89.2		0.99	2		

Depth (In.)	6A1a Organic carbon	6B2a Nitrogen	C/N		6C1a Ext. iron as Fe	Analyses by New Jersey Agr. Exp. Sta., Rutgers University a/: Bulk density	Water retained at suctions of: 0.02 bar	0.06 bar	0.10 bar	0.33 bar	1 bar	2 bar	6 bar	15 bar	Available water	Field capacity	pH: 8C1c (1:1) KCl	8C1a (1:1) H_2O
	Pct.	Pct.			Pct.	g/cc	Pct.								in/in	Pct.		
0-7	1.35	0.104	13		0.3	1.17	37.4	24.1	19.6	16.0	14.7	6.0	5.0	4.4	0.12	14.9		4.4
7-16	0.32	0.041	8		0.4	1.48	22.8	14.9	11.7	9.5	8.6	4.5	2.6	2.0	0.13	10.5		4.5
16-19	0.19				0.5	1.58	20.6	15.4	12.6	10.2	9.5	6.1	4.0	2.9	0.13	11.0		4.4
19-27	0.29				1.1	1.58	21.3	16.6	13.3	11.3	10.6	9.4	7.5	6.4	0.10	12.1		4.2
27-37	0.15				0.8	1.55	23.3	16.5	10.3	9.0	8.0	7.1	5.8	5.2	0.07	9.8		4.4
37	0.04				0.3	1.46	26.3	19.7	5.4	4.6	3.9	2.6	2.3	2.0	0.07	6.9		4.7

Depth (In.)	Extractable bases 5B1a: 6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	Sum	6H2a Ext. acidity	CEC: 5A3a Sum cations		6G1d Ext. Al			Ratios to clay 8D1: CEC Sum	Ext. iron	15-bar water	8D3 Ca/Mg	Base saturation: 5C3 Sum cations Pct.	5C1 NH_4OAc Pct.
	meq/100 g																
0-7	0.3	0.2	tr.	0.1	0.6	6.6	7.2					1.76	0.07	1.07		8	
7-16	0.2	0.1	tr.	0.1	0.4	3.3	3.7					1.27	0.08	0.42		11	
16-19	0.1	tr.	tr.	0.1	0.2	3.3	3.5					0.41	0.06	0.34		6	
19-27	0.2	0.2	0.1	0.1	0.6	8.0	8.6					0.47	0.06	0.35		7	
27-37	0.2	0.3	tr.	0.1	0.6	5.4	6.0					0.44	0.06	0.39		10	
37	0.2	0.1	tr.	0.1	0.4	1.9	2.3					0.46	0.06	0.40		17	

Depth (In.)	Clay Fraction Analysis 7A1b-d: Mt.	Chl.	Vm (7A2 X-ray)	Mi (7A2 X-ray)	Int (7A2 X-ray)	Qtz (7A2 X-ray)	Kl. (7A3)	Gibbsite (7A3)	Analyses by New Jersey Agr. Exp. Sta., Rutgers a/: Hydraulic conductivity	Porosity a/: Non-capillary	Capillary	Total	Plastic index a/	Aggregate stability a/
									in/hr	Pct.	Pct.	Pct.	Pct.	Pct.
0-7									12.6	22.5	28.6	51.1		83
7-16									1.7	19.9	22.2	42.1		88
16-19									0.4	13.2	24.1	37.3		48
19-27									2.2	11.8	25.9	37.7		43
27-37									1.4	12.4	25.6	38.0		20
37									9.3	10.3	30.2	40.5	N.P.	11

a/ Methods referenced on methods code sheet.

Pedon Classification: Typic Hapludult; coarse-loamy, siliceous, mesic
Soil: Downer loamy sand
Soil No.: S58NJ-5-2
Location: Cape May County, New Jersey. One mile north of Dias Creek, eastward from county highway 47 about 200 yards on Hand Avenue, in woods on north side of Hand Avenue, in southwest corner of the woods about 100 feet from the field and 100 feet from the road.
Vegetation and land use: Predominantly red and black oak. Some white oak, sassafras, dogwood and cherry.
Slope and land form: 0 to 1 percent.
Drainage: Well drained.
Permeability: Moderately rapid.
Parent material: Quaternary coastal plain sediments.
Described by: G. A. Quakenbush

Horizon and Beltsville Lab. No.	
O1 Not sampled	4 inches to 1/2. Last year's leaves, mostly oak.
O2 Not sampled	1/2 inch to 0. Dark reddish brown (5YR 2/2) disintegrated organic matter weakly matted by roots.
Ap1 59277	0 to 2 inches. Dark brown (10YR 3/3) loamy sand; single grained (very weak, fine to medium crumb); friable.
Ap2	2 to 7 inches. Dark brown (10YR 4/2) unevenly darker and paler, loamy sand; single grained; loose; abrupt irregular boundary with narrow tonguing into the A2.
A2 59278	7 to 16 inches. Yellowish brown (10YR 5/4) loamy fine sand; single grained; loose; friable; clear wavy boundary. 9 to 12 inches thick.
B1 59279	16 to 19 inches. Yellowish brown (10YR 5/4) in most of the mass, fine sandy loam; very weak subangular blocky structure; friable; clear wavy boundary. 2 to 5 inches thick.
B2t 59280	10 to 27 inches. Strong brown (7.5YR 4/6) fine sandy loam; very weak subangular blocky structure; slightly plastic, scattered small firm brittle masses; clear wavy boundary. 4 to 8 inches thick.
B3t 59281	27 to 37 inches. Strong brown (7.5YR 4/6) fine sandy loam; very weak subangular blocky structure; friable except for lumpy masses, approximating 20 percent of the whole, which are firm and brittle; gradual smooth boundary. 6 to 10 inches thick.
IIC 59282	37 inches plus. Yellowish brown (10YR 5/6) fine sand becoming paler with depth; single grained; loose.

Notes: Colors refer to moist soil.

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

PEDON CLASSIFICATION: Typic Hapludult; coarse-loamy, siliceous, mesic
SOIL Downer sandy loam SOIL Nos. S58NJ-8-7 LOCATION Gloucester County, New Jersey

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 59195 - 59200

Depth (In.)	Horizon	1B1b Total Sand (2–0.05)	Total Silt (0.05–0.002)	Total Clay (< 0.002)	Sand (2–1)	Sand (1–0.5)	Sand (0.5–0.25)	Sand (0.25–0.1)	Sand (0.1–0.05)	Silt (0.05–0.02)	Silt Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)		3B2 Cm	Coarse fragments 3B1 2A2 > 2 < 76 Pct.	2 – 19 Pct. of < 76mm	19 – 76 Pct. of < 76mm
		Pct. of < 2 mm																
0-10	Ap	60.4	32.1	7.5	2.9	16.0	18.2	16.1	7.2	13.8	18.3	28.2	53.2		0.99	1		
10-16	A2	71.2	22.6	6.2	3.0	17.7	23.0	19.9	7.6	10.2	12.4	26.6	63.6		0.99	1		
16-23	B1t	70.9	21.8	7.3	2.2	16.7	22.8	20.8	8.4	9.9	11.9	27.6	62.5		0.99	2		
23-30	B2t	76.9	14.9	8.2	3.2	20.0	24.1	21.7	7.9	7.1	7.8	24.7	69.0		0.97	5		
30-48	IIC1	85.0	10.5	4.5	13.7	21.2	20.6	17.8	11.7	6.7	3.8	26.7	73.4		0.79	28		
48-60	IIC2	92.9	2.6	4.5	10.4	29.1	35.6	16.6	1.2	0.3	2.3	5.8	91.7		0.88	17		

Depth (In.)	6A1a Organic carbon	6B2a Nitrogen	C/N		Carbonate as $CaCO_3$	Analyses by New Jersey Agr. Exp. Sta., Rutgers University a/ Bulk density	Water retained at suctions of 0.02 bar	0.06 bar	0.10 bar	0.33 bar	1 bar	2 bar	6 bar	15 bar	Available water	Field capacity	pH 8C1c (1:1) KCl	8C1a (1:1) H_2O
	Pct.	Pct.			Pct.	g/cc	Pct.								in/in	Pct.		
0-10	1.48	0.086	17			1.60	20.7	17.0	15.8	15.2	14.2	7.6	5.4	4.0	0.18	15.2		4.9
10-16	0.28	0.023	12			1.66	17.3	12.6	11.8	11.2	10.6	4.6	3.3	2.7	0.13	10.5		5.0
16-23	0.17					1.62	16.7	14.6	11.1	10.5	9.6	4.7	3.6	3.0	0.12	10.3		5.0
23-30	0.08					1.65	15.2	13.2	9.1	8.6	7.9	4.7	3.8	3.2	0.09	8.6		4.5
30-48	0.04					1.82	11.7	7.3	5.8	5.3	4.9	2.5	2.2	1.9	0.09	6.7		4.6
48-60	0.02					1.71	7.0	5.9	3.9	3.1	2.8	2.1	2.0	1.7	0.05	4.7		4.6

Depth (In.)	Extractable bases 5B1a 6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	Sum	6H2a Ext. acidity	CEC 5A3a Sum cations	6G1d Ext. Al			Ratios to clay 8D1 CEC Sum	Ext. iron	15-bar water	8D3 Ca/Mg		Base saturation 5C3 Sum cations Pct.	5C1 NH_4OAc Pct.
	meq/100 g																
0-10	2.3	0.3	0.1	0.3	3.0	7.0	10.0				1.33		0.53			30	
10-16	0.8	0.1	tr.	0.1	1.0	3.0	4.1				0.66		0.44			27	
16-23	0.7	0.3	0.1	0.2	1.3	2.6	3.9				0.53		0.41			33	
23-30	0.7	0.3	0.1	0.1	1.2	2.9	4.2				0.51		0.39			31	
30-48	0.3	0.2	tr.	0.1	0.6	1.7	2.3				0.51		0.42			27	
48-60	0.2	0.2	tr.	0.1	0.5	1.2	1.7				0.38		0.38			29	

Depth (In.)	Clay Fraction Analysis 7A1b-d Mt.	Chl.	Vm.	Mi.	Int.	Qtz.	Kl.	Gibbsite		Analyses by New Jersey Agr. Exp. Sta., Rutgers a/ Porosity a/ Hydraulic conductivity in/hr	Non-capillary Pct.	Capillary Pct.	Total Pct.	a/ Plastic index Pct.	a/ Aggregate stability Pct.
	7A2 X-ray						7A3								
0-10										0.2	9.2	27.1	36.3		49
10-16										0.2	11.6	21.0	32.6	N.P.	44
16-23										1.0	14.3	23.5	37.8	N.P.	30
23-30										1.9	13.4	21.7	35.1		29
30-48										2.8	13.7	13.9	27.6	N.P.	39
48-60										15.5	22.3	10.1	32.4	N.P.	-

a/ Methods referenced on methods code sheet.

Pedon Classification: Typic Hapludult; coarse-loamy, siliceous, mesic
Soil: Downer sandy loam
Soil No.: S58NJ-8-7
Location: Gloucester County, New Jersey. South of Williamstown; property owned by Melvin Sickler.
Vegetation and land use: Cultivated crops—field corn after 20 years of irrigated vegetables, some double and triple cropping.
Drainage: Well drained.
Permeability: Estimated moderately rapid.
Parent material: Coastal plain sandy sediments.
Described by: M. Markley

Horizon and Beltsville Lab. No.	
Ap 59195	0 to 10 inches. Very dark grayish brown (10YR 3/2) sandy loam; weak fine granular structure; very friable, nonsticky; pH 6.4; abrupt smooth boundary. 9 to 12 inches thick.
A2 59196	10 to 16 inches. Yellowish brown (10YR 5/6) sandy loam; weak medium granular structure; very friable, nonsticky; pH 6.0; gradual smooth boundary. 5 to 6 inches thick.
B1t 59197	16 to 23 inches. Dark brown (10YR 4/3) sandy loam; weak medium granular structure; very friable; in places peds are slightly firm, nonsticky; few clay films; pH 6.2; gradual smooth boundary. 6 to 7 inches thick.
B2t 59198	23 to 30 inches. Dark yellowish brown (10YR 4/4) sandy loam with rare parts heavy sandy loam; weak medium subangular blocky structure; very friable, in places firm, slightly sticky; common clay films; pH 6.2; gradual wavy boundary. 5 to 8 inches thick.
IIC1 59199	30 to 48 inches. Dark yellowish brown (10YR 4/4) gravelly loamy sand; stratified; firm to loose strata; pH 5.8; gradual irregular boundary.
IIC2 59200	48 to 60 inches. Yellowish brown (10YR 5/6) medium and coarse sand with lenses and balls of finer texture; stratified, single grain; very friable to firm, nonsticky; pH 5.8.

Notes: Colors refer to moist soil. Roots throughout A and B horizons, only few in the C horizon (below 30 inches) and none observed below 48 inches.

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

PEDON CLASSIFICATION: Typic Hapludult; coarse-loamy, siliceous, mesic

SOIL Downer loamy sand SOIL Nos. 859NJ-5-1 LOCATION Cape May County, New Jersey

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 60319 - 60324

Depth (In.)	Horizon	1B1b Total: Sand (2–0.05)	Silt (0.05–0.002)	Clay (< 0.002)	Size class and particle diameter (mm) 3A1 Sand: Very coarse (2–1)	Coarse (1–0.5)	Medium (0.5–0.25)	Fine (0.25–0.1)	Very fine (0.1–0.05)	Silt: (0.05–0.02)	Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)		3B2 Cm	Coarse fragments 3B1: 2A2 ≥ 2 Pct.	2 – 19	19 – 76
		Pct. of < 2 mm														Pct.	Pct. of < 76mm	
0-8	Ap	74.2	22.4	3.4	1.9	10.8	16.6	39.2	5.7	15.7	6.7	42.4	68.5		1.00	tr.		
8-15	A2	87.5	7.5	5.0	12.3	12.1	18.3	39.4	5.4	2.7	10.2	35.8	82.1		1.00	tr.		
15-21	A3	73.3	20.4	6.3	1.1	9.9	17.6	39.0	5.7	9.3	11.1	36.5	67.6		1.00	tr.		
21-30	B2t	63.3	22.4	14.3	1.1	9.1	16.6	31.6	4.9	10.1	12.3	31.3	58.4		1.00	tr.		
30-34	B3t	76.6	12.4	11.0	2.0	11.6	21.7	36.9	4.4	6.3	6.1	28.5	72.2		1.00	-		
34-37	IIC1	92.3	3.9	3.8	1.8	17.2	26.8	42.7	3.8	2.5	1.4	25.9	88.5		1.00	tr.		
37-48	Not sampled																	

Depth (In.)	6A1a Organic carbon	6B2a Nitrogen	C/N		Carbonate as $CaCO_3$	Analyses by New Jersey Agr. Exp. Sta., Rutgers University 8/: Bulk density	Water retained at suctions of: 0.02 bar	0.06 bar	0.10 bar	0.33 bar	1 bar	2 bar	6 bar	15 bar	Available water	Field capacity	pH 8C1c (1:1) KCl	8C1a (1:1) H_2O
	Pct.	Pct.			Pct.	g/cc	Pct.								in/in	Pct.		
0-8	0.55	0.075	7			1.56	21.8	19.9	18.9	17.3	15.8	3.4	3.0	2.8	0.14	11.6		6.1
8-15	0.26	0.036				1.60	18.3	14.0	12.6	10.9	9.6	3.0	2.8	2.1	0.14	11.0		6.0
15-21	0.14					1.58	17.6	11.9	9.7	9.1	8.1	4.4	3.1	2.3	0.14	11.1		6.0
21-30	0.15					1.48	19.2	15.8	15.3	14.2	13.3	7.8	6.1	5.3	0.11	12.9		5.5
30-34	0.08					1.52	19.6	11.3	10.3	9.1	7.7	5.3	4.7	4.3	0.08	9.8		4.8
34-37	0.04					1.55	15.0	7.8	5.3	4.4	3.5	2.0	1.6	1.6	0.06	5.4		4.7

Depth (In.)	Extractable bases 5B1a: 6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	Sum	6H2a Ext. acidity	CEC: 5A3a Sum cations	6G1d Ext. Al			Ratios to clay 8D1: CEC Sum	Ext. iron	15-bar water	8D3 Ca/Mg		Base saturation: 5C3 Sum cations Pct.	5C1 NH_4OAc Pct.
	meq/100 g																
0-8	2.5	0.6	tr.	0.2	3.3	2.3	5.6				1.65		0.82			59	
8-15	1.3	0.4	tr.	0.2	1.9	1.4	3.3				0.66		0.42			58	
15-21	1.0	0.5	0.1	0.2	1.8	1.2	3.0				0.48		0.37			60	
21-30	2.3	0.9	0.1	0.2	3.5	3.0	6.5				0.45		0.37			54	
30-34	1.8	0.6	0.1	0.1	2.6	3.3	5.9				0.54		0.39			44	
34-37	0.7	0.3	tr.	tr.	1.0	1.2	2.2				0.58		0.42			45	

Depth (In.)	Clay Fraction Analysis 7A1b-d: Mt.	Chl.	Vm.	Mi.	Int.	Qtz.	Kl.	Gibbsite		Analyses by New Jersey Agr. Exp. Sta., Rutgers 8/: Hydraulic conductivity 8/ in/hr	Porosity 8/: Non-capillary Pct.	Capillary Pct.	Total Pct.	Plastic index 8/ Pct.	Aggregate stability 8/ Pct.
	7A2 X-ray						7A3								
0-8										0.8	7.2	31.6	38.8		85
8-15										1.2	15.6	22.3	37.9		25
15-21										0.9	22.0	16.3	38.3		19
21-30										2.3	18.2	23.3	41.5		14
30-34										2.4	20.2	17.3	37.5		19
34-37										8.7	24.9	11.7	36.6	N.P.	20

Methods referenced on methods code sheet.

Pedon Classification: Typic Hapludult; coarse-loamy, siliceous, mesic
Soil: Downer loamy sand[1/]
Soil No.: S59NJ-5-1
Location: Cape May County, New Jersey. Approximately 600 feet west of Bay Shore Road intersection with road to Higbee's Landing, about 40 feet west of east boundary of farm, on rise of land north of road, on Taylor farm.
Vegetation and land use: Cropped.
Drainage: Well drained.
Permeability: Moderate.
Parent material: Developed in quaternary coastal plain sediments.
Described by: V. R. Powley and G. A. Quakenbush

Horizon and Beltsville Lab. No.	
Ap 60319	0 to 8 inches. Dark grayish brown (10YR 4/2) loamy sand; single grain; very friable; abrupt smooth boundary. 8 to 9 inches thick.
A2 60320	8 to 15 inches. Yellowish brown (10YR 5/4) loamy sand, light yellowish brown (10YR 6/4) dry; single grain but weakly coherent; friable except firm in place in upper 4 inches; contains many channels of dark grayish brown Ap material; clear smooth boundary. 7 to 8 inches thick.
A3 60321	15 to 21 inches. Yellowish brown (10YR 5/6) fine sandy loam, faint variegations of strong brown (7.5YR 5/6); weak fine granular structure; friable except for minor, slightly firm parts; clear smooth boundary. 4 to 6 inches thick.
B2t 60322	21 to 30 inches. Strong brown (7.5YR 5/6) fine sandy loam, brown (7.5YR 5/4) dry; massive; friable, scattered small parts slightly firm, and slightly brittle, slightly sticky; contains few pockets up to 1 inch in diameter of light yellowish brown (10YR 6/4) loamy sand; clear smooth boundary. 8 to 11 inches thick.
B3t 60323	30 to 34 inches. Strong brown (7.5YR 5/6) fine sandy loam; massive; friable; 30 to 50 percent slightly firm in place and slightly brittle; containing few rounded quartz pebbles less than 1 inch in diameter; clear smooth boundary. 2 to 3 inches thick.
IIC1 60324	34 to 37 inches. Strong brown (7.5YR 5/8) sand, yellow (10YR 7/6) dry; single grain; very friable or loose; containing few rounded quartz pebbles less than 1 inch in diameter; clear smooth boundary. 3 to 5 inches thick.
IIC2	37 to 48 inches. Yellow (10YR 7/8) quartziferous sand with a few dark grains; single grain; loose; below 4 feet, color becomes light gray (2.5Y 7/2).

Notes: Colors refer to moist soils.

[1/] Base saturation is raised by protracted use of agricultural fertilizers and liming. Base saturation at 71 inches is presumed to be below 35 percent.

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

PEDON CLASSIFICATION: Typic Hapludult; coarse-loamy, siliceous, mesic
SOIL Downer sandy loam SOIL Nos. S59NJ-6-1 LOCATION Cumberland County, New Jersey

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 60325 - 60329

Depth (In.)	Horizon	1B1b Total Sand (2–0.05)	Total Silt (0.05–0.002)	Total Clay (< 0.002)	Size class and particle diameter (mm) 3A1 Sand: Very coarse (2–1)	Coarse (1–0.5)	Medium (0.5–0.25)	Fine (0.25–0.1)	Very fine (0.1–0.05)	Silt: 0.05–0.02	Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)		3B2 Cm	Coarse fragments 3B1: 2A2 > 2 < 76 Pct.	2 – 19 Pct. of < 76mm	19 – 76 Pct. of < 76mm
		Pct. of < 2 mm																
0-6	Ap1	Not sampled																
6-11	Ap2	72.7	20.8	6.5	5.8	28.0	22.8	13.3	2.8	7.6	13.2	15.2	69.9		0.99	2		
11-17	A2	68.0	23.1	8.9	5.0	24.2	20.7	14.5	3.6	8.4	14.7	17.7	64.4		0.98	3		
17-31	B2t	68.1	23.1	8.8	4.4	24.0	21.2	14.9	3.6	8.9	14.2	18.7	64.5		0.98	4		
31-37	B3t	73.2	15.7	11.1	5.2	18.4	21.7	21.5	6.4	7.2	8.5	22.9	66.8		0.88	18		
37-46	IIC1	81.6	12.6	5.8	8.6	17.8	19.8	26.4	9.0	8.1	4.5	29.5	72.6		0.72	37		
50-100	IIC2	Not sampled																

Depth (In.)	6A1a Organic carbon Pct.	6B2a Nitrogen Pct.	C/N		Carbonate as $CaCO_3$ Pct.	Analyses by New Jersey Agr. Exp. Sta., Rutgers University a/: Bulk density g/cc	Water retained at suctions of (Pct.): 0.02 bar	0.06 bar	0.10 bar	0.33 bar	1 bar	2 bar	6 bar	15 bar	Available water in/in	Field capacity Pct.	pH 8C1c (1:1) KCl	8C1a (1:1) H_2O
0-6	Not sampled																	
6-11	0.56	0.067	8			1.70	16.4	13.0	11.4	10.1	8.9	6.3	4.1	2.9	0.144	11.4		5.7
11-17	0.28	0.045	6			1.70	14.9	11.3	10.2	9.8	9.4	6.4	4.5	3.2	0.158	12.5		5.5
17-31	0.10					1.54	15.7	11.5	10.2	9.5	8.9	6.2	4.3	3.9	0.121	11.8		5.0
31-37	0.08					1.63	14.6	9.7	8.1	7.4	6.7	5.9	4.5	3.9	0.100	9.4		4.8
37-46	0.04					1.75	12.0	7.6	6.4	6.0	5.5	3.1	2.5	2.1	0.106	7.6		4.8
50-100	Not sampled																	

Depth (In.)	Extractable bases 5B1a: 6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	Sum (meq/100 g)	6H2a Ext. acidity	CEC: 5A3a Sum cations	6G1d Ext. Al	Ratios to clay 8D1: CEC Sum	Ext. iron	15-bar water	8D3 Ca/Mg	Base saturation: 5C3 Sum cations Pct.	5C1 NH_4OAc Pct.
0-6	Not sampled													
6-11	2.6	0.4	0.1	0.3	3.4	3.7	7.1		1.09		0.45		48	
11-17	1.4	0.3	0.1	0.3	2.1	2.7	4.8		0.54		0.36		44	
17-31	1.1	0.3	0.1	0.3	1.8	2.9	4.7		0.53		0.44		38	
31-37	1.3	0.5	0.2	0.2	2.2	3.7	5.9		0.53		0.35		37	
37-46	0.7	0.3	0.1	0.1	1.2	2.1	3.3		0.57		0.36		36	
50-100	Not sampled													

Depth (In.)	Clay Fraction Analysis 7A1b-d (7A2 X-ray): Mt.	Chl.	Vm.	Mi.	Int.	Qtz.	Kl. (7A3)	Gibbsite	Analyses by New Jersey Agr. Exp. Sta., Rutgers a/: Hydraulic conductivity in/hr	Porosity a/: Non-capillary Pct.	Capillary Pct.	Total Pct.	Plastic index a/ Pct.	Aggregate stability a/ Pct.
0-6	Not sampled													
6-11									1.0	11.1	22.1	33.2		51
11-17									1.1	13.2	19.3	32.5		45
17-31									1.5	18.8	17.3	36.1		33
31-37									0.9	16.6	15.3	31.9		39
37-46									1.2	13.9	13.2	27.1	N.P.	27
50-100	Not sampled													

a/ Methods referenced on methods code sheet.

Pedon Classification: Typic Hapludult; coarse-loamy, siliceous, mesic
Soil: Downer sandy loam
Soil No.: S59NJ-6-1
Location: Cumberland County, New Jersey. 2-1/2 miles west southwest of Fairton, on Dix Brothers farm, east side of north-south road, opposite Fred Dix's house, in field between farm buildings and house slightly to the south, about 75 feet north of east end of fenced in area in back of house.
Vegetation and land use: Cultivated.
Slope and land form: Nearly level, 0 to 1 percent.
Drainage: Moderate.
Permeability: Moderate.
Parent material: Developed in quaternary coastal plain sediments.
Described by: G. A. Quakenbush

Horizon and Beltsville Lab. No.	
Ap1 Not sampled	0 to 6 inches. Dark brown (10YR 4/3) sandy loam; massive; recently plowed, somewhat firm clods breaking to friable. 6 to 8 inches thick.
Ap2 60325	6 to 11 inches. Dark brown (10YR 4/3), sandy loam; massive; firm and slightly brittle in place, friable when removed; abrupt smooth boundary but with narrow stringers extending 1 to 4 inches into the A2. Total Ap is 11 to 13 inches thick.
A2 60326	11 to 17 inches. Dark brown (10YR 4/3) sandy loam, pale brown (10YR 6/3) dry; massive; firm and slightly brittle in place, friable when removed; worm tubes filled with Ap material; clear wavy boundary. 5 to 10 inches thick.
B2t 60327	17 to 31 inches. Strong brown (7.5YR 5/6) sandy loam, reddish yellow (7.5YR 6/6) dry; massive; friable; sand grains are covered in part with silt and clay material, clay films very rare; clear wavy boundary. 9 to 14 inches thick.
B3t 60328	31 to 37 inches. Strong brown (7.5YR 5/8) sandy loam; massive; very friable to slightly firm and slightly brittle; clear smooth boundary. 5 to 7 inches thick.
IIC1 60329	37 to 46 inches. Strong brown (7.5YR 5/6) gravelly loamy sand; single grain; loose with small bodies firm and brittle where sand and gravel are bound by clay bridges; 25 percent rounded quartzitic pebbles. 8 to 10 inches thick.
IIC2 Not sampled	50 to 100 inches. Stratified pale brown (10YR 6/3) coarse sand, light gray (10YR 7/2) dry; single grain; loose; 15 percent pebbles, mostly fine sand.

Notes: Colors refer to moist soil unless indicated otherwise.

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

PEDON CLASSIFICATION: Typic Hapludult; coarse-loamy, siliceous, mesic

SOIL Sassafras taxadjunct SOIL Nos. 858NJ-6-1 LOCATION Cumberland County, New Jersey

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 59289 - 59294

Depth (In)	Horizon	181b Total Sand (2-0.05)	Total Silt (0.05-0.002)	Total Clay (< 0.002)	Sand Very coarse (2-1)	Sand Coarse (1-0.5)	Sand Medium (0.5-0.25)	Sand Fine (0.25-0.1)	Sand Very fine (0.1-0.05)	Silt (0.05-0.02)	Silt Int. III (0.02-0.002)	Int. II (0.2-0.02)	(2-0.1)		3B2 Cm	Coarse fragments 3B1 2A2 ≥ 2 <76 Pct.	2-19 Pct. of <76mm	19-76 Pct. of <76mm
		Pct. of < 2 mm																
0-3	A1	67.5	26.3	6.2	1.6	11.5	22.2	26.4	5.8	11.9	14.4	28.9	61.7		1.00	tr.		
3-12	A2	65.8	27.2	7.0	1.5	10.7	20.7	26.7	6.2	11.9	15.3	29.8	59.6		1.00	tr.		
12-23	B1	62.0	28.6	9.4	1.2	10.0	20.1	24.9	5.8	12.3	16.3	29.0	56.2		1.00	tr.		
23-33	B2t	56.3	27.2	16.5	0.9	7.6	17.0	24.9	5.9	12.4	14.8	30.0	50.4		1.00	tr.		
33-37	B3	73.1	17.8	9.1	1.2	10.2	24.4	31.3	6.0	9.3	8.5	29.1	67.1		1.00	tr.		
37-48	IIC	95.6	1.4	3.0	5.1	27.4	46.1	16.6	0.4	1.3	0.1	4.8	95.2		0.92	13		

Depth (In.)	6A1a Organic carbon Pct.	6B2a Nitrogen Pct.	C/N		6C1a Ext. iron as Fe Pct.	Analyses by New Jersey Agr. Exp. Sta., Rutgers University a/ Bulk density g/cc	Water retained at suctions of 0.02 bar Pct.	0.06 bar	0.10 bar	0.33 bar	1 bar	2 bar	6 bar	15 bar	Available water in/in	Field capacity Pct.	pH 8C1c (1:1) KCl	8C1a (1:1) H_2O
0-3	1.37	0.089	15		0.6	1.19	33.6	30.5	17.4	16.5	14.6	6.5	5.0	4.0	0.20	21.2		4.0
3-12	0.52	0.047	11		0.6	1.36	28.8	21.4	16.7	14.8	12.9	6.0	4.0	3.0	0.17	15.2		4.5
12-23	0.16				0.8	1.48	24.8	18.7	15.2	12.3	10.6	6.6	4.4	3.3	0.15	13.4		4.4
23-33	0.17				1.5	1.48	24.5	19.1	16.4	14.9	13.4	8.8	7.1	6.2	0.14	15.4		4.5
33-37	0.08				1.0	1.54	21.9	15.4	12.3	10.2	9.2	5.3	4.4	3.7	0.15	13.2		4.6
37-48	0.02				0.4	1.53	15.1	4.1	3.0	2.2	1.6	1.4	1.2	1.1	0.13	9.4		4.6

Depth (In.)	Extractable bases 5B1a 6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	Sum	6H2a Ext. acidity	CEC 5A3a Sum cations		6G1d Ext. Al			Ratios to clay 8D1 CEC Sum	Ext. iron	15-bar water	8D3 Ca/Mg		Base saturation 5C3 Sum cations Pct.	5C1 NH_4OAc Pct.
	meq/100 g																	
0-3	0.3	0.1	tr.	0.1	0.5	9.0	9.5					1.53	0.10	0.65			5	
3-12	0.1	tr.	tr.	0.1	0.2	4.8	5.0					0.71	0.09	0.43			4	
12-23	0.1	tr.	tr.	0.1	0.2	4.1	4.3					0.46	0.09	0.35			5	
23-33	0.1	0.8	tr.	0.1	1.0	3.1	4.1					0.25	0.09	0.38			24	
33-37	0.1	0.7	tr.	0.1	0.9	3.9	4.8					0.53	0.11	0.41			19	
37-48	0.1	0.4	tr.	tr.	0.5	1.0	1.5					0.50	0.13	0.37			33	

Depth (In.)	Clay Fraction Analysis 7A1b-d Mt.	Chl	Vm	Mi.	Int.	Qtz.	Kl.	Gibbsite	Analyses by New Jersey Agr. Exp. Sta., Rutgers a/ Hydraulic conductivity in/hr	Porosity a/ Non-capillary Pct.	Capillary Pct.	Total Pct.	Plastic index a/ Pct.	Aggregate stability a/ Pct.
	7A2 X-ray						7A3							
0-3									6.4	15.0	37.9	52.9		90
3-12									2.7	16.4	29.1	45.5		91
12-23									1.2	14.3	27.7	42.0		64
23-33									1.1	13.5	27.6	41.1		40
33-37									1.3	14.5	23.9	38.4		24
37-48									28.6	27.3	6.3	33.6	N.P.	-

a/ Methods referenced on methods code sheet.

Pedon Classification: Typic Hapludult; coarse-loamy, siliceous, mesic
Soil: Sassafras taxadjunct [1/]
Soil No.: S58NJ-6-1
Location: Cumberland County, New Jersey. 1/2 mile north of Jericho, intersection of Cook Lane and road going south toward Jericho, west side of road to Jericho about 100 feet in woods and 200 feet from field opposite the intersection.
Vegetation and land use: Woodland of hardwoods, chiefly black and white oak with some hickory and dogwood.
Drainage: Well drained.
Permeability: Moderately rapid.
Parent material: Quaternary coastal plain sediments.
Described by: G. A. Quakenbush

Horizon and Beltsville Lab. No.	
O1 Not sampled	4 inches to 1/2. Loose leaves from last year, mostly oak.
O2 Not sampled	1/2 inch to 0. Black (N 2/) fragmented partially decomposed leaves in a fibrous mat.
A1 59289	0 to 3 inches. Dark brown (10YR 3/3) sandy loam, brown (10YR 5/3) dry; massive; friable; clear wavy boundary 2 to 3 inches thick.
A2 59290	3 to 12 inches. Yellowish brown (10YR 5/4) toward 7.5YR sandy loam, very pale brown (10YR 7/4) dry; massive; very friable; clear wavy boundary 10 to 16 inches thick.
B1 59291	12 to 23 inches. Dark brown (7.5YR 4/4 and 4/6) sandy loam, light yellowish brown (10YR 6/4) dry; massive; friable to slightly firm and brittle; clear wavy boundary. 4 to 12 inches thick.
B2t 59292	23 to 33 inches. Dark brown (7.5YR 4/4) fine sandy loam, yellowish brown (10YR 5/4) dry; massive; friable, slightly plastic; clear wavy boundary. 9 to 10 inches thick.
B3 59293	33 to 37 inches. Strong brown (7.5YR 4/6) fine sandy loam, light yellowish brown (10YR 6/4) dry; massive; very friable. 4 to 5 inches thick.
IIC 59294	37 to 48 inches plus. Brown (7.5YR 4/4) sand brownish yellow (10YR 6/6) dry; single grain; very friable to slightly firm and slightly brittle in place. A few clean quartz pebbles up to 1 inch in diameter.

Notes: Colors refer to moist soil unless indicated otherwise.

[1/] This pedon is a taxadjunct because it is in the coarse-loamy family particle size class, whereas the Sassafras series is in the fine-loamy class. Clay content in the B2t horizon is 2.5 percent low.

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

PEDON CLASSIFICATION: Typic Hapludult; coarse-loamy, siliceous, mesic
SOIL Westphalia taxadjunct SOIL Nos. S59NJ-4-1 LOCATION Camden County, New Jersey

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 60138 - 60142

Depth (in.)	Horizon	18 1b Size class and particle diameter (mm) 3A1												3B2	Coarse fragments 3B1		
		Total			Sand					Silt		Int. II			2A2		
		Sand (2–0.05)	Silt (0.05–0.002)	Clay (< 0.002)	Very coarse (2–1)	Coarse (1–0.5)	Medium (0.5–0.25)	Fine (0.25–0.1)	Very fine (0.1–0.05)	0.05–0.02	Int. III (0.02–0.002)	(0.2–0.02)	(2–0.1)		≥ 2 < 76	2 – 19	19 – 76
		Pct. of < 2 mm												Cm	Pct.	Pct. of < 76mm	
0-4	A1	87.9	9.4	2.7	2.1	7.8	7.3	39.9	30.8	5.3	4.1	68.9	57.1	1.00	tr.		
4-17	A2	86.8	9.1	4.1	2.4	6.6	6.4	39.7	31.7	5.2	3.9	69.8	55.1	0.98	3		
17-23	B1t	79.7	10.5	9.8	1.6	3.6	3.4	37.6	33.5	5.4	5.1	72.3	46.2	0.95	9		
23-34	B2t	72.6	10.4	17.0	1.0	2.4	2.1	35.8	31.3	4.8	5.6	68.6	41.3	0.98	4		
34-60	C	76.2	11.6	12.2	-	0.2	0.3	26.2	49.5	6.2	5.4	80.3	26.7	1.00	tr.		

Depth (in.)	6A1a Organic carbon	6B2a Nitrogen	C/N		Carbonate as $CaCO_3$	6C1a Ext. iron as Fe	Analyses by New Jersey Agr. Exp. Sta., Rutgers University a/											8C1a (1:1) H_2O
							Bulk density	Water retained at suctions of								Available water	Field capacity	
								0.02 bar	0.06 bar	0.10 bar	0.33 bar	1 bar	2 bar	6 bar	15 bar			
	Pct.	Pct.			Pct.	Pct.	g/cc	Pct.								in/in	Pct.	
0-4	1.00	0.045	22			1.22	36.0	21.7	18.1	13.3	9.9	4.4	4.1	3.5	0.13	14.5		3.6
4-17	0.40	0.031	13			1.34	32.7	23.0	19.1	11.4	7.0	4.6	3.5	2.5	0.13	12.2		4.3
17-23	0.16					1.53	23.2	18.1	14.6	10.9	7.7	6.5	5.4	3.9	0.19	15.8		4.2
23-34	0.12					1.57	20.2	17.6	16.6	15.3	13.6	10.1	9.0	7.7	0.16	17.3		4.2
34-60	0.06					1.48	23.9	18.4	17.9	14.0	11.1	7.8	6.6	5.3	0.13	14.2		4.1

Depth (in.)	Extractable bases 5B1a					6H2a	CEC		6G1d			Ratios to clay		8D1	8D3		Base saturation	
	6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	Sum	Ext. acidity	5A3a Sum cations		Ext. Al			CEC Sum	Ext. iron	15-bar water	Ca/Mg		5C3 Sum cations	5C1 NH_4OAc
	meq/100 g																Pct.	Pct.
0-4	0.1	0.1	tr.	tr.	0.2	5.0	5.2										4	
4-17	tr.	tr.	tr.	tr.	tr.	3.9	3.9					0.95		0.61			-	
17-23	tr.	tr.	tr.	tr.	tr.	2.9	2.9					0.29		0.40			-	
23-34	tr.	tr.	tr.	tr.	tr.	5.0	5.1					0.30		0.45			-	
34-60	tr.	tr.	tr.	tr.	tr.	4.8	4.8					0.39		0.43			-	

Depth (in.)	Clay Fraction Analysis 7A1b-d								Analyses by New Jersey Agr. Exp. Sta., Rutgers a/						
	Mt.	Chl.	Vm.	Mi.	Int	Qtz.	Kl.	Gibbsite	Hydraulic conductivity	Porosity a/ Non-capillary	Capillary	Total	Plastic index	Aggregate stability
	7A2 X-ray						7A3		in/hr	Pct.	Pct.	Pct.	Pct.	Pct.
0-4									8.7	22.7	26.2	48.9		84
4-17									4.8	15.5	30.7	46.2		90
17-23									0.1	11.1	27.5	38.6		39
23-34									0.1	9.5	27.7	37.2		30
34-60									0.4	13.4	27.2	40.6		12

a/ Methods referenced on methods code sheet.

Pedon Classification: Typic Hapludult; coarse-loamy, siliceous, mesic
Soil: Westphalia taxadjunct 1/
Soil No.: S59NJ-4-1
Location: Camden County, New Jersey. 500 feet south of intersection of Blackwood-Clementon Road and Laurel Springs Road; Hidden Lake woodland, 50 feet from woodland edge; on photo CMV-23-76; Tettemer property.
Vegetation and land use: Hardwood forest, mostly oaks, some yellow poplar, scrub pine, beech, hickory. Shrubs of wild honeysuckle and laurel. Herbs, green briar, low bush blueberries. Chestnut stumps.
Slope and land form: 5 percent.
Drainage: Moderately well drained.
Permeability: Moderate.
Parent material: Kirkwood formation, fine sands.
Described by: Marco Markley

Horizon and Beltsville Lab. No.	
O1 Not sampled	3 to 2 inches. Mostly oak leaves.
O2 Not sampled	2 inches to 0. Very dark gray (10YR 3/1) fibrous, matted broken leaves.
A1 60138	0 to 4 inches. Gray (10YR 5/1) fine sand, browner in lowest inch; single grain; loose; abrupt wavy boundary. 2 to 5 inches thick including A1, A2 and Bir of incipient podzol.
A2 60139	4 to 17 inches. Light yellowish brown(2.5Y 6/4) loamy fine sand; weak medium subangular blocky structure; very friable; many roots; gradual smooth boundary. 12 to 16 inches thick.
B1t 60140	17 to 23 inches. Yellowish brown (10YR 5/6) very fine sandy loam; weak medium subangular blocky structure; friable; many roots; 5 percent rounded quartzose pebbles; abrupt smooth boundary. 3 to 6 inches thick.
B2t 60141	23 to 34 inches. Yellowish brown (10YR 5/8) very fine sandy loam; moderate medium subangular blocky structure; friable; common roots; gradual boundary. 10 to 14 inches thick.
C 60142	34 to 60 inches. Yellowish brown (10YR 5/8) very fine sandy loam; few medium prominent mottles of light brownish gray (10YR 6/2); weak medium subangular blocky structure; very friable; few roots; no coarse skeleton.

Notes: Colors refer to moist soil.

1/ This pedon is a taxadjunct because the argillic horizon is thick enough for the Typic subgroup, whereas the Westphalia series has a thin argillic horizon and is consequently in the Ochreptic subgroup.

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

PEDON CLASSIFICATION: Typic Hapludult; fine-loamy, mixed, mesic
SOIL Aura coarse sandy loam SOIL Nos. S58NJ-8-2 LOCATION Gloucester County, New Jersey

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 59157 - 59160

Depth (In.)	Horizon	1B1b Size class and particle diameter (mm) 3A1 — Total: Sand (2–0.05)	Silt (0.05–0.002)	Clay (< 0.002)	Sand: Very coarse (2–1)	Coarse (1–0.5)	Medium (0.5–0.25)	Fine (0.25–0.1)	Very fine (0.1–0.05)	Silt: 0.05–0.02	Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)		3B2 Cm	Coarse fragments 3B1: 2A2 > 2 Pct.	2 – 19 Pct. of < 76mm	19 – 76 Pct. of < 76mm
		Pct. of < 2 mm																
0-2	A1,A2,B	68.0	27.8	4.2	11.0	24.2	15.7	13.6	3.5	12.7	15.1	22.6	64.5		0.70	46		
2-9	A'2	62.7	27.3	10.0	13.0	21.4	13.5	9.7	5.1	11.3	16.0	21.6	57.6		0.77	36		
9-13	B'1t	59.7	24.5	15.8	11.6	20.9	13.0	8.8	5.4	10.3	14.2	20.4	54.3		0.84	23		
13-19	IIB'21t	58.2	20.1	21.7	15.6	20.7	10.9	6.5	4.5	7.7	12.4	15.4	53.7		0.81	28		

Depth (In.)	6A1a Organic carbon	6B2a Nitrogen	C/N		6C1a Ext. iron as Fe	Analyses by New Jersey Agr. Exp. Sta., Rutgers University a/ — Bulk density	Water retained at suctions of: 0.02 bar	0.06 bar	0.10 bar	0.33 bar	1 bar	2 bar	6 bar	15 bar	Available water	Field capacity	pH 8C1c (1:1) KCl	8C1a (1:1) H_2O
	Pct.	Pct.			Pct.	g/cc	Pct.								in/in	Pct.		
0-2	2.36	0.060	39		0.2	1.34	29.0	22.3	20.3	15.6	14.0	7.2	5.3	3.6	0.26	22.2		3.6
2-9	0.52	0.049	11		0.7	1.42	24.3	18.5	17.2	14.4	12.8	6.7	5.5	4.4	0.18	16.1		4.4
9-13	0.28	0.036	8		1.0	1.64	17.3	14.1	13.1	11.4	9.6	8.4	5.3	3.5	0.16	13.3		4.3
13-19	0.28	0.018	16		1.4	1.56	20.1	16.8	15.4	13.8	12.4	16.9	14.8	13.9	0.09	16.0		4.2

Depth (In.)	Extractable bases 5B1a: 6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	Sum	6H2a Ext. acidity	CEC: 5A3a Sum cations		6G1d Ext. Al			Ratios to clay 8D1: CEC Sum	Ext. iron	15-bar water	8D3 Ca/Mg		Base saturation: 5C3 Sum cations Pct.	5C1 NH_4OAc Pct.
	meq/100 g																	
0-2	0.1	0.1	tr.	0.1	0.3	7.8	8.1					1.93	0.05	0.86			4	
2-9	tr.	0.1	tr.	0.1	0.2	7.8	8.0					0.80	0.07	0.44			2	
9-13	0.1	tr.	tr.	0.1	0.2	4.5	4.9					0.31	0.06	0.22			4	
13-19	0.1	tr.	tr.	0.1	0.2	5.6	5.8					0.27	0.06	0.64			3	

Depth (In.)	Clay Fraction Analysis 7A1b-d — 7A2 X-ray: Mt.	Chl.	Vm.	Mi.	Int.	Qtz.	7A3: Kl.	Gibbsite	Analyses by New Jersey Agr. Exp. Sta., Rutgers: Hydraulic conductivity a/ in/hr	Porosity a/: Non-capillary Pct.	Capillary Pct.	Total a/ Pct.	Plastic index a/ Pct.	Aggregate stability a/ Pct.
0-2									7.7	14.7	30.0	44.7		95
2-9									1.2	17.4	26.3	43.7		84
9-13									0.7	15.6	22.2	37.8		73
13-19									0.8	11.4	26.8	38.2		71

a/ Methods referenced on methods code sheet.

Pedon Classification: Typic Hapludult; fine-loamy, mixed, mesic
Soil: Aura coarse sandy loam[1/]
Soil No.: S58NJ-8-2
Location: Gloucester County, New Jersey. Florence Getzov property; about 2,380 feet northeast of "Y" intersection, at Bluebell, 250 feet north of the northeast road, about 50 feet back from the southeast edge of gravel pit.
Vegetation and land use: Oak forest chiefly white, black, northern red, chestnut. Suppressed species included sassafras, hickory, a few black gum, post oak, shortleaf pine, and scrub oak. Shrubs include blueberry and huckleberry.
Drainage: Well drained.
Permeability: Moderate.
Parent material: Coastal plain medium to sandy-textured sediments with brown sola.
Described by: M. Markley and G. Quakenbush

Horizon and Beltsville Lab. No.	
O2 Not sampled	1/2 inch to 0. Black (5YR 2/1) partially decomposed leaf fragments, laminated and full of root fibers, to 1 inch thick.
A1[a]	0 to 1/2 inch. Very dark gray (10YR 3/1) sandy loam; massive; friable; rich in mycelia.
A2	1/2 to 1 inch. Very dark grayish brown (10YR 3/2) sandy loam; massive; friable. Old root channel full of mycelia.
B 59157	1 to 2 inches. Dark brown (7.5YR 3/2) sandy loam or loam; massive; friable.
A'2 59158	2 to 9 inches. Yellowish brown (10YR 5/4) gravelly sandy loam; weak fine granular structure; slightly sticky; 25 percent coarse skeleton of rounded quartz pebbles; roots abundant; clear wavy boundary. 6 to 9 inches thick.
B'1t 59159	9 to 13 inches. Dark yellowish brown (10YR 4/4) with inclusions of strong brown (7.5YR 5/6) gritty sandy loam; weak fine subangular blocky structure; slightly sticky; less than 5 percent coarse skeleton of rounded quartz pebbles; some clay coating; gradual wavy boundary. 4 to 6 inches thick.
IIB'21t 59160	13 to 19 inches. Yellowish red (5YR 5/6 to 4/6) gritty sandy clay loam or gritty sandy clay; massive; friable, sticky; all sand and gravel clay coated; mycelia common; abrupt smooth boundary. 6 to 12 inches thick.
IIB'22t	19 to 60 inches. Yellowish red (5YR 4/6) gritty sandy clay loam; massive; firm to very firm in place, friable when removed, sticky; sand grains clay coated and bridged; about 5 percent coarse skeleton of fine sharp pebbles; some free water trickled from soil where it contained most pebbles; very few roots.

Notes: Colors are for moist soil.

1/Although this pedon was not sampled below 19 inches, this combination of low base status above 19 inches and morphology below 19 inches is indicative of Ultisols in this sampling area.

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PEDON CLASSIFICATION: Typic Hapludult; fine-loamy, mixed, mesic
SOIL Aura sandy loam SOIL Nos. S58NJ-8-3 LOCATION Gloucester County, New Jersey

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 59161 - 59165

Depth (in.)	Horizon	1B1b Total Sand (2–0.05)	Silt (0.05–0.002)	Clay (< 0.002)	Size class and particle diameter (mm) 3A1 Sand: Very coarse (2–1)	Coarse (1–0.5)	Medium (0.5–0.25)	Fine (0.25–0.1)	Very fine (0.1–0.05)	Silt: 0.05–0.02	Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)		3B2 Cm	Coarse fragments 3B1: 2A2 ≥ 2 < 76 Pct.	2 – 19	19 – 76
		Pct. of < 2 mm														Pct.	Pct. of < 76mm	
0–4	A1,A2,B	58.8	33.9	7.3	5.6	16.6	15.1	14.6	6.9		19.0	29.0				17		
4–10	A'2	56.7	35.3	8.0	5.7	14.6	13.2	14.1	9.1		19.7	32.2				25		
10–15	B'1	52.8	37.0	10.2	3.9	13.1	12.6	14.0	9.2		21.0	32.8				20		
15–22	B'21t	45.8	33.4	15.9	4.9	12.8	11.5	12.4	9.1		19.0	30.2				36		
22–27	IIB'22t	65.9	3.2	30.9	15.1	32.8	15.0	2.4	0.6		1.8	2.7				7		

Depth (in.)	6A1a Organic carbon	6B2a Nitrogen	C/N		6C1a Ext. iron as Fe	Analyses by New Jersey Agr. Exp. Sta., Rutgers University a/ Bulk density	Water retained at suctions of: 0.02 bar	0.06 bar	0.10 bar	0.33 bar	1 bar	2 bar	6 bar	15 bar	Available water	Field capacity	pH 8C1c (1:1) KCl	8C1a (1:1) H_2O
	Pct.	Pct.			Pct.	g/cc	Pct.								in/in	Pct.		
0–4	1.40	0.084	17		0.6	1.19	37.6	28.0	25.0	20.6	18.2	8.4	5.4	5.3	0.27	27.0		3.8
4–10	0.37	0.025	15		0.6	1.45	23.4	17.2	15.6	12.8	11.2	7.4	4.6	3.9	0.18	15.7		4.3
10–15	0.38	0.035	11		1.1	1.50	22.5	16.6	15.5	13.1	11.2	8.3	5.9	5.1	0.14	13.7		4.5
15–22	0.26	0.033	8		1.2	1.56	21.3	15.5	14.2	11.7	10.5	10.2	8.6	8.2	0.11	13.1		4.3
22–27	0.06	0.030			2.0	1.65	20.1	16.8	16.0	13.9	13.1	14.3	12.2	12.0	0.05	14.0		4.5

Depth (in.)	Extractable bases 5B1a: 6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	Sum	6H2a Ext. acidity	CEC: 5A3a Sum cations		6G1d Ext. Al			Ratios to clay 8D1: CEC Sum	Ext. iron	15-bar water	8D3 Ca/Mg		Base saturation: 5C3 Sum cations Pct	5C1 NH_4OAc Pct.
	meq/100 g																	
0–4	tr.	tr.	tr.	0.1		10.6	10.7					1.46					1	
4–10	0.1	tr.	tr.	0.1		4.5	4.7					0.59					4	
10–15	0.1	tr.	tr.	0.1		3.4	3.6					0.35					6	
15–22	0.1	tr.	tr.	0.1		5.8	6.1					0.38					5	
22–27	0.1		tr.	0.1		5.8	6.0					0.19					3	

Depth (in.)	Clay Fraction Analysis 7A1b-d: Mt.	Chl.	Vm.	Mi.	Int.	Qtz.	Kl.	Gibbsite	Analyses by New Jersey Agr. Exp. Sta., Rutgers a/: Hydraulic conductivity	Porosity a/: Non-capillary	Capillary	Total	Plastic index a/	Aggregate stability a/
	7A2 X-ray						7A3		in/hr	Pct.	Pct.	Pct.	Pct.	Pct.
0–4									5.7	18.2	33.5	51.7		93
4–10									0.7	19.0	25.0	44.0		70
10–15									1.8	16.3	24.4	40.7		70
15–22									1.3	15.0	24.0	39.0		61
22–27									0.7	9.2	25.7	36.9		45

a/ Methods referenced on methods code sheet.

Pedon Classification: Typic Hapludult; fine-loamy, mixed, mesic
Soil: Aura sandy loam
Soil No.: S58NJ-8-3
Location: Gloucester County, New Jersey. 1-1/4 miles east of Fries Mill, along dirt road southeastward off of Williamstown-Fries Mill Road; in first woodlot south side of the dirt road, near slight curve; approximately 75 feet in the woods.
Vegetation and land use: Oak forest, chiefly white, northern red, black, chestnut, and hickory.
Drainage: Well drained.
Permeability: Moderate.
Parent material: Coastal plain medium textured sediments with brown sola.
Described by: M. Markley, G. Quakenbush, and K. P. Wilson

Horizon and Beltsville Lab. No.	
O1	3 inches to 1. Undecomposed oak leaves over partially decayed broken leaves mixed with sand in the lower part.
O2	1 inch to 0. Dark reddish brown (5YR 2/2) laminated, fibrous decayed leaves full of roots.
A1, A2	0 to 1/2 inch. Horizons not clearly distinguishable; dark gray (5YR 4/1) sandy loam; massive; friable; abundant mycelia; abrupt smooth boundary. 9 to 3 inches thick.
B 59161	1/2 to 4 inches. Dark grayish brown (10YR 4/2) sandy loam; massive; friable; many roots; 10 percent rounded quartz pebbles; abrupt irregular boundary. 0 to 4 inches thick.
A'2 59162	4 to 10 inches. Yellowish brown (10YR 5/4) gravelly sandy loam; weak fine granular structure; friable; 20 percent rounded quartz pebbles; clear wavy boundary. 6 to 10 inches thick.
B'1 59163	10 to 15 inches. Dark yellowish brown (10YR 4/4) sandy loam; weak fine subangular blocky structure; friable; common roots; clay films on ped faces; 10 percent rounded quartz pebbles; clear smooth boundary. 3 to 6 inches thick.
B'21t 59164	15 to 22 inches. Dark brown (7.5YR 4/4) gravelly loam; weak fine subangular blocky structure; friable, slightly sticky; roots common; common clay films; 10 percent rounded quartz pebbles; clear wavy boundary. 5 to 10 inches thick.
B'22t	22 to 27 inches. Yellowish red (5YR 4/6) sandy clay loam; massive; firm in place, sticky; common clay films; clear wavy boundary. 4 to 8 inches thick.
IIB'23t 59165	27 to 36 inches. Yellowish red (5YR 4/8) coarse sandy loam; massive; firm in place, friable when removed.

Notes: Colors refer to moist soil.

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PEDON CLASSIFICATION: Typic Hapludult; fine-loamy, mixed, mesic
SOIL Aura sandy loam SOIL Nos. 858NJ-8-5 LOCATION Gloucester County, New Jersey

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 59170 - 59173

Depth (In.)	Horizon	1B1b Total Sand (2-0.05)	Total Silt (0.05-0.002)	Total Clay (< 0.002)	Sand: Very coarse (2-1)	Sand: Coarse (1-0.5)	Sand: Medium (0.5-0.25)	Sand: Fine (0.25-0.1)	Sand: Very fine (0.1-0.05)	Silt (0.05-0.02)	Int. III (0.02-0.002)	Int. II (0.2-0.02)	(2-0.1)		3B2 Cm	Coarse fragments 3B1: 2A2 ≥ 2 < 76 Pct.	2 - 19 Pct. of < 76mm	19 - 76 Pct. of < 76mm
		Pct. of < 2 mm																
0-8	Ap	59.1	33.9	7.0	9.1	16.9	15.7	11.0	6.4	16.8	17.1	27.7	52.7		0.87	20		
8-13	A2	50.4	38.1	11.5	10.8	14.6	11.8	8.3	4.9	15.8	22.3	24.1	45.5		0.84	23		
13-17	B1	49.0	32.1	18.9	11.8	13.8	11.5	7.7	4.2	13.1	19.0	20.4	44.8		0.81	28		
17-72	IIBt	66.6	4.7	28.7	19.0	23.8	16.5	6.2	1.1	2.2	2.5	5.3	65.5		0.80	28		

Depth (In.)	6A1a Organic carbon	6B2a Nitrogen	C/N		6C1a Ext. iron as Fe	Analyses by New Jersey Agr. Exp. Sta., Rutgers University a/ Bulk density	Water retained at suctions of: 0.02 bar	0.06 bar	0.10 bar	0.33 bar	1 bar	2 bar	6 bar	15 bar	Available water	Field capacity	pH 8C1c (1.1) KCl	pH 8C1a (1.1) H_2O
	Pct	Pct.			Pct.	g/cc	Pct.								in/in	Pct.		
0-8	1.11	0.083	13		0.5	1.57	22.8	18.3	15.8	14.7	13.9	6.3	4.7	3.6	0.15	12.5		5.2
8-13	0.24	0.029			0.7	1.75	16.8	14.9	12.8	11.1	9.8	8.1	5.1	4.0	0.15	11.9		5.8
13-17	0.18				1.3	1.62	20.8	16.6	14.0	13.1	12.1	10.8	8.1	6.8	0.13	13.5		5.9
17-72	0.08				1.7	1.70	15.4	14.0	12.4	11.5	10.9	11.3	10.1	9.8	0.07	12.0		4.4

Depth (In.)	Extractable bases 5B1a: 6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	Sum	6H2a Ext. acidity	CEC: 5A3a Sum cations		6G1d Ext. Al			Ratios to clay 8D1: CEC Sum	Ext. iron	15-bar water	8D3 Ca/Mg		Base saturation: 5C3 Sum cations Pct.	5C1 NH_4OAc Pct.
	meq/100 g																	
0-8	2.2	0.6	tr.	0.1	2.9	2.6	5.5					0.78	0.07	0.51			53	
8-13	0.8	0.2	tr.	0.1	1.1	1.1	2.2					0.19	0.06	0.35			50	
13-17	2.2	0.9	0.1	0.1	3.3	1.5	4.8					0.25	0.07	0.36			69	
17-72	1.2	0.5	tr.	0.1	1.8	5.2	7.0					0.24	0.06	0.34			26	

Depth (In.)	Clay Fraction Analysis 7A1b-d: Mt.	Chl.	Vm.	Mi.	Int.	Qtz	Kl.	Gibbsite	Analyses by New Jersey Agr. Exp. Sta., Rutgers: Hydraulic conductivity a/	Porosity a/: Non-capillary	Capillary	Total	Plastic index a/	Aggregate stability a/
	7A2 X-ray						7A3		in/hr	Pct.	Pct.	Pct.	Pct.	Pct.
0-8									0.8	11.4	29.7	41.1		94
8-13									0.2	10.8	25.9	36.7		38
13-17									1.1	15.1	26.7	41.8		31
17-72									0.8	11.3	23.7	35.0		39

a/ Methods referenced on methods code sheet.

Pedon Classification: Typic Hapludult; fine-loamy, mixed, mesic
Soil: Aura sandy loam
Soil No.: S58NJ-8-5
Location: Gloucester County, New Jersey. Southwest of Monroeville (lat. 39°36'50", long. 75°6'52"); Alex Clemick farm.
Vegetation and land use: In alfalfa for 8 years.
Slope and land form: 1 percent slope.
Permeability: Moderate.
Drainage: Well drained.
Parent material: Coastal plain medium textured sediments with brown sola.
Described by: M. Markley

Horizon and Beltsville Lab. No.	
Ap 59170	0 to 8 inches. Dark grayish brown (2.5Y 4/2) sandy loam; weak fine granular structure; friable, nonsticky; 5 percent quartz pebbles; pH 6.6; abrupt smooth boundary. 8 to 9 inches thick.
A2 59171	8 to 13 inches. Light olive brown (2.5Y 5/4) loam; weak fine granular structure; friable, somewhat firm in place, nonsticky; 8 percent quartz pebbles; pH 6.6; clear smooth boundary. 4 to 8 inches thick.
B1 59172	13 to 17 inches. Dark yellowish brown (10YR 4/4) gravelly loam; weak medium subangular blocky structure; friable, sticky; pH 6.4; gradual smooth boundary. 2 to 5 inches thick.
IIBt 59173	17 to 72 inches. Dark brown (7.5YR 4/4) gravelly sandy clay loam; massive; firm in place, very sticky; 20 percent rounded pebbles less than 1 inch in diameter; roots common only in cracks; clay films nearly continuous on pebbles.

Notes: Colors refer to moist soil.

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

PEDON CLASSIFICATION: Typic Hapludult; fine-loamy, mixed, mesic
SOIL Collington sandy loam SOIL Nos. S61NJ-13-1 LOCATION Monmouth County, New Jersey

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 62197-62202

Depth (In.)	Horizon	1B1b Total Sand (2–0.05)	Total Silt (0.05–0.002)	Total Clay (< 0.002)	Sand: Very coarse (2–1)	Sand: Coarse (1–0.5)	Sand: Medium (0.5–0.25)	Sand: Fine (0.25–0.1)	Sand: Very fine (0.1–0.05)	Silt: 0.05–0.02	Silt: Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)	3B2 Cm	Coarse fragments 3B1: 2A2 ≥ 2 <76 Pct.	2 – 19	19 – 76
		Pct. of < 2 mm														Pct. of < 76mm	
0-11	Ap	53.6	32.5	13.9	0.2	10.6	22.6	11.6	8.6	16.4	16.1	29.6	45.0		tr.		
11-13	B1	46.6	34.4	19.0	0.3	9.9	18.6	10.2	7.6	16.0	18.4	27.2	39.0		tr.		
13-29	B2t	42.6	20.5	36.9	0.4	9.6	17.7	9.3	5.6	9.3	11.2	18.3	37.0		tr.		
29-32	B3t	60.9	10.1	29.0	0.6	12.5	25.6	16.4	5.8	4.4	5.7	15.3	55.1		tr.		
32-44	C1	67.1	6.5	26.4	0.3	11.2	29.4	19.7	6.5	2.9	3.6	16.8	60.6		-		
44-80	C2	71.2	8.6	20.2	0.6	14.1	28.7	19.3	8.5	3.8	4.8	20.7	62.7		tr.		
80-120	C3	Not sampled															

Depth (In.)	6A1a Organic carbon Pct.	6B2a Nitrogen Pct.	C/N	Ext. iron as Fe Pct.	Bulk density: 4A1e ⅓ bar g/cc	Bulk density: 4A1h Oven dry g/cc	4D1 COLE	Water content: Pct.	Water content: 4B1c ⅓ bar Pct.	Water content: 4B2 15 bar Pct.	4C1 WRD in/in	pH: 8C1c (1:1) KCl	pH: 8C1a (1:1) H_2O
0-11	0.92	0.082	11										
11-13	0.42	0.047	9										
13-29	0.26												
29-32	0.10												
32-44	0.08												
44-80	0.08												
80-120	Not sampled												

Depth (In.)	Extractable bases 5B1a: 6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	Sum	6H2a Ext. acidity	CEC: 5A3a Sum cations	CEC	6G1d Ext. Al		Ratios to clay 8D1: CEC Sum	Ext. iron	15-bar water	8D3 Ca/Mg	Base saturation: 5C3 Sum cations Pct.	5C1 NH_4OAc Pct.
	meq/100 g															
0-11	2.6	0.6	0.1	0.6	3.9	9.9	13.8				0.99				28	
11-13	5.2	1.0	0.1	0.3	6.7	6.0	12.6				0.66			5	52	
13-29	9.1	3.3	0.1	0.3	12.8	8.0	20.8				0.56			3	62	
29-32	4.8	3.4	0.1	0.3	8.6	8.8	17.4				0.60			1	49	
32-44	2.7	2.2	0.1	0.2	5.2	11.2	16.4				0.62			1	32	
44-80	1.7	1.8	0.1	0.2	3.8	10.5	14.3				0.71			1	26	
80-120	Not sampled															

Depth (In.)	Clay Fraction Analysis 7Alb-g: Mt.	Chl.	Vm.	Mi.	Int.	Qtz.	Ka.	Gibbsite
	7A2 X-ray						7A3	

Mt. = Montmorillonite, Chl. = chlorite, Vm. = Vermiculite, mi = mica, Int. = interstratified layer, Qtz. = quartz, Ka. = Kaolinite

Relative amounts: blank = not determined, dash = not detected, tr. = trace, x = small, xx = moderate, xxx = abundant, xxxx = dominant.

Pedon Classification: Typic Hapludult; fine-loamy, mixed, mesic
Soil: Collington sandy loam
Soil No.: 61NJ-13-1
Location: Monmouth County, New Jersey. Approximately 1-1/3 miles by road SE of Cream Ridge, along Smith Mill Road, east of road about 75 feet.
Vegetation and land use: Cultivated to potatoes; cropland.
Slope and land form: Broad, gently sloping (1 to 2 percent) upper part of slope divide between two areas that grade toward a larger drainage area; part of uneven coastal plain.
Erosion: Beginning within 50 feet down slope, soil loss by wind or water seems likely; plow layer only 6 to 8 inches rests directly on the most clayey part of B horizon.
Drainage: Well drained.
Permeability: Moderate.
Parent material: Moderately glauconite-bearing sandy strata. (Stratification appears to persist even within the B horizon). Geologic map shows Red Bank-Tinton formations. Navesink marl is believed to occur at 11 or 12 feet. Wind action appears to have caused some sand accretion, giving thicker surface soil in some locations than at sample site.
Ground Water: Free water reached with bucket auger at about 10 feet. (October 19, 1961)
Described by: G. A. Quakenbush

Horizon and Beltsville Lab. No.	
Ap 62197	0 to 11 inches. Dark brown (7.5YR 3/2) sandy loam; weak fine granular structure in the upper part, massive in the lower several inches; friable in the upper part, firm in place but friable when removed in the lower several inches, slightly sticky; scattered dark green grains of glauconite.
B1 62198	11 to 13 inches. Dark brown (7.5YR 4/4) loam with streaks, mainly vertical, of dark brown (7.5YR 3/2) material occupying 30 to 40 percent of the mass (in worm borings); weak fine subangular blocky structure; friable, slightly sticky; some glauconite visible; clear smooth boundary.
B2t 62199	13 to 29 inches. Dark brown (7.5YR 3/4) sandy clay loam; smearing under pressure to dark yellowish brown (10YR 3/4) with dark green grains showing; moderate, medium subangular blocky structure parting to weak fine subangular blocks; friable, slightly sticky; thin clay films common, clear and darker as well as redder than the rough scraped material; worm holes common and many filled with dark material from overlying horizons, especially in the upper half; glauconite grains common.
B3t 62200	29 to 32 inches. Dark brown (7.5YR 3/4) sandy loam shaded by visible grains (10 percent) (7.5YR 5/4) and 30 to 40 percent very dark green; massive; friable, slightly sticky; glauconite estimated to constitute about 25 to 30 percent of the total soil; clear smooth boundary.
C1 62201	32 to 44 inches. Dark brown (7.5YR 3/4) sandy loam sprinkled with visible grains (15 to 20 percent) brown (7.5YR 4/4) and 30 percent dark green; massive; very friable, nonsticky; estimated 25 to 30 percent glauconite.
C2 62202	44 to 80 inches. Sandy loam with delicately variegated background colors of 50 percent dark brown to brown (7.5YR 4/4 and 3/4) some yellowish brown (10YR 5/6) and some yellowish red (5YR 4/6) speckled with 30 to 40 percent dark green grains; single grain; loose and non-sticky; estimated 25 to 30 percent glauconite.
C3 Not sampled	80 to 120 inches. Sandy loam; stratified glauconitic beds, banded 2.5Y and reddish hues; loose; some redder hues appearing like bands of iron oxides, related to impeded drainage above finer textured strata. The 2.5Y colors possibly from gleization or inherited colors. Coarse sand with some gravel at about 9 feet.

Notes: Color readings are for moist soil (moisture content was high). Horizonation and thickness of horizons unusually uniform for coastal plain conditions. Starting with the lower part of the Ap and continuing throughout the B2, the soil was firm in place under pressures of fingers; also true of B3 and most of the C, but to slightly lower degree. The surface color is darkened by glauconite grains.

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

PEDON CLASSIFICATION: Typic Hapludult; fine-loamy, mixed, mesic
SOIL Collington sandy loam SOIL Nos. S61NJ-13-2 LOCATION Monmouth County, New Jersey

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 62192-62196

Depth (in.)	Horizon	1B1b Total Sand (2–0.05)	Total Silt (0.05–0.002)	Total Clay (< 0.002)	Sand Very coarse (2–1)	Sand Coarse (1–0.5)	Sand Medium (0.5–0.25)	Sand Fine (0.25–0.1)	Sand Very fine (0.1–0.05)	Silt 0.05–0.02	Silt Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)		3B2 Cm	Coarse fragments 3B1 2A2 > 2 <76 Pct.	2 – 19 Pct. of < 76mm	19 – 76 Pct. of < 76mm
		Pct. of < 2 mm																
0-10	Ap	58.6	26.6	14.8	1.1[a]	7.4[a]	20.3[a]	22.7[a]	7.1[a]	11.4	15.2	27.8	51.5			4		
10-13	A2	51.7	34.9	13.4	0.6[a]	6.2[a]	16.6[a]	20.3[a]	8.0[a]	15.6	19.3	32.6	43.7			2		
13-23	B2t	46.0	29.0	25.0	0.6[a]	4.8[a]	13.8[a]	19.1[a]	7.7[a]	13.0	16.0	29.2	38.3			tr.		
23-29	B3t	70.5	13.3	16.2	1.0	7.3	22.9	31.2	8.1	6.4	6.9	29.0	62.4			9		
29-36	C1	78.5	7.1	14.4	1.3	10.9	30.0	30.8	5.5	3.4	3.7	21.1	73.0			5		
36-44	C2	Not sampled																

Depth (in.)	6A1a Organic carbon Pct.	6B2a Nitrogen Pct.	C/N		Carbonate as $CaCO_3$ Pct.	Ext. iron as Fe Pct.	Bulk density 4A1e ⅓ bar g/cc	Bulk density 4A1h Oven dry g/cc	4D1 COLE	Water content Pct.	Water content 4B1c ⅓ bar Pct.	Water content 4B2 15 bar Pct.		4C1 WRD in/in	pH 8C1c (1:1) KCl	pH 8C1a (1:1) H_2O
0-10	1.38	0.116	12													
10-13	0.76	0.059	13													
13-23	0.21															
23-29	0.06															
29-36	0.06															
36-44	Not sampled															

Depth (in.)	Extractable bases 5B1a 6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	Sum	6H2a Ext. acidity	CEC 5A3a Sum cations	CEC	6G1d Ext. Al			Ratios to clay 8D1 CEC Sum	Ratios to clay 8D1 Ext. iron	Ratios to clay 8D1 15-bar water	8D3 Ca/Mg		Base saturation 5C3 Sum cations Pct.	Base saturation 5C1 NH_4OAc Pct.
	meq/100 g																	
0-10	7.1	1.5	0.1	0.3	9.0	11.4	20.4					1.38					44	
10-13	3.5	0.9	0.1	0.1	4.6	9.0	13.6					1.01					34	
13-23	4.4	0.5	0.1	0.2	5.2	12.1	17.3					0.69					30	
23-29	3.4	0.4	0.1	0.2	4.1	12.1	16.2					1.00					25	
29-36	2.8	0.3	0.1	0.2	3.4	10.1	13.5					0.94					25	
36-44	Not sampled																	

Depth (in.)	Clay Fraction Analysis 7A1b-d Mt.	Chl.	Vm.	Mi.	Int.	Qtz.	Kl.	Gibbsite
	7A2 X-ray						7A3	

[a] Half concretions.

Mt. = Montmorillonite, Chl. = chlorite, Vm. = Vermiculite, mi = mica, Int. = Interstratified layer, Qtz. = quartz, Kl. = Kaolinite

Relative amounts: blank = not determined, dash = not detected, tr. = trace, x = small, xx = moderate, xxx = abundant, xxxx = dominant.

Pedon Classification: Typic Hapludult; fine-loamy, mixed, mesic
Soil: Collington sandy loam
Soil No.: S61NJ-13-2
Location: Monmouth County, New Jersey. Holmdel, approximately 1,000 feet north of intersection of Holmdel-Hillsdale Road with New Jersey State Highway 6, along Route 6, 300 feet east of road.
Vegetation and land use: Alfalfa-grass mixture; cropland.
Slope and land form: Gently sloping (2 percent), upland, just below sandier cap on low knoll.
Drainage: Well drained.
Permeability: Moderate in the B2 horizon; in other horizons, rapid to very rapid.

Horizon and Beltsville Lab. No.	
Ap 62192	0 to 10 inches. Very dark gray (10YR 3/1) sandy loam; very weak, medium subangular blocky structure; very friable; scattered quartzose and concretionary fragments 1/2 to 2 inches in size. 10 to 11 inches thick.
A2 62193	10 to 13 inches. Brown (10YR 5/3) and grayish brown (10YR 5/2) with common channels very dark grayish brown (10YR 3/2) loam; very weak, medium subangular blocky structure; slightly firm in place, friable; abundant root and worm tubes with dark colored material in them; scattered quartzose pebbles 1/2 to 2 inches in size; clear smooth boundary.
B2t 62194	13 to 23 inches. Dark brown to brown (10YR 4/3) loam; moderate, medium subangular blocky structure; slightly firm; rootlets follow ped planes, many root holes commonly containing organic stained material; continuous clay films on peds, slightly darker than matrix; scattered quartzose and concretionary fragments one to two inches in size; clear smooth boundary.
B3t 62195	23 to 29 inches. Dark brown (7.5YR 4/4) sandy loam finely speckled 50 percent with spots of dark olive; very weak medium subangular blocky structure; friable; some quartzose and concretionary fragments; clear smooth boundary.
C1 62196	29 to 36 inches. Dark brown to brown (10YR 4/3) sandy loam with specks of dark olive; single grained and, in parts, weak fine granular structure, very friable to loose; visible component of glauconite 20 to 30 percent; abrupt wavy boundary.
C2 Not sampled	36 to 44 inches plus. Dark brown to brown (10YR 4/3) abundantly peppered with dark olive specks, gravelly sandy loam; single grained; very friable; quartzose gravel 1 inch to 4 inches in size.

Notes: Colors stated are for the moist soil. Roots: Some coarse roots found below 40 inches, in the C2 horizon; roots abundant through the A2 horizon to 13 inches; both fine and coarse roots pass through the B2 to 23 inches.

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

PEDON CLASSIFICATION: Typic Hapludult; fine-loamy, mixed, mesic
SOIL Freehold sandy loam SOIL Nos. S56NJ-3-2 LOCATION Burlington County, New Jersey

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 59243 - 59248

Depth (In.)	Horizon	1B1b Size class and particle diameter (mm) 3A1													3B2	Coarse fragments 3B1		
		Total			Sand					Silt		Int. II (0.2–0.02)	(2–0.1)		Cm	2A2 ≥ 2	2 - 19	19 - 76
		Sand (2–0.05)	Silt (0.05–0.002)	Clay (< 0.002)	Very coarse (2–1)	Coarse (1–0.5)	Medium (0.5–0.25)	Fine (0.25–0.1)	Very fine (0.1–0.05)	0.05–0.02	Int. III (0.02–0.002)					Pct.	Pct. of < 76mm	
		Pct. of < 2 mm																
0-5	A1	66.2	26.0	7.8	0.5	3.0	10.4	35.2	17.1	12.4	13.6	49.3	49.1		1.00	tr.		
5-14	A2	68.4	23.4	8.2	0.2	2.6	10.4	36.5	18.7	11.0	12.4	50.6	49.7		1.00	-		
14-21	B1	67.7	21.8	10.5	0.5	2.9	10.5	35.6	18.2	10.0	11.8	48.7	49.5		1.00	-		
21-34	B2t	64.9	13.8	21.3	0.5	3.1	9.9	33.6	17.8	6.8	7.0	43.4	47.0		1.00	-		
34-41	B3t	74.8	9.5	15.7	0.3	2.5	10.4	40.6	21.0	5.0	4.5	50.0	53.8		1.00	-		
41-108	IIC	82.9	6.9	10.2	0.3	1.9	10.9	49.3	20.5	3.7	3.2	52.7	62.4		1.00	tr.		

Depth (In.)	6A1a Organic carbon	6B2a Nitrogen	C/N		6C1a Ext. iron as Fe	Analyses by New Jersey Agr. Exp. Sta., Rutgers University a/										pH	
						Bulk density	Water retained at suctions of								Available water	Field capacity	8C1c (1:1) KCl	8C1a (1:1) H_2O
							0.02 bar	0.06 bar	0.10 bar	0.33 bar	1 bar	2 bar	6 bar	15 bar				
	Pct.	Pct.			Pct.	g/cc	Pct.								in/in	Pct.		
0-5	2.58	0.156	16		0.6	0.99	54.8	45.8	37.8	29.5	25.0	10.8	9.3	8.7	0.15	24.3		4.2
5-14	0.30	0.031	10		0.6	1.39	31.0	20.2	16.7	13.4	12.0	7.3	4.6	3.7	0.16	25.5		4.3
14-21	0.15				0.7	1.56	23.2	18.3	16.2	14.2	13.1	7.9	5.8	3.9	0.20	16.8		4.2
21-34	0.13				1.3	1.61	22.5	20.2	18.2	16.2	15.2	11.8	10.0	8.3	0.18	19.2		4.3
34-41	0.04				0.9	1.62	22.3	18.2	15.2	13.3	12.0	8.8	7.2	6.1	0.18	17.2		4.4
41-108	0.04				1.0	1.52	26.2	16.8	11.3	9.6	7.6	5.5	4.9	4.1	0.14	13.1		4.5

Depth (In.)	Extractable bases 5B1a					6H2a	CEC		6G1d			Ratios to clay 8D1			8D3		Base saturation	
	6N2d	6O2b	6P2a	6Q2a		Ext. acidity	5A3a Sum cations		Ext. Al			CEC Sum	Ext. iron	15-bar water	Ca/Mg		5C3 Sum cations	5C1 NH_4OAc
	Ca	Mg	Na	K	Sum													
	meq/100 g																Pct.	Pct.
0-5	0.6	0.4	0.1	0.2	1.3	15.9	17.2					2.20	0.08	1.12			8	
5-14	0.1	0.2	tr.	0.1	0.4	6.8	7.2					0.88	0.07	0.45			6	
14-21	0.1	0.2	0.1	0.1	0.5	6.6	3.1					0.29	0.07	0.37			16	
21-34	0.4	1.0	0.1	0.2	1.7	11.2	12.0					0.56	0.06	0.39			7	
34-41	tr.	1.1	0.1	0.2	1.4	8.2	9.6					0.61	0.06	0.39			14	
41-108	0.3	1.1	tr.	0.1	1.5	6.5	8.0					0.78	0.10	0.40			19	

Depth (In.)	Clay Fraction Analysis 7Alb-d								Analyses by New Jersey Agr. Exp. Sta., Rutgers a/					
	Mt.	Chl.	Vm.	Mi.	Int.	Qtz.	Kl.	Gibbsite	Hydraulic conductivity a/	Porosity a/ Non-capillary	Capillary	Total	Plastic index a/	Aggregate stability a/
	7A2 X-ray						7A3		in/hr	Pct.	Pct.	Pct.	Pct.	Pct.
0-5									5.1	14.2	44.9	59.1		90
5-14									1.4	16.9	28.1	45.0		59
14-21									0.4	9.2	28.4	37.6		21
21-34									0.1	4.5	32.4	36.9		15
34-41									0.7	8.2	29.5	37.7		9
41-108									3.2	16.2	25.2	41.4		12

a/ Methods referenced on methods code sheet.

Pedon Classification: Typic Hapludult; fine-loamy, mixed, mesic
Soil: Freehold sandy loam
Soil No.: 856NJ-3-2
Location: Burlington County, New Jersey. 1-1/2 miles southwest of Lumberton. Woodlot of Joseph Adamski. Photo CMU-7-119.
Vegetation and land use: Hardwood woodland, mostly red oak.
Slope and land form: 0 to 3 percent.
Erosion: There has been little if any erosion on this site.
Drainage: Well drained. No evidence of mottling to depth investigated.
Permeability: Moderate.
Sampled by and date: N. A. Willits and M. Markley. December 27, 1956.

Horizon and Beltsville Lab. No.	
O1 Not sampled	3 inches to 1/2. Mostly loose oak leaves over entire area except where removed in vicinity of ground hog holes. Broken stems, leaves, etc., partially decayed and matted.
O2 Not sampled	1/2 inch to 0. Black fluffy decayed leaves, in places slightly grayish. Insect casts and tunnels of insects and small animals are abundant. A few earthworm casts are present.
A1 59243	0 to 5 inches. Dark grayish brown to dark brown (10YR 4/2 to 4/3) sandy loam, weak fine granular structure; very friable; some tongues extend several inches below normal horizon; gradual irregular boundary. 3 to 6 inches thick.
A2 59244	5 to 14 inches. Yellowish brown (10YR 5/4 to 5/6) sandy loam; structureless; very friable; glauconite grains apparent to naked eye, but not abundant; mica also present; clear wavy boundary. 8 to 11 inches thick.
B1 59245	14 to 21 inches. Yellowish brown (10YR 5/6) sandy loam. Weak medium subangular blocky structure; friable; glauconite and mica same as horizon above; clear wavy boundary. 4 to 6 inches thick.
B2t 59246	21 to 34 inches. Dark yellowish brown to dark brown (10YR 4/4 to 4/6 to 7.5YR 4/4) sandy clay loam; moderate medium subangular blocky structure; friable, slightly sticky; glauconite and mica same as A2; abrupt smooth boundary. 12 to 14 inches thick.
B3t 59247	34 to 41 inches. Colors mixed, yellowish brown (10YR 5/4) with greenish cast from glauconite, sandy loam; massive; very friable; glauconite same as A2; abrupt smooth boundary. 7 to 8 inches thick.
IIC 59248	41 to 108 inches. Extremely variable, yellowish red (5YR 5/8) iron concretions, to olive yellow (2.5Y 6/8) loamy sand with thin 4 inch bands of sandy loam; single grain; loose; glauconite usually less abundant than above but varies considerable with strata; mica very abundant.

Notes: Colors are for moist soil.

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

PEDON CLASSIFICATION: Typic Hapludult; fine-loamy, mixed, mesic

SOIL Freehold sandy loam SOIL Nos. 857NJ-13-1 LOCATION Monmouth County, New Jersey

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 59249 - 59256

Depth (in.)	Horizon	1B1b Total Sand (2–0.05)	Total Silt (0.05–0.002)	Total Clay (< 0.002)	Sand very coarse (2–1)	Sand coarse (1–0.5)	Sand medium (0.5–0.25)	Sand fine (0.25–0.1)	Sand very fine (0.1–0.05)	Silt 0.05–0.02	Silt Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)		3B2 Cm	Coarse fragments 3B1 2A2 > 2 Pct.	2 – 19 Pct. of < 76mm	19 – 76 Pct. of < 76mm
		Pct. of < 2 mm																
1-8	A'21	63.8	25.2	11.0	0.3	8.0	31.4	18.8	5.3	12.0	13.2	22.6	58.5		1.00	-		
8-13	A'22	65.0	26.2	8.8	0.4	7.6	32.1	19.2	5.7	13.1	13.1	24.0	59.3		1.00	tr.		
13-16	A'3	63.8	27.1	9.1	0.2	7.2	31.3	18.9	6.2	13.2	13.9	24.6	57.6		1.00	tr.		
16-23	B'21t	57.6	25.5	16.9	0.2	6.7	28.0	17.4	5.3	12.5	13.0	22.5	52.3		1.00	-		
23-28	B'22t	55.9	23.7	20.4	0.2	6.0	26.8	17.7	5.2	11.3	12.4	21.5	50.7		1.00	-		
28-38	B'3t	62.7	18.4	18.9	0.2	6.5	30.0	21.2	4.8	9.3	9.1	20.3	57.9		1.00	-		
38-44	IIC1	78.7	9.8	11.5	0.6	8.0	35.0	28.8	6.3	5.6	4.2	21.1	72.4		1.00	tr.		
44-50	IIC2	86.7	4.7	8.6	0.7	12.0	42.7	27.9	3.4	2.7	2.0	14.0	83.3			tr.		

Depth (in.)	6A1a Organic carbon Pct.	6B2a Nitrogen Pct.	C/N		6C1a Ext. iron as Fe Pct.	Analyses by New Jersey Agr. Exp. Sta., Rutgers University a/ Bulk density g/cc	Water retained at suctions of 0.02 bar Pct.	0.06 bar	0.10 bar	0.33 bar	1 bar	2 bar	6 bar	15 bar	Available water in/in	Field capacity Pct.	pH 8C1c (1:1) KCl	8C1a (1:1) H_2O
1-8	0.96	0.056	17		1.3	0.95	53.8	36.4	28.1	20.3	15.7	9.8	7.5	5.7	0.20	26.8		4.3
8-13	0.28	0.057	5		1.0	1.36	25.3	16.1	15.2	13.4	11.3	7.6	5.5	4.2	0.18	17.7		4.5
13-16	0.20				0.9	1.41	25.6	16.0	15.2	14.2	11.8	7.7	5.4	4.2	0.20	18.2		4.5
16-23	0.13				1.4	1.50	23.5	18.4	18.0	16.6	14.9	11.3	9.2	7.7	0.18	19.9		4.4
23-28	0.11				1.5	1.60	22.3	18.7	18.4	17.6	15.9	11.4	9.4	8.2	0.18	19.2		4.6
28-38	0.06				1.7	1.69	19.4	16.1	16.0	13.5	12.0	10.5	8.9	7.7	0.17	17.7		4.6
38-44	-				2.1	1.55	22.9	8.5	7.8	6.7	5.3	6.2	5.4	4.7	0.11	11.7		4.6
44-50	-				2.1													4.6

Depth (in.)	Extractable bases 5B1a 6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	Sum	6H2a Ext. acidity	CEC 5A3a Sum cations	6G1d Ext. Al			Ratios to clay 8D1 CEC Sum	Ext. iron	15-bar water	8D3 Ca/Mg		Base saturation 5C3 Sum cations Pct.	5C1 NH_4OAc Pct.
	meq/100 g																
1-8	0.1	0.1	0.1	0.1	0.4	10.9	11.3				1.03	0.12	0.52			4	
8-13	0.1	0.1	tr.	0.1	0.3	6.4	6.7				0.76	0.11	0.48			4	
13-16	0.1	0.1	tr.	0.1	0.3	5.8	6.1				0.67	0.10	0.46			5	
16-23	0.2	0.2	tr.	0.2	0.6	9.8	10.4				0.61	0.08	0.46			6	
23-28	0.3	0.8	0.1	0.2	1.4	11.2	12.6				0.62	0.07	0.40			11	
28-38	0.3	1.1	tr.	0.2	1.6	9.4	11.0				0.58	0.09	0.41			14	
38-44	0.2	1.0	tr.	0.1	1.3	6.5	7.8				0.68	0.18	0.41			17	
44-50	0.3	0.6	tr.	0.2	1.1	5.4	6.5				0.75					17	

Depth (in.)	Clay Fraction Analysis 7A1b-d Mt.	Chl.	Vm.	Mi.	Int.	Qtz	Kl.	Gibbsite	Analyses by New Jersey Agr. Exp. Sta., Rutgers a/ Porosity a/ Hydraulic conductivity in/hr	Non-capillary Pct.	Capillary Pct.	Total Pct.	Plastic index Pct.	Aggregate stability Pct.
	7A2 X-ray						7A3							
1-8									7.9	23.3	34.3	57.6		96
8-13									2.9	24.0	21.8	45.8		90
13-16									2.0	20.6	22.6	43.2		86
16-23									0.8	13.0	27.6	40.6		70
23-28									0.2	8.1	29.9	38.0		45
28-38									0.2	7.5	28.7	36.2		19
38-44									7.7	25.4	15.3	40.7		14
44-50														

a/ Methods referenced on methods code sheet.

Pedon Classification: Typic Hapludult; fine-loamy, mixed, mesic
Soil: Freehold sandy loam
Soil No.: S57NJ-13-1
Location: Monmouth County, New Jersey. Mrs. Charles Conover woodlot. Vanderburg-Marlboro Road, 500 feet west of Vanderburg, New Jersey. 200 feet south of above road along a dirt road. 75 feet east into woodlot.
Vegetation and land use: Old woodlot. Beach, red oak, scattered white oak, small hickory, occasional black birch. Kalmia and little else in understory.
Slope and land form: 2 to 3 percent. Drainage: Well drained. Permeability: Moderate.
Parent material: Glauconitic sandy loam.
Sampled by and date: K. P. Wilson and N. A. Willits. April 18, 1957.

Horizon and Beltsville Lab. No.	
O1 Not sampled	2 inches to 1. Loose leaves mainly beech and oak from last leaf fall; partially decayed, not tied down by mycelia. 2 to 3 inches thick.
O21 Not sampled	1 to 1/2 inch. Brownish, decayed easily crumbled leaves, matted with roots and mycelia. 1/2 to 1 inch thick.
O22 Not sampled	1/2 inch to 0. Black (10YR 2/1) silty organic material, dark reddish brown, (5YR 2/2) dry; slightly greasy when wet; matted with fine roots; discontinuous; pH 3.8. 0 to 1/2 inch thick.
A1 Not sampled	0 to 1/2 inch. Very dark grayish brown (10YR 3/2) organic-rich sandy loam, dark reddish brown (5YR 2/2) dry; many fine organic grains and some faunal casts, finely dusted with clean silt; abundant fine roots. 0 to 1/2 inch thick.
Bh Not sampled	1/2 to 1 inch. Dark brown (7.5YR 3/2) sandy loam, brown (7.5YR 4/2 to 10YR 4/3) dry; weak fine to medium crumb structure; many fine pores; slightly firm in place; aggregates are dusted with clean silt; crushed aggregates have 20 to 30 percent clean quartz grains; smooth glauconite grains; pH 4.2; abrupt wavy boundary. 0 to 1/2 inch thick.
A'21 59249	1 to 8 inches. Yellowish brown (10YR 5/4) sandy loam, light yellowish brown (10YR 6/4) dry; weak medium subangular blocky structure; friable; many fine roots; many mycelia; few 1 mm pores, many finer; quartz grains and many fine aggregates dusted with silt; few glauconite grains; some brown organic material; pH 4.2; gradual wavy boundary. 6 to 10 inches thick.
A'22 59250	8 to 13 inches. Yellowish brown (10YR 5/4) sandy loam, light yellowish brown (10YR 6/4) dry; weak, medium subangular blocky structure breaking to weak fine granules; loose to friable; many fine roots; sand grains faintly bridged with clay, heavily dusted with quartz silt; pH 4.8; gradual wavy boundary. 0 to 4 inches thick.
A'3 59251	13 to 16 inches. Dark yellowish brown (10YR 4/4) sandy loam, light yellowish brown (10YR 6/4) dry; blocky structure, breaking to weak fine granules; slightly firm in place, friable when removed; many fine roots; many pores; few faint to distinct clay films on some peds; sand coated with silt and light covering of yellow clay; more glauconite than in horizon above, some round, smooth, green glauconite; few red siltstone grains; pH 4.6; gradual wavy boundary. 1 to 4 inches thick.
B'21t 59252	16 to 23 inches. Dark brown (7.5YR 4/4) sandy loam, yellowish brown (10YR 5/6) dry; weak or moderate fine subangular blocky structure with abundant fine pores; firmer than A3; clay bridges sand grains; many 20 percent; tiny aggregates of silt and clay; many smooth green glauconite grains; many fine roots; pH 4.4; gradual wavy boundary. 4 to 7 inches thick.
B'22t 59253	23 to 28 inches. Dark yellowish brown (10YR 4/4) sandy clay loam, to yellowish brown (10YR 5/4) dry; weak fine subangular blocky structure, breaking to weak fine granules; moderately firm in place; few coarse roots; all peds clay coated; ped interiors filled and bridged with clay; sand grains coated with thin, yellow clay films and dusted with silt grains; about 5 percent smooth soft rounded glauconite grains; pH 4.4; gradual wavy boundary. 5 to 8 inches thick.
B'3t 59254	28 to 38 inches. Dark brown (10YR 4/3) heavy sandy loam matrix with finer channel fillings, yellowish brown (10YR 5/4) dry; massive; firm in place, friable when removed; many fine roots and root channels; discontinuous clay films on ped faces; (up to 20 percent); most sand grains coated and dusted with silt and many thinly coated by yellow clay; green splotches high in glauconite; few fine mica grains; pH 4.6: gradual wavy boundary. 6 to 10 inches thick.
IIC1 59255	38 to 44 inches. Yellowish brown (10YR 5/6) sandy loam; dry; massive with many tiny, weakly aggregated clusters of grains; very friable; many pores; many clear quartz grains with discontinuous coatings; some clay bridges; 10 percent glauconite as medium sand; 2 percent mica; 5 to 8 inches thick.
IIC2 59256	44 to 50 inches. Dark yellowish brown (10YR 4/4) loamy sand; dry; massive; many clay films as bridges and coats on medium sand; many fine pores; about 10 to 15 percent glauconite; some mica; many fine red grains.

Notes: Colors refer to moist soil unless indicated otherwise. pH by colormetric field test.

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

PEDON CLASSIFICATION: Typic Hapludult; fine-loamy, mixed, mesic
SOIL Freehold sandy loam SOIL Nos. S59NJ-13-5 LOCATION Monmouth County, New Jersey

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 60163 - 60169

Depth (In.)	Horizon	1B1b Total Sand (2–0.05)	Silt (0.05–0.002)	Clay (< 0.002)	Sand: Very coarse (2–1)	Coarse (1–0.5)	Medium (0.5–0.25)	Fine (0.25–0.1)	Very fine (0.1–0.05)	Silt: 0.05–0.02	Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)		3B2 Cm	Coarse fragments 3B1: 2A2 > 2 Pct.	2 – 19	19 – 76
		Pct. of < 2 mm														Pct.	Pct. of < 76mm	
0–4	Ap1	54.5	33.0	12.5	0.8	11.9	24.1	12.7	5.0	15.1	17.9	23.4	49.5		1.00	tr.		
4–10	Ap2	53.7	33.6	12.7	0.7	11.1	24.1	12.9	4.9	15.9	17.7	24.2	48.8		1.00	tr.		
10–16	A2	55.5	31.9	12.6	0.6	10.2	26.3	13.8	4.6	12.3	19.6	20.7	50.9		1.00	tr.		
16–27	B21t	47.2	28.0	24.8	0.7	8.9	21.1	12.4	4.1	13.2	14.8	20.5	43.1		1.00	tr.		
27–33	B22t	52.2	25.8	22.0	0.9	10.2	23.5	12.3	5.3	15.4	10.4	23.9	46.9		1.00	tr.		
33–39	IIC1	76.3	11.3	12.4	1.2	14.6	36.1	19.0	5.4	7.2	4.1	18.0	70.9		1.00	tr.		
39–72	IIIC2	88.6	5.7	5.7	1.1	19.0	43.3	20.9	4.3	4.6	1.1	14.7	84.3		1.00	tr.		

Depth (In.)	6A1a Organic carbon	6B2a Nitrogen	C/N		Carbonate as $CaCO_3$	Analyses by New Jersey Agr. Exp. Sta., Rutgers University a/: Bulk density	Water retained at suctions of: 0.02 bar	0.06 bar	0.10 bar	0.33 bar	1 bar	2 bar	6 bar	15 bar	Available water	Field capacity	pH: 8C1c (1:1) KCl	8C1a (1:1) H_2O
	Pct.	Pct.			Pct.	g/cc	Pct.								in/in	Pct.		
0–4	2.28	0.226	10			1.39	21.6	28.7	28.4	26.3	23.9	15.2	12.5	11.3	0.21	26.3		6.4
4–10	1.44	0.134	11			1.39	27.6	24.0	21.9	19.7	17.4	12.4	9.4	7.2	0.21	22.3		5.5
10–16	0.49	0.063	8			1.43	26.0	22.5	20.7	18.5	17.0	10.2	7.6	6.0	0.20	20.0		5.3
16–27	0.20					1.44	28.4	26.0	24.0	22.4	20.3	14.6	12.6	11.0	0.16	22.0		4.7
27–33	0.13					1.57	23.8	21.1	19.9	18.6	17.3	13.1	11.8	6.2	0.21	19.5		4.8
33–39	0.04					1.56	22.3	15.9	13.0	11.6	11.4	7.6	6.8	5.7	0.16	15.9		4.7
39–72	0.04					1.51	22.1	12.4	9.9	6.8	6.3	4.3	3.8	3.2	0.12	10.9		4.8

Depth (In.)	Extractable bases 5B1e: 6N2d Ca	6Q2b Mg	6P2a Na	6Q2a K	Sum	6H2a Ext. acidity	CEC: 5A3a Sum cations		6G1d Ext. Al			Ratios to clay 8D1: CEC Sum	Ext. iron	15-bar water	8D3 Ca/Mg		Base saturation: 5C3 Sum cations Pct.	5C1 NH_4OAc Pct.
	meq/100 g																	
0–4	9.4	3.2	0.1	0.3	13.0	7.5	20.5					1.64		0.90			63	
4–10	3.8	1.0	0.1	0.4	5.3	9.8	15.1					1.19		0.57			35	
10–16	2.0	0.7	0.2	0.2	3.1	6.5	9.6					0.76		0.48			32	
16–27	2.1	0.8	0.2	0.4	3.5	10.0	13.5					0.54		0.44			26	
27–33	2.2	0.6	0.3	0.2	3.3	9.2	12.4					0.56		0.28			26	
33–39	2.0	0.3	0.2	0.1	2.6	6.4	9.0					0.72		0.46			29	
39–72	1.0	0.3	0.1	tr.	1.4	4.7	6.2					1.08		0.56			24	

Depth (In.)	Clay Fraction Analysis 7A1b-d: Mt.	Chl.	Vm.	Mi.	Int.	Qtz.	Kl.	Gibbsite	Analyses by New Jersey Agr. Exp. Sta., Rutgers: Hydraulic conductivity a/	Porosity a/: Non-capillary	Capillary	Total	Plastic index a/	Aggregate stability a/
	7A2 X-ray						7A3		in/hr	Pct.	Pct.	Pct.	Pct.	Pct.
0–4									77.0	5.7	39.2	44.9		94
4–10									3.4	10.6	33.8	44.4		73
10–16									2.6	11.8	31.8	43.6		50
16–27									0.9	8.1	35.6	43.7		28
27–33									0.6	8.3	33.4	41.7		16
33–39									2.6	13.2	26.2	39.4		19
39–72									13.4	20.8	19.0	39.8		28

a/ Methods referenced on methods code sheet.

Pedon Classification: Typic Hapludult; fine-loamy, mixed, mesic
Soil: Freehold sandy loam
Soil No.: S59NJ-13-5
Location: Monmouth County, New Jersey. One mile north of Colts Neck in permanent pasture at south end of Stanley Schank farm, 50 feet in from woods and black top road.
Vegetation and land use: Permanent pasture, principally bluegrass and white dutch clover.
Slope and land form: 1 percent.
Drainage: Well drained.
Permeability: Moderate.
Parent material: Developed on reworked sands and silts deposited as a terrace on the underlying slightly dirty red sands of what is interpreted to be the Red Bank formation of Cretaceous age.
Sampled by: N. A. Willits and K. P. Wilson

Horizon and Beltsville Lab. No.	
Ap1 60163	0 to 4 inches. Very dark grayish brown (10YR 3/2) sandy loam, dark grayish brown (10YR 4/2) dry; moderate medium granular structure; variable from friable to firm because of hoof punch marks; matted fine grass roots; abundant wormholes; pH 6.0; abrupt smooth boundary. 3 to 4 inches thick.
Ap2 60164	4 to 10 inches. Dark brown (10YR 3/3) sandy loam, brown (10YR 5/3) dry; moderate medium subangular blocky structure parting to weak fine granular; slightly firm in place but friable when removed; abundant fine roots; many wormholes; coated granules well developed; some mixing of A2 throughout especially at bottom; pH 5.4; clear irregular boundary. 6 to 7 inches thick.
A2 60165	10 to 16 inches. Strong brown (7.5YR 5/6) sandy loam, yellowish brown (10YR 5/4) dry; weak coarse platy and weak medium subangular blocky structure parting to very weak fine granular; slightly firm in place friable when removed; many fine roots; abundant root and worm channels with filling of Ap; pH 5.3; clear smooth boundary. 5 to 6 inches thick.
B21t 60166	16 to 27 inches. Strong brown (7.5YR 5/6) loam, reddish yellow (7.5YR 6/6) dry; moderate, medium subangular blocky structure parting to moderate fine granular; firm in place, friable when removed; slightly plastic; several coarse roots and a few fine roots; worm and root channels common; clay films on ped faces; noticeable glauconite; pH 5.2; clear smooth boundary. 11 to 13 inches thick.
B22t 60167	27 to 33 inches. Strong brown (7.5YR 5/6) sandy clay loam, strong brown (7.5YR 5/8) dry; weak coarse subangular blocky structure parting to weak very fine granular; slightly less firm in place than horizon above; slightly plastic; few coarse roots; some discontinuous clay films on peds; noticeable glauconite; pH 5.2; clear smooth boundary. 5 to 7 inches thick.
IIC1 60168	33 to 39 inches. Strong brown (7.5YR 5/6) coarse sandy loam; massive or weak coarse subangular blocky structure; slightly firm in place, very friable when removed; few roots; slight grain coating; noticeable glauconite; pH 5.2; clear smooth boundary. 5 to 8 inches thick.
IIIC2 60169	39 to 72 inches. Strong brown (7.5YR 5/8) sand, light and dark grains intermixed, yellowish brown (10YR 5/8) dry; single grained; weakly stratified parallel to surface; very loose; noticeable glauconite; pH 5.1; clear smooth boundary.
D3 Not sampled	72 to 96 inches. Reddish brown (2.5YR 4/4) loamy sand; stratified; firm to loose, gravelly.

Notes: Colors refer to moist soil unless indicated otherwise. Low value colors are caused by glauconite grains.

U S DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

PEDON CLASSIFICATION: Typic Hapludult; fine-loamy, mixed, mesic
SOIL Matapeake taxadjunct SOIL Nos. S57NJ-11-1 LOCATION Mercer County, New Jersey

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 57447 - 57453

Depth (In.)	Horizon	1B1b Total Sand (2–0.05)	Total Silt (0.05–0.002)	Total Clay (< 0.002)	Sand (Pct. of < 2 mm) Very coarse (2–1)	Sand Coarse (1–0.5)	Sand Medium (0.5–0.25)	Sand Fine (0.25–0.1)	Sand Very fine (0.1–0.05)	Silt 0.05–0.02	Silt Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)		3B2 Cm	Coarse fragments 3B1 2A2 > 2 < 76 Pct.	2–19 (Pct. of < 76mm)	19–76 (Pct. of < 76mm)
0-3	A1	31.9	57.7	10.4	1.5	7.5	7.6	9.0	6.3	26.9	30.8	37.5	25.6		1.00	tr.		
3-13	A2	33.5	55.0	11.5	1.6	8.3	8.4	9.4	5.8	24.0	31.0	34.4	27.7		0.99	2		
13-16	B1	27.3	60.0	12.7	1.2	6.1	6.7	7.7	5.6	25.8	34.2	34.9	21.7		0.99	1		
16-20	B21t	20.9	59.7	19.4	1.0	4.3	4.7	5.8	5.1	25.6	34.1	33.6	15.8		0.99	1		
20-25	B22t	17.2	59.6	23.2	0.5	2.7	3.8	4.9	5.3	26.6	33.0	34.4	11.9		0.99	2		
25-29	B3t	38.2	45.6	16.2	2.7	7.3	8.9	12.1	7.2	22.4	23.2	35.4	31.0		0.93	10		
29-40	IIC	79.3	9.1	11.6	6.1	16.1	16.7	29.9	10.5	5.7	3.4	32.5	68.8		0.89	16		

Depth (In.)	6A1a Organic carbon Pct	6B2a Nitrogen Pct.	C/N		6C1a Ext. iron as Fe Pct.	Analyses by New Jersey Agr. Exp. Sta., Rutgers University a/ Bulk density g/cc	Water retained at suctions of (Pct.) 0.02 bar	0.06 bar	0.10 bar	0.33 bar	1 bar	2 bar	6 bar	15 bar	Available water in/in	Field capacity Pct.	pH 8C1c (1:1) KCl	8C1a (1:1) H_2O
0-3	5.2	0.196	26		0.8	1.06	47.7	37.5	35.9	32.7	29.4	15.2	10.9	9.3	0.23	31.1		3.7
3-13	0.94	0.049	19		0.8	1.27	35.5	25.9	25.1	22.6	19.3	11.6	6.9	5.2	0.23	23.2		4.3
13-16	0.28				0.8	1.40	30.2	23.2	22.6	20.6	19.0	12.0	7.2	5.3	0.23	21.8		4.6
16-20	0.26				1.1	1.45	27.6	24.5	23.7	22.5	20.9	15.2	9.8	7.6	0.21	21.9		4.5
20-25	0.24				1.3	1.51	26.2	23.5	22.7	21.9	21.1	16.5	11.9	9.9	0.12	17.5		4.3
25-29	0.20				1.8	1.84	16.1	14.8	14.4	14.0	13.2	10.3	7.9	6.6	0.16	14.8		4.3
29-40	0.11				0.8	1.80	15.6	12.9	12.2	11.5	10.7	8.9	6.2	4.9	0.17	13.5		4.5

Depth (In.)	Extractable bases 5B1a 6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	Sum (meq/100 g)	6H2a Ext acidity	CEC 5A3a Sum cations		6G1d Ext. Al			Ratios to clay 8D1 CEC Sum	Ext iron	15-bar water	8D3 Ca/Mg		Base saturation 5C3 Sum cations Pct	5C1 NH_4OAc Pct.
0-3	0.4	0.4	0.1	0.2	1.0	22.0	23.1					0.20	0.08	0.89			5	
3-13	tr.	0.1	0.1	0.2	0.4	9.3	9.7					0.84	0.07	0.45			4	
13-16	tr.	0.1	0.1	0.2	0.4	6.5	6.9					0.54	0.06	0.42			6	
16-20	tr.	tr.	0.1	0.2	0.3	9.1	9.4					0.48	0.06	0.39			3	
20-25	tr.	tr.	tr.	0.2	0.2	12.2	12.4					0.53	0.06	0.43			2	
25-29	tr.	0.5	tr.	0.1	0.6	8.3	8.9					0.55	0.11	0.41			7	
29-40	tr.	0.5	tr.	0.1	0.6	8.4	9.0					0.77	0.07	0.42			7	

Depth (In.)	Clay Fraction Analysis 7A1b-d Mt.	Chl.	Vm	Mi.	Int.	Qtz.	Kl.	Gibbsite		Analyses by New Jersey Agr. Exp. Sta., Rutgers Hydraulic conductivity a/ in/hr	Porosity a/ Non-capillary Pct.	Capillary Pct.	Total Pct.	Plastic index a/ Pct.	Aggregate stability a/ Pct.
	7A2 X-ray						DTA 7A3								
0-3										3.9	16.6	39.3	55.9		93
3-13		x	xxx	xx			10	tr.		0.9	14.8	32.8	47.6		-
13-16										0.5	13.1	32.4	45.5		65
16-20										0.4	9.3	35.4	44.7		57
20-25		x	xx	xx			15	2		0.3	7.3	35.4	42.7		-
25-29										0.3	5.3	26.8	32.1		29
29-40	x		x	xx			40	2		0.5	8.3	23.2	31.5		20

a/ Methods referenced on methods code sheet.

Mt. = Montmorillonite, Chl. = chlorite, Vm. = Vermiculite, mi = mica,
Int. = Interstratified layer, Qtz. = quartz, Kl. = Kaolinite

Relative amounts: blank = not determined, dash = not detected,
tr. = trace, x = small, xx = moderate, xxx = abundant, xxxx = dominant.

Pedon Classification: Typic Hapludult; fine-loamy, mixed, mesic
Soil: Matapeake taxadjunct 1/
Soil No.: S57NJ-11-1
Location: Mercer County, New Jersey. Barclay woodlot. 1-1/2 miles west of Hightstown on Princeton-Hightstown Road. 100 feet from east edge of woodlot and 50 feet in from north side of road.
Vegetation and land use: White oak, red oak, hickory, dogwood. Considerable brush of viburnum, sassafras, soft maple.
Slope and land form: 2 percent. Erosion: Little or no accelerated erosion.
Drainage: Well drained. Permeability: Moderate.
Parent material: Silty mantle overlying gravelly and sandy, cross bedded deposits.
Sampled by and date: K. P. Wilson, G. A. Quakenbush, E. J. Pedersen, S. E. Davidson, and N. A. Willits. March 29, 1957.

Horizon and Beltsville Lab. No.	
O1 Not sampled	4 to 2 inches. Loose leaves, mainly oak, some maple.
O21 Not sampled	2 inches to 1/2. Decayed leaves from previous fall. Leaves grind up easily between fingers. Leaves matted and tied together and to the underlying layer by mycelia and rootlets. Frequent holes of earth fauna.
O22 Not sampled	1/2 inch to 0. Very dark brown (10YR 2/2) silty organic matter; weak fine granular structure; porous but matted with fine and coarse roots; A1 and A2 somewhat mixed in by earth fauna; pH 3.9; abrupt broken boundary. 0 to 1 inch thick.
A1 57447	0 to 3 inches. Dark gray to very dark gray (10YR 4/1 to 3/1) silt loam; weak fine crumb structure; friable to loose; dark stained; dusted with fine particles of quartz; larger, rounded grains are frosted but uncoated; rare fine white mica; no dark minerals; scattered gravel and large stones 1 to 6 inches, quartzite, gneiss, (one gabbro); many fine and coarse roots; pH 3.7; clear broken boundary. 0 to 4 inches thick.
A2 57448	3 to 13 inches. Brown (10YR 5/3) silt loam, yellowish brown (10YR 5/4) dry; weak fine crumb to weak medium subangular blocky structure at bottom; friable; coarse and fine roots; many very fine common fine pores; common fine roots; organic stain throughout; scattered 1 to 6 inch quartzite gravel; mainly clean finely divided quartz particles; 1 percent dark, hard, glossy, rounded grains less than 0.05 mm; 2 percent 1/2-to 1-inch quartz pebbles; pH 4.3; gradual irregular boundary. 8 to 14 inches thick.
B1 57449	13 to 16 inches. Yellowish brown (10YR 5/6) silt loam; weak medium subangular blocky structure; friable to firm; clay bridging and coating grains, clay films on peds discontinuous and with little color contrast to matrix; many dark grains; scattered very fine white mica, especially oriented on ped faces; 2 percent 1/2 to 1 inch quartz pebbles; coarse and fine roots common; pH 4.6; gradual wavy boundary. 3 to 7 inches thick.
B21t 57450	16 to 20 inches. Strong brown (7.5YR 5/6) silt loam with common fine and medium faint redder mottles; moderate medium and fine subangular blocky structure; clay films continuous on peds, common as bridges and pore fillings; many fine pores; scattered white mica; many fine roots; 1 percent 1/2 to 1 inch quartz pebbles; pH 4.5; clear wavy boundary. 4 to 9 inches thick.
B22t 57451	20 to 25 inches. Strong brown (7.5YR 5/6) silt loam; moderate medium subangular blocky structure; firm, plastic; continuous clay coats on all peds; when dry, 0.1 mm shrinkage cracks appear; scattered white mica; 1 percent glossy, hard, dark grains; small spots of white clay (decayed feldspars or chert); few fine roots in peds and along faces; 2 percent 1/2 to 1 inch quartz pebbles, some chert; pH 4.3; clear wavy boundary. 5 to 8 inches thick.
B3t 57452	25 to 29 inches. Yellowish brown (10YR 5/8) loam with few fine faint mottles or variegations; weak medium subangular blocky structure; firm in place, friable removed, slightly sticky; many pores; discontinuous clay films; common fine roots; less shrinkage than B22t; much white mica silt oriented on ped faces; 1 to 2 percent dark grains; few gravel; many chert pebbles and decayed fragments; pH 4.3; gradual irregular boundary. 4 to 6 inches thick.
IIC 57453	29 to 40 inches. Yellowish brown (10YR 5/6) sandy loam with common medium faint mottles; massive; loose to friable; discrete redder particles; some manganese staining; mainly 0.1 to 0.2 mm diameter iron oxide coated, frosted, round quartz sand grains; 5 percent hard, glossy, dark rounded mineral grains; scattered fine white mica; little gravel; small 1 mm to 1 inch chert pebbles decayed to white opaque clay; occasional fine roots; pH 4.5.

Notes: Colors are for moist soil unless indicated otherwise.

1/ This pedon is a taxadjunct because it is in a fine-loamy family particle size class, whereas the Matapeake series is in a fine-silty class.

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

PEDON CLASSIFICATION: Typic Hapludult; fine-loamy, mixed, mesic
SOIL Matapeake taxad,junct SOIL Nos. S57NJ-12-3 LOCATION Middlesex County, New Jersey

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 57466 - 57471

Depth (in.)	Horizon	1B1b Size class and particle diameter (mm) 3A1													3B2	Coarse fragments 3B1		
		Total			Sand					Silt						2A2		
		Sand (2-0.05)	Silt (0.05-0.002)	Clay (< 0.002)	Very coarse (2-1)	Coarse (1-0.5)	Medium (0.5-0.25)	Fine (0.25-0.1)	Very fine (0.1-0.05)	0.05-0.02	Int. III (0.02-0.002)	Int. II (0.2-0.02)	(2-0.1)		Cm	≥ 2 < 76	2 - 19	19 - 76
		Pct. of < 2 mm														Pct.	Pct. of < 76mm	
0-4	A1	23.7	61.7	14.6	0.7	4.0	5.5	7.7	5.8	27.1	34.6	36.5	17.9		0.99	2		
4-11	A2	26.1	60.7	13.2	1.1	4.0	5.6	8.2	7.2	28.4	32.3	39.8	18.9		0.97	7		
11-18	B1t	24.2	59.0	16.8	1.2	3.8	4.8	7.3	7.1	27.4	31.6	38.2	17.1		0.97	5		
18-28	B2t	25.9	52.7	21.4	1.4	3.7	4.9	8.4	7.5	26.1	26.6	38.3	18.4		0.96	6		
28-38	IIC1	50.5	37.2	12.3	5.4	8.5	11.5	16.5	8.6	20.5	16.7	37.0	41.9		0.87	18		
38-50	IIC2	61.0	27.5	11.5	8.1	12.8	14.6	18.3	7.2	14.1	13.4	29.9	53.8		0.83	23		

Depth (in.)	6A1a Organic carbon	6B2a Nitrogen	C/N		6C1a Ext. iron as Fe	Analyses by New Jersey Agr. Exp. Sta., Rutgers University a/ Bulk density	Water retained at suctions of								Available water	Field capacity	pH	
							0.02 bar	0.06 bar	0.10 bar	0.33 bar	1 bar	2 bar	6 bar	15 bar			8C1c (1:1) KCl	8C1a (1:1) H_2O
	Pct	Pct.			Pct.	g/cc	Pct.								in/in	Pct.		
0-4	3.88	0.151	26		1.2	0.94	59.0	50.3	46.1	41.4	36.4	16.5	11.4	8.1	0.26	36.1		3.7
4-11	0.81	0.046	18		1.1	1.21	37.4	28.2	27.0	24.9	22.2	13.7	8.4	5.6	0.27	27.5		4.3
11-18	0.30				1.4	1.42	26.9	22.8	22.3	21.3	20.0	14.1	8.9	6.2	0.25	23.4		4.4
18-28	0.18				1.9	1.56	24.4	22.1	20.7	19.6	18.4	14.1	11.2	8.4	0.21	21.5		4.2
28-38	0.05				1.5	1.82	15.9	13.8	13.5	12.6	11.4	9.0	6.6	5.0	0.16	12.9		4.5
38-50	0.04				1.4	1.85	13.7	11.4	11.2	10.3	9.4	6.8	5.5	4.7	0.14	11.3		4.5

Depth (in.)	Extractable bases 5B1a					6H2a	CEC		6G1d			Ratios to clay 8D1			8D3		Base saturation	
	6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	Sum	Ext. acidity	5A3a Sum cations		Ext. Al			CEC Sum	Ext. iron	15-bar water	Ca/Mg		5C3 Sum cations	5C1 NH_4OAc
	meq/100 g																Pct.	Pct.
0-4	0.2	0.1	0.1	0.3	0.7	19.6	20.3					1.24	0.08	0.55			3	
4-11	tr.	tr.	tr.	0.2	0.2	8.5	8.7					0.66	0.08	0.42			2	
11-18	tr.	0.1	0.1	0.1	0.3	8.1	8.4					0.50	0.08	0.37			4	
18-28	tr.	tr.	tr.	0.2	0.2	9.9	10.1					0.47	0.09	0.39			2	
28-38	tr.	0.7	tr.	0.1	0.8	5.8	6.6					0.54	0.12	0.41			12	
38-50	tr.	0.7	tr.	0.1	0.8	4.8	5.6					0.49	0.12	0.41			14	

Depth (in.)	Clay Fraction Analysis 7A1b-d								Analyses by New Jersey Agr. Exp. Sta., Rutgers a/					
	Mt.	Chl.	Vm.	Mi	Int.	Qtz.	Kl.	Gibbsite	Hydraulic conductivity	Porosity a/ Non-capillary	Capillary	Total	Plastic index	Aggregate stability
	X-ray 7A2						DTA 7A3		in/hr	Pct.	Pct.	Pct.	Pct.	Pct.
0-4		x	xxx	xx			15	3	6.1	14.8	46.8	61.6		96
4-11									2.6	16.4	33.6	50.0		74
11-18									0.6	11.3	32.1	43.4		51
18-28	x		xx	xx			7	0	0.2	7.5	34.3	41.8		30
28-38		x	xx	xx			20	tr.	0.1	7.0	25.1	32.1		20
38-50									0.2	7.8	21.1	28.9		26

a/ Methods referenced on methods code sheet.

Mt. = Montmorillonite, Chl. = chlorite, Vm. = Vermiculite, mi = mica, int. = interstratified layer, Qtz. = quartz, Kl. = Kaolinite

Relative amounts: blank = not determined, dash = not detected, tr. = trace, x = small, xx = moderate, xxx = abundant, xxxx = dominant.

Pedon Classification: Typic Hapludult; fine-loamy, mixed, mesic
Soil: Matapeake taxadjunct [1/]
Soil No.: S57NJ-12-3
Location: Middlesex County, New Jersey. John Wicoff woodlot, 1 mile east of Plainsboro. Woodlot 500 feet northeast along power line and 75 feet west of power line into woods.
Vegetation and land use: Beech, white oak, red oak, hickory, maple leaf viburnum, sassafras, and maple.
Slope and land form: 1 percent.
Drainage: Well drained.
Permeability: Moderate.
Parent material: Silty mantle overlying gravelly and sandy, cross bedded deposits.
Sampled by and date: K. P. Wilson, E. J. Pedersen, S. E. Davidson, G. A. Quakenbush, and N. A. Willits. March 28, 1957

Horizon and Beltsville Lab. No.	
O1 Not sampled	4 to 2 inches. Loose leaves, undecayed, from last leaf fall; oak and beech leaves predominate; not tied to underlying layer.
O21 Not sampled	2 inches to 1/2. Decayed leaves from previous fall; leaves can easily be ground up by fingers; leaves matted and tied together and to the underlying layer by mycelia and rootlets; 1 to 2 inches thick.
O22 Not sampled	1/2 inch to 0. Black (10YR 2/1) silty decayed humus with some mineral matter; matted with very fine and medium sized roots; mixed somewhat by micro- and macroearth fauna with A1 and A2; pH 3.7; lower boundary distinct, discontinuous. 0 to 1/2 inch thick.
A1 57466	0 to 4 inches. Very dark grayish brown (10YR 3/2) silt loam; very weak fine granular structure; very friable; mixed organic particles, streaks and stains of mineral matter, mainly as rounded fine silica grains 0.01 mm, but some 0.1 mm or larger, large grains clean or coated by finer ones, scattered rounded black grains 0.1 mm opaque and dull; occasional fine white mica; many 0.5 to 0.1 mm pores; many fine roots; scattered 1/2 to 1 inch quartz pebbles; pH 3.9; clear irregular boundary. 1 to 5 inches thick.
A2 57467	4 to 11 inches. Yellowish brown (10YR 5/4) silt loam; weak medium subangular blocky structure; friable; mainly finely divided clear quartz with some fine mica; small cracks coated and stained with organic matter; many 0.5 mm and smaller pores; many fine roots; few 1/2 to 1 inch quartz pebbles; pH 4.8; gradual wavy boundary. 3 to 8 inches thick.
B1t 57468	11 to 18 inches. Dark yellowish brown (10YR 4/4) silt loam; weak medium subangular blocky structure; friable to firm, hard when dry; about 10 percent 1 mm, frosted quartz grains; few black carbon flakes; few fine white mica; cavities coated with clay but not much bridging; slightly redder discontinuous clay films on peds; many 0.05 to 1.0 mm pores; very fine root hairs penetrate peds; 10 percent 1/2 to 1 inch quartz gravel; pH 4.3; gradual wavy boundary. 4 to 7 inches thick.
B2t 57469	18 to 28 inches. Dark brown (7.5YR 4/4) heavy silt loam; very faintly mottled with slightly redder hue; weak medium subangular blocky structure; firm; mainly rounded quartz grains, 0.2 mm diameter; most grains coated with clay and silt; few white mica; clay films on peds continuous; few fine and coarse roots; few 1/2 to 1 inch quartz pebbles; pH 4.3; gradual irregular boundary. 4 to 12 inches thick.
IIC1 57470	28 to 38 inches. Strong brown (7.5YR 5/6) loam; massive; firm in place, friable when removed; 12 percent 1/4 to 2 inch quartz and decayed chert fragments, rounded and angular; quartz pebbles coated with clay; films of clay on undersides of quartz pebbles and in cavities; upper sides of pebble coatings porous; sand grains commonly less than 1 mm diameter and are frosted and coated with clay; stained scattered fine white mica; a little organic stain in very localized spots; pH 4.7; gradual and wavy lower boundary. 6 to 15 inches thick.
IIC2 57471	38 to 50 inches. Yellowish brown (10YR 5/6) sandy loam; massive; firm to very firm in place, friable when removed; 15 percent 1/8 to 2 inches quartz and decayed chert gravel; dark grains 0.05 mm or finer, somewhat glossy, black, hard; few fine mica; grains coated with silt and clay; pH 4.8.

Notes: Colors are for moist soil.

[1/] This pedon is a taxadjunct because its family particle size class is fine-loamy, whereas the Matapeake series is in a fine-silty class.

U. S DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

PEDON CLASSIFICATION: Typic Hapludult; fine-silty, mixed, mesic
SOIL Matapeake silt loam SOIL Nos. 858NJ-12-1 LOCATION Middlesex County, New Jersey

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 59257 - 59262

Depth (In.)	Horizon	1B1b Total Sand (2–0.05) Pct. of < 2 mm	Total Silt (0.05–0.002)	Total Clay (< 0.002)	Sand: Very coarse (2–1)	Sand: Coarse (1–0.5)	Sand: Medium (0.5–0.25)	Sand: Fine (0.25–0.1)	Sand: Very fine (0.1–0.05)	Silt: 0.05–0.02	Silt: Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)		3B2 Cm	Coarse fragments 3B1: 2A2 > 2 < 76 Pct.	2 – 19 Pct. of < 76mm	19 – 76 Pct. of < 76mm
0-10	Ap	18.9	66.8	14.3	0.6	2.4	2.7	3.5	9.7	31.7	35.1	43.4	9.2		1.00	tr.		
10-12	A2,B1	13.5	66.3	20.2	0.4	1.2	1.5	2.2	8.2	29.0	37.3	38.5	5.3		1.00	tr.		
12-21	B21t	13.5	56.4	30.1	0.1	0.7	1.0	2.1	9.6	28.9	27.5	39.8	3.9		1.00	-		
21-27	B22t	21.8	59.4	18.8	0.3	1.2	2.0	4.5	13.8	30.4	29.0	46.9	8.0		1.00	tr.		
27-34	IIC1	40.4	46.6	13.0	2.6	5.2	7.0	11.8	13.8	24.5	22.1	44.6	26.6		0.69	39		
34-40	IIIC2	53.5	24.8	21.7	12.4	15.9	13.1	9.4	2.7	8.6	16.2	15.1	50.8		0.60	49		

Depth (In.)	6A1e Organic carbon Pct	6B2a Nitrogen Pct.	C/N		6C1a Ext. iron as Fe Pct.	Analyses by New Jersey Agr. Exp. Sta., Rutgers University a/ Bulk density g/cc	Water retained at suctions of: 0.02 bar Pct.	0.06 bar	0.10 bar	0.33 bar	1 bar	2 bar	6 bar	15 bar	Available water in/in	Field capacity Pct.	pH 8C1c (1:1) KCl	8C1a (1:1) H_2O
0-10	1.10	0.127	9		1.1	1.46	27.6	26.4	25.4	22.8	21.8	15.7	9.3	6.4	0.27	25.0		4.8
10-12	0.40	0.075	5		1.5	1.49	26.7	25.1	24.2	23.2	22.3	17.0	11.1	8.3	0.23	23.9		4.8
12-21	0.23				2.2	1.49	27.2	25.8	25.0	24.4	24.0	19.0	13.1	11.5	0.21	25.4		4.8
21-27	0.11				2.1	1.65	22.6	22.1	21.4	20.8	20.0	15.2	10.5	8.9	0.19	20.6		4.5
27-34	0.04				1.8	1.87	13.9	13.3	12.8	11.8	11.0	11.2	7.6	6.3	0.14	12.4		4.6
34-40	0.04				2.3	1.84	12.0	9.8	8.9	8.0	7.6	13.0	9.1	7.2				4.6

Depth (In.)	Extractable bases 5B1a: 6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	Sum meq/100 g	6H2e Ext. acidity	CEC: 5A3a Sum cations	6G1d Ext. Al	Ratios to clay 8D1: CEC Sum	Ext iron	15-bar water	8D3 Ca/Mg	Base saturation: 5C3 Sum cations Pct.	5C1 NH_4OAc Pct.
0-10	1.9	0.2	tr.	0.2	2.3	9.8	12.1		0.85	0.08	0.45		19	
10-12	2.6	0.4	0.1	0.2	3.3	6.9	10.2		0.50	0.07	0.41		32	
12-21	4.1	0.5	0.1	0.2	4.9	8.2	13.1		0.43	0.07	0.38		37	
21-27	2.5	0.4	0.1	0.1	3.1	6.7	9.8		0.52	0.11	0.47		32	
27-34	1.8	0.4	tr.	0.1	2.3	5.6	7.9		0.61	0.14	0.48		29	
34-40	2.0	0.6	tr.	0.1	2.7	5.7	8.4		0.39	0.11	0.33		32	

Depth (In.)	Clay Fraction Analysis 7A1b-d (7A2 X-ray): Mt	Chl.	Vm.	Mi.	Int.	Qtz.	(7A3): Kl.	Gibbsite	Analyses by New Jersey Agr. Exp. Sta., Rutgers: Hydraulic conductivity a/ in/hr	Porosity a/: Non-capillary Pct.	Capillary Pct.	Total Pct.	Plastic index a/ Pct.	Aggregate stability a/ Pct.
0-10									0.1	4.0	38.3	42.3		24
10-12									0.4	6.7	37.4	44.1		27
12-21									0.1	5.0	38.5	43.5		17
21-27									0.02	3.2	36.3	39.5		5
27-34									0.1	5.2	23.9	29.1		10
34-40									1.0	11.0	18.1	29.1		18

a/ Methods referenced on methods code sheet.

Pedon Classification: Typic Hapludult; fine-silty, mixed, mesic
Soil: Matapeake silt loam
Soil No.: S58NJ-12-1
Location: Middlesex County, New Jersey. One mile east of Dayton in cultivated field of Hunkele farm. 100 feet south of dead end road and 200 feet east of woodlot on medium sized flat area. Across road from Hunkele woodlot sampled for same soil in 1957.
Vegetation and land use: Plowed in fall. Previously in wheat. Rotation 2 years potatoes, 1 year wheat, 1 year clover. Never irrigated. This rotation used for last 10 to 15 years. Lost clover in last year's drought, hence plowed this year after wheat.
Slope and land form: 1 percent.
Erosion: Little erosion is believed to have occurred at site, even though A2 is generally missing or very thin below plowed layer.
Drainage: Well drained.
Permeability: Moderately permeable.
Parent material: Developed in silt mantle.
Sampled by and date: N. A. Willits, K. P. Wilson, M. A. Hawkins. April 3, 1958.

Horizon and Beltsville Lab. No.	
Ap 59257	0 to 10 inches. Dark grayish brown (10YR 4/2) silt loam, pale brown (10YR 6/3) dry; weak medium subangular blocky structure parting to very fine granules; friable but aggregates very firm when dry; scattered 1/2 to 1-1/2 inch quartz pebbles; pH 4.4; abrupt wavy boundary. 8 to 11 inches thick.
A2, B1 59258	10 to 12 inches. Dark yellowish brown (10YR 4/4) fine silt loam, pale brown (10YR 6/3) dry; weak medium subangular blocky structure parting to very fine granules; peds very hard when dry; slightly firm in place; many fine roots; this horizon discontinuous because of deep plowing and penetration by worm or root holes filled with organic matter; pH 5.2. 0 to 2 inches thick.
B21t 59259	12 to 21 inches. Dark brown (7.5YR 4/4) silty clay loam, with slightly redder ped coatings; light yellowish brown (10YR 6/4) dry; very weak medium prismatic structure parting to moderately firm in place but friable when removed; many very fine roots; wormholes and root holes filled with organic stained Ap material; all peds continuously coated with clay when observed under 20x lens; pH 5.2; gradual wavy boundary. 10 to 11 inches thick.
B22t 59260	21 to 27 inches. Strong brown (7.5YR 5/6) silt loam with more clay but less silt than in A1 horizon, light yellowish brown (10YR 6/4) or slightly redder dry; moderate medium subangular blocky structure; moderately firm in place, friable when removed; very many fine roots; clay films on ped surfaces discontinuous; pH 4.5; clear wavy boundary. 5 to 6 inches thick.
IIC1 59261	27 to 34 inches. Dark yellowish brown (10YR 4/4) gravelly loam, light yellowish brown (10YR 6/4) dry; moderate medium subangular blocky structure; firm to very firm in place, friable when removed; few fine roots; 30 percent 1/2 to 2 inch quartz pebbles; clay on both tops and bottoms of pebbles; pH 4.8. 8 to 9 inches thick.
IIIC2 59262	34 to 40 inches. Reddish brown (5YR 4/4) gravelly sandy clay loam, strong brown (7.5YR 5/6) dry; massive to granular structure, masked by coarse skeleton; firm in place, friable when removed; 35 percent 1/2 to 2 inch diameter gravel mainly quartz with some quartzite and decayed chert; clay bridges and films on coarse sand grains; pH 4.8.

Notes: Colors refer to moist soil unless indicated otherwise.

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

PEDON CLASSIFICATION: Aquic Hapludult; coarse-loamy, siliceous, mesic

SOIL Hammonton sandy loam SOIL Nos. S61NJ-3-1 LOCATION Burlington County, New Jersey

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 62203-62208

Depth (in.)	Horizon	1B1b Size class and particle diameter (mm) 3A1													3B2	Coarse fragments 3B1		
		Total			Sand						Silt					2A2		
		Sand (2–0.05)	Silt (0.05–0.002)	Clay (< 0.002)	Very coarse (2–1)	Coarse (1–0.5)	Medium (0.5–0.25)	Fine (0.25–0.1)	Very fine (0.1–0.05)	0.05–0.02	Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)		Cm	> 2 <76 Pct.	2 – 19	19 – 76
		Pct. of < 2 mm														Pct. of < 76mm		
0-9	Ap	74.7	19.1	6.2	4.3	21.1	14.6	19.8	14.9	11.1	8.0	36.6	59.8			tr.		
9-15	A2	76.3	17.9	5.8	5.9	21.0	14.0	20.3	15.1	9.3	8.6	35.6	61.2			tr.		
15-20	B1t	69.5	20.5	10.0	3.8	17.7	13.2	19.5	15.3	11.1	9.4	37.4	54.2			tr.		
20-24	B21t	62.2	26.2	11.6	3.8	16.1	10.6	15.9	15.8	13.9	12.3	38.5	46.4			tr.		
24-33	B3gt	50.0	38.8	11.2	2.9	10.7	6.9	11.6	17.9	20.8	18.0	45.3	32.1			tr.		
33-40	IIC1	94.1	2.2	3.7	8.8	29.6	16.9	26.8	12.0	1.8	0.4	29.0	82.1			8		
40-60	IIIC2	Not sampled																

Depth (in.)	6A1a Organic carbon	6B2a Nitrogen	C/N		Carbonate as $CaCO_3$	Ext. iron as Fe	Bulk density			4D1	Water content				4C1	pH	
								4A1e ⅓ bar	4A1h Oven dry	COLE		4B1c ⅓ bar	4B2 15 bar		WRD	8C1c (1:1)	8C1a (1:1)
	Pct.	Pct.			Pct.	Pct.	g/cc	g/cc	g/cc		Pct.	Pct.	Pct.		in/in	KCl	H_2O
0-9	0.86	0.058	15														
9-15	0.19																
15-20	0.14																
20-24	0.12																
24-33	0.10																
33-40	0.02																
40-60	Not sampled																

Depth (in.)	Extractable bases 5B1a					6H2a	CEC		6G1d		Ratios to clay 0.01			8D3	Base saturation	
	6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	Sum	Ext. acidity	5A3a Sum cations		Ext. Al		CEC Sum	Ext. iron	15-bar water	Ca/Mg	5C3 Sum cations	5C1 NH_4OAc
	meq/100 g														Pct.	Pct.
0-9	3.0	0.9	0.1	0.2	4.2	3.4	7.6				1.22				55	
9-15	1.0	0.2	tr.	0.2	1.4	1.5	2.9				0.50				48	
15-20	1.5	0.6	0.1	0.2	2.4	1.9	4.3				0.43				56	
20-24	1.7	0.8	0.1	0.1	2.7	2.5	5.2				0.45				52	
24-33	1.0	0.4	0.2	tr.	1.6	4.2	5.8				0.52				27	
33-40	0.2	0.2	tr.	tr.	0.4	1.1	1.5				0.40				27	
40-60	Not sampled															

Depth (in.)	Clay Fraction Analysis 7A1b-d							
	Mt.	Chl.	Vm.	Mi.	Int.	Qtz.	Kl.	Gibbsite
	7A2 X-ray						7A3	

Mt. = Montmorillonite, Chl. = chlorite, Vm. = Vermiculite, mi = mica, Int. = Interstratified layer, Qtz. = quartz, Kl. = Kaolinite

Relative amounts: blank = not determined, dash = not detected, tr. = trace, x = small, xx = moderate, xxx = abundant, xxxx = dominant.

Pedon Classification: Aquic Hapludult; coarse-loamy, siliceous, mesic
Soil: Hammonton sandy loam
Soil No.: S61NJ-3-1
Location: Burlington County, New Jersey. Tabernacle, property of Anna Belle Haines, southeast of house, 300 feet north of oak tree in farm lane, 120 feet east of lane.
Vegetation and land use: General crop rotation including barley and vegetables.
Slope and land form: Extensive flat area; elevation about 90 feet.
Drainage: Somewhat poorly drained.
Permeability: Moderately rapid.
Parent material: Moderately sandy coastal plain deposits.
Ground water: Water table at 60 inches. (July 25, 1961)
Described by: Marco Markley

Horizon and Beltsville Lab. No.	
Ap 62203	0 to 9 inches. Dark grayish brown (2.5Y 4/2) sandy loam, grayish brown when dry (2.5Y 5/2); weak fine granular structure; very friable; roots numerous; worm channels common; very few rounded quartz pebbles; abrupt smooth boundary. 8 to 10 inches thick.
A2 62204	9 to 15 inches. Light olive brown (2.5Y 5/4) loamy sand; few fine faint mottles; weak fine granular structure; slightly firm in place, friable when removed; roots common; few 1/2 inch concretions; very few pebbles; gradual smooth boundary. 5 to 6 inches thick.
B1t 62205	15 to 20 inches. Yellowish brown (10YR 5/4) sandy loam; few fine faint mottles; weak medium granular structure; very friable; roots common; very few pebbles; gradual smooth boundary.
B21t 62206	20 to 24 inches. Slightly darker yellowish brown (10YR 5/4) sandy loam; weak medium subangular blocky structure; friable; roots common; very few pebbles; thin discontinuous clay films; pores common; gradual smooth boundary.
B3gt 62207	24 to 33 inches. Light brownish gray (2.5Y 6/2) loam; many medium distinct yellowish brown (10YR 5/4) mottles; moderate medium subangular blocky structure; friable; abrupt smooth boundary.
IIC1 62208	33 to 40 inches. Yellowish brown (10YR 5/8) sand stratified; single grained; some layers loose, some firm or weakly cemented.
IIIC2 Not sampled	40 to 60 inches. Brown (10YR 5/3) gravelly loamy sand, single grained; 15 percent rounded quartzose pebbles.

Notes: Color readings, except as otherwise specified, are for moist soil. Soil moisture condition at time of sampling: moist toward dry.

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PEDON CLASSIFICATION: Aquic Hapludult; fine-loamy, mixed, mesic
SOIL Mattapex taxadjunct SOIL Nos. 857NJ-12-2 LOCATION Middlesex County, New Jersey

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 57459 - 57465

Depth (In)	Horizon	1B1b Total Sand (2–0.05)	Total Silt (0.05–0.002)	Total Clay (< 0.002)	Sand: Very coarse (2–1)	Sand: Coarse (1–0.5)	Sand: Medium (0.5–0.25)	Sand: Fine (0.25–0.1)	Sand: Very fine (0.1–0.05)	Silt: (0.05–0.02)	Silt: Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)		3B2 Cm	Coarse fragments 3B1: 2A2 > 2 <76 Pct.	2 - 19	19 - 76
		Pct. of < 2 mm														Pct. of < 76mm		
0-9	Ap	25.8	61.8	12.4	1.2	3.6	5.0	7.1	8.9	30.5	31.3	42.9	16.9		0.92	14		
9-12	A2	19.0	64.4	16.6	0.6	2.3	3.2	5.1	7.8	30.5	33.9	41.0	11.2		0.96	7		
12-19	B21t	17.8	58.2	24.0	0.2	1.8	2.7	4.9	8.2	29.2	29.0	40.1	9.6		0.99	2		
19-22	B22t	22.1	58.3	19.6	0.6	2.0	3.2	6.1	10.2	30.8	27.5	44.5	11.9			3		
22-28	B3	30.8	53.8	15.4	1.0	3.2	5.2	9.5	11.9	29.4	24.4	46.7	18.9		0.99	2		
28-34	IIC1	53.9	38.0	8.1	1.5	6.6	12.9	20.2	12.7	23.5	14.5	46.7	41.2		0.80	26		
34-44	IIC2	58.3	32.4	9.4	6.4	10.9	15.1	17.2	8.6	19.6	12.8	35.6	49.7			34		

Depth (In.)	6A1a Organic carbon	6B2a Nitrogen	C/N		6C1a Ext. iron as Fe	Analyses by New Jersey Agr. Exp. Sta., Rutgers University a/ Bulk density	Water retained at suctions of: 0.02 bar	0.06 bar	0.10 bar	0.33 bar	1 bar	2 bar	6 bar	15 bar	Available water	Field capacity	pH 8C1c (1:1) KCl	8C1a (1:1) H_2O
	Pct.	Pct.			Pct.	g/cc	Pct.								in/in	Pct.		
0-9	1.22	0.090	14		1.0	1.45	27.4	25.4	24.6	22.8	21.7	14.0	11.0	9.2				4.8
9-12	0.44	0.040	11		1.2	1.60	24.5	22.7	21.8	20.7	19.5	9.6	6.4	4.9				5.0
12-19	0.26				1.5	1.56	26.7	24.7	23.9	23.2	21.8	10.4	6.9	5.2				4.8
19-22	0.10				1.3							13.3	10.0	7.9				4.7
22-28	0.05				1.3	1.67	22.8	21.7	21.0	20.4	18.8	14.8	11.7	9.7				4.6
28-34	0.03				1.5	1.83	15.1	13.0	12.5	10.8	9.1	6.0	5.4	5.1				4.7
34-44	0.02				1.6													4.7

Depth (In)	Extractable bases 5B1a: 6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	Sum	6H2a Ext. acidity	CEC: 5A3a Sum cations		6G1d Ext. Al			Ratios to clay 8D1: CEC Sum	Ext. iron	15-bar water	8D3 Ca/Mg		Base saturation: 5C3 Sum cations Pct.	5C1 NH_4OAc Pct.
	meq/100 g																	
0-9	1.6	0.3	tr.	0.6		8.9	11.4					0.92	0.08	0.74			22	
9-12	2.2	0.2	tr.	0.5		6.0	8.9					0.54	0.07	0.30			32	
12-19	2.5	0.3	tr.	0.5		11.5	14.8					0.62	0.06	0.22			22	
19-22	2.3	0.3	tr.	0.3		7.3	10.2					0.52	0.07	0.40			28	
22-28	1.9	0.3	tr.	0.3		6.4	8.9					0.58	0.08	0.63			28	
28-34	1.2	0.1	tr.	0.2		4.2	5.7					0.70	0.19	0.63			26	
34-44	1.2	0.2	tr.	0.2		4.4	6.0					0.64	0.17				27	

Depth (In.)	Clay Fraction Analysis 7A1b-d: Mt.	Chl.	Vm.	Mi.	Int.	Qtz.	Kl.	Gibbsite	Analyses by New Jersey Agr. Exp. Sta., Rutgers a/: Hydraulic conductivity	Porosity a/: Non-capillary	Capillary	Total	Plastic index a/	Aggregate stability a/
	7A2 X-ray						DTA 7A3		in/hr	Pct.	Pct.	Pct.	Pct.	Pct.
0-9									0.8	8.5	36.6	45.1		-
9-12			xxx	xx			x		0.5	6.6	35.9	42.5		90
12-19	x		xxx	xx			xx		0.2	6.9	38.3	45.2		59
19-22	xx		x	xx			xx							59
22-28	x		x	xx			xx		0.04	4.2	36.3	40.5		48
28-34			xx	xx			xx		0.2	7.1	24.0	31.1		28
34-44														

a/ Methods referenced on methods code sheet.

Mt. = Montmorillonite, Chl. = chlorite, Vm. = Vermiculite, mi = mica,
Int. = interstratified layer, Qtz. = quartz, Kl. = Kaolinite

Relative amounts: blank = not determined, dash = not detected,
tr. = trace, x = small, xx = moderate, xxx = abundant, xxxx = dominant.

Pedon Classification: Aquic Hapludult; fine-loamy, mixed, mesic
Soil: Mattapex taxadjunct 1/
Soil No.: S57NJ-12-2
Location: Middlesex County, New Jersey. Charles Holston field. 1 mile east of Dayton, field south of barn about 150 feet and about 40 feet from woods where S57NJ-12-1 taken. About 200 feet from east corner of woods.
Vegetation and land use: Cultivated field. Winter wheat cover crop. Has been planted to white potatoes continuously for 30 years. Grain crop 1949, only exception.
Slope and land form: 1 percent.
Erosion: Little or no erosion has taken place here.
Drainage: Moderately well drained.
Permeability: Moderate.
Parent material: Silty mantle overlying gravelly and sandy, cross bedded deposits (Pensauken formation, post-Jerseyan, pre-Wisconsin age).
Sampled by and date: K. P. Wilson, E. J. Pedersen, S. E. Davidson, and N. A. Willits. March 26, 1957.

Horizon and Beltsville Lab. No.	
Ap 57459	0 to 9 inches. Dark grayish brown to brown (10YR 4/2 to 4/3) silt loam; weak medium subangular blocky structure; firm; moderately permeable; many fine roots; scattered 1/2 to 1 inch quartz pebbles; pH 5.3; abrupt smooth boundary. 8 to 9 inches thick.
A2 57460	9 to 12 inches. Yellowish brown (10YR 5/4) silt loam; weak medium or thick platy structure; plow pan breaks to weak medium subangular blocky; firm in place, friable when removed; wormholes 1 to 4 inches apart and roots pass through this easily; no evidence of roots following platiness; little shrinkage and cracking; rounded frosted quartz grains of .02 mm size dusted with fine angular quartz silt and very fine sand; about 1 percent glossy, hard dark mineral; scattered fine white mica; 5 percent 1/4 to 1 inch diameter quartz pebbles; pH 5.3; clear wavy boundary. 1 to 4 inches thick.
B21t 57461	12 to 19 inches. Strong brown (7.5YR 5/6) heavy silt loam; moderate medium subangular blocky structure; firm; continuous clay films slightly redder than ped interiors. Clay and organic movement along root channels; many fine pores and more dense than A2; the 1 mm quartz grains are rounded and frosted; few fine white mica; many fine roots; 2 percent 1/2 to 1 inch quartz pebbles; clear wavy boundary; pH 5.2. 5 to 8 inches thick.
B22t 57462	19 to 22 inches. Brown (7.5YR 5/4) heavy silt loam; moderate medium subangular blocky structure parting to fine subangular blocks; slightly brittle; firm in place, friable when removed; discontinuous clay films, clay flows along vertical fractures; common fine roots; pH 4.8; gradual irregular boundary. 2 to 6 inches thick.
B3 57463	22 to 28 inches. Yellowish brown (10YR 5/6) silt loam with a few fine distinct low chroma mottles and strong brown spots (7.5YR 5/8); moderate medium subangular blocky structure; very firm in place, peds firm and denser than horizon above, slightly sticky; clay films on peds patchy; clay coats around pebbles, especially on undersides, clay bridges, especially in redder spots; 2 percent glossy, hard, dark mineral grains, scattered fine white mica, especially oriented on ped faces; 2 percent 1/2 to 1 inch quartz pebbles; pH 4.4; clear broken boundary. 0 to 8 inches thick.
IIC1 57464	28 to 34 inches. Reddish brown (5YR 4/4) gravelly fine sandy loam; massive; firm in place, friable when removed; clay bridging and some coating sand grains; rounded sand grains coated with iron oxide; 5 percent dark grains, 2 percent fine white mica; a few decayed chert fragments; 30 percent 1/8 to 1 inch quartz pebbles; pH 4.3; gradual irregular boundary. 4 to 10 inches thick.
IIC2 57465	34 to 44 inches. Yellowish red (5YR 4/6) gravelly sandy loam; massive; friable; pH 4.4.

Notes: Colors are for moist soil.

1/ This pedon is a taxadjunct because it is in the fine-loamy family particle size class as opposed to the Mattapex series which is in a fine-silty class.

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PEDON CLASSIFICATION: Aquic Hapludult; fine-loamy, mixed, mesic
SOIL Mattapex taxadjunct SOIL Nos. S57NJ-12-4 LOCATION Middlesex County, New Jersey

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 57472 - 57477

Depth (In.)	Horizon	1B1b Size class and particle diameter (mm) 3A1												3B2	Coarse fragments 3B1		
		Total			Sand					Silt		Int. II			2A2		
		Sand (2–0.05)	Silt (0.05–0.002)	Clay (< 0.002)	Very coarse (2–1)	Coarse (1–0.5)	Medium (0.5–0.25)	Fine (0.25–0.1)	Very fine (0.1–0.05)	0.05–0.02	Int. III (0.02–0.002)	(0.2–0.02)	(2–0.1)		≥ 2 < 76	2 – 19	19 – 76
		Pct. of < 2 mm												Cm	Pct.	Pct. of < 76mm	
0-13	Ap	27.6	57.2	15.2	1.8	4.8	5.9	8.1	7.0	26.2	31.0	37.6	20.6		6		
13-18	B21t	27.3	49.5	23.2	1.4	4.1	5.5	8.5	7.8	24.0	25.5	36.3	19.5		4		
18-26	B22t	30.0	51.0	19.0	1.8	4.2	5.7	9.4	8.9	25.5	25.5	39.4	21.1		4		
26-31	IIB3	49.7	38.7	11.6	4.4	8.8	11.2	15.0	10.3	21.5	17.2	39.5	39.4		18		
31-38	IIIC1	55.1	36.9	8.0	6.3	11.6	13.3	15.2	8.7	21.8	15.1	37.6	46.4		16		
38-50	IIIC2	76.4	14.7	8.9	16.2	25.3	20.5	10.9	3.5	7.5	7.2	14.7	72.9		35		

Depth (In.)	6A1e Organic carbon	Nitrogen	C/N		6C1a Ext. iron as Fe		Bulk density 4A1e ⅓ bar	Bulk density 4A1h Oven dry	4D1 COLE	Water content	Water content 4B1c ⅓ bar	Water content 4B2 15 bar		4C1 WRD	pH 8C1c (1:1) KCl	pH 8C1a (1:1) H_2O
	Pct	Pct.			Pct.		g/cc	g/cc	g/cc		Pct.	Pct.	Pct.		in/in			
0-13	0.95	0.087	11		1.2											5.1
13-18	0.16				1.5											5.3
18-26	0.10				1.1											5.3
26-31	0.02				1.3											4.6
31-38	0.00				1.5											4.7
38-50	0.02				1.1											4.7

Depth (In.)	Extractable bases 5B1a 6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	Sum	6H2a Ext. acidity	CEC 5A3a Sum cations	CEC	6G1d Ext Al		Ratios to clay 8n1 CEC Sum	Ratios to clay Ext. iron	Ratios to clay 15-bar water	8D3 Ca/Mg	Base saturation 5C3 Sum cations Pct.	Base saturation 5C1 NH_4OAc Pct.
	meq/100 g															
0-13	3.9	0.8	tr.	0.6		7.3	12.6				0.83	0.08			42	
13-18	4.3	0.7	tr.	0.4		5.0	10.4				0.45	0.06			52	
18-26	3.9	0.7	tr.	0.3		4.2	9.1				0.48	0.06			54	
26-31	1.6	0.3	tr.	0.2		4.4	6.5				0.56	0.11			32	
31-38	1.4	0.4	tr.	0.2		3.6	5.6				0.70	0.19			36	
38-50	1.1	0.4	tr.	0.2		2.8	4.5				0.50	0.12			38	

Depth (In.)	Clay Fraction Analysis 7Alb-d Mt.	Chl.	Vm.	Mi.	Int.	Qtz.	Kl.	Gibbsite
	7A2 X-ray						DTA 7A3	
0-13		x	xxx	xx			xx	
13-18								
18-26	x	x	xx	xx			xx	
26-31			xx	x			xx	
31-38			x	xx			xx	
38-50								

Mt. = Montmorillonite, Chl. = chlorite, Vm. = Vermiculite, mi = mica,
Int. = interstratified layer, Qtz. = quartz, Kl. = Kaolinite

Relative amounts. blank = not determined, dash = not detected,
tr. = trace, x = small, xx = moderate, xxx = abundant, xxxx = dominant.

Pedon Classification: Aquic Hapludult; fine-loamy, mixed, mesic
Soil: Mattapex taxadjunct[1]
Soil No.: S57NJ-12-4
Location: Middlesex County, New Jersey. J. Wikoff farm, 1 mile east of Plainsboro, 50 feet west from west edge of woods along power line 500 feet northeast of road in cultivated field.
Vegetation and land use: Cultivated (winter wheat cover crop turned under for potatoes).
Slope and land form: About 1 percent.
Erosion: Not believed either accumulation or deposition.
Drainage: Moderately well drained.
Permeability: Moderate.
Parent material: Silty mantle overlying gravelly and sandy, cross-bedded deposits.
Sampled by and date: G. A. Quakenbush, E. J. Pedersen, S. E. Davidson, and K. P. Wilson. March 28, 1957.

Horizon and Beltsville Lab. No.	
Ap 57472	0 to 13 inches. Brown (10YR 4/3) silt loam; weak coarse crumb structure; friable; mainly very fine silica silt and fine sand plus organic matter; 2 percent 1/2 to 1 inch quartz pebbles; pH 0 to 2 = 5.6, 2 to 6 = 5.4, and 6 to 11 = 5.7; irregular lower boundary. 10 to 14 inches thick.
B21t 57473	13 to 18 inches. Strong brown (7.5YR 5/6) loam; very faint, fine, common yellowish brown (10YR 5/4) and dark yellowish brown (10YR 4/4) mottles; moderate medium subangular blocky structure; firm to slightly firm; discontinuous clay films on most ped surfaces, pores clay coated, clay coats around pebbles; some organic spots; 2 percent 1/2 to 1 inch quartz pebbles; scattered fine roots; pH 5.5; clear wavy boundary. 3 to 6 inches thick.
B22t 57474	18 to 26 inches. Yellowish brown (10YR 5/8) silt loam, common fine faint yellowish brown (10YR 5/6) mottles and few spots of dusky red (2.5YR 3/2); moderate medium subangular blocky structure parting to fine subangular blocks; slightly firm to firm; continuous clay films on most surfaces; many very fine pores; common fine white mica, oriented parallel to ped faces; occasional decayed chert or feldspar grains and fine fragments; 2 percent 1/2 to 1 inch quartz pebbles; pH 5.3; clear wavy boundary. 7 to 10 inches thick.
IIB3 57475	26 to 31 inches. Yellowish brown (10YR 5/6) loam; few fine faint mottles; weak medium subangular blocky structure; firm in place, friable when removed; distinct discontinuous clay films on many ped faces and bridging grains; all grains coated with clay; many fine pores; scattered fine white mica; some decayed chert or feldspar; few roots; 12 percent 1/4 to 1 inch quartz pebbles; pH 4.1; clear broken boundary. 0 to 7 inches thick.
IIIC1 57476	31 to 38 inches. Strong brown (7.5YR 5/6) sandy loam with few fine or medium distinct dark or reddish zones that may be mottles; massive; pebbles clay coated; sand grains bridged with clay; firm or very firm in place, friable when removed; few fine roots; 3 to 5 percent dark minerals, some chert; iron, manganese and clay cementation; many 0.1 to 1.0 mm pores; very few fine white mica flakes; 12 percent 1 to 2 inch quartz pebbles; pH 4.9; gradual wavy boundary. 3 to 10 inches thick.
IIIC2 57477	38 to 50 inches. Strong brown (7.5YR 5/6) to yellowish red (5YR 5/6) gravelly sandy loam; massive; friable; coarse, medium and fine sand, well rounded, frosted and coated with oxides and clay; many uncoated pores; some moderately shiny, altered ferromagnesian minerals; many decayed cherts of all sizes; some, more angular quartz grains; some manganese cementation; some reddish zones around cherts and ferromagnesian grains; occasional feldspars altered to white clay specks; very little mica; 25 percent coarse skeleton 1/8 to 1 inch diameter, mainly quartz pebbles; pH 4.5.

Notes: Colors refer to moist soil.

[1] This pedon is a taxadjunct because it is in the fine-loamy family particle size class, whereas the Mattapex series is in the fine-silty. Base saturation is marginal toward Alfisols because of long term agricultural liming and fertilization, and is extrapolated as very near 35 percent at 63 inches.

U. S DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

PEDON CLASSIFICATION: Aquic Hapludult: fine-loamy, mixed, mesic
SOIL Mattapex taxadjunct SOIL Nos. 858NJ-12-2 LOCATION Middlesex County, New Jersey

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 59263 - 59268

Depth (In.)	Horizon	1B1b Size class and particle diameter (mm) 3A1													3B2	Coarse fragments 3B1		
		Total			Sand					Silt						2A2		
		Sand (2–0.05)	Silt (0.05–0.002)	Clay (< 0.002)	Very coarse (2–1)	Coarse (1–0.5)	Medium (0.5–0.25)	Fine (0.25–0.1)	Very fine (0.1–0.05)	0.05–0.02	Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)		Cm	≥ 2 < 76	2 - 19	19 - 76
		Pct. of < 2 mm														Pct.	Pct. of < 76mm	
0-10	Ap	31.6	55.5	12.9	2.2	6.6	7.1	8.3	7.4	27.2	28.3	38.7	24.2		0.97	5		
10-13	B21t	21.5	58.4	20.1	1.7	3.9	4.5	5.5	5.9	24.9	33.5	33.6	15.6		0.95	9		
13-20	B22t	24.7	51.7	23.6	2.2	4.3	5.2	6.6	6.4	23.2	28.5	33.1	18.3		0.92	14		
20-24	B23t	28.2	54.9	16.9	1.6	3.6	5.1	8.3	9.6	28.2	26.7	42.6	18.6		0.94	9		
24-31	B24t	24.9	58.6	16.5	1.2	3.1	4.1	7.0	9.5	28.9	29.7	42.2	15.4		0.97	4		
31-39	IIC1	75.0	20.9	4.1	4.0	10.5	16.7	27.5	16.3	13.1	7.8	44.1	58.7		0.81	26		

Depth (In.)	6A1a Organic carbon	6B2a Nitrogen	C/N		6C1a Ext. Iron, as Fe	Analyses by New Jersey Agr. Exp. Sta., Rutgers University a/											pH	
						Bulk density	Water retained at suctions of								Available water	Field capacity	8C1c (1:1)	8C1a (1:1)
							0.02 bar	0.06 bar	0.10 bar	0.33 bar	1 bar	2 bar	6 bar	15 bar				
	Pct.	Pct.			Pct.	g/cc	Pct.								In/in	Pct.	KCl	H_2O
0-10	1.02				1.1	1.41	24.0	21.4	20.1	19.0	17.6	11.8	8.0	5.6	0.20	19.5		4.8
10-13	0.17				1.5	1.54	22.3	21.4	20.8	20.2	19.4	14.2	10.2	7.4	0.20	19.5		4.8
13-20	0.28				1.9	1.51	23.1	22.1	21.5	20.9	20.5	15.5	12.1	9.7	0.18	20.3		4.8
20-24	0.08				2.0	1.69	20.4	19.6	18.0	18.0	17.0	13.2	9.7	8.0	0.22	20.6		4.7
24-31	0.07				1.8	1.65	20.9	20.1	19.5	19.0	18.2	14.1	9.9	8.1	0.21	20.9		4.6
31-39	0.02				1.2	1.78	12.9	9.4	8.4	7.4	6.7	3.8	2.7	2.3	0.18	12.0		4.8

Depth (In.)	Extractable bases 5B1a					6H2a	CEC		6G1d			Ratios to clay 8D1			8D3		Base saturation	
	6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	Sum	Ext. acidity	5A3a Sum cations		Ext. Al			CEC Sum	Ext. iron	15-bar water	Ca/Mg		5C3 Sum cations	5C1 NH_4OAc
	meq/100 g																Pct.	Pct.
0-10	2.2	0.5	0.1	0.4	3.2	9.8	13.0					1.01	0.09	0.43			25	
10-13	1.9	0.7	0.1	0.3	3.0	8.0	11.0					0.55	0.07	0.37			27	
13-20	2.9	0.8	0.2	0.4	4.3	8.4	12.7					0.54	0.08	0.41			34	
20-24	2.8	0.4	0.1	0.2	3.5	6.7	10.2					0.60	0.12	0.47			34	
24-31	2.6	0.3	0.1	0.1	3.1	6.3	9.7					0.59	0.11	0.49			35	
31-39	1.0	0.1	0.1	0.1	1.3	2.9	4.2					1.02	0.29	0.56			31	

Depth (In.)	Clay Fraction Analysis 7A1b-d								Analyses by New Jersey Agr. Exp. Sta., Rutgers a/					
	Mt.	Chl.	Vm.	Mi.	Int.	Qtz.	Kl.	Gibbsite	Hydraulic conductivity	Porosity Non-capillary	Porosity Capillary	Porosity Total	Plastic index	Aggregate stability
	7A2 X-ray						7A3		In/hr	Pct.	Pct.	Pct.	Pct.	Pct.
0-10									0.4	12.6	28.6	41.2		45
10-13									0.3	8.7	32.8	41.5		24
13-20									0.3	7.6	33.3	40.9		22
20-24									0.01	4.0	33.0	37.0		8
24-31									0.02	4.2	33.0	37.2		6
31-39									2.1	12.1	17.2	29.3		25

a/ Methods referenced on methods code sheet.

Pedon Classification: Aquic Hapludult; fine-loamy, mixed, mesic
Soil: Mattapex taxadjunct [1]
Soil No.: S58NJ-12-2
Location: Middlesex County, New Jersey. 1 mile east of Plainsboro, south of Plainsboro-Cranbury Road, west of crossing of high tension line distance of 13 utility poles, in field about 225 feet; Britton farm.
Vegetation and land use: Cropped for potatoes for over 15 years and then, the last 6 years, for potatoes alternating with wheat. Wheat stubble plowed under during past autumn.
Slope and land form: 1 percent.
Drainage: Moderately well drained.
Permeability: Moderately slow.
Parent material: Silty and very fine sandy materials on broad, upland, very gently sloping sections of the coastal plain.
Described by: G. Quakenbush

Horizon and Beltsville Lab. No.	
Ap 59263	0 to 10 inches. Dark brown (10YR 4/3) silt loam; massive breaking to weak fine granular structure friable; abrupt smooth boundary. 8 to 10 inches thick.
B21t 59264	10 to 13 inches. Strong brown (7.5YR 4/6) silt loam; weak thin to medium platy structure, also vertical irregular jointing of undetermined spacing; friable; concentration of fine roots in joints; clay films on peds; clear wavy boundary. 7 to 13 inches thick.
B22t 59265	13 to 20 inches. Strong brown (7.5YR 4/6) silt loam; weak or moderate medium or coarse subangular blocky structure; friable, slightly sticky; clay films are weak; clear wavy boundary. 7 to 13 inches thick.
B23t 59266	20 to 24 inches. Strong brown (7.5YR 4/6) silt loam; few to common fine faint mottles; massive breaking to weak coarse subangular blocks; firm in place; slight clay films; clear wavy boundary. 4 to 10 inches thick.
B24t 59267	24 to 31 inches. Strong brown (7.5YR 5/6) silt loam; common or many distinct light brownish gray (10YR 6/2) matter; weak coarse subangular blocky structure; firm in place, friable removed; sand constituent is fine or very fine; clear wavy boundary. 6 to 8 inches thick.
IIC1 59268	31 to 39 inches. Dark brown (7.5YR 4/4) gravelly loamy sand; weakly stratified; firm to loose.
IIC2 Not sampled	39 inches plus. Strong brown (7.5YR 5/6) gravelly sand; weakly stratified; loose.

Notes: Colors refer to moist soil.

[1] This pedon is a taxadjunct because its family particle size class is fine-loamy, as opposed to fine-silty for the Mattapex series.

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

PEDON CLASSIFICATION: Arenic Hapludult; loamy, siliceous, mesic

SOIL Westphalia taxadjunct SOIL Nos. S59NJ-8-1 LOCATION Gloucester County, New Jersey

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 60143 - 60147

Depth (in.)	Horizon	1B1b Total Sand (2–0.05)	Silt (0.05–0.002)	Clay (< 0.002)	Size class and particle diameter (mm) 3A1 Sand: Very coarse (2–1)	Coarse (1–0.5)	Medium (0.5–0.25)	Fine (0.25–0.1)	Very fine (0.1–0.05)	Silt: 0.05–0.02	Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)	3B2 Cm	Coarse fragments 3B1: 2A2 ≥ 2 < 76 Pct.	2 - 19	19–76
		Pct. of < 2 mm														Pct. of < 76mm	
0-4	A1	89.8	7.8	2.4	2.1	7.9	4.1	37.0	38.7	4.3	3.5	77.4	51.1		1.00	1	
4-17	A21	87.9	7.9	4.2	2.2	6.9	3.6	37.7	37.5	3.9	4.0	76.8	50.4		0.97	7	
17-26	A22	84.2	13.2	2.6	1.8	4.4	2.2	38.7	37.1	10.2	3.0	83.8	47.1		0.92	13	
26-36	Bt	79.4	5.9	14.7	0.8	1.8	1.1	41.0	34.7	2.5	3.4	76.1	44.7		0.97	5	
36-60	C	84.4	5.0	10.6	0	0.2	0.2	30.4	53.6	2.6	2.4	85.8	30.8		1.00	tr.	

Depth (In.)	6A1a Organic carbon	6B2a Nitrogen	C/N		Carbonate as $CaCO_3$	Analyses by New Jersey Agr. Exp. Sta., Rutgers University a/ Bulk density	Water retained at suctions of: 0.02 bar	0.06 bar	0.10 bar	0.33 bar	1 bar	2 bar	6 bar	15 bar	Available water	Field capacity	pH 8C1c (1:1) KCl	8C1a (1:1) H_2O
	Pct.	Pct.			Pct.	g/cc	Pct.								in/in	Pct.		
0-4	1.34	0.045	30			1.12	39.7	24.9	21.6	18.2	16.9	4.7	4.2	4.0	0.12	15.0		3.6
4-17	0.37	0.025	15			1.27	33.4	25.3	21.4	9.8	7.8	4.3	3.4	2.5	0.12	11.9		4.4
17-26	0.08					1.47	23.9	17.8	14.2	7.7	4.9	2.8	2.1	1.4	0.16	12.2		4.5
26-36	0.12					1.55	21.8	17.7	14.3	12.6	8.7	9.4	8.1	6.9	0.13	15.2		4.3
36-60	0.04					1.44	26.4	19.3	15.6	9.3	3.0	7.2	6.3	5.5	0.07	10.7		4.3

Depth (In.)	Extractable bases 5B1a: 6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	Sum	6H2a Ext acidity	CEC: 5A3a Sum cations		6G1d Ext. Al			Ratios to clay 8D1: CEC Sum	Ext. iron	15-bar water	8D3 Ca/Mg		Base saturation: 5C3 Sum cations Pct.	5C1 NH_4OAc Pct.
	meq/100 g																	
0-4	0.1	tr.	tr.	tr.	0.1	4.1	4.2										2	
4-17	tr.	tr.	tr.	tr.	tr.	3.3	3.3					0.78		0.60			-	
17-26	tr.	tr.	tr.	tr.	tr.	0.8	0.8										-	
26-36	tr.	tr.	tr.	tr.	tr.	3.9	4.0					0.27		0.47			2	
36-60	tr.	tr.	tr.	tr.	tr.	2.1	2.1					0.20		0.52			-	

Depth (In.)	Clay Fraction Analysis 7A1b-d: Mt.	Chl.	Vm.	Mi.	Int.	Qtz.	Kl.	Gibbsite	Analyses by New Jersey Agr. Exp. Sta., Rutgers a/: Porosity a/ Hydraulic conductivity	Non-capillary	Capillary	Total	Plastic index a/	Aggregate stability a/
	7A2 X-ray						7A3		in/hr	Pct.	Pct.	Pct.	Pct.	Pct.
0-4									4.2	24.2	27.6	51.8		87
4-17									5.9	15.0	32.8	47.8		84
17-26									2.2	12.4	25.8	38.2		53
26-36									0.3	9.0	27.3	36.3		14
36-60									2.8	11.2	27.5	38.7		13

a/ Methods referenced on methods code sheet.

Pedon Classification: Arenic Hapludult; loamy, siliceous, mesic
Soil: Westphalia taxadjunct 1/
Soil No.: S59NJ-8-1
Location: Gloucester County, New Jersey. About 200 feet south of the Barnsboro-Jefferson Road, 10 feet west of woods trail; long.: 75°10'45", lat.: 39°45'20"; on property of Lawrence Meyers.
Vegetation and land use: Hardwood forest of yellow poplar and beech abundant and white and red oak common; some black gum, red maple, sassafras. Shrubs: sweet pepper bush, laurel, wild honeysuckle.
Slope and land form: 2 percent.
Drainage: Moderately well drained.
Permeability: Moderate.
Parent material: Kirkwood formation, fine sand.

Horizon and Beltsville Lab. No.	
O1 Not sampled	6 to 3 inches. Loose leaves of beech, red oak.
O2 Not sampled	3 inches to 0. Very dark gray (10YR 3/1) fibrous matted broken leaves.
A1 60143	0 to 4 inches. Dark gray (10YR 4/1) fine sand; single grain; loose; less than 2 percent rounded quartzose pebbles; abrupt wavy boundary. 2 to 5 inches thick.
A21 60144	4 to 17 inches. Yellowish brown (10YR 5/6) fine sand; weak medium subangular blocky structure; very friable; many roots; gradual smooth boundary. 14 to 16 inches thick.
A22 60145	17 to 26 inches. Light yellowish brown (2.5Y 6/4) loamy fine sand; weak medium subangular blocky to weak platy structure; very friable; 10 percent of quartzose pebbles and cobbles, some up to 5 and 8 inches in diameter; gradual wavy boundary. 5 to 10 inches thick.
Bt 60146	26 to 36 inches. Yellowish brown (10YR 5/8) very fine sandy loam; moderate medium subangular blocky structure; friable; common roots; some pebbles; thin clay films around pebbles; very wavy. 12 to 24 inches thick.
C 60147	36 to 60 inches. Yellowish brown (10YR 5/8) loamy very fine sand with streaks of (10YR 6/2) up to 2 inches in thickness; single grain; very friable; few roots; less than 3 percent pebbles.

Notes: Colors refer to moist soil.

1/ This pedon is a taxadjunct because the epipedon and the argillic horizon is thicker than in the Westphalia series which is in the Ochreptic subgroup.

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

PEDON CLASSIFICATION: Arenic Hapludult; loamy, siliceous, mesic
SOIL Westphalia taxadjunct SOIL Nos. S59NJ-3-2 LOCATION Burlington County, New Jersey

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 60132 - 60137

Depth (in.)	Horizon	1B1b Total Sand (2–0.05)	Total Silt (0.05–0.002)	Total Clay (< 0.002)	Sand: Very coarse (2–1)	Sand: Coarse (1–0.5)	Sand: Medium (0.5–0.25)	Sand: Fine (0.25–0.1)	Sand: Very fine (0.1–0.05)	Silt: 0.05–0.02	Silt: Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)	3B2 Cm	Coarse fragments 3B1: 2A2 ≥ 2 Pct.	2 – 19 Pct. of < 76mm	19 – 76 Pct. of < 76mm
		Pct. of < 2 mm															
0-5	A1	78.9	19.6	1.5	2.5	9.0	7.9	27.2	32.3	12.1	7.5	63.6	46.6	1.00	tr.		
5-23	A2	75.6	19.5	4.9	3.1	9.2	7.8	24.9	30.6	12.2	7.3	60.1	45.0	1.00	tr.		
23-31	B2t	69.3	21.1	9.6	3.0	6.9	6.2	21.5	31.7	13.2	7.9	59.9	37.6	1.00	tr.		
31-39	B3t	79.0	13.5	7.5	3.6	8.8	7.9	27.3	31.4	9.0	4.5	59.7	47.6	1.00	tr.		
39-46	C1	94.6	3.9	1.5	4.0	14.9	12.1	38.7	24.9	3.2	0.7	54.0	69.7	1.00	tr.		
46-50	C2	87.4	5.4	7.2	2.7	14.0	11.6	34.7	24.4	4.5	0.9	51.1	63.0	1.00	tr.		

Depth (in.)	6A1a Organic carbon Pct.	5B2a Nitrogen Pct.	C/N	Carbonate as $CaCO_3$ Pct.	Analyses by New Jersey Agr. Exp. Sta., Rutgers University a/: Bulk density g/cc	Water retained at suctions of: 0.02 bar Pct.	0.06 bar Pct.	0.10 bar Pct.	0.33 bar Pct.	1 bar Pct.	2 bar Pct.	6 bar Pct.	15 bar Pct.	Available water in/in	Field capacity Pct.	pH 8C1c (1:1) KCl	pH 8C1a (1:1) H_2O
0-5	1.16	0.049	24		1.11	44.1	28.4	26.3	22.4	19.2	3.8	3.5	3.4	0.15	16.8		3.6
5-23	0.46	0.032	14		1.30	35.9	23.9	22.8	17.2	15.0	4.4	3.7	3.1	0.14	13.7		4.5
23-31	0.13				1.56	17.7	17.0	14.5	12.0	9.4	6.1	5.2	4.5	0.15	14.0		4.3
31-39	0.06				1.58	15.1	14.5	13.0	10.6	9.1	4.5	3.9	3.1	0.13	11.1		4.3
39-46	0.00				1.56	21.7	12.2	10.1	6.8	4.6	2.0	1.2	0.8	0.12	8.8		4.4
46-50	0.04				1.61	21.3	14.3	12.4	9.4	8.0	4.4	4.1	3.1	0.13	11.5		4.3

Depth (in.)	Extractable bases 5B1a: 6N2d Ca meq/100 g	6O2b Mg meq/100 g	6P2a Na meq/100 g	6Q2a K meq/100 g	Sum meq/100 g	6H2a Ext. acidity meq/100 g	CEC: 5A3a Sum cations meq/100 g	6Q1d Ext. Al meq/100 g	Ratios to clay 8D1: CEC Sum	Ext. iron	15-bar water	8D3 Ca/Mg	Base saturation: 5C3 Sum cations Pct.	5C1 NH_4OAc Pct.
0-5	0.1	tr.	0.1	tr.	0.2	5.0	5.2						4	
5-23	tr.	tr.	0.1	tr.	0.1	4.6	4.7		0.96		0.63		2	
23-31	tr.	tr.	tr.	0.1	0.1	4.8	4.9				0.47		2	
31-39	tr.	0.1	tr.	tr.	0.1	3.5	3.6		0.48		0.47		3	
39-46	tr.	tr.	tr.	tr.	tr.	0.4	0.4						-	
46-50	tr.	0.1	tr.	tr.	0.1	3.3	3.4		0.47		0.53		3	

Depth (in.)	Clay Fraction Analysis 7A1b-d, 7A2 X-ray: Mt.	Chl.	Vm.	Mi.	Int.	Qtz.	7A3: Kl.	Gibbsite
0-5								
5-23								
23-31								
31-39								
30-46								
46-50								

Depth (in.)	Analyses by New Jersey Agr. Exp. Sta., Rutgers a/: Hydraulic conductivity in/hr	Porosity a/: Non-capillary Pct.	Capillary Pct.	Total Pct.	Plastic index Pct.	Aggregate stability Pct.
0-5	8.0	22.9	31.1	54.0		93
5-23	6.7	19.8	31.0	50.8		78
23-31	0.8	14.7	26.4	41.1		42
31-39	0.7	14.5	24.2	38.7		27
30-46	4.6	20.2	18.9	39.1		23
46-50	2.1	14.9	22.9	37.8		25

a/ Methods referenced on methods code sheet.

Pedon Classification: Arenic Hapludult; loamy, siliceous, mesic
Soil: Westphalia taxadjunct 1/
Soil No.: S59NJ-3-2
Location: Burlington County, New Jersey. 200 feet north of Buddtown-Paislee Road; near Beaverville, north of Red Lion; long. 74°44'10", lat. 39°54'25"; on photo CMU-14-128; Allen property.
Vegetation and land use: Hardwood forest, mainly oak, some hickory; also maple, holly, chestnut, black gum, gray birch. Understory: Laurel, briars, sweet pepper bush, low bush blueberries.
Slope and land form: 1 percent.
Drainage: Well drained.
Permeability: Moderate.
Parent material: Kirkwood formation, fine sands.
Described by: Marco Markley

Horizon and Beltsville Lab. No.	
O1 Not sampled	4 to 3 inches. Mostly undecomposed oak leaves.
O2 Not sampled	3 inches to 0. Very dark grayish brown (10YR 3/2) fibrous fragmented leaves.
A1 60132	0 to 5 inches. Gray (10YR 5/1) fine sand, browner in the lower 2 inches; single grain; loose; roots abundant; no coarse skeleton; clear wavy boundary. 4 to 6 inches thick.
A2 60133	5 to 23 inches. Yellowish brown (10YR 5/6) loamy fine sand; weak medium subangular blocky structure; very friable; many roots; in places firm in the lower part; coloring of peds is paler on the surface and darker inside; abrupt wavy boundary. 7 to 11 inches thick.
B2t 60134	23 to 31 inches. Yellowish brown (10YR 5/8) very fine sandy loam; moderate medium subangular blocky structure; friable; many roots; mica common; abrupt wavy boundary. 5 to 10 inches thick.
B3t 60135	31 to 39 inches. Yellowish brown (10YR 5/6) very fine sandy loam; weak medium subangular blocky structure; very friable; common roots; low mica content; abrupt wavy boundary. 7 to 10 inches thick.
C1 60136	39 to 46 inches. Stratified light yellowish brown (2.5Y 6/4) sand; single grain; loose; few roots; low mica content; abrupt wavy boundary. 5 to 9 inches thick.
C2 60137	46 to 50 inches. Stratified yellowish brown (10YR 5/8) loamy sand; massive; friable; some roots; low mica content; abrupt wavy boundary. 2 to 6 inches thick.
C3 Not sampled	50 to 60 inches. Stratified light brownish gray (2.5Y 6/2) fine sand; single grain; loose; few roots; low mica content.

Notes: Colors refer to moist soil.

1/ This pedon is a taxadjunct because the epipedon and the argillic horizon is thicker than in the Westphalia series which is in the Ochreptic subgroup.

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

PEDON CLASSIFICATION: Humic Hapludult; coarse-loamy, siliceous, mesic

SOIL Downer taxadjunct SOIL Nos. 858NJ-5-4 LOCATION Cape May County, New Jersey

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 59283 - 59288

Depth (In.)	Horizon	1B1b Total Sand (2-0.05)	Total Silt (0.05-0.002)	Total Clay (< 0.002)	Sand: Very coarse (2-1)	Sand: Coarse (1-0.5)	Sand: Medium (0.5-0.25)	Sand: Fine (0.25-0.1)	Sand: Very fine (0.1-0.05)	Silt (0.05-0.02)	Silt: Int. III (0.02-0.002)	Int. II (0.2-0.02)	(2-0.1)		3B2 Cm	Coarse fragments 3B1: 2A2 >2 <76 Pct.	2-19	19-76
		Pct. of < 2 mm														Pct. of < 76mm		
0-9	Ap	72.4	22.2	5.4	4.1	17.7	21.0	27.4	2.2	9.1	13.1	21.9	70.2		0.99	2		
9-12	A2	69.6	23.2	7.2	3.2	15.3	21.2	27.2	2.7	6.8	16.4	19.0	66.9		0.97	5		
12-16	B1	62.4	28.5	9.1	2.2	13.8	19.2	24.7	2.5	11.5	17.0	22.9	59.9		0.98	3		
16-22	B2t	56.7	30.0	13.0	2.2	13.4	17.4	21.3	2.4	12.6	17.4	22.7	54.3		0.98	4		
22-27	B3	73.5	15.6	10.9	2.7	16.8	23.4	29.2	1.4	6.5	9.1	16.0	72.1		0.96	7		
27-36	IIC	91.6	3.9	4.5	4.6	17.4	27.4	41.0	1.2	2.1	1.8	16.5	90.4		0.98	4		

Depth (In.)	6A1a Organic carbon	6B2a Nitrogen	C/N		6C1a Ext. iron as Fe	Analyses by New Jersey Agr. Exp. Sta., Rutgers University a/: Bulk density	Water retained at suctions of: 0.02 bar	0.06 bar	0.10 bar	0.33 bar	1 bar	2 bar	6 bar	15 bar	Available water	Field capacity	pH: 8C1c (1:1) KCl	8C1a (1:1) H_2O
	Pct.	Pct.			Pct.	g/cc	Pct.								in/in	Pct.		
0-9	1.12	0.100	11		0.4	1.58	21.8	19.5	16.7	15.5	14.1	5.4	3.8	3.2	0.17	13.8		5.3
9-12	0.32	0.041			0.4	1.69	16.6	13.3	11.2	10.6	9.3	5.2	3.5	2.6	0.14	11.1		5.4
12-16	0.27				0.6	1.63	18.8	14.9	12.8	11.9	10.3	6.0	4.3	3.2	0.14	11.6		5.6
16-22	0.23				0.8	1.53	23.1	16.9	14.5	13.5	12.4	7.2	6.1	4.9	0.12	13.0		5.2
22-27	0.15				0.8	1.62	20.6	12.6	10.0	9.0	7.2	6.5	5.5	4.2	0.10	9.9		5.0
27-36	0.04				0.4	1.51	22.5	8.1	5.1	4.0	3.4	2.1	1.9	1.7	0.06	5.6		5.0

Depth (In.)	Extractable bases 5B1a: 6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	Sum	6H2a Ext. acidity	CEC: 5A3a Sum cations	6G1d Ext. Al	Ratios to clay 8D1: CEC Sum	Ext. iron	15-bar water	8D3 Ca/Mg	Base saturation: 5C3 Sum cations Pct	5C1 NH_4OAc Pct.
	meq/100 g													
0-9	2.6	0.2	tr.	0.5	3.3	4.8	8.1		1.50	0.07	0.59		41	
9-12	1.4	0.2	tr.	0.3	1.9	2.3	4.2		0.58	0.06	0.36		45	
12-16	1.9	0.4	tr.	0.3	2.6	2.3	4.9		0.54	0.07	0.35		53	
16-22	2.2	0.7	tr.	0.3	3.2	3.3	6.6		0.51	0.06	0.38		50	
22-27	1.5	0.7	tr.	0.3	2.5	2.9	5.4		0.49	0.07	0.39		46	
27-36	0.6	0.3	tr.	0.1	1.0	1.4	2.4		0.53	0.09	0.38		42	

Depth (In.)	Clay Fraction Analysis 7A1b-d: Mt.	Chl.	Vm.	Mi	Int	Qtz.	Kl.	Gibbsite	Analyses by New Jersey Agr. Exp. Sta., Rutgers: Hydraulic conductivity a/	Porosity a/: Non-capillary	Capillary	Total	Plastic index a/	Aggregate stability a/
	7A2 X-ray						7A3		in/hr	Pct.	Pct.	Pct.	Pct.	Pct.
0-9									2.8	7.1	30.5	37.6		79
9-12									0.2	9.1	23.1	32.2		37
12-16									0.5	9.9	24.2	24.1		24
16-22									1.0	13.9	25.5	39.4		22
22-27									1.8	17.5	20.4	37.9		27
27-36									10.5	26.2	12.3	38.5	N.P.	27

a/ Methods referenced on methods code section.

Pedon Classification: Humic Hapludult; coarse-loamy, siliceous, mesic
Soil: Downer taxadjunct 1/
Soil No.: S58NJ-5-4
Location: Cape May County, New Jersey. 3/4 mile north of canal, on west side of Shunpike Road, 250 yards west of road, toward projection of woods; Phillips farm.
Vegetation and land use: Under alfalfa of several years.
Slope and land form: 2 to 3 percent.
Drainage: Well drained.
Permeability: Moderately rapid.
Parent material: Quaternary coastal plain sediments.

Horizon and Beltsville Lab. No.	
Ap 59283	0 to 9 inches. Very dark grayish brown (10YR 3/2) sandy loam, grayish brown (10YR 5/2) dry; weak fine granular structure; friable; abrupt slightly wavy boundary except for stringers that extend irregularly and as much as 5 inches into the A2.
A2 59284	9 to 12 inches. Yellowish brown (10YR 5/4) sandy loam, pale brown (10YR 6/3) dry; weak fine granular structure; friable; clear wavy boundary. 3 to 7 inches thick.
B1 59285	12 to 16 inches. Dark brown (10YR 5/3) sandy loam, pale brown (10YR 6/3) dry; massive, crushing to very weak very fine granules; clear wavy boundary. 3 to 5 inches thick.
B2t 59286	16 to 22 inches. Strong brown (7.5YR 5/6) sandy loam, light yellowish brown (10YR 6/4) dry; very weak medium or coarse subangular blocky structure; slightly plastic; thin clay films on peds and around pebbles; clear wavy boundary. 6 to 7 inches thick.
B3 59287	22 to 27 inches. Strong brown (7.5YR 5/6) sandy loam, yellowish brown (10YR 5/4) dry; massive; friable; clear wavy boundary. 3 to 5 inches thick.
IIC 59288	27 to 36 inches. Yellowish brown (10YR 5/6) sand, light yellowish brown (10YR 6/4) dry; single grain; loose.

Notes: Colors are for moist soil unless indicated otherwise.

1/ This pedon is a taxadjunct because it has the dark Ap horizon of the Humic subgroup. The Downer series is in the typic subgroup. Base status is elevated by fertilization and liming is considered less than 35 percent below 60 inches.

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

PEDON CLASSIFICATION: Psammentic Hapludult; sandy, siliceous, mesic

SOIL Galestown loamy sand SOIL Nos. S58NJ-3-1 LOCATION Burlington County, New Jersey

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 59201 - 59205

Depth (In.)	Horizon	1B1b Size class and particle diameter (mm) 3A1 — Total: Sand (2–0 05)	Silt (0.05–0 002)	Clay (< 0.002)	Sand: Very coarse (2–1)	Coarse (1–0.5)	Medium (0.5–0.25)	Fine (0.25–0.1)	Very fine (0 1–0 05)	Silt: 0.05–0 02	Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)	3B2 Cm	Coarse fragments 3B1: 2A2 > 2 Pct.	2 – 19 Pct. of < 76mm	19 – 76 Pct. of < 76mm
		Pct. of < 2 mm															
0-4	A11,A12	87.6	8.4	4.0	0.8	10.8	29.8	38.8	7.4	4.9	3.5	30.0	80.2	1.00	-		
4-26	A2	90.7	5.9	3.4	0.6	9.4	28.2	41.9	10.6	3.9	2.0	35.3	80.1	1.00	-		
26-32	B1t	88.1	6.3	5.6	0.5	6.6	24.7	43.7	12.6	4.2	2.1	39.6	75.5	1.00	tr.		
32-40	B2t	87.6	4.9	7.5	0.4	6.1	24.7	44.0	12.4	3.8	1.1	38.4	75.2	1.00	-		
40-62	IIC1	95.7	1.6	2.7	0.4	6.8	31.5	49.5	7.5	0.4	1.2	30.4	88.2	1.00	-		
62-70	IIC2	Not sampled															

Depth (In.)	6A1a Organic carbon	6B2a Nitrogen	C/N		6C1a Ext. iron as Fe	Analyses by New Jersey Agr. Exp. Sta., Rutgers University a/ — Bulk density	Water retained at suctions of: 0.02 bar	0.06 bar	0.10 bar	0.33 bar	1 bar	2 bar	6 bar	15 bar	Available water	Field capacity	pH: 8C1c (1:1) KCl	8C1a (1.1) H_2O
	Pct	Pct.			Pct.	g/cc	Pct.								in/in	Pct.		
0-4	2.06	0.085	24		0.4	1.31	31.0	15.1	12.5	11.0	9.1	6.7	5.5	5.0	0.20	20.0		3.7
4-26	0.26	0.019	14		0.4	1.47	24.8	9.5	7.3	6.1	4.9	2.8	2.2	1.3	0.10	8.4		4.3
26-32	0.10	0.032			0.6	1.53	24.5	10.7	9.1	6.9	6.2	3.4	3.0	2.1	0.11	9.6		4.2
32-40	0.12	0.032			0.7	1.51	24.8	10.0	8.5	7.5	6.8	3.9	3.4	2.6	0.11	9.9		4.1
40-62	0.05				0.4	1.49	23.3	7.2	5.9	5.0	4.3	2.1	1.8	1.4	0.09	7.5		4.5
62-70	Not sampled																	

Depth (In.)	Extractable bases 5B1a: 6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	Sum	6H2a Ext. acidity	CEC: 5A3a Sum cations	6G1d Ext Al	Ratios to clay 8D1: CEC Sum	Ext. iron	15-bar water	8D3 Ca/Mg	Base saturation: 5C3 Sum cations Pct.	5C1 NH_4OAc Pct.
	meq/100 g													
0-4	0.3	0.2	0.1	0.1	0.7	9.8	10.5		2.62	0.10	1.25		7	
4-26	0.1	0.2	0.1	0.1	0.5	2.2	2.7		0.79	0.12	0.38		18	
26-32	0.3	tr.	tr.	0.1	0.4	2.2	2.6		0.46	0.11	0.38		15	
32-40	0.3	0.2	tr.	0.1	0.6	3.6	4.2		0.56	0.09	0.35		14	
40-62	0.4	0.1	tr.	0.1	0.6	1.5	3.1			0.15	0.52		19	
62-70	Not sampled													

Depth (In.)	Clay Fraction Analysis 7A1b-d: Mt.	Chl.	Vm	Mi.	Int.	Qtz.	Kl.	Gibbsite	Analyses by New Jersey Agr. Exp. Sta., Rutgers a/ — Porosity: Hydraulic conductivity a/ in/hr	Non-capillary a/ Pct.	Capillary Pct.	Total Pct.	Plastic index a/ Pct.	Aggregate stability a/ Pct.
	7A2 X-ray						7A3							
0-4									11.1	26.7	19.7	46.4	N.P.	70
4-26									8.2	27.5	14.0	41.5	N.P.	72
26-32									5.7	25.9	16.3	42.2	N.P.	51
32-40									5.7	26.6	15.2	41.8	N.P.	18
40-62									10.3	26.5	11.3	37.8	N.P.	-
62-70	Not sampled													

a/ Methods referenced on methods code sheet.

lassification: Psammentic Hapludult; sandy, siliceous, mesic
Galestown loamy sand
.: S58NJ-3-1
n: Burlington County, New Jersey. 1/2 mile west of U.S. Highway No. 130, 300 feet south in
odlot, 1 mile southeast of Taylor.
ion and land use: Woodland, mainly chestnut oak with some Virginia pine, hickory, beech, and red
k. Understory: flowering dogwood.
nd land form: 2 to 3 percent.
e: Somewhat excessively drained.
ility: Estimated to be very rapid.
material: Impure sands from high stream terrace.
by and date: N. A. Willits, K. P. Wilson, and M. A. Hawkins. April 1, 1958.

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Loose leaves from last fall; very discontinuous cover.
pled

1 inch to 0. Black (5YR 2/1) matted and decayed leaves; fine rootlets and mycelia.
pled

0 to 1 inch. Black (5YR 2/1) sand; very weak fine granular structure; loose; pH 2 to 6; clear smooth lower boundary.

1 to 4 inches. Dark brown (7.5YR 3/2) sand; very weak fine granular structure or single grain; loose; pH 2.6; gradual wavy boundary. 2 to 4 inches thick.

4 to 26 inches. Yellowish brown (10YR 5/6) sand; single grain; loose; pH 4.4; clear lower wavy boundary. 20 to 23 inches thick.

26 to 32 inches. Dark brown (7.5YR 4/4) sand slightly finer textured than the A2; single grain; slightly firm in place, loose when removed; lamellae of clay accumulation; pH 4.4; clear wavy lower boundary. 4 to 11 inches thick.

32 to 40 inches. Dark brown to reddish brown (7.5YR 4/4 to 5YR 4/4) loamy sand very slightly finer textured than the B1; slightly firm in place, very friable when removed; no clay bridges; pH 4.2; clear wavy boundary. 9 to 11 inches thick.

40 to 62 inches. Dark brown (7.5YR 4/4) sand, balls and lamellae of heavy loamy sand; single grain; very friable; pH 4.3; clear wavy lower boundary.

62 to 70 inches. Dark yellowish brown (10YR 4/4) to yellowish brown (10YR 5/4) medium sand;
pled single grain; loose.

Colors refer to moist soil.

PEDON CLASSIFICATION: Psammentic Hapludult; sandy, siliceous, mesic

SOIL Galestown loamy sand SOIL Nos. 858MJ-3-2 LOCATION Burlingtown County, New Jersey

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 59206 - 59210

Depth (In.)	Horizon	1B1b Total Sand (2–0.05)	Total Silt (0.05–0.002)	Total Clay (< 0.002)	Size class and particle diameter (mm) 3A1 Sand: Very coarse (2–1)	Sand: Coarse (1–0.5)	Sand: Medium (0.5–0.25)	Sand: Fine (0.25–0.1)	Sand: Very fine (0.1–0.05)	Silt: 0.05–0.02	Silt: Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)		3B2 Cm	Coarse fragm 2A2 > 2 Pct.	2 – 19
		Pct. of < 2 mm															
0–5	A11,A12	89.3	7.1	3.6	1.3	16.4	25.5	36.5	9.6	4.6	2.5	34.2	79.7		1.00	-	
5–27	A2	93.3	3.2	3.5	1.7	13.2	23.9	41.2	13.3	3.0	0.2	40.0	80.0		1.00	tr.	
27–36	B1t	89.8	3.3	6.9	1.3	8.0	18.4	45.6	16.5	2.8	0.5	47.2	73.3		1.00	tr.	
36–48	B2t	90.1	2.5	7.4	2.2	12.0	23.1	41.3	11.5	1.5	1.0	36.6	78.6		1.00	tr.	
48–60	C	91.2	4.3	4.5	1.9	9.9	17.2	31.5	30.7	3.2	1.1	55.2	60.5		1.00	tr.	

Depth (In.)	6A1a Organic carbon Pct.	6B2a Nitrogen Pct.	C/N		6C1a Ext. iron as Fe Pct.	Analyses by New Jersey Agr. Exp. Sta., Rutgers University a/ Bulk density g/cc	Water retained at suctions of: 0.02 bar Pct.	0.06 bar Pct.	0.10 bar Pct.	0.33 bar Pct.	1 bar Pct.	2 bar Pct.	6 bar Pct.	15 bar Pct.	Available water in/in	Field capacity Pct.	pH 8C1c (1:1) KCl
0–5	2.31	0.105	22		0.5	1.30	31.5	15.5	13.3	11.2	10.0	7.3	6.6	6.3	0.093	13.6	
5–27	0.15	0.034			0.5	1.47	23.7	9.5	6.9	5.3	3.8	2.3	2.0	1.4	0.101	8.3	
27–36	0.10	0.033			0.6	1.48	24.3	11.3	8.1	6.6	5.9	3.5	3.1	2.7	0.095	9.1	
36–48	0.09				0.8	1.53	21.7	10.7	8.2	6.9	6.2	4.3	4.0	3.3	0.101	9.9	
48–60	0.06				0.5	1.49	23.2	12.2	9.4	7.8	6.9	3.0	2.7	2.2	0.088	8.1	

Depth (In.)	Extractable bases 5B1a: 6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	Sum	6H2a Ext. acidity	CEC: 5A3a Sum cations	6G1d Ext. Al	Ratios to clay 8D1: CEC Sum	Ext. iron	15-bar water	8D3 Ca/Mg	Base sa 5C3 Sum cations Pct.
	meq/100 g												
0–5	0.4	0.3	tr.	0.1	0.8	9.1	9.9		2.75	0.14	1.75		8
5–27	tr.	0.2	tr.	0.1	0.3	2.8	3.1		0.88	0.14	0.40		10
27–36	0.2	0.3	tr.	0.1	0.6	3.0	3.6		0.52	0.09	0.39		17
36–48	0.2	0.3	tr.	0.2	0.7	4.9	5.6		0.76	0.11	0.45		12
48–60	0.3	0.4	tr.	0.1	0.8	2.2	3.0		0.67	0.11	0.49		27

Depth (In.)	Clay Fraction Analysis 7A1b-d: Mt	Chl.	Vm.	Mi.	Int.	Qtz.	Kl.	Gibbsite	Analyses by New Jersey Agr. Exp. Sta., Rutgers a/: Hydraulic conductivity a/ in/hr	Porosity a/: Non-capillary Pct.	Capillary Pct.	Total Pct.	Plastic index a/ Pct.	Aggregate stability a/ Pct.
	7A2 X-ray						7A3							
0–5									9.8	26.0	20.0	46.0	N.P.	77
5–27									10.5	27.0	13.9	40.9	N.P.	-
27–36									6.8	24.3	16.7	41.0	N.P.	59
36–48									7.5	21.7	16.3	38.0	N.P.	24
48–60									3.7	18.7	18.1	36.8	N.P.	17

a/ Methods enced o methods sheet.

Classification: Psammentic Hapludult; sandy, siliceous, mesic
Galestown loamy sand
o.: S58NJ-3-2
on: Burlington County, New Jersey. 3/4 mile north of U.S. Highway No. 130 and north of Holliday
ake, 1 mile south of Beverly, 100 feet in woodlot west of blacktop road.
tion and land use: Woodland, trees averaging 2 to 4 inches in diameter, white oak, hickory, red oak,
hestnut oak, beech, flowering dogwood, sassafras, Virginia pine, and wild cherry.
and land form: Less than 1 percent.
n: Little or none.
ge: Somewhat excessively drained.
bility: Estimated, very rapid throughout.
material: Impure sands from high, stream terrace.
d by and date: N. A. Willits, K. P. Wilson, M. A. Hawkins. April 1, 1958.

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o.

3 inches to 1. Loose leaves from last fall, mainly oak.
mpled

1 inch to 0. Black (5YR 2/1) matted decayed leaves, hardly recognizable; many very fine
mpled roots and mycelia; abrupt lower boundary; pH 4.0. 1/2 to 1 inch thick.

0 to 1 inch. Very dark gray to very dark grayish brown (10YR 3/1 to 3/2) sand; single grain; loose; clear clean quartz grains throughout; pH 3.7; clear wavy boundary. 1 to 1-1/2 inches thick.

1 to 5 inches. Dark brown (7.5YR 3/2) sand; single grain; loose; fewer clean quartz grains than in A11; clear wavy boundary.

5 to 27 inches. Strong brown (7.5YR 5/6) to brown (7.5YR 5/4) sand; single grain; loose; pH 4.2; clear wavy boundary. 22 to 27 inches thick.

27 to 36 inches. Dark yellowish brown (10YR 4/4) sand with slightly more fines than A2; weak medium subangular blocky structure; slightly firmer in place than the A2, loose when removed; pH 4.2; clear wavy boundary. 9 to 14 inches thick.

36 to 48 inches. Reddish brown to yellowish red (5YR 4/4 to 4/6) sand with slightly more fines than in the B1t; weak medium subangular blocky structure; slightly firm in place, very friable when removed; scattered grains of glauconite; clay bridges in the firmer spots and in lamellae; pH 3.6; clear wavy boundary.

48 to 60 inches. Reddish brown (2.5YR 5/4) sand; single grain; loose; discontinuous lamellae with slightly more clay than the mass and yellowish red (5YR 4/6); pH 4.8, some glauconite clearly visible (2 to 5 percent estimated).

: Colors refer to moist soil.

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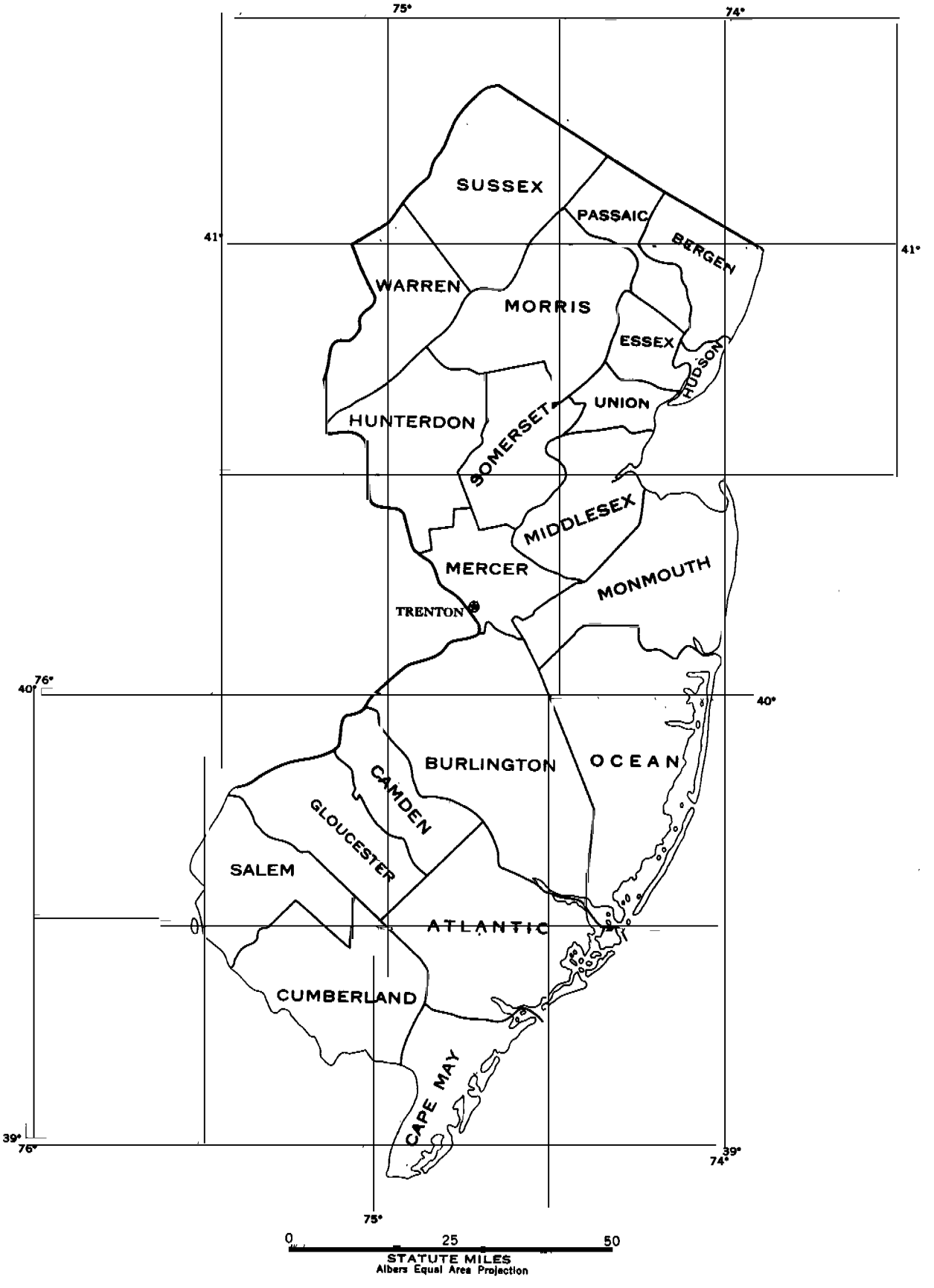
NEW JERSEY


75°
74°
41°
SUSSEX
PASSAIC
BERGEN
WARREN
MORRIS
ESSEX
HUDSON
HUNTERDON
SOMERSET
UNION
MIDDLESEX
MERCER
MONMOUTH
TRENTON
40°
BURLINGTON
OCEAN
CAMDEN
GLOUCESTER
SALEM
ATLANTIC
CUMBERLAND
CAPE MAY
39°
76°
0
25
50
STATUTE MILES
Albers Equal Area Projection