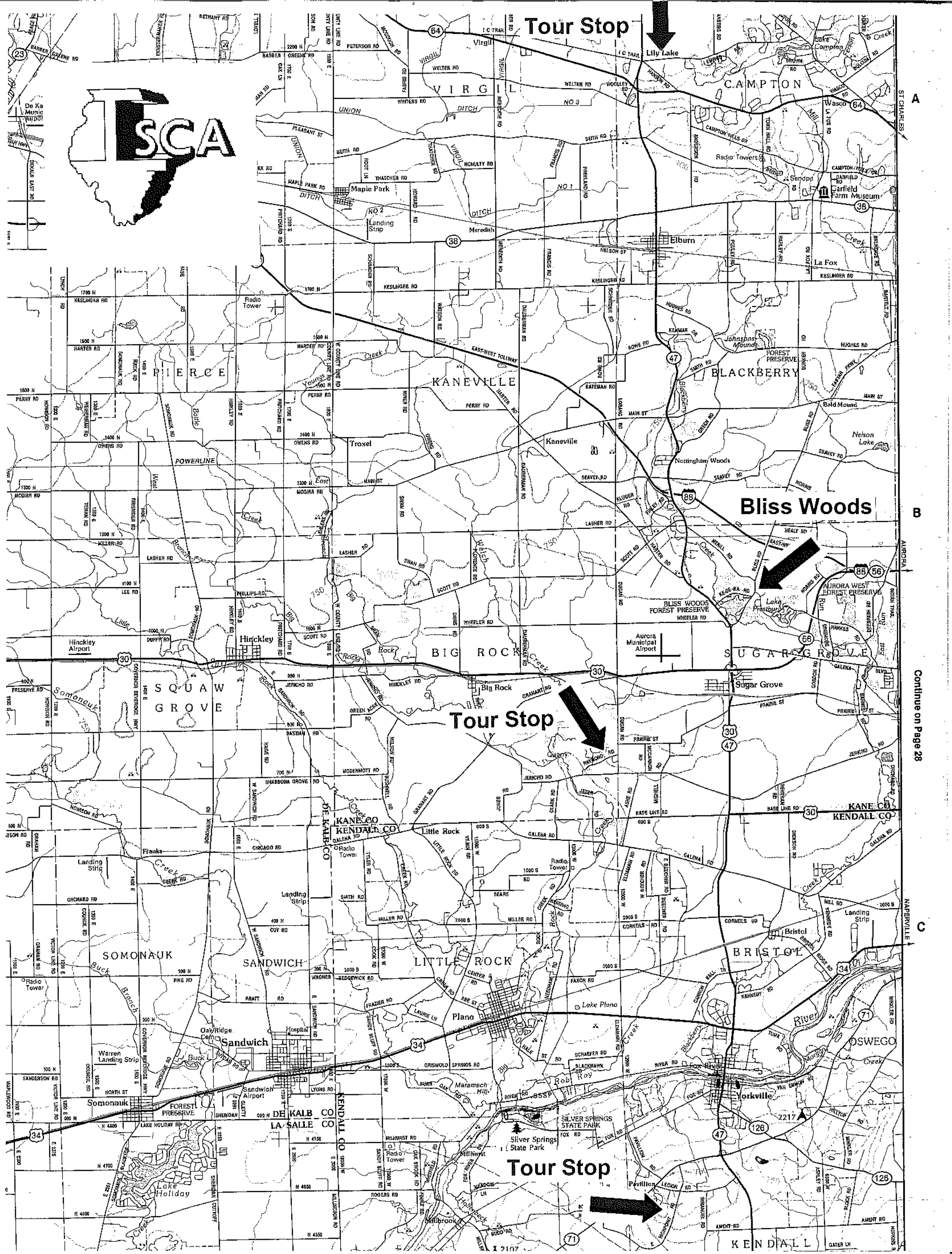
Illinois Soil Classifiers Association

Field Tour of Loam-Textured Diamictons

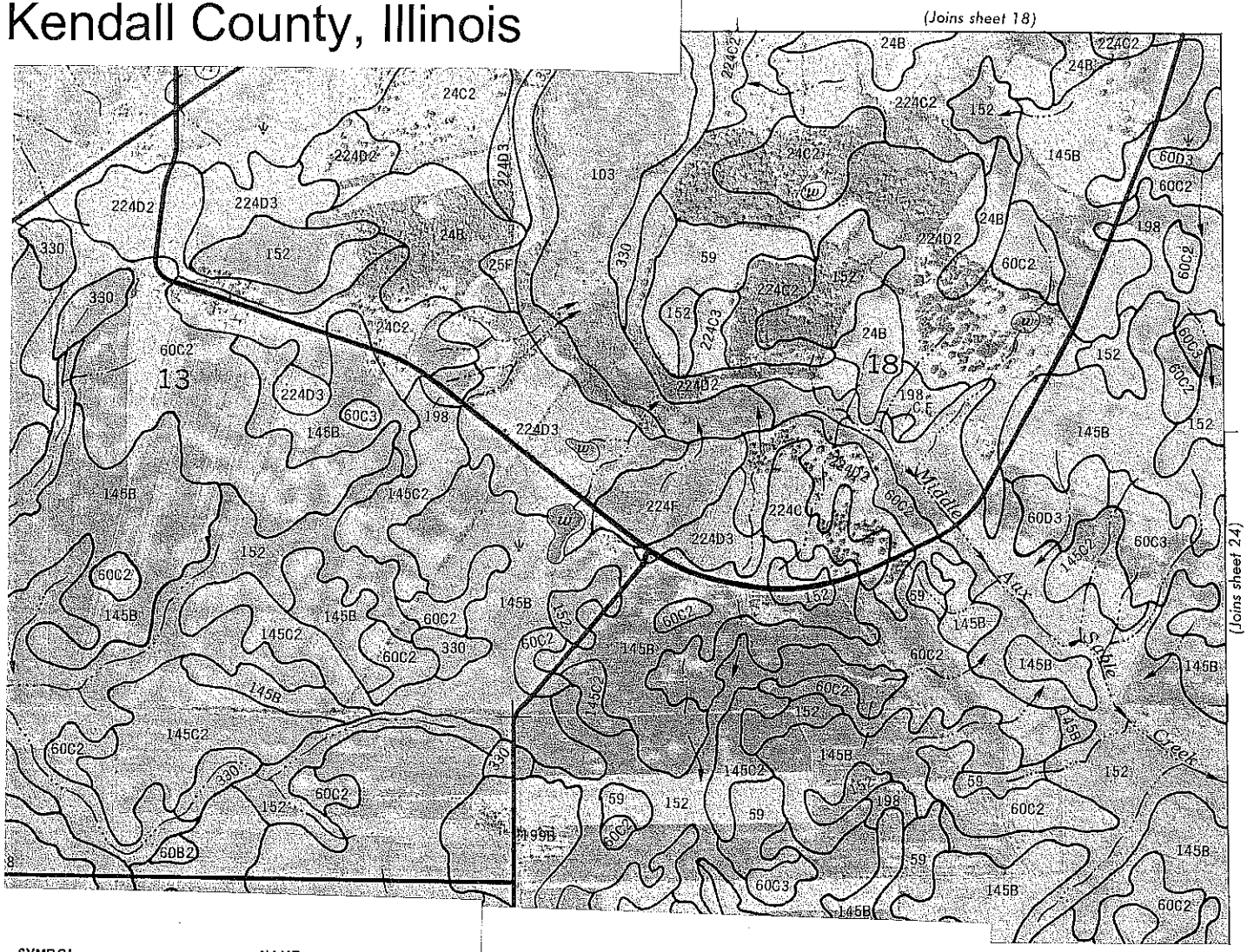
Sugar Grove, IL

October 18, 2003



Tour Stop
SCA
VIRGIL
CAMPTON
Maple Park
Elburn
La Fox
PIERCE
KANEVILLE
BLACKBERRY
Kaneville
Bliss Woods
BLISS WOODS FOREST PRESERVE
AURORA WEST FOREST PRESERVE
Hinckley
BIG ROCK
SUGAR GROVE
SQUAW GROVE
Big Rock
Sugar Grove
Tour Stop
Continue on Page 28
KANE CO
KENDALL CO
DE KALB CO
Little Rock
SOMONAUK
SANDWICH
LITTLE ROCK
BRISTOL
Bristol
Plano
Sandwich
OSWEGO
Yorkville
Somonauk
Silver Springs State Park
Tour Stop
Lake Holiday
KENDALL
A
B
C

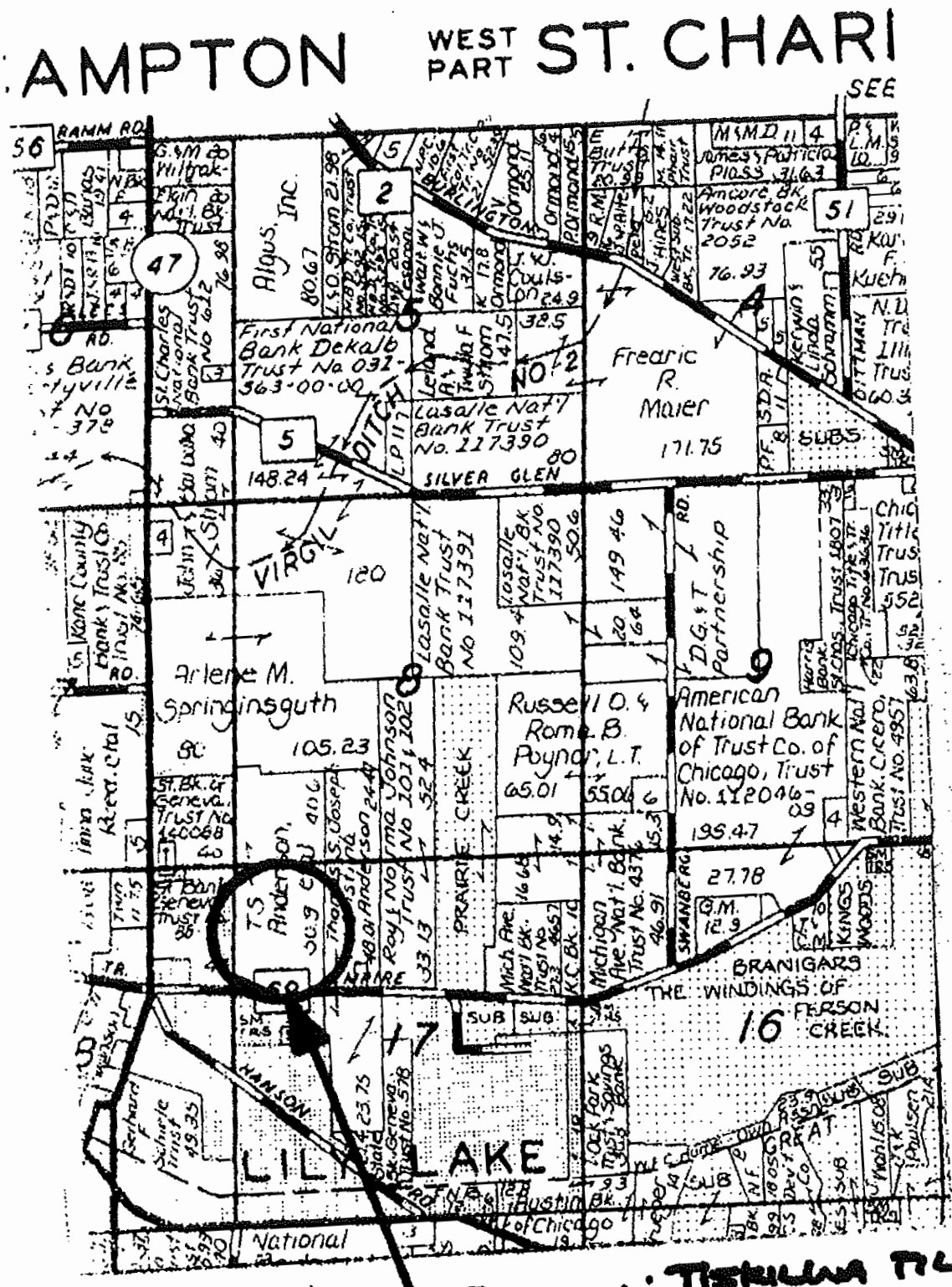
Soil Map
Yorkville Site
T 36 N, R 7 E, Sec 18, NE ¼
Kendall County, Illinois



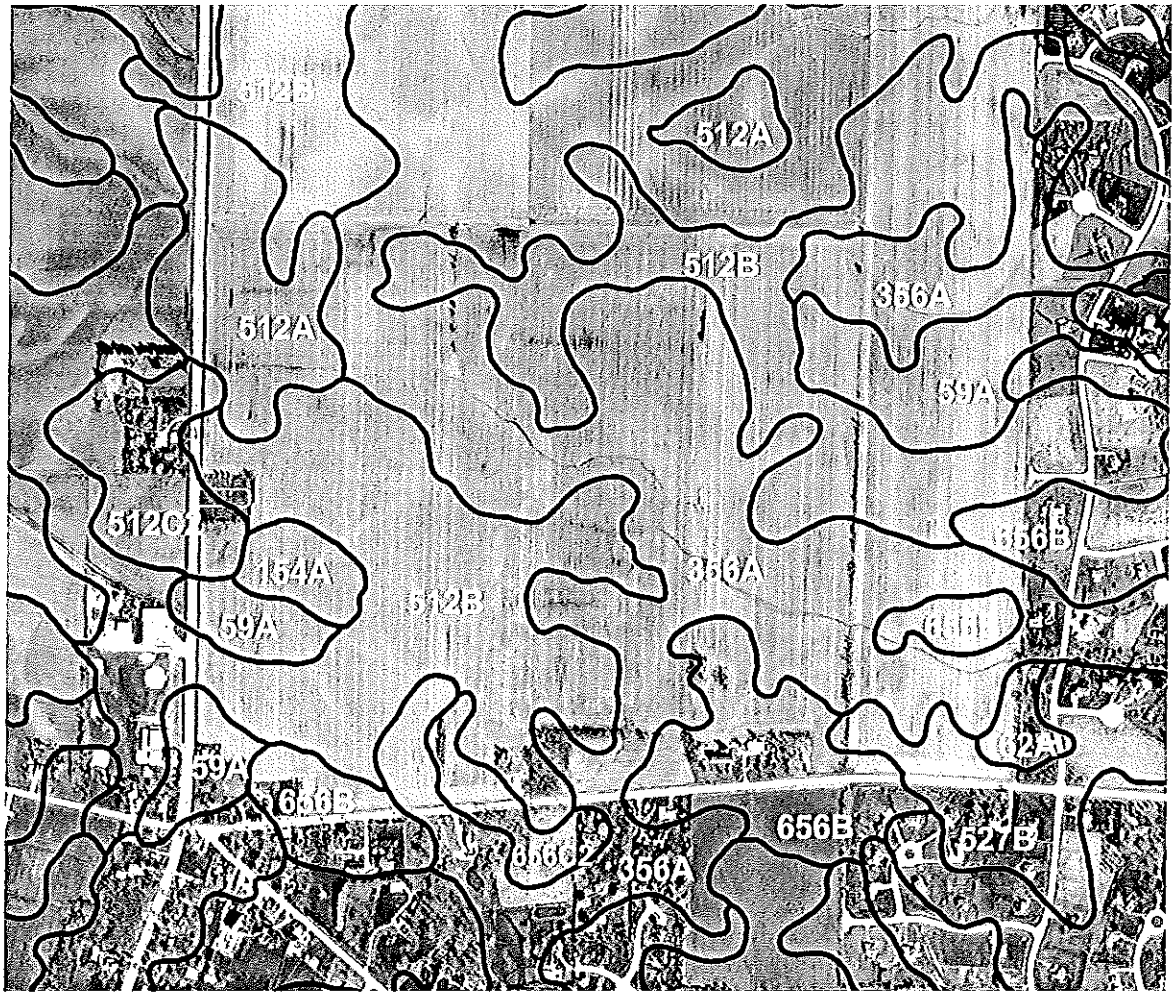
SYMBOL	NAME
443A	Barrington silt loam, 0 to 2 percent slopes
443B	Barrington silt loam, 2 to 4 percent slopes
443C2	Barrington silt loam, 4 to 7 percent slopes, eroded
105A	Batavia silt loam, 0 to 2 percent slopes
105B	Batavia silt loam, 2 to 4 percent slopes
149	Brenton silt loam
R149	Brenton silt loam, bedrock substratum
235	Bryce silty clay
134B	Camden silt loam, 1 to 4 percent slopes
134C2	Camden silt loam, 4 to 7 percent slopes, eroded
134D2	Camden silt loam, 7 to 12 percent slopes, eroded
C.F.	Cut and fill land
192	Del Rey silt loam
24A	Dodge silt loam, 0 to 2 percent slopes
24B	Dodge silt loam, 2 to 4 percent slopes
24C2	Dodge silt loam, 4 to 7 percent slopes, eroded
325A	Dresden silt loam, 0 to 2 percent slopes
325B	Dresden silt loam, 2 to 4 percent slopes
152	Drummer silty clay loam
321	DuPage loam
198	Elburn silt loam
327B	Fox silt loam, 1 to 4 percent slopes
327C2	Fox silt loam, 4 to 7 percent slopes, eroded
G.P.	Gravel pits
67	Harpster silty clay loam
25F	Hennepin silt loam, 15 to 30 percent slopes
25G	Hennepin silt loam, 30 to 45 percent slopes
103	Houghton muck

SYMBOL	NAME
242	Kendall silt loam
191	Knight silt loam
304	Landes fine sandy loam
60B2	La Rose silt loam, 2 to 4 percent slopes, eroded
60C2	La Rose silt loam, 4 to 7 percent slopes, eroded
60C3	La Rose soils, 4 to 7 percent slopes, severely eroded
60D3	La Rose soils, 7 to 12 percent slopes, severely eroded
210	Lena muck
59	Lisbon silt loam
318C	Lorenzo loam, 4 to 7 percent slopes
318D2	Lorenzo loam, 7 to 18 percent slopes, eroded
318F	Lorenzo loam, 18 to 40 percent slopes
189A	Martinton silt loam, 0 to 2 percent slopes
189B	Martinton silt loam, 2 to 4 percent slopes
69	Milford silty clay loam
R69	Milford silty clay loam, bedrock substratum
219	Millbrook silt loam
82	Millington silt loam
442	Mundelein silt loam
228A	Nappanee silt loam, 0 to 2 percent slopes
228B	Nappanee silt loam, 2 to 4 percent slopes
330	Peotone silty clay loam
199A	Plano silt loam, 0 to 2 percent slopes
199B	Plano silt loam, 2 to 4 percent slopes
199C2	Plano silt loam, 4 to 7 percent slopes, eroded
240A	Plattville silt loam, 0 to 2 percent slopes
240B	Plattville silt loam, 2 to 4 percent slopes
148A	Proctor silt loam, 0 to 2 percent slopes
148B	Proctor silt loam, 2 to 4 percent slopes
148C2	Proctor silt loam, 4 to 7 percent slopes, eroded

SYMBOL	NAME
324B	Ripon silt loam, 1 to 4 percent slopes
324C2	Ripon silt loam, 4 to 7 percent slopes, eroded
791A	Rush silt loam, 0 to 2 percent slopes
791B	Rush silt loam, 2 to 4 percent slopes
243A	St. Charles silt loam, 0 to 2 percent slopes
243B	St. Charles silt loam, 2 to 4 percent slopes
243C2	St. Charles silt loam, 4 to 7 percent slopes, eroded
107	Sawmill silty clay loam
145A	Saybrook silt loam, 0 to 2 percent slopes
145B	Saybrook silt loam, 2 to 4 percent slopes
145B2	Saybrook silt loam, 2 to 4 percent slopes, eroded
145C2	Saybrook silt loam, 4 to 7 percent slopes, eroded
88C	Sparta loamy fine sand, 3 to 10 percent slopes
224C	Strawn silt loam, 4 to 7 percent slopes
224C2	Strawn silt loam, 4 to 7 percent slopes, eroded
224D2	Strawn silt loam, 7 to 15 percent slopes, eroded
224F	Strawn silt loam, 15 to 30 percent slopes
224C3	Strawn soils, 4 to 7 percent slopes, severely eroded
224D3	Strawn soils, 7 to 12 percent slopes, severely eroded
91A	Swygert silty clay loam, 0 to 2 percent slopes
91B	Swygert silty clay loam, 2 to 4 percent slopes
91C2	Swygert silty clay loam, 3 to 7 percent slopes, eroded
206	Thorp silt loam
223B	Varne silt loam, 1 to 4 percent slopes
223C2	Varna silt loam, 4 to 7 percent slopes, eroded
223D3	Varna soils, 7 to 15 percent slopes, severely eroded
104	Virgil silt loam
369A	Waupecan silt loam, 0 to 2 percent slopes
369B	Waupecan silt loam, 2 to 4 percent slopes

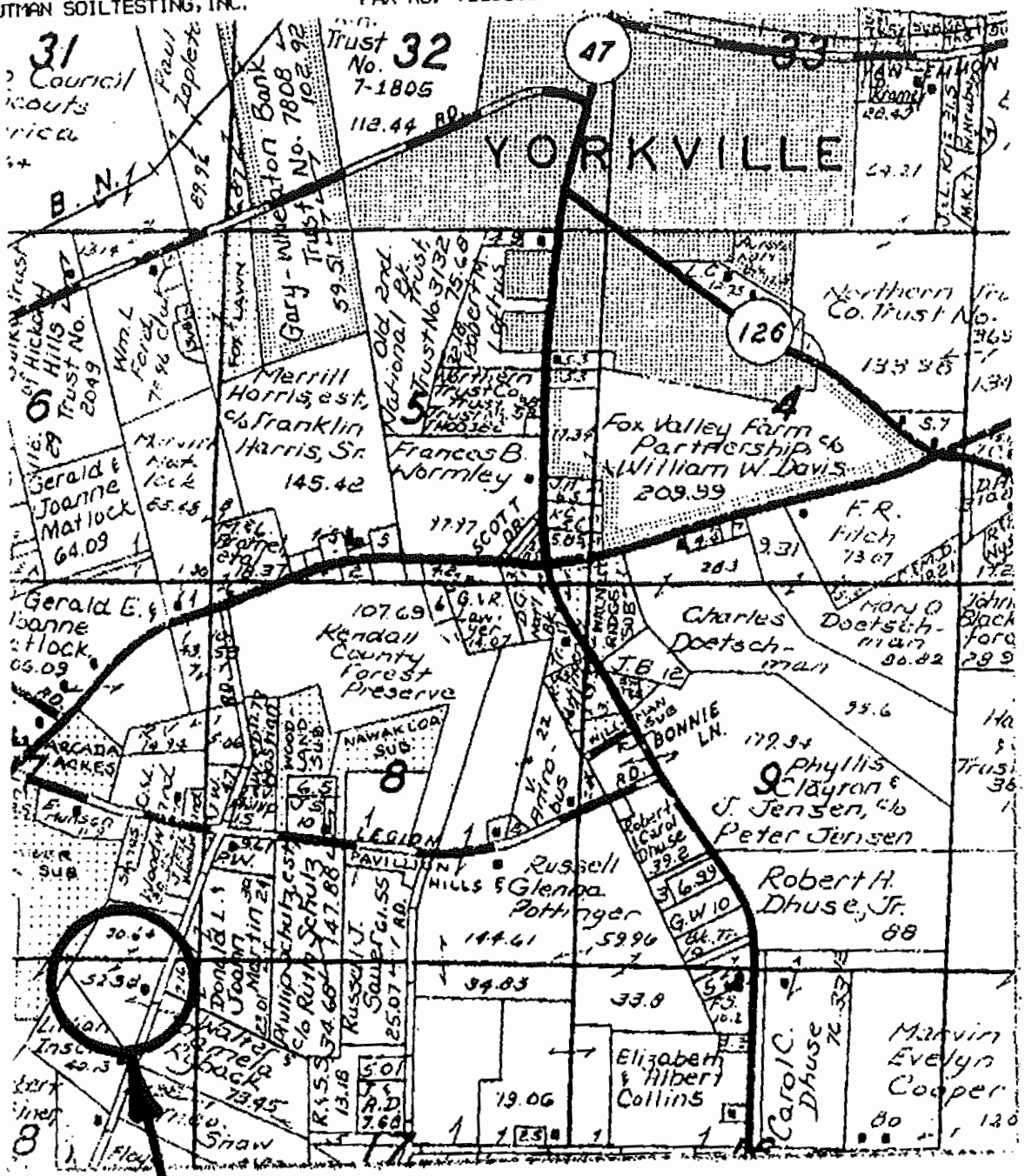

AMPTON
WEST PART
ST. CHARI
SEE
RAMM RD
47
Algus, Inc
80.67
First National Bank Dekalb Trust No. 031-363-00-00
St. Charles National Bank Trust No. 612
Lasalle Nat'l Bank Trust No. 117390
Frearic R. Maier
171.75
SILVER GLEN
DITCH
148.24
VIRGIL
120
Arlene M. Springinsguth
105.23
Lasalle Nat'l Bank Trust No. 117391
Russell O. & Rome B. Poynor, L.T.
65.01
D.G.I.T. Partnership
American National Bank of Trust Co. of Chicago, Trust No. 112046-09
195.47
Arlene Junk Rev. Trust
PRAIRIE CREEK
Michigan Ave. Nat'l. Bank Trust No. 437
27.78
SWANBE RD
BRANIGARS
THE WINDINGS OF
FERSON CREEK
16
17
SUB
HANSON
LILY LAKE
Oak Park Trust & Savings Bank
Austin Bk. of Chicago
National
SITE 1: TISKILWA TILL
NW 1/4 SEC. 17 T40N R7E
KANE CO.
EMPIRE ROAD

Soil Map
Lily Lake Site
T 40 N, R 7 E, Sec 17, NW 1/4
Kane County, Illinois



1000 0 1000 2000 Feet

59A -- Lisbon silt loam, 0-2% slopes
62A -- Herbert silt loam, 0-2% slopes
154A -- Flanagan silt loam, 0-2% slopes
356A -- ElPaso silty clay loam, 0-2% slopes
512A -- Danabrook silt loam, 0-2% slopes
512B -- Danabrook silt loam, 2-5% slopes
527B -- Kidami silt loam, 2-4% slopes
656B -- Octagon silt loam, 2-4% slopes
656C2 -- Octagon silt loam, 4-6% slopes, eroded

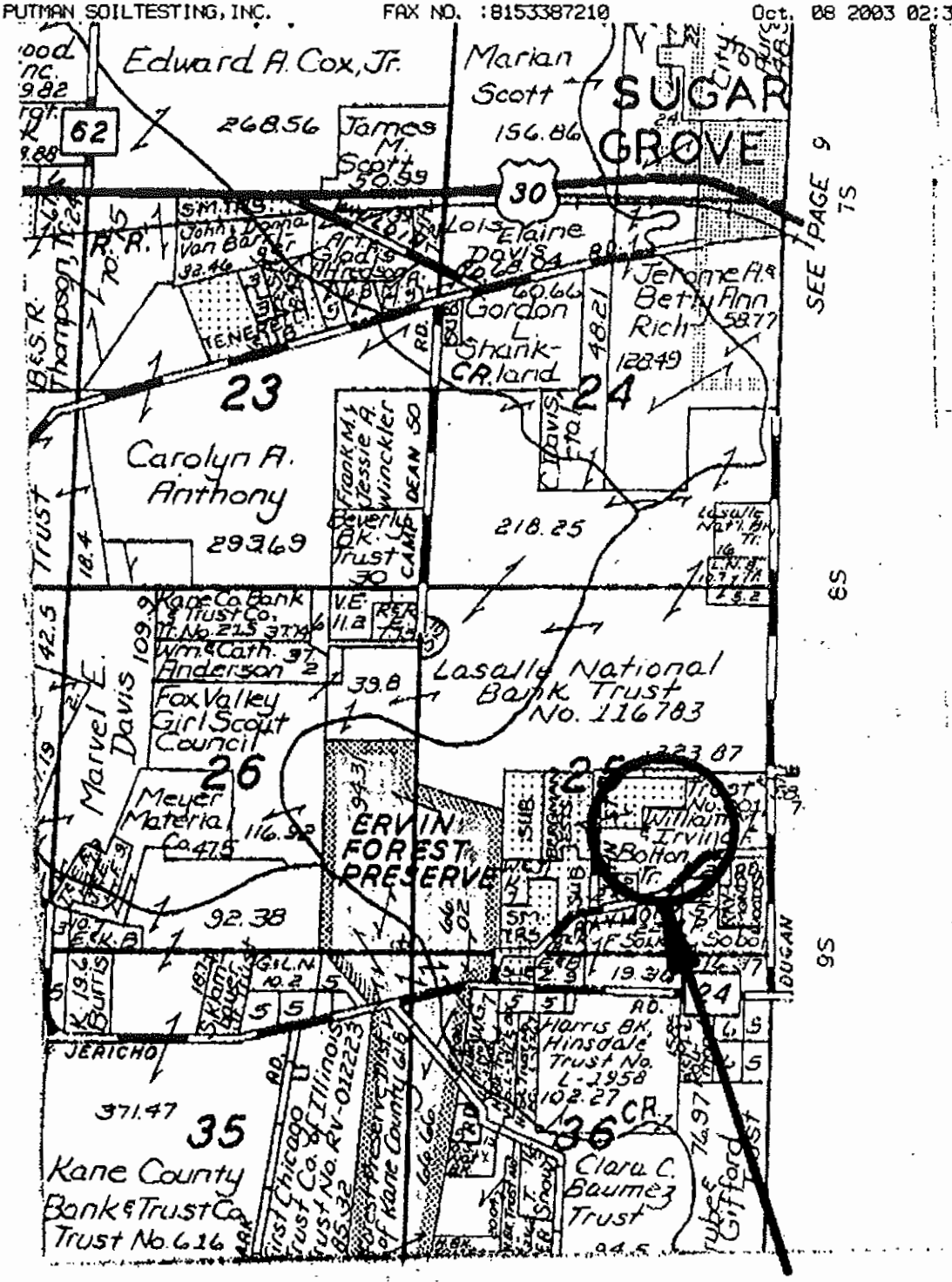


SITE 2 : HEAVY LOAM TILL

NE 1/4 SEC. 18 T36N R7E

KENDALL COUNTY

HIGHPOINT ROAD



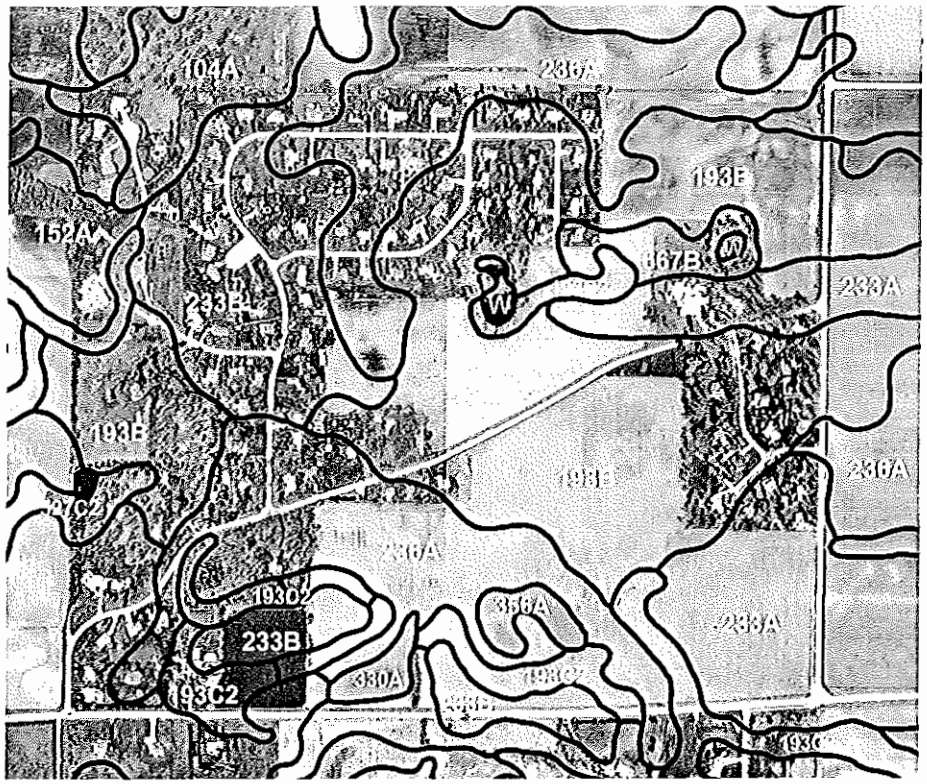
SITE 3: LIGHT LOAM TILL

SE 1/4 SEC. 25 T38N RGE

KANE CO.

DUGAN & RAYMOND ROADS

Soil Map
Sugar Grove Site
T 38 N, R 6 E, Sec 25, SE 1/4
Kane County, Illinois



104A -- Virgil silt loam, 0-2% slopes
152A -- Drummer silty clay loam, 0-2% slopes
193B -- Mayville silt loam, 2-5% slopes
193C2 -- Mayville silt loam, 5-10% slopes, eroded
233A -- Birkbeck silt loam, 0-2% slopes
233B -- Birkbeck silt loam, 2-5% slopes
236A -- Sabina silt loam, 0-2% slopes
330A -- Peotone silty clay loam, 0-2% slopes
356A -- ElPaso silty clay loam, 0-2% slopes
527C2 -- Kidami loam, 4-6% slopes, eroded
667B -- Kaneville silt loam, 2-5% slopes
W -- Water

Section 905.Appendix A Illustrations and Exhibits
Illustration M
Exhibit B Key for Determining Sewage Loading Rates (Gallons/Square Feet/Day)

KEY FOR DETERMINING SEWAGE SUBSURFACE LOADING RATES (g/d/sq.ft.) FOR ILLINOIS SOILS (1)

Structure and Parent Material	Single grain; Granular; Platy (2)	Angular and Subangular Blocky; Prismatic									Structureless or Massive			
		Loess; Outwash						Till; Lacustrine						
		Weak		Moderate		Strong		Moderate; Strong			Loess; Outwash		Till (3); Lacustrine	
Moist Consistance	lo vfr fr	lo vfr	fr fi	fr	fi	fr	fi	fr	fi	vfi	vfr	fr	vfr fr	fi vfi
Texture	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1. Fragmental; Ext. or Very gravelly sand; Gravelly sand; Coarse sand; Gravelly loamy sand	> 1.00 (4)	(5) N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2. Medium sand; Sand; Loamy coarse sand; Loamy sand; Coarse sandy loam	1.00	1.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.00	N/A	N/A	N/A
3. Fine sand; Loamy fine sand	0.84	0.91	0.84	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.91	0.84	N/A	N/A
4. Sandy loam; Fine sandy loam; Gravelly sandy loam; Gravelly loam; Gravelly silt loam	0.75	0.84	0.75	0.75	N/A	N/A	N/A	N/A	N/A	N/A	0.84	0.75	0.75	0.52
5. Loam; Silt loam; Very fine sandy loam; Sandy clay loam; Silt; Very fine sand; Loamy very fine sand	0.62	0.75	0.69	0.75	0.69	N/A	N/A	0.62	0.52	(6) 0.45	0.69	0.52	(6) 0.45	0.27 (6)
6. Silty clay loam (<35% c); Clay loam (<35% c)	0.52	N/A	(6) 0.45	0.62	0.52	0.69	0.52	(6) 0.45	(6) 0.40	(6) 0.27	0.52	(6) 0.45	(6) 0.27	0.00 (6)
7. Silty clay loam (>35% c); Clay loam (>35% c), Sandy clay (<40% c)	0.45 (6)	N/A	N/A	(6) 0.45	(6) 0.40	(6) 0.45	(6) 0.40	N/A	(6) 0.27	(6) 0.20	(6) 0.27	(6) 0.20	(6) 0.00	0.00 (6)
8. Sandy clay (>40% c) Silty clay	0.40 (6)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	(6) 0.20	(6) 0.00	N/A	N/A	N/A	0.00 (6)
9. Clay; Organics; Fragic; Fragipan; Lithic; Paralithic	SOIL PROPERTIES HAVE VERY SEVERE LIMITATIONS; SUBSURFACE DISPOSAL NOT RECOMMENDED													

Malden Till

PEDON DESCRIPTION

Print Date: 10/14/2003
Description Date: 11/06/1996
Describer: Karla Hanson Jeff Deniger
Site ID: 96IL037208

Site Note:

Pedon ID: 96IL037208
Pedon Note: Sampled Malden till at Moores' for Lincloin Complete lab data
Lab Source ID: SSL
Lab Pedon #: 97P0115

Soil Name as Described/Sampled: Saybrook

Soil Name as Correlated:

Classification:
Pedon Type: within range of series
Pedon Purpose: research site
Taxon Kind:
Associated Soils:
Physiographic Division:
Physiographic Province:
Physiographic Section:
State Physiographic Area:
Local Physiographic Area:
Geomorphic Setting: on summit of interfluve of moraine on summit of interfluve of upland
Upslope Shape: convex
Cross Slope Shape: convex
Particle Size Control Section: 25 to 104 cm.
Diagnostic Features: ? to ? cm.

Country:
State: Illinois
County: De Kalb
MLRA: 108A -- Illinois and Iowa Deep Loess and Drift, Eastern Part
Soil Survey Area: IL037 -- DeKalb County, Illinois
Map Unit:
Quad Name:
Location Description:
Legal Description: 1,900 feet south and 2,030 feet east of the NW corner of Section 24, Township 39N, Range 4E
Latitude: 41 degrees 50 minutes 36 seconds north
Longitude: 88 degrees 43 minutes 37 seconds west
Datum:
UTM Zone:
UTM Easting:
UTM Northing:

Primary Earth Cover: Crop cover
Secondary Earth Cover:
Existing Vegetation:
Parent Material:
Bedrock Kind:
Bedrock Depth:
Bedrock Hardness:
Bedrock Fracture Interval:
Surface Fragments:

Cont. Site ID: 96IL037208 **Pedon ID:** 96IL037208

Slope (%)	Elevation (meters)	Aspect (deg)	MAAT (C)	MSAT (C)	MWAT (C)	MAP (mm)	Frost-Free Days	Drainage Class	Slope Length (meters)	Upslope Length (meters)
3.0	271.0	280						moderately well		

Ap--0 to 15 centimeters; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2), dry; weak fine subangular blocky parting to weak fine granular structure; friable; many fine and medium roots; neutral, pH 6.6, Hellige-Truog; clear smooth boundary. Lab sample # 97P00797

A--15 to 25 centimeters; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2), dry; weak medium granular structure; friable; many fine and medium roots; neutral, pH 6.6, Hellige- Truog; abrupt smooth boundary. Lab sample # 97P00798

Bt1--25 to 43 centimeters; dark yellowish brown (10YR 4/4) silty clay loam; weak medium prismatic parting to weak fine and medium subangular blocky structure; friable; common very fine roots; 30 percent continuous distinct dark brown (10YR 3/3) clay films throughout and 60 percent continuous distinct very dark gray (10YR 3/1) organic stains throughout; neutral, pH 6.6, Hellige-Truog; clear wavy boundary. Lab sample # 97P00799

Bt2--43 to 61 centimeters; dark yellowish brown (10YR 4/4) silty clay loam; 10 percent fine grayish brown (10YR 5/2) mottles; weak medium prismatic parting to moderate fine subangular blocky structure; friable; common very fine roots; 7 percent patchy prominent light gray (10YR 7/2) silt coats on faces of peds and 20 percent continuous distinct brown (10YR 4/3) clay films throughout and 30 percent continuous distinct dark brown (10YR 3/3) clay films throughout; 3 percent fine black (10YR 2/1) iron-manganese concretions throughout; 1 percent unspecified fragments; neutral, pH 6.6, Hellige-Truog; gradual wavy boundary. Lab sample # 97P00800

Bt3--61 to 79 centimeters; dark yellowish brown (10YR 4/4) silty clay loam; 10 percent fine grayish brown (10YR 5/2) mottles; weak medium prismatic parting to moderate fine subangular blocky structure; friable; common very fine roots; 12 percent patchy prominent light gray (10YR 7/2) silt coats on faces of peds and 30 percent continuous distinct brown (10YR 4/3) clay films throughout; 5 percent fine strong brown (7.5YR 4/6) iron concretions throughout; 3 percent unspecified fragments; neutral, pH 6.6, Hellige-Truog; clear wavy boundary. Lab sample # 97P00801

2Bt4--79 to 104 centimeters; dark yellowish brown (10YR 4/4) clay loam; 6 percent fine brown (10YR 5/3) and 8 percent fine grayish brown (10YR 5/2) mottles; moderate medium and coarse subangular blocky structure; friable; common very fine roots; 3 percent patchy prominent light gray (10YR 7/2) silt coats on faces of peds and 20 percent continuous distinct dark yellowish brown (10YR 3/4) clay films on faces of peds; 6 percent fine black (10YR 2/1) iron-manganese concretions throughout and 7 percent fine strong brown (7.5YR 4/6) iron concretions throughout; 8 percent unspecified fragments; slight effervescence; neutral, pH 6.8, Hellige-Truog; clear wavy boundary. Lab sample # 97P00802, 97P00803. Horizon split for sampling at 104 cm.

2BCt--104 to 140 centimeters; 30 percent yellowish brown (10YR 5/4) and 70 percent light olive brown (2.5Y 5/3) loam; 10 percent fine grayish brown (2.5Y 5/2) mottles; weak medium and coarse subangular blocky structure; firm; common very fine roots; 10 percent discontinuous distinct brown (7.5YR 4/3) clay films on faces of peds; 6 percent fine black (10YR 2/1) iron-manganese concretions throughout and 7 percent fine dark yellowish brown (10YR 4/6) iron concretions throughout; 10 percent unspecified fragments; strong effervescence; slightly alkaline, pH 7.6, Hellige-Truog; clear wavy boundary. Lab sample # 97P00804

2C--140 to 165 centimeters; 90 percent yellowish brown (10YR 5/4) and 10 percent light olive brown (2.5Y 5/3) loam; massive; friable; 3 percent fine dark yellowish brown (10YR 4/6) iron concretions throughout; 13 percent unspecified fragments; moderately alkaline, pH 8.0, Hellige-Truog. Lab sample # 97P00805

Pedon ID: 96IL037208

*** Primary Characterization Data ***

(De Kalb County, Illinois)

Print Date: Oct 14 2003 10:06AM

Sampled as : Saybrook
Revised to correlated on Mar 01, 2000 : Danabrook ; Fine-silty, mixed, superactive, mesic Oxyaquic Argiudoll

SSL - Project CP97IL028 DEKALB AND MC HENERY COUNTIES
- Site ID 96IL037208 Lat: 41° 50' 36.00" north Long: 88° 43' 37.00" west
- Pedon No. 97P0115
- General Methods 1B1A, 2A1, 2B

United States Department of Agriculture
Natural Resources Conservation Service
National Soil Survey Center
Soil Survey Laboratory
Lincoln, Nebraska 68508-3866

Layer	Horizon	Orig Hzn	Depth (cm)	Field Label 1	Field Label 2	Field Label 3	Field Texture	Lab Texture
97P00797	Ap	Ap	0-15					SICL
97P00798	A	A	15-25					SICL
97P00799	Bt1	Bt1	25-43					SICL
97P00800	Bt2	Bt2	43-61					SICL
97P00801	Bt3	Bt3	61-79					SICL
97P00802	2Bt4	2Bt4	79-104					L
97P00803	2Bt4	2Bt4	104-122					SIL
97P00804	2BC	2BC	122-140					L
97P00805	2C2	2C2	140-165					FSL

Pedon Calculations

Calculation Name	Result	Units of Measure
CEC Activity, CEC7/Clay, Weighted Average	0.67	(NA)
Clay, carbonate free, Weighted Average	33	% wt
Weighted Particles, 0.1-75mm, 75 mm Base	4	% wt
Volume, >2mm, Weighted Average	0	% vol
Clay, total, Weighted Average	33	% wt
LE, Whole Soil, Summed to 1m	0	cm/m

Weighted averages based on control section: 25-75 cm

PSDA & Rock Fragments

				-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-	-12-	-13-	-14-	-15-	-16-	-17-
				(- - - - - Total - - - - - -)			(- - Clay - - -)		(- - - - Silt - - - - -)		(- - - - - - - - - - - - Sand - - - - - - - - - - - -)					(Rock Fragments (mm))				
				Clay	Silt	Sand	Fine	CO_3	Fine	Coarse	VF	F	M	C	VC	(- - - - - - - - Weight - - - - - - - -)				>2 mm
				<	.002	.05	<	<	.002	.02	.05	.10	.25	.5	1	2	5	20	.1-	wt %
	Depth			.002	-.05	-2	.0002	.002	-.02	-.05	-.10	-.25	-.50	-1	-2	-5	-20	-75	75	whole
Layer	(cm)	Horz	Prep	(- % of <2mm Mineral Soil -)												(- - - - - - - % of <75mm - - - - - -)				soil
				3A1	3A1	3A1	3A1	3A1	3A1	3A1	3A1	3A1	3A1	3A1	3A1	3B1	3B1	3B1		
97P00797	0-15	Ap	S	27.2	66.9	5.9	14.5		36.7	30.2	1.8	2.2	1.4	0.4	0.1	--	--	--	4	--
97P00798	15-25	A	S	28.6	65.8	5.6	16.1		37.0	28.8	1.9	2.2	1.1	0.2	0.2	tr	tr	--	4	tr
97P00799	25-43	Bt1	S	35.3	62.3	2.4	20.5		34.8	27.5	1.2	0.8	0.3	0.1	tr	--	--	--	1	--
97P00800	43-61	Bt2	S	34.1	61.4	4.5	19.2		31.9	29.5	1.7	1.7	0.8	0.2	0.1	--	tr	--	3	--
97P00801	61-79	Bt3	S	29.9	59.5	10.6	16.0		30.6	28.9	3.0	4.6	2.2	0.6	0.2	1	tr	--	9	1
97P00802	79-104	2Bt4	S	23.4	32.2	44.4	12.0		20.4	11.8	7.9	20.5	12.0	2.5	1.5	2	3	1	40	6
97P00803	104-122	2Bt4	S	20.1	50.9	29.0	6.3	1.0	35.2	15.7	6.9	11.6	6.7	2.1	1.7	10	8	2	38	20
97P00804	122-140	2BC	S	13.6	38.7	47.7	4.4	0.7	23.9	14.8	9.0	19.3	11.2	4.2	4.0	9	10	6	54	25
97P00805	140-165	2C2	S	9.7	32.5	57.8	3.5	1.0	17.4	15.1	13.8	25.4	12.9	3.5	2.2	7	4	tr	50	11

Water Dispersible PSDA

				-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-	-12-
				(- Water Dispersible -)											
				(- - - - - Total - - - - - -)			(- - Clay - - -)		(- - - - Silt - - - - -)		(- - - - - - - - - - - - Sand - - - - - - - - - - - -)				
				Clay	Silt	Sand	F	CO_3	F	C	VF	F	M	C	VC
				<	.002	.05	<	<	.002	.02	.05	.10	.25	.5	1
	Depth			.002	-.05	-2	.0002	.002	-.02	-.05	-.10	-.25	-.50	-1	-2
Layer	(cm)	Horz	Prep	(- % of <2mm -)											
				3A1c	3A1c	3A1c			3A1c	3A1c	3A1c	3A1c	3A1c	3A1c	3A1c
97P00797	0-15	Ap	S	10.5	82.3	7.2			49.5	32.8	2.7	2.6	1.4	0.3	0.2

*** Primary Characterization Data ***

(De Kalb County, Illinois)

Pedon ID: 96IL037208

Print Date: Oct 14 2003 10:06AM

Sampled As : Saybrook

USDA-NRCS-NSSC-National Soil Survey Laboratory ; Pedon No. 97P0115

Bulk Density & Moisture

				-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-	-12-	-13-
				(Bulk Density)		Cole	(---------- Water Content ----------)						WRD	Aggst		
				33 kPa	Oven Dry	Whole Soil	6 kPa	10 kPa	33 kPa	1500 kPa	1500 kPa Moist	Ratio AD/OD	Whole Soil	Stabl 2-0.5mm	(- - Ratio/Clay - -) CEC7	1500 kPa
Layer	Depth (cm)	Horz	Prep	(- - - g cm^{-3} - - -)			(---------- pct of < 2mm ----------)						cm^3 cm^{-3}	%		
				4A1d	4A1h				4B1c	4B2a		4B5	4C1	4G1	8D1	8D1
97P00797	0-15	Ap	S	1.50	1.62	0.026			23.1	14.1		1.017	0.14	6	0.65	0.52
97P00798	15-25	A	S	1.51	1.62	0.024			23.3	12.0		1.017	0.17		0.62	0.42
97P00799	25-43	Bt1	S	1.32	1.48	0.039			26.8	16.1		1.026	0.14		0.64	0.46
97P00800	43-61	Bt2	S	1.37	1.50	0.031			24.7	15.5		1.027	0.13		0.68	0.45
97P00801	61-79	Bt3	S	1.41	1.56	0.034			22.8	13.9		1.023	0.12		0.70	0.46
97P00802	79-104	2Bt4	S	1.47	1.59	0.026			17.7	10.6		1.014	0.10		0.52	0.45
97P00803	104-122	2Bt4	S	1.85	1.94	0.014			15.7	9.1		1.008	0.10		0.35	0.45
97P00804	122-140	2BC	S	1.87	1.88	0.001			8.9	6.3		1.006	0.04		0.36	0.46
97P00805	140-165	2C2	S							5.1		1.004			0.37	0.53

Water Content

				-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-	-12-	-13-
				(- - Atterberg - -)		(----- Bulk Density -----)			(---------- Water Content ----------)							
				(- - - Limits - - -)		Field	Recon 33 kPa	Recon Oven Dry	Field	Recon 33 kPa	(---------- Sieved Samples ----------) 6 kPa	10 kPa	33 kPa	100 kPa	200 kPa	500 kPa
Layer	Depth (cm)	Horz	Prep	LL	PI	(-------- g cm^{-3} -------)			(---------- % of < 2mm ----------)							
				pct <0.4mm											4B1a	
97P00797	0-15	Ap	S												22.3	
97P00798	15-25	A	S												18.6	
97P00799	25-43	Bt1	S												25.3	
97P00800	43-61	Bt2	S												21.8	
97P00801	61-79	Bt3	S												19.3	
97P00802	79-104	2Bt4	S												14.7	
97P00803	104-122	2Bt4	S												14.5	
97P00804	122-140	2BC	S												10.1	
97P00805	140-165	2C2	S												7.8	

*** Primary Characterization Data ***

(De Kalb County, Illinois)

Pedon ID: 96IL037208
Sampled As : Saybrook
USDA-NRCS-NSSC-National Soil Survey Laboratory ; Pedon No. 97P0115

Print Date: Oct 14 2003 10:06AM

Carbon & Extractions

Layer	Depth (cm)	Horz	Prep	-1- (- - - - - Total - - - - -) C (- - - - - - % of <2 mm - - - - - -)	-2- N	-3- S	-4- Org C 6A1c	-5- C/N Ratio	-6- (- - - Dith-Cit Ext - - -) Fe (- - - - - - - - - - - - - - - - % of < 2mm - - - - - - - - - - - - - - -)	Al	Mn	-7- (- - - - - - - - Acid Oxalate Extraction - - - - - - - -) Al+½Fe	-8- ODOE Fe	Al	-9- Mn mg kg^{-1}	-10- Si	-11- (- - - Na Pyro-Phosphate - - -) C (- - - - - - - - - % of < 2mm - - - - - - - - -)	-12- Fe	Al	-13- Mn	-14-	-15-	-16-	-17-	-18-
97P00797	0-15	Ap	S				1.49																		
97P00798	15-25	A	S				1.37																		
97P00799	25-43	Bt1	S				0.73																		
97P00800	43-61	Bt2	S				0.44																		
97P00801	61-79	Bt3	S				0.32																		
97P00802	79-104	2Bt4	S				0.33																		
97P00803	104-122	2Bt4	S				0.45																		
97P00804	122-140	2BC	S				0.30																		
97P00805	140-165	2C2	S				0.18																		

CEC & Bases

Layer	Depth (cm)	Horz	Prep	-1- (- - - - - NH_4OAC Extractable Bases - - - - -) Ca (- - - - - - - - - - - - - - - - - - cmol(+) kg^{-1} - - - - - - - - - - - - - - - - - -) 6N2e	Mg 6O2d	Na 6P2b	K 6Q2b	-5- Sum Bases	-6- Acid-ity 6H5a	-7- Extr Al	-8- KCl Mn mg kg^{-1}	-9- CEC8 Sum Cats (- - - - cmol(+) kg^{-1} - - - -) 5A3a	-10- CEC7 NH_4 OAC 5A8b	-11- ECEC Bases +Al	-12- Al Sat (- - - - - - - - % - - - - - - - -)	-13- (- - - - Base - - - -) (- Saturation -) Sum 5C3	-14- NH_4OAC 5C1
97P00797	0-15	Ap	S	8.4	4.2	tr	0.5	13.1	8.8			21.9	17.8			60	74
97P00798	15-25	A	S	8.8	4.4	0.1	0.3	13.6	8.0			21.6	17.8			63	76
97P00799	25-43	Bt1	S	10.4	7.0	tr	0.4	17.8	8.3			26.1	22.6			68	79
97P00800	43-61	Bt2	S	10.6	7.5	0.1	0.4	18.6	7.3			25.9	23.1			72	81
97P00801	61-79	Bt3	S	10.2	7.2	tr	0.3	17.7	6.5			24.2	20.9			73	85
97P00802	79-104	2Bt4	S	10.0*	7.8	tr	0.2	18.0	2.2			20.2	12.1			89	100
97P00803	104-122	2Bt4	S	26.1*	11.3	--	0.1						7.0			100	100
97P00804	122-140	2BC	S	13.7*	7.4	--	0.1						4.9			100	100
97P00805	140-165	2C2	S	15.9*	11.2	--	tr						3.6			100	100

*Extractable Ca may contain Ca from calcium carbonate or gypsum., CEC7 base saturation set to 100.

pH & Carbonates

Layer	Depth (cm)	Horz	Prep	-1- (- - - - - - - - - - - - - - - - - - pH - - - - - - - - - - - - - - - - - -) KCl	$CaCl_2$ 0.01M 1:2 8C1f	H_2O 1:1 8C1f	Sat Paste	-5- Sulf	-6- NaF	-7- (- - Carbonate - -) As $CaCO_3$ <2mm (- - - - - - - - - - - - % - - - - - - - - - - - -) 6E1g	<20mm	-8- (- - Gypsum - - -) As $CaSO_4{*}2H_2O$ <2mm	<20mm	-9- Resist ohms cm^{-1}
97P00797	0-15	Ap	S		5.5	6.3									
97P00798	15-25	A	S		5.6	6.3									
97P00799	25-43	Bt1	S		5.6	6.5									
97P00800	43-61	Bt2	S		5.8	6.0									
97P00801	61-79	Bt3	S		5.5	6.0									
97P00802	79-104	2Bt4	S		6.9	7.5									
97P00803	104-122	2Bt4	S		7.7	8.4				31					
97P00804	122-140	2BC	S		8.2	8.4				31					
97P00805	140-165	2C2	S		8.3	8.4				29					

Pedon ID: 96IL037208

*** Supplementary Characterization Data ***

(De Kalb County, Illinois)

Print Date: Oct 14 2003 10:08AM

Sampled as : Saybrook
Revised to correlated on Mar 01, 2000 : Danabrook ; Fine-silty, mixed, superactive, mesic Oxyaquic Argiudoll

SSL - Project CP97IL028 DEKALB AND MC HENERY COUNTIES
- Site ID 96IL037208 Lat: 41° 50' 36.00" north Long: 88° 43' 37.00" west
- Pedon No. 97P0115
- General Methods 1B1A, 2A1, 2B

United States Department of Agriculture
Natural Resources Conservation Service
National Soil Survey Center
Soil Survey Laboratory
Lincoln, Nebraska 68508-3866

Tier 1

Layer	Depth (cm)	Horz	Prep	Engineering PSDA Percentage Passing Sieve 3 Inches	2 Inches	3/2 Inches	1 Inches	3/4 Inches	3/8 Inches	4 Number	10 Number	40 Number	200 Number	20 Microns	5 Microns	2 Microns	Cumulative Curve Fractions USDA Less Than Diameters (mm) at 1. Millimeter	.5 Millimeter	.25 Millimeter	.10 Millimeter	.05 Millimeter	<75mm 60 Percentile	50 Percentile	10 Percentile	Atterberg LL %	Atterberg PI %	Gradation Uniformity CU	Gradation Curvature CC
97P00797	0-15	Ap	S	100	100	100	100	100	100	100	100	99	95	64	42	27	100	100	98	96	94	0.02	0.008	–			33.6	0.8
97P00798	15-25	A	S	100	100	100	100	100	100	100	100	99	95	66	43	29	100	100	99	96	94	0.01	0.008	–			31.5	0.8
97P00799	25-43	Bt1	S	100	100	100	100	100	100	100	100	100	98	70	49	35	100	100	100	99	98	0.01	0.005	–			26.7	0.5
97P00800	43-61	Bt2	S	100	100	100	100	100	100	100	100	99	96	66	47	34	100	100	99	97	96	0.01	0.006	–			33.0	0.5
97P00801	61-79	Bt3	S	100	100	100	100	100	100	100	99	98	90	60	42	30	99	98	96	91	89	0.02	0.009	–			46.1	0.5
97P00802	79-104	2Bt4	S	100	100	100	99	99	98	96	94	87	56	41	30	22	93	90	79	60	52	0.10	0.041	0.001			>100	0.5
97P00803	104-122	2Bt4	S	100	99	99	98	98	94	90	80	76	60	44	27	16	79	77	72	62	57	0.08	0.030	0.001			89.2	0.6
97P00804	122-140	2BC	S	100	98	97	95	94	89	84	75	67	43	28	17	10	72	69	60	46	39	0.24	0.129	0.002			>100	1.2
97P00805	140-165	2C2	S	100	100	100	100	100	98	96	89	81	45	24	15	9	87	84	72	50	38	0.15	0.101	0.002			61.6	2.4

Tier 2

Layer	Depth (cm)	Horz	Prep	Weight Fractions Whole Soil (mm) >2 % of Whole Soil	250 -UP	250 -75	75 -2	75 -20	20 -5	5 -2	<2	<75 mm Fraction 75 -2 % of <75 mm	75 -20 3B1	20 -5 3B1	5 -2 3B1	<2	Weight Per Unit Volume (g cm^{-3}) Whole Soil Soil Sur 33 kPa	Soil Sur Oven -dry	Engineering Moist	Engineering Satur -ated	<2 mm Fraction Soil Survey 33 kPa 4A1d	Soil Survey 1500 kPa	Soil Survey Oven -dry 4A1h	Engineering Moist	Engineering Satur -ated	Void Ratios At 33 kPa Whole Soil	At 33 kPa <2 mm
97P00797	0-15	Ap	S	–	–	–	–	–	–	–	100	–	–	–	–	100	1.50	1.62	1.85	1.93	1.50	1.55	1.62	1.85	1.93	0.77	0.77
97P00798	15-25	A	S	tr	–	–	–	–	tr	tr	100	–	–	tr	tr	100	1.51	1.62	1.86	1.94	1.51	1.57	1.62	1.86	1.94	0.75	0.75
97P00799	25-43	Bt1	S	–	–	–	–	–	–	–	100	–	–	–	–	100	1.32	1.48	1.68	1.82	1.32	1.39	1.48	1.67	1.82	1.01	1.01
97P00800	43-61	Bt2	S	–	–	–	–	–	–	–	100	–	–	tr	–	100	1.37	1.50	1.71	1.85	1.37	1.42	1.50	1.71	1.85	0.93	0.93
97P00801	61-79	Bt3	S	1	–	–	1	–	tr	1	99	1	–	tr	1	99	1.42	1.57	1.75	1.88	1.41	1.48	1.56	1.73	1.88	0.87	0.88
97P00802	79-104	2Bt4	S	6	–	–	6	1	3	2	94	6	1	3	2	94	1.51	1.63	1.77	1.94	1.47	1.52	1.59	1.73	1.92	0.75	0.80
97P00803	104-122	2Bt4	S	20	–	–	20	2	8	10	80	20	2	8	10	80	1.97	2.05	2.23	2.23	1.85	1.89	1.94	2.14	2.15	0.35	0.43
97P00804	122-140	2BC	S	25	–	–	25	6	10	9	75	25	6	10	9	75	2.02	2.03	2.16	2.26	1.87	1.87	1.88	2.04	2.16	0.31	0.42
97P00805	140-165	2C2	S	11	–	–	11	tr	4	7	89	11	tr	4	7	89	1.53										

Tier 3

Layer	Depth (cm)	Horz	Prep	>2 (% of Whole Soil)	250-UP (% of Whole Soil)	250-75 (% of Whole Soil)	75-2 (% of Whole Soil)	75-20 (% of Whole Soil)	20-5 (% of Whole Soil)	5-2 (% of Whole Soil)	<2 (% of Whole Soil)	2-.05 (% of Whole Soil)	.05-.002 (% of Whole Soil)	LT .002 (% of Whole Soil)	Pores D (% of Whole Soil)	Pores F (% of Whole Soil)	C/N Ratio	Fine Clay (Ratios To Clay)	CEC <2 mm Fraction Sum Cats (Ratios To Clay)	NH_4-OAC 8D1 (Ratios To Clay)	1500 kPa H_2O 8D1 (Ratios To Clay)	LEP 33 kPa (Ratios To Clay)	Whole Soil 33 kPa (Linear Extensiblity)	Whole Soil 1500 kPa (Linear Extensiblity)	<2 mm 1500 kPa Oven-dry (Linear Extensiblity)	<2 mm to % Oven-dry (Linear Extensiblity)	Whole Soil 4C1 (WRD)	<2 mm (WRD)
97P00797	0-15	Ap	S	–	–	–	–	–	–	–	100	3	38	15	9	34		0.53	0.81	0.65	0.52	0.100	1.1		1.1		0.14	0.14
97P00798	15-25	A	S	tr	–	–	–	–	tr	tr	100	3	38	16	8	35		0.56	0.76	0.62	0.42	0.080	1.3		1.3		0.17	0.17
97P00799	25-43	Bt1	S	–	–	–	–	–	–	–	100	1	31	18	14	36		0.58	0.74	0.64	0.46	0.110	1.7		1.7		0.14	0.14
97P00800	43-61	Bt2	S	–	–	–	–	–	–	–	100	2	32	18	14	34		0.56	0.76	0.68	0.45	0.090	1.2		1.2		0.13	0.13
97P00801	61-79	Bt3	S	1	–	–	1	–	tr	1	99	6	32	16	13	33		0.54	0.81	0.70	0.46	0.110	1.4		1.6		0.12	0.13
97P00802	79-104	2Bt4	S	3	–	–	3	1	2	1	97	24	17	13	17	26		0.51	0.86	0.52	0.45	0.120	1.1		1.1		0.10	0.10
97P00803	104-122	2Bt4	S	15	–	–	15	1	6	7	85	17	30	12		26		0.31		0.35	0.45	0.080	0.5		0.7		0.10	0.12
97P00804	122-140	2BC	S	19	–	–	19	5	8	7	81	28	22	8	10	14		0.32		0.36	0.46	0.010					0.04	0.05
97P00805	140-165	2C2	S	6	–	–	6	tr	2	4	94	29	16	5	42			0.36		0.37	0.53							

Tier 4

Layer	Depth (cm)	Horz	Prep	>2 (Whole Soil)	75-20 (Whole Soil)	20-2 (Whole Soil)	2-.05 (Whole Soil)	.05-.002 (Whole Soil)	<.002 (Whole Soil)	VC Sand (<2 mm Fraction)	C Sand (<2 mm Fraction)	M Sand (<2 mm Fraction)	F Sand (<2 mm Fraction)	VF Sand (<2 mm Fraction)	C Silt (<2 mm Fraction)	F Silt (<2 mm Fraction)	Clay (<2 mm Fraction)	Texture by PSDA <2 mm	PSDA Sand 2-.05 (% of 2 mm)	PSDA Silt .05-.002 (% of 2 mm)	PSDA Clay <.002 (% of 2 mm)	pH Ca Cl_2 .01M (<2 mm)	Elect. Resist. ohms (<2 mm)	Elect. Conduct dS m^{-1} (<2 mm)	Particle Density g cm^{-3}
97P00797	0-15	Ap	S				8	92	37	tr	1	2	3	2	41	50	37	sicl	5.9	66.9	27.2	5.5			
97P00797[1]	0-15		S															si							
97P00798	15-25	A	S				8	92	40	tr	tr	2	3	3	40	52	40	sicl	5.6	65.8	28.6	5.6			
97P00799	25-43	Bt1	S				4	96	55		tr	tr	1	2	43	54	55	sicl	2.4	62.3	35.3	5.6			
97P00800	43-61	Bt2	S				7	93	52	tr	tr	1	3	3	45	48	52	sicl	4.5	61.4	34.1	5.8			
97P00801	61-79	Bt3	S	1	1	1	15	84	42	tr	1	3	7	4	41	44	43	sicl	10.6	59.5	29.9	5.5			
97P00802	79-104	2Bt4	S	8	8	6	54	39	28	2	3	16	27	10	15	27	31	l	44.4	32.2	23.4	6.9			
97P00803	104-122	2Bt4	S	24	24	21	28	49	19	2	3	8	15	9	20	44	25	sil	29.0	50.9	20.1	7.7			
97P00804	122-140	2BC	S	28	28	21	40	32	11	5	5	13	22	10	17	28	16	l	47.7	38.7	13.6	8.2			
97P00805	140-165	2C2	S	12	12	12	56	32	9	2	4	14	28	15	17	19	11	fsl	57.8	32.5	9.7	8.3			

[1] Multiple values present due to instrumentation or analyzed size fraction. See laboratory for more information.

Malden Till

PEDON DESCRIPTION

Print Date: 10/14/2003
Description Date: 10/03/1967
Describer: K. Hinkley and L. Tyler
Site ID: 67IL089003
Site Note:

Pedon ID: 67IL089003
Pedon Note: Ground Water: Deep. Original SSN S67IL-045-003; 67B478-67B486.
Lab Source ID: SSL

Lab Pedon #: 40A2807
Soil Name as Described/Sampled: Octagon

Soil Name as Correlated:

Classification:
Pedon Type:
Pedon Purpose: full pedon description
Taxon Kind: series
Associated Soils:
Physiographic Division:
Physiographic Province:
Physiographic Section:
State Physiographic Area:
Local Physiographic Area:
Geomorphic Setting: upland louderback
Upslope Shape:
Cross Slope Shape:
Particle Size Control Section:
Diagnostic Features: ? to ? cm.

Country:
State: Illinois
County: Kane
MLRA:
Soil Survey Area: IL089 -- Kane County, Illinois
Map Unit:
Quad Name:
Location Description: T38N, R7E, Section 12; from NW corner of SW 1/4, 45 feet west to fence, 1062 ft. south along fence, then 271 feet east.
Legal Description:
Latitude: 41 degrees 47 minutes 7 seconds north
Longitude: 88 degrees 23 minutes 38 seconds west
Datum:
UTM Zone:
UTM Easting:
UTM Northing:

Primary Earth Cover:
Secondary Earth Cover:
Existing Vegetation:
Parent Material:
Bedrock Kind:
Bedrock Depth:
Bedrock Hardness:
Bedrock Fracture Interval:
Surface Fragments:

Cont. Site ID: 67IL089003 **Pedon ID:** 67IL089003

Slope (%)	Elevation (meters)	Aspect (deg)	MAAT (C)	MSAT (C)	MWAT (C)	MAP (mm)	Frost-Free Days	Drainage Class	Slope Length (meters)	Upslope Length (meters)
7.0								moderately well		

Ap--0 to 25 centimeters; very dark grayish brown (10YR 3/2) silt loam, light brownish gray (10YR 6/2), dry; weak very fine granular structure; friable; abrupt boundary. Lab sample # 40A22159

B21--25 to 36 centimeters; brown (10YR 4/3) silty clay loam; strong very fine and fine angular blocky structure; friable; very dark grayish brown (10YR 3/2), moist, clay films on faces of peds and dark brown (10YR 3/3), moist, clay films on faces of peds and gray (10YR 6/1), dry, silt coats on faces of peds; clear boundary. Lab sample # 40A22160

I-IIB22--36 to 43 centimeters; brown (10YR 4/3) silty clay loam; strong fine angular blocky structure; firm; very dark grayish brown (10YR 3/2), moist, clay films on faces of peds and dark brown (10YR 3/3), moist, clay films on faces of peds and gray (10YR 6/1), dry, silt coats on faces of peds; 2 percent 2- to 75-millimeter unspecified fragments; clear boundary. Lab sample # 40A22161

I-IIB23--43 to 56 centimeters; brown (10YR 4/3) clay loam; weak medium prismatic parting to strong fine and medium angular blocky structure; firm; very dark grayish brown (10YR 3/2), moist, clay films on faces of peds and dark brown (10YR 3/3), moist, clay films on faces of peds and gray (10YR 6/1), dry, silt coats on faces of peds; clear boundary. Lab sample # 40A22162

IIB24--56 to 74 centimeters; dark reddish brown (5YR 3/3) clay loam; moderate medium prismatic parting to medium and coarse angular blocky structure; firm; continuous brown (7.5YR 4/2), moist, coats on faces of peds and continuous dark brown (7.5YR 3/2), moist, coats on faces of peds; clear boundary. Lab sample # 40A22163

IIB25--74 to 84 centimeters; dark yellowish brown (10YR 4/4) and olive brown (2.5Y 4/4) loam; moderate medium prismatic parting to moderate coarse angular blocky structure; firm; continuous very dark gray (10YR 3/1), moist, clay films on faces of peds; clear boundary. Lab sample # 40A22164. Strong brown (7.5YR 5/8) ghosts or concretions.

IIB3--84 to 107 centimeters; yellowish brown (10YR 5/4) and light olive brown (2.5Y 5/4) loam; weak coarse prismatic structure; friable; continuous very dark gray (10YR 3/1), moist, clay films on faces of peds; strong effervescence; gradual boundary. Lab sample # 40A22165. Strong brown (7.5YR 5/8) ghosts or concretions.

IIC1--107 to 132 centimeters; yellowish brown (10YR 5/4) and light olive brown (2.5Y 5/4) loam; massive; friable; continuous very dark gray (10YR 3/1), moist, clay films on faces of peds; strong effervescence; gradual boundary. Lab sample # 40A22166. Some strong brown (7.5YR 5/8) ghosts or concretions.

IIC2--132 to 152 centimeters; yellowish brown (10YR 5/4) and light olive brown (2.5Y 5/4) loam; massive; friable; 10 percent continuous coats on faces of peds; strong effervescence. Lab sample # 40A22167. Some strong brown (7.5YR 5/8) ghosts or concretions.

*** Primary Characterization Data ***

(Kane County, Illinois)

Pedon ID: 67IL089003

Print Date: Oct 14 2003 10:22AM

Sampled as : Octagon
Revised to correlated on Apr 01, 2000 : Octagon ; Fine-loamy, mixed, superactive, mesic Oxyaquic Argiudoll

SSL - Project NL40001 SSIR SAMPLES
- Site ID 67IL089003 Lat: 41° 47' 7.00" north Long: 88° 23' 38.00" west
- Pedon No. 40A2807
- General Methods 1B1A, 2A1, 2B

United States Department of Agriculture
Natural Resources Conservation Service
National Soil Survey Center
Soil Survey Laboratory
Lincoln, Nebraska 68508-3866

Layer	Horizon	Orig Hzn	Depth (cm)	Field Label 1	Field Label 2	Field Label 3	Field Texture	Lab Texture
40A22159	Ap	AP	0-25	67B0478				SIL
40A22160	B	B21	25-36	67B0479				SICL
40A22161	2B11	2B22	36-44	67B0480				SICL
40A22162	2B12	2B23	44-56	67B0481				SICL
40A22163	2B13	2B24	56-74	67B0482				CL
40A22164	2B14	2B25	74-84	67B0483				CL
40A22165	2B2	2B3	84-108	67B0484				L
40A22166	2B3	2B 1	108-131	67B0485				L
40A22167	2C	2C 2	131-152	67B0486				L

Pedon Calculations

Calculation Name	Result	Units of Measure
CEC Activity, CEC7/Clay, Weighted Average	0.59	(NA)
Clay, carbonate free, Weighted Average	33	% wt
Weighted Particles, 0.1-75mm, 75 mm Base	16	% wt
Volume, >2mm, Weighted Average	1	% vol
Clay, total, Weighted Average	33	% wt
LE, Whole Soil, Summed to 1m	0	cm/m

Weighted averages based on control section: 25-75 cm

PSDA & Rock Fragments

				-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-	-12-	-13-	-14-	-15-	-16-	-17-
				(----- Total -----)			(-- Clay ---)		(---- Silt ----)		(---------- Sand ----------)					(Rock Fragments (mm))				
				Clay	Silt	Sand	Fine	CO_3	Fine	Coarse	VF	F	M	C	VC	(-------- Weight --------)				>2 mm
				<	.002	.05	<	<	.002	.02	.05	.10	.25	.5	1	2	5	20	.1-	wt %
	Depth			.002	-.05	-2	.0002	.002	-.02	-.05	-.10	-.25	-.50	-1	-2	-5	-20	-75	75	whole
Layer	(cm)	Horz	Prep	(---------- % of <2mm Mineral Soil ----------)												(------ % of <75mm ------)				soil
				3A1	3A1	3A1		3A1	3A1	3A1	3A1	3A1	3A1	3A1	3A1	3B1	3B1	3B1		
40A22159	0-25	Ap	S	18.6	74.7	6.7			42.8	31.9	2.7	1.9	1.3	0.6	0.2	--	--	--	4	--
40A22160	25-36	B	S	32.6	62.7	4.7			37.2	25.5	1.8	1.3	0.9	0.5	0.2	--	--	--	3	--
40A22161	36-44	2B11	S	36.9	53.4	9.7			32.3	21.1	2.8	3.1	2.1	1.2	0.5	--	--	--	7	--
40A22162	44-56	2B12	S	34.8	45.5	19.7			30.4	15.1	4.0	6.9	4.5	2.9	1.4	--	--	--	16	--
40A22163	56-74	2B13	S	31.4	33.7	34.9			24.3	9.4	6.3	13.4	8.4	4.2	2.6	--	--	1	29	1
40A22164	74-84	2B14	S	37.2	35.2	27.6			26.8	8.4	5.4	9.4	5.9	4.3	2.6	--	--	--	22	--
40A22165	84-108	2B2	S	25.4	41.9	32.7		1.3	29.0	12.9	7.2	9.6	5.5	5.6	4.8	--	--	5	29	5
40A22166	108-131	2B3	S	20.1	43.7	36.2		1.4	30.4	13.3	6.7	10.0	6.6	7.6	5.3	--	--	4	32	4
40A22167	131-152	2C	S	18.7	43.5	37.8		1.4	30.6	12.9	6.6	10.3	6.8	8.2	5.9	--	--	10	38	10

Bulk Density & Moisture

				-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-	-12-	-13-
				(Bulk Density)		Cole	(---------- Water Content ----------)						WRD	Aggst		
				33	Oven	Whole	6	10	33	1500	1500 kPa	Ratio	Whole	Stabl	(-- Ratio/Clay --)	
	Depth			kPa	Dry	Soil	kPa	kPa	kPa	kPa	Moist	AD/OD	Soil	2-0.5mm	CEC7	1500 kPa
Layer	(cm)	Horz	Prep	(--- g cm^{-3} ---)			(---------- pct of < 2mm ----------)						cm^3 cm^{-3}	%		
				NK	4A1h				NK	NK						
40A22159	0-25	Ap	S	1.34	1.38	0.010			22.5	7.4			0.20		0.70	0.40
40A22160	25-36	B	S	1.38	1.50	0.028			24.8	12.8			0.16		0.63	0.39
40A22161	36-44	2B11	S	1.44	1.62	0.039			23.8	14.9			0.13		0.64	0.40
40A22162	44-56	2B12	S	1.51	1.67	0.034			21.8	13.7			0.12		0.58	0.39
40A22163	56-74	2B13	S	1.60	1.75	0.030			19.5	12.0			0.12		0.55	0.38
40A22164	74-84	2B14	S	1.41	1.54	0.028			23.4	14.5			0.12		0.52	0.39
40A22165	84-108	2B2	S	1.62	1.70	0.016			17.9	10.4			0.12		0.45	0.41
40A22166	108-131	2B3	S	1.72	1.77	0.009			16.0	7.5			0.14		0.39	0.37
40A22167	131-152	2C	S	1.68	1.73	0.009			16.6	8.2			0.13		0.40	0.44

*** Primary Characterization Data ***

(Kane County, Illinois)

Print Date: Oct 14 2003 10:22AM

Pedon ID: 67IL089003
Sampled As : Octagon
USDA-NRCS-NSSC-National Soil Survey Laboratory ; Pedon No. 40A2807

Carbon & Extractions

Layer	Depth (cm)	Horz	Prep	-1- Total C (% of <2 mm)	-2- Total N (% of <2 mm)	-3- Total S (% of <2 mm)	-4- Org C NK (% of <2 mm)	-5- C/N Ratio	-6- Dith-Cit Ext Fe NK (% of < 2mm)	-7- Dith-Cit Ext Al (% of < 2mm)	-8- Dith-Cit Ext Mn (% of < 2mm)	-9- Acid Oxalate Extraction Al+½Fe (% of < 2mm)	-10- Acid Oxalate Extraction ODOE (% of < 2mm)	-11- Acid Oxalate Extraction Fe (% of < 2mm)	-12- Acid Oxalate Extraction Al (% of < 2mm)	-13- Acid Oxalate Extraction Mn (% of < 2mm)	-14- Acid Oxalate Extraction Si (mg kg^{-1})	-15- Na Pyro-Phosphate C (% of < 2mm)	-16- Na Pyro-Phosphate Fe (% of < 2mm)	-17- Na Pyro-Phosphate Al (% of < 2mm)	-18- Na Pyro-Phosphate Mn (% of < 2mm)
40A22159	0-25	Ap	S				1.34		0.8												
40A22160	25-36	B	S				0.59		1.4												
40A22161	36-44	2B11	S				0.56		1.7												
40A22162	44-56	2B12	S				0.46		2.0												
40A22163	56-74	2B13	S				0.37		1.7												
40A22164	74-84	2B14	S				0.55		2.1												
40A22165	84-108	2B2	S				0.45		1.6												
40A22166	108-131	2B3	S				0.41		1.4												
40A22167	131-152	2C	S				0.41		1.3												

CEC & Bases

Layer	Depth (cm)	Horz	Prep	-1- NH_4OAC Ca (cmol(+) kg^{-1}) NK	-2- NH_4OAC Mg (cmol(+) kg^{-1}) NK	-3- NH_4OAC Na (cmol(+) kg^{-1}) NK	-4- NH_4OAC K (cmol(+) kg^{-1}) NK	-5- Sum Bases (cmol(+) kg^{-1})	-6- Acidity (cmol(+) kg^{-1}) NK	-7- Extr Al (cmol(+) kg^{-1}) NK	-8- KCl Extr Mn (mg kg^{-1})	-9- CEC8 Sum Cats (cmol(+) kg^{-1})	-10- CEC7 NH_4 OAC (cmol(+) kg^{-1}) NK	-11- ECEC Bases +Al (cmol(+) kg^{-1})	-12- Al Sat (%)	-13- Base Sat Sum (%)	-14- Base Sat NH_4OAC (%)
40A22159	0-25	Ap	S	8.0	2.7	tr	0.2	10.9	4.1	tr		15.0	13.0			73	84
40A22160	25-36	B	S	9.7	4.6	tr	0.4	14.7	6.9	1.6		21.6	20.5	16.3	10	68	72
40A22161	36-44	2B11	S	11.6	5.7	tr	0.5	17.8	6.7	1.5		24.5	23.6	19.3	8	73	75
40A22162	44-56	2B12	S	9.6	5.3	tr	0.4	15.3	6.0	1.0		21.3	20.1	16.3	6	72	76
40A22163	56-74	2B13	S	8.8	5.2	tr	0.3	14.3	4.0	0.3		18.3	17.3	14.6	2	78	83
40A22164	74-84	2B14	S	13.0*	8.0	tr	0.3	21.3	2.2	0.1		23.5	19.3	21.4	tr	91	100
40A22165	84-108	2B2	S	12.1*	7.9	tr	0.2		–	0.1			11.4			100	100
40A22166	108-131	2B3	S	11.6*	7.0	tr	0.1		–	0.1			7.8			100	100
40A22167	131-152	2C	S	12.1*	6.3	–	0.1		–	0.1			7.4			100	100

*Extractable Ca may contain Ca from calcium carbonate or gypsum., CEC7 base saturation set to 100.

pH & Carbonates

Layer	Depth (cm)	Horz	Prep	-1- pH $CaCl_2$ KCl NK	-2- pH $CaCl_2$ 0.01M 1:2	-3- pH H_2O 1:1 NK	-4- pH Sat Paste	-5- pH Sulf	-6- pH NaF	-7- Carbonate As $CaCO_3$ <2mm (%) NK	-8- Carbonate As $CaCO_3$ <20mm (%)	-9- Gypsum As $CaSO_4$*$2H_2O$ <2mm (%)	-10- Gypsum As $CaSO_4$*$2H_2O$ <20mm (%)	-11- Resist ohms cm^{-1}
40A22159	0-25	Ap	S	5.0		5.6								
40A22160	25-36	B	S	4.0		5.0								
40A22161	36-44	2B11	S	3.8		4.9								
40A22162	44-56	2B12	S	3.9		5.1								
40A22163	56-74	2B13	S	4.2		5.4								
40A22164	74-84	2B14	S	5.7		6.6								
40A22165	84-108	2B2	S	6.4		7.3				25				
40A22166	108-131	2B3	S	6.7		7.5				29				
40A22167	131-152	2C	S	6.8		7.6				33				

*** Supplementary Characterization Data ***

(Kane County, Illinois)

Pedon ID: 67IL089003

Print Date: Oct 14 2003 10:22AM

Sampled as : Octagon
Revised to correlated on Apr 01, 2000 : Octagon ; Fine-loamy, mixed, superactive, mesic Oxyaquic Argiudoll

SSL - Project NL40001 SSIR SAMPLES
- Site ID 67IL089003 Lat: 41° 47' 7.00" north Long: 88° 23' 38.00" west
- Pedon No. 40A2807
- General Methods 1B1A, 2A1, 2B

United States Department of Agriculture
Natural Resources Conservation Service
National Soil Survey Center
Soil Survey Laboratory
Lincoln, Nebraska 68508-3866

Tier 1

				-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-	-12-	-13-	-14-	-15-	-16-	-17-	-18-	-19-	-20-	-21-	-22-	-23-	-24-	-25-
				(Engineering PSDA Percentage Passing Sieve													(Cumulative Curve Fractions (<75mm) USDA Less Than Diameters (mm) at								(Atter-berg		(Gradation	
Layer	Depth (cm)	Horz	Prep	3 (Inches	2	3/2	1	3/4	3/8	4 (Number	10	40	200)	20 (Microns	5	2)	1. (Millimeter	.5	.25	.10	.05)	60 (Percentile	50	10)	LL (%)	PI)	Uni-fmty CU	Cur-vtur CC
40A22159	0-25	Ap	S	100	100	100	100	100	100	100	100	99	95	61	36	19	100	99	98	96	93	0.02	0.011	0.001			26.9	1.1
40A22160	25-36	B	S	100	100	100	100	100	100	100	100	99	96	70	47	33	100	99	98	97	95	0.01	0.006	–			26.9	0.6
40A22161	36-44	2B11	S	100	100	100	100	100	100	100	100	98	92	69	50	37	100	98	96	93	90	0.01	0.005	–			27.8	0.4
40A22162	44-56	2B12	S	100	100	100	100	100	100	100	100	95	83	65	47	35	99	96	91	84	80	0.01	0.006	–			34.8	0.4
40A22163	56-74	2B13	S	100	100	100	99	99	99	99	99	90	68	55	41	31	96	92	84	71	64	0.03	0.012	–			76.9	0.3
40A22164	74-84	2B14	S	100	100	100	100	100	100	100	100	92	75	64	48	37	97	93	87	78	72	0.01	0.006	–			38.2	0.3
40A22165	84-108	2B2	S	100	99	98	96	95	95	95	95	84	68	52	35	24	90	85	80	71	64	0.04	0.017	0.001			71.7	0.6
40A22166	108-131	2B3	S	100	99	98	97	96	96	96	96	82	65	48	31	19	91	84	77	68	61	0.05	0.022	0.001			69.3	0.7
40A22167	131-152	2C	S	100	97	95	92	90	90	90	90	76	59	44	28	17	85	77	71	62	56	0.08	0.031	0.001			>100	0.6

Tier 2

				-26-	-27-	-28-	-29-	-30-	-31-	-32-	-33-	-34-	-35-	-36-	-37-	-38-	-39-	-40-	-41-	-42-	-43-	-44-	-45-	-46-	-47-	-48-	-49-	-50-
				(Weight Fractions														(Weight Per Unit Volume (g cm^{-3})									(Void Ratios	
				Whole Soil (mm)								<75 mm Fraction						Whole Soil				<2 mm Fraction					At 33 kPa	
Layer	Depth (cm)	Horz	Prep	>2 (% of Whole Soil	250 -UP	250 -75	75 -2	75 -20	20 -5	5 -2	<2)	75 -2 (% of <75 mm 3B1	75 -20 3B1	20 -5 3B1	5 -2 3B1	<2)		Soil Sur 33 kPa	Oven -dry	Engineering Moist	Satur -ated	Soil Survey 33 kPa NK	1500 kPa	Oven -dry 4A1h	Engineering Moist	Satur -ated	Whole Soil	<2 mm
40A22159	0-25	Ap	S	–	–	–	–	–	–	–	100	–	–	–	–	100		1.34	1.38	1.65	1.83	1.34		1.38	1.64	1.83	0.98	0.98
40A22160	25-36	B	S	–	–	–	–	–	–	–	100	–	–	–	–	100		1.39	1.51	1.74	1.87	1.38		1.50	1.72	1.86	0.91	0.92
40A22161	36-44	2B11	S	–	–	–	–	–	–	–	100	–	–	–	–	100		1.46	1.64	1.81	1.91	1.44		1.62	1.78	1.90	0.82	0.84
40A22162	44-56	2B12	S	–	–	–	–	–	–	–	100	–	–	–	–	100		1.52	1.68	1.85	1.95	1.51		1.67	1.84	1.94	0.74	0.75
40A22163	56-74	2B13	S	1	–	–	1	1	–	–	99	1	1	–	–	99		1.61	1.76	1.92	2.00	1.60		1.75	1.91	2.00	0.65	0.66
40A22164	74-84	2B14	S	–	–	–	–	–	–	–	100	–	–	–	–	100		1.46	1.59	1.80	1.91	1.41		1.54	1.74	1.88	0.82	0.88
40A22165	84-108	2B2	S	5	–	–	5	5	–	–	95	5	5	–	–	95		1.65	1.73	1.93	2.03	1.62		1.70	1.91	2.01	0.61	0.64
40A22166	108-131	2B3	S	4	–	–	4	4	–	–	96	4	4	–	–	96		1.74	1.79	2.00	2.08	1.72		1.77	2.00	2.07	0.52	0.54
40A22167	131-152	2C	S	10	–	–	10	10	–	–	90	10	10	–	–	90		1.74	1.79	2.00	2.08	1.68		1.73	1.96	2.05	0.52	0.58

Tier 3

Layer	Depth (cm)	Horz	Prep	>2 (-UP)	250 -75	250 -2	75 -20	75 -5	20 -2	5 <2	2- .05	.05- .002	LT .002	Pores D	Pores F	C /N Rat -io	Fine Clay	CEC <2 mm Fraction Sum Cats	NH_4^+ OAC	1500 kPa H_2O	LEP 33 kPa	Whole Soil 33 kPa 1500 kPa	Linear Extensiblity Whole Soil <2 mm to % Oven -dry	1500 kPa	Oven -dry	WRD Whole Soil	WRD <2 mm
				(% of Whole Soil)																						(in^3/in^3)	
40A22159	0-25	Ap	S	--	--	--	--	--	--	--	100	3	38	9	18	31		0.81	0.70	0.40						0.20	0.20
40A22160	25-36	B	S	--	--	--	--	--	--	--	100	2	32	17	13	35		0.66	0.63	0.39						0.16	0.17
40A22161	36-44	2B11	S	--	--	--	--	--	--	--	100	5	29	20	10	35		0.66	0.64	0.40						0.13	0.13
40A22162	44-56	2B12	S	--	--	--	--	--	--	--	100	11	25	19	10	33		0.61	0.58	0.39						0.12	0.12
40A22163	56-74	2B13	S	1	--	--	1	1	--	--	99	21	20	19	8	31		0.58	0.55	0.38						0.12	0.12
40A22164	74-84	2B14	S	--	--	--	--	--	--	--	100	14	18	19	11	34		0.63	0.52	0.39						0.12	0.13
40A22165	84-108	2B2	S	3	--	--	3	3	--	--	97	19	25	15	10	28			0.45	0.41						0.12	0.12
40A22166	108-131	2B3	S	3	--	--	3	3	--	--	97	23	27	13	8	26			0.39	0.37						0.14	0.15
40A22167	131-152	2C	S	7	--	--	7	7	--	--	93	22	25	11	8	26			0.40	0.44						0.13	0.14

Tier 4

Layer	Depth (cm)	Horz	Prep	Whole Soil >2	Whole Soil 75 -20	Whole Soil 20 -2	Whole Soil 2- .05	Whole Soil .05- .002	Whole Soil < .002	Sands VC	Sands C	Sands M	Sands F	Sands VF	Silts C	Silts F	Clay	Text -ure by PSDA	PSDA (mm) Sand 2- .05	PSDA (mm) Silt .05- .002	PSDA (mm) Clay < .002	pH Ca Cl_2 .01M	Elect. Res- ist. ohms	Elect. Con- duct dS m^{-1}	Part- -icle Den- sity g cm^{-3}
				(% of >2 mm Sand and Silt)						(% of Sand and Silt)								<2 mm 3A1	(% of 2 mm) 3A1			(<2 mm)			
40A22159	0-25	Ap	S			8	92	23	tr	1	2	2	3	39	53	23		sil	6.7	74.7	18.6				
40A22160	25-36	B	S			7	93	48	tr	1	1	2	3	38	55	48		sicl	4.7	62.7	32.6				
40A22161	36-44	2B11	S			15	85	58	1	2	3	5	4	33	51	58		sicl	9.7	53.4	36.9				
40A22162	44-56	2B12	S			30	70	53	2	4	7	11	6	23	47	53		sicl	19.7	45.5	34.8				
40A22163	56-74	2B13	S	1	1	50	48	45	4	6	12	20	9	14	35	46		cl	34.9	33.7	31.4				
40A22164	74-84	2B14	S			44	56	59	4	7	9	15	9	13	43	59		cl	27.6	35.2	37.2				
40A22165	84-108	2B2	S	7	7	41	52	32	6	8	7	13	10	17	39	34		l	32.7	41.9	25.4				
40A22166	108-131	2B3	S	5	5	43	52	24	7	10	8	13	8	17	38	25		l	36.2	43.7	20.1				
40A22167	131-152	2C	S	12	12	41	47	20	7	10	8	13	8	16	38	23		l	37.8	43.5	18.7				

Tiskilwa till

PEDON DESCRIPTION

Print Date: 10/14/2003
Description Date: 11/20/1996
Describer: JAD/KDH
Site ID: 96IL037209

Site Note:

Pedon ID: 96IL037209
Pedon Note:
Lab Source ID: SSL
Lab Pedon #: 97P0116

Soil Name as Described/Sampled: Saybrook

Soil Name as Correlated:

Classification:
Pedon Type: within range of series
Pedon Purpose: research site
Taxon Kind:
Associated Soils:
Physiographic Division:
Physiographic Province:
Physiographic Section:
State Physiographic Area:
Local Physiographic Area:
Geomorphic Setting: on backslope of side slope of moraine on backslope of side slope of upland
Upslope Shape: linear
Cross Slope Shape: linear
Particle Size Control Section:
Diagnostic Features: ? to ? cm.

Country:
State: Illinois
County: De Kalb
MLRA: 95B -- Southern Wisconsin and Northern Illinois Drift Plain
Soil Survey Area: IL037 -- DeKalb County, Illinois
Map Unit:
Quad Name:
Location Description:
Legal Description: 2,000 feet west and 500 feet north of the SE corner of Section 34, Township 41N, Range 3E
Latitude: 41 degrees 58 minutes 51 seconds north
Longitude: 88 degrees 52 minutes 30 seconds west
Datum:
UTM Zone:
UTM Easting:
UTM Northing:

Primary Earth Cover: Crop cover
Secondary Earth Cover:
Existing Vegetation:
Parent Material:
Bedrock Kind:
Bedrock Depth:
Bedrock Hardness:
Bedrock Fracture Interval:
Surface Fragments:

Cont. Site ID: 96IL037209 **Pedon ID:** 96IL037209

Slope (%)	Elevation (meters)	Aspect (deg)	MAAT (C)	MSAT (C)	MWAT (C)	MAP (mm)	Frost-Free Days	Drainage Class	Slope Length (meters)	Upslope Length (meters)
3.0	279.0	45						moderately well		

Ap--0 to 20 centimeters; very dark gray (10YR 3/1) silty clay loam, gray (10YR 5/1), dry; weak fine and medium subangular blocky structure; friable; common very fine and fine roots; neutral, pH 6.6, Hellige-Truog; clear smooth boundary. Lab sample # 97P00806

Bt1--20 to 33 centimeters; brown (10YR 4/3) silty clay loam; moderate medium prismatic structure; friable; common very fine roots; 20 percent continuous distinct very dark gray (10YR 3/1), moist, organic stains in root channels and/or pores and 70 percent continuous distinct dark brown (10YR 3/3), moist, clay films on faces of peds and in pores; neutral, pH 6.8, Hellige-Truog; gradual wavy boundary. Lab sample # 97P00807

Bt2--33 to 48 centimeters; dark yellowish brown (10YR 4/4) silty clay loam; moderate medium prismatic parting to moderate medium subangular blocky structure; friable; common very fine roots; 10 percent continuous distinct very dark gray (10YR 3/1), moist, organic stains in root channels and/or pores and 55 percent continuous distinct dark brown (10YR 3/3), moist, clay films on faces of peds and in pores; 2 percent fine irregular very dark gray (10YR 3/1) iron-manganese concretions throughout and 2 percent fine irregular yellowish brown (10YR 5/6) iron concretions throughout; neutral, pH 7.0, Hellige-Truog; gradual wavy boundary. Lab sample # 97P00808

Bt3--48 to 69 centimeters; dark yellowish brown (10YR 4/4) silty clay loam; 5 percent fine distinct irregular light brownish gray (10YR 6/2) mottles; moderate medium prismatic parting to moderate medium subangular blocky structure; friable; common very fine roots; 3 percent discontinuous distinct very dark gray (10YR 3/1), moist, organic stains in root channels and/or pores and 50 percent continuous distinct brown (10YR 4/3), moist, clay films on faces of peds and in pores; 5 percent medium irregular black (10YR 2/1) iron-manganese concretions throughout and 15 percent fine irregular yellowish brown (10YR 5/6) iron concretions throughout; 1 percent 2- to 75-millimeter unspecified fragments; neutral, pH 7.2, Hellige-Truog; gradual wavy boundary. Lab sample # 97P00809

2Bt4--69 to 89 centimeters; brown (7.5YR 5/4) clay loam; 3 percent fine distinct irregular light brownish gray (10YR 6/2) mottles; weak medium angular blocky structure; friable; common very fine roots; 30 percent continuous distinct brown (7.5YR 4/3), moist, clay films on faces of peds and in pores; 8 percent medium irregular black (10YR 2/1) iron-manganese concretions throughout and 20 percent fine irregular yellowish brown (10YR 5/6) iron concretions throughout; 1 percent 75- to 250- millimeter unspecified fragments and 3 percent 2- to 75-millimeter unspecified fragments; neutral, pH 7.2, Hellige-Truog; clear wavy boundary. Lab sample # 97P00810

2BC--89 to 107 centimeters; brown (7.5YR 5/4) loam; 3 percent medium distinct irregular light brownish gray (10YR 6/2) mottles; moderate medium angular blocky structure; friable; 10 percent discontinuous distinct brown (7.5YR 4/3), moist, clay films on faces of peds and in pores; 3 percent fine irregular black (10YR 2/1) iron-manganese concretions throughout and 20 percent fine irregular yellowish brown (10YR 5/6) iron concretions throughout; 8 percent 2- to 75-millimeter unspecified fragments; strong effervescence; moderately alkaline, pH 8.0, Hellige-Truog; clear wavy boundary. Lab sample # 97P00811

2C1--107 to 155 centimeters; brown (7.5YR 5/4) loam; massive; friable; 30 percent discontinuous prominent light gray (2.5Y 7/2), moist, pressure faces on vertical faces of peds; 40 percent medium irregular yellowish brown (10YR 5/6) iron concretions throughout; 8 percent 2- to 75-millimeter unspecified fragments; violent effervescence; moderately alkaline, pH 8.2, Hellige-Truog; gradual wavy boundary. Lab sample # 97P00812, 97P00813. Horizon split for sampling at 132 cm.

2C2--155 to 203 centimeters; reddish brown (5YR 5/4) loam; massive; friable; 10 percent discontinuous prominent light gray (2.5Y 7/2), moist, pressure faces on vertical faces of peds; 40 percent medium irregular yellowish brown (10YR 5/6) iron concretions throughout; 1 percent 75- to 250-millimeter unspecified fragments and 9 percent 2- to 75-millimeter unspecified fragments; violent effervescence; moderately alkaline, pH 8.4, Hellige-Truog. Lab sample # 97P00814

Pedon ID: 96IL037209

*** Primary Characterization Data ***

(De Kalb County, Illinois)

Print Date: Oct 14 2003 10:48AM

Sampled as : Saybrook
Revised to correlated on Dec 01, 2000 : Danabrook ; Fine-silty, mixed, superactive, mesic Oxyaquic Hapludalf

SSL - Project CP97IL028 DEKALB AND MC HENERY COUNTIES
- Site ID 96IL037209 Lat: 41° 58' 51.00" north Long: 88° 52' 30.00" west
- Pedon No. 97P0116
- General Methods 1B1A, 2A1, 2B

United States Department of Agriculture
Natural Resources Conservation Service
National Soil Survey Center
Soil Survey Laboratory
Lincoln, Nebraska 68508-3866

Layer	Horizon	Orig Hzn	Depth (cm)	Field Label 1	Field Label 2	Field Label 3	Field Texture	Lab Texture
97P00806	Ap	Ap	0-20					SICL
97P00807	Bt1	Bt1	20-33					SICL
97P00808	Bt2	Bt2	33-48					SICL
97P00809	Bt3	Bt3	48-69					CL
97P00810	2Bt4	2Bt4	69-89					L
97P00811	2BC	2BC	89-107					L
97P00812	2C1	2C1	107-132					L
97P00813	2C1	2C1	132-155					L
97P00814	2C2	2C2	155-203					L

Pedon Calculations

Calculation Name	Result	Units of Measure
CEC Activity, CEC7/Clay, Weighted Average	0.64	(NA)
Clay, carbonate free, Weighted Average	31	% wt
Weighted Particles, 0.1-75mm, 75 mm Base	14	% wt
Volume, >2mm, Weighted Average	1	% vol
Clay, total, Weighted Average	31	% wt
LE, Whole Soil, Summed to 1m	0	cm/m

Weighted averages based on control section: 20-70 cm

PSDA & Rock Fragments

				-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-	-12-	-13-	-14-	-15-	-16-	-17-
				(----- Total ------)			(-- Clay ---)		(---- Silt -----)		(------------ Sand ------------)					(Rock Fragments (mm))				
				Clay	Silt	Sand	Fine	CO_3	Fine	Coarse	VF	F	M	C	VC	(--------- Weight --------)				>2 mm
				< .002	.002 -.05	.05 -2	< .0002	< .002	.002 -.02	.02 -.05	.05 -.10	.10 -.25	.25 -.50	.5 -1	1 -2	2 -5	5 -20	20 -75	.1- 75	wt % whole soil
Layer	Depth (cm)	Horz	Prep	(------------------------- % of <2mm Mineral Soil ---------------------------)												(------- % of <75mm ------)				
				3A1	3A1	3A1	3A1	3A1	3A1	3A1	3A1	3A1	3A1	3A1	3A1	3B1	3B1	3B1		
97P00806	0-20	Ap	S	28.8	65.5	5.7	15.0		37.3	28.2	1.7	2.0	1.6	0.3	0.1	tr	--	--	4	--
97P00807	20-33	Bt1	S	35.1	58.9	6.0	19.7		33.0	25.9	1.7	2.5	1.5	0.2	0.1	--	--	--	4	--
97P00808	33-48	Bt2	S	33.0	55.1	11.9	18.4		28.1	27.0	2.8	4.8	3.6	0.6	0.1	tr	tr	--	9	tr
97P00809	48-69	Bt3	S	28.3	46.6	25.1	15.0		24.2	22.4	5.0	10.5	7.6	1.4	0.6	2	1	--	22	3
97P00810	69-89	2Bt4	S	18.9	38.0	43.1	6.3	1.0	22.4	15.6	9.0	17.0	11.9	3.3	1.9	5	4	1	41	10
97P00811	89-107	2BC	S	18.2	40.8	41.0	4.9	1.8	24.9	15.9	9.6	15.2	10.7	3.4	2.1	15	5	1	46	21
97P00812	107-132	2C1	S	18.4	41.2	40.4	4.8	2.3	25.5	15.7	9.0	14.8	10.0	3.7	2.9	3	4	tr	36	7
97P00813	132-155	2C1	S	18.3	41.1	40.6	5.1	2.3	25.3	15.8	9.1	15.4	10.4	3.6	2.1	7	4	--	39	11
97P00814	155-203	2C2	S	18.4	41.0	40.6	4.9	2.3	24.1	16.9	9.7	14.8	10.6	3.2	2.3	3	4	--	36	7

Water Dispersible PSDA

				-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-	-12-
				(------------------------------ Water Dispersible ------------------------------)											
				(----- Total ------)			(-- Clay ---)		(---- Silt -----)		(------------ Sand ------------)				
				Clay	Silt	Sand	F	CO_3	F	C	VF	F	M	C	VC
				< .002	.002 -.05	.05 -2	< .0002	< .002	.002 -.02	.02 -.05	.05 -.10	.10 -.25	.25 -.50	.5 -1	1 -2
Layer	Depth (cm)	Horz	Prep	(------------------------- % of <2mm ---------------------------)											
				3A1c	3A1c	3A1c			3A1c	3A1c	3A1c	3A1c	3A1c	3A1c	3A1c
97P00806	0-20	Ap	S	8.3	82.4	9.3			49.7	32.7	3.2	3.5	2.2	0.3	0.1

*** Primary Characterization Data ***

(De Kalb County, Illinois)

Pedon ID: 96IL037209

Print Date: Oct 14 2003 10:48AM

Sampled As : Saybrook

USDA-NRCS-NSSC-National Soil Survey Laboratory ; Pedon No. 97P0116

Bulk Density & Moisture

				-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-	-12-	-13-
				(Bulk Density)		Cole	(---------- Water Content ----------						WRD	Aggst		
				33 kPa	Oven Dry	Whole Soil	6 kPa	10 kPa	33 kPa	1500 kPa	1500 kPa Moist	Ratio AD/OD	Whole Soil	2-0.5mm	(- - Ratio/Clay - -) CEC7	1500 kPa
Layer	Depth (cm)	Horz	Prep	(- - - g cm^{-3} - - -)			(---------- pct of < 2mm ----------						cm^3 cm^{-3}	%		
				4A1d	4A1h				4B1c	4B2a		4B5	4C1	4G1	8D1	8D1
97P00806	0-20	Ap	S	1.48	1.61	0.028			21.7	12.9		1.019	0.13	9	0.70	0.45
97P00807	20-33	Bt1	S	1.35	1.52	0.040			26.5	15.0		1.025	0.16		0.64	0.43
97P00808	33-48	Bt2	S	1.39	1.53	0.032			24.0	14.6		1.025	0.13		0.67	0.44
97P00809	48-69	Bt3	S	1.37	1.54	0.039			24.0	12.3		1.020	0.16		0.64	0.43
97P00810	69-89	2Bt4	S	1.82	1.89	0.012			13.0	8.5		1.009	0.08		0.42	0.45
97P00811	89-107	2BC	S	1.87	1.93	0.009			13.5	7.4		1.007	0.10		0.34	0.41
97P00812	107-132	2C1	S	1.82	1.93	0.019			13.1	7.6		1.006	0.10		0.31	0.41
97P00813	132-155	2C1	S	1.88	1.93	0.008			13.5	7.6		1.007	0.10		0.33	0.42
97P00814	155-203	2C2	S	1.86	1.92	0.010			13.5	6.9		1.006	0.12		0.31	0.38

Water Content

				-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-	-12-	-13-
				(- - Atterberg - -)		(----- Bulk Density -----			(---------- Water Content ----------							
				(- - - Limits - - -)		Field	Recon 33 kPa	Recon Oven Dry	Field	Recon 33 kPa	(---------- Sieved Samples ---------- 6 kPa	10 kPa	33 kPa	100 kPa	200 kPa	500 kPa
Layer	Depth (cm)	Horz	Prep	LL	PI	(-------- g cm^{-3} -------)			(---------- % of < 2mm ----------							
				pct <0.4mm											4B1a	
97P00806	0-20	Ap	S												19.4	
97P00807	20-33	Bt1	S												21.7	
97P00808	33-48	Bt2	S												18.3	
97P00809	48-69	Bt3	S												15.6	
97P00810	69-89	2Bt4	S												11.6	
97P00811	89-107	2BC	S												11.4	
97P00812	107-132	2C1	S												11.6	
97P00813	132-155	2C1	S												11.8	
97P00814	155-203	2C2	S												11.5	

*** Primary Characterization Data ***

Pedon ID: 96IL037209 (De Kalb County, Illinois) Print Date: Oct 14 2003 10:48AM

Sampled As : Saybrook

USDA-NRCS-NSSC-National Soil Survey Laboratory ; Pedon No. 97P0116

Carbon & Extractions

				-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-	-12-	-13-	-14-	-15-	-16-	-17-	-18-
				(- - - - - Total - - - - -)			Org	C/N	(- - - Dith-Cit Ext - - -)			(- - - - - - - - Acid Oxalate Extraction - - - - - - - -)						(- - - Na Pyro-Phosphate - - -)			
	Depth			C	N	S	C	Ratio	Fe	Al	Mn	Al+½Fe	ODOE	Fe	Al	Mn	Si	C	Fe	Al	Mn
Layer	(cm)	Horz	Prep	(- - - - - - % of <2 mm - - - - - -)					(- - - - - - - - - - - - - - - - - % of < 2mm - - - - - - - - - - - - - - -)							mg kg^{-1}	(- - - - - - - - - % of < 2mm - - - - - - - - -)				
							6A1c														
97P00806	0-20	Ap	S				1.78														
97P00807	20-33	Bt1	S				0.66														
97P00808	33-48	Bt2	S				0.41														
97P00809	48-69	Bt3	S				0.31														
97P00810	69-89	2Bt4	S				0.16														
97P00811	89-107	2BC	S				0.10														
97P00812	107-132	2C1	S				0.09														
97P00813	132-155	2C1	S				0.10														
97P00814	155-203	2C2	S				0.09														

CEC & Bases

				-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-	-12-	-13-	-14-
				(- - - - - - NH_4OAC Extractable Bases - - - - -)								CEC8	CEC7	ECEC		(- - - - Base - - - -)	
								Sum	Acid-	Extr	KCl	Sum	NH_4	Bases	Al	(- Saturation -)	
	Depth			Ca	Mg	Na	K	Bases	ity	Al	Mn	Cats	OAC	+Al	Sat	Sum	NH_4OAC
Layer	(cm)	Horz	Prep	(- - - - - - - - - - - - - - - - - - cmol(+) kg^{-1} - - - - - - - - - - - - - - - - - -)							mg kg^{-1}	(- - - - cmol(+) kg^{-1} - - -)			(- - - - - - - - % - - - - - - - -)		
				6N2e	6O2d	6P2b	6Q2b		6H5a			5A3a	5A8b			5C3	5C1
97P00806	0-20	Ap	S	11.9	6.2	tr	0.5	18.6	6.1			24.7	20.3			75	92
97P00807	20-33	Bt1	S	12.7	7.9	0.3	0.3	21.2	5.7			26.9	22.5			79	94
97P00808	33-48	Bt2	S	11.6	7.3	tr	0.3	19.2	6.5			25.7	22.0			75	87
97P00809	48-69	Bt3	S	9.7	5.9	tr	0.3	15.9	5.0			20.9	18.1			76	88
97P00810	69-89	2Bt4	S	26.3*	9.6	tr	0.1						7.9			100	100
97P00811	89-107	2BC	S	36.2*	7.9	tr	0.1						6.1			100	100
97P00812	107-132	2C1	S	35.6*	7.2	0.1	0.1						5.7			100	100
97P00813	132-155	2C1	S	35.3*	8.1	tr	0.1						6.0			100	100
97P00814	155-203	2C2	S	35.4*	5.9	tr	0.1						5.7			100	100

*Extractable Ca may contain Ca from calcium carbonate or gypsum., CEC7 base saturation set to 100.

pH & Carbonates

				-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-
				(- - - - - - - - - - - - - - - - - - pH - - - - - - - - - - - - - - - - - -)						(- - Carbonate - -) As $CaCO_3$		(- - Gypsum - - -) As $CaSO_4*2H_2O$		Resist
					$CaCl_2$ 0.01M	H_2O	Sat			<2mm	<20mm	<2mm	<20mm	ohms
	Depth			KCl	1:2	1:1	Paste	Sulf	NaF					
Layer	(cm)	Horz	Prep		8C1f	8C1f				(- - - - - - - - - - - - % - - - - - - - - - - -)				cm^{-1}
										6E1g				
97P00806	0-20	Ap	S		6.3	6.5								
97P00807	20-33	Bt1	S		6.7	6.7								
97P00808	33-48	Bt2	S		6.4	6.4								
97P00809	48-69	Bt3	S		6.4	6.4								
97P00810	69-89	2Bt4	S		8.1	8.2				23				
97P00811	89-107	2BC	S		8.4	8.5				33				
97P00812	107-132	2C1	S		8.5	8.3				34				
97P00813	132-155	2C1	S		8.5	8.3				35				
97P00814	155-203	2C2	S		8.5	8.3				36				

Pedon ID: 96IL037209

*** Supplementary Characterization Data ***

(De Kalb County, Illinois)

Print Date: Oct 14 2003 10:49AM

Sampled as : Saybrook
Revised to correlated on Dec 01, 2000 : Danabrook ; Fine-silty, mixed, superactive, mesic Oxyaquic Hapludalf

SSL - Project CP97IL028 DEKALB AND MC HENERY COUNTIES
- Site ID 96IL037209 Lat: 41° 58' 51.00" north Long: 88° 52' 30.00" west
- Pedon No. 97P0116
- General Methods 1B1A, 2A1, 2B

United States Department of Agriculture
Natural Resources Conservation Service
National Soil Survey Center
Soil Survey Laboratory
Lincoln, Nebraska 68508-3866

Tier 1 -1- -2- -3- -4- -5- -6- -7- -8- -9- -10- -11- -12- -13- -14- -15- -16- -17- -18- -19- -20- -21- -22- -23- -24- -25-

				Engineering PSDA Percentage Passing Sieve												Cumulative Curve Fractions USDA Less Than Diameters (mm) at								(<75mm)	Atterberg		Gradation	
Layer	Depth (cm)	Horz	Prep	3 Inches	2 Inches	3/2 Inches	1 Inches	3/4 Inches	3/8 Inches	4 Number	10 Number	40 Number	200 Number	20 Microns	5 Microns	2 Microns	1. Millimeter	.5 Millimeter	.25 Millimeter	.10 Millimeter	.05 Millimeter	60 Percentile	50 Percentile	10 Percentile	LL %-	PI %-	Uniformity CU	Curvature CC
97P00806	0-20	Ap	S	100	100	100	100	100	100	100	100	99	95	66	44	29	100	100	98	96	94	0.01	0.007	--			30.8	0.8
97P00807	20-33	Bt1	S	100	100	100	100	100	100	100	100	99	95	68	48	35	100	100	98	96	94	0.01	0.006	--			29.5	0.5
97P00808	33-48	Bt2	S	100	100	100	100	100	100	100	100	98	90	61	44	33	100	99	96	91	88	0.02	0.008	--			45.5	0.4
97P00809	48-69	Bt3	S	100	100	100	100	100	100	99	97	93	75	51	37	27	96	95	88	78	73	0.03	0.018	--			63.4	0.5
97P00810	69-89	2Bt4	S	100	100	100	99	99	97	95	90	83	56	37	25	17	88	85	75	59	51	0.10	0.046	0.001			>100	1.0
97P00811	89-107	2BC	S	100	100	100	99	99	97	94	79	73	51	34	22	14	77	75	66	54	47	0.16	0.068	0.001			>100	1.0
97P00812	107-132	2C1	S	100	100	100	100	100	98	96	93	85	60	41	27	17	90	87	78	64	55	0.07	0.036	0.001			95.1	0.9
97P00813	132-155	2C1	S	100	100	100	100	100	98	96	89	82	57	39	25	16	87	84	75	61	53	0.09	0.041	0.001			>100	0.9
97P00814	155-203	2C2	S	100	100	100	100	100	98	96	93	85	60	40	26	17	91	88	78	64	55	0.07	0.037	0.001			93.8	1.0

Tier 2 -26- -27- -28- -29- -30- -31- -32- -33- -34- -35- -36- -37- -38- -39- -40- -41- -42- -43- -44- -45- -46- -47- -48- -49- -50-

				Weight Fractions Whole Soil (mm) % of Whole Soil								<75 mm Fraction % of <75 mm				Weight Per Unit Volume (g cm^{-3}) Whole Soil				<2 mm Fraction				Void Ratios	
Layer	Depth (cm)	Horz	Prep	>2	250 -UP	250 -75	75 -2	75 -20	20 -5	5 -2	<2	75 -2	75 -20 3B1	20 -5 3B1	5 -2 3B1	<2	Soil Sur 33 kPa	Oven -dry	Engineering Moist	Satur -ated	Soil Survey 33 kPa 4A1d	1500 kPa	Oven -dry 4A1h	Engineering Moist	Satur -ated	At 33 kPa Whole Soil	<2 mm
97P00806	0-20	Ap	S	--	--	--	--	--	--	--	100	--	--	--	tr	100	1.48	1.61	1.81	1.92	1.48	1.54	1.61	1.80	1.92	0.79	0.79
97P00807	20-33	Bt1	S	--	--	--	--	--	--	--	100	--	--	--	--	100	1.35	1.52	1.71	1.84	1.35	1.43	1.52	1.71	1.84	0.96	0.96
97P00808	33-48	Bt2	S	tr	--	--	--	--	tr	tr	100	--	--	tr	tr	100	1.39	1.53	1.72	1.87	1.39	1.45	1.53	1.72	1.87	0.91	0.91
97P00809	48-69	Bt3	S	3	--	--	3	--	1	2	97	3	--	1	2	97	1.38	1.55	1.70	1.86	1.37	1.46	1.54	1.70	1.85	0.92	0.93
97P00810	69-89	2Bt4	S	10	--	--	10	1	4	5	90	10	1	4	5	90	1.88	1.95	2.11	2.17	1.82	1.85	1.89	2.06	2.13	0.41	0.46
97P00811	89-107	2BC	S	21	--	--	21	1	5	15	79	21	1	5	15	79	1.99	2.05	2.21	2.24	1.87	1.90	1.93	2.12	2.16	0.33	0.42
97P00812	107-132	2C1	S	7	--	--	7	tr	4	3	93	7	tr	4	3	93	1.86	1.97	2.08	2.16	1.82	1.87	1.93	2.06	2.13	0.42	0.46
97P00813	132-155	2C1	S	11	--	--	11	--	4	7	89	11	--	4	7	89	1.94	1.99	2.17	2.21	1.88	1.90	1.93	2.13	2.17	0.37	0.41
97P00814	155-203	2C2	S	7	--	--	7	--	4	3	93	7	--	4	3	93	1.90	1.96	2.15	2.18	1.86	1.89	1.92	2.11	2.16	0.39	0.42

Tier 3 -51- -52- -53- -54- -55- -56- -57- -58- -59- -60- -61- -62- -63- -64- -65- -66- -67- -68- -69- -70- -71- -72- -73- -74- -75-

Layer	Depth (cm)	Horz	Prep	Volume Fractions - Whole Soil (mm) At 33 kPa (% of Whole Soil): >2	250-UP	250-75	75-2	75-20	20-5	5-2	<2	2-.05	.05-.002	LT .002	Pores D	Pores F	C/N Ratio	Ratios To Clay - <2 mm Fraction: Fine Clay	CEC Sum Cats	CEC NH_4-OAC 8D1	1500 kPa H_2O 8D1	LEP 33 kPa	Linear Extensiblity - Whole Soil 33 kPa 1500 kPa	Linear Extensiblity - Whole Soil 33 kPa Oven-dry	Linear Extensiblity - <2 mm to % 1500 kPa	Linear Extensiblity - <2 mm to % Oven-dry	WRD - Whole Soil 4C1 (in^3/in^3)	WRD - <2 mm (in^3/in^3)
97P00806	0-20	Ap	S	--	--	--	--	--	--	--	100	3	36	16	11	33		0.52	0.86	0.70	0.45	0.100	1.3		1.3		0.13	0.13
97P00807	20-33	Bt1	S	--	--	--	--	--	--	--	100	3	30	18	13	36		0.56	0.77	0.64	0.43	0.110	1.9		1.9		0.16	0.16
97P00808	33-48	Bt2	S	tr	--	--	--	--	tr	tr	100	6	29	17	15	33		0.56	0.78	0.67	0.44	0.100	1.4		1.4		0.13	0.13
97P00809	48-69	Bt3	S	2	--	--	2	--	1	1	98	13	24	14	16	32		0.53	0.74	0.64	0.43	0.140	2.1		2.1		0.16	0.16
97P00810	69-89	2Bt4	S	7	--	--	7	1	3	4	93	28	24	12	6	23		0.33		0.42	0.45	0.070	0.5		0.5		0.08	0.08
97P00811	89-107	2BC	S	16	--	--	16	1	4	11	84	24	24	11	3	22		0.27		0.34	0.41	0.060	0.5		0.5		0.10	0.11
97P00812	107-132	2C1	S	5	--	--	5	tr	3	2	95	26	27	12	8	22		0.26		0.31	0.41	0.110	0.9		0.9		0.10	0.10
97P00813	132-155	2C1	S	8	--	--	8	--	3	5	92	27	27	12	4	23		0.28		0.33	0.42	0.050	0.3		0.4		0.10	0.11
97P00814	155-203	2C2	S	5	--	--	5	--	3	2	95	27	27	12	3	25		0.27		0.31	0.38	0.060	0.5		0.5		0.12	0.12

Tier 4 -76- -77- -78- -79- -80- -81- -82- -83- -84- -85- -86- -87- -88- -89- -90- -91- -92- -93- -94- -95- -96- -97- -98-

Layer	Depth (cm)	Horz	Prep	Weight Fractions - Clay Free - Whole Soil (- % of >2 mm Sand and Silt -): >2	75-20	20-2	2-.05	.05-.002	<.002	<2 mm Fraction (% of Sand and Silt) Sands: VC	C	M	F	VF	Silts: C	F	Clay	Texture by PSDA <2 mm 3A1	PSDA (mm) (% of 2 mm) Sand 2-.05 3A1	Silt .05-.002 3A1	Clay <.002 3A1	pH $CaCl_2$ .01M 8C1f	Elect. Resist. (<2 mm) ohms	Elect. Conduct (<2 mm) dS m^{-1}	Particle Density (<2 mm) g cm^{-3}
97P00806	0-20	Ap	S				8	92	40	tr	tr	2	3	2	40	52	40	sicl	5.7	65.5	28.8	6.3			
97P00806[1]	0-20		S															si							
97P00807	20-33	Bt1	S				9	91	54	tr	tr	2	4	3	40	51	54	sicl	6.0	58.9	35.1	6.7			
97P00808	33-48	Bt2	S				18	82	49	tr	1	5	7	4	40	42	49	sicl	11.9	55.1	33.0	6.4			
97P00809	48-69	Bt3	S	4	4	4	34	62	38	1	2	11	15	7	31	34	39	cl	25.1	46.6	28.3	6.4			
97P00810	69-89	2Bt4	S	12	12	11	47	41	20	2	4	15	21	11	19	28	23	l	43.1	38.0	18.9	8.1			
97P00811	89-107	2BC	S	25	25	23	38	38	17	3	4	13	19	12	19	30	22	l	41.0	40.8	18.2	8.4			
97P00812	107-132	2C1	S	8	8	8	45	46	21	4	5	12	18	11	19	31	23	l	40.4	41.2	18.4	8.5			
97P00813	132-155	2C1	S	13	13	13	43	44	19	3	4	13	19	11	19	31	22	l	40.6	41.1	18.3	8.5			
97P00814	155-203	2C2	S	8	8	8	46	46	21	3	4	13	18	12	21	30	23	l	40.6	41.0	18.4	8.5			

[1] Multiple values present due to instrumentation or analyzed size fraction. See laboratory for more information.

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PEDON DESCRIPTION

Print Date: 10/16/2003
Description Date: 11/01/1990
Describer: DEC
Site ID: 90IL111001

Site Note:
Pedon ID: 90IL111001
Pedon Note: Physiography, Upland-Moraine; PH Method, La Motte;
Lab Source ID: SSL
Lab Pedon #: 91P0192
Soil Name as Described/Sampled: Miami

Soil Name as Correlated:

Classification:
Pedon Type:
Pedon Purpose: full pedon description
Taxon Kind:
Associated Soils:
Physiographic Division:
Physiographic Province:
Physiographic Section:
State Physiographic Area:
Local Physiographic Area:
Geomorphic Setting: None Assigned
Upslope Shape:
Cross Slope Shape:
Particle Size Control Section:
Diagnostic Features: ? to ? cm.

Country:
State: Illinois
County: McHenry
MLRA: 95B -- Southern Wisconsin and Northern Illinois Drift Plain
Soil Survey Area:
Map Unit:
Quad Name:
Location Description:
Legal Description:
Latitude: 42 degrees 10 minutes 37 seconds north
Longitude: 88 degrees 32 minutes 57 seconds west
Datum:
UTM Zone:
UTM Easting:
UTM Northing:

Primary Earth Cover:
Secondary Earth Cover:
Existing Vegetation:
Parent Material:
Bedrock Kind:
Bedrock Depth:
Bedrock Hardness:
Bedrock Fracture Interval:
Surface Fragments:

Cont. Site ID: 90IL111001 **Pedon ID:** 90IL111001

Slope (%)	Elevation (meters)	Aspect (deg)	MAAT (C)	MSAT (C)	MWAT (C)	MAP (mm)	Frost-Free Days	Drainage Class	Slope Length (meters)	Upslope Length (meters)
4.0		180						well		

A p1--0 to 28 centimeters; brown (10YR 4/3) loam, pale brown (10YR 6/3), dry; weak fine granular structure; friable; common fine roots and few medium roots; 15 percent discontinuous dark brown (10YR 3/3) organic stains on faces of peds; neutral, pH 7.2, Hellige-Truog; clear smooth boundary. Lab sample # 91P1193. few organic coats surface features on faces of peds; few medium roots; common fine roots

A p2--28 to 41 centimeters; brown (10YR 4/3) and dark yellowish brown (10YR 4/4) loam, pale brown (10YR 6/3), dry; weak fine and medium subangular blocky structure; friable; common fine roots; 2 percent discontinuous dark brown (10YR 3/3) organic stains on faces of peds; neutral, pH 7.0, Hellige-Truog; abrupt smooth boundary. Lab sample # 91P1194. very few organic coats surface features on faces of peds; common fine roots

B t1--41 to 61 centimeters; dark yellowish brown (10YR 4/4) clay loam; moderate fine and medium subangular blocky structure; friable; few very fine and fine roots; 15 percent discontinuous brown (10YR 4/3), moist, clay films on faces of peds; 10 percent unspecified fragments; neutral, pH 7.2, Hellige-Truog; gradual smooth boundary. Lab sample # 91P1195. few clay films surface features on faces of peds; few very fine and fine roots

B t2--61 to 74 centimeters; strong brown (7.5YR 4/6) clay loam; moderate medium subangular blocky structure; friable; few very fine and fine roots; 15 percent discontinuous brown (10YR 4/3), moist, clay films on faces of peds and 15 percent discontinuous dark brown (10YR 3/3), moist, organic stains in root channels and/or pores; 10 percent unspecified fragments; neutral, pH 7.2, Hellige- Truog; gradual smooth boundary. Lab sample # 91P1196. few clay films surface features on faces of peds; few organic coats surface features in root channels and/or pores; few very fine and fine roots

B t3--74 to 86 centimeters; strong brown (7.5YR 4/6) clay loam; weak medium prismatic, and moderate medium subangular blocky structure; friable; few very fine and fine roots; 15 percent discontinuous brown (7.5YR 4/4), moist, clay films on faces of peds and 15 percent discontinuous dark brown (10YR 3/3), moist, organic stains in root channels and/or pores; 10 percent unspecified fragments; slightly alkaline, pH 7.4, Hellige-Truog; gradual smooth boundary. Lab sample # 91P1197. few clay films surface features on faces of peds; few organic coats surface features in root channels and/or pores; few very fine and fine roots

BC--86 to 102 centimeters; brown (7.5YR 5/4) loam; weak coarse subangular blocky structure; friable; few very fine roots; slight effervescence; slightly alkaline, pH 7.8, Hellige-Truog; clear smooth boundary. Lab sample # 91P1198. few very fine roots

C 1--102 to 135 centimeters; loam; pale red (2.5YR 6/2) and reddish brown (5YR 5/4) and strong brown (7.5YR 5/6) mottles; massive; friable; few very fine roots; 5 percent unspecified fragments; violent effervescence; moderately alkaline, pH 8.0, Hellige-Truog; gradual smooth boundary. Lab sample # 91P1199. few very fine roots

C 2--135 to 170 centimeters; reddish brown (5YR 5/4) loam; 11 percent medium prominent strong brown (7.5YR 5/6) and 11 percent medium prominent strong brown (7.5YR 5/6) mottles; massive; friable; 5 percent unspecified fragments; violent effervescence; moderately alkaline, pH 8.0, Hellige-Truog. Lab sample # 91P1200. common medium prominent 7.5YR56 mottles; common medium prominent 7.5YR56 mottles

*** Primary Characterization Data ***

(McHenry County, Illinois)

Pedon ID: 90IL111001

Print Date: Oct 16 2003 7:24AM

Sampled as : Miami ; Fine-loamy, mixed, mesic Typic Hapludalf
Revised to correlated: Miami ; Fine-loamy, mixed, active, mesic Typic Hapludalf

SSL - Project CP91IL049 MCHENRY COUNTY
- Site ID 90IL111001 Lat: 42° 10' 37.00" north Long: 88° 32' 57.00" west MLRA: 95B
- Pedon No. 91P0192
- General Methods 1B1A, 2A1, 2B

United States Department of Agriculture
Natural Resources Conservation Service
National Soil Survey Center
Soil Survey Laboratory
Lincoln, Nebraska 68508-3866

Layer	Horizon	Orig Hzn	Depth (cm)	Field Label 1	Field Label 2	Field Label 3	Field Texture	Lab Texture
91P01193	Ap1	AP1	0-28				L	FSL
91P01194	Ap2	AP2	28-40				L	FSL
91P01195	Bt1	BT1	40-60				CL	CL
91P01196	Bt2	BT2	60-74				CL	CL
91P01197	Bt3	BT3	74-87				CL	L
91P01198	BC	BC	87-102				L	L
91P01199	C1	C1	102-135				L	L
91P01200	C2	C2	135-170				L	L

Pedon Calculations

Calculation Name	Result	Units of Measure
CEC Activity, CEC7/Clay, Weighted Average	0.53	(NA)
Clay, carbonate free, Weighted Average	30	% wt
Weighted Particles, 0.1-75mm, 75 mm Base	35	% wt
Volume, >2mm, Weighted Average	3	% vol
Clay, total, Weighted Average	30	% wt
LE, Whole Soil, Summed to 1m	0	cm/m

Weighted averages based on control section: 40-87 cm

*** Primary Characterization Data ***

Pedon ID: 90IL111001 (McHenry County, Illinois) Print Date: Oct 16 2003 7:24AM

Sampled As : Miami Fine-loamy, mixed, mesic Typic Hapludalf

USDA-NRCS-NSSC-National Soil Survey Laboratory ; Pedon No. 91P0192

PSDA & Rock Fragments

Layer	Depth (cm)	Horz	Prep	-1- Clay < .002 (% of <2mm Mineral Soil) 3A1	-2- Silt .002 -.05 (% of <2mm Mineral Soil) 3A1	-3- Sand .05 -2 (% of <2mm Mineral Soil) 3A1	-4- Clay Fine < .0002 (% of <2mm Mineral Soil)	-5- Clay CO_3 < .002 (% of <2mm Mineral Soil)	-6- Silt Fine .002 -.02 (% of <2mm Mineral Soil) 3A1	-7- Silt Coarse .02 -.05 (% of <2mm Mineral Soil) 3A1	-8- Sand VF .05 -.10 (% of <2mm Mineral Soil) 3A1	-9- Sand F .10 -.25 (% of <2mm Mineral Soil) 3A1	-10- Sand M .25 -.50 (% of <2mm Mineral Soil) 3A1	-11- Sand C .5 -1 (% of <2mm Mineral Soil) 3A1	-12- Sand VC 1 -2 (% of <2mm Mineral Soil) 3A1	-13- (Rock Fragments (mm)) Weight 2 -5 (% of <75mm) 3B1	-14- (Rock Fragments (mm)) Weight 5 -20 (% of <75mm) 3B1	-15- (Rock Fragments (mm)) Weight 20 -75 (% of <75mm) 3B1	-16- (Rock Fragments (mm)) Weight .1- 75 (% of <75mm)	-17- >2 mm wt % whole soil
91P01193	0-28	Ap1	S	11.9	27.9	60.2			19.1	8.8	8.2	29.7	18.3	3.2	0.8	1	2	–	53	
91P01194	28-40	Ap2	S	11.8	29.0	59.2			19.8	9.2	7.6	26.0	21.4	3.4	0.8	1	3	–	54	
91P01195	40-60	Bt1	S	33.1	24.7	42.2			17.8	6.9	7.7	17.4	12.8	2.9	1.4	2	3	–	38	
91P01196	60-74	Bt2	S	32.6	27.1	40.3			19.1	8.0	10.7	17.0	9.6	2.2	0.8	1	1	–	31	
91P01197	74-87	Bt3	S	21.6	34.2	44.2			22.0	12.2	13.7	17.3	8.7	2.3	2.2	2	4	–	35	
91P01198	87-102	BC	S	18.7	38.9	42.4			25.1	13.8	13.0	16.2	8.8	2.5	1.9	3	5	2	36	
91P01199	102-135	C1	S	15.3	42.0	42.7			26.8	15.2	14.0	15.9	8.7	2.4	1.7	3	4	1	34	
91P01200	135-170	C2	S	15.7	46.1	38.2			31.4	14.7	13.0	13.6	7.5	2.3	1.8	3	4	1	31	

Bulk Density & Moisture

Layer	Depth (cm)	Horz	Prep	-1- (Bulk Density) 33 kPa (g cm^{-3}) 4A1d	-2- (Bulk Density) Oven Dry (g cm^{-3}) 4A1h	-3- Cole Whole Soil	-4- (Water Content) 6 kPa (pct of < 2mm)	-5- (Water Content) 10 kPa (pct of < 2mm) 4B1c	-6- (Water Content) 33 kPa (pct of < 2mm) 4B1c	-7- (Water Content) 1500 kPa (pct of < 2mm) 4B2a	-8- 1500 kPa Moist (pct of < 2mm)	-9- Ratio AD/OD 4B5	-10- WRD Whole Soil (cm^3 cm^{-3}) 4C1	-11- Aggst Stabl 2-0.5mm % 4G1	-12- (Ratio/Clay) CEC7 8D1	-13- (Ratio/Clay) 1500 kPa 8D1
91P01193	0-28	Ap1	S	1.48	1.55	0.015		15.2	13.5	5.2		1.010	0.12	70	0.80	0.44
91P01194	28-40	Ap2	S	1.64	1.68	0.008		14.7	12.9	5.0		1.010	0.13	21	0.65	0.42
91P01195	40-60	Bt1	S	1.55	1.78	0.046		23.1	21.5	13.1		1.020	0.13		0.57	0.40
91P01196	60-74	Bt2	S	1.53	1.77	0.049		24.1	22.6	13.1		1.020	0.14		0.52	0.40
91P01197	74-87	Bt3	S	1.51	1.74	0.047		24.1	22.3	7.7		1.010	0.21		0.47	0.36
91P01198	87-102	BC	S	1.66	1.79	0.024		19.2	17.7	7.0		1.010	0.17		0.42	0.37
91P01199	102-135	C1	S	1.83	1.88	0.008		15.2	13.6	5.7		1.010	0.14		0.36	0.37
91P01200	135-170	C2	S	1.89	1.95	0.010		13.7	12.6	5.5		1.010	0.13		0.32	0.35

*** Primary Chara[illegible]zation Data ***

Pedon ID: 90IL111001
(McHenry County, Illinois)
Print Date: Oct 16 2003 7:24AM

Sampled As : Miami
Fine-loamy, mixed, mesic Typic Hapludalf

USDA-NRCS-NSSC-National Soil Survey Laboratory ; Pedon No. 91P0192

Water Content

Layer	Depth (cm)	Horz	Prep	-1- (- - Atterberg - -) (- - - Limits - - -) LL pct <0.4mm	PI	-2- (- - - - - Bulk Density - - - - -) Field (- - - - - - - g cm^{-3} - - - - - - -)	-3- Recon 33 kPa	-4- Recon Oven Dry	-5- (- Water Content -) Field (- % of < 2mm -)	-6- Recon 33 kPa	-7- (- - - - - - - - - - - - - - Sieved Samples - - - - - - - - - - - - - -) 6 kPa	-8- 10 kPa	-9- 33 kPa	-10- 100 kPa	-11- 200 kPa	-12- 500 kPa	-13-
																4B1a	
91P01193	0-28	Ap1	S													8.6	
91P01194	28-40	Ap2	S													9.5	
91P01195	40-60	Bt1	S													17.0	
91P01196	60-74	Bt2	S													17.3	
91P01197	74-87	Bt3	S													13.0	
91P01198	87-102	BC	S													11.9	
91P01199	102-135	C1	S													10.8	
91P01200	135-170	C2	S													11.3	

Carbon & Extractions

Layer	Depth (cm)	Horz	Prep	-1- (- - - - - Total - - - - -) C (- - - - - - % of <2 mm - - - - - -) 6B3a	N	S	-2- Org C 6A1c	-3- C/N Ratio	-4- (- - - Dith-Cit Ext - - -) Fe (- - - - - - - - - - - - - - - - % of < 2mm - - - - - - - - - - - - - - -) 6C2b	Al 6G7a	Mn 6D2a	-5- (- - - - - - - - - Acid Oxalate Extraction - - - - - - - - -) Al+½Fe	ODOE Fe	Al	Mn	Si mg kg^{-1}	-6- (- - - Na Pyro-Phosphate - - -) C (- - - - - - - - - % of < 2mm - - - - - - - - -)	Fe	Al	Mn
91P01193	0-28	Ap1	S	0.090			1.05		0.7	tr	tr								
91P01194	28-40	Ap2	S	0.060			0.63		0.8	tr	tr								
91P01195	40-60	Bt1	S	0.053			0.45		1.7	0.2	tr								
91P01196	60-74	Bt2	S	0.048			0.38		1.5	0.1	tr								
91P01197	74-87	Bt3	S	0.033			0.28		0.9	0.1	tr								
91P01198	87-102	BC	S				0.21		0.7	tr	–								
91P01199	102-135	C1	S				0.13		0.5	tr	–								
91P01200	135-170	C2	S				0.09		0.5	tr	–								

*** Primary Characterization Data ***

Pedon ID: 90IL111001 (McHenry County, Illinois) Print Date: Oct 16 2003 7:24AM

Sampled As : Miami Fine-loamy, mixed, mesic Typic Hapludalf

USDA-NRCS-NSSC-National Soil Survey Laboratory ; Pedon No. 91P0192

CEC & Bases

				-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-	-12-	-13-	-14-
				(------ NH_4OAC Extractable Bases -----)								CEC8	CEC7	ECEC		(---- Base ----)	
								Sum	Acid-	Extr	KCl	Sum	NH_4	Bases	Al	(- Saturation -)	
	Depth			Ca	Mg	Na	K	Bases	ity	Al	Mn	Cats	OAC	+Al	Sat	Sum	NH_4OAC
Layer	(cm)	Horz	Prep	(---------- cmol(+) kg^{-1} ---------)							mg kg^{-1}	(---- cmol(+) kg^{-1} ---)			(-------- % --------)		
				6N2e	6O2d	6P2b	6Q2b		6H5a			5A3a	5A8b			5C3	5C1
91P01193	0-28	Ap1	S	6.8*	2.9	tr	tr	9.7	1.7			11.4	9.5			85	100
91P01194	28-40	Ap2	S	5.8*	2.6	tr	tr	8.4	1.5			9.9	7.7			85	100
91P01195	40-60	Bt1	S	12.2*	7.3	0.1	0.2	19.8	3.4			23.2	19.0			85	100
91P01196	60-74	Bt2	S	14.1*	9.6	0.1	0.2	24.0	2.2			26.2	17.0			92	100
91P01197	74-87	Bt3	S	16.1*	12.8	tr	0.1		2.5				10.1			92	100
91P01198	87-102	BC	S	25.0*	12.2	0.1	0.1		--				7.8			100	100
91P01199	102-135	C1	S	36.2*	5.7	tr	0.1		--				5.5			100	100
91P01200	135-170	C2	S	36.4*	6.9	tr	tr		--				5.1			100	100

*Extractable Ca may contain Ca from calcium carbonate or gypsum., CEC7 base saturation set to 100.

pH & Carbonates

				-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-
				(---------- pH ----------)						(-- Carbonate --)		(-- Gypsum --)		
					$CaCl_2$					As $CaCO_3$		As $CaSO_4*2H_2O$		Resist
	Depth				0.01M	H_2O	Sat			<2mm	<20mm	<2mm	<20mm	ohms
Layer	(cm)	Horz	Prep	KCl	1:2	1:1	Paste	Sulf	NaF	(---------- % ----------)				cm^{-1}
					8C1f	8C1f				6E1g	6E4			
91P01193	0-28	Ap1	S		6.6	6.9								
91P01194	28-40	Ap2	S		6.5	7.0								
91P01195	40-60	Bt1	S		6.6	7.2								
91P01196	60-74	Bt2	S		6.8	7.3								
91P01197	74-87	Bt3	S		7.1	7.7				22	25			
91P01198	87-102	BC	S		7.4	8.0				29				
91P01199	102-135	C1	S		7.7	8.2				33	36			
91P01200	135-170	C2	S		7.7	8.4				36				

*** Primary Characterization Data ***

Pedon ID: 90IL111001
(McHenry County, Illinois)
Print Date: Oct 16 2003 7:24AM

Sampled As : Miami
Fine-loamy, mixed, mesic Typic Hapludalf

USDA-NRCS-NSSC-National Soil Survey Laboratory ; Pedon No. 91P0192

Clay Mineralogy (<.002 mm)

				-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-	-12-	-13-	-14-	-15-	-16-	-17-	-18-
				X-Ray					Thermal				Elemental							EGME	Inter
													SiO_2	Al_2O_3	Fe_2O_3	MgO	CaO	K_2O	Na_2O	Retn	preta
	Depth		Fract	7A2i												7C3					tion
Layer	(cm)	Horz	ion	<----------peak size---------->					<---------%--------->				<----------%---------->							mg g^{-1}	
91P01194	28-40	Ap2	tcly	VR 2	KK 2	MI 2	QZ 1	HE 1						12	7.3			1.2			
91P01195	40-60	Bt1	tcly	VR 3	KK 3	MI 3	VM 1	QZ 1						18	10.4			2.0			
91P01196	60-74	Bt2	tcly	MT 3	MI 3	VR 2	KK 2	QZ 1						19	10.2			2.5			
91P01198	87-102	BC	tcly	MI 3	KK 2	VR 1	MT 1	QZ 1						16	8.1			2.8			
91P01200	135-170	C2	tcly	MI 3	DL 2	KK 1	MT 1	VR 1						11	6.6			2.7			

FRACTION INTERPRETATION:
tcly - Total Clay, <0.002 mm

MINERAL INTERPRETATION:

DL - Dolomite
HE - Hematite
KK - Kaolinite
MI - Mica
MT - Montmorillonite
QZ - Quartz
VM - Vermiculite-Mica
VR - Vermiculite

RELATIVE PEAK SIZE:
5 Very Large
4 Large
3 Medium
2 Small
1 Very Small
6 No Peaks

Pedon ID: 90IL111001

*** Supplementary Characterization Data ***

(McHenry County, Illinois)

Print Date: Oct 16 2003 7:27AM

Sampled as : Miami ; Fine-loamy, mixed, mesic Typic Hapludalf
Revised to correlated: Miami ; Fine-loamy, mixed, active, mesic Typic Hapludalf

SSL - Project CP91IL049 MCHENRY COUNTY
- Site ID 90IL111001 Lat: 42° 10' 37.00" north Long: 88° 32' 57.00" west MLRA: 95B
- Pedon No. 91P0192
- General Methods 1B1A, 2A1, 2B

United States Department of Agriculture
Natural Resources Conservation Service
National Soil Survey Center
Soil Survey Laboratory
Lincoln, Nebraska 68508-3866

Tier 2

Layer	Depth (cm)	Horz	Prep	-26- >2 -UP	-27- 250 -75	-28- 250 -2	-29- 75 -20	-30- 75 -5	-31- 20 -2	-32- 5 <2	-33- 75 -2	-34- 75 -20	-35- 20 -5	-36- 5 -2	-37- <2	-38-	-39-	-40- Soil 33 kPa	-41- Sur Oven -dry	-42- Engineering Moist	-43- Satur -ated	-44- Soil 33 kPa	-45- Survey 1500 kPa	-46- Oven -dry	-47- Engineering Moist	-48- Satur -ated	-49- Whole Soil	-50- <2 mm
				(---------- % of Whole Soil ----------)								(------ % of <75 mm ------)																	
												3B1	3B1	3B1								4A1d		4A1h					
91P01193	0-28	Ap1	S									–	2	1								1.48		1.55					
91P01194	28-40	Ap2	S									–	3	1								1.64		1.68					
91P01195	40-60	Bt1	S									–	3	2								1.55		1.78					
91P01196	60-74	Bt2	S									–	1	1								1.53		1.77					
91P01197	74-87	Bt3	S									–	4	2								1.51		1.74					
91P01198	87-102	BC	S									2	5	3								1.66		1.79					
91P01199	102-135	C1	S									1	4	3								1.83		1.88					
91P01200	135-170	C2	S									1	4	3								1.89		1.95					

Tier 3

Layer	Depth (cm)	Horz	Prep	-51- >2 -UP	-52- 250 -75	-53- 250 -2	-54- 75 -20	-55- 75 -5	-56- 20 -2	-57- 5 <2	-58- 2- .05	-59- .05- .002	-60- LT .002	-61- Pores D	-62- F	-63-	-64- C /N Rat -io	-65- Fine Clay	-66- CEC Sum Cats	-67- CEC NH4OAC 8D1	-68- 1500 kPa H2O 8D1	-69- LEP 33 kPa	-70- Linear Extensiblity 1500 kPa	-71- Whole Soil 33 kPa -dry	-72- <2 mm to % 1500 kPa	-73- <2 mm to % Oven -dry	-74- WRD Whole Soil	-75- WRD <2 mm
				(---------- Volume Fractions ---------- Whole Soil (mm) At 33 kPa ----------)														(------- Ratios To Clay ------- <2 mm Fraction)					(-- Linear Extensiblity -- Whole Soil)		(-- WRD -- <2 mm to %)			
				(---------- % of Whole Soil ----------)																								
																				8D1	8D1						4C1	
91P01193	0-28	Ap1	S																	0.80	0.44						0.12	
91P01194	28-40	Ap2	S																	0.65	0.42						0.13	
91P01195	40-60	Bt1	S																	0.57	0.40						0.13	
91P01196	60-74	Bt2	S																	0.52	0.40						0.14	
91P01197	74-87	Bt3	S																	0.47	0.36						0.21	
91P01198	87-102	BC	S																	0.42	0.37						0.17	
91P01199	102-135	C1	S																	0.36	0.37						0.14	
91P01200	135-170	C2	S																	0.32	0.35						0.13	

Tier 4

Layer	Depth (cm)	Horz	Prep	-76- >2	-77- 75 -20	-78- 20 -2	-79- 2- .05	-80- .05- .002	-81- < .002	-82- VC	-83- C	-84- M	-85- F	-86- VF	-87- C	-88- F	-89- ay	-90-	-91- Text -ure by PSDA	-92- Sand 2- .05	-93- Silt .05- .002	-94- Clay < .002	-95- pH Ca Cl_2 .01M	-96- Elect. Res- ist. ohms	-97- Con- duct dS m^{-1}	-98- Part- -icle Den- sity g cm^{-3}
				(- Weight Fractions - Clay Free -)																					
				(Whole Soil)						(<2 mm Fraction)															
				(- % of >2 mm Sand and Silt -)						(% of Sand and Silt)															
																			<2 mm	(% of 2 mm)				(<2 mm)	
																			3A1	3A1	3A1	3A1	8C1f		
91P01193	0-28	Ap1	S																fsl	60.2	27.9	11.9	6.6		
91P01194	28-40	Ap2	S																fsl	59.2	29.0	11.8	6.5		
91P01195	40-60	Bt1	S																cl	42.2	24.7	33.1	6.6		
91P01196	60-74	Bt2	S																cl	40.3	27.1	32.6	6.8		
91P01197	74-87	Bt3	S																l	44.2	34.2	21.6	7.1		
91P01198	87-102	BC	S																l	42.4	38.9	18.7	7.4		
91P01199	102-135	C1	S																l	42.7	42.0	15.3	7.7		
91P01200	135-170	C2	S																l	38.2	46.1	15.7	7.7		

Tiskilwa till

PEDON DESCRIPTION

Print Date: 10/14/2003
Description Date: 11/01/1992
Describer: E.J.E and J.A.D.
Site ID: 92IL111031

Site Note:

Pedon ID: 92IL111031
Pedon Note: Piezometer site.
Lab Source ID: SSL

Lab Pedon #: 93P0631
Soil Name as Described/Sampled: Miami
Soil Name as Correlated:
Classification:
Pedon Type: within range of series
Pedon Purpose: full pedon description
Taxon Kind:
Associated Soils:
Physiographic Division:
Physiographic Province:
Physiographic Section:
State Physiographic Area:
Local Physiographic Area:
Geomorphic Setting: on summit of None Assigned
Upslope Shape: convex
Cross Slope Shape: convex
Particle Size Control Section:
Diagnostic Features: ? to ? cm.

Country:
State: Illinois
County: McHenry
MLRA: 95B -- Southern Wisconsin and Northern Illinois Drift Plain
Soil Survey Area: IL111 -- McHenry County, Illinois
Map Unit:
Quad Name:
Location Description: Marengo Ridge Conservation Area, 5 paces W of road edge, 4.5 paces S of gate post; T.44N., R.5E., SW 1/4, SE 1/4, NW 1/4, NE 1/4, sec. 13, Marengo, TWSP.
Legal Description:
Latitude:
Longitude:
Datum:
UTM Zone:
UTM Easting:
UTM Northing:

Primary Earth Cover:
Secondary Earth Cover:
Existing Vegetation:
Parent Material:
Bedrock Kind:
Bedrock Depth:
Bedrock Hardness:
Bedrock Fracture Interval:
Surface Fragments:

Slope (%)	Elevation (meters)	Aspect (deg)	MAAT (C)	MSAT (C)	MWAT (C)	MAP (mm)	Frost-Free Days	Drainage Class	Slope Length (meters)	Upslope Length (meters)
2.0								well		

A--0 to 8 centimeters; 90 percent dark grayish brown (10YR 4/2) and 10 percent dark yellowish brown (10YR 4/4) loam; weak fine subangular blocky parting to weak fine granular structure; friable; common fine and medium roots throughout; 2 percent 2- to 75-millimeter mixed igneous, metamorphic, and sedimentary rock fragments; neutral, pH 7.2, Unspecified; abrupt smooth boundary. Lab sample # 93P04451

E--8 to 18 centimeters; brown (10YR 5/3) loam; weak thin platy parting to weak fine subangular blocky structure; very friable; common fine roots throughout; 15 percent discontinuous distinct very dark grayish brown (10YR 3/2) organic stains on faces of peds and in pores; 1 percent 2- to 75- millimeter mixed igneous, metamorphic, and sedimentary rock fragments; neutral, pH 7.0, Unspecified; abrupt smooth boundary. Lab sample # 93P04452

BE--18 to 25 centimeters; 50 percent brown (10YR 5/3) and 50 percent reddish brown (5YR 5/4) loam; moderate fine subangular blocky structure; friable; common fine roots throughout; 15 percent patchy distinct dark grayish brown (10YR 4/2) organic stains and 15 percent discontinuous brown (7.5YR 5/4) clay films on faces of peds and in pores; 2 percent 2- to 75-millimeter mixed igneous, metamorphic, and sedimentary rock fragments; strongly acid, pH 5.4, Unspecified; clear smooth boundary. Lab sample # 93P04453

Bt1--25 to 41 centimeters; brown (7.5YR 5/4) clay loam; moderate fine subangular blocky structure; firm; common very fine and fine roots throughout; 15 percent continuous distinct brown (7.5YR 4/4) clay films and 15 percent discontinuous brown (10YR 5/3) skeletans on faces of peds and in pores; 3 percent 2- to 75-millimeter mixed igneous, metamorphic, and sedimentary rock fragments; very strongly acid, pH 5.0, Unspecified; clear wavy boundary. Lab sample # 93P04454

Bt2--41 to 61 centimeters; brown (7.5YR 4/4) clay loam; moderate fine and medium prismatic parting to moderate fine subangular blocky structure; firm; common very fine and fine roots throughout; 15 percent continuous distinct reddish brown (5YR 4/3) clay films and 15 percent discontinuous brown (10YR 5/3) skeletans on faces of peds and in pores; 3 percent 2- to 75-millimeter mixed igneous, metamorphic, and sedimentary rock fragments; very strongly acid, pH 4.8, Unspecified; clear smooth boundary. Lab sample # 93P04455

Bt3--61 to 76 centimeters; yellowish red (5YR 4/6) clay; moderate fine and medium prismatic parting to moderate fine subangular blocky structure; firm; few very fine roots throughout; 15 percent continuous distinct brown (7.5YR 4/4) clay films on faces of peds and in pores and 15 percent continuous distinct reddish brown (5YR 4/4) clay films on faces of peds and in pores; 5 percent 2- to 75-millimeter mixed igneous, metamorphic, and sedimentary rock fragments; slightly acid, pH 6.4, Unspecified; clear wavy boundary. Lab sample # 93P04456

Bt4--76 to 94 centimeters; brown (7.5YR 4/4) clay loam; moderate fine and medium subangular blocky structure; firm; few very fine and fine roots throughout; 15 percent continuous distinct brown (10YR 4/3) clay films on faces of peds and in pores; 6 percent 2- to 75-millimeter mixed igneous, metamorphic, and sedimentary rock fragments; slight effervescence, by HCl, 1 normal; slightly alkaline, pH 7.4, Unspecified; gradual wavy boundary. Lab sample # 93P04457

BC--94 to 152 centimeters; brown (7.5YR 5/4) clay loam; weak medium subangular blocky structure; friable; few very fine roots throughout; 15 percent patchy distinct brown (10YR 4/3) clay films on faces of peds and in pores; 8 percent 2- to 75-millimeter mixed igneous, metamorphic, and sedimentary rock fragments; strong effervescence, by HCl, 1 normal; slightly alkaline, pH 7.6, Unspecified. Lab sample # 93P04458. 92P4459 & 92P4460.

*** Primary Characterization Data ***

(McHenry County, Illinois)

Pedon ID: 92IL111031

Print Date: Oct 14 2003 10:43AM

Sampled as on Nov 01, 1992 : Miami ; Fine-loamy, mixed, mesic Typic Hapludalf
Revised to correlated on May 01, 2000 : Kidami ; Fine-loamy, mixed, active, mesic Oxyaquic Hapludalf

SSL - Project RP93IL172 MCHENRY COUNTY
- Site ID 92IL111031
- Pedon No. 93P0631
- General Methods 1B1A, 2A1, 2B

United States Department of Agriculture
Natural Resources Conservation Service
National Soil Survey Center
Soil Survey Laboratory
Lincoln, Nebraska 68508-3866

Layer	Horizon	Orig Hzn	Depth (cm)	Field Label 1	Field Label 2	Field Label 3	Field Texture	Lab Texture
93P04451	A	A	0-8				L	SIL
93P04452	E	E	8-18				L	SIL
93P04453	BE	BE	18-25				L	SIL
93P04454	Bt1	BT1	25-41				CL	L
93P04455	Bt2	BT2	41-61				CL	CL
93P04456	Bt3	BT3	61-76				C	CL
93P04457	Bt4	BT4	76-94				CL	CL
93P04458	BC	BC	94-114				CL	L
93P04459	BC	BC	114-135				CL	L
93P04460	BC	BC	135-152				CL	L

Pedon Calculations

Calculation Name	Result	Units of Measure
Clay, carbonate free, Weighted Average	29	% wt
Weighted Particles, 0.1-75mm, 75 mm Base	0	% wt
Clay, total, Weighted Average	29	% wt

Weighted averages based on control section: 25-75 cm

PSDA & Rock Fragments

				-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-	-12-	-13-	-14-	-15-	-16-	-17-
				(- - - - - Total - - - - - -)			(- - Clay - - -)		(- - - - Silt - - - - -)		(- - - - - - - - - - - - Sand - - - - - - - - - - - -)					(Rock Fragments (mm))				
				Clay	Silt	Sand	Fine	CO_3	Fine	Coarse	VF	F	M	C	VC	(- - - - - - - - Weight - - - - - - - -)				>2 mm
				<	.002	.05	<	<	.002	.02	.05	.10	.25	.5	1	2	5	20	.1-	wt %
	Depth			.002	-.05	-2	.0002	.002	-.02	-.05	-.10	-.25	-.50	-1	-2	-5	-20	-75	75	whole
Layer	(cm)	Horz	Prep	(- % of <2mm Mineral Soil -)												(- - - - - - - % of <75mm - - - - - - -)				soil
				3A1	3A1	3A1	3A1	3A1	3A1	3A1	3A1	3A1	3A1	3A1	3A1					
93P04451	0-8	A	S																–	
93P04451	0-8	A	N	9.4	50.4	40.2	3.2		28.3	22.1	8.2	16.8	12.4	2.2	0.6					
93P04452	8-18	E	S																–	
93P04452	8-18	E	N	8.4	52.6	39.0	2.3		29.6	23.0	5.7	19.2	11.1	2.3	0.7					
93P04453	18-25	BE	S																–	
93P04453	18-25	BE	N	10.4	50.7	38.9	1.9		29.7	21.0	8.1	17.1	11.2	2.0	0.5					
93P04454	25-41	Bt1	S																–	
93P04454	25-41	Bt1	N	19.8	43.8	36.4	8.6		26.5	17.3	8.5	14.9	9.8	2.3	0.9					
93P04455	41-61	Bt2	S																–	
93P04455	41-61	Bt2	N	34.1	29.5	36.4	18.6		16.5	13.0	7.6	15.6	10.2	2.0	1.0					
93P04456	61-76	Bt3	S																–	
93P04456	61-76	Bt3	N	33.5	28.3	38.2	18.0		15.2	13.1	6.6	18.6	10.2	2.1	0.7					
93P04457	76-94	Bt4	S																–	
93P04457	76-94	Bt4	N	28.5	31.7	39.8	13.4		16.6	15.1	9.1	16.7	10.5	2.3	1.2					
93P04458	94-114	BC	S																–	
93P04458	94-114	BC	N	17.5	41.5	41.0	8.1		23.9	17.6	10.7	16.0	9.6	3.1	1.6					
93P04459	114-135	BC	S																–	
93P04459	114-135	BC	N	17.0	39.1	43.9	6.0		21.5	17.6	12.4	15.6	10.0	3.6	2.3					
93P04460	135-152	BC	S																–	
93P04460	135-152	BC	N	17.6	38.2	44.2	10.7	2.4	22.4	15.8	13.1	15.4	9.6	3.8	2.3					

*** Primary Characterization Data ***

(McHenry County, Illinois)

Print Date: Oct 14 2003 10:43AM

Pedon ID: 92IL111031

Sampled As : Miami Fine-loamy, mixed, mesic Typic Hapludalf

USDA-NRCS-NSSC-National Soil Survey Laboratory ; Pedon No. 93P0631

Bulk Density & Moisture

Layer	Depth (cm)	Horz	Prep	-1- (Bulk Density) 33 kPa (g cm^{-3})	-2- (Bulk Density) Oven Dry (g cm^{-3})	-3- Cole Whole Soil	-4- (Water Content) 6 kPa (pct of < 2mm)	-5- 10 kPa	-6- 33 kPa	-7- 1500 kPa	-8- 1500 kPa Moist	-9- Ratio AD/OD	-10- WRD Whole Soil	-11- Aggst Stabl 2-0.5mm	-12- (Ratio/Clay) CEC7	-13- (Ratio/Clay) 1500 kPa
										4B2a		4B5	cm^3 cm^{-3}	%		8D1
93P04451	0-8	A	S													0.74
93P04451	0-8	A	N							7.0		1.008				
93P04452	8-18	E	S													0.57
93P04452	8-18	E	N							4.8		1.006				
93P04453	18-25	BE	S													0.38
93P04453	18-25	BE	N							4.0		1.004				
93P04454	25-41	Bt1	S													0.37
93P04454	25-41	Bt1	N							7.3		1.012				
93P04455	41-61	Bt2	S													0.36
93P04455	41-61	Bt2	N							12.3		1.023				
93P04456	61-76	Bt3	S													0.37
93P04456	61-76	Bt3	N							12.4		1.021				
93P04457	76-94	Bt4	S													0.39
93P04457	76-94	Bt4	N							11.2		1.018				
93P04458	94-114	BC	S													0.43
93P04458	94-114	BC	N							7.6		1.009				
93P04459	114-135	BC	S													0.42
93P04459	114-135	BC	N							7.2		1.008				
93P04460	135-152	BC	S													0.41
93P04460	135-152	BC	N							7.2		1.007				

Carbon & Extractions

Layer	Depth (cm)	Horz	Prep	-1- (Total) C (% of <2 mm)	-2- (Total) N (% of <2 mm)	-3- (Total) S (% of <2 mm)	-4- Org C (% of <2 mm) 6A1c	-5- C/N Ratio	-6- (Dith-Cit Ext) Fe (% of < 2mm)	-7- (Dith-Cit Ext) Al (% of < 2mm)	-8- (Dith-Cit Ext) Mn (% of < 2mm)	-9- (Acid Oxalate Extraction) Al+½Fe (% of < 2mm)	-10- (Acid Oxalate Extraction) ODOE (% of < 2mm)	-11- (Acid Oxalate Extraction) Fe (% of < 2mm)	-12- (Acid Oxalate Extraction) Al (% of < 2mm)	-13- (Acid Oxalate Extraction) Mn (mg kg^{-1})	-14- (Acid Oxalate Extraction) Si (mg kg^{-1})	-15- (Na Pyro-Phosphate) C (% of < 2mm)	-16- (Na Pyro-Phosphate) Fe (% of < 2mm)	-17- (Na Pyro-Phosphate) Al (% of < 2mm)	-18- (Na Pyro-Phosphate) Mn (% of < 2mm)
93P04451	0-8	A	N				1.84														
93P04452	8-18	E	N				1.25														
93P04453	18-25	BE	N				0.36														
93P04454	25-41	Bt1	N				0.29														
93P04455	41-61	Bt2	N				0.20														
93P04456	61-76	Bt3	N				0.21														
93P04457	76-94	Bt4	N				0.28														
93P04458	94-114	BC	N				0.14														
93P04459	114-135	BC	N				0.14														
93P04460	135-152	BC	N				0.11														

pH & Carbonates

Layer	Depth (cm)	Horz	Prep	-1- (pH) KCl	-2- (pH) $CaCl_2$ 0.01M 1:2 8C1f	-3- (pH) H_2O 1:1 8C1f	-4- (pH) Sat Paste	-5- (pH) Sulf	-6- (pH) NaF	-7- (Carbonate) As $CaCO_3$ <2mm (%) 6E1g	-8- (Carbonate) As $CaCO_3$ <20mm (%)	-9- (Gypsum) As $CaSO_4$*$2H_2O$ <2mm (%)	-10- (Gypsum) As $CaSO_4$*$2H_2O$ <20mm (%)	-11- Resist ohms cm^{-1}
93P04451	0-8	A	N		6.5	6.7								
93P04452	8-18	E	N		5.9	6.4								
93P04453	18-25	BE	N		4.8	5.6								
93P04454	25-41	Bt1	N		4.5	5.3								
93P04455	41-61	Bt2	N		4.5	5.4								
93P04456	61-76	Bt3	N		5.2	6.0								
93P04457	76-94	Bt4	N		6.8	7.4								
93P04458	94-114	BC	N		7.3	8.0				28				
93P04459	114-135	BC	N		7.4	8.0				32				
93P04460	135-152	BC	N		7.6	8.1				33				

Yorkville till

USDA -Natural Resources Conservation Service
Pedon NSSL Description
DATE Sampled: 02/14/2002

Soil Series: Strawn

Map Unit Name: Strawn silt loam, 4 to 7 percent slopes, eroded
Component Name: Strawn
Component Kind: Series

Site Identification #: S02IL-093-001
Map Unit Symbol: 224C2

Location Information
Soil Survey Area #: 093
County FIPS Code: 093
County Name: Kendall County
Soil Survey Area Name: Kendall County

MLRA: 108A

Location Description: 1,440 feet west and 360 feet south of the NE corner of section 18, T. 36 N., R. 7 E.

Quadrangle Name: Plattville Quad 41088 E4
Latitude: 41 degrees 36 minutes 07 seconds N
Longitude: 88 degrees 28 minutes 17 seconds E NAD 27

Photograph: AS# 23

Description Category: Full pedon description
Pedon Category: Outside range of series

Slope Characteristics Information
Aspect: West 270 degrees
Slope: 5 percent
Horizontal Shape: Linear*
Vertical Shape: Linear*

Elevation: 740 feet

Physiography:
Local: End moraine
Major: Glaciated upland

Hillside Component: Backslope
Degree of Erosion: 2 - Moderate
Classification:fine-loamy, mixed, active, mesic Typic Hapludalfs

Moisture Regime: Udic moisture regime
Landuse: Grass

Permeability: Moderate
Natural Drainage Class: Moderately well drained
Diagnostic Features: argillic, 7 to 21 inches
Described by: crew
Notes: Actual classification is fine-silty, mixed superactive, mesic Oxyaquic Hapludalfs. Till averages more than 50 percent silt which is outside the range for the Strawn series.

Ap--0 to 7 inches; 65 percent very dark grayish brown (10YR 3/2) and 35 percent brown (10YR 4/3) silt loam, light brownish gray (10YR 6/2) dry; moderate medium granular structure; friable; many very fine and fine roots; 1 percent gravel; neutral; clear smooth boundary.

Bt1--7 to 12 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate fine subangular blocky structure; friable; common very fine and fine roots; many distinct continuous very dark grayish brown (10YR 3/2) organic coatings on faces of peds; many distinct continuous brown (10YR 4/3) clay films on faces of peds; 2 percent gravel; neutral; clear smooth boundary.

Bt2--12 to 21 inches; dark yellowish brown (10YR 4/4) silty clay loam; weak medium prismatic structure parting to moderate medium subangular blocky; friable; common very fine roots; few distinct discontinuous very dark grayish brown (10YR 3/2) organo-clay films on faces of peds; few distinct continuous dark grayish brown (10YR 4/2) brown (10YR 4/3) clay films on faces of peds; few fine prominent strong brown (7.5YR 4/6) masses of iron accumulation throughout; 2 percent gravel; slightly alkaline; clear smooth boundary.

BCt--21 to 32 inches; yellowish brown (10YR 5/4) silty clay loam; weak coarse prismatic structure parting to weak coarse subangular blocky; firm; few fine roots; very few distinct discontinuous very dark gray (10YR 3/1) organo-clay films throughout; few distinct discontinuous brown (10YR 5/3) clay films throughout; few fine prominent strong brown (7.5YR 5/6 and 5/8) masses of iron accumulations throughout; common fine prominent reddish yellow (7.5YR 6/8) masses of iron accumulation throughout; few fine distinct gray (10YR 6/1)iron depletions on faces of peds; 5 percent gravel; strongly effervescent; slightly alkaline; clear smooth boundary.

C1--32 to 45 inches; yellowish brown (10YR 5/4) silty clay loam; massive; firm; few very fine roots; few fine prominent yellowish brown (10YR 5/8) and yellowish red (5YR 5/8) masses of iron accumulation throughout; common medium prominent light brownish gray (2.5Y 6/2) iron depletions on faces of peds; 6 percent gravel; strongly effervescent; moderately alkaline; gradual wavy boundary.

C2--45 to 63 inches; brown (10YR 5/3) silty clay loam; massive; firm; few medium prominent yellowish red (5YR 5/8) and few fine distinct brownish yellow (10YR 6/8) masses of iron accumulation on faces of peds; common medium prominent gray (5Y 6/1) iron depletions on faces of peds; 4 percent gravel; strongly effervescent; moderately alkaline.

*** Primary Characterization Data ***

(Kendall County, Illinois)

Pedon ID: S02IL-093-001

Print Date: Oct 14 2003 7:04AM

Sampled as on Feb 14, 2002 : STRAWN ; Fine-loamy, mixed, active, mesic Typic Hapludalf
Revised to :

SSL - Project C2002USIL099 KENDALL CO.
- Site ID S02IL-093-001 Lat: 41° 36' 7.00" north Long: 88° 28' 17.00" west NAD27 MLRA: 108
- Pedon No. 02N0202
- General Methods 1B1A, 2A1, 2B

United States Department of Agriculture
Natural Resources Conservation Service
National Soil Survey Center
Soil Survey Laboratory
Lincoln, Nebraska 68508-3866

Layer	Horizon	Orig Hzn	Depth (cm)	Field Label 1	Field Label 2	Field Label 3	Field Texture	Lab Texture
02N00948	Ap		0-18	S02IL-093-001-1			SICL	SICL
02N00949	Bt1		18-30	S02IL-093-001-2			SICL	SICL
02N00950	Bt2		30-53	S02IL-093-001-3			SICL	SIC
02N00951	BCt		53-81	S02IL-093-001-4			SICL	SICL
02N00952	C1		81-114	S02IL-093-001-5			SICL	SICL
02N00953	C2		114-160	S02IL-093-001-6			SICL	SICL

Pedon Calculations

Calculation Name	Result	Units of Measure
LE, Whole Soil, Summed to 1m	3	cm/m

PSDA & Rock Fragments

				-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-	-12-	-13-	-14-	-15-	-16-	-17-
				(- - - - - Total - - - - - -)			(- - Clay - - -)		(- - - - Silt - - - - -)		(- - - - - - - - - - - - Sand - - - - - - - - - - - -)					(Rock Fragments (mm))				
				Clay	Silt	Sand	Fine	CO_3	Fine	Coarse	VF	F	M	C	VC	(- - - - - - - - Weight - - - - - - - -)				>2 mm
				<	.002	.05	<	<	.002	.02	.05	.10	.25	.5	1	2	5	20	.1-	wt %
	Depth			.002	-.05	-2	.0002	.002	-.02	-.05	-.10	-.25	-.50	-1	-2	-5	-20	-75	75	whole
Layer	(cm)	Horz	Prep	(- % of <2mm Mineral Soil -)												(- - - - - - - % of <75mm - - - - - -)				soil
				PSDAr1				PSDAr1	PSDAr1		PSDAr1	PSDAr1	PSDAr1	PSDAr1	PSDAr1					
02N00948	0-18	Ap	S	28.6	65.5	5.9			37.5	28.0	2.1	1.9	1.4	0.3	0.2	tr	1	--	5	1
02N00949	18-30	Bt1	S	35.3	59.6	5.1			35.0	24.6	1.8	1.5	1.2	0.5	0.1	tr	tr	--	3	1
02N00950	30-53	Bt2	S	40.0	50.9	9.1			30.3	20.6	2.8	2.7	2.3	0.8	0.5	1	1	2	10	4
02N00951	53-81	BCt	S	31.1	50.3	18.6		1.3	36.0	14.3	5.0	5.6	4.1	3.0	0.9	3	5	1	21	9
02N00952	81-114	C1	S	27.7	56.1	16.2		2.1	39.1	17.0	1.3	5.6	3.9	2.9	2.5	6	4	--	23	10
02N00953	114-160	C2	S	28.7	56.4	14.9		2.1	37.8	18.6	0.2	5.9	4.2	3.3	1.3	3	7	3	26	13

*** Primary Characterization Data ***

Pedon ID: S02IL-093-001 (Kendall County, Illinois) Print Date: Oct 14 2003 7:04AM

Sampled As : STRAWN Fine-loamy, mixed, active, mesic Typic Hapludalf

USDA-NRCS-NSSC-National Soil Survey Laboratory ; Pedon No. 02N0202

Bulk Density & Moisture

				-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-	-12-	-13-
				(Bulk Density)		Cole	(- - - - - - - - - - Water Content - - - - - - - - - -)						WRD	Aggst		
				33 kPa	Oven Dry	Whole Soil	6 kPa	10 kPa	33 kPa	1500 kPa	1500 kPa Moist	Ratio AD/OD	Whole Soil	Stabl 2-0.5mm	(- - Ratio/Clay - -) CEC7	1500 kPa
Layer	Depth (cm)	Horz	Prep	(- - - g cm^{-3} - - -)			(- - - - - - - - - - - - pct of < 2mm - - - - - - - - - - - -)						cm^3 cm^{-3}	%		
				DbWR1	DbWR1				DbWR1	WR15b1		ADOD1		AgStab1		
02N00948	0-18	Ap	S	1.42	1.55	0.029			20.7	12.7		1.021	0.11	30	0.68	0.44
02N00949	18-30	Bt1	S	1.46	1.72	0.056			24.4	15.5		1.027	0.13		0.68	0.44
02N00950	30-53	Bt2	S	1.43	1.67	0.052			24.3	16.2		1.028	0.11		0.64	0.41
02N00951	53-81	BCt	S	1.79	1.89	0.017			15.2	12.7		1.011	0.04		0.36	0.41
02N00952	81-114	C1	S	1.91	2.01	0.016			14.3	11.1		1.009	0.06		0.30	0.40
02N00953	114-160	C2	S	1.88	1.97	0.014			14.3	12.3		1.009	0.03		0.26	0.43

Carbon & Extractions

				-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-	-12-	-13-	-14-	-15-	-16-	-17-	-18-
				(- - - - - Total - - - - -)			Org	C/N	(- - - Dith-Cit Ext - - -)			(- - - - - - - - - Acid Oxalate Extraction - - - - - - - - -)					(- - - Na Pyro-Phosphate - - -)			
	Depth			C	N	S	C	Ratio	Fe	Al	Mn	Al+½Fe	ODOE	Fe	Al	Mn	Si	C	Fe	Al	Mn
Layer	(cm)	Horz	Prep	(- - - - - - % of <2 mm - - - - - -)					(- - - - - - - - - - - - - - - - % of < 2mm - - - - - - - - - - - - - - -)							mg kg^{-1}	(- - - - - - - - - % of < 2mm - - - - - - - - -)			
				TotNCS	TotNCS	TotNCS			DC1	DC1	DC1										
02N00948	0-18	Ap	S	1.33	0.179	0.02		7	1.3	0.2	0.1										
02N00949	18-30	Bt1	S	0.80	0.119	0.01		7	1.6	0.2	0.1										
02N00950	30-53	Bt2	S	0.66	0.098	tr		7	2.1	0.3	0.1										
02N00951	53-81	BCt	S	3.54	0.051	0.01		8	1.5	0.1	tr										
02N00952	81-114	C1	S	4.28	0.065	tr		7	1.3	0.1	tr										
02N00953	114-160	C2	S	4.28	0.033	–		14	1.4	0.1	tr										

*** Primary Characterization Data ***

Pedon ID: S02IL-093-001 (Kendall County, Illinois) Print Date: Oct 14 2003 7:04AM

Sampled As : STRAWN Fine-loamy, mixed, active, mesic Typic Hapludalf

USDA-NRCS-NSSC-National Soil Survey Laboratory ; Pedon No. 02N0202

CEC & Bases

Layer	Depth (cm)	Horz	Prep	-1- Ca (cmol(+) kg^{-1}) CEC1	-2- Mg CEC1	-3- Na CEC1	-4- K CEC1	-5- Sum Bases	-6- Acidity XAcid1	-7- Extr Al	-8- KCl Mn (mg kg^{-1})	-9- CEC8 Sum Cats (cmol(+) kg^{-1})	-10- CEC7 NH_4 OAC CEC1	-11- ECEC Bases +Al	-12- Al Sat (%)	-13- Base Sat Sum (%)	-14- Base Sat NH_4OAC (%)
02N00948	0-18	Ap	S	14.5*	5.7	0.2	0.4	20.8	3.4			24.2	19.4			86	100
02N00949	18-30	Bt1	S	15.9	6.9	0.4	0.5	23.7	3.8			27.5	23.9			86	99
02N00950	30-53	Bt2	S	15.4	8.3	0.2	0.4	24.3	4.7			29.0	25.7			84	95
02N00951	53-81	BCt	S	30.7*	11.5	0.2	0.2	42.6					11.1				100
02N00952	81-114	C1	S	39.0*	8.0	0.2	0.1	47.3					8.4				100
02N00953	114-160	C2	S	37.3*	10.2	0.2	0.2	47.9					7.5				100

*Extractable Ca may contain Ca from calcium carbonate or gypsum., CEC7 base saturation set to 100.

Salt

Layer	Depth (cm)	Horz	Prep	-1- Ca (mmol(+) L^{-1})	-2- Mg	-3- Na	-4- K	-5- CO_3 (mmol(-) L^{-1})	-6- HCO_3	-7- F	-8- Cl	-9- PO_4	-10- Br	-11- OAC	-12- SO_4	-13- NO_2	-14- NO_3	-15- H_2O (%)	-16- Total Salts (%)	-17- Elec Cond (dS m^{-1})	-18- Pred Elec Cond	-19- Exch Na (%)	-20- SAR
02N00948	0-18	Ap	S																			1	
02N00949	18-30	Bt1	S																			2	
02N00950	30-53	Bt2	S																			1	
02N00951	53-81	BCt	S																			2	
02N00952	81-114	C1	S																			2	
02N00953	114-160	C2	S																			2	

*** Primary Characterization Data ***

Pedon ID: S02IL-093-001 (Kendall County, Illinois) Print Date: Oct 14 2003 7:04AM

Sampled As : STRAWN Fine-loamy, mixed, active, mesic Typic Hapludalf

USDA-NRCS-NSSC-National Soil Survey Laboratory ; Pedon No. 02N0202

pH & Carbonates

				-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-
				(---------- pH ---------)						(-- Carbonate --)		(-- Gypsum ---)		
					$CaCl_2$					As $CaCO_3$		As $CaSO_4{}^*2H_2O$		Resist
	Depth				0.01M	H_2O	Sat			<2mm	<20mm	<2mm	<20mm	ohms
Layer	(cm)	Horz	Prep	KCl	1:2 pHRou1	1:1 pHRou1	Paste	Sulf	NaF	(---------- % ----------) Carb1				cm^{-1}
02N00948	0-18	Ap	S		6.6	7.0								
02N00949	18-30	Bt1	S		6.5	6.9								
02N00950	30-53	Bt2	S		6.5	7.2								
02N00951	53-81	BCt	S		7.6	8.1				26				
02N00952	81-114	C1	S		7.7	8.2				32				
02N00953	114-160	C2	S		7.8	8.3				32				

Phosphorous

				-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-
					(---------- Phosphorous ----------								)
				Melanic	NZ	Acid	Bray	Bray	Olsen	H_2O	Citric	Mehlich	Extr
	Depth			Index		Oxal	1	2			Acid	III	NO_3
Layer	(cm)	Horz	Prep		%	(---------- mg kg^{-1} ----------							) mg kg^{-1}
							Bray11						
02N00948	0-18	Ap	S				1.4						
02N00949	18-30	Bt1	S				0.7						
02N00950	30-53	Bt2	S				0.7						

*** Primary Characterization Data ***

Pedon ID: S02IL-093-001
Sampled As : STRAWN
USDA-NRCS-NSSC-National Soil Survey Laboratory

(Kendall County, Illinois)
Fine-loamy, mixed, active, mesic Typic Hapludalf
; Pedon No. 02N0202

Print Date: Oct 14 2003 7:04AM

Clay Mineralogy (<.002 mm)

				-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-	-12-	-13-	-14-	-15-	-16-	-17-	-18-
						X-Ray					Thermal					Elemental				EGME	Inter
													SiO_2	Al_2O_3	Fe_2O_3	MgO	CaO	K_2O	Na_2O	Retn	preta
	Depth		Fract			Xray1															tion
Layer	(cm)	Horz	ion	<----------		peak size		---------->	<---		%	--->	<---			%			---->	$mg\ g^{-1}$	
02N00950	30-53	Bt2	tcly	MT 2	VR 2	MI 2	KK 2	QZ 1													SMEC

FRACTION INTERPRETATION:
tcly - Total Clay, <0.002 mm

MINERAL INTERPRETATION:
KK - Kaolinite MI - Mica MT - Montmorillonite QZ - Quartz VR - Vermiculite

RELATIVE PEAK SIZE: 5 Very Large 4 Large 3 Medium 2 Small 1 Very Small 6 No Peaks

INTERPRETATION (BY HORIZON):
SMEC - Smectitic

Pedon ID: S02IL-093-001

*** Supplementary Characterization Data ***
(Kendall County, Illinois)

Print Date: Oct 14 2003 7:04AM

Sampled as on Feb 14, 2002 : STRAWN ; Fine-loamy, mixed, active, mesic Typic Hapludalf
Revised to :

SSL - Project C2002USIL099 KENDALL CO.
- Site ID S02IL-093-001 Lat: 41° 36' 7.00" north Long: 88° 28' 17.00" west NAD27 MLRA: 108
- Pedon No. 02N0202
- General Methods 1B1A, 2A1, 2B

United States Department of Agriculture
Natural Resources Conservation Service
National Soil Survey Center
Soil Survey Laboratory
Lincoln, Nebraska 68508-3866

Tier 1

				-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-	-12-	-13-	-14-	-15-	-16-	-17-	-18-	-19-	-20-	-21-	-22-	-23-	-24-	-25-
				(- Engineering PSDA - Percentage Passing Sieve													(- Cumulative Curve Fractions - USDA Less Than Diameters (mm) at									(<75mm)	(Atter- berg		(Gradation)	
Layer	Depth (cm)	Horz	Prep	3 (- Inches	2	3/2	1	3/4	3/8	4 (- Number	10	40	200)	20 (- Microns	5	2)	1. (- Millimeter	.5	.25	.10	.05)	60 (- Percentile	50	10)	LL (-%-	PI)	Uni- fmty CU	Cur- vtur CC
02N00948	0-18	Ap	S	100	100	100	100	100	100	99	99	98	94	65	43	28	99	99	97	95	93	0.01	0.008	tr			31.6	0.8
02N00949	18-30	Bt1	S	100	100	100	100	100	100	100	100	99	96	70	49	35	100	99	98	97	95	0.01	0.005	tr			26.5	0.5
02N00950	30-53	Bt2	S	100	99	99	98	98	98	97	96	94	89	67	50	38	96	95	93	90	87	0.01	0.005	tr			30.3	0.4
02N00951	53-81	BCt	S	100	100	100	99	99	97	94	91	87	77	61	41	28	90	87	84	79	74	0.02	0.009	tr			41.1	0.6
02N00952	81-114	C1	S	100	100	100	100	100	98	96	90	84	76	60	39	25	88	85	82	77	75	0.02	0.010	0.001			39.4	0.8
02N00953	114-160	C2	S	100	99	99	98	97	94	90	87	82	74	58	38	25	86	83	79	74	74	0.02	0.012	0.001			44.9	0.7

Tier 2

				-26-	-27-	-28-	-29-	-30-	-31-	-32-	-33-	-34-	-35-	-36-	-37-	-38-	-39-	-40-	-41-	-42-	-43-	-44-	-45-	-46-	-47-	-48-	-49-	-50-
				(- Weight Fractions - Whole Soil (mm)								<75 mm Fraction					)	(- Weight Per Unit Volume (g cm^{-3}) - Whole Soil					<2 mm Fraction				)	(- Void - Ratios	
Layer	Depth (cm)	Horz	Prep	>2 (- % of Whole Soil -	250 -UP	250 -75	75 -2	75 -20	20 -5	5 -2	<2)	75 -2 (- % of <75 mm -	75 -20	20 -5	5 -2	<2)		Soil Sur 33 kPa	Oven -dry	Engineering Moist	Satur -ated	33 kPa DbWR1	Soil Survey 1500 kPa	Oven -dry DbWR1	Engineering Moist	Satur -ated	At 33 kPa Whole Soil	<2 mm
02N00948	0-18	Ap	S	1			1	–	1	tr	99	1	–	1	tr	99		1.43	1.56	1.72	1.89	1.42	1.48	1.55	1.71	1.88	0.85	0.87
02N00949	18-30	Bt1	S	1			1	–	tr	tr	99	1	–	tr	tr	99		1.47	1.73	1.82	1.92	1.46	1.57	1.72	1.82	1.91	0.80	0.82
02N00950	30-53	Bt2	S	4			4	2	1	1	96	4	2	1	1	96		1.46	1.70	1.80	1.91	1.43	1.52	1.67	1.78	1.89	0.82	0.85
02N00951	53-81	BCt	S	9			9	1	5	3	91	9	1	5	3	91		1.84	1.94	2.10	2.15	1.79	1.81	1.89	2.06	2.11	0.44	0.48
02N00952	81-114	C1	S	10			10	–	4	6	90	10	–	4	6	90		1.96	2.05	2.21	2.22	1.91	1.93	2.01	2.18	2.19	0.35	0.39
02N00953	114-160	C2	S	13			13	3	7	3	87	13	3	7	3	87		1.96	2.04	2.20	2.22	1.88	1.89	1.97	2.15	2.17	0.35	0.41

Tier 3

Layer	Depth (cm)	Horz	Prep	-51- >2	-52- 250 -UP	-53- 250 -75	-54- 75 -2	-55- 75 -20	-56- 20 -5	-57- 5 -2	-58- <2	-59- 2- .05	-60- .05- .002	-61- LT .002	-62- Pores D	-63- Pores F	-64- C /N Ratio	-65- Fine Clay	-66- CEC Sum Cats	-67- NH_4- OAC	-68- 1500 kPa H_2O	-69- LEP 33 kPa	-70- Whole Soil 33 kPa to % 1500 kPa	-71- Whole Soil Oven -dry	-72- <2 mm 1500 kPa	-73- <2 mm Oven -dry	-74- WRD Whole Soil	-75- WRD <2 mm
				(Volume Fractions — Whole Soil (mm) At 33 kPa — % of Whole Soil)														(Ratios To Clay — <2 mm Fraction)					(Linear Extensiblity)				(WRD — in^3/in^3)	
02N00948	0-18	Ap	S	1	--	--	1	--	1	tr	99	3	35	15	17	29	7		0.85	0.68	0.44	0.105	1.4	2.9	1.4	3.0	0.11	0.11
02N00949	18-30	Bt1	S	1	--	--	1	--	tr	tr	99	3	33	19	10	35	7		0.78	0.68	0.44	0.159	2.4	5.6	2.5	5.6	0.13	0.13
02N00950	30-53	Bt2	S	3	--	--	2	1	1	1	97	5	27	21	11	34	7		0.73	0.64	0.41	0.133	2.0	5.2	2.1	5.3	0.11	0.12
02N00951	53-81	BCt	S	6	--	--	6	1	3	2	94	12	32	20	5	26	8			0.36	0.41	0.058	0.4	1.8	0.4	1.8	0.04	0.04
02N00952	81-114	C1	S	7	--	--	7	--	3	4	93	11	38	19	1	25	7			0.30	0.40	0.061	0.3	1.5	0.3	1.7	0.06	0.06
02N00953	114-160	C2	S	10	--	--	10	2	5	2	90	9	36	18	2	24	14			0.26	0.43	0.056	0.2	1.3	0.2	1.6	0.03	0.04

Tier 4

Layer	Depth (cm)	Horz	Prep	-76- >2	-77- 75 -20	-78- 20 -2	-79- 2- .05	-80- .05- .002	-81- < .002	-82- VC	-83- C	-84- M	-85- F	-86- VF	-87- Silts C	-88- Silts F	-89- Clay	-90-	-91- Texture by PSDA <2 mm	-92- Sand 2- .05	-93- Silt .05- .002	-94- Clay < .002	-95- pH $CaCl_2$ .01M	-96- Elect. Res-ist. ohms	-97- Con-duct $dS\ m^{-1}$	-98- Particle Density $g\ cm^{-3}$
				(Weight Fractions - Clay Free — Whole Soil — % of >2 mm Sand and Silt)						(<2 mm Fraction — Sands — % of Sand and Silt)					(Silts)					(PSDA (mm) — % of 2 mm) PSDAr1			pHRou1 (<2 mm)			
02N00948	0-18	Ap	S	1	1	1	8	90	39	tr	tr	2	3	3	39	53	40		sicl	5.9	65.5	28.6	6.6			
02N00949	18-30	Bt1	S	2	2	--	8	91	54	tr	1	2	2	3	38	54	55		sicl	5.1	59.6	35.3	6.5			
02N00950	30-53	Bt2	S	6	6	3	14	79	62	1	1	4	5	5	34	51	67		sic	9.1	50.9	40.0	6.5			
02N00951	53-81	BCt	S	13	13	11	24	64	39	1	4	6	8	7	21	52	45		sicl	18.6	50.3	31.1	7.6			
02N00952	81-114	C1	S	13	13	13	19	67	33	3	4	5	8	2	24	54	38		sicl	16.2	56.1	27.7	7.7			
02N00953	114-160	C2	S	17	17	13	17	65	33	2	5	6	8	tr	26	53	40		sicl	14.9	56.4	28.7	7.8			

Pedon ID: S02IL-093-001

*** Taxonomy Characterization Data ***

(Kendall County, Illinois)

Print Date: Oct 14 2003 7:04AM

Sampled as on Feb 14, 2002 : STRAWN ; Fine-loamy, mixed, active, mesic Typic Hapludalf
Revised to :

SSL - Project C2002USIL099 KENDALL CO.
- Site ID S02IL-093-001 Lat: 41° 36' 7.00" north Long: 88° 28' 17.00" west NAD27 MLRA: 108
- Pedon No. 02N0202
- General Methods 1B1A, 2A1, 2B

United States Department of Agriculture
Natural Resources Conservation Service
National Soil Survey Center
Soil Survey Laboratory
Lincoln, Nebraska 68508-3866

Taxonomy Tier 1

Layer	Depth (cm)	Horz	Prep	-1- Clay <.002 (% of <2 mm) PSDAr1	-2- Fine Clay <.0002	-3- $CaCO_3$ Clay <.002 PSDAr1	-4- 1500 kPa /Clay	-5- Clay Est (%)	-6- .1-75 mm Frac	-7- Bulk Den 33 kPa g cm^{-3} DbWR1	-8- Cole Whole Soil cm cm^{-1}	-9- Vol % of Whole	-10- Resist Min %
02N00948	0-18	Ap	S	28.6			0.44		5	1.42	0.029	1	
02N00949	18-30	Bt1	S	35.3			0.44		3	1.46	0.056	1	
02N00950	30-53	Bt2	S	40.0			0.41		10	1.43	0.052	3	
02N00951	53-81	BCt	S	31.1		1.3	0.41		21	1.79	0.017	6	
02N00952	81-114	C1	S	27.7		2.1	0.40		23	1.91	0.016	7	
02N00953	114-160	C2	S	28.7		2.1	0.43		26	1.88	0.014	10	

Taxonomy Tier 2

Layer	Depth (cm)	Horz	Prep	-1- pH H_2O pHRou1	-2- pH NaF	-3- Org C (%)	-4- Tot C TotNCS	-5- Al+½ Fe Oxal	-6- ODOE	-7- CO_3 as $CaCO_3$ Carb1	-8- (— Base Sat —) NH_4	-9- Bases	-10- NZ P Ret)	-11- ECEC cmol(+) kg^{-1}	-12- CEC7 /Clay	-13- ECEC /Clay	-14- Al Sat %	-15- E C dS m^{-1}	-15- ESP %
02N00948	0-18	Ap	S	7.0			1.33				100*	86			0.68				1
02N00949	18-30	Bt1	S	6.9			0.80				99	86			0.68				2
02N00950	30-53	Bt2	S	7.2			0.66				95	84			0.64				1
02N00951	53-81	BCt	S	8.1			3.54			26	100*				0.36				2
02N00952	81-114	C1	S	8.2			4.28			32	100*				0.30				2
02N00953	114-160	C2	S	8.3			4.28			32	100*				0.26				2

*Extractable Ca may contain Ca from calcium carbonate or gypsum.

Yorkville till

PEDON DESCRIPTION

Print Date: 10/14/2003
Description Date: 02/14/2002
Describer: crew
Site ID: 02IL093002

Site Note: Mapped as 145B, would correlate to 541B2-Graymont silt loam, 2 to 5 percent slopes, eroded. Till averages more than 50 percent silt. land use: grass
Pedon ID: 02IL093002

Pedon Note:
Lab Source ID: SSL
Lab Pedon #: 02N0203

Soil Name as Described/Sampled: Saybrook

Soil Name as Correlated:

Classification: Fine-silty, mixed, superactive, mesic Oxyaquic Argiudolls
Pedon Type: within range of map unit
Pedon Purpose: full pedon description
Taxon Kind:
Associated Soils:
Physiographic Division:
Physiographic Province:
Physiographic Section:
State Physiographic Area:
Local Physiographic Area:
Geomorphic Setting: on backslope of ground moraine on backslope of glaciated upland
Upslope Shape: linear
Cross Slope Shape: linear
Particle Size Control Section:
Diagnostic Features: argillic horizon 28 to 84 cm.

Country:
State: Illinois
County: Kendall
MLRA: 108 -- Illinois and Iowa Deep Loess and Drift
Soil Survey Area: IL093 -- Kendall County, Illinois
Map Unit: 145B -- Saybrook silt loam, 2 to 4 percent slopes
Quad Name: Plattville, Illinois
Location Description:
Legal Description: 1170 feet west and 1020 feet south of NE corner of Section 18, Township 36N, Range 7E
Latitude: 41 degrees 36 minutes 3 seconds north
Longitude: 88 degrees 28 minutes 13 seconds west
Datum: NAD27
UTM Zone:
UTM Easting:
UTM Northing:

Primary Earth Cover:
Secondary Earth Cover:
Existing Vegetation:
Parent Material:
Bedrock Kind:
Bedrock Depth:
Bedrock Hardness:
Bedrock Fracture Interval:
Surface Fragments:

Cont. Site ID: 02IL093002 **Pedon ID:** 02IL093002

Slope (%)	Elevation (meters)	Aspect (deg)	MAAT (C)	MSAT (C)	MWAT (C)	MAP (mm)	Frost-Free Days	Drainage Class	Slope Length (meters)	Upslope Length (meters)
3.0	223.0	270						moderately well		

Ap--0 to 10 centimeters; very dark gray (10YR 3/1) silt loam, gray (10YR 5/1), dry; moderate medium granular structure; friable; common very fine roots; neutral, pH 7.0; abrupt smooth boundary. Lab sample # 02N00954

AB--10 to 28 centimeters; 80 percent very dark gray (10YR 3/1) and 20 percent brown (10YR 4/3) silty clay loam; moderate fine and medium angular blocky structure; friable; common very fine roots; neutral, pH 7.0; clear smooth boundary. Lab sample # 02N00955

Bt1--28 to 53 centimeters; dark yellowish brown (10YR 4/4) silty clay loam; weak medium prismatic parting to moderate fine and medium subangular blocky structure; friable; common very fine roots; 10 percent continuous distinct brown (10YR 4/3) clay films; 10 percent fine irregular weakly cemented black (7.5YR 2.5/1) iron-manganese concretions throughout and 10 percent fine distinct dark yellowish brown (10YR 4/6) iron-manganese masses throughout; 1 percent 2- to 75-millimeter unspecified fragments; neutral, pH 7.0; common distinct continuous very dark grayish brown (10YR 3/2) organo-clay films on faces of peds; few distinct very dark gray (10YR 3/1) organic coatings throughout; clear smooth boundary. Lab sample # 02N00956

2Bt2--53 to 84 centimeters; dark yellowish brown (10YR 4/4) silty clay loam; moderate medium and coarse prismatic parting to moderate medium subangular blocky structure; friable; many very fine roots; 30 percent continuous distinct brown (10YR 4/3) clay films; 10 percent fine irregular very weakly cemented black (7.5YR 2.5/1) iron-manganese concretions throughout and 30 percent medium prominent strong brown (7.5YR 4/6) iron-manganese masses throughout; 2 percent 2- to 75-millimeter unspecified fragments; slightly alkaline, pH 7.6; few distinct discontinuous dark brown (10YR 3/2) organo-clay films on faces of peds; few distinct discontinuous very dark gray (10YR 3/1) organic coatings throughout; clear smooth boundary. Lab sample # 02N00957

2BCt--84 to 114 centimeters; brown (10YR 5/3) silty clay loam; weak coarse prismatic parting to weak coarse subangular blocky structure; firm; 10 percent discontinuous distinct brown (10YR 4/3) clay films on faces of peds; prominent strong brown (7.5YR 5/8) iron-manganese masses throughout and iron depletions throughout and 30 percent fine distinct yellowish brown (10YR 5/6) and 75 percent coarse distinct gray (10YR 6/1); 7 percent 2- to 75-millimeter unspecified fragments; strong effervescence; moderately alkaline, pH 8.2; gradual wavy boundary. Lab sample # 02N00958

2C--114 to 165 centimeters; brown (10YR 5/3) silty clay loam; massive; firm; 7 percent 2- to 75- millimeter unspecified fragments; strong effervescence; moderately alkaline, pH 8.2. Lab sample # 02N00959

*** Primary Characterization Data ***

(Kendall County, Illinois)

Pedon ID: S02IL-093-002

Print Date: Oct 14 2003 8:16AM

Sampled as on Feb 14, 2002 : SAYBROOK ; Fine-silty, mixed, superactive, mesic Oxyaquic Argiudoll
Revised to :

SSL - Project C2002USIL099 KENDALL CO.
- Site ID S02IL-093-002 Lat: 41° 36' 3.00" north Long: 88° 28' 13.00" west NAD27 MLRA: 108
- Pedon No. 02N0203
- General Methods 1B1A, 2A1, 2B

United States Department of Agriculture
Natural Resources Conservation Service
National Soil Survey Center
Soil Survey Laboratory
Lincoln, Nebraska 68508-3866

Layer	Horizon	Orig Hzn	Depth (cm)	Field Label 1	Field Label 2	Field Label 3	Field Texture	Lab Texture
02N00954	Ap		0-10	S02IL-093-002-1			SIL	SICL
02N00955	AB		10-28	S02IL-093-002-2			SICL	SICL
02N00956	Bt1		28-53	S02IL-093-002-3			SICL	SICL
02N00957	2Bt2		53-84	S02IL-093-002-4			SICL	SICL
02N00958	2BCt		84-114	S02IL-093-002-5			SICL	SICL
02N00959	2C		114-165	S02IL-093-002-6			SICL	CL

Pedon Calculations

Calculation Name	Result	Units of Measure
LE, Whole Soil, Summed to 1m	6	cm/m

PSDA & Rock Fragments

				-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-	-12-	-13-	-14-	-15-	-16-	-17-
				(- - - - - Total - - - - - -)			(- - Clay - - -)		(- - - - Silt - - - - -)		(- - - - - - - - - - - - Sand - - - - - - - - - - - -)					(Rock Fragments (mm))				
				Clay	Silt	Sand	Fine	CO_3	Fine	Coarse	VF	F	M	C	VC	(- - - - - - - - Weight - - - - - - - -)				>2 mm
				<	.002	.05	<	<	.002	.02	.05	.10	.25	.5	1	2	5	20	.1-	wt %
	Depth			.002	-.05	-2	.0002	.002	-.02	-.05	-.10	-.25	-.50	-1	-2	-5	-20	-75	75	whole
Layer	(cm)	Horz	Prep	(- % of <2mm Mineral Soil -)												(- - - - - - - % of <75mm - - - - - -)				soil
				PSDAr1				PSDAr1	PSDAr1		PSDAr1	PSDAr1	PSDAr1	PSDAr1	PSDAr1					
02N00954	0-10	Ap	S	32.3	62.5	5.2			38.6	23.9	1.5	1.6	1.3	0.2	0.6	tr	--	--	4	tr
02N00955	10-28	AB	S	35.1	60.5	4.4			37.7	22.8	1.4	1.2	1.2	0.6	tr	tr	tr	--	3	1
02N00956	28-53	Bt1	S	35.2	59.4	5.4			34.1	25.3	2.3	1.6	0.9	0.6	tr	tr	tr	--	3	tr
02N00957	53-84	2Bt2	S	30.3	61.0	8.7			31.9	29.1	3.1	3.0	1.7	0.8	0.1	1	1	--	7	2
02N00958	84-114	2BCt	S	30.2	49.9	19.9		1.3	35.8	14.1	5.1	6.1	4.2	2.5	2.0	4	8	5	29	17
02N00959	114-165	2C	S	29.1	50.4	20.5		2.1	36.9	13.5	4.9	5.6	4.6	3.6	1.8	4	5	4	27	13

*** Primary Characterization Data ***

Pedon ID: S02IL-093-002 (Kendall County, Illinois) Print Date: Oct 14 2003 8:16AM

Sampled As : SAYBROOK Fine-silty, mixed, superactive, mesic Oxyaquic Argiudoll

USDA-NRCS-NSSC-National Soil Survey Laboratory ; Pedon No. 02N0203

Bulk Density & Moisture

Layer	Depth (cm)	Horz	Prep	-1- (Bulk Density) 33 kPa (g cm^{-3}) DbWR1	-2- Oven Dry DbWR1	-3- Cole Whole Soil	-4- (Water Content) 6 kPa	-5- 10 kPa	-6- 33 kPa pct of < 2mm DbWR1	-7- 1500 kPa WR15b1	-8- 1500 kPa Moist	-9- Ratio AD/OD ADOD1	-10- WRD Whole Soil cm^3 cm^{-3}	-11- Aggst Stabl 2-0.5mm % AgStab1	-12- (Ratio/Clay) CEC7	-13- 1500 kPa
02N00954	0-10	Ap	S	1.43	1.62	0.042			23.7	15.1		1.022	0.12	30	0.79	0.47
02N00955	10-28	AB	S	1.45	1.67	0.048			25.2	15.2		1.024	0.14		0.73	0.43
02N00956	28-53	Bt1	S	1.35	1.74	0.088			27.4	20.5		1.027	0.09		0.70	0.58
02N00957	53-84	2Bt2	S	1.41	1.73	0.070			26.0	15.2		1.022	0.15		0.69	0.50
02N00958	84-114	2BCt	S	1.62	1.78	0.028			20.7	12.3		1.010	0.12		0.34	0.41
02N00959	114-165	2C	S	1.82	1.92	0.016			16.4	12.3		1.008	0.07		0.29	0.42

Carbon & Extractions

Layer	Depth (cm)	Horz	Prep	-1- (Total) C (% of <2 mm) TotNCS	-2- N TotNCS	-3- S TotNCS	-4- Org C	-5- C/N Ratio	-6- (Dith-Cit Ext) Fe (% of < 2mm) DC1	-7- Al DC1	-8- Mn DC1	-9- (Acid Oxalate Extraction) Al+½Fe	-10- ODOE	-11- Fe	-12- Al	-13- Mn mg kg^{-1}	-14- (Na Pyro-Phosphate) Si	-15- C (% of < 2mm)	-16- Fe	-17- Al	-18- Mn
02N00954	0-10	Ap	S	3.72	0.350	0.03		11	1.4	0.2	0.1										
02N00955	10-28	AB	S	1.84	0.200	0.03		9	1.3	0.3	0.1										
02N00956	28-53	Bt1	S	0.77	0.086	tr		9	1.6	0.3	0.1										
02N00957	53-84	2Bt2	S	0.52	0.080	tr		7	1.8	0.3	0.1										
02N00958	84-114	2BCt	S	3.66	0.041	0.01		12	1.5	0.2	tr										
02N00959	114-165	2C	S	4.31	0.030	--		15	1.3	0.1	tr										

CEC & Bases

Layer	Depth (cm)	Horz	Prep	-1- (NH_4OAC Extractable Bases) Ca (cmol(+) kg^{-1}) CEC1	-2- Mg CEC1	-3- Na CEC1	-4- K CEC1	-5- Sum Bases	-6- Acid-ity XAcid1	-7- Extr Al	-8- KCl Mn mg kg^{-1}	-9- CEC8 Sum Cats (cmol(+) kg^{-1})	-10- CEC7 NH_4 OAC CEC1	-11- ECEC Bases +Al	-12- Al Sat (%)	-13- (Base Saturation) Sum	-14- NH_4OAC
02N00954	0-10	Ap	S	14.5	5.2	0.2	0.8	20.7	9.3			30.0	25.5			69	81
02N00955	10-28	AB	S	14.0	5.2	0.1	0.3	19.6	10.6			30.2	25.5			65	77
02N00956	28-53	Bt1	S	13.2	6.7	0.1	0.4	20.4	6.0			26.4	24.5			77	83
02N00957	53-84	2Bt2	S	11.4	6.5	0.2	0.4	18.5	4.9			23.4	21.0			79	88
02N00958	84-114	2BCt	S	35.0*	10.6	0.1	0.2	45.9					10.4				100
02N00959	114-165	2C	S	36.7*	9.2	0.1	0.1	46.1					8.5				100

*Extractable Ca may contain Ca from calcium carbonate or gypsum., CEC7 base saturation set to 100.

Salt

Layer	Depth (cm)	Horz	Prep	-1- (Water Extracted From Saturated Paste) Ca (mmol(+) L^{-1})	-2- Mg	-3- Na	-4- K	-5- CO_3 (mmol(-) L^{-1})	-6- HCO_3	-7- F	-8- Cl	-9- PO_4	-10- Br	-11- OAC	-12- SO_4	-13- NO_2	-14- NO_3	-15- H_2O (%)	-16- Total Salts	-17- Elec Cond (dS m^{-1})	-18- Pred Elec Cond	-19- Exch Na (%)	-20- SAR
02N00954	0-10	Ap	S																			1	
02N00955	10-28	AB	S																			tr	
02N00956	28-53	Bt1	S																			1	
02N00957	53-84	2Bt2	S																			1	
02N00958	84-114	2BCt	S																			1	
02N00959	114-165	2C	S																			1	

*** Primary Characterization Data ***

Pedon ID: S02IL-093-002 (Kendall County, Illinois) Print Date: Oct 14 2003 8:16AM

Sampled As : SAYBROOK Fine-silty, mixed, superactive, mesic Oxyaquic Argiudoll

USDA-NRCS-NSSC-National Soil Survey Laboratory ; Pedon No. 02N0203

pH & Carbonates

Layer	Depth (cm)	Horz	Prep	-1- (pH) KCl	-2- (pH) $CaCl_2$ 0.01M 1:2 pHRou1	-3- (pH) H_2O 1:1 pHRou1	-4- (pH) Sat Paste	-5- (pH) Sulf	-6- (pH) NaF	-7- Carbonate As $CaCO_3$ <2mm (% Carb1)	-8- Carbonate As $CaCO_3$ <20mm (%)	-9- Gypsum As $CaSO_4*2H_2O$ <2mm (%)	-10- Gypsum As $CaSO_4*2H_2O$ <20mm (%)	-11- Resist ohms cm^{-1}
02N00954	0-10	Ap	S		5.6	6.2								
02N00955	10-28	AB	S		5.3	5.8								
02N00956	28-53	Bt1	S		5.6	6.1								
02N00957	53-84	2Bt2	S		6.1	6.6								
02N00958	84-114	2BCt	S		7.6	8.1				26				
02N00959	114-165	2C	S		7.7	8.1				32				

Phosphorous

Layer	Depth (cm)	Horz	Prep	-1- Melanic Index	-2- NZ %	-3- Acid Oxal	-4- Bray 1 Bray11 (mg kg^{-1})	-5- Bray 2 (mg kg^{-1})	-6- Olsen (mg kg^{-1})	-7- H_2O (mg kg^{-1})	-8- Citric Acid (mg kg^{-1})	-9- Mehlich III (mg kg^{-1})	-10- Extr NO_3 mg kg^{-1}
02N00954	0-10	Ap	S				37.2						
02N00955	10-28	AB	S				3.7						
02N00956	28-53	Bt1	S				1.1						

Clay Mineralogy (<.002 mm)

Layer	Depth (cm)	Horz	Fraction	-1- X-Ray Xray1 peak size MT	-2- peak size MI	-3- peak size KK	-4- peak size VR	-5- peak size QZ	-6- Thermal %	-7- Thermal %	-8- Thermal %	-9- Thermal %	-10- Elemental % SiO_2	-11- Elemental % Al_2O_3	-12- Elemental % Fe_2O_3	-13- Elemental % MgO	-14- Elemental % CaO	-15- Elemental % K_2O	-16- Elemental % Na_2O	-17- EGME Retn mg g^{-1}	-18- Interpretation
02N00956	28-53	Bt1	tcly	MT 3	MI 2	KK 2	VR 2	QZ 1													SMEC

FRACTION INTERPRETATION:

tcly - Total Clay, <0.002 mm

MINERAL INTERPRETATION:

KK - Kaolinite MI - Mica MT - Montmorillonite QZ - Quartz VR - Vermiculite

RELATIVE PEAK SIZE: 5 Very Large 4 Large 3 Medium 2 Small 1 Very Small 6 No Peaks

INTERPRETATION (BY HORIZON):

SMEC - Smectitic

Pedon ID: S02IL-093-002

*** Supplementary Characterization Data ***
(Kendall County, Illinois)

Print Date: Oct 14 2003 8:16AM

Sampled as on Feb 14, 2002 : SAYBROOK ; Fine-silty, mixed, superactive, mesic Oxyaquic Argiudoll
Revised to :

SSL - Project C2002USIL099 KENDALL CO.
- Site ID S02IL-093-002 Lat: 41° 36' 3.00" north Long: 88° 28' 13.00" west NAD27 MLRA: 108
- Pedon No. 02N0203
- General Methods 1B1A, 2A1, 2B

United States Department of Agriculture
Natural Resources Conservation Service
National Soil Survey Center
Soil Survey Laboratory
Lincoln, Nebraska 68508-3866

Tier 1 -1- -2- -3- -4- -5- -6- -7- -8- -9- -10- -11- -12- -13- -14- -15- -16- -17- -18- -19- -20- -21- -22- -23- -24- -25-

Layer	Depth (cm)	Horz	Prep	Engineering PSDA Percentage Passing Sieve (Inches) 3	2	3/2	1	Engineering PSDA Percentage Passing Sieve (Number) 3/4	3/8	4	10	40	200	Engineering PSDA Percentage Passing Sieve (Microns) 20	5	2	Cumulative Curve Fractions USDA Less Than Diameters (mm) at (Millimeter) 1.	.5	.25	.10	.05	(<75mm) (Percentile) 60	50	10	(Atterberg) LL	PI	(Gradation) Uniformity CU	Curvature CC
02N00954	0-10	Ap	S	100	100	100	100	100	100	100	100	99	96	71	48	32	99	99	98	96	95	0.01	0.006	tr			25.6	0.7
02N00955	10-28	AB	S	100	100	100	100	100	100	100	100	99	96	73	50	35	100	99	98	97	96	0.01	0.005	tr			23.7	0.6
02N00956	28-53	Bt1	S	100	100	100	100	100	100	100	100	99	96	69	49	35	100	99	99	97	95	0.01	0.005	tr			27.7	0.5
02N00957	53-84	2Bt2	S	100	100	100	100	100	100	99	98	97	91	61	42	30	98	97	95	93	89	0.02	0.009	tr			42.9	0.5
02N00958	84-114	2BCt	S	100	99	98	96	95	91	87	83	78	69	55	37	25	81	79	76	71	66	0.03	0.014	0.001			60.1	0.6
02N00959	114-165	2C	S	100	99	98	97	96	94	91	87	81	72	57	38	25	85	82	78	73	69	0.02	0.012	tr			49.3	0.6

Tier 2 -26- -27- -28- -29- -30- -31- -32- -33- -34- -35- -36- -37- -38- -39- -40- -41- -42- -43- -44- -45- -46- -47- -48- -49- -50-

Layer	Depth (cm)	Horz	Prep	Weight Fractions Whole Soil (mm) >2	250-UP	250-75	75-2	75-20	20-5	5-2	<2	<75 mm Fraction 75-2	75-20	20-5	5-2	<2 (% of Whole Soil / % of <75 mm)	Weight Per Unit Volume (g cm^{-3}) Whole Soil Soil Sur 33 kPa	Oven-dry	Engineering Moist	Engineering Satur-ated	<2 mm Fraction Soil Survey 33 kPa DbWR1	1500 kPa	Oven-dry DbWR1	Engineering Moist	Engineering Satur-ated	Void Ratios At 33 kPa Whole Soil	<2 mm
02N00954	0-10	Ap	S	tr			tr	–	–	tr	100	tr	–	–	tr	100	1.43	1.62	1.77	1.89	1.43	1.51	1.62	1.77	1.89	0.85	0.85
02N00955	10-28	AB	S	1			1	–	tr	tr	99	1	–	tr	tr	99	1.46	1.68	1.83	1.91	1.45	1.55	1.67	1.82	1.90	0.82	0.83
02N00956	28-53	Bt1	S	tr			tr	–	tr	tr	100	tr	–	tr	tr	100	1.35	1.74	1.71	1.84	1.35	1.46	1.74	1.72	1.84	0.96	0.96
02N00957	53-84	2Bt2	S	2			2	–	1	1	98	2	–	1	1	98	1.42	1.74	1.78	1.88	1.41	1.55	1.73	1.78	1.88	0.87	0.88
02N00958	84-114	2BCt	S	17			17	5	8	4	83	17	5	8	4	83	1.73	1.89	2.02	2.08	1.62	1.69	1.78	1.96	2.01	0.53	0.64
02N00959	114-165	2C	S	13			13	4	5	4	87	13	4	5	4	87	1.90	1.99	2.17	2.18	1.82	1.85	1.92	2.12	2.13	0.39	0.46

Tier 3 -51- -52- -53- -54- -55- -56- -57- -58- -59- -60- -61- -62- -63- -64- -65- -66- -67- -68- -69- -70- -71- -72- -73- -74- -75-

Layer	Depth (cm)	Horz	Prep	Volume Fractions Whole Soil (mm) At 33 kPa (% of Whole Soil) >2	250-UP	250-75	75-2	75-20	20-5	5-2	<2	C/N Ratio	Ratios To Clay <2 mm Fraction Fine Clay	CEC Sum Cats	CEC NH$_4$-OAC	1500 kPa H$_2$O	LEP	Linear Extensiblity Whole Soil 33 kPa	1500 kPa	Oven-dry	<2 mm to % 1500 kPa	Oven-dry	WRD Whole Soil	WRD <2 mm
02N00954	0-10	Ap	S	–	–	–	–	–	–	–	100	3	34	17	12	34	11		0.93	0.79	0.47	0.130	1.8	4.2	1.8	4.2	0.12	0.12
02N00955	10-28	AB	S	1	–	–	1	–	tr	tr	99	2	33	19	9	36	9		0.86	0.73	0.43	0.137	2.2	4.8	2.2	4.8	0.14	0.15
02N00956	28-53	Bt1	S	tr	–	–	tr	–	tr	tr	100	3	30	18	13	36	9		0.75	0.70	0.58	0.250	2.6	8.8	2.6	8.8	0.09	0.09
02N00957	53-84	2Bt2	S	1	–	–	1	–	1	1	99	5	33	16	11	35	7		0.77	0.69	0.50	0.234	3.4	7.0	3.2	7.1	0.15	0.15
02N00958	84-114	2BCt	S	11	–	–	11	3	5	3	89	11	27	17	6	29	12			0.34	0.41	0.106	1.3	3.0	1.4	3.2	0.12	0.14
02N00959	114-165	2C	S	9	–	–	9	3	4	3	91	13	31	18	1	27	15			0.29	0.42	0.062	0.3	1.6	0.5	1.8	0.07	0.07

Tier 4 -76- -77- -78- -79- -80- -81- -82- -83- -84- -85- -86- -87- -88- -89- -90- -91- -92- -93- -94- -95- -96- -97- -98-

Layer	Depth (cm)	Horz	Prep	Weight Fractions - Clay Free Whole Soil (- % of >2 mm Sand and Silt -) >2	75-20	20-2	2-.05	.05-.002	<.002	<2 mm Fraction (% of Sand and Silt) Sands VC	C	M	F	VF	Silts C	F	Clay	Texture by PSDA <2 mm	PSDA (mm) Sand 2-.05	Silt .05-.002	Clay <.002	pH Cl_2 .01M	Electrical Resistance ohms	Electrical Conductance dS m^{-1}	Particle Density g cm^{-3}
02N00954	0-10	Ap	S	–	–	–	8	92	48	1	tr	2	2	2	35	57	48	sicl	5.2	62.5	32.3	5.6			
02N00955	10-28	AB	S	2	2	–	7	92	53	–	1	2	2	2	35	58	54	sicl	4.4	60.5	35.1	5.3			
02N00956	28-53	Bt1	S	–	–	–	8	91	54	–	1	1	2	4	39	53	54	sicl	5.4	59.4	35.2	5.6			
02N00957	53-84	2Bt2	S	3	3	3	12	85	42	tr	1	2	4	4	42	46	43	sicl	8.7	61.0	30.3	6.1			
02N00958	84-114	2BCt	S	23	23	16	22	55	33	3	4	6	9	7	20	51	43	sicl	19.9	49.9	30.2	7.6			
02N00959	114-165	2C	S	17	17	12	24	59	34	3	5	6	8	7	19	52	41	cl	20.5	50.4	29.1	7.7			

Pedon ID: S02IL-093-002

*** Taxonomy Characterization Data ***

(Kendall County, Illinois)

Print Date: Oct 14 2003 8:16AM

Sampled as on Feb 14, 2002 :
Revised to :

SAYBROOK ; Fine-silty, mixed, superactive, mesic Oxyaquic Argiudoll

SSL - Project C2002USIL099 KENDALL CO.
- Site ID S02IL-093-002 Lat: 41° 36' 3.00" north Long: 88° 28' 13.00" west NAD27 MLRA: 108
- Pedon No. 02N0203
- General Methods 1B1A, 2A1, 2B

United States Department of Agriculture
Natural Resources Conservation Service
National Soil Survey Center
Soil Survey Laboratory
Lincoln, Nebraska 68508-3866

Taxonomy Tier 1

Layer	Depth (cm)	Horz	Prep	-1- Clay <.002 (% of <2 mm) PSDAr1	-2- Fine Clay <.0002 (% of <2 mm)	-3- $CaCO_3$ Clay <.002 (% of <2 mm) PSDAr1	-4- 1500 kPa /Clay	-5- Clay Est (%)	-6- .1-75 mm Frac (%)	-7- Bulk Den 33 kPa g cm^{-3} DbWR1	-8- Cole Whole Soil cm cm^{-1}	-9- Vol % of Whole	-10- Resist Min %
02N00954	0-10	Ap	S	32.3			0.47		4	1.43	0.042	--	
02N00955	10-28	AB	S	35.1			0.43		3	1.45	0.048	1	
02N00956	28-53	Bt1	S	35.2			0.58		3	1.35	0.088	tr	
02N00957	53-84	2Bt2	S	30.3			0.50		7	1.41	0.070	1	
02N00958	84-114	2BCt	S	30.2		1.3	0.41		29	1.62	0.028	11	
02N00959	114-165	2C	S	29.1		2.1	0.42		27	1.82	0.016	9	

Taxonomy Tier 2

Layer	Depth (cm)	Horz	Prep	-1- pH H_2O pHRou1	-2- pH NaF	-3- Org C (%)	-4- Tot C TotNCS	-5- Al+½ Fe Oxal (%)	-6- ODOE (%)	-7- CO_3 as $CaCO_3$ (%) Carb1	-8- (--- Base Sat ---) NH_4 (%)	(%) Bases	-9- NZ P Ret (%)	-10- ECEC cmol(+) kg^{-1}	-11- CEC7 /Clay	-12- ECEC /Clay	-13- Al Sat %	-14- E C dS m^{-1}	-15- ESP %
02N00954	0-10	Ap	S	6.2			3.72				81	69			0.79				1
02N00955	10-28	AB	S	5.8			1.84				77	65			0.73				tr
02N00956	28-53	Bt1	S	6.1			0.77				83	77			0.70				1
02N00957	53-84	2Bt2	S	6.6			0.52				88	79			0.69				1
02N00958	84-114	2BCt	S	8.1			3.66			26	100*				0.34				1
02N00959	114-165	2C	S	8.1			4.31			32	100*				0.29				1

*Extractable Ca may contain Ca from calcium carbonate or gypsum.

Pedon Calculations

Calculation Name	Result	Units of Measure
LE, Whole Soil, Summed to 1m	6	cm/m

WEDRON AND MASON GROUPS:
Lithostratigraphic Reclassification of Deposits of the Wisconsin Episode, Lake Michigan Lobe Area

Ardith K. Hansel
W. Hilton Johnson

Department of Natural Resources
ILLINOIS STATE GEOLOGICAL SURVEY

Bulletin 104 1996

LITHOSTRATIGRAPHIC FRAMEWORK

The sediment record of the Wisconsin Episode of glaciation consists of a complex succession of deposits that record migrating proglacial and glacial environments. These deposits are classified in two intertonguing groups. The till and ice-marginal deposits, mainly diamicton, are collectively classified as the Wedron Group, whereas the proglacial sorted-sediment deposits, mainly loess, eolian sand, lake sediment, and outwash, are collectively classified as the Mason Group.

WEDRON GROUP

The four formations of the Wedron Group (fig. 7) constitute lithostratigraphic units that have regional significance within the Lake Michigan Lobe area (fig. 8). Each formation consists predominantly of diamicton that has a characteristic lithology and/or unique stratigraphic position. The lower formations pinch out beneath the overlying ones to the north and east in the central part of the lobe area. Generally no more than two formations are superposed, except in the lateral parts of the lobe area where, in some places, three have been found in stratigraphic position (e. g., extreme northeastern Illinois and southeastern Wisconsin).

The basal unit of the Wedron Group is the Tiskilwa Formation. Diamicton of the Tiskilwa Formation generally has a red hue (red brown to red gray) and a matrix of medium grain size (25%–40% clay). Two members contain diamicton that is grayer and coarser than type-Tiskilwa till. They are recognized as the lower Delavan Member and the upper Piatt Member. The Tiskilwa Formation crops out in a crescent-shaped pattern at the southwest end of the Lake Michigan Lobe area (fig. 8). It forms a significant subsurface unit wedging out beneath the Lemont Formation.

Diamicton of the Lemont Formation is more heterogeneous than that of the other Wedron Group formations. The characterizing grain-size fraction of the matrix is silt, which makes up 40% to slightly more than 50% of the diamicton. In the type area southwest of Chicago, Lemont diamicton has a light gray silt loam to sandy loam matrix; it contains abundant coarse gravel, more than 75% of which is dolomite. Northwest of the type area, Lemont diamicton is in facies relationship with the sandy loam diamicton of the Haeger Member, whereas west and south of the type area, it is in facies relationship with silty clay diamicton of the Yorkville Member, or possibly, with the silt loam diamicton of the Batestown Member. Yorkville diamicton constitutes a dark gray, silty clay wedge of the Lemont Formation, and it pinches out beneath or is in facies relationship with buried silt loam diamicton of undivided Lemont Formation in its type area southwest of Chicago. In the type area, undivided Lemont Formation constitutes a distinctly silty subsurface unit that generally overlies bedrock. Correlative diamicton is present in southeastern Wisconsin and crops out along the lake bluffs at Milwaukee (Mickelson et al. 1984).

The Wadsworth Formation, a unit containing dark gray, silty clay diamicton, overlies the Lemont Formation. The Wadsworth Formation is present at the surface in the moraines that encircle the southern Lake Michigan basin. It underlies sediment beneath Lake Michigan and part of the lake plain in the metropolitan Chicago area (fig. 8). Wadsworth diamicton generally contains less than 15% sand in its matrix; often more than 90% of the matrix is silt and clay. Lithologically, diamicton of the Wadsworth Formation is like that of the Yorkville Member of the Lemont Formation. In the area south and west of Chicago, the Wadsworth Formation overlaps the Yorkville Member, and the boundary between the two units is not always distinct. However, because Wadsworth diamicton occurs at a stratigraphic position above the upper, coarser grained Lemont diamicton in that area (Johnson and Hansel 1989), the two units are classified in separate formations. The Wadsworth Formation pinches out beneath the Kewaunee Formation, which crops out along the lake basin north of Milwaukee, Wisconsin, and Muskegan, Michigan, and beneath sediment in the northern three-quarters of Lake Michigan.

Diamicton of the Kewaunee Formation is reddish. It generally contains 45% to 50% silt in the matrix, which ranges from silty clay to silt loam. Mickelson et al. (1984) defined the Kewaunee Formation and subdivided it into members on the basis of diamicton lithology and stratigraphic position. They found that the matrix grain size of the Kewaunee diamicton is progressively coarser for each member. Diamicton of the lowermost member has the finest grain size and that of the uppermost member is the coarsest. In this report, we classify the red diamicton units beneath Lake Michigan and defined by Lineback et al. (1974) as members of the Kewaunee Formation. They include the Shorewood, Manitowoc, and Two Rivers Members (fig. 7).

MASON GROUP

Intertonguing with the Wedron Group diamicton formations are the Mason Group sorted-sediment formations, the Roxana and Peoria Silts and Henry and Equality Formations (figs. 2, 9). They are distinguished predominantly on the basis of grain size and bedding characteristics.

The basal formation of the Mason Group is the Roxana Silt (fig. 2), a unit that generally lacks bedding structures, except for color zonation. It is red brown to red gray and appears massive in exposures. The Roxana Silt, which commonly has the Farmdale Geosol developed in its upper part, occurs above the Sangamon Geosol, which is developed in units of the Illinois or pre-Illinois episodes. Although a glacial sediment source for the Roxana Silt is not definitely known, the silt is dominantly loessal and clearly valley-related. It has a distribution similar to that of the Peoria Silt along the ancient Mississippi Valley in central Illinois (McKay 1979b, Johnson and Follmer 1989). Tongues of the Henry and Equality Formations may interfinger with the Roxana Silt, but such relationships are not known

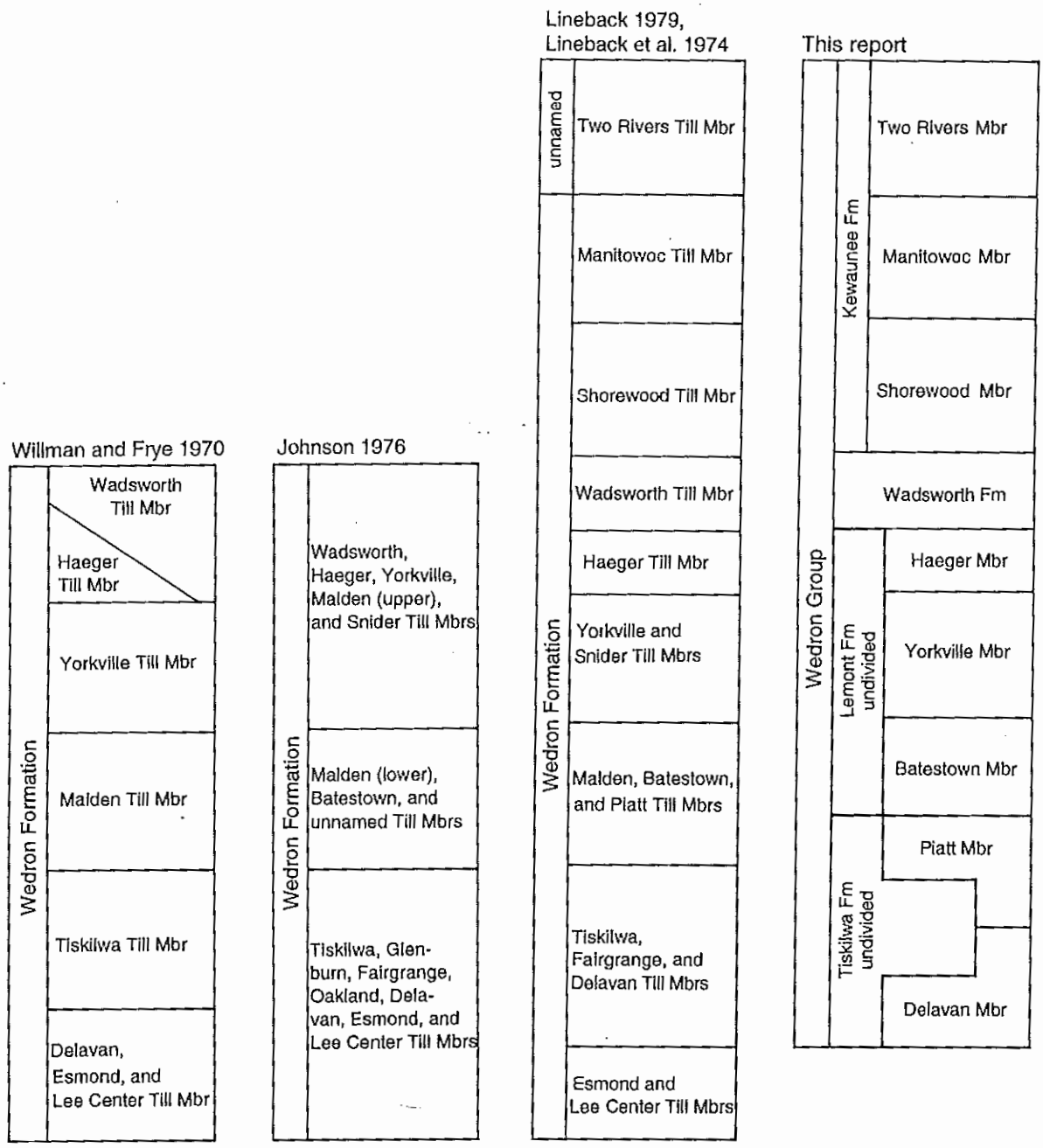


Figure 7 History of lithostratigraphic classification of the Wedron Group deposits.

to be common. One new member of the Roxana Silt is the Robein Member, which was formerly classified as a formation by Willman and Frye (1970). The Robein Member is distinguished from the rest of the Roxana Silt by the presence of stratification; it is characteristically brown to black and rich in organic matter. The Markham, McDonough, and Meadow Members of Willman and Frye (1970) are retained.

Unlike the Roxana Silt, the other four formations of the Mason Group intertongue with deposits of the Wedron Group and/or with each other (fig. 2). They record closely associated proglacial sedimentary environments that migrated as the ice margin fluctuated during the last glacial episode.

The Peoria Silt consists of yellow tan to gray silt that generally lacks bedding structures and appears massive in exposures. The Morton and Richland Loesses, formerly classified by Willman and Frye (1970) as formations separated from the Peoria Loess by arbitrary vertical boundaries along the outer limit of the Wedron Formation, are recognized in this report as lower and upper tongues, respectively, of the Peoria Silt (fig. 9a). The lower tongue is given a formal name, the Morton Tongue, whereas the upper tongue is treated informally and the name Peoria Silt is recommended for the unit beyond and above the Wedron Group.

As originally defined (Willman and Frye 1970), the Henry and Equality Formations were essentially lithogenetic units. The Henry Formation was defined as glacial outwash that is dominantly sand and gravel. The Equality Formation was defined as glacial lake sediment, generally well

bedded, that ranges in grain size from clay and silt deposited in relatively deep-water environments (Carmi Member) to sand and gravel deposited in near-shore environments (Dolton Member). In this report, the descriptions of these two formations are changed to remove the genetic connotations. The Henry Formation consists predominantly of bedded sand and gravel, and the Equality Formation predominantly of bedded silt and clay. In places the Henry and Equality Formations interfinger. As redefined, sand and gravel units formerly classified as the Dolton Member of the Equality Formation are now part of the Henry Formation, and they can be designated informally as a near-shore lacustrine facies. Therefore, the Dolton Member of the Equality Formation is abandoned as a formal unit, and for reasons of synonymy with the formation, the Carmi Member is also abandoned. These revisions open the possibility for subdividing the Equality Formation on the basis of lithostratigraphy.

The Henry Formation was subdivided into members by Willman and Frye (1970) predominantly on the basis of morphogenetic units that had fairly distinct lithologies. For example, the Wasco Member was defined as ice-contact sand and gravel deposits occurring mostly in kames, eskers, and deltas; the deposits are characterized by lateral and vertical variation in grain size, sorting, bedding, and structure. By contrast, the Mackinaw Member was defined as outwash deposited in valleys; it is more uniform in texture than other Henry Formation members, and it consists predominantly of sandy gravel or pebbly sand. The Batavia Member was differentiated as an upland outwash unit deposited along the fronts of moraines; the sand and gravel of this unit is characterized by vertical and lateral variation in grain size. Because in this classification we define lithostratigraphic units on the basis of their lithic characteristics and stratigraphic position, we recommend the morphogenetic-based units of the Henry Formation defined by Willman and Frye (1970) be treated informally. They do have useful applications in understanding glacial history and in mapping glacial deposits.

The Peddicord Formation of Willman et al. (1971) is not retained at formation rank. Instead, the unit is recognized as a formal tongue of the Equality Formation (fig. 9c). The Peddicord Tongue occurs, generally in valley fills, beneath the Tiskilwa For-

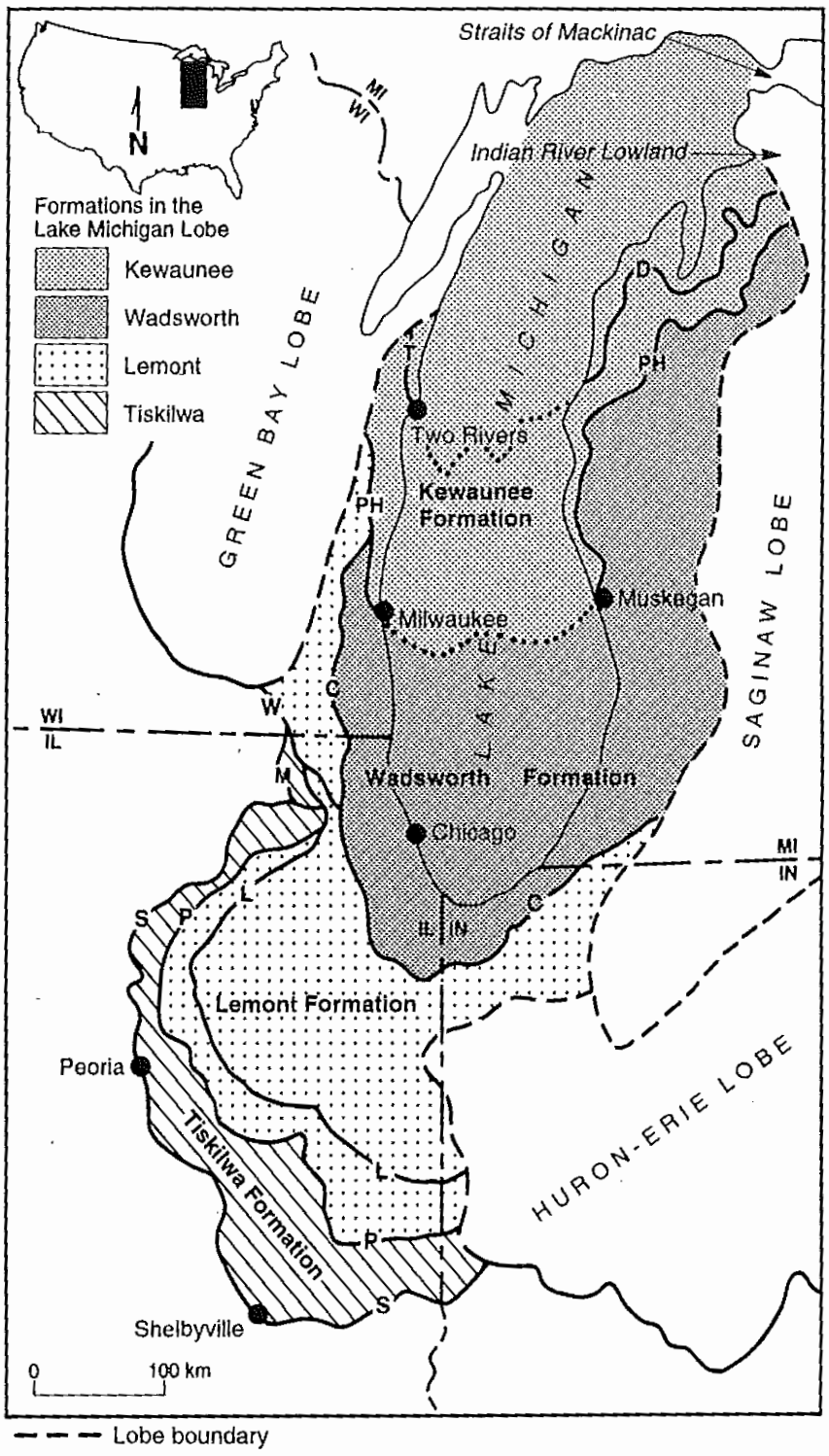


Figure 8 Surface distribution of the Tiskilwa, Lemont, Wadsworth, and Kewaunee Formations (and equivalent units) of the Wedron Group. Also shown are the maximum ice-margin positions during glacial phases in the Lake Michigan Lobe: Marengo (M), Shelby (S), Putnam (P), Livingston (L), Woodstock (W), Crown Point (C), Port Huron (PH), and Two Rivers (T) (modified from Hansel and Johnson 1992; boundaries in Lake Michigan after Foster and Colman 1992).

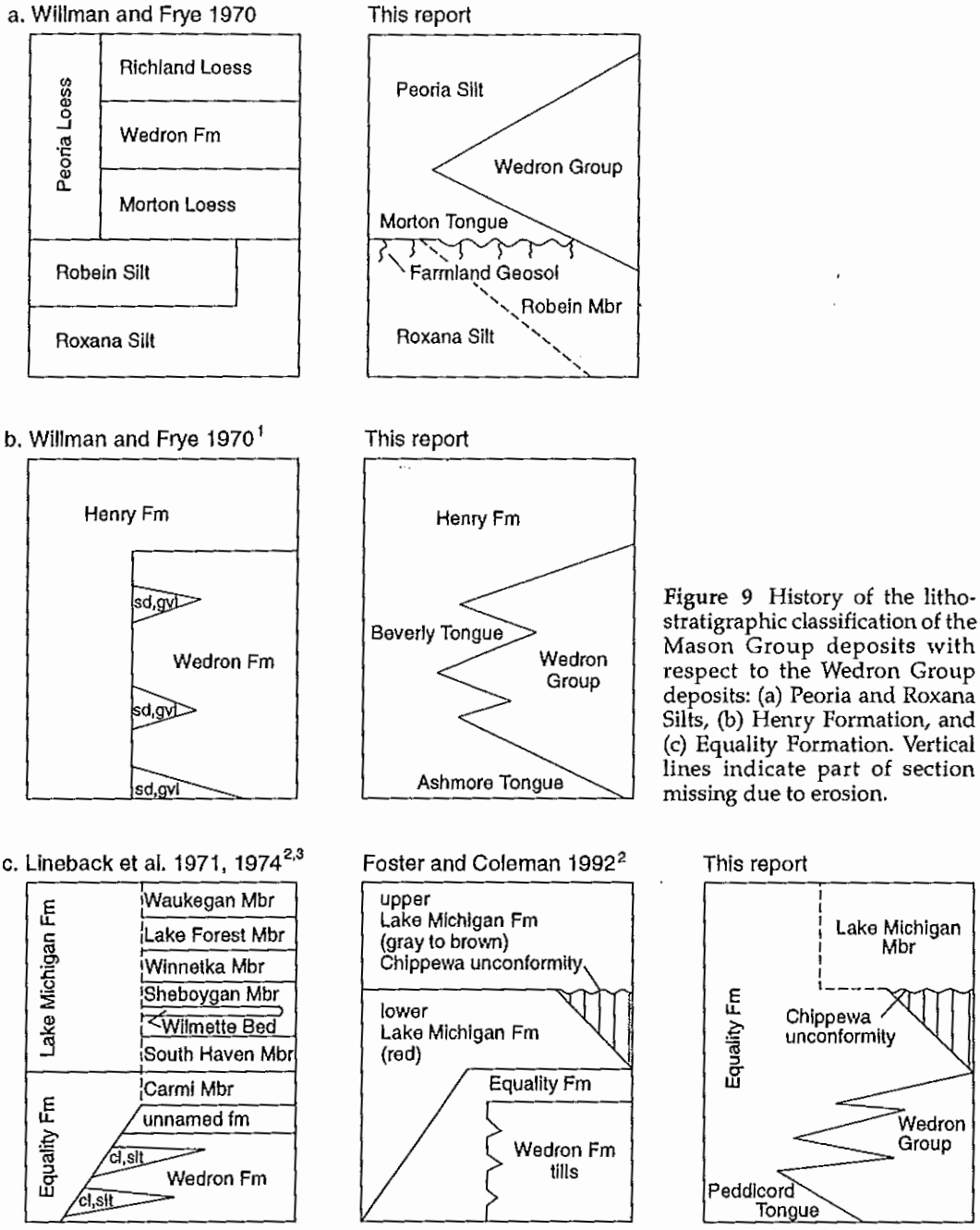


Figure 9 History of the lithostratigraphic classification of the Mason Group deposits with respect to the Wedron Group deposits: (a) Peoria and Roxana Silts, (b) Henry Formation, and (c) Equality Formation. Vertical lines indicate part of section missing due to erosion.

[1]Mackinaw, Batavia, and Wasco Members of Henry Formation not shown.
[2]In Lake Michigan.
[3]Ravinia Sand Member of Lake Michigan Formation and Dolton Member of Equality Formation not shown.

mation of the Wedron Group. At the same stratigraphic position, a formal tongue of the Henry Formation, the Ashmore Tongue (name from Ford 1973), is also recognized (fig. 9b).

The Lake Michigan Formation was defined by Willman and Frye (1970) to consist of the surficial lacustrine deposits and beach sediment (Ravinia Sand Member) of modern lakes. On the basis of color, grain size, mineralogy, water content, and presence or absence of black beds or black mottling in 22 sediment cores taken from bottom sediment of southern Lake Michigan, Lineback et al. (1970) differentiate five more members (two red and three gray) and one bed. Colman and Foster (1990), who collected 55 cores from beneath Lake Michigan, were unable to consistently distinguish among the five members defined by Lineback et al. (1970); instead, they (Foster and Colman 1991) informally divided the Lake Michigan Formation into only two units (a lower, red unit and an upper, gray unit), which are separated by the Chippewa unconformity (Hough 1955, 1958) in shallow water and by a gradational color change in the deep bathymetric basins (fig. 9c). On the basis of high-resolution seismic-reflection profiles and seismic facies analysis, Foster and Colman (1991) interpreted the lower Lake Michigan Formation to be a distal facies of the more ice-proximal Equality Formation of Lineback et al. (1970) and Wickham et al. (1978). Fos-

ter and Colman (1991) suggested changes in rank and nomenclature were needed. In this report, the Lake Michigan Formation is downgraded in rank to a member of the Equality Formation, and the members and bed defined by Willman and Frye (1970) and Lineback et al. (1970) are dropped as formal lithostratigraphic units. The Lake Michigan Member is defined as the uppermost unit of the Equality Formation. The member occurs beneath Lake Michigan above the Chippewa unconformity and/or red, clay-rich sediment of the undivided Equality Formation (fig.9c). Like the stratified sand and gravel of the former Dolton Member, that of the Ravinia Sand Member is classified in this report as a facies (nearshore lacustrine) of the Henry Formation.

The Parkland Sand, as defined by Willman and Frye (1970), consists of windblown sand in dunes and sheet-like deposits between and bordering the dunes. In this report, the Parkland Sand is not retained as a formal unit. The well sorted, medium to fine grained sand, interpreted to be windblown, is included as an informal facies of the Henry Formation or a sandy facies of the Peoria Silt. The Parkland facies commonly occurs above glacial and postglacial fluvial and lacustrine sand and gravel of the Henry Formation and represents a reworked eolian facies of the Henry Formation. Where it interfingers or interbeds with the Peoria Silt, the Parkland facies may be more appropriately classified as a sandy facies of the Peoria Silt.

Other surficial formations defined by Willman and Frye (1970) (i. e., the Cahokia Alluvium, Grayslake Peat, Lacon Formation, and Peyton Colluvium) intertongue among themselves and sometimes with formations of the Mason Group. These postglacial units are not the subject of this report, but we recommend those with lithogenetic names be renamed (e. g., the Cahokia Alluvium to the Cahokia Formation and the Peyton Colluvium to the Peyton Formation). Future studies and mapping projects will address the reclassification of these units.

SUMMARY OF REVISIONS

Recent studies indicate the Sangamon Geosol is developed in deposits of the Winnebago Formation and the Lee Center and Esmond Till Members of the Wedron Formation. These units are no longer classified as the Wisconsinan Stage (Berg et al. 1985, Follmer and Kempton 1985, Curry and Kempton 1985). This change leaves the loess of the Roxana Silt as the main record for the early and middle parts of the Wisconsin Episode in Illinois, although deposits of the Equality and Henry Formations are also present in some basins and valleys (Curry 1989). The Roxana Silt is classified with the sorted sediment of the Mason Group. The Robein Silt is lowered in rank to a member of the Roxana Silt.

The Wedron Formation is raised to group rank (fig. 7); its upper boundary is extended to include the Two Rivers Member of the Kewaunee Formation in the Lake Michigan Lobe area. The Tiskilwa Till Member is raised to formation rank (Tiskilwa Formation); its lower boundary is extended to include gray diamicton formerly included in the Delavan and Fairgrange Till Members. The Delavan Till Member is classified as a formal unit (Delavan Member) in the Tiskilwa Formation, and the Fairgrange, Glenburn, and Oakland Till Members are dropped. The upper boundary of the Tiskilwa Formation is also extended to include gray diamicton formerly classified in the Piatt and Malden Till Members. The Piatt Till Member is retained as a formal unit (Piatt Member) in the Tiskilwa Formation, and the Malden Till Member is dropped.

The Lemont drift (Bretz 1939, 1955) is redefined as the Lemont Formation of the Wedron Group. In addition to the Lemont drift, the Lemont Formation includes deposits formerly included in the Batestown, Snider, Malden, Yorkville, and Haeger Till Members. The Batestown, Yorkville, and Haeger Till Members are retained as formal units (Batestown, Yorkville, and Haeger Members) in this revision, but they are included in the Lemont Formation. The lower boundary of the Yorkville Member is extended to include some diamicton units formerly included in the Snider and Malden Till Members. The latter two members are dropped.

The Wadsworth Till Member is raised to formation rank (Wadsworth Formation); it is not formally subdivided into members. The Kewaunee Formation (Mickelson et al. 1984) is recognized as the uppermost formation in the Wedron Group. Beneath Lake Michigan, the Kewaunee Formation consists of the Shorewood, Manitowoc, and Two Rivers Members. These units were formerly the Shorewood and Manitowoc Till Members of the former Wedron Formation and the Two Rivers Till Member of an unnamed formation. They were defined by Lineback et al. (1974) as tills that occur beneath Lake Michigan.

The Peoria Loess is renamed the Peoria Silt and classified with the sorted sediment of the new Mason Group. The Morton and Richland Loesses are not retained as units of formation rank in the present revision. Instead, they are included as tongues of the Peoria Silt that interfinger with parts of the Wedron Group. The lower tongue is formalized as the Morton Tongue, whereas the name Peoria Silt is applied to the unit beyond and above the Wedron Group (fig. 9a). The definitions of the Henry and Equality Formations are also modified to remove the genetic connotations. The Ashmore and Beverly Tongues are formalized as part of the Henry Formation, and the Peddicord Tongue is formalized as part of the Equality Formation. The Ashmore and Peddicord Tongues occur stratigraphically below the Tiskilwa Formation of the Wedron Group (fig. 9b, c); the Beverly Tongue occurs below the Haeger Member of the Lemont Formation. The fine grained, red, laminated sediment of the former Lake Michigan Formation is included in the Equality Formation, and the upper gray, laminated sediment is recognized as the Lake Michigan Member. The former members of the Lake Michigan Formation are not retained as formal lithostratigraphic units. The former members of the Henry and Equality Formations and the Parkland Sand were defined on the basis of genesis and/or morphology; therefore, they are not retained as formal members in this classification. This does not negate the utility of those units, however, and the names Batavia, Mackinaw, Wasco, Dolton, and Parkland will likely continue to be applied informally to the sedimentary facies for which they were intended. The Roxana and Peoria Silts and the Henry and Equality Formations are classified as formations in the new Mason Group.

DEFINITION OF LITHOSTRATIGRAPHIC UNITS

The lithostratigraphic units of the Wedron and Mason Groups are defined and/or revised below according to the guidelines set forth in the North American Stratigraphic Code (NACSN 1983). Definition is the original naming and description of a unit. Redefinition is a correction or change in the descriptive term applied to a stratigraphic unit; redefinition does not require a new geographic term. Redescription corrects an inadequate or inaccurate description. Revision involves either minor changes in the definition of one or both boundaries, or in the unit's rank. Reclassification applies when the hierarchical unit with which a subunit is classified changes, but the subunit's rank and name remain the same. Definition, redefinition, revision, or abandonment of a formal unit requires publication of a comprehensive statement that includes the following: (1) the intent to designate or modify a formal unit, (2) designation of category and rank of unit, (3) selection and derivation of name, (4) specification of type section or type locality, (5) description of unit, (6) definition of boundaries, (7) historical background, (8) dimensions, shape, and other regional aspects, (9) geologic age, (10) correlations, and (11) genesis, where applicable (NACSN 1993, p. 851). References for and revisions of formerly published reference sections and their locations, as well as descriptions of new reference sections presented below, are included in appendix C.

WEDRON GROUP

Status

Revised unit. Elevated in rank from the Wedron Formation (Frye et al. 1968, Willman and Frye 1970); upper boundary extended to top of the Two Rivers Member of the Kewaunee Formation (Mickelson et al. 1984); the Esmond and Lee Center Till Members now classified as the Glasford Formation (Berg et al. 1985).

Source of name Wedron, a village along the Fox River in La Salle County, northeastern Illinois.

Original name Wedron Formation (Frye et al. 1968).

Type section Wedron Section, Wedron Silica Company quarries at Wedron, Illinois; good for lower boundary and lithology (Tiskilwa Formation and lower part of Lemont Formation). Original section was destroyed by mining.

Principal reference sections

Farm Creek Section and Higginsville Section; good for lower boundary and lithology (Tiskilwa Formation). Land and Lakes Landfill Section; good for lithology (upper part of Lemont Formation and Wadsworth Formation). Cedarburg Lake Bluff Section and Kewaunee Section, Wisconsin; good for lithology (Kewaunee Formation and Wadsworth-equivalent Oak Creek Formation).

Definition

The Wedron Group comprises a succession of diamicton formations that interfinger with sorted-sediment formations of the Mason Group. The succession is subdivided from the base upward into the Tiskilwa, Lemont, Wadsworth, and Kewaunee Formations (fig. 7).

Background

The Wedron Formation was originally defined by Frye et al. (1968), and later subdivided into members by Willman and Frye (1970; fig. 4b). Frye et al. defined the Wedron Formation as the succession of diamictons and associated sediments from the contact of the Morton Loess (or the Robein Silt in the absence of the Morton Loess) to the top of the diamicton below the Two Creeks deposit at Two Creeks, Wisconsin. Because several units within the succession are now recognized as formations (i. e., the Tiskilwa, Lemont, and Wadsworth), the Wedron is raised in rank to group status. Accepting the lithostratigraphic framework established for the Lake Michigan Lobe in Wisconsin by Mickelson et al. (1984), we classify the red till members (the Shorewood, Manitowoc, and Two Rivers) identified in Lake Michigan by Lineback et al. (1974) as members of the Kewaunee Formation of Wisconsin. The upper boundary of the original Wedron Formation is thus extended to include the Two Rivers Member of the Kewaunee Formation as part of the Wedron Group (fig. 7). Although the Wedron Group is defined on the basis of deposits in Illinois and Lake Michigan, the group also provides a useful regional concept (figs. 8, 11).

Description

The Wedron Group consists of multiple diamicton units that contain lenses of clay, silt, sand, gravel, and occasionally humic material and wood. It intertongues with sorted-sediment units of the Mason Group (fig. 2), most commonly the Peoria Silt and Henry and Equality Formations (figs. 9, 12). The succession contains considerable lithic heterogeneity among diamicton units. Matrix texture of diamicton ranges from fine to coarse, and the percentage of gravel-sized clasts ranges from about 2% to 5% in fine grained diamicton to up to 20% in coarse grained diamicton. Matrix diamicton color ranges from gray to

Wisconsin		Illinois and Lake Michigan		Indiana	Michigan
Kewaunee Fm	Two Rivers Mbr	Kewaunee Fm	Two Rivers Mbr		Orchard Beach till
	Valders Mbr		Manitowoc Mbr		Riverton till
	Haven Mbr				
	Ozaukee Mbr		Shorewood Mbr		Montague till
Oak Creek Fm		Wadsworth Fm		Wadsworth Till	Saugatauk and Filer till
Holy Hill Fm	New Berlin Mbr	Lemont Fm undivided	Haeger Mbr		Ganges till
	?				?
			Yorkville Mbr	Snider Till	
			Batestown Till Mbr	Batestown Till	
Zenda Fm	Tiskilwa Mbr	Tiskilwa Fm undivided	Platt Mbr	Fairgrange Till	
			Delavan Mbr		

Figure 11 Correlation of the Wedron Group formations and members in the Lake Michigan Lobe area (units in Wisconsin from Mickelson et al. 1984, Mickelson and Syverson, in press; units in Indiana from Bleuer et al. 1983, N.K. Bleuer, Indiana Geological Survey, personal communication, 1994; units in Michigan from Monaghan and Larson 1986, Monaghan et al. 1986, Taylor 1990).

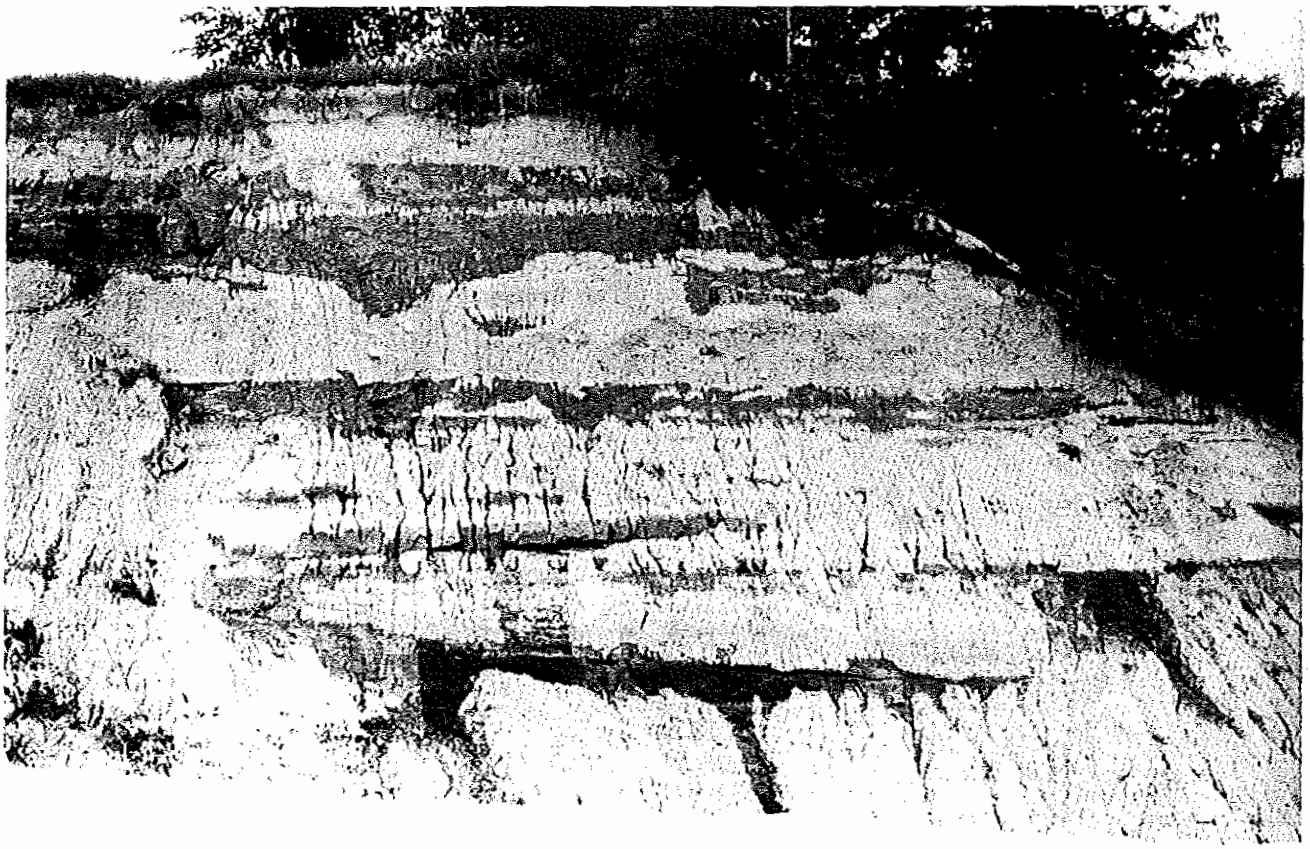


Figure 12 Intertongued sorted-sediment units of the Mason Group and diamicton units of the Wedron Group at Wedron Quarry pit 1. Mason Group units are shaded.

gray brown, red gray, or red brown, and typically oxidizes to olive brown, brown, yellow brown, or red brown. The Wedron Group is subdivided into four formations and eight members in Illinois and Lake Michigan (fig. 7). The entire Wedron Group succession is not known to be present in any one place. From the base upward the ideal succession includes the following:

Tiskilwa Formation consisting of red to gray, medium textured diamicton units;

Lemont Formation consisting of a succession of gray, fine to coarse textured diamicton units;

Wadsworth Formation consisting of gray, fine grained diamicton units;

Kewaunee Formation containing red, fine textured diamicton units.

All the formations contain lenses of sorted sediment and intertongue, at least locally along their margins, with stratified sand and gravel of the Henry Formation and bedded silt and clay of the Equality Formation.

Boundaries

Lower boundary: the contact with the Ashmore Tongue of the Henry Formation, the Peddicord Tongue of the Equality Formation, the Morton Tongue of the Peoria Silt, the Robein Member or undivided Roxana Silt, or older units. Upper boundary: the contact with upper tongues of the Peoria Silt and Henry and Equality Formations, the Trafalgar Formation (fig. 13b), or postglacial units.

Differentiation from other units

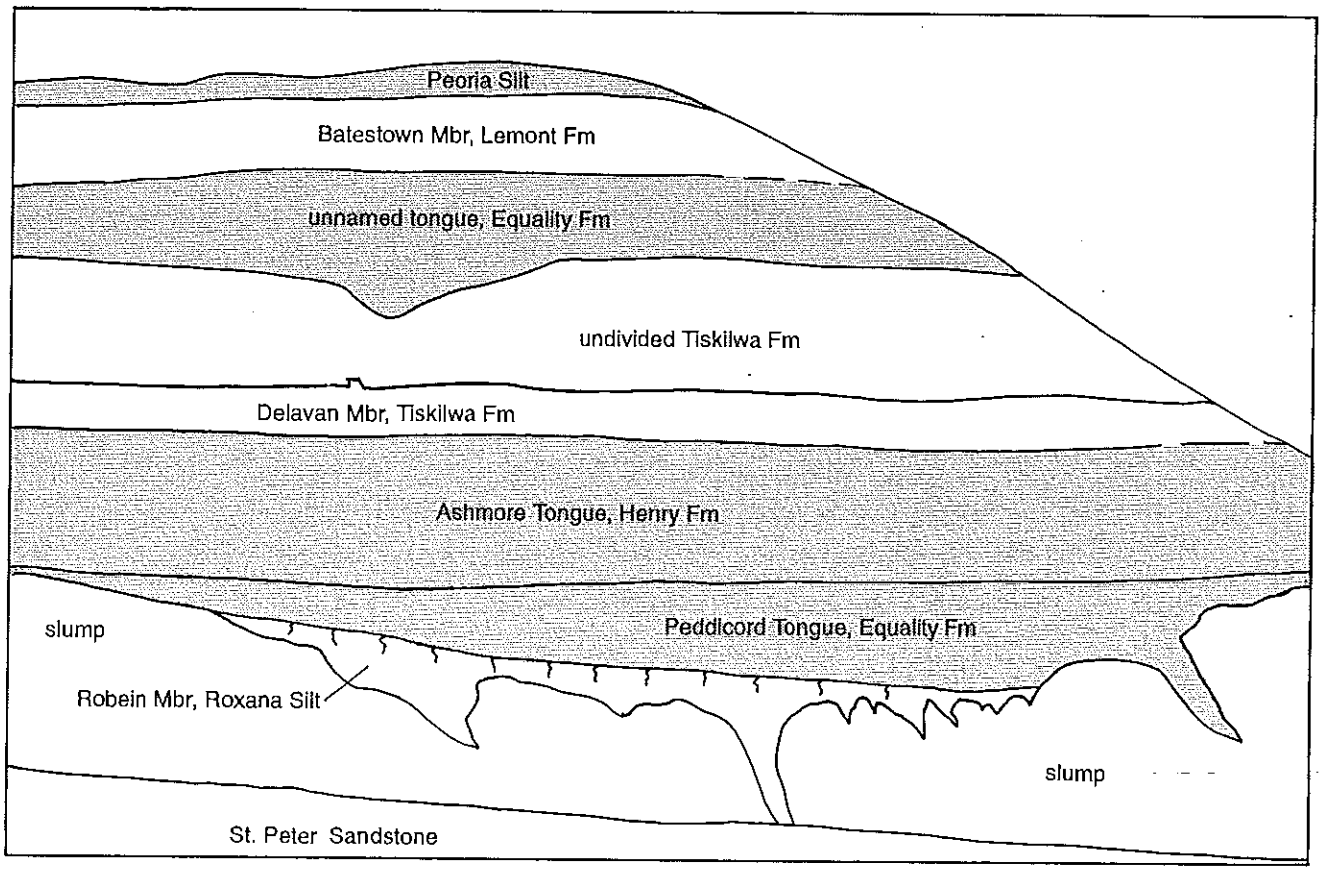
The Wedron Group is readily distinguishable from the sorted-sediment formations of the Mason Group. Diamicton units of the Wedron Group can generally be differentiated from those of the underlying formations on the basis of their lithic characteristics, but in some cases the stratigraphic relationships of Wedron diamicton to key pedostratigraphic units (like the Farmdale or Sangamon Geosols) are necessary. Lenses and bodies of material derived from the underlying units locally occur within the Wedron Group.

Regional extent and thickness

Except for the few areas where bedrock crops out, the Wedron Group is at or near the surface in northeastern Illinois (plate 1), northwestern Indiana, eastern Wisconsin, the western part of the lower peninsula of Michigan, and the Lake Michigan basin (fig. 8). The thickness of the Wedron Group varies. Although the Wedron Group may reach 75 to 90 meters (246–295 ft) thick in some of the larger moraines in Illinois, it averages about 30 meters (98 ft) thick in much of Illinois and locally is less than 1 meter thick in some regions of the Lake Michigan Lobe area.

Origin

The Wedron Group consists predominantly of till that contains lenses of subglacial and supraglacial fluvial, lacustrine, and debris-flow sediment. This sediment together with intertonguing proglacial eolian, lacustrine, and fluvial sediment of the Mason Group makes up multiple glacigenic sequences. The glacigenic sequences have



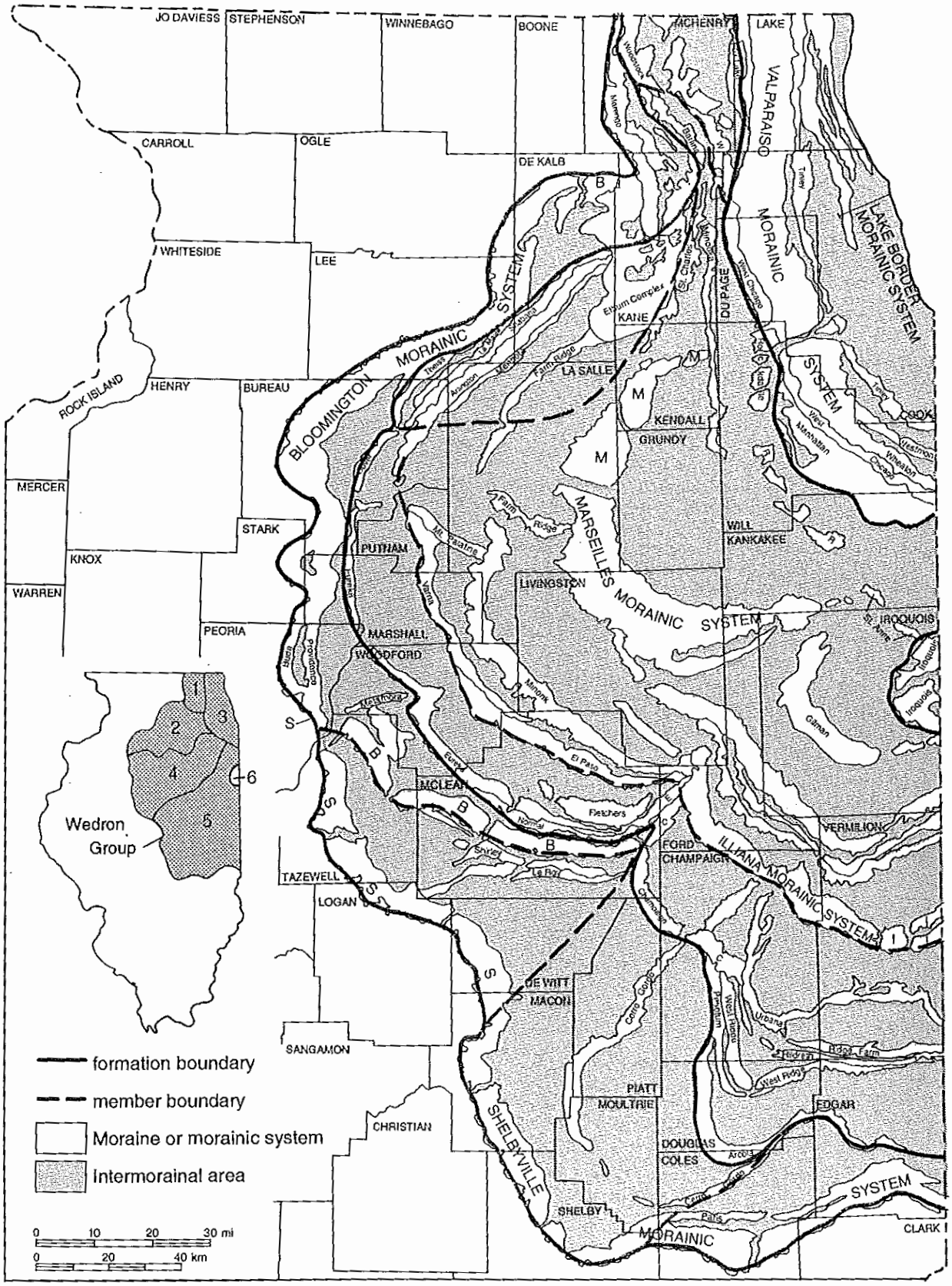


Figure 13a Areal distribution of moraines and boundaries of formations and predominant members of the Wedron Group and the Trafalgar Formation in Illinois. (Names of formations and members are labeled on 13b.) Sublobe areas of the Lake Michigan Lobe and the Huron-Erie Lobe are shown on inset map: (1) Harvard; (2) Princeton; (3) Joliet; (4) Peoria; (5) Decatur; and (6) Huron-Erie (sublobe areas and moraines are modified from Willman and Frye 1970).

a shingled occurrence, and they pinch out in the subsurface beneath younger sequences. Rarely do more than two or three glacigenic sequences occur in succession, and most sections expose only parts of one or two sequences.

Age and correlation

The Wedron Group was deposited during the Michigan Subepisode, between about 26,000 and 11,000 radiocarbon years ago (fig. 10). It correlates with equivalent units of the Lake Michigan Lobe (fig. 11) in Wisconsin (i. e., Tiskilwa Member, Zenda Formation; New Berlin Member, Holy Hill Formation; Oak Creek Formation; and Kewaunee Formation), in Indiana (i. e., Fairgrange, Batestown, Snider, and Wadsworth Tills), and in Michigan (i. e., Ganges, Saugatauk, Filer, Montague, Riverton, and Orchard Beach tills.

Tiskilwa Formation

Status

Revised unit. Elevated in rank from the Tiskilwa Till Member (Willman and Frye 1970); lower boundary extended to include the Delavan Member, originally defined as a separate till member of the Wedron Formation (Willman and Frye 1970); upper boundary extended to include the Piatt Member, originally defined as a member of the Wedron Formation (Wickham 1979a).

Source of name Tiskilwa, a village in Bureau County, northern Illinois.

Original name Tiskilwa Till Member (Willman and Frye 1970).

Type section Buda East Section, located in a roadcut 5 miles (8 km) east of Tiskilwa. No longer exposed.

Principal reference sections

Wedron Section (fig. 12); good for upper and lower boundaries and lithology. Danvers Section; good for lower boundary and lithology. Higginsville Section (fig. 14); good for upper and lower boundaries and lithology.

Definition

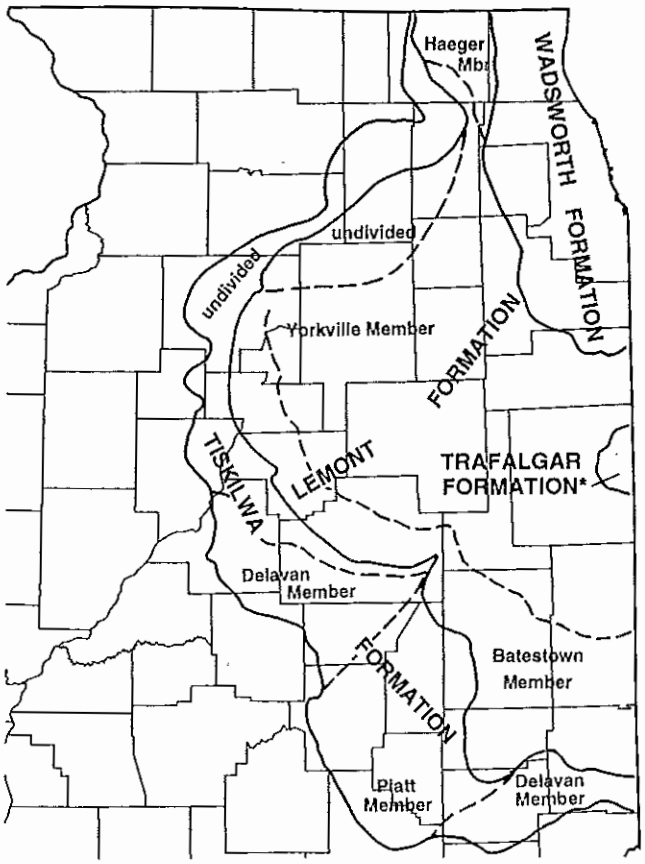
The Tiskilwa Formation is the lowermost sequence of red to gray diamicton units of the Wedron Group. Two grayer diamicton members (a lower Delavan Member and an upper Piatt Member) are differentiated from the main body of red gray diamicton (fig. 7).

Background

The Tiskilwa Till Member was originally defined by Willman and Frye (1970) and described as the pink till member of the Wedron Formation. The Tiskilwa Till Member has become a fundamental unit in describing and interpreting the geology in the area of the Lake Michigan Lobe. It is readily recognized by its red or pink hues. It is the thickest and volumetrically the most extensive unit of the Wedron in Illinois (Wickham and Johnson 1981, Wickham et al. 1988).

The relationship of the lower tills of the Wedron Group across the Decatur-Peoria Sublobe boundary area stimulated further study in the 1970s, probably in part because Willman and Frye (1970) did not subdivide the Wedron Formation in the Decatur Sublobe area (fig. 4a). With the exception of Chamberlin (1883, 1894), Leverett (1899), and Leverett and Taylor (1915), many geologists (Leighton et al. 1948, Horberg and Anderson 1956, Anderson 1955, 1957, Leighton 1960, Frye et al. 1965, Willman and Frye 1970, Frye and Willman 1973, Dreimanis and Goldthwait 1973) attributed the drift of the Decatur Sublobe area to a more eastern source than the Lake Michigan basin. This interpretation was mainly based on moraine configurations. Studies of the tills across the sublobe-boundary area, however, indicate lithologic similarities between tills of the Peoria and Decatur Sublobes (Wascher and Winters 1938, Newell 1954, Kempton et al. 1971). McKay (1975) and Moore (1981) argued that till members are continuous across the sublobe boundary and were deposited by the Lake Michigan Lobe. A Lake Michigan Lobe source for the till members in the Decatur Sublobe area is also indicated from recent provenance studies (Bleuer 1975, Johnson et al. 1986).

In the decade that followed the publication of *Pleistocene Stratigraphy of Illinois* (William and Frye 1970), six till members and one nontill member were differentiated within the Wedron Formation in the area of the Decatur Sublobe. They include the Glenburn, Batestown, and Snider Till Members (Johnson et al. 1971b); the Oakland and Fairgrange Till Members and the Ashmore Member (Ford 1973); and the



*not part of Wedron Group

Figure 13b Names of Wedron Group formations and members in Illinois.

Piatt Till Member (Wickham 1979a). All of these except the Glenburn and Oakland Till Members and the Ashmore Member were recognized on the state Quaternary map compiled by Lineback in 1979 (fig. 5).

In 1976, Johnson correlated the Glenburn, Oakland, and Fairgrange Till Members of east-central Illinois (Decatur Sublobe) with the Tiskilwa and Delavan Till Members of central and northern Illinois (fig. 7). He suggested these units formed a lower, medium-textured group of Wedron Formation till members. (The Lee Center Till Member of northeastern Illinois was also included in this group, but it has since been interpreted to underlie the Sangamon Geosol [Follmer and Kempton 1985]).

On the basis of the preceding work and in an attempt to simplify the classification system that evolved for the lower part of the Wedron Group, we elevate the Tiskilwa Member to a formation that includes two lithologically related, mappable subunits (figs. 7, 13). They are (1) the Delavan Member, proposed by Willman and Frye (1970), which is expanded in concept and regional extent to include the former Glenburn, Oakland, and Fairgrange Till Members of the Decatur Sublobe area; and (2) the Piatt Member, proposed by Wickham (1979a). The Ashmore Member, proposed by Ford (1973), is recognized herein as the Ashmore Tongue of the Henry Formation.

Where undivided, the Tiskilwa Formation consists predominantly of red and pink loam to clay loam diamicton. Diamicton of the Delavan Member is more gray and considered a lithologic variant of the main diamicton of the Tiskilwa Formation. It occurs stratigraphically below (in the Princeton, Harvard, and northern part of the Peoria Sublobe areas) or replaces (in the southern part of the Decatur and Peoria Sublobe areas) the main pink diamicton of the Tiskilwa Formation (fig. 13). The Piatt Member, a sandier, grayer facies of the Tiskilwa Formation, occurs stratigraphically above the Delavan Member in part of the Decatur Sublobe area (figs. 7, 13).

The Oakland Till Member proposed by Ford (1973) is replaced herein by the Oakland facies, a lithologic variant of the Delavan Member or the undivided Tiskilwa Formation. Diamicton of the Oakland facies is browner, siltier, more abundant in expandable clay minerals, and generally more variable than typical diamicton of the Tiskilwa Formation (Johnson et al. 1972, Ford 1973, Johnson 1976). It is a discontinuous, basal facies of the Tiskilwa Formation; thicknesses up to about 4 meters were reported from exposures and cores in east-central Illinois (Johnson et al. 1972, Ford 1973, Johnson 1976). Ford (1973) attributed the browner color and distinct clay-mineral composition of the Oakland diamicton to glacial incorporation of the Roxana Silt, including the organic-rich Robein Member.

Description

The Tiskilwa Formation consists of calcareous, red gray to gray, medium textured (clay loam to loam) diamicton that contains lenses of gravel, sand, silt, and clay. Typically, it oxidizes to red brown, brown, or yellow brown.

Boundaries

Lower boundary: the contact with the Ashmore Tongue of the Henry Formation, the Peddicord Tongue of the Equality Formation, the Morton Tongue of the Peoria Silt, the Robein Member or undivided Roxana Formation (in which the Farmdale Geosol is developed), or older units. Upper

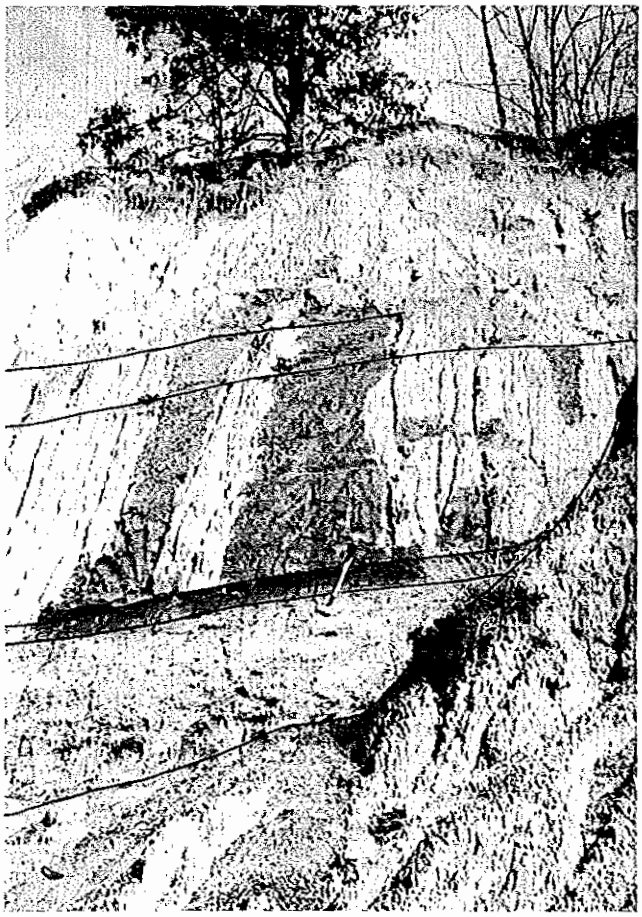


Figure 14 The Yorkville and Batestown Members of the Lemont Formation, Delavan Member of the Tiskilwa Formation, Robein Member of the Roxana Silt, and Glasford Formation at Higginsville Section.

boundary: the contact with the Batestown, Yorkville, or Haeger Members of the Lemont Formation, upper tongues of the Peoria Silt and Henry and Equality Formations, or postglacial units.

Differentiation from other units
Diamicton of the Tiskilwa Formation is readily distinguishable from sorted sediment of the Mason Group. In places in the subsurface, the contact with the organic-rich Robein Member of the Roxana Silt is a distinctive marker for recognizing the base of the Tiskilwa Formation. Where the Tiskilwa Formation overlies older diamicton units, the units can usually be differentiated on the basis of lithology. Where present, the Sangamon Geosol helps to differentiate these older diamicton units from those of the Tiskilwa Formation. Lenses of the underlying units may be within the Tiskilwa Formation, particularly the basal part, but they are usually accompanied by evidence of subglacial deformation. Locally, the Oakland facies may be present as a basal diamicton facies. Diamicton of the Tiskilwa Formation generally contains more clay and is redder than that of the overlying Batestown Member of the Lemont Formation. In some areas where the Delavan or Piatt Members are in contact with the Batestown Member, however, the lithologies of these units are quite similar, and arbitrary boundaries along the outer margins of moraines may be necessary to separate the units for mapping purposes.

Regional extent and thickness
The Tiskilwa Formation forms a wedge-shaped deposit that pinches out beneath the Lemont Formation to the north and east (fig. 13). It is volumetrically the largest formation of the Wedron Group in Illinois. It forms the surface unit in the outermost moraines of the Harvard, Princeton, Peoria, and Decatur Sublobe areas in Illinois, where in some places it reaches thicknesses up to 90 meters (295 ft) (Wickham et al. 1988).

Origin
The Tiskilwa Formation consists of part(s) of one or multiple glacigenic sequences. Over much of Illinois the glacigenic sequences represented by the Tiskilwa Formation and the interfingered tongues of the Peoria Silt and Henry and Equality Formations appear fairly complete (e. g., Wedron Section), suggesting that deposition clearly dominated over erosion in the marginal areas of the Lake Michigan Lobe during the Michigan Subepisode (Johnson and Hansel 1990).

Age and correlation
The Tiskilwa Formation was deposited during the early part of the Michigan Subepisode (Marengo and Shelby Phases) between about 26,000 and 18,500 radiocarbon years ago (Hansel and Johnson 1992). The Lake Michigan Lobe advanced to its maximum position in the Harvard Sublobe area (Marengo Moraine) about 25,000 radiocarbon years ago; it reached its maximum position in the Princeton, Peoria, and Decatur Sublobe areas (Bloomington and Shelbyville Morainic Systems) about 20,000 radiocarbon years ago before it wasted back about 50 kilometers (31 mi; fig. 10). The Tiskilwa Formation correlates with the Tiskilwa Member of the Zenda Formation in Wisconsin (fig. 11) and the Fairgrange Till in Indiana.

Delavan Member

Status
Reclassified unit. Name changed to the Delavan Member, unit classified as part of the Tiskilwa Formation, and unit description broadened to include lithologically similar and stratigraphically equivalent diamicton (Fairgrange, Oakland, and Glenburn Till Members of the Decatur Sublobe area). Formerly classified as the Delavan Till Member of the Wedron Formation (Willman and Frye 1970).

Source of name Delavan, a village in Tazewell County, central Illinois.

Original name Delavan Till Member (Willman and Frye 1970).

Type section Roadcuts along Illinois Highway 121, 4 miles (6.4 km) east of Delavan. No longer exposed.

Principal reference sections
Danvers Section; good for boundaries and lithology. Farm Creek Section; good for lower boundary and lithology. Wedron Section (fig. 12) and Higginsville Section (fig. 14); good for boundaries and lithology.

Definition
The Delavan Member consists of the lower gray to brown or violet gray loam diamicton beds of the Tiskilwa Formation. Locally the Delavan Member is pinkish and similar to the undivided Tiskilwa Formation. Diamicton of the Delavan Member oxidizes to brown, yellow brown, or pink.

Background
The Delavan Till Member was originally defined by Willman and Frye (1970); it was described as gray, silty, illitic till of the Peoria Sublobe area and up to 200 feet (61 m) thick in the Shelbyville Morainic System (fig. 13). In earlier reports diamicton of the Delavan Till Member was often referred to as Shelbyville till or drift (e. g., Frye et al. 1962).

In 1970, Willman and Frye did not subdivide the Wedron Formation into members in the Decatur Sublobe area (fig. 4), but in the decade that followed six till members and one nontill member of the Wedron Formation were defined for that area (Johnson et al. 1971b, Ford 1973, Wickham 1979a). In 1976, Johnson correlated three of the till members of the Wedron Formation of the Decatur Sublobe area (the Glenburn, Oakland, and Fairgrange Till Members) with the Tiskilwa and Delavan Till Members of the Peoria Sublobe area. These three units formed a lower, medium-textured group of Wedron tills (fig. 7).

The Glenburn Till Member was defined by Johnson et al. (1971b) as a brownish gray, loam till that oxidizes to a distinct brown or pink. It was defined in the Danville region, where it is primarily a subsurface unit. Although Johnson et al. (1971b) believed it to be part of the Woodfordian Substage and to correlate with subsurface Woodfordian tills to the west (Kempton et al. 1971), a radiocarbon age of 38,000 years for wood from near the base of the unit left its age equivocal.

The Fairgrange Till Member was defined by Ford in 1973 and described as an olive brown to light brownish gray, loam till that is sometimes pinkish; its type locality is in the Charleston Stone Quarry pits. Ford (1973) suggested the Fairgrange Till Member correlated with the Tiskilwa

Origin
The Piatt Member consists of till and ice-marginal, redeposited sediment. Locally, it appears to be part of the same glacigenic sequence as the Delavan Member; in these places a conformable contact between the Piatt and Delavan Members suggests that the two tills were deposited during a single glacial event.

Age and correlation
The Piatt Member was deposited during the Shelby Phase of the Michigan Subepisode, probably between about 19,000 and 18,500 radiocarbon years ago (Hansel and Johnson 1992; fig. 10). It likely correlates with the upper grayer facies of the undivided Tiskilwa Formation in some areas of Illinois.

Lemont Formation

Status
Revised unit. Elevated to formation rank; includes the Haeger Member as the uppermost unit; lower boundary extended to include the Batestown and Yorkville Members. Named the Lemont drift in 1939 and defined as a lithostratigraphic unit by Bretz (1955). Retained, but as an informal unit, in Willman and Frye (1970). Correlated with the Haeger Till Member of the Wedron Formation and recommended as a unit of formation rank by Johnson and Hansel (1989).

Source of name Lemont, a village along the south side of the Des Plaines Valley in Cook County.

Original name Lemont drift (Bretz 1939).

Type section Lemont Section, an abandoned quarry about 1 mile (1.6 km) west of Lemont; good for lithology and upper boundary of the undivided Lemont Formation (fig. 18).

Principal reference sections
Wedron Section (fig. 12); good for lower contact and lithology of the Batestown Member. Higginsville Section (fig. 14); good for lower contact and lithology of the Batestown and Yorkville Members. Land and Lakes Landfill Section; good for lithology of the undivided Lemont Formation and upper contact. Beverly Sand and Gravel Pit (fig. 19); good for lithology of the Haeger Member.

Definition
The Lemont Formation of the Wedron Group is the succession of fine to coarse textured, gray diamicton units that overlies the Tiskilwa Formation and underlies the Wadsworth Formation. Three members, each part of different glacigenic sequences, have been differentiated (fig. 7): a lower member of silt loam to loam diamicton (Batestown Member), a middle member of silty clay to silty clay loam diamicton (Yorkville Member), and an upper member of gravelly, sandy loam diamicton (Haeger Member). In the type area southwest of Chicago, the Lemont Formation is not subdivided. It consists of gravelly silt loam to loam diamicton (fig. 20), much of which is derived from the local Silurian dolomite; the uppermost glacigenic sequence and in places parts of lower glacigenic sequences are represented. The Lemont Formation is not subdivided in most of the Princeton Sublobe area (fig. 13a, Lee, De Kalb, Kane, Bureau, La Salle, and Kendall Counties), where diamicton units that are laterally contiguous and likely time equivalent with the Batestown and Yorkville Members are commonly coarser in grain size.

Background
The Lemont drift was recognized early (Bretz 1939) and described in detail (Bretz 1955) as a distinct lithostratigraphic unit that crops out along the Des Plaines and Sag Channels southwest of the Chicago Metropolitan Area. Bretz (1955) named the Lemont a drift rather than a till because of the complex association of abundant washed sediment with till in the unit. Bretz recognized that the

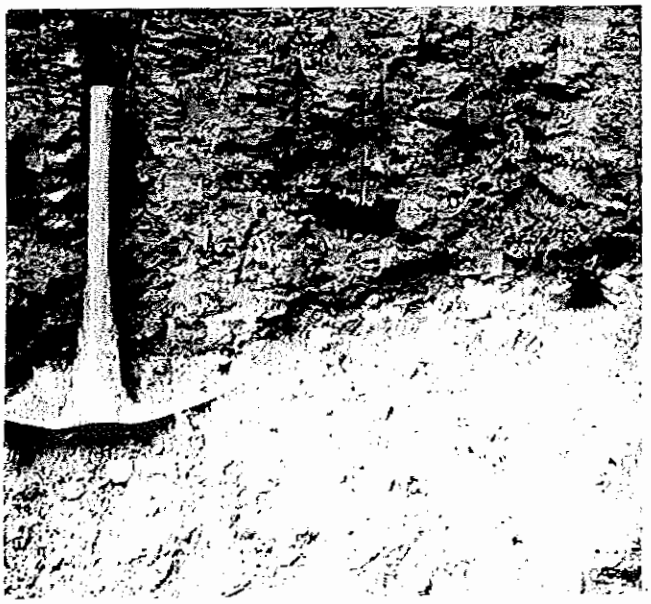


Figure 18 Clayey diamicton of the Wadsworth Formation above oxidized, silty, dolomitic diamicton of the undivided Lemont Formation at the Lemont Section.

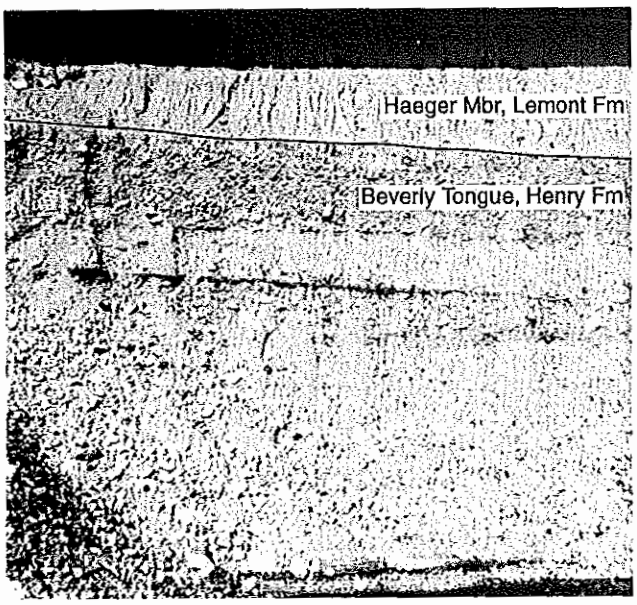


Figure 19 Diamicton (subglacial till) of the Haeger Member of the Lemont Formation overlies the proglacial (ice proximal) sand and gravel of the Beverly Tongue of the Henry Formation at the Beverly Sand and Gravel Pit Section.

Lemont drift was older than the surficial clayey till in the Valparaiso, Tinley, and Lake Border Moraines in the Chicago region, but he was uncertain of its age and relationship to older units in Illinois.

Horberg and Potter (1955) described buried weathered zones in stratified sediment in the upper part of the Lemont drift. Because of the thickness (about 2 m; 6.6 ft) and character of the weathered zone at the Worth Section southwest of Chicago, they interpreted it as fossil soil correlative with the last interglacial paleosol, the Sangamon soil. Thus, they interpreted the Lemont drift to be Illinoian age. Alternatively, Frye and Willman (1960) suggested the weathering profile might correlate instead with the last interstadial paleosol, the Farmdale soil, and therefore concluded the Lemont drift could be Altonian age. Probably because of the uncertainty about its age, Willman and Frye (1970) did not give the Lemont drift formal status when they established a lithostratigraphic classification of Pleistocene units in Illinois. They suggested the Lemont drift, which they retained as an informal unit, could be Illinoian, Altonian, or Woodfordian age. Willman and Frye (1970) observed the Lemont drift was lithologically most like the Haeger Till Member of the Wedron Formation. Bogner (1973) concluded the weathered zones in the Lemont drift, which also occur in the Wadsworth Till Member, could be traced upward along joints to the modern soil. Thus, she concluded the Lemont could be Woodfordian. She correlated the Lemont drift with the Malden Till Member of the Wedron Formation, as had Kempton (Willman and Frye 1970) and Landon and Kempton (1971).

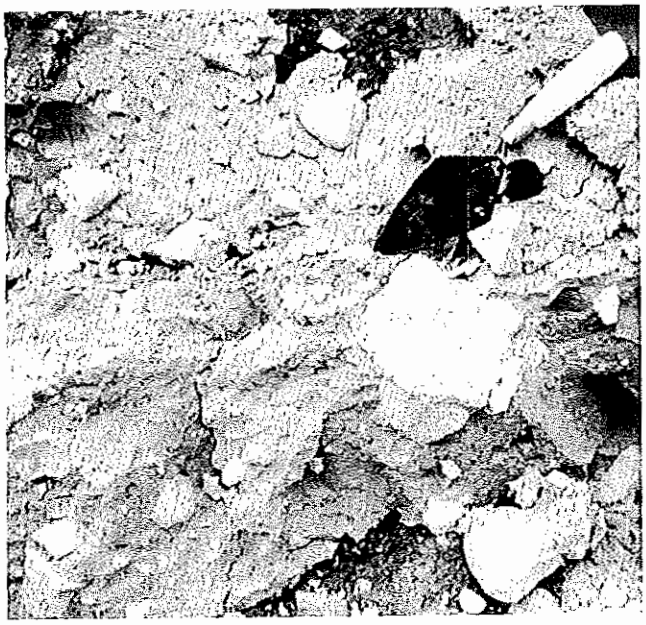


Figure 20 Unoxidized, silty, dolomitic diamicton of the undivided Lemont Formation exposed in O'Hare reservoir excavation.

Johnson and Hansel (1985, 1989) and Hansel and Johnson (1986) agreed with Bogner's (1973) interpretation of the weathered zones within the Lemont drift as representative of an extension of the modern soil profile along joints to form secondary zones of clay accumulation below the main part of the B horizon (fig. 21). Such zones, which are leached of carbonates, can develop in stratified sediment, particularly in coarse, permeable sediment that is calcareous. Some leached zones (*beta* B horizons) form immediately below the main B horizon, whereas others (*gamma* B horizons) form below a calcareous layer but are connected by joints to the overlying main B horizon. Johnson and Hansel (1989) also agreed with Bogner's (1973) interpretation that the Lemont drift was part of the Wedron Formation, but on the basis of lithostratigraphy and sedimentological sequences in and westward of the Valparaiso Moraine, they correlated the Lemont drift with the Haeger rather than with the Malden Till Member. In 1989, Johnson and Hansel identified two glacigenic sequences within the Lemont drift in the type locality; they concluded the tongue of lacustrine sediment between the tills of the two sequences represented the first phase of ancestral Lake Michigan during the last deglaciation. They correlated the upper glacigenic sequence with the Haeger Till Member, which crops out in McHenry County, and suggested the lower sequence, although lithologically similar to the Lemont drift, may be time correlative with either the Malden or Yorkville Till Members of the Wedron

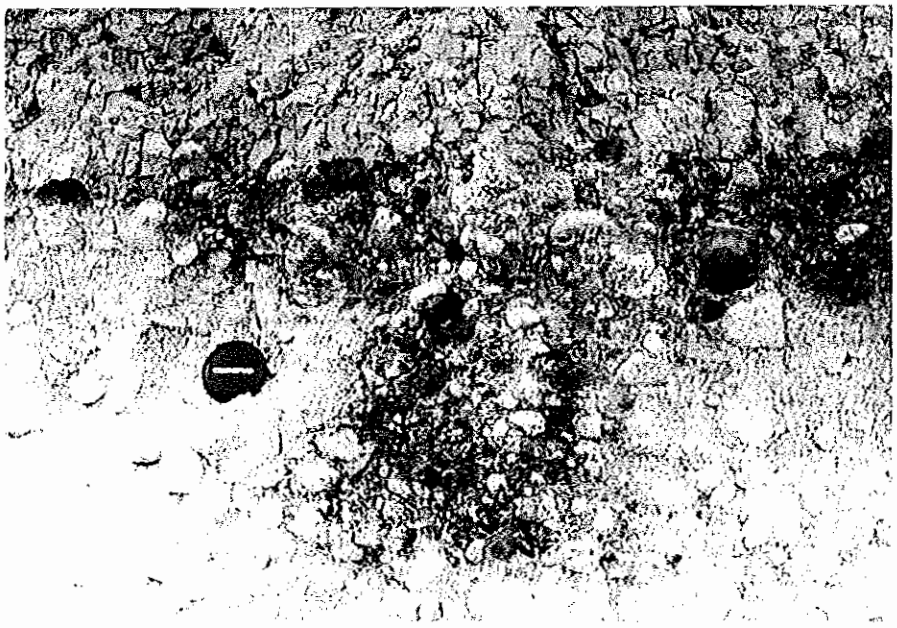


Figure 21 A *gamma* B horizon developed in the upper part of a tongue of the Henry Formation, which occurs beneath jointed, calcareous diamicton of the Wadsworth Formation and above diamicton of the Lemont Formation. The *gamma* B horizon represents an extension of the modern soil profile along joints to form a secondary zone of clay accumulation below the main B horizon.

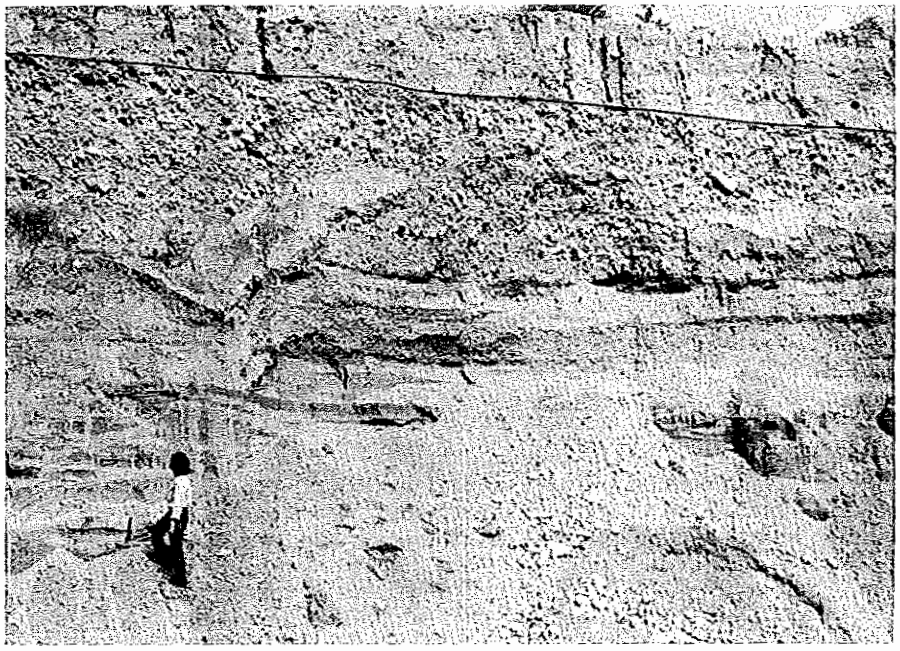


Figure 22 Sediment-flow diamicton of the undivided Lemont Formation above a coarsening-upward sand and gravel tongue of the Henry Formation. The unnamed tongue is correlative with the Beverly Tongue, which occurs beneath the Haeger Member of the Lemont Formation.

Formation. Engineers in the Chicago area have commonly referred to the Lemont drift as the "Chicago hardpan" (DeLeuw-Novick 1975). Agreeing with Bretz (1955) that the Lemont drift constitutes an important lithostratigraphic unit in northeastern Illinois, as well as a unit of regional significance, Johnson and Hansel (1989) recommended the name Lemont be retained for a formation if the Wedron Formation were raised to group rank.

The Lemont Formation as proposed herein contains multiple diamicton units that vary in texture from silty clay to sandy loam. The diamicton units are interfingered with tongues of the Henry and Equality Formations of the Mason Group; they are part of several glacigenic sequences that occur stratigraphically between the Tiskilwa and Wadsworth Formations. Southwest of Chicago in the type area of the Lemont drift, the Lemont Formation is left undivided and consists of multiple diamicton units that are interfingered with tongues of sorted sediment of the Mason Group. Diamicton in the undivided Lemont Formation is predominantly gravelly silt loam that, although light gray in the subsurface, generally oxidizes to yellow brown in exposures (fig. 18). The diamicton contains lenses of sorted sediment, predominantly silt, sand, and gravel. Away from the type area, lateral facies changes are interpreted to occur between the locally derived dolomitic silt loam to loam diamicton of the undivided Lemont Formation and the (1) sandy loam diamicton of the Haeger Member, (2) silty clay diamicton of the Yorkville Member, and (3) silt loam diamicton of the Batestown Member (fig. 7). Diamicton of the former Malden Till Member is included in the Batestown Member (formerly, the Batestown Till Member; Johnson et al. 1971b) or the Yorkville Member (formerly, the Yorkville Till Member; Willman and Frye 1970). Diamicton of the former Snider Till Member (Johnson et al. 1971b) also is included in the Yorkville Member.

Description

The Lemont Formation consists of calcareous, gray, fine to coarse textured (silty clay to sandy loam) diamicton units that contain lenses of gravel, sand, silt, and clay. The characterizing element in the matrix texture of Lemont diamicton is silt, which generally makes up about 30% to more than 50% of the matrix. Typically, the diamicton of the Lemont Formation oxidizes to brown, olive brown, or yellow brown. A coarsening-upward sand and gravel sequence (Beverly Tongue of Henry Formation) was observed beneath the Haeger Member and beneath the correlative uppermost diamicton unit of the undivided Lemont Formation in its type area (fig. 22).

Boundaries

Lower boundary: the contact with tongues of the Henry (fig. 22) and Equality Formations, the Tiskilwa Formation, older units, or bedrock. Upper boundary: the contact with the Wadsworth Formation (fig. 18), upper tongues of the Peoria Silt and Henry and Equality Formations, or postglacial units.

Differentiation from other units

Diamicton of the Lemont Formation is generally grayer and more illitic than that of the underlying Tiskilwa Formation. It commonly oxidizes to olive brown or yellow brown, whereas the diamicton of the Tiskilwa Formation oxidizes to brown or red brown. Its texture varies more than that of the overlying silty clay diamicton of the Wadsworth Formation. In the Decatur Sublobe area, diamicton of the Batestown Member generally contains more silt and less sand than that of the underlying Piatt Member; where this differentiation is indistinct, the Champaign-Pesotum-Arcola moraine front is used as a vertical boundary between these members (fig. 13). In the southern part of the Peoria Sublobe area where lateral facies along moraines occur, a vertical boundary at the front of the Normal Moraine is used to separate the Lemont Formation from the underlying Tiskilwa Formation. The silty clay diamicton of the Yorkville Member is very similar to that of the Wadsworth Formation; where they are juxtaposed, the West Chicago-Wilton Center moraine front is used as a vertical boundary between the two units (fig. 13). In the Harvard Sublobe area, the Haeger Member generally is readily distinguishable from the Tiskilwa and Wadsworth Formations. Locally, diamicton of the Yorkville and Haeger Members may be red gray or red brown and the uncharac-

teristic redder hues and lithology have been interpreted to reflect incorporation of diamicton of the Tiskilwa Formation (Wickham et al. 1988).

Regional extent and thickness
The Lemont Formation consists of several wedge-shaped diamicton units that overlap the Tiskilwa Formation and pinch out beneath the Wadsworth Formation. The Lemont Formation is up to about 60 meters (197 ft) thick in some moraines and forms the surface unit in more than half the area of the Wedron Group in Illinois (fig. 13). It is volumetrically, however, not as large as the Tiskilwa Formation, which is much thicker and more extensive in the subsurface.

Origin
The Lemont Formation is interpreted to represent the subglacial and ice-marginal facies of several offlapping glacigenic sequences. Diamicton of the Lemont Formation is more illitic and contains fewer far-travelled crystalline erratics than that of the Tiskilwa Formation. The predominant clast lithologies consist of Paleozoic shale and carbonate. The composition of the Lemont Formation indicates predominantly a Lake Michigan basin, northern Illinois, and southeastern Wisconsin source. We attribute the fine grained matrix of Yorkville diamicton in part to reflect incorporation of proglacial lacustrine sediment that accumulated between end moraines and the glacier as the ice margin melted back and readvanced during the late Putnam and early Livingston Phases (fig. 10).

Age and correlation
The Lemont Formation was deposited during the Shelby (in the Arcola Moraine, eastern part of the Decatur Sublobe area), Putnam, Livingston, and Woodstock Phases of the Michigan Subepisode, probably between about 18,500 and 15,500 radiocarbon years ago (Hansel and Johnson 1992). Each phase represents the interval of a readvance and subsequent melting back of the ice margin (fig. 10). Fluctuations were 50 kilometers (31 mi) or more. The Lemont Formation correlates in part with the New Berlin and Horicon Members (Holy Hill Formation) of Wisconsin, the Batestown and Snider Tills of Indiana, and possibly the Ganges till of Michigan (fig. 11).

Batestown Member

Status
Reclassified and redescribed unit. Name changed to Batestown Member of the Lemont Formation, and unit description broadened to include lithologically similar and stratigraphically equivalent diamicton in the lower part of the former Malden Till Member of the Peoria and Princeton Sublobe areas. Formerly classified as the Batestown Till Member of the Wedron Formation (Johnson et al. 1971b).

Source of name Batestown, a village in Vermilion County.

Original name Batestown Till Member (Johnson et al. 1971b).

Type section Emerald Pond Section near Danville in Vermilion County; good for contacts and lithology, but deteriorating.

Principal reference sections
Higginsville Section (fig. 14); good for contacts and lithology. Wedron Section (fig. 12); good for contacts and lithology.

Definition
The Batestown Member is the medium textured, lowermost unit of diamicton in the Lemont Formation. Diamicton of the Batestown Member generally consists of dark gray to gray silt loam to loam that oxidizes to brown or olive brown.

Background
The Batestown Till Member of the Wedron Formation was originally defined by Johnson et al. (1971b) and described as a distinct gray till, easily recognized by its texture, structure, and color in the Decatur Sublobe area (Johnson et al. 1971b). They correlated the Batestown Till Member with unit 2 of Kempton et al. (1971) in the McLean County area to the west. McKay (1975) traced the Batestown Till Member westward into the Peoria Sublobe area and concluded it to be equivalent to the lower part of the Malden Till Member (Willman and Frye 1970). On the basis of McKay's study (1975), Johnson (1976) included the Batestown Till Member with the middle, medium textured tills of the Wedron Formation and correlated it with the lower part of the Malden Till Member of northeast and central Illinois (fig. 7). On the 1979 state Quaternary map compiled by Lineback, silty till in the eastern part of the Bloomington, Normal, Eureka, and Fletchers Moraines of the Peoria Sublobe area was mapped as the Batestown Till Member (figs. 5, 13). Similarly, Johnson et al. (1986) mapped the loam till south of the Illiana Morainic System as the Batestown Till Member, and extended the member to include the loam till in the Peoria Sublobe area. They concluded the Decatur Sublobe area (like the Peoria Sublobe area) was inundated by the Lake Michigan Lobe, rather than by a coalesced Huron-Erie Lobe.

In this report, the Batestown Till Member of the Wedron Formation is reclassified the Batestown Member of the Lemont Formation. On the basis of the previous work discussed above and in an attempt to make the classification system simpler by avoiding two names (Malden and Batestown) for the same lithostratigraphic unit in different sublobe areas, the name Batestown Member is the designation for all the gray loam diamicton units of the lower glacigenic sequence(s) of the Lemont Formation in the Decatur and Peoria Sublobe areas and part of the Princeton Sublobe area (figs. 7, 13). The lower, medium textured diamicton units of the former Malden Till Member are classified as the Batestown Member, whereas the upper, finer textured diamicton units of the former Malden Till Member are included in the revised Yorkville Member. Although the term Malden takes precedence over the term Batestown, we choose to use the term Batestown for the member name because the Malden Till Member as defined by Willman and Frye (1970) carries little meaning in regard to lithology. The Malden Till Member included all diamicton units stratigraphically above the Tiskilwa Till Member and beyond the Marseilles Morainic System (Yorkville Till Member). Diamicton texture in these units ranges from very fine to coarse. To avoid such lithic ambiguity, we have elected to reserve the term Batestown Member for the more medium textured diamicton of the lower part of the Lemont Formation; it crops out beyond the margin of the

Arlington, Varna, El Paso, and Newtown Moraines (fig. 13). Locally in the Peoria Sublobe area, particularly at or near the surface, diamicton of the Batestown Member contains more clay than diamicton of type-Batestown. Because we interpret this clayier diamicton to reflect a facies change, it is treated herein as an informal facies of the Batestown Member. Similarly, we interpret lateral variation in diamicton texture along the strike of moraines that extend into the northern part of the Princeton Sublobe area to reflect facies changes, and we do not subdivide the Lemont Formation in that area (fig. 13). This avoids the 45-kilometer (28 mi) offset of member boundaries present on the 1979 state Quaternary map north and south of the Illinois River (fig. 5).

Description

The Batestown Member of the Lemont Formation consists of calcareous, gray, medium textured (loam) diamicton (fig. 23) that contains lenses of gravel, sand, silt, and clay. Typically, it oxidizes to brown, olive brown, or yellow brown. Locally in the Peoria and Decatur Sublobe areas, diamicton of the Batestown Member is finer and texturally similar to diamicton of the Yorkville Member. This finer textured diamicton is retained in the Batestown Member because of lateral continuity, but it should be mapped, where appropriate, as an informal facies.

Boundaries

Lower boundary: the contact with the undivided Tiskilwa Formation (fig. 24), the Delavan or Piatt Members (Tiskilwa Formation; fig. 14), tongues of the Henry and Equality Formations (fig. 25), or older units. Upper boundary: the contact with the Yorkville Member (Lemont Formation; figs. 14, 24), tongues of the Peoria Silt (fig. 12) and the Henry and Equality Formations, or postglacial units.

Differentiation from other units

Diamicton of the Batestown Member is generally distinguishable from the redder, less illitic, and clayier diamicton of the underlying Tiskilwa Formation. In the Peoria Sublobe area, however, a vertical boundary is used at the front of the Normal Moraine because diamicton in the eastern part of the Bloomington Morainic System is similar to that of the Batestown Member (fig. 13). Similarly, in the Decatur Sublobe area a vertical boundary along the Champaign-Pesotum-Arcola moraine front is used for mapping purposes to distinguish diamicton of the Piatt and Delavan Members (Tiskilwa Formation) from that of the Batestown Member. The contact of the Batestown Member with the overlying Yorkville Member is readily distinguishable in the Decatur Sublobe area. It is less clear in the central part of the Peoria Sublobe area where a finer textured facies of the Batestown diamicton occurs. For mapping purposes, a vertical boundary is used at the front of the El Paso Moraine to separate the Yorkville and Batestown Members. West of the St. Charles Moraine in the northern part of the Princeton Sublobe area, the Batestown and Yorkville Members are indistinct, and the Lemont Formation is not subdivided.

Regional extent and thickness

The Batestown Member forms a wedge-shaped deposit that overlaps the Tiskilwa Formation and pinches out beneath the Yorkville Member to the north and east. It crops out in the shape of a crescent, which has a reentrant in the area where the Decatur and Peoria Sublobes met (fig. 13). The Batestown Member is up to about 25 meters (82 ft) thick in some end moraines (see for example, Wickham 1979a).

Origin

The Batestown Member is interpreted to be the subglacial and ice-marginal facies of one or more glacigenic sequences; it consists predominantly of till. Evidence from the Wedron Section and the surrounding region in the area near the Princeton and Peoria Sublobe boundary (Johnson and Hansel 1990, Hansel and Johnson 1992) indicates that deposition of the Batestown Member followed a fairly significant readvance (75 km; 47 mi) of the ice margin. At the Wedron Section, the Batestown Member lithology (medium textured, gray diamicton) suggests a more local source (Illinois and Lake Michigan basin) than does the underlying Tiskilwa Formation lithology. In the area of the Decatur and southern part of the Peoria Sublobes, the lithological change to a more local source likely took place earlier in the glacial history and more gradually. For example, in color, matrix grain size, and clay-mineral composition, diamicton of the Piatt Member of the Tiskilwa Formation is intermediate between diamicton of the Delavan Member of Tiskilwa Formation and that of the

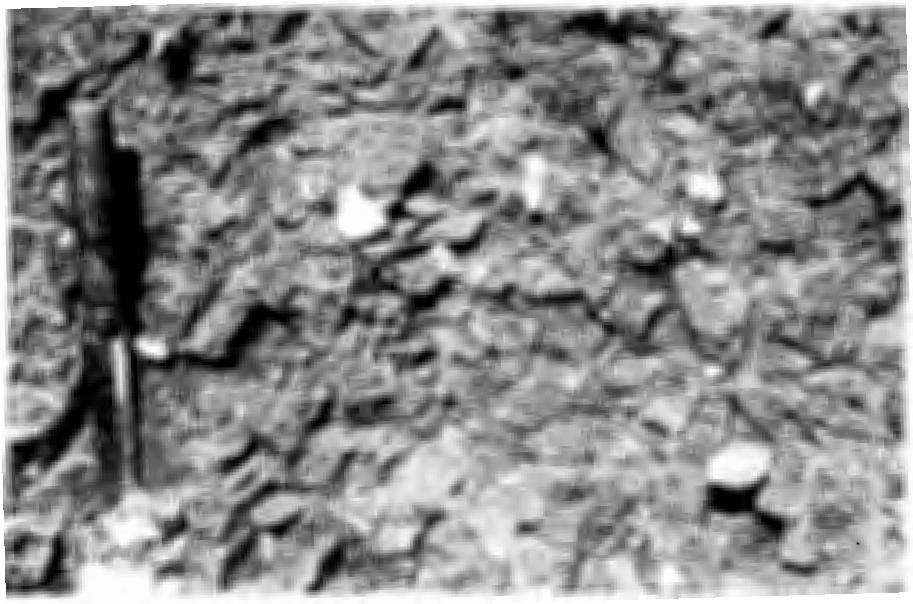
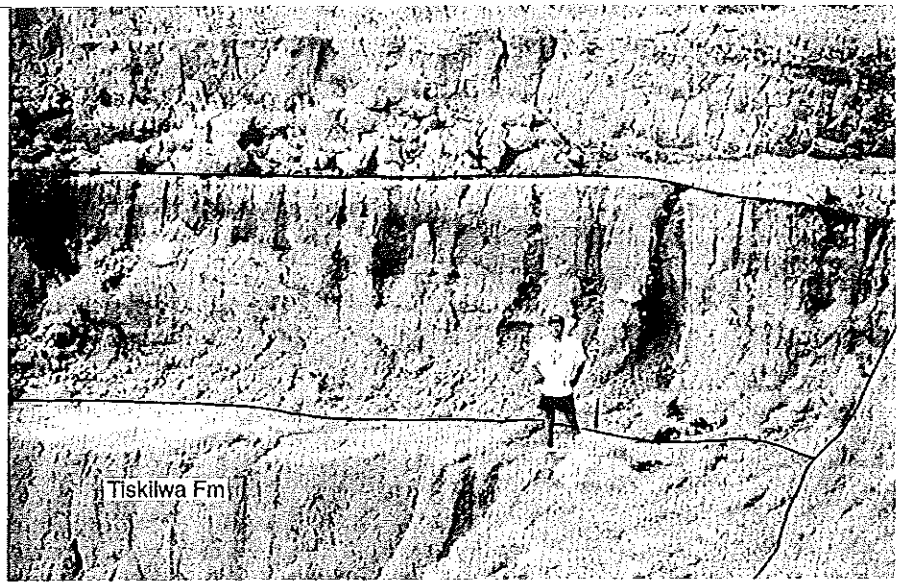


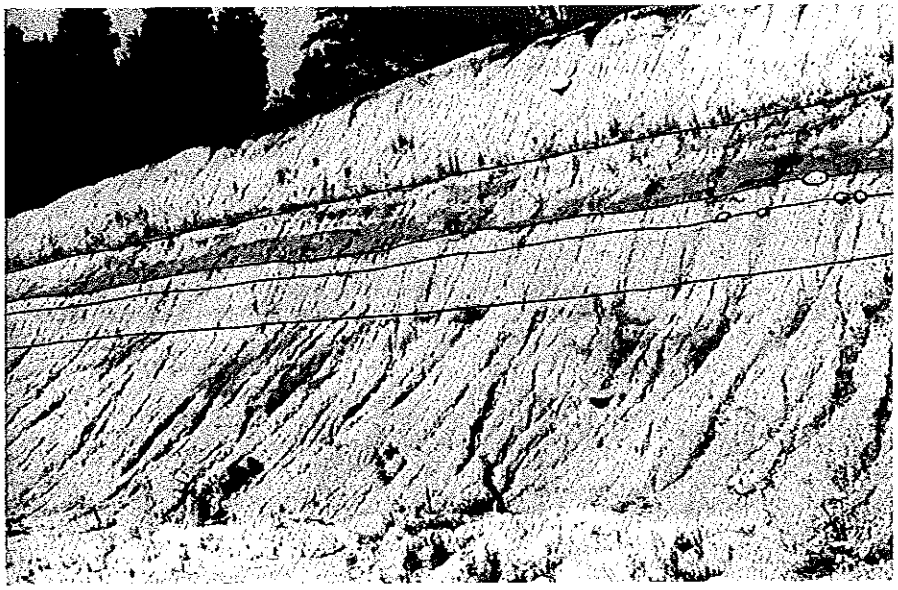
Figure 23 Silt loam diamicton (subglacial till) of the Batestown Member of the Lemont Formation.



Yorkville Mbr, Lemont Fm

Batestown Mbr, Lemont Fm

Figure 24 Silty clay diamicton of the Yorkville Member and silt loam diamicton of the Batestown Member (Lemont Formation) overlie clay loam diamicton of the undivided Tiskliwa Formation at Fox River Stone Quarry, St. Charles, Illinois. The diamictons are interpreted to be subglacial tills.



Batestown Member, Lemont Fm

Equality Fm tongue

Piatt Mbr, Tiskilwa Fm

undivided Tiskilwa Fm

slump

Figure 25 Sorted-sediment tongue of the Equality Formation between diamictons of the Batestown Member of the Lemont Formation and the Piatt Member of the Tiskilwa Formation at Wedron Quarry pit 6.

Batestown Member of the Lemont Formation. Diamicton in the Bloomington Morainic System east of Bloomington, Illinois, classified herein as undivided Tiskilwa Formation, is similar to diamicton of the Batestown Member (fig. 13).

Age and correlation
The Batestown Member was deposited during the later part of the Shelby Phase (central Decatur Sublobe area) and the Putnam Phase of the Michigan Subepisode, probably between about 18,500 and 17,700 radiocarbon years ago (Hansel and Johnson 1992; fig. 10). It correlates with the Batestown Till in Indiana (fig. 11).

Yorkville Member

Status
Reclassified and redescribed unit. Name changed to the Yorkville Member and unit classified as part of the Lemont Formation. Lower boundary extended in the Decatur and Peoria Sublobe areas to include fine grained diamicton units mapped by Lineback (1979) as the Snider and Malden Till Members. Formerly classified as the Yorkville Till Member of the Wedron Formation (Willman and Frye 1970).

Source of name Yorkville, a village in Kendall County.

Original name Yorkville Till Member (Willman and Frye 1970).

Type section Roadcut at the intersection of Illinois Highways 71 and 47; no longer exposed.

Principal reference sections
Higginsville Section (fig. 14); good for lower boundary and lithology. Wedron Section; good for lower boundary (fig. 26). Core 7815; good for lithology.

Definition
The Yorkville Member is the fine grained, middle unit of diamicton in the Lemont Formation. It is generally dark gray, silty clay to silty clay loam diamicton that oxidizes to olive brown.

Background
The Yorkville Till Member of the Wedron Formation was originally defined by Willman and Frye (1970). It was described as a very clayey gray till that commonly exhibits a green cast, and as being slightly darker than other gray tills. Willman and Frye (1970) mapped the Yorkville Till Member in parts of the Harvard (Barlina Moraine), Princeton (St. Charles Moraine), and Peoria (Marseilles, Minooka, and Rockdale Moraines) Sublobe areas (fig. 4). In the Decatur Sublobe area, gray silty clay to silty clay loam diamicton similar to but sandier than type-Yorkville diamicton was defined as the Snider Till Member (Johnson et al. 1971b). McKay (1975) correlated diamicton of the Snider Till Member with diamicton in the El Paso, Minonk, and Strawn Moraines in the Peoria Sublobe area that Willman and Frye (1970) had included in the Malden Till Member. Johnson (1976) included the Snider and Yorkville Till Members in a group of upper, fine textured tills of the Wedron Formation (fig. 7). On the 1979 state Quaternary map (fig. 5), Lineback extended the Snider Till Member into part of the Peoria Sublobe area where Willman and Frye (1970) originally had mapped the Malden Till Member. Later, on the basis of field relationships and statistical treatment of textural and compositional data, Moore (1981) (1) correlated diamicton in the Chatsworth, Ellis, and Paxton Moraines with the Snider Till Member in its type area; (2) reported the Yorkville and Snider were portions of a single lithologic unit; and (3) recommended on the basis of priority that the name Snider be dropped and the name Yorkville be retained for this unit. Killey (1982) identified two distinct clay-mineral zones (the Dwight averaging 76% illite and the lower Yorkville averaging 81% illite) in the area mapped as the Yorkville Till Member in Livingston, Woodford, and Marshall Counties. She attributed the zones to represent separate ice-margin advances. In this report, the Yorkville Till Member of the Wedron Formation is reclassified as the Yorkville Member of the Lemont Formation (fig. 7). The Yorkville Member description is broadened to include fine textured diamicton units (silty clay and silty clay loam) that were (1) left undivided in the Wedron Formation in the Decatur Sublobe area by Willman and Frye (1970) and subsequently classified as the Snider Till Member by Johnson et al. (1971b); (2) mapped as part of the Malden Till Member in the Princeton Sublobe area by Willman and Frye (1970); and (3) mapped as part of the Malden Till Member (Willman and Frye 1970) or a combination of the Malden and Snider Till Members in the Peoria Sublobe area (Lineback 1979).

Description
The Yorkville Member of the Lemont Formation consists of calcareous, gray, fine textured (silty clay to silty clay loam) diamicton that contains lenses of gravel, sand, silt, and clay. Typically, it oxidizes to olive brown. Paleozoic shale and dolomite are common clast lithologies. As noted by Willman and Frye (1970), the weathered surface of Yorkville diamicton commonly contains a concentration of small dolomitic pebbles, giving it the appearance of gravel.

Boundaries
Lower boundary: the contact with the Batestown Member (figs. 14, 24), the Tiskilwa Formation, tongues of the Henry (fig. 26) and Equality Formations, older units, or bedrock. Upper boundary: the contact with the Beverly Tongue of the Henry Formation, the Haeger Member, the undivided Lemont Formation, the Trafalgar Formation, the Wadsworth Formation, tongues of the Equality Formation, upper tongues of the Peoria Silt and Henry Formation (fig. 27), or postglacial units.

Figure 26 Modern soil developed in diamicton of the Yorkville Member of the Lemont Formation above a sand and gravel tongue of the Henry Formation at Wedron Quarry pit 1.

Differentiation from other units
The Yorkville Member diamicton generally contains more clay than the underlying Batestown Member diamicton. However, where the Batestown Member diamicton is finer textured than type-Batestown diamicton, differentiation between the two units is more difficult, and locally a vertical boundary is needed to distinguish them for mapping purposes. For example, in the Peoria Sublobe area, a vertical boundary is used at the front of the El Paso Moraine to separate the silty clay diamicton of the Yorkville Member from diamicton beyond the moraine that has a similar texture, but which we consider to be a fine grained facies of the Batestown Member (fig. 13). In vertical sequence, sorted sediment of the Equality and Henry Formations is often present between diamicton units of the Batestown and Yorkville Members and helps to differentiate the two units. Diamicton of the Yorkville Member is much finer than the coarse textured diamicton of the Haeger Member in the area of the Harvard Sublobe. Stratified sand and gravel of the Beverly Tongue of the Henry Formation is common beneath diamicton of the Haeger Member and correlative diamicton of the undivided Lemont Formation. The upper boundary of the Yorkville Member is more problematic in the Joliet Sublobe area where fine textured diamicton of the Wadsworth Formation may be in contact with that of the Yorkville Member. In that area, a vertical boundary at the West Chicago-Wilton Center moraine front is used to demarcate the unit boundary (fig. 13). The latter ice-margin position coincides approximately with the erosional margin of Silurian bedrock, where the Yorkville Member pinches out or is in facies relationship with the basal part of the undivided Lemont Formation. Locally, diamicton of the Yorkville Member may be red gray or red brown; the uncharacteristic redder

Figure 27 Upper tongues of the Peoria Silt and Henry Formation above diamictons of the Yorkville and Batestown Members of the Lemont Formation and the undivided Tiskilwa Formation, which overlie the Elwood Dolomite (Silurian) at the Fox River Stone Company Quarry, St. Charles, Illinois.

hues and lithology have been interpreted to reflect incorporation of diamicton of the Tiskilwa Formation (Wickham et al. 1988).

Regional extent and thickness
The Yorkville Member forms a wedge-shaped diamicton unit that overlaps the Batestown Member, the Tiskilwa Formation, older units, or bedrock. Although the Yorkville Member crops out over a large area, it pinches out for a very short distance north and east beneath the Haeger Member in the Harvard Sublobe area and the undivided Lemont Formation or the Wadsworth Formation in the Joliet Sublobe area (fig. 13). The Yorkville Member is up to 60 meters (197 ft) thick in some parts of the Marseilles Morainic System (Willman and Payne 1942).

Origin
The Yorkville Member is interpreted to represent the subglacial and ice-marginal facies of multiple offlapping glacigenic sequences; it consists predominantly of till, but may also contain subaqueous debris flow and lacustrine sediment. One or more proglacial lakes likely existed between the moraines to the west and the Lake Michigan Lobe glacier, which may have wasted back to a position near the Silurian-Ordovician boundary before readvancing. The fine textured lithology of the Yorkville Member is consistent with a lacustrine and shale source.

Age and correlation
The Yorkville Member was deposited during the Livingston Phase of the Michigan Subepisode, probably between about 17,700 and 16,200 radiocarbon years ago (Hansel and Johnson 1992) (fig. 10). It correlates with fine textured diamicton included in the Snider Till south of the Kankakee River Valley in Indiana (fig. 11).

Haeger Member

Status
Reclassified unit. Name changed to the Haeger Member and unit classified as part of the Lemont Formation. Formerly classified as the Haeger Till Member of the Wedron Formation.

Source of name Haegers Bend, a village along the Fox River in McHenry County.

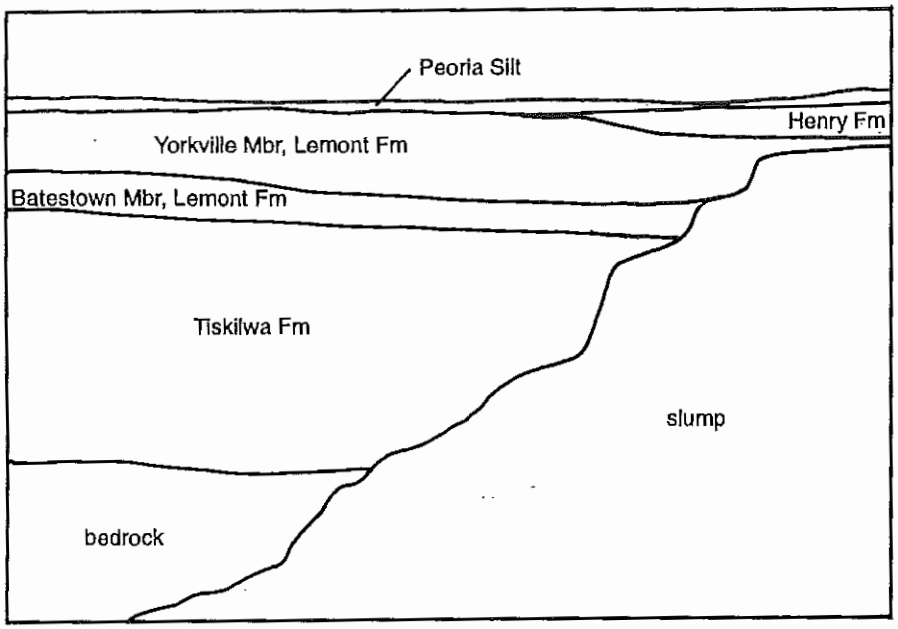
Original name Haeger Till Member (Willman and Frye 1970).

Type section Roadcuts along the Algonquin-Cary Road, 0.5 mile (0.8 km) northwest of Haegers Bend; no longer exposed.

Principal reference sections
Beverly Sand and Gravel Pit Section (fig. 19); good for lithology and lower contact with the Beverly Tongue of the Henry Formation (contact with underlying Yorkville Member confirmed from dredging in base of pit).

Definition
The Haeger Member is the coarse grained, uppermost unit of diamicton in the Lemont Formation. The Haeger Member diamicton consists of gravelly, sandy loam that is typically oxidized to yellow brown in surface exposures, but it is light gray to gray in the subsurface. The Haeger Member is commonly underlain by a proglacial, coarsening-upward sand and gravel sequence (Fraser and Cobb 1982), which is classified herein as the Beverly Tongue of the Henry Formation (fig. 19). In the Joliet Sublobe area, the Haeger Member is overlain by the Wadsworth Formation.

Background
The Haeger Till Member of the Wedron Formation was originally defined by Willman and Frye (1970) and described as a silty, sandy, gravelly till interstratified with sand and gravel outwash. It was mapped as a surface unit in the Harvard Sublobe area. Although they defined the upper boundary of the Haeger Till Member as the contact with the Wadsworth Till Member (fig. 7), Willman and Frye (1970) expressed some uncertainty as to whether sandy



Haeger till graded southward into clayey Wadsworth till along the West Chicago Moraine or, instead, was overlapped by Wadsworth till (fig. 13). The latter interpretation was accepted by Johnson et al. (1985b) and Kempton et al. (1987b), who recognized the Haeger Till Member in the subsurface beneath the Wadsworth Till Member east and south in Lake and Cook Counties. Johnson et al. (1985b), Hansel and Johnson (1986, 1987), and Johnson and Hansel (1989) correlated the Haeger Member with the Lemont drift (Bretz 1939, 1955), which crops out along the Des Plaines Channel southwest of Chicago. In the Joliet Sublobe area where the Wadsworth Till Member is the surface drift, Johnson et al. (1985b) and Hansel and Johnson (1987) concluded the West Chicago Moraine is a superposed feature that reflects in part a buried moraine that formed at the Haeger-Lemont ice margin. In that area, the moraine contains Haeger-Lemont drift overlain by Wadsworth diamicton and represents two distinct glacial events. Hansel et al. (1985a) proposed a new name, Woodstock Moraine, be used for the part of the moraine that represents the Haeger ice-margin position in the area of the Harvard Sublobe (fig. 13). They suggested the name West Chicago Moraine be applied for only that part of the moraine in the Joliet Sublobe area where the Wadsworth Till Member is at the surface.

The Haeger Till Member of the Wedron Formation (Willman and Frye 1970) is herein classified as the Haeger Member of the Lemont Formation. The Haeger Member consists of a sandy loam diamicton unit that often contains lenses and beds of sorted sediment in its upper part. Typically, it is underlain by a coarsening-upward stratified facies that sometimes contains beds and tongues of diamicton near the top (see for example, Fraser and Cobb 1982, Johnson et al. 1985b, Hansel and Johnson 1986, Johnson and Hansel 1989, and Schneider 1983). In this report, the coarsening-upward sand and gravel is classified as the Beverly Tongue of the Henry Formation, and it is locally underlain by a tongue of the Equality Formation (Fraser and Cobb 1982). In McHenry County, the diamicton facies (Haeger Member) is often missing, probably due to subsequent erosion, and the Henry Formation is the surficial unit.

Description

The Haeger Member of the Lemont Formation consists of calcareous, light gray to gray, coarse textured (sandy loam) gravelly diamicton that contains lenses of sand, gravel, silt, and clay. The Beverly Tongue of the Henry Formation, which consists of a coarsening-upward succession of stratified sediment that is similar in lithology to Haeger diamicton, is common beneath the diamicton unit. Typically, the Haeger Member is oxidized to yellow brown. Paleozoic dolomite is the dominant clast lithology.

Boundaries

Lower boundary: the contact with the Yorkville Member of the Lemont Formation, the Tiskilwa Formation, the Beverly Tongue of the Henry Formation (fig. 19), or older units. Upper boundary: the contact with the Wadsworth Formation, upper tongues of the Peoria Silt and the Henry and Equality Formations, or postglacial units.

Differentiation from other units

Haeger diamicton in McHenry County is generally readily distinguishable because it is distinctly coarser grained than other units of the Wedron Group and it is oxidized to yellow brown. It is most similar to diamicton of the undivided Lemont Formation, although it is sandier and less illitic than type-Lemont diamicton southwest of Chicago. A lateral change in texture and clay-mineral composition appears to occur between the type areas of the two units (Johnson et al. 1985b, Johnson and Hansel 1989). Locally, diamicton of the Tiskilwa Formation and that of the lower part of the Haeger Member may be similar as a result of entrainment of red Tiskilwa diamicton during the Haeger advance. Schneider (1983) noted that locally the Haeger-equivalent New Berlin till is redder in its lower part in southeastern Wisconsin.

Regional extent and thickness

The Haeger Member forms a wedge-shaped deposit that overlaps the Beverly Tongue, the Yorkville Member, or the Tiskilwa Formation and pinches out to the north and east beneath the Wadsworth Formation. The surface extent of the Haeger Member is limited to the Harvard Sublobe area;

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Pleistocene Stratigraphy of Illinois

H. B. Willman and John C. Frye

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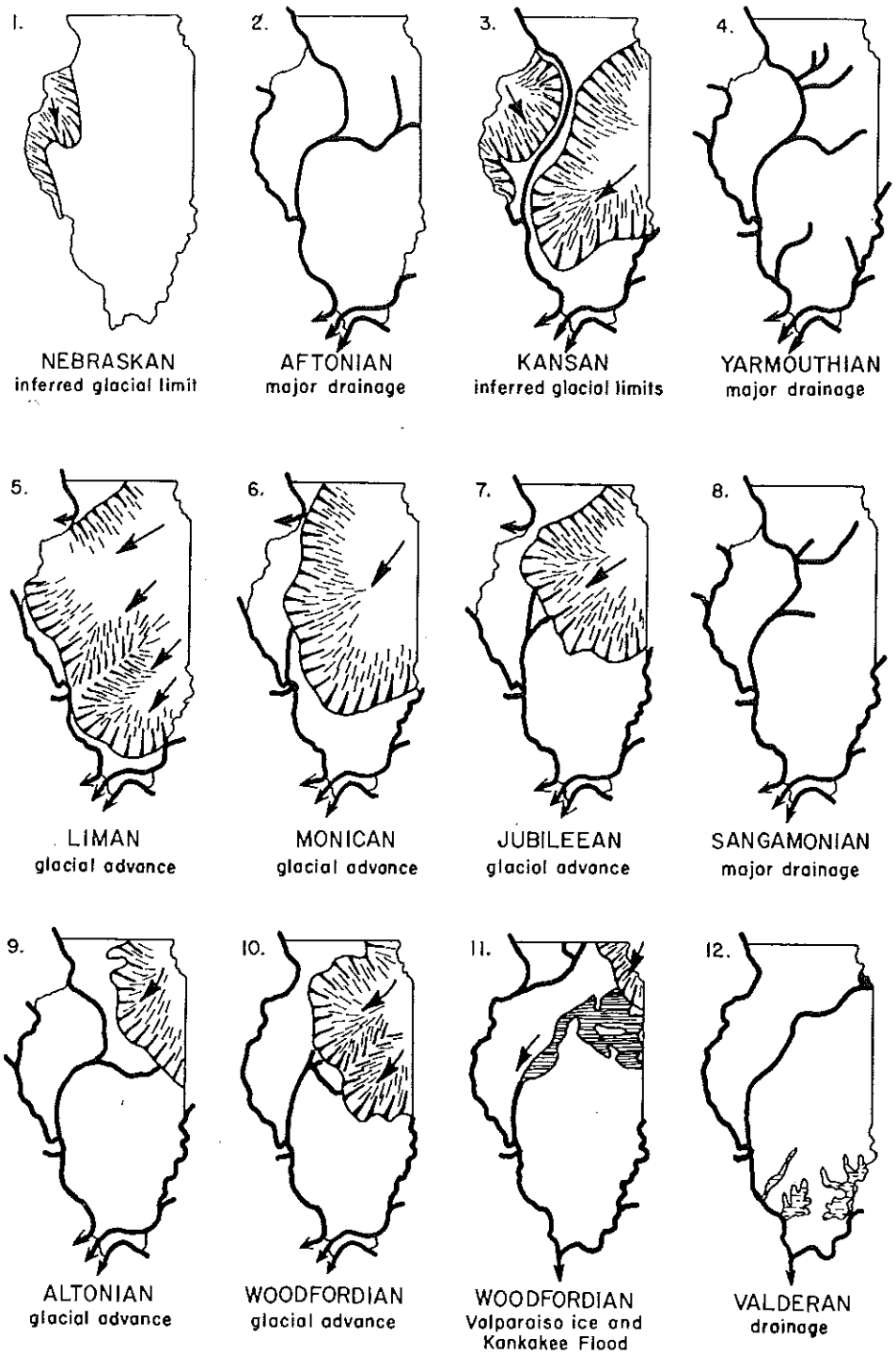

Fig. 5 — Sequence of glaciations and interglacial drainage in Illinois.

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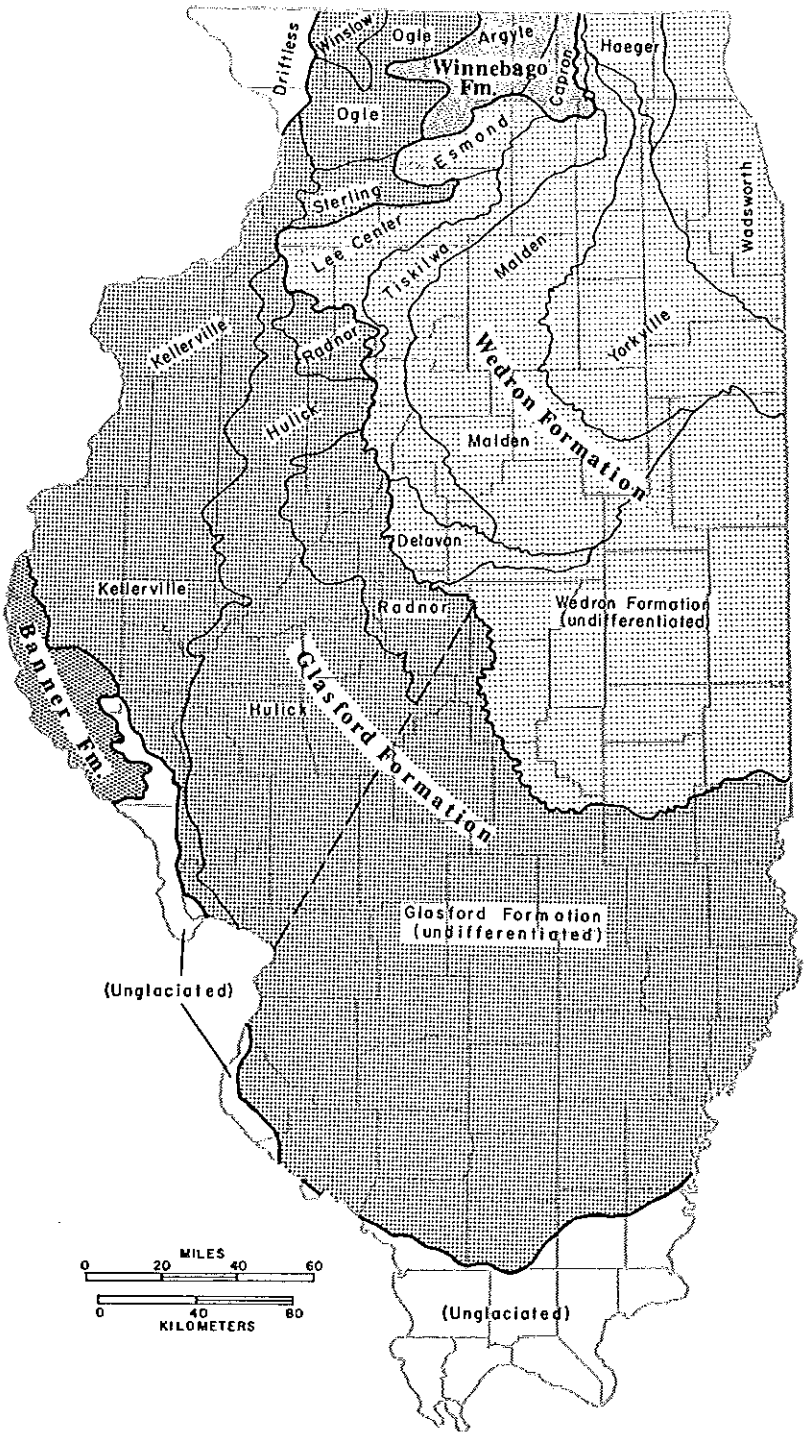

Fig. 6 — Areal distribution of the dominantly till formations and members of Illinois.

Meadow Loess Member (New)

The Meadow Loess Member of the Roxana Silt is named for Meadow Heights, a northeastern section of Collinsville, Madison County. Its type section is the Pleasant Grove School Section (table 6) three quarters of a mile west of Meadow Heights, SW NE SE Sec. 20, T. 3 N., R. 8 W. It is the uppermost member of the Roxana Silt, and in previous Illinois literature was called zones II, III, and IV of the Roxana Silt (Frye and Willman, 1960, 1963b; Frye, Glass, and Willman, 1962).

This member forms the major part of the Roxana Silt. It rests on the Pleasant Grove Soil developed in McDonough Loess and is terminated upward by the top of the Farmdale Soil or by the Robein Silt, Morton Loess, or Peoria Loess.

The Meadow Loess is a uniform silt and the three zones are based largely on color, pinkish tan in the lower and upper parts and gray to gray-tan loess in the middle. Although the zones have gradational contacts, they are distinct in the area of thick Roxana Loess from Havana, Mason County, to Gale, Alexander County, more than 250 miles. They become less distinct as the loess thins back from the bluffs and are rarely recognizable more than 15 miles from the bluffs. The mineral composition of the loess is given in tables 4 and 5, its spatial relations are shown diagrammatically in figure 8, and radiocarbon dates are listed in table 1. Its character is described in many of the stratigraphic sections in this report (table 6).

The Meadow Loess occurs late in the Altonian Substage of the Wisconsinan Stage.

Winnebago Formation

The Winnebago Formation was informally named Winnebago drift (Frye and Willman, 1960) for Winnebago County, as a replacement for the term Farmdale drift (Shaffer, 1956). The term was formalized as a formation in 1969 (Frye et al.), and the type locality was designated as the Rock Valley College Section and adjacent exposures and Northwest Tollway borings No. 2 and No. 5 (Kempton, 1963, p. 38). The type section is in the Rock Valley College Section, SW NW SW Sec. 10, T. 44 N., R. 2 E. It consists of 1.5 feet of Peoria Loess overlying 6 feet of leached till and 7 feet of calcareous, pink, sandy and cobbly till. The till is the Argyle Till Member of the Winnebago Formation. The formation was defined to include those glacial deposits bounded by the Farmdale Soil at the top and the Sangamon Soil at the base. The formation has been described in detail from deep core borings in Kane and McHenry Counties (Kempton, *in* Frye and Willman, 1965a), and its textural and mineral composition has been described (Frye et al., 1969).

The Winnebago Formation consists of tills, silts, peats, and outwash, and it probably is as much as 400 feet thick in the deeper bedrock valleys. It is subdivided into three named members: the Capron Till Member at the top, the Plano Silt Member below the Capron, and the Argyle Till Member below the Plano Silt. In the subsurface below the Argyle are silts, tills, and some outwash that have not been differentiated into members. Radiocarbon dates determined from the formation are listed in table 1, compositional data are given in tables 2, 4, and 5, and the geographic distribution of the formation at the surface is indicated on the map in figure 6. The spatial relation of the Winnebago to adjacent stratigraphic units is shown diagrammatically in figure 8.

The Winnebago Formation is entirely within the Altonian Substage of the Wisconsinan Stage. It is related largely to glacial advances from the Lake Michigan Lobe and possibly the Green Bay Lobe.

Argyle Till Member

The Argyle Till Member of the Winnebago Formation was informally named the Argyle till (Frye et al., 1969, p. 26) for Argyle, Winnebago County, from exposures in the vicinity of Argyle on the Winnebago County line. Its type section is the Rock

Valley College Section 5 miles southwest of Argyle, SW NW SW Sec. 10, T. 44 N., R. 2 E. The Argyle is bounded at the top by its contact with the Plano Silt Member or overlying beds, and its basal contact is with unnamed silts in the lower part of the Winnebago Formation or older deposits.

The till is exceptionally saudy, as shown in table 2, and pinkish tan or salmon in color. Its composition has been described, and its stratigraphic position shown by the Greenway School cores and the Beaverton, Byron West, Dixon Northwest, Grand Detour, and Meridian Road No. 3 Sections (Frye et al., 1969). The geographic distribution as a surface till is shown in figure 6, and the spatial relations are shown diagrammatically in figure 8.

The Argyle Till Member is in the midpart of the Altonian Substage of the Wisconsinan Stage.

Plano Silt Member

The Plano Silt Member of the Winnebago Formation was named the Plano Silt (Kempton and Hackett, 1968b, p. 31) for Plano, Kendall County. The type section is the Big Rock Creek Section (Kempton and Hackett, 1968b, p. 32), an exposure in the east bank of Big Rock Creek 3.5 miles northeast of Plano, SE NE Sec. 1, T. 37 N., R. 6 E. The Plano Member is bounded above by its contact with the Capron Till Member and at the base by its contact with the Argyle Till Member. The member is also described in Greenway School cores 2 and 4 (Frye et al., 1969).

The Plano Silt consists of silt, organic silt, and peat. Radiocarbon dates determined from the Plano are listed in table 1, and its spatial relations are shown diagrammatically in figure 8.

The Plano is in the later part of the Altonian Substage of the Wisconsinan Stage. It is the product of slow accumulation of silt, loess, and organic matter during the interval of glacial withdrawal between the deposition of the Argyle and Capron Till Members.

Capron Till Member

The Capron Till Member of the Winnebago Formation was informally named the Capron till (Frye et al., 1969, p. 26) for Capron, Boone County, from its occurrence in the prominent ridge that trends north-south through the town. The type section is the Capron North Section, a roadcut 3 miles north of Capron, NE SE SE Sec. 23, T. 46 N., R. 4 E., where 2.25 feet of Peoria Loess overlies 1 foot of leached till, 2 feet of pink calcareous till, and 3.5 feet of calcareous sand. The till and sand are the Capron Member. The Capron Till is bounded at the base by its contact with the Plano Silt Member and at the top by its contact with the Robein Silt or overlying beds.

The Capron has two compositional phases, an upper sandy phase and a lower silty phase. The typical compositions of these phases are indicated in table 2. The geographic distribution of the member is shown in figure 6, and its spatial relations are shown diagrammatically in figure 8. The Capron Member is within the youngest part of the Altonian Substage of the Wisconsinau Stage.

Robein Silt (New)

The Robein Silt is named for the village of Robein, Tazewell County, and its type section is the Farm Creek Section (table 6), NE SW SE Sec. 30, T. 26 N., R. 3 W. The name is a direct replacement for Farmdale Silt (Frye and Willman, 1960). It became necessary to rename the unit because of repeated redefinition of Farmdale (Frye and Willman, 1960; Leighton, 1960), and because the same locality is also the type for the Farmdale Soil and the Farmdalian Substage. The Robein Silt is classed as a formation. It is bounded below by the Roxana Silt or underlying formations and above by Morton Loess or by units of the Wedron Formation.

The Robein Silt consists of silts, sandy silts, organic silts, and peat. It is generally less than 5 feet thick and in many localities is only a few inches thick. Although thin,

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basal contact of the loess is strongly time transgressing. When traced from the central Illinois River Valley toward the northeast, it rests on progressively younger tills of the Wedron Formation. Wherever the base of the loess is calcareous, the top of the underlying till is also calcareous, indicating that the loess began to accumulate as soon as the ice melted.

Wedron Formation

The Wedron Formation (Frye et al., 1968) is named for Wedron, La Salle County, and the type section is the Wedron Section (table 6) in the Wedron Silica Company pit, SE SW Sec. 9, T. 34 N., R. 4 E. The Wedron Section does not include the uppermost part of the formation, but it is one of the longest and most typical exposures of the formation (Sauer, 1916; Willman and Payne, 1942, fig. 82 and geol. sec. 68; Leighton and Willman, 1953; Leonard and Frye, 1960; Frye and Willman, 1965b).

The formation was defined as comprising those deposits of glacial till and outwash extending upward from their contact on Morton Loess (or on the Robein Silt in the absence of the Morton) to the top of the till below the Two Creeks deposits at Two Creeks, Wisconsin. Although largely till, this span of rocks also contains numerous beds of outwash, including gravel, sand, and silt. The formation is extremely variable in thickness. It is as much as 200 to 250 feet thick in some of the larger moraines, and it probably averages about 100 feet thick.

The Wedron Formation has been described in numerous reports in addition to those already cited, including Leverett, 1897, 1899a; Cady, 1919; Fisher, 1925; Athy, 1928; Leighton and Ekblaw, 1932; Horberg, 1950a, 1953; Horberg, Larson, and Suter, 1950; Bretz, 1955; Suter et al., 1959; Zeizel et al., 1962; Willman, Glass, and Frye, 1963; Piskin and Bergstrom, 1967; Kempton and Hackett, 1968b. In many of these reports the Wedron includes beds identified by an age designation and called Early and Middle Wisconsin, or Tazewell and Cary drift.

The spatial relations of the Wedron Formation are shown diagrammatically in figure 8, geographic distribution in figure 6, and its composition is indicated in tables 2, 3, 4, and 5. Radiocarbon dates from the Wedron Formation, as well as the more abundant dates from above and below it, are listed in table 1.

The Wedron Formation spans all but the earliest part of the Woodfordian Substage of the Wisconsinan Stage. The youngest drift in the formation does not occur in Illinois but is present in Wisconsin and Michigan. The formation was deposited by glaciers of the Lake Michigan and Erie Lobes.

The Wedron Formation of northeastern Illinois is herein divided into the following members, in descending order: Wadsworth Till Member, Haeger Till Member, Yorkville Till Member, Malden Till Member, Tiskilwa Till Member, and the Esmond and correlative Lee Center and Delavan Till Members.

Esmond Till Member

The Esmond Till Member of the Wedron Formation was informally named the Esmond till (Frye et al., 1969, p. 26) from the village of Esmond, De Kalb County. The type section is in roadcuts, NW SW NW Sec. 27, T. 43 N., R. 2 E., Winnebago County, 10 miles north of Esmond, but the till has been studied in detail in the Greenway School cores near Esmond (Frye et al., 1969). The type section exposes about 10 feet of brownish gray, calcareous, clayey till of the Esmond Member overlain by 2 feet of Richland Loess. The underlying pink sandy till of the Winnebago Formation is exposed down the hill 100 yards to the north. The Esmond is also well exposed in the Dixon Northwest and the Grand Detour Sections (table 7). The upper boundary of the member is the pink-tan Tiskilwa Member or equivalent deposits, and the lower boundary is on Morton Loess or deposits of the Robein Silt or Winnebago Formation.

The Esmond Till has two phases, an upper silty phase and a lower silty clay phase,

both of which are characterized by a high illite content (tables 2 and 3). It is gray and contains relatively few cobbles and pebbles. It is a thin drift, generally not more than 20 to 30 feet thick. Its geographic distribution is shown in figure 6.

The Esmond Till is in the early part of the Woodfordian Substage of the Wisconsinan Stage. It was deposited by the Dixon Sublobe of the Lake Michigan Lobe.

Lee Center Till Member

The Lee Center Till Member of the Wedron Formation was informally named the Lee Center till (Frye et al., 1969, p. 26) from the village of Lee Center, Lee County, which is located on the back slope of the Temperance Hill Moraine that marks the northern limit of the till. The type section is a roadcut 5 miles northwest of Lee Center, SE SW NW Sec. 31, T. 21 N., R. 10 E., where 8 feet of calcareous, gray, slightly silty till of the Lee Center Till Member underlies 4 feet of leached, brown Richland Loess. The till has been studied in detail in the Lee No. 3 core boring (Frye et al., 1969). It is bounded at the top by the sharply contrasting pink till of the Tiskilwa Till Member, and at the base it rests on Morton Loess or Robein Silt.

The member is well exposed in the Malden South and Wedron Sections described in this report (table 6) and the Moon School Section in Henry County (table 7). It consists largely of gray clayey till and is generally only 20 to 30 feet thick, except in the Temperance Hill Moraine where it is as much as 50 feet thick. The composition of the till is given in tables 2, 3, and 5, and its distribution is shown on the map in figure 6.

The Lee Center Till is stratigraphically equivalent to the Esmond and Delavan Members but is classed as a separate member because its composition contrasts strongly with that of the Esmond Till Member (table 3) and because of its geographic restriction to the Green River Sublobe of the Lake Michigan Lobe.

The Lee Center Till is in the early part of the Woodfordian Substage of the Wisconsinan Stage. It was deposited by the Green River Sublobe of the Lake Michigan Lobe.

Delavan Till Member (New)

The Delavan Till Member of the Wedron Formation is named for Delavan, Tazewell County. The type section consists of exposures in roadcuts along Illinois Highway 121, 4 miles east of Delavan, SW Sec. 16, T. 22 N., R. 3 W., where 12 feet of Richland Loess, calcareous in the lower part, overlies 10 feet of calcareous gray till of the Delavan Till Member. The Delavan Member is also well exposed in the Danvers Section (table 7). It is bounded at the top by the pink-tan Tiskilwa Till, and it rests on the Morton Loess.

The Delavan is largely gray, silty, illitic till and is as much as 200 feet thick in the Shelbyville Morainic System. Its composition is given in tables 2, 3, and 5.

The Delavan Till presumably is stratigraphically equivalent to the Esmond and Lee Center Till Members, but it differs strongly from the Esmond in composition and is separated from the Lee Center geographically (fig. 6). Like the other two, it is bounded at the top by the overlying Tiskilwa Member and at the base by the Morton Loess.

The Delavan Till is in the early part of the Woodfordian Substage of the Wisconsinan Stage. It was deposited by the Peoria Sublobe of the Lake Michigan Lobe.

Tiskilwa Till Member (New)

The Tiskilwa Till Member of the Wedron Formation is named for Tiskilwa, Bureau County, and the type section is a roadcut, the Buda East Section, SE SE SW Sec. 31, T. 16 N., R. 8 E., 5 miles northwest of Tiskilwa (Frye and Willman, 1965a, p. 95, unit 1). In the type section it is overlain by sand and gravel of the Henry Formation, which is overlain by the Richland Loess.

The till of the Tiskilwa Member is sandy, pink-tan to reddish tan-brown, and generally is described as pink till. It is commonly 100 to 150 feet thick beneath

Tiskilwa (cont.)

the higher parts of the Bloomington Morainic System. It is bounded above by the more illitic, tan to yellow-gray Malden Till, and below by gray tills of the Delavan, Esmond, or Lee Center Till Members. Although the basal contact is locally somewhat transitional, the tills below are distinctly less red and are all higher in illite content (table 3). Because of its distinctive pink color, the Tiskilwa Till is widely differentiated in outcrops along the Illinois Valley as far east as Joliet (Fisher, 1925; Willman and Payne, 1942) and in subsurface (Kempton and Hackett, 1968b).

In the stratigraphic sections included with this report, the Tiskilwa Till is described in the Malden South and Wedron Sections (table 6). Its composition and color are listed in table 3, its geographic distribution is shown in figure 6, and its relations to other units are shown diagrammatically in figure 8.

The Tiskilwa Till is in the early part of the Woodfordian Substage of the Wisconsinan Stage, and it was deposited by glaciers of the Peoria, Princeton, and Harvard Sublobes of the Lake Michigan Lobe.

Malden Till Member (New)

The Malden Till Member of the Wedron Formation is named for Malden, Bureau County, and the type section is the Malden South Section (table 6) in roadcuts 2 miles south of Malden, SW SE SE Sec. 5, T. 16 N., R. 10 E.

The Malden Till Member consists of silty, locally sandy, yellow-gray to gray-tan till with discontinuous beds of sand and gravel. It is bounded at the top by the darker gray, very clayey Yorkville Till and at the base by the pink Tiskilwa Till. It differs from the Yorkville in having a higher ratio of garnet to epidote (table 4). Data on grain size, clay mineral composition, and color of the matrix of the till are given in table 3, and the geographic distribution is shown in figure 6.

The Malden Till is in the mid-part of the Woodfordian Substage of the Wisconsinan Stage. It was deposited by the Peoria, Princeton, and Harvard Sublobes of the Lake Michigan Lobe.

Yorkville Till Member (New)

The Yorkville Till Member of the Wedron Formation is named for Yorkville, Kendall County. Its type section is a roadcut at the intersection of Illinois Highways 71 and 47, 1 mile south of Yorkville, SE SE SE Sec. 5, T. 36 N., R. 7 E., where 6 feet of typical calcareous, pebbly, clayey till of the Yorkville Till Member is overlain by 2 feet of leached Richland Loess.

The till of the Yorkville Member is a very clayey gray till, slightly darker than the other gray tills, and it commonly has a slight greenish cast. Although the overlying Wadsworth Till is nearly as clayey, the Yorkville is characterized by an abundance of small dolomite pebbles that become concentrated on weathered surfaces and give the till the superficial appearance of gravel. This is more characteristic of the till in the Marseilles Drift than of the tills of the Minooka and younger drifts. The Yorkville Till Member is as much as 200 feet thick below the higher part of the Marseilles Morainic System (Willman and Payne, 1942). The distribution of the member is shown in figure 6. Data on grain size, clay mineral composition, and color of the matrix are given in table 3. Its average composition in comparison with the other tills is given in table 2.

The Yorkville Till Member is in the mid-part of the Woodfordian Substage of the Wisconsinan Stage and was deposited by glaciers of the Peoria, Princeton, and Harvard Sublobes of the Lake Michigan Lobe.

Haeger Till Member (New)

The Haeger Till Member of the Wedron Formation is named for Haegers Bend, a village on the Fox River between Fox River Grove and Algonquin, McHenry County. The type section consists of roadcuts along the Algonquin-Cary Road half a mile northwest of Haegers Bend, NW NE Sec. 23, T. 43 N., R. 8 E. In the type section the Haeger Till Member con-

sists of 12 feet of calcareous, very gravelly, silty, yellow-gray till overlain by 1 to 2 feet of leached Richland Loess.

The Haeger Member is bounded at the top by the clayey Wadsworth Till and at the base by the clayey Yorkville Till. It overlaps onto the pink Tiskilwa Till. Southward it either grades into the outer drift of the Wadsworth Member, which has been the preferred interpretation for many years as shown by the mapping of the West Chicago Moraine through the transition zone (pl. 1), or it is overlapped by the Wadsworth Member south of the area where the Fox River cuts through the West Chicago Moraine.

The Haeger Till Member consists largely of silty, sandy, gravelly till interstratified with sand and gravel outwash, but locally it contains some areas of silty clayey till. It varies greatly in thickness but seems generally to be relatively thin, 20 to 30 feet thick, except in isolated hills in which it is as much as 50 feet thick. The geographic extent of the Haeger Till Member is shown in figure 6. Data on grain size, clay mineral composition, and color of the matrix are given in table 3. Its average composition in comparison with the other tills is given in table 2.

The Haeger Till Member is in the midpart of the Woodfordian Substage of the Wisconsinan Stage and was deposited by the Harvard Sublobe of the Lake Michigan Lobe.

Wadsworth Till Member (New)

The Wadsworth Till Member of the Wedron Formation is named for Wadsworth, Lake County, and the type section is a roadcut at the intersection of Illinois Highway 131 and the Wadsworth Road 2 miles east of Wadsworth, SE SE SW Sec. 30, T. 46 N., R. 12 E., where 6 feet of typical Wadsworth Till (sample P-6982, table 3) contains the thin Modern Soil in its top. The Wadsworth Till consists of the highly clayey, gray tills of the Lake Border Morainic System, the Tinley Moraine, and most of the Valparaiso Morainic System (pl. 1, fig. 6). The tills of the Lake Border Drift are higher in expandable clay minerals and less pebbly than those in the western part of the member. These drifts, particularly the Tinley, contain a conspicuous amount of Mississippian-Devonian black shale pebbles, and minute brown spores from those rocks are common in the till matrix. In general, the Lake Border Drift is more clayey and contains fewer pebbles and coarser materials than the Valparaiso Drift. Its clay minerals include about 10 percent more montmorillonite than those of the Valparaiso.

The Wadsworth Member is adjacent to the sandy and gravelly Haeger Till Member in northern Illinois, but farther south, beyond the limit of the Haeger, it is much less sharply differentiated from the Yorkville Till Member. The outer margin of the Wadsworth is characterized by till that is more silty and contains more gravel lenses than is typical of either the Wadsworth or Yorkville, and it may be a thin southern equivalent of the Haeger. At the top, the member is bounded by its contact with the Lake Michigan Formation.

The geographic distribution of the member is shown in figure 6, and its spatial relations to other members are indicated diagrammatically in figure 8. Data on matrix grain size, clay mineral composition, and color are given in table 3. As shown in table 2, the Wadsworth and Yorkville Tills have the highest clay content of the tills of the Wedron Formation, are high in illite content, and contain more dolomite than calcite.

The Wadsworth Member is the youngest till member in Illinois in the Woodfordian Substage of the Wisconsinan Stage. It was deposited by the Joliet Sublobe of the Lake Michigan Lobe.

Henry Formation (New)

The Henry Formation, named for Henry, Marshall County, consists of glacial outwash that is dominantly sand and gravel and is overlain only by the Richland Loess, post-Wedron formations (fig. 1) or the Modern Soil. Similar deposits that are