

Soil Survey of Rotation Plot Site

By David Claypool

The Dickinson Branch Station has conducted studies of crop rotations for 80 years. This project is currently known as the Cropping Systems Trial. Because the soils vary within this area a detailed soil survey will be useful to aid in interpreting variability in production data and also to aid in future soil management.

In 1987, a soil survey of the area was conducted. The goals of this survey were to:

1. Produce a topographic map,
2. Identify the soils and map them in detail,
3. To relate certain soil characteristics to their landscape position.

The work was primarily done by Dave Claypool of the Dickinson Station with the assistance of Mr. David Hopkins of the NDSU Soils Department. Dr. J.L. Richardson, also of the Soils Department, acted as advisor to the project.

Description of the Survey Area

The survey area occupies about 5 acres in the main plot field of the Dickinson Branch Experiment Station, located at SW $\frac{1}{4}$ SW $\frac{1}{4}$ Section 32, Range 96W, Township 140N, Stark County. The area is bounded on the south by a dirt access road and on the north by a diversion terrace. Figure 1 shows the layout of the plots and the sampling pattern.

Topographic Map Procedure

The bench mark used for the topographic survey was the northwest corner of the foundation of the west machinery shed. Its elevation was estimated from USGS maps to be 2470 feet. The topographic map is based on surface elevations taken on a grid of 25 foot squares. The base line of the grid was the south edge of the rotation plots which is marked by buried cement markers. The origin for the grid is located on the base line 50 feet west of the west boundary marker of plot 92. From the origin, the grid extends 525 feet to the east and 575 feet to the north.

Summary of Topographic Survey

The topographic map is shown in Figure 2. The average slope from north to south is 5%, a change in elevation of 30 feet. The slope of the plot area is planar except for the northeast corner which is slightly convex. A small erosional rill on the west edge of plots 69 and 70 does not appear on the map.

Soil Survey Procedures

Soil profile descriptions were made from 3 inch diameter cores taken with a Giddings probe to at least 40 inches deep. The cores were taken from the uncropped alleys between plots. Soil colors were described from crushed samples. The lowest depths in the soil descriptions represent the sampling depth and are not necessarily the bottoms of the deepest horizons. Samples for organic matter analysis were taken at the same sites with a 1.5 inch tube in 6 inch increments to 24 inches deep. Percent organic matter was determined by the NDSU Soil Testing Lab using the Walkley-Black method and is listed in Table 1. The soils were classified by David Hopkins from the profile descriptions written by Dave Claypool.

Soil Survey Results

The profile descriptions follow. Soil textures are field estimates. The most common soil type is Farnuf or Farnuf variant. Some soil characteristics change with landscape position. Generally, from north to south, the thickness of the A and B horizons increase, the surface colors darken from 10 YR 3/2 to 10 YR 3/1, and the B horizon colors change from 2.5 Y to 10 YR.

Other characteristics do not vary according to elevation. The percent organic matter increases across the slope (east to west). See Figure 3. The depth to carbonates as detected with dilute HCl increases from west to east (Figure 4).

The northeast corner (Sites 1, 2, 5 and 9) and Site 36 are sandier than the rest of the area. Buried soils occur at Site 6 and at Supplemental Site A (between Sites 1 and 5).

Site 4 is in an alfalfa field north of the conservation terrace and should be considered to be out of the study area.

Future Work

Further interpretations of the soil profile descriptions and lab analysis will be made in the coming year. Soil type and other characteristics will be related to yield response in four crop management systems.

Table 1. Soil Organic Matter (%)

| Site # | Depth (in.) | | | | | | |
|--------|-------------|------|-------|-------|--|------|-------|
| | 0-6 | 6-12 | 12-18 | 18-24 | | 0-12 | 12-24 |
| 1 | 1.90 | 0.47 | 0.13 | 0.47 | | 2.37 | 0.60 |
| 2 | 2.10 | 1.10 | 1.00 | 0.54 | | 3.20 | 1.54 |
| 3 | 2.40 | 1.40 | 0.94 | 0.87 | | 3.80 | 1.81 |
| 4 | 3.20 | 2.10 | 1.50 | 1.50 | | 5.30 | 3.00 |
| 5 | 1.50 | 0.67 | 0.13 | 0.07 | | 2.17 | 0.20 |
| 6 | 2.20 | 1.10 | 1.00 | 0.87 | | 3.30 | 1.87 |
| 7 | 1.60 | 1.90 | 1.00 | 0.67 | | 3.50 | 1.67 |
| 8 | 1.10 | 1.50 | 0.81 | 1.30 | | 2.60 | 2.11 |
| 9 | 1.50 | 0.94 | 0.60 | 0.40 | | 2.44 | 1.00 |
| 10 | 1.30 | 1.60 | 1.50 | 1.00 | | 2.90 | 2.50 |
| 11 | 1.30 | 1.50 | 1.50 | 1.50 | | 2.80 | 3.00 |
| 12 | 2.10 | 1.80 | 1.40 | 1.30 | | 3.90 | 2.70 |
| 13 | 1.70 | 1.30 | 1.30 | 1.30 | | 3.00 | 2.60 |
| 14 | 2.40 | 2.00 | 1.60 | 1.90 | | 4.40 | 3.50 |
| 15 | 2.30 | 1.90 | 1.70 | 1.90 | | 4.20 | 3.60 |
| 16 | 2.60 | 2.20 | 1.50 | 1.70 | | 4.80 | 3.20 |
| 17 | 1.70 | 1.30 | 0.94 | 0.81 | | 3.00 | 1.75 |
| 18 | 2.20 | 1.50 | 1.70 | 1.50 | | 3.70 | 3.20 |
| 19 | 2.10 | 1.80 | 2.00 | 1.90 | | 3.90 | 3.90 |
| 20 | 2.70 | 1.90 | 1.60 | 1.70 | | 4.60 | 3.30 |
| 21 | 1.80 | 1.80 | 1.20 | 0.60 | | 3.60 | 1.80 |
| 22 | 2.30 | 2.40 | 1.80 | 1.50 | | 4.70 | 3.30 |
| 23 | 2.50 | 2.20 | 1.80 | 1.60 | | 4.70 | 3.40 |
| 24 | 2.50 | 2.10 | 1.70 | 1.40 | | 4.60 | 3.10 |
| 25 | 2.40 | 1.50 | 1.30 | 1.30 | | 3.90 | 2.60 |
| 26 | 2.80 | 1.80 | 1.30 | 1.80 | | 4.60 | 3.10 |
| 27 | 3.10 | 2.80 | 1.60 | 1.10 | | 5.90 | 2.70 |
| 28 | 3.20 | 2.40 | 2.10 | 1.70 | | 5.60 | 3.80 |
| 29 | 2.30 | 1.60 | 1.10 | 1.20 | | 3.90 | 2.30 |
| 30 | 2.00 | 1.30 | 1.00 | 1.60 | | 3.30 | 2.60 |
| 31 | 3.00 | 2.30 | 2.00 | 1.70 | | 5.30 | 3.70 |
| 32 | 3.00 | 2.70 | 1.50 | 1.20 | | 5.70 | 2.70 |
| 33 | 2.60 | 2.50 | 1.60 | 1.30 | | 5.10 | 2.90 |
| 34 | 2.70 | 2.20 | 1.60 | 1.50 | | 4.90 | 3.10 |
| 35 | 2.30 | 1.00 | 1.00 | 1.10 | | 3.30 | 2.10 |
| 36 | 1.80 | 1.00 | 0.94 | 0.47 | | 2.80 | 1.41 |

Soil Survey of Rotation Plots, 1987

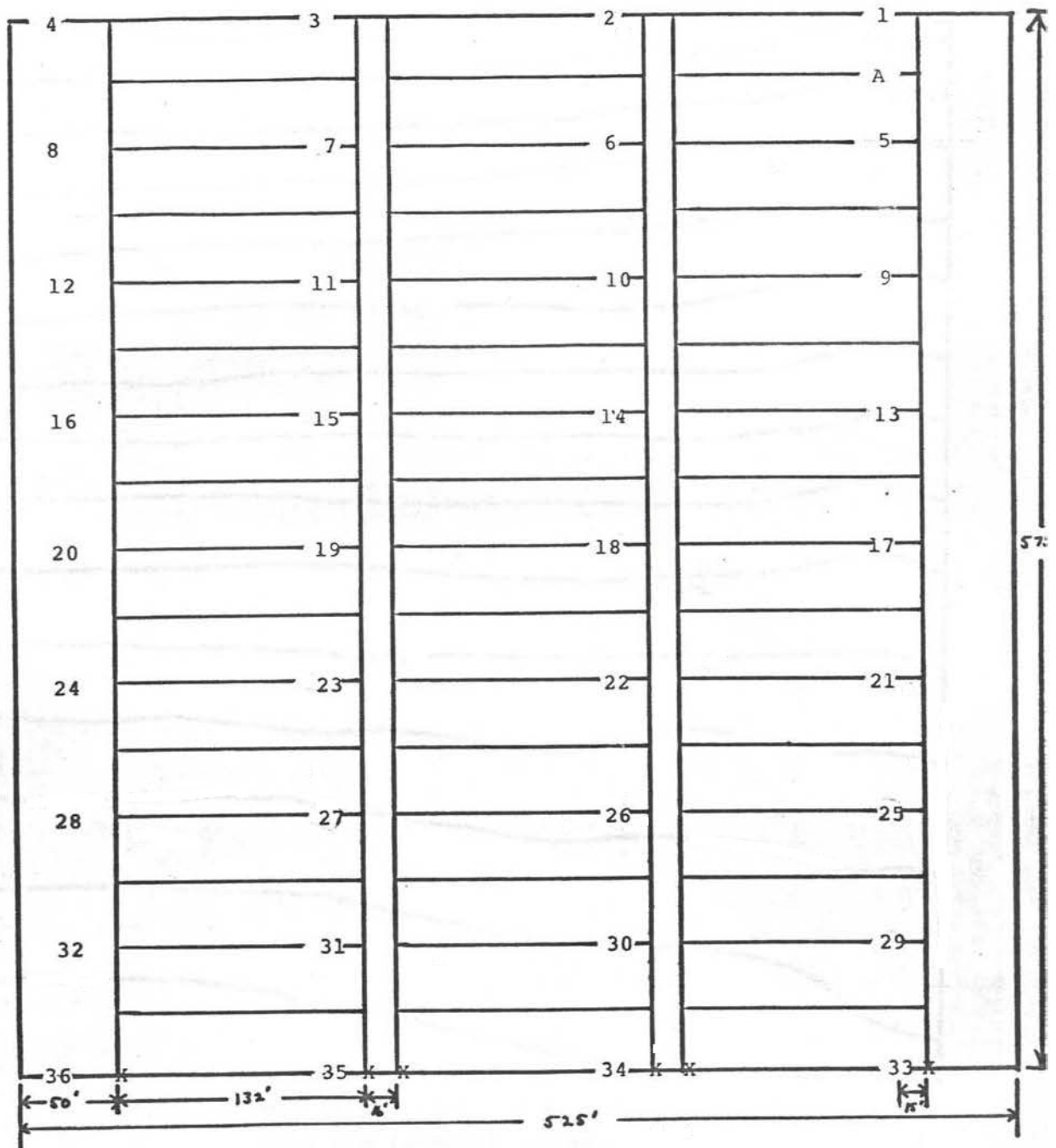


Figure 1. Plots and Sampling Sites.

60-107 = plot numbers
1-36 = sampling sites

X = cement marker



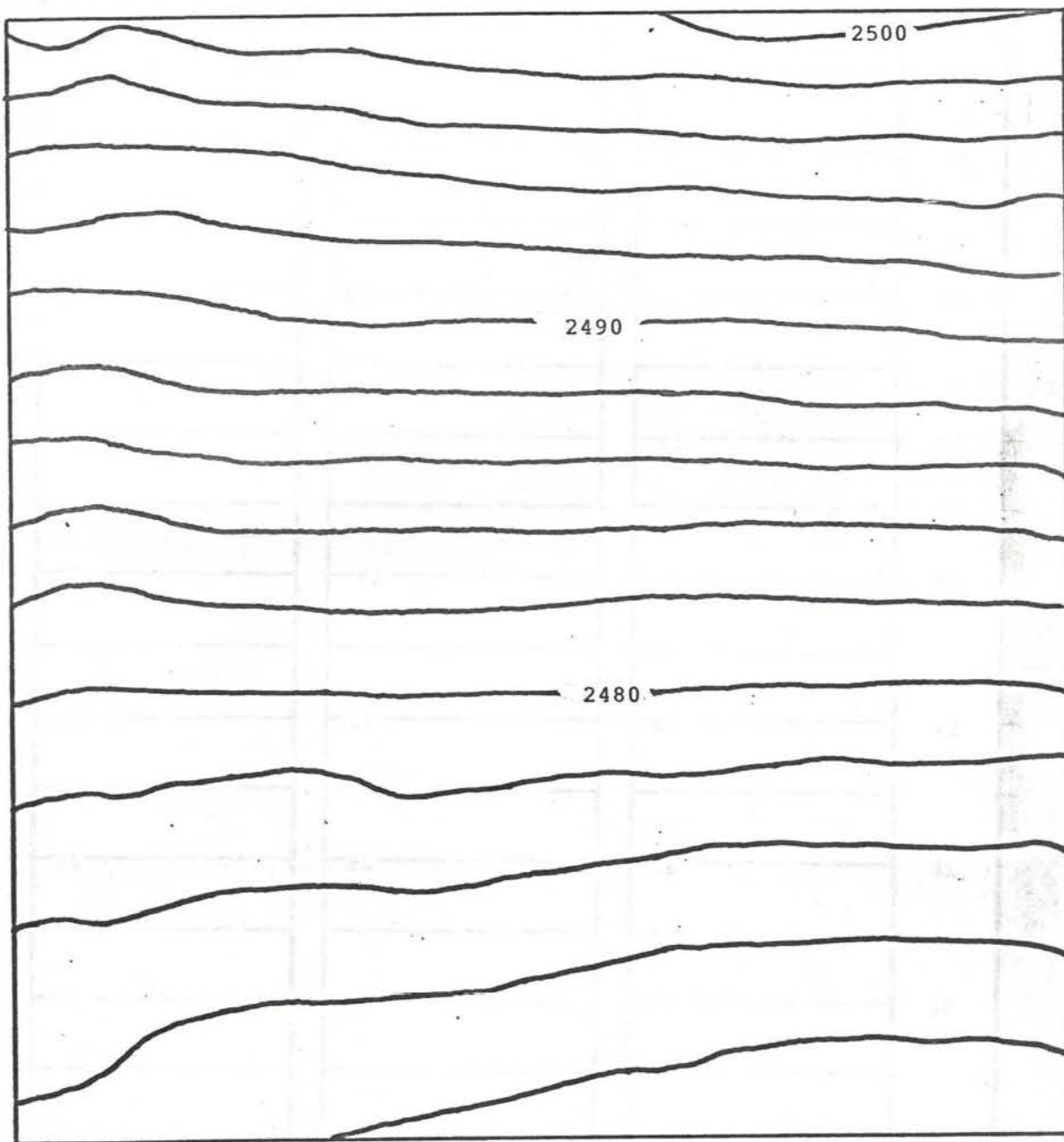


Figure 2. Topographic Map.
contour interval = 2 feet

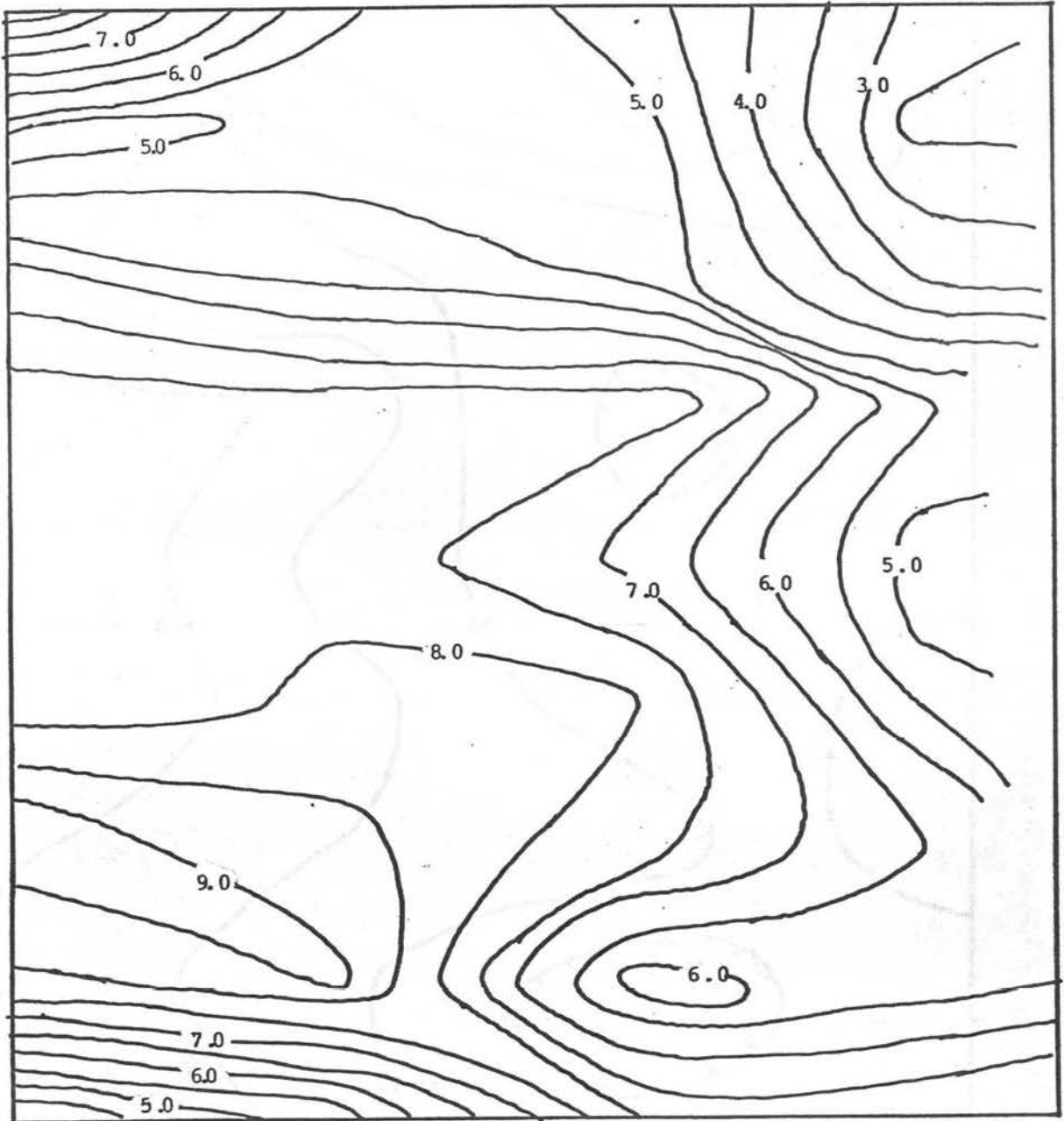


Figure 3. Percent Organic Matter 0-24 inches.

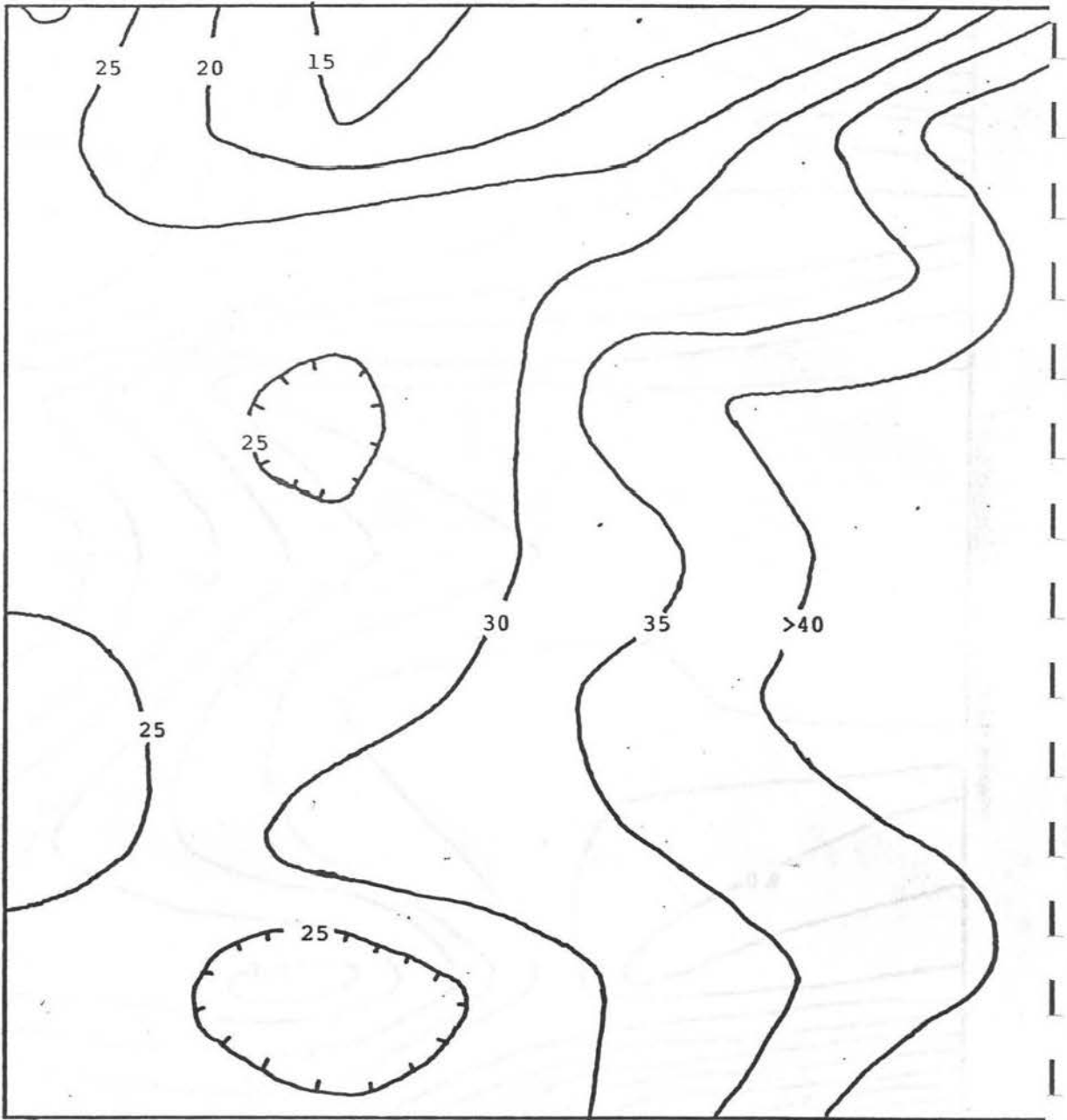


Figure 4. Depth to Carbonates (in.)

Dickinson Experiment Station
Soil Survey of Rotation Plots, 1987
Soil Profile Descriptions

Soil colors are from moist, crushed samples unless noted otherwise.

Site 1

Soil type: Telfer

Classification: Entic Haploboroll, sandy, mixed.

| | | |
|-----|-----------|---|
| Ap | 0-8 in. | Very dark grayish brown (10YR 3/2), loam; moderate coarse and very coarse platy parting to moderate fine subangular blocky structure. |
| Bw1 | 8-21 in. | Light olive brown (2.5Y 5/4), loamy fine sand; weak very coarse prismatic structure. |
| Bw2 | 21-35 in. | Light olive brown (2.5Y 5/4), loamy fine sand; weak very coarse prismatic structure; effervescent. |
| C | 35-40 in. | Light olive brown (2.5Y 5/4), loamy fine sand; single grain. |

Site 2

Soil type: Reeder variant

Classification: Typic Argiboroll, fine-loamy over sandy or sandy skeletal, mixed.

| | | |
|-----|-----------|---|
| Ap | 0-5 in. | Very dark grayish brown (10YR 3/2), loam; moderate medium subangular blocky structure. |
| Bt1 | 5-9 in. | Dark brown-brown (10YR 4/3), loam; moderate medium prismatic structure; many moderately thick clay films on ped faces. |
| Bt2 | 9-12 in. | Dark brown-brown (10YR 4/3), loam, (finer sand than Bt1); moderate medium prismatic structure; many moderately thick clay films on ped faces. |
| Bw | 12-17 in. | Grayish brown (2.5Y 5/2), fine sandy loam; weak coarse prismatic structure; few thin clay films on ped faces. |
| C | 17-25 in. | Grayish brown (2.5Y 5/2), loamy fine sand; massive; effervescent. |
| Cr1 | 25-30 in. | Grayish brown (2.5Y 5/2), loamy fine sand; massive; effervescent; stratified. |
| Cr2 | 30-36 in. | Grayish brown (2.5Y 5/2), loamy fine sand; massive; weakly effervescent; stratified. |
| 2Cr | 36-48 in. | Grayish brown (2.5Y 5/2), sand; massive. |

Rotation Plot Soil Profile Descriptions

Site 3

Soil type: Farnuf variant

Classification: Pachic Argiboroll, fine-loamy, mixed.

| | | |
|-----|-----------|---|
| Ap | 0-5 in. | Dark grayish brown (10YR 3/2), loam; moderate fine subangular blocky structure. |
| Bt | 5-13 in. | Dark grayish brown (2.5Y 4/2), loam; moderate coarse prismatic structure. |
| Btk | 13-21 in. | Dark grayish brown (2.5Y 4/2), loam; moderate coarse prismatic structure; effervescent; stone lines at 15 and 17 inches consisting of ¼ in. diameter angular fragments. |
| Bk | 21-31 in. | Grayish brown (2.5Y 4/2), loam; weak very coarse prismatic structure; common thin clay films on ped faces; effervescent, few medium nests and threads of lime. |
| C | 31-48 in. | Grayish brown (2.5Y 4/2), loam; massive; effervescent, few medium nests and threads of lime; gravel at 46 inches consisting of ¼ in. diameter angular fragments. |

Site 4

Soil type: Farnuf variant

Classification: Pachic Argiboroll, fine-loamy, mixed.

| | | |
|-----|-----------|--|
| Ap | 0-11 in. | Very dark grayish brown (10YR 3/2), loam; weak medium subangular blocky parting to moderate granular structure. |
| Bt1 | 11-21 in. | Dark brown (10YR 3/3), clay loam; strong very coarse prismatic structure; many thin clay films on ped faces. |
| Bt2 | 21-31 in. | Dark grayish brown (2.5Y 4/2), clay loam; strong very coarse prismatic structure; many thin clay films on ped faces. |
| C | 31-44 in. | Dark grayish brown (2.5Y 4/2), sandy clay loam; effervescent, many fine and medium soft masses and threads of lime. |
| | 47 in. | Stone line consisting of ¼ in. diameter angular coarse fragments. |

Rotation Plot Soil Profile Descriptions

Site 5

Soil type: Amor variant

Classification: Typic Haploboroll, fine-loamy over sandy or sandy skeletal, mixed.

| | | |
|----|-----------|---|
| Ap | 0-7 in. | Very dark grayish brown (10YR 3/2), sandy clay loam; moderate medium, fine, and very fine granular structure. |
| Bw | 7-21 in. | Dark grayish brown to grayish brown (2.5Y 4.5/2), loam; weak coarse prismatic structure. |
| C | 21-40 in. | Olive (5Y 5/3), sand; single grain. |

Site 6

Soil type: Farnuf

Classification: Typic Argiboroll, fine-loamy, mixed.

| | | |
|-------|-----------|--|
| Ap | 0-6 in. | Dark grayish brown (10YR 3/2), loam; moderate very coarse subangular blocky parting to fine and very fine granular structure. |
| Bt1 | 6-14 in. | Dark grayish brown to brown (10YR 4/2.5), loam; strong coarse prismatic structure; thick continuous clay films on ped faces. |
| Bt2 | 14-22 in. | Dark grayish brown (2.5Y 4/2); loam; weak very coarse prismatic parting to moderate very coarse subangular blocky structure; common thin clay films. |
| Bk | 22-28 in. | Dark grayish brown (2.5Y 4/2), loam; weak very coarse prismatic structure; strongly effervescent, common fine masses of lime. |
| 2Ab | 28-31 in. | Very dark gray (10YR 3/1), silt loam; weak very coarse prismatic structure. |
| 2Bkb | 31-38 in. | Dark grayish brown (2.5Y 4/2), silt loam; weak very coarse prismatic structure; effervescent, common masses of lime. |
| 2Btkb | 38-46 in. | Olive brown (2.5Y 4/4), silty clay loam; strong very coarse prismatic structure; common moderately thick clay films on ped faces; weakly effervescent, many coarse masses of lime. |
| 2C | 46-49 in. | Dark grayish brown (2.5Y 4/2), silt loam; massive, stratified alluvium. |

Rotation Plot Soil Profile Descriptions

Site 7

Soil type: Farnuf

Classification: Typic Argiboroll, fine-loamy, mixed.

- | | | |
|-----|-----------|---|
| Ap | 0-10 in. | Dark brown (10YR 3/3), clay loam; moderate coarse and medium subangular blocky parting to weak fine and medium granular structure. |
| Bt | 10-15 in. | Dark grayish brown (2.5Y 4/2), clay loam; moderate coarse prismatic parting to moderate medium and coarse subangular blocky structure; continuous thin clay films on ped faces. |
| Bk1 | 15-25 in. | Dark grayish brown to grayish brown (2.5Y 4.5/2), sandy clay loam; weak very coarse prismatic structure; strongly effervescent, common medium and coarse masses of lime; stone line consisting of ½" diameter angular fragments at 16". |
| Bk2 | 25-30 in. | Dark grayish brown to grayish brown (2.5Y 4.5/2), loam; moderate very coarse prismatic structure; effervescent, many medium and coarse masses and threads of lime. |
| Bk3 | 30-42 in. | Dark grayish brown to grayish brown (2.5Y 4.5/2), loam; weak very coarse prismatic structure; effervescent, many medium and coarse soft masses and threads of lime. |
| C | 42+ in. | Dark grayish brown (2.5Y 4/2), sandy clay loam; massive; effervescent. |

Rotation Plot Soil Profile Descriptions

Site 8

Soil type: Farnuf variant

Classification: Pachic Argiboroll, fine-loamy, mixed.

| | | |
|-----|-----------|---|
| Ap | 0-7 in. | Very dark grayish brown (10YR 3/2), sandy clay loam; moderate coarse and very coarse subangular blocky parting to weak fine and medium granular structure. |
| Bt1 | 7-15 in. | Dark brown (10YR 3/3), clay loam; moderate coarse prismatic parting to moderate medium subangular blocky structure; many moderately thick clay films on ped faces. |
| Bt2 | 15-26 in. | Dark grayish brown (2.5Y 4/2), loam; moderate coarse prismatic structure; common thin clay films on ped faces. |
| Bk | 26-38 in. | Dark grayish brown (2.5Y 4/2), sandy clay loam; weak very coarse prismatic structure; very few thin clay films on ped faces; effervescent, common fine masses and threads of lime; stone lines at 31 and 37 in. consisting of ½ in. diameter angular fragments. |
| C | 38-44 in. | Dark grayish brown to grayish brown (2.5Y 4.5/2), sandy clay loam; effervescent, common fine masses and threads of lime. |

Site 9

Soil type: Reeder variant

Classification: Typic Argiboroll, fine-loamy over sandy or sandy skeletal, mixed.

| | | |
|-----|-----------|--|
| Ap | 0-7 in. | Very dark grayish brown (10YR 3/2), sandy clay loam; moderate fine and medium subangular blocky parting to moderate medium granular structure. |
| Bt1 | 7-14 in. | Dark brown (10YR 4/3), sandy clay loam; moderate medium prismatic structure; common thin clay films on ped faces; few fine fragments of lignite. |
| Bt2 | 14-22 in. | Brown (10YR 4.5/3), fine sandy loam; moderate medium prismatic parting to moderate medium subangular blocky structure; common thin clay films on ped faces (thinner than Bt1). |
| Bw | 22-29 in. | Dark grayish brown (2.5Y 4/2), loamy fine sand; weak medium prismatic structure. |
| Cl | 29-35 in. | Dark grayish brown (2.5Y 4/2.5), sand; single grain. |
| C2 | 35-44 in. | Olive brown (2.5Y 4/4), sand; massive; effervescent, many fine soft masses of lime, from 35-40 in., lime disseminated from 40-45 in. |

Rotation Plot Soil Profile Descriptions

Site 10

Soil type: Farnuf variant

Classification: Pachic Argiboroll, fine-loamy, mixed.

| | | |
|-----|-----------|---|
| Ap | 0-5 in. | Very dark grayish brown (10YR 3/2), sandy clay loam; weak fine subangular blocky structure. |
| A | 5-10 in. | Very dark grayish brown (10YR 3/2), sandy clay loam; weak coarse platy parting to moderate fine subangular blocky structure. |
| Bt1 | 10-19 in. | Dark brown (10YR 3/3), clay loam; strong medium prismatic parting to strong fine and medium subangular blocky structure; many moderately thick clay films on ped faces; few fine lignite fragments. |
| Bt2 | 19-31 in. | Dark grayish brown (2.5Y 4/2), sandy clay loam; strong medium prismatic parting to weak fine subangular blocky structure; common thin clay films on ped faces. |
| Btk | 31-40 in. | Dark grayish brown (2.5Y 4/2), sandy clay loam; moderate medium prismatic structure; few thin clay films on ped faces; effervescent, common fine soft masses of lime; stone line at 38 in. consisting of gravel-size fragments. |

Site 11

Soil type: Farnuf variant

Classification: Pachic Argiboroll, fine-loamy, mixed.

| | | |
|-----|-----------|---|
| Ap | 0-7 in. | Very dark grayish brown (10YR 3/2), clay loam; weak fine subangular blocky parting to moderate fine and medium granular structure. |
| Bt1 | 7-17 in. | Very dark grayish brown to dark grayish brown (10YR 3.5/2), clay loam; strong medium prismatic parting to strong medium subangular blocky structure; many moderately thick clay films on ped faces. |
| Bt2 | 17-29 in. | Dark grayish brown (2.5Y 4/2), clay loam; strong medium prismatic structure; common thin clay films on ped faces; common fine fragments of lignite. |
| Bk | 29-40 in. | Dark grayish brown (2.5Y 4/2), fine sandy loam; moderate coarse prismatic structure; few thin clay films on ped faces; effervescent, common medium soft masses and threads of lime. |

Rotation Plot Soil Profile Descriptions

Site 12

Soil type: Farnuf variant

Classification: Pachic Argiboroll, fine-loamy, mixed.

| | | |
|-----|-----------|---|
| Ap | 0-7 in. | Very dark grayish brown (10YR 3/2), clay loam; moderate fine granular structure. |
| Bt1 | 7-13 in. | Dark brown (10YR 4/3), clay loam; medium and strong coarse prismatic structure; many moderately thick clay films on ped faces. |
| Bt2 | 13-24 in. | Dark brown (10YR 3/3), clay loam; strong coarse prismatic parting to strong fine and medium subangular blocky structure; many moderately thick clay films on ped faces. |
| Bt3 | 24-29 in. | Dark grayish brown (2.5Y 4/2), clay loam; strong coarse prismatic structure; common thin clay films on ped faces. |
| Bk1 | 29-36 in. | Dark grayish brown to grayish brown (2.5Y 4.5/2), sandy clay loam; weak very coarse prismatic structure; effervescent, few fine threads of lime. |
| Bk2 | 36-40 in. | Dark grayish brown to grayish brown (2.5Y 4.5/2), sandy clay loam; weak very coarse prismatic structure; strongly effervescent, few medium soft masses and threads of lime. |

Site 13

Soil type: Farnuf

Classification: Typic Argiboroll, fine-loamy, mixed.

| | | |
|-----|-----------|--|
| Ap | 0-7 in. | Very dark grayish brown (10YR 3/2), clay loam; moderate medium subangular blocky parting to moderate medium granular structure. |
| Bt1 | 7-16 in. | Dark brown (10YR 4/3), clay loam; moderate medium prismatic structure; continuous moderately thick clay films on ped faces. |
| Bt2 | 16-26 in. | Brown (10YR 4.5/3), clay loam; moderate medium prismatic parting to moderate coarse subangular blocky structure; continuous moderately thick clay films on ped faces; few fine fragments of lignite. |
| Bt3 | 26-42 in. | Brown (10YR 5/3), clay loam; moderate coarse prismatic structure; common thin clay films on ped faces. |
| Btk | 42-47 in. | Olive brown to light olive brown (2.5Y 4.5/4), loam; weak coarse prismatic structure; common thin clay films on ped faces; effervescent, many medium soft masses and threads of lime. |

Rotation Plot Soil Profile Descriptions

Site 14

Soil type: Farnuf

Classification: Typic Argiboroll, fine-loamy, mixed.

| | | |
|-----|-----------|---|
| Ap | 0-9 in. | Very dark grayish brown (10YR 3/2), loam; weak and moderate coarse subangular blocky parting to moderate fine granular structure. |
| Bt1 | 9-20 in. | Dark brown (10YR 4/3), clay loam; strong coarse prismatic parting to strong fine and medium subangular blocky structure; continuous moderately thick clay films on ped faces. |
| Bt2 | 20-28 in. | Dark grayish brown (10YR 4/2), clay loam; strong coarse prismatic structure; many moderately thick clay films on ped faces; few fine fragments of lignite. |
| Bt3 | 28-39 in. | Dark grayish brown (2.5Y 4/2), sandy clay loam; moderate coarse prismatic structure; many thin clay films on ped faces; few fine fragments of lignite. |
| Bk | 39-41 in. | Dark grayish brown (2.5Y 4/2), clay loam; moderate coarse and very coarse prismatic structure; effervescent, many fine soft masses and threads of lime. |

Rotation Plot Soil Profile Descriptions

Site 15

Soil type: Farnuf

Classification: Typic Argiboroll, fine-loamy, mixed.

| | | |
|------|-----------|--|
| Ap | 0-7 in. | Very dark grayish brown (10YR 3/2), loam; moderate coarse platy and moderate fine and medium subangular blocky parting to moderate fine granular structure. |
| Bt1 | 7-16 in. | Dark yellowish brown (10YR 4/4), clay loam; strong medium and coarse prismatic parting to strong fine and medium subangular blocky structure; continuous moderately thick clay films on ped faces. |
| Bt2 | 16-23 in. | Dark grayish brown (2.5Y 4/2), clay loam; strong medium and coarse prismatic parting to strong fine and medium subangular blocky structure; many moderately thick clay films on ped faces. |
| Btk1 | 23-26 in. | Dark grayish brown (2.5Y 4/2), loam; moderate coarse and medium prismatic structure; common thin clay films on ped faces; effervescent; many fine fragments of lignite. |
| Btk2 | 26-34 in. | Dark grayish brown (2.5Y 4/2), clay loam; moderate coarse and very coarse prismatic structure; few thin clay films on ped faces; effervescent, common fine soft masses and threads of lime; few fine fragments of lignite. |
| Btk3 | 34-40 in. | Dark grayish brown to grayish brown (2.5Y 4.5/2), sandy clay loam; weak coarse and very coarse prismatic structure; common thin clay films on ped faces; effervescent; few fine soft masses and threads of lime. |
| Btk4 | 40-42 in. | Dark grayish brown (2.5Y 4/2), sandy clay loam; weak coarse and very coarse prismatic structure; common thin clay films on ped faces; strongly effervescent, many medium soft masses and threads of lime. |

Rotation Plot Soil Profile Descriptions

Site 16

Soil type: Savage

Classification: Typic Argiboroll, fine, mixed.

| | | |
|-----|-----------|---|
| Ap | 0-9 in. | Very dark grayish brown (10YR 3/2), sandy clay loam; weak coarse subangular blocky parting to moderate medium and coarse granular structure. |
| Bt1 | 9-13 in. | Dark brown (10YR 3/3), clay loam; moderate medium prismatic structure; continuous moderately thick clay films on ped faces. |
| Bt2 | 13-25 in. | Dark grayish brown (10YR 4/2), clay loam; strong coarse prismatic structure; continuous moderately thick clay films on ped faces. |
| Bt3 | 25-29 in. | Dark grayish brown (2.5Y 4/2), clay loam; moderate coarse prismatic structure; many moderately thick clay films on ped faces. |
| Bk | 29-35 in. | Dark grayish brown (2.5Y 4/2), clay loam; weak coarse prismatic structure; common thin clay films on ped faces; effervescent; many very fine soft threads and masses of lime. |
| C | 35-41 in. | Dark grayish brown (2.5Y 4/2), sandy clay loam; massive; effervescent, many very fine soft threads and masses of lime. |

Rotation Plot Soil Profile Descriptions

Site 17

Soil type: Farnuf

Classification: Typic Argiboroll, fine-loamy, mixed.

| | | |
|------|-----------|--|
| Ap | 0-8 in. | Very dark grayish brown (10YR 3/2), loam; weak medium subangular blocky parting to moderate fine granular structure (moderate thick platy parting to subangular blocky and granular structure at 3-8 in.). |
| Bt1 | 8-13 in. | Dark brown (10YR 3/3), loam; moderate medium prismatic; many moderately thick clay films on ped faces. |
| Bt2 | 13-20 in. | Dark grayish brown (2.5Y 4/2), clay loam; strong medium prismatic parting to moderate fine prismatic structure; continuous moderately thick clay films on ped faces. |
| 2Bt3 | 20-29 in. | Dark grayish brown (2.5Y 4/2), sandy clay loam; strong medium prismatic parting to moderate fine prismatic structure; continuous moderately thick clay films on ped faces. |
| 2Bt4 | 29-44 in. | Dark grayish brown (2.5Y 4/2), sandy clay loam; moderate coarse prismatic structure; many thin clay films on ped faces; many fine fragments of lignite at 36-38 in. |
| 2Bt5 | 44-49 in. | Light olive brown (2.5Y 5/4), fine sandy loam; moderate medium prismatic structure; many moderately thick clay films on ped faces. |

Rotation Plot Soil Profile Descriptions

Site 18

Soil type: Farnuf

Classification: Typic Argiboroll, fine-loamy, mixed.

| | | |
|------|-----------|--|
| Ap | 0-7 in. | Very dark grayish brown (10YR 3/2), loam; pale brown (10YR 6/3) dry; weak medium subangular blocky parting to moderate fine and medium granular structure. |
| Bt1 | 7-13 in. | Dark brown to dark yellowish brown (10YR 4/3.5), clay loam; moderate medium prismatic parting to strong fine and medium angular blocky structure; continuous moderately thick clay films on ped faces. |
| Bt2 | 13-16 in. | Dark brown to dark yellowish brown (10YR 4/3.5), clay loam; strong fine prismatic parting to strong medium angular blocky structure; continuous moderately thick clay films on ped faces; few fine fragments of lignite. |
| Bt3 | 16-23 in. | Dark grayish brown (2.5Y 4/2), clay loam; strong medium prismatic parting to strong fine prismatic structure; continuous moderately thick clay films on ped faces. |
| Bt4 | 23-32 in. | Dark grayish brown (2.5Y 4/2), loam; moderate coarse prismatic structure; many thin clay films on ped faces. |
| Btk1 | 32-42 in. | Dark grayish brown (2.5Y 4/2), loam; moderate coarse prismatic structure; common thin clay films on ped faces; effervescent, few fine threads of lime. |
| Btk2 | 42-47 in. | Dark grayish brown (2.5Y 4/2), loam; weak coarse prismatic structure; few thin clay films on ped faces; strongly effervescent, many medium soft masses and many fine threads of lime. |

Rotation Plot Soil Profile Descriptions

Site 19

Soil type: Farnuf

Classification: Typic Argiboroll, fine-loamy, mixed.

| | | |
|-----|-----------|--|
| Ap | 0-8 in. | Very dark grayish brown (10YR 3/2), loam; moderate coarse platy parting to strong medium subangular blocky structure. |
| Bt1 | 8-15 in. | Dark brown (10YR 4/3), clay loam; strong medium prismatic parting to strong fine subangular blocky structure; many moderately thick clay films on ped faces. |
| Bt2 | 15-21 in. | Dark grayish brown (10YR 4/2), clay loam; strong medium prismatic parting to moderate fine prismatic structure; many moderately thick clay films on ped faces. |
| Bt3 | 21-26 in. | Dark grayish brown (10YR 4/2), clay loam; strong medium prismatic structure; common thin clay films on ped faces; few fine fragments of lignite. |
| C | 26-49 in. | Dark grayish brown to grayish brown (10YR 4.5/2), loam; massive; effervescent, many fine soft masses and threads of lime. |

Rotation Plot Soil Profile Descriptions

Site 20

Soil type: Savage

Classification: Typic Argiboroll, fine, mixed.

| | | |
|-----|-----------|---|
| Ap | 0-7 in. | Very dark grayish brown (10YR 3/2), loam; moderate very thick platy parting to moderate fine subangular blocky structure. |
| Bt1 | 7-12 in. | Dark brown (10YR 3/3), clay loam; moderate coarse prismatic structure; many moderately thick clay films on ped faces. |
| Bt2 | 12-21 in. | Dark grayish brown (10YR 4/2), clay loam; strong coarse prismatic parting to moderate coarse angular blocky structure; continuous moderately thick clay films on ped faces. |
| Bt3 | 21-26 in. | Dark grayish brown (2.5Y 4/2), clay loam; strong coarse prismatic parting to moderate fine prismatic and moderate coarse angular blocky structure; many moderately thick clay films on ped faces. |
| Btk | 26-32 in. | Dark grayish brown (2.5Y 4/2), clay loam; weak coarse prismatic structure; few thin clay films on ped faces; effervescent, many medium soft masses and many fine threads of lime. |
| C | 32-42 in. | Dark grayish brown (2.5Y 4/2), loam; massive; effervescent, many medium soft masses and many fine threads of lime; lens of 4 mm diameter gravel at 42 in. |

Rotation Plot Soil Profile Descriptions

Site 21

Soil type: Farnuf variant

Classification: Pachic Argiboroll, fine-loamy, mixed.

| | | |
|-----|-----------|--|
| Ap | 0-8 in. | Very dark grayish brown (10YR 3/2), loam; moderate medium subangular blocky parting to moderate fine granular structure. |
| A | 8-13 in. | Very dark grayish brown (10YR 3/2), loam; weak medium platy structure. |
| Bt1 | 13-21 in. | Dark brown (10YR 3.5/3), sandy loam; moderate medium prismatic; many thin clay films on ped faces. |
| Bt2 | 21-29 in. | Dark brown (10YR 3/3), sandy clay loam; moderate coarse prismatic parting to moderate medium subangular blocky structure; many moderately thick clay films on ped faces. |
| Bt3 | 29-40 in. | Dark brown (10YR 3.5/3), sandy loam; moderate coarse prismatic structure; many moderately thick clay films on ped faces. |
| Bt4 | 40-44 in. | Dark brown (10YR 3/3), sandy clay loam; moderate coarse prismatic structure; many moderately thick clay films on ped faces. |

Rotation Plot Soil Profile Descriptions

Site 22

Soil type: Grail variant

Classification: Pachic Argiboroll, fine-loamy, mixed.

| | | |
|-----|-----------|---|
| Ap | 0-8 in. | Very dark grayish brown (10YR 3/2), loam; weak medium subangular blocky parting to moderate fine granular structure. |
| A | 8-13 in. | Very dark grayish brown (10YR 3/2), loam; moderate medium prismatic parting to moderate fine and medium subangular blocky structure. |
| Bt1 | 13-22 in. | Dark brown (10YR 3/3), loam; strong medium prismatic parting to strong fine and medium angular blocky structure; many thin clay films on ped faces, moderately thick clay films on tops of peds. |
| Bt2 | 22-31 in. | Dark grayish brown (10YR 4/2), clay loam; strong medium prismatic parting to strong fine and medium angular blocky structure; many moderately thick clay films on ped faces. |
| Bt3 | 31-37 in. | Dark grayish brown (10YR 4/2), clay loam; strong medium prismatic parting to strong fine prismatic structure; many moderately thick clay films on ped faces. |
| Btk | 37-42 in. | Dark grayish brown (2.5Y 4/2), clay loam; moderate coarse prismatic structure; common thin clay films on ped faces; slightly effervescent, common fine soft masses and threads of lime; common medium fragments of lignite. |
| C | 42-48 in. | Dark grayish brown (10YR 4/2), loam, massive; effervescent, common fine soft masses and threads of lime. |

Rotation Plot Soil Profile Descriptions

Site 23

Soil type: Farnuf variant

Classification: Pachic Argiboroll, fine-loamy, mixed.

| | | |
|-----|-----------|--|
| Ap | 0-8 in. | Very dark grayish brown (10YR 3/2), loam; pale brown (10YR 6/3) dry; moderate medium and fine platy parting to moderate fine subangular blocky and moderate fine granular structure. |
| A/B | 8-10 in. | Dark brown (10YR 3/3), loam; weak fine subangular blocky parting to moderate fine and medium granular structure. |
| Bt1 | 10-14 in. | Dark brown (10YR 4/3), clay loam; strong fine subangular blocky structure; continuous moderately thick clay films on ped faces. |
| Bt2 | 14-24 in. | Dark brown (10YR 3/3), clay loam; strong medium prismatic parting to strong fine and medium angular blocky structure; continuous moderately thick clay films on ped faces. |
| Bt3 | 24-27 in. | Dark grayish brown (2.5Y 4/2), loam; strong medium and fine prismatic structure; many moderately thick clay films on ped faces; common fine fragments of lignite. |
| Btk | 27-36 in. | Dark grayish brown (2.5Y 4/2), loam; moderate coarse prismatic structure; many thin clay films on ped faces; effervescent, many fine soft threads of lime. |
| C | 36-40 in. | Dark grayish brown (2.5Y 4/2), loam; massive; effervescent, many medium soft masses of lime. |

Rotation Plot Soil Profile Descriptions

Site 24

Soil type: Grail variant

Classification: Pachic Argiboroll, fine, mixed.

| | | |
|-----|-----------|--|
| Ap | 0-7 in. | Very dark grayish brown (10YR 3/2), clay loam; moderate medium platy parting to moderate medium subangular blocky structure. |
| Bt1 | 7-16 in. | Dark brown (10YR 3/3), clay loam; moderate medium prismatic structure; many moderately thick clay films on ped faces. |
| Bt2 | 16-24 in. | Dark brown (10YR 3/3), clay loam; moderate medium prismatic parting to moderate medium subangular blocky structure; continuous moderately thick clay films on ped faces. |
| Btk | 24-36 in. | Dark brown (10YR 4/3), clay loam; moderate medium prismatic structure; few thin clay films on ped faces; effervescent, many fine and medium soft masses and threads of lime. |
| C | 36-45 in. | Dark brown (10YR 3/3), loam; massive; effervescent, many fine soft threads of lime. |

Rotation Plot Soil Profile Descriptions

Site 25

Soil type: Farnuf

Classification: Typic Argiboroll, fine-loamy, mixed.

| | | |
|-----|-----------|---|
| Ap | 0-6 in. | Very dark gray (10YR 3/1), loam; pale brown (10YR 6/3) dry; moderate medium platy parting to moderate medium subangular blocky structure. |
| Bt1 | 6-10 in. | Dark grayish brown (10YR 4/2), loam; weak medium prismatic structure; common thin clay films on ped faces. |
| Bt2 | 10-20 in. | Dark grayish brown (10YR 4/2), clay loam; moderate medium prismatic parting to strong medium angular blocky structure; many moderately thick clay films on ped faces. |
| Bt3 | 20-27 in. | Dark grayish brown (10YR 4/2), clay loam; moderate medium prismatic parting to strong medium angular blocky structure; continuous moderately thick clay films on ped faces. |
| Bt4 | 27-40 in. | Dark grayish brown (10YR 4/2), loam; moderate medium prismatic structure; many thin clay films on ped faces. |
| C1 | 40-45 in. | Light olive brown (2.5Y 5/4), fine sand; massive; slightly effervescent. |
| C2 | 45-48 in. | Dark grayish brown (2.5Y 4/2), loamy fine sand; massive; effervescent, many fine soft masses and threads of lime. |

Rotation Plot Soil Profile Descriptions

Site 26

Soil type: Farnuf

Classification: Typic Argiboroll, fine-loamy, mixed.

| | | |
|-----|-----------|--|
| Ap | 0-7 in. | Very dark gray (10YR 3/1), loam; brown (10YR 5/3) dry; weak medium subangular blocky parting to moderate medium and fine granular structure. |
| Bt1 | 7-12 in. | Dark brown (10YR 3/3), clay loam; moderate medium prismatic structure; many moderately thick clay films on ped faces. |
| Bt2 | 12-22 in. | Dark brown (10YR 4/3), clay loam; moderate medium prismatic parting to strong medium angular blocky structure; many moderately thick clay films on ped faces. |
| Bt3 | 22-26 in. | Dark grayish brown (10YR 4/2), clay loam; moderate medium prismatic parting to strong fine prismatic structure; continuous moderately thick clay films on ped faces. |
| Bt4 | 26-35 in. | Dark grayish brown (10YR 4/2), clay loam; moderate medium prismatic structure; many moderately thick clay films on ped faces. |
| Btk | 35-48 in. | Dark grayish brown to grayish brown (2.5Y 4.5/2), loam; weak coarse prismatic structure; many thin clay films on ped faces; effervescent, many fine soft masses and threads of lime. |

Rotation Plot Soil Profile Descriptions

Site 27

Soil type: Farnuf variant

Classification: Pachic Argiboroll, fine-loamy, mixed.

| | | |
|------|-----------|--|
| Ap | 0-8 in. | Very dark grayish brown (10YR 3/2), loam; moderate medium subangular blocky parting to moderate medium granular structure. |
| Bt1 | 8-14 in. | Dark brown (10YR 3/3), clay loam; weak medium prismatic parting to moderate medium subangular blocky structure; continuous moderately thick clay films on ped faces. |
| Bt2 | 14-27 in. | Dark brown (10YR 3/3), clay loam; moderate medium prismatic structure; many moderately thick clay films on tops and bottoms of peds and many thin clay films on sides of peds. |
| Bt3 | 27-33 in. | Dark grayish brown to grayish brown (2.5Y 4.5/2), sandy clay loam; moderate coarse prismatic structure; common thin clay films on ped faces. |
| Btk1 | 33-41 in. | Dark grayish brown to grayish brown (2.5Y 4.5/2), loam; few thin clay films on ped faces; effervescent, few fine soft masses and threads of lime; stone line consisting of ¼ in. diameter angular fragments at 33-34 in. |
| Btk2 | 41-48 in. | Dark grayish brown (2.5Y 4/2), loam; common thin clay films on ped faces; effervescent, many fine soft masses and threads of lime. |

Rotation Plot Soil Profile Descriptions

Site 28

Soil type: Savage

Classification: Typic Argiboroll, fine, mixed.

| | | |
|------|-----------|---|
| Ap | 0-6 in. | Very dark grayish brown (10YR 3/2), loam; moderate medium subangular blocky parting to moderate medium granular structure. |
| Bt1 | 6-11 in. | Dark grayish brown (10YR 4/2), clay loam; moderate fine subangular blocky structure; common thin clay films on ped faces. |
| Bt2 | 11-16 in. | Dark grayish brown (10YR 4/2), clay loam; moderate medium prismatic structure; many moderately thick clay films on ped faces. |
| Bt3 | 16-21 in. | Dark grayish brown (10YR 4/2), clay loam; moderate medium prismatic parting to strong fine and medium angular blocky structure; many moderately thick clay films on ped faces. |
| Btk1 | 21-26 in. | Dark grayish brown (2.5Y 4/2), clay loam; moderate medium prismatic structure; many thin clay films on ped faces; slightly effervescent. |
| Btk2 | 26-31 in. | Dark grayish brown (2.5Y 4/2), clay loam; moderate medium prismatic parting to moderate medium subangular blocky structure; common thin clay films on ped faces; effervescent, many fine soft masses and threads of lime. |
| Btk3 | 31-40 in. | Dark grayish brown (10YR 4/2), clay loam; moderate medium prismatic structure; common thin and moderately thick clay films on ped faces; effervescent, common fine soft masses and threads of lime; common fine fragments of lignite. |
| Btk4 | 40-43 in. | Dark grayish brown (10YR 4/2), clay loam; moderate medium prismatic parting to moderate medium subangular blocky structure; many thin clay films on ped faces; effervescent, many fine soft masses and threads of lime. |

Rotation Plot Soil Profile Descriptions

Site 29

Soil type: Farnuf

Classification: Typic Argiboroll, fine-loamy, mixed.

| | | |
|------|-----------|--|
| Ap | 0-7 in. | Very dark gray (10YR 3/1), loam; brown (10YR 5/3) dry; moderate thick platy and weak medium subangular blocky parting to moderate fine granular structure. |
| A/B | 7-10 in. | Dark brown (10YR 3/3), loam; moderate very thick platy structure. |
| Bt1 | 10-19 in. | Dark brown (10YR 4/3), clay loam; moderate medium prismatic parting to strong medium angular blocky structure; many moderately thick clay films on ped faces. |
| Bt2 | 19-38 in. | Dark grayish brown (10YR 4/2), sandy clay loam; moderate medium prismatic structure; many thin clay films on ped faces. |
| Btk1 | 38-41 in. | Dark grayish brown (10YR 4/2), fine sandy loam; moderate medium prismatic structure; common thin clay films on ped faces; effervescent. |
| Btk2 | 41-48 in. | Dark grayish brown (10YR 4/2), fine sandy loam; weak medium prismatic structure; common thin clay films on ped faces; effervescent, many fine soft masses and threads of lime. |

Rotation Plot Soil Profile Descriptions

Site 30

Soil type: Farnuf

Classification: Typic Argiboroll, fine-loamy, mixed.

| | | |
|-------|-----------|--|
| Ap | 0-7 in. | Very dark gray (10YR 3/1), loam; brown (10YR 5/3) dry; weak medium subangular blocky parting to moderate fine granular structure. |
| Bt1 | 7-16 in. | Dark brown (10YR 4/3), clay loam; moderate medium prismatic parting to strong medium subangular blocky structure; many moderately thick and common thick clay films on ped faces. |
| Bt2 | 16-25 in. | Dark grayish brown (10YR 4/2), clay loam; moderate medium prismatic parting to strong medium angular blocky structure; continuous moderately thick clay films on ped faces. |
| Bt3 | 25-31 in. | Dark grayish brown (10YR 4/2), loam; moderate medium prismatic parting to moderate fine prismatic structure; many moderately thick clay films on ped faces. |
| Btk | 31-36 in. | Dark grayish brown to grayish brown (10YR 4.5/2), loam; weak coarse prismatic structure; common thin clay films on ped faces; effervescent, many fine soft masses and threads of lime. |
| C | 36-40 in. | Brown (10YR 5/3), fine sandy loam; massive; slightly effervescent. |
| 2Btkb | 40-48 in. | Brown (10YR 5/3), fine sandy loam; weak coarse prismatic structure; common thin clay films on ped faces; effervescent, many fine soft masses and threads of lime. |

Rotation Plot Soil Profile Descriptions

Site 31

Soil type: Farnuf

Classification: Typic Argiboroll, fine-loamy, mixed.

| | | |
|-------|-----------|--|
| Ap | 0-6 in. | Very dark gray (10YR 3/1), loam; pale brown (10YR 6/3) dry; weak medium subangular blocky parting to moderate fine granular structure. |
| Bt1 | 6-13 in. | Dark brown (10YR 4/3), clay loam; weak medium prismatic structure; many moderately thick clay films on ped faces. |
| Bt2 | 13-21 in. | Dark grayish brown (10YR 4/2), clay loam; moderate medium prismatic structure; continuous moderately thick clay films on ped faces. |
| Btk1 | 21-29 in. | Dark grayish brown to grayish brown (2.5Y 4.5/2), clay loam; weak coarse prismatic structure; common thin clay films on ped faces; effervescent, common fine soft masses and threads of lime. |
| Btk2 | 29-39 in. | Dark grayish brown to grayish brown (2.5Y 4.5/2), loam; weak coarse prismatic structure; common thin clay films on ped faces; effervescent, many fine soft masses and threads of lime; common fine fragments of lignite. |
| C | 39-44 in. | Dark grayish brown (2.5Y 4/2), loam; massive; slightly effervescent. |
| 2Btkb | 44-48 in. | Dark grayish brown (10YR 4/2), loam; weak coarse prismatic structure; many thin clay films on ped faces; effervescent, many fine soft masses and threads of lime. |

Rotation Plot Soil Profile Descriptions

Site 32

Soil type: Farnuf variant

Classification: Pachic Argiboroll, fine-loamy, mixed.

- | | | |
|--------|-----------|--|
| Ap | 0-5 in. | Very dark grayish brown (10YR 3/2), clay loam; weak very thick platy parting to moderate coarse and very coarse subangular blocky structure. |
| A | 5-11 in. | Very dark grayish brown (10YR 3/2), clay loam; moderate very coarse prismatic parting to strong coarse and medium angular blocky structure. |
| Bt1 | 11-17 in. | Dark brown (10YR 3/3), silty clay loam; weak coarse prismatic structure. |
| Bt2 | 17-29 in. | Dark grayish brown (2.5Y 4/2), silty clay loam; weak very coarse prismatic structure. |
| 2C | 29-33 in. | Dark grayish brown (2.5Y 4.5/2), sandy clay loam; massive; effervescent. |
| 3Btkb1 | 33-36 in. | Dark grayish brown (2.5Y 4/2), sandy clay loam; weak coarse prismatic structure; few thin clay films on ped faces; effervescent, common fine and medium soft masses and threads of lime. |
| 3Btkb2 | 36-45 in. | Dark grayish brown (2.5Y 4/2), sandy clay loam; weak very coarse prismatic parting to moderate medium and coarse subangular blocky structure; few thin clay films on ped faces; strongly effervescent, many medium and coarse soft masses and threads of lime. |

Rotation Plot Soil Profile Descriptions

Site 33

Soil type: Farnuf

Classification: Typic Argiboroll, fine-loamy, mixed.

| | | |
|-----|-----------|---|
| Ap | 0-8 in. | Very dark gray (10YR 3/1), loam; pale brown (10YR 6/3) dry; weak medium subangular blocky parting to moderate fine granular structure. |
| A/B | 8-13 in. | Very dark gray (10YR 3/1), loam; weak coarse subangular blocky structure. |
| BA | 13-18 in. | Dark grayish brown (10YR 4/2), loam; weak fine prismatic structure; common thin clay films on ped faces. |
| Bt1 | 18-23 in. | Dark brown (10YR 4/3), clay loam; moderate medium prismatic structure; continuous moderately thick to thick clay films on ped faces. |
| Bt2 | 23-30 in. | Dark brown (10YR 4/3), clay loam; moderate medium prismatic parting to strong medium angular blocky structure; continuous moderately thick clay films on ped faces. |
| Bt3 | 30-38 in. | Dark grayish brown (10YR 4/2), loam; moderate medium prismatic structure; many thin clay films on ped faces. |
| Bt4 | 38-45 in. | Dark grayish brown (10YR 4/2), loam; weak coarse prismatic structure; common thin clay films on ped faces. |
| Btk | 45-48 in. | Dark grayish brown (2.5Y 4/2), loam; weak coarse prismatic structure; common thin clay films on ped faces; effervescent, many fine soft masses and threads of lime. |

Rotation Plot Soil Profile Descriptions

Site 34

Soil type: Farnuf

Classification: Typic Argiboroll, fine-loamy, mixed.

| | | |
|------|-----------|--|
| Ap | 0-7 in. | Very dark gray (10YR 3/1), loam; brown (10YR 5/3) dry; moderate thick platy parting to moderate medium subangular blocky structure. |
| B/A | 7-12 in. | Very dark grayish brown (10YR 3/2), loam; weak coarse and medium subangular blocky structure; few moderately thick clay films on ped faces. |
| Bt1 | 12-17 in. | Dark brown (10YR 4/3), loam; moderate coarse and medium prismatic parting to strong medium and fine subangular blocky structure; many moderately thick and thick clay films on ped faces. |
| Bt2 | 17-24 in. | Dark brown (10YR 4/3), clay loam; moderate medium prismatic parting to moderate medium angular blocky structure; continuous moderately thick and thick clay films on ped faces. |
| Bt3 | 24-31 in. | Dark grayish brown (2.5Y 4/2), loam; moderate medium prismatic parting to strong medium coarse angular blocky structure; continuous moderately thick and thick clay films on ped faces. |
| Btk1 | 31-35 in. | Dark grayish brown to grayish brown (2.5Y 4.5/2), loam; moderate coarse prismatic structure; many thin clay films of ped faces; effervescent, common fine soft masses and threads of lime. |
| Btk2 | 35-40 in. | Dark grayish brown to grayish brown (2.5Y 4.5/2), loam; weak coarse prismatic structure; common thin clay films on ped faces; effervescent, common fine soft masses and threads of lime. |
| Btk3 | 40-46 in. | Dark grayish brown to grayish brown (2.5Y 4.5/2), loam; weak coarse prismatic structure; common thin clay films on ped faces; effervescent, common fine soft masses and threads of lime. |

Rotation Plot Soil Profile Descriptions

Site 35

Soil type: Farnuf

Classification: Typic Argiboroll, fine-loamy, mixed.

| | | |
|------|-----------|--|
| Ap | 0-7 in. | Very dark gray (10YR 3/1), loam; brown (10YR 5/3) dry; moderate thick platy parting to moderate medium subangular blocky structure. |
| B/A | 7-16 in. | Dark brown (10YR 4/3), clay loam; moderate medium and fine subangular blocky structure; many moderately thick clay films on ped faces. |
| Bt | 16-26 in. | Olive brown (2.5Y 4/4), clay loam; moderate medium subangular blocky structure; many thin clay films on ped faces. |
| Btk1 | 26-37 in. | Dark grayish brown (2.5Y 4/2), clay loam; moderate medium prismatic parting to moderate coarse angular blocky structure; continuous moderately thick and thick clay films on ped faces; effervescent, common fine soft masses and threads of lime. |
| Btk2 | 37-45 in. | Dark grayish brown to grayish brown (2.5Y 4.5/2), clay loam; moderate medium prismatic structure; many moderately thick clay films on ped faces; effervescent, many fine and medium soft masses and threads of lime. |
| Btk3 | 45-48 in. | Dark grayish brown (2.5Y 4/2), clay loam; weak coarse prismatic structure; common thin clay films on ped faces; slightly effervescent, many fine soft masses of lime. |

Rotation Plot Soil Profile Descriptions

Site 36

Soil type: Yegen

Classification: Typic Argiboroll, coarse-loamy, mixed.

| | | |
|-----|-----------|--|
| Ap | 0-8 in. | Very dark gray (10YR 3/1), sandy clay loam; brown (10YR 5/3) dry; weak thick platy parting to moderate medium subangular blocky structure. |
| A/B | 8-11 in. | Dark grayish brown (10YR 4/2), sandy loam; weak thick platy structure. |
| Bt1 | 11-21 in. | Dark brown (10YR 4/3), sandy loam; weak coarse prismatic structure; many thin clay films on ped faces. |
| Bt2 | 21-30 in. | Dark brown (10YR 4/3), sandy loam; weak coarse prismatic structure; common thin clay films on ped faces. |
| BC | 30-41 in. | Dark brown (10YR 4/3), sandy loam massive; very few clay films bridging sand grains; effervescent; a ½ in. thick layer of sandstone is present at 33 inches. |
| C | 41-48 in. | Light olive brown (2.5Y 5/4), loamy sand; single grain; slightly effervescent. |

Supplemental Site A

Soil type: Lefor variant

Classification:

| | | |
|-------|-----------|--|
| Ap | 0-7 in. | Very dark grayish brown (10YR 3/2), loam; dark grayish brown to dark brown (10YR 4/2.5) dry; weak coarse subangular blocky parting to weak medium and fine granular structure. |
| Bt | 7-13 in. | Dark brown (10YR 3/3), sandy clay loam; strong coarse prismatic parting to moderate coarse subangular blocky structure. |
| 2 Bw | 13-20 in. | Dark brown (10YR 4/3), fine sandy loam; pale brown (10YR 6/3) dry; weak coarse prismatic parting to moderate coarse subangular blocky structure. |
| 3Bt1b | 20-25 in. | Dark grayish brown to olive brown (2.5Y 4/3), clay loam; strong coarse prismatic structure; continuous moderately thick clay films on ped faces. |
| 4Bt2b | 25-30 in. | Olive (5Y 5/3), loam; strong coarse prismatic structure; continuous moderately thick clay films on ped faces. |
| 5C | 30-72 in. | Grayish brown to light olive brown (2.5Y 5/3), fine sand; single grain. |