

Appendix H.

Mississippi River Geomorphology Report

**MISSISSIPPI RIVER EROSION STUDY
SOIL PROFILE DESCRIPTIONS-SAMPLING TUBE CORES**

SITE NAME: ST1 **RM825.5 Site 1** Right descending bank, midpoint.

GEOMORPHIC SURFACE: Late Wisconsinan outwash terrace.

POSITION IN LANDSCAPE: Along shoulder slope of terrace 200' above water's edge.

PARENT MATERIALS: Mississippi River outwash.

WATER TABLE: Below bottom of core.

SURFACE ELEVATION: approx 850.0'

USGS 7.5 MIN. QUADRANGLE: Inver Grove Heights, MN.

SLOPE: 25-30%

VEGETATION: Mixed hardwood forest.

METHODOLOGY: JMC sampling tube core (1.0" or 1.5" ID).

DEPTH OF CORE, TRENCH, BORING, OR SOIL PIT: 5.0', 152cm.

PHOTOGRAPHED: Color slide of area.

DATE DESCRIBED: 9/11/1995

DESCRIBED BY: Jeff Anderson

REMARKS: Very steep sloped, very coarse grained late glacial outwash terrace, boulder lag armoring the channel margin. Unstable slope along outer meander bend.

DEPT H (FT) (CM)	<u>USCS SOIL CLASSIFICATION</u> <u>USDA HORIZON DESIGNATION</u>	SOIL/GEOLOGIC DESCRIPTION
<u>0-1.0</u> 0-30	<u>SP</u> A	10YR 2/2-very dark brown; sandy loam; weak medium granular structure; friable; common fine roots; few granules (fine gravel); noncalcareous; clear boundary.
<u>1.0-3.75</u> 30-114	<u>SP</u> Bw	7.5YR 4/6-strong brown; sandy loam; weak medium subangular blocky structure; friable; common fine roots; few granules and small well rounded pebbles (fine gravel); noncalcareous; clear boundary.
<u>3.75-5.0</u> 114-152	<u>SP</u> C	10YR 6/4-light yellowish brown; sandy loam (fine medium sand); single grain; loose; few granules and small well rounded pebbles (fine gravel); noncalcareous.

SITE NAME: ST2T **RM805**

GEOMORPHIC SURFACE: Mississippi River late Holocene island

POSITION IN LANDSCAPE: Flat lying.

PARENT MATERIALS: Mississippi River alluvium.

WATER TABLE: Below bottom of core.

SURFACE ELEVATION: approx 680.0'

USGS 7.5 MIN. QUADRANGLE: Diamond Bluff West, WI-MN.

SLOPE: 0%

VEGETATION: Silver maples

METHODOLOGY: JMC sampling tube core (1.0" or 1.5" ID).

DEPTH OF CORE, TRENCH, BORING, OR SOIL PIT: 3.3', 100cm.

PHOTOGRAPHED:

DATE DESCRIBED: 9/11/1995

DESCRIBED BY: Jeff Anderson

REMARKS: Brief stop at this location. A quick test core was advanced. Late Holocene deposit capped by about two feet of recent historical deposits.

DEPTH (FT) (CM)	<u>USCS SOIL CLASSIFICATION</u> USDA HORIZON DESIGNATION	SOIL/GEOLOGIC DESCRIPTION
<u>0-2.0</u> 0-60	<u>SM-ML</u> C	10YR 4/4-3/3-dark yellowish brown to dark brown; loam (silt and sand); weak medium platy structure; friable; historical flood laminae of silt and sand; noncalcareous; abrupt boundary.
<u>2.0-2.6</u> 60-80	<u>SM</u> A	10YR 2/2-very dark brown; loam; moderate medium granular structure; friable; common fine roots; noncalcareous; clear boundary.
<u>2.6-3.3</u> 80-100	<u>SP-SM</u> Bw	10YR 4/4-dark yellowish brown; sandy loam; single grain; loose; noncalcareous.

SITE NAME: ST3T **RM801**

GEOMORPHIC SURFACE: Mississippi River late Holocene surface.

POSITION IN LANDSCAPE: Flat lying.

PARENT MATERIALS: Mississippi River alluvium.

WATER TABLE: Below bottom of core.

SURFACE ELEVATION: approx 680.0'

USGS 7.5 MIN. QUADRANGLE: Diamond Bluff West, WI-MN.

SLOPE: 0%

VEGETATION: Silver maples

METHODOLOGY: JMC sampling tube core (1.0" or 1.5" ID).

DEPTH OF CORE, TRENCH, BORING, OR SOIL PIT: 1.3', 40cm.

PHOTOGRAPHED:

DATE DESCRIBED: 9/11/1995

DESCRIBED BY: Jeff Anderson

REMARKS: Brief stop at this location. A quick test core was advanced. Recent historical alluvium recorded in this shallow core.

<u>DEPTH</u> <u>(FT)</u> <u>(CM)</u>	<u>USCS SOIL CLASSIFICATION</u> <u>USDA HORIZON DESIGNATION</u>	<u>SOIL/GEOLOGIC</u> <u>DESCRIPTION</u>
<u>0-1.3</u> 0-40	<u>SM-ML</u> C	10YR 4/4-3/3-dark yellowish brown to dark brown; loam (silt and sand); weak medium platy structure; friable; historical flood laminae of silt and sand; noncalcareous.

SITE NAME: ST4a&b **RM791.7 Site 2** Right descending bank, midpoint.

GEOMORPHIC SURFACE: Mississippi River very late Holocene surface.

POSITION IN LANDSCAPE: Flat lying.

PARENT MATERIALS: Mississippi River alluvium.

WATER TABLE: 3.4', 103cm.

SURFACE ELEVATION: approx 675.0'

USGS 7.5 MIN. QUADRANGLE: Red Wing, WI-MN.

SLOPE: 0%

VEGETATION: Silver maples

METHODOLOGY: JMC sampling tube core (1.0" or 1.5" ID).

DEPTH OF CORE, TRENCH, BORING, OR SOIL PIT: 10.2', 310cm.

PHOTOGRAPHED: B/W print and color slide of ST4.

DATE DESCRIBED: 9/11-12/1995

DESCRIBED BY: Jeff Anderson

REMARKS: Historical alluvium recorded in this core capping the surface. Very late Holocene deposits lie below. A weak thin buried AC horizon exists beginning at 37.0", 94cm. Below this unit is calcareous flood laminae containing partially decomposed gastropod shells. Outer meander bend.

<u>DEPTH</u> <u>(FT)</u>	<u>USCS SOIL CLASSIFICATION</u>	<u>SOIL/GEOLOGIC</u>
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(CM)	USDA HORIZON DESIGNATION	DESCRIPTION
<u>0-0.33</u> 0-10	<u>SP</u> C	10YR 4/4-dark yellowish brown; medium sand; single grain; loose; historical sand deposit; noncalcareous; abrupt boundary.
<u>0.33-2.0</u> 10-60	<u>SP</u> Bw	7.5YR 4/4-brown; loamy sand (medium sand with minor silt); weak medium subangular blocky structure; friable to loose; weak B horizon; noncalcareous; gradual boundary.
<u>2.0-3.1</u> 60-94	<u>SP</u> C	10YR 4/4-dark yellowish brown; fine medium sand; single grain; loose; noncalcareous. abrupt boundary.
<u>3.1-3.2</u> 94-97.5	<u>SP-SM</u> ACb	N2/0-3/0-black to very dark gray; sandy loam; massive to single grain; friable to loose; charcoal flecks and black organic material; noncalcareous; abrupt boundary.
<u>3.2-3.4</u> 97.5-104	<u>SP</u> Cb	7.5YR 4/4-brown; medium sand; single grain; nonsticky; saturated; common coarse prominent mottles; noncalcareous; abrupt boundary.
<u>3.4-3.6</u> 104-109	<u>SP</u> C2b	10YR 4/2-dark grayish brown; medium sand; single grain; nonsticky; saturated; mottles along sand bedding planes; shell fragments; calcareous; abrupt boundary.
<u>3.6-5.8</u> 109-177	<u>SM</u> Cg3b	10YR 4/1-3/1-dark gray to very dark gray; silt loam to loam (silty fine sand); massive; sticky; common medium distinct mottles; common to many fine roots; charcoal unit from 4.1' to 4.3', 126cm-130cm; gleyed; calcareous; abrupt boundary.
<u>5.8-10.2</u> 177-310	<u>ML</u> Cg4b	N3/0-very dark gray; silt loam (silt); massive; sticky; common fine roots; laminae of silt and very fine sand, less than 0.1' (few mm's) thick; shell fragments; gleyed; some units calcareous, others noncalcareous.

SITE NAME: ST5T **RM791.7 Site 2**

GEOMORPHIC SURFACE: Mississippi River very late Holocene surface.

POSITION IN LANDSCAPE: Flat lying.

PARENT MATERIALS: Mississippi River alluvium.

WATER TABLE: 1.9', 58cm.

SURFACE ELEVATION: approx 675.0'

USGS 7.5 MIN. QUADRANGLE: Red Wing, WI-MN.

SLOPE: 0%

VEGETATION: Silver maples

METHODOLOGY: JMC sampling tube core (1.0" or 1.5" ID).

DEPTH OF CORE, TRENCH, BORING, OR SOIL PIT: 5.0', 152cm.

PHOTOGRAPHED:

DATE DESCRIBED: 9/12/1995

DESCRIBED BY: Jeff Anderson

REMARKS: Recent flood deposit caps the top 0.4', 13cm. A very weak soil in apparent very late Holocene to early historic deposit lies below. Weak organic enrichment occurs from 0.8' to 1.0', 25cm-30cm. Calcareous flood laminae containing partially decomposed gastropod shells. Adjacent particle size sample #2.

DEPTH (FT) (CM)	<u>USCS SOIL CLASSIFICATION</u> USDA HORIZON DESIGNATION	SOIL/GEOLOGIC DESCRIPTION
<u>0-0.4</u> 0-13	<u>SP</u> C	10YR 6/4-light yellowish brown; medium sand; single grain; loose; recent historical sand deposit; erosion surface at the contact with the lower horizon; noncalcareous; abrupt boundary.
<u>0.4-0.6</u> 13-18	<u>SP</u> C2	10YR 6/4-light yellowish brown; medium sand; single grain; loose; common medium distinct mottles along bedding planes; mottles highly oxidized and concretionary; noncalcareous; abrupt boundary.
<u>0.6-0.8</u> 18-25	<u>SP</u> C3	10YR 4/1-dark gray; fine medium sand; single grain; loose; thin bedded sand laminae; many medium distinct mottles along bedding planes; some silty sand laminae; noncalcareous. abrupt boundary.
<u>0.8-1.0</u> 25-30	<u>SM</u> ACb	10YR2/1-black; loam (silty sand); moderate medium subangular blocky; friable; charcoal flecks and black organic material; many fine roots and root holes; noncalcareous; abrupt boundary.
<u>1.0-5.0</u> 30-152	<u>ML</u> Cgb	10YR 3/1-very dark gray; silt loam (silty very fine sand); massive; sticky to nonsticky; saturated; common medium distinct mottles; common fine roots; becoming gleyed 10YR4/1 massive silt with common shell fragments; calcareous.

SITE NAME: ST6a&b **RM763.4 Site 3** Left descending bank, midpoint.

GEOMORPHIC SURFACE: Chippewa River tributary fan capped by historical alluvium and spoil.

POSITION IN LANDSCAPE: Flat lying.

PARENT MATERIALS: Mixed dredge spoil and historical alluvium.

WATER TABLE: 1.7', 52cm.

SURFACE ELEVATION: approx 675.0'

USGS 7.5 MIN. QUADRANGLE: Wabasha North, MN-WI.

SLOPE: 0%

VEGETATION: Silver maples

METHODOLOGY: JMC sampling tube core (1.0" or 1.5" ID).

DEPTH OF CORE, TRENCH, BORING, OR SOIL PIT: 4.5', 138cm.

PHOTOGRAPHED:

DATE DESCRIBED: 9/12/1995

DESCRIBED BY: Jeff Anderson

REMARKS: Sandy dredge spoil caps recent historical flood laminae. The native pre-settlement soil was not encountered. Just below the Chippewa River confluence.

DEPTH (FT) (CM)	USCS SOIL CLASSIFICATION USDA HORIZON DESIGNATION	SOIL/GEOLOGIC DESCRIPTION
<u>0-0.9</u> 0-27	<u>SP</u> C	10YR 7/3-very pale brown; medium coarse sand with few granules (sand with fine gravel); single grain; loose; dredge spoil; noncalcareous; abrupt boundary.
<u>0.9-1.2</u> 27-35.5	<u>SM</u> 2C	10YR 5/4-yellowish brown; loam (silty fine sand); massive; slightly sticky; common medium distinct mottles; historical alluvium; saturated; noncalcareous; abrupt boundary.
<u>1.2-2.7</u> 35.5-81	<u>SP</u> 2C2	10YR 5/4-yellowish brown; medium sand; single grain; nonsticky; historical alluvium; saturated; noncalcareous; abrupt boundary.
<u>2.7-3.0</u> 81-91	<u>SM</u> 2Cg3	N4/0-dark gray; loam (silty sand); massive; sticky; common fine roots and organic material; thick bedded flood lamina 0.5" 1.0cm thick; noncalcareous; abrupt boundary.
<u>3.0-4.5</u> 91-138	<u>SP</u> 2Cg4	medium coarse sand; saturated; no recovery

SITE NAME: ST7 **RM763.4 Site 3** Left descending bank, midpoint.

GEOMORPHIC SURFACE: Chippewa River tributary fan capped by historical alluvium and spoil.

POSITION IN LANDSCAPE: Flat lying.

PARENT MATERIALS: Mixed dredge spoil and historical alluvium.

WATER TABLE: 1.9', 58cm.

SURFACE ELEVATION: approx 675.0'

USGS 7.5 MIN. QUADRANGLE: Wabasha North, MN-WI.

SLOPE: 0%

VEGETATION: Silver maples

METHODOLOGY: JMC sampling tube core (1.0" or 1.5" ID).

DEPTH OF CORE, TRENCH, BORING, OR SOIL PIT: 3.6', 110cm.

PHOTOGRAPHED:

DATE DESCRIBED: 9/12/1995

DESCRIBED BY: Jeff Anderson

REMARKS: Sandy dredge spoil caps recent historical flood laminae. The native pre-settlement soil was not encountered. ST7 is about 4.5' upslope from ST6a&b.

DEPTH (FT) (CM)	USCS SOIL CLASSIFICATION USDA HORIZON DESIGNATION	SOIL/GEOLOGIC DESCRIPTION
<u>0-0.2</u> 0-6	<u>SP</u> C	10YR 7/3-very pale brown; medium sand; single grain; loose; dredge spoil; noncalcareous; abrupt boundary.
<u>0.2-0.4</u> 6-11	<u>SM</u> C2	10YR 4/4-dark yellowish brown; loam (silty sand); massive; friable; dredge spoil; noncalcareous; abrupt boundary.
<u>0.4-0.9</u> 11-28	<u>SP</u> C3	10YR 7/3-very pale brown; medium sand; single grain; loose; dredge spoil; noncalcareous; abrupt boundary.
<u>0.9-1.2</u> 28-35	<u>SM-ML</u> 2Cg	10YR4/1-dark gray; loam (sandy silt); massive; friable; historical flood laminae; common medium distinct mottles along bedding planes; common fine roots; noncalcareous; abrupt boundary.
<u>1.2-2.3</u> 35-70	<u>SP</u> 2C2	10YR 4/4-dark yellowish brown; coarse sand; nonsticky; few granules (fine gravel); few coarse prominent mottles; saturated; noncalcareous; abrupt boundary.
<u>2.3-3.3</u> 70-100	<u>SM-ML</u> 2C3	N3/0-very dark gray; loam (sandy silt); massive; sticky; organic material interbedded with flood alluvium; noncalcareous; abrupt boundary.
<u>3.3-3.6</u> 100-110	<u>SP</u> 2C4	10YR 7/2-light gray; coarse sand; single grain; nonsticky; noncalcareous.

SITE NAME: ST8a&b **RM751.1 Site 4** Left descending bank, midpoint.
 GEOMORPHIC SURFACE: Mid to late Holocene Mississippi River levee.
 POSITION IN LANDSCAPE: Flat lying.
 PARENT MATERIALS: Historical alluvium and Holocene alluvium.
 WATER TABLE: 5.3', 163cm.
 SURFACE ELEVATION: approx 665.0'
 USGS 7.5 MIN. QUADRANGLE: Alma, WI-MN.
 SLOPE: 0%
 VEGETATION: Mixed hardwoods and silver maples.
 METHODOLOGY: JMC sampling tube core (1.0" or 1.5" ID).
 DEPTH OF CORE, TRENCH, BORING, OR SOIL PIT: 6.7', 203cm.
 PHOTOGRAPHED: Color slides, B/W prints of core and location. Power plant in background.
 DATE DESCRIBED: 9/13/1995
 DESCRIBED BY: Jeff Anderson
 REMARKS: Historical flood deposits caps the surface to about 0.7', 22cm. At least six paleosols were recognized below ranging in age from very late Holocene-early historic to mid-late Holocene. Two miles downstream from L&D 4. Archaeological site is nearby, and high buried archaeological potential in this levee deposit. Upstream power plant has sheet piling.

DEPTH (FT) (CM)	<u>USCS SOIL CLASSIFICATION</u> <u>USDA HORIZON DESIGNATION</u>	SOIL/GEOLOGIC DESCRIPTION
<u>0-0.7</u> 0-22	<u>SP</u> C	10YR 5/3-yellowish brown; fine sand; single grain; loose; common fine roots; historical alluvium; pH 6.0; noncalcareous; abrupt boundary.
<u>0.7-1.0</u> 22-29	<u>ML</u> A	10YR 3/1-very dark gray; silt loam (silt); moderate medium granular structure; friable; common fine roots; pH 6.5; noncalcareous; abrupt boundary.
<u>1.0-2.0</u> 29-58	<u>SP</u> BC	10YR 6/4-light yellowish brown; fine sand; single grain; loose; common medium distinct mottles; few organic inclusions from above horizon; noncalcareous; abrupt boundary.
<u>2.0-2.3</u> 58-69	<u>SM-ML</u> Ab	10YR2/2-very dark brown; loam (fine sandy silt); weak medium subangular blocky structure; friable; common fine roots; noncalcareous; clear boundary.
<u>2.3-3.0</u> 69-91	<u>SP</u> BCb	10YR 6/4-light yellowish brown; fine medium sand; single grain; loose; common medium distinct mottles; few organic inclusions from above horizon; noncalcareous; abrupt boundary.
<u>3.0-3.4</u> 91-103	<u>SM-ML</u> Ab2	10YR2/2-very dark brown; loam (fine sandy silt); moderate medium subangular blocky structure; friable; common fine roots and root holes; few medium faint mottles; noncalcareous; clear boundary.

<u>3.4-3.8</u> 103-115	<u>SP</u> BCb2	10YR 6/4-light yellowish brown; fine medium sand; single grain; loose; common medium distinct mottles; few organic inclusions from above horizon (krotovina); noncalcareous; clear boundary.
<u>3.8-4.1</u> 115-125	<u>SM</u> ACb3	10YR 3/3-dark brown; loam to sandy loam (silty sand); weak medium subangular blocky structure; friable; noncalcareous; abrupt boundary.
<u>4.1-5.6</u> 125-170	<u>SP</u> Cb3	10YR 4/4-dark yellowish brown; medium sand; single grain; loose; common medium to coarse prominent mottles; few weak organic enriched units less than 0.1' thick; noncalcareous; clear boundary.
<u>5.6-5.8</u> 170-175	<u>SM</u> Ab4	10YR 3/3-2/2-dark brown to very dark brown; loam to sandy loam (silty fine medium sand); massive; sticky; saturated; noncalcareous; abrupt boundary.
<u>5.8-6.3</u> 175-191	<u>SP</u> BCb4	10YR 3/3-4/4-dark brown to dark yellowish brown; medium sand; single grain; nonsticky; saturated; noncalcareous; abrupt boundary.
<u>6.3-6.5</u> 191-198	<u>ML</u> Ab5	10YR3/1-2/2-very dark gray to very dark brown; silt loam (silt); moderate medium subangular blocky breaking to moderate medium granular structure; sticky; saturated; noncalcareous; abrupt boundary.
<u>6.5-6.7</u> 198-203	<u>SM</u> Cgb5	10YR 4/1-dark gray; loam to sandy loam (silty sand); massive; slightly sticky; saturated; common medium distinct mottles; noncalcareous.

SITE NAME: ST9 **RM746.4 Site 5** Left descending bank, midpoint.
 GEOMORPHIC SURFACE: Old dredge spoil site, over an apparent late Holocene surface.
 POSITION IN LANDSCAPE: Flat lying.
 PARENT MATERIALS: Dredge spoil.
 WATER TABLE: Below depth of core.
 SURFACE ELEVATION: approx. 665.0'
 USGS 7.5 MIN. QUADRANGLE: Weaver, MN-WI.
 SLOPE: 0%
 VEGETATION: Silver maples, poison ivy.
 METHODOLOGY: JMC sampling tube core (1.0" or 1.5" ID).
 DEPTH OF CORE, TRENCH, BORING, OR SOIL PIT: 2.0', 60cm.
 PHOTOGRAPHED:
 DATE DESCRIBED: 9/13/1995
 DESCRIBED BY: Jeff Anderson
 REMARKS: Old dredge spoil site, hole cave-in occurred at 2.0'. Large dredge spoil storage area.

DEPTH (FT) (CM)	<u>USCS SOIL CLASSIFICATION</u> USDA HORIZON DESIGNATION	SOIL/GEOLOGIC DESCRIPTION
<u>0-2.0</u> 0-60	<u>SP</u> C	10YR 7/3-very pale brown; medium coarse sand; single grain; loose; dredge spoil; few granules (fine gravel); noncalcareous.

SITE NAME: ST10 **RM746.4 Site 5** Left descending bank, midpoint.
 GEOMORPHIC SURFACE: Old dredge spoil site, apparently over a late Holocene surface.
 POSITION IN LANDSCAPE: Flat lying.
 PARENT MATERIALS: Dredge spoil and historical alluvium.
 WATER TABLE: At or near the surface.
 SURFACE ELEVATION: approx. 665.0'.
 USGS 7.5 MIN. QUADRANGLE: Weaver, MN-WI.
 SLOPE: 0%
 VEGETATION: Silver maples, poison ivy.
 METHODOLOGY: JMC sampling tube core (1.0" or 1.5" ID).
 DEPTH OF CORE, TRENCH, BORING, OR SOIL PIT: 5.0', 152cm.
 PHOTOGRAPHED:
 DATE DESCRIBED: 9/13/1995
 DESCRIBED BY: Jeff Anderson
 REMARKS: Old dredge spoil site, on beach next to middle stake. Large dredge storage area.

DEPTH (FT) (CM)	USCS SOIL CLASSIFICATION USDA HORIZON DESIGNATION	SOIL/GEOLOGIC DESCRIPTION
<u>0-0.3</u> 0-10	<u>SP</u> C	10YR 7/3-very pale brown; medium coarse sand with few granules (sand with fine gravel); single grain; nonsticky; dredge spoil; saturated; noncalcareous; abrupt boundary.
<u>0.3-4.4</u> 10-135	<u>SM</u> 2Cg	N4/0-dark gray; loam (silty medium fine sand); massive; slightly sticky; historical alluvium; saturated; gleyed; noncalcareous; abrupt boundary.
<u>4.4-5.0</u> 135-152	<u>ML-CL</u> 2ACgb	N3/0-very dark gray; silty clay loam (clayey silt); massive; sticky; very late Holocene to historic alluvium; saturated; gleyed; noncalcareous.

SITE NAME: ST11 **RM727.4 Site 6** Right descending bank, midpoint.
 GEOMORPHIC SURFACE: Mid to late Holocene Mississippi River levee.
 POSITION IN LANDSCAPE: Flat lying.
 PARENT MATERIALS: Mississippi River Holocene alluvium.
 WATER TABLE: 5.3', 160cm.
 SURFACE ELEVATION: approx. 650.0'
 USGS 7.5 MIN. QUADRANGLE: Winona West, MN. Quadrangle not stocked.
 SLOPE: 0%
 VEGETATION: Ash and silver maples.
 METHODOLOGY: JMC sampling tube core (1.0" or 1.5" ID).
 DEPTH OF CORE, TRENCH, BORING, OR SOIL PIT: 7.0', 213cm.
 PHOTOGRAPHED: Color slides of site activity.
 DATE DESCRIBED: 9/13/1995
 DESCRIBED BY: Jeff Anderson
 REMARKS: Lateral bank erosion with minor surface erosion. About 1 mile downstream of L&D 5A. High buried archaeological potential in this levee deposit. Description is complimented with a bank profile exposure.

DEPTH (FT) (CM)	USCS SOIL CLASSIFICATION USDA HORIZON DESIGNATION	SOIL/GEOLOGIC DESCRIPTION
<u>0-0.3</u> 0-10	<u>SM</u> A	10YR 2/2-very dark brown; loam (silty sand to sandy silt); moderate medium granular structure; friable; many fine roots and root holes; noncalcareous; abrupt boundary.
<u>0.3-1.8</u> 10-53	<u>SP</u> C	10YR 7/3-very pale brown; coarse sand; single grain; loose; laminae of cross-bedded coarse sand, medium sand and some very coarse sand with granules (fine gravel); few fine faint mottles along bedding planes; pH 6.0; noncalcareous; abrupt boundary.
<u>1.8-2.3</u> 53-69	<u>SM</u> Ab	10YR 2/2-very dark brown; loam (silty sand to sandy silt); moderate medium subangular blocky breaking to moderate medium granular structure; friable; many fine and coarse roots and root holes; few fine faint mottles; pH 6.5; noncalcareous; abrupt boundary.
<u>2.3-2.8</u> 69-86	<u>SP-SM</u> Bwb	7.5YR 5/4-brown; sandy loam (fine medium sand with minor silt); weak medium subangular blocky structure; very friable; common fine root holes; noncalcareous; abrupt boundary.
<u>2.8-3.3</u> 86-100	<u>SM</u> ACb2	10YR 2/3-very dark brown; loam (silty sand); moderate medium subangular blocky structure; friable; many fine roots; common medium distinct mottles; medium sand inclusions in horizon; noncalcareous; abrupt boundary.
<u>3.3-4.2</u>	<u>ML</u>	10YR 2/2-very dark brown; silt loam (silt); moderate

100-127	Ab3	medium subangular blocky structure; friable; many fine root holes common fine roots and worm casts; thick buried A horizon excellent for RC date; few fine faint mottles; noncalcareous; gradual boundary.
<u>4.2-7.0</u> 127-213	<u>ML</u> BCgb3	10YR 4/2-dark grayish brown; silt loam to loam (silt to sandy silt); weak medium subangular blocky structure to massive; sticky; many medium distinct mottles; gleyed; noncalcareous.

SITE NAME: ST12 **RM727.4 Site 7** Left descending bank, midpoint (opposite bank).

GEOMORPHIC SURFACE: Probable very late Holocene Mississippi River surface.

POSITION IN LANDSCAPE: Flat lying.

PARENT MATERIALS: Mississippi River Holocene alluvium.

WATER TABLE: Within 1.0' of the surface.

SURFACE ELEVATION: approx. 650.0'

USGS 7.5 MIN. QUADRANGLE: Winona West, MN.

SLOPE: 0%

VEGETATION: Silver maples.

METHODOLOGY: JMC sampling tube core (1.0" or 1.5" ID).

DEPTH OF CORE, TRENCH, BORING, OR SOIL PIT: 2.1', 64cm.

PHOTOGRAPHED:

DATE DESCRIBED: 9/13/1995

DESCRIBED BY: Jeff Anderson

REMARKS: Core advanced on beach near water's edge. Deposits are all relatively recent. Undetermined if older Holocene surfaces lie east away from the bank under the spoil material. Probable very late Holocene surface below 1.5'.

<u>DEPTH</u> <u>(FT)</u> <u>(CM)</u>	<u>USCS SOIL CLASSIFICATION</u> <u>USDA HORIZON DESIGNATION</u>	<u>SOIL/GEOLOGIC</u> <u>DESCRIPTION</u>
<u>0-0.8</u> 0-24	<u>SP</u> C	10YR 7/3-very pale brown; medium sand; single grain; loose; dredge spoil; noncalcareous; abrupt boundary.
<u>0.8-1.5</u> 24-46	<u>ML</u> Cg	5Y 4/1-dark gray; silt loam (silt); massive; slightly sticky; common to many fine and medium roots; common medium distinct mottles; gleyed; noncalcareous; gradual boundary.
<u>1.5-1.8</u> 46-56	<u>ML-CL</u> ACgb	N2/0-3/0-black to very dark gray; silty clay loam (clayey silt); massive; sticky; many fine roots; organic enriched clayey silt; gleyed; noncalcareous; abrupt boundary.
<u>1.8-2.1</u> 56-64	<u>SP</u> Cb	7.5YR 3/6-strong dark brown; coarse sand; single grain; nonsticky; highly oxidized, common coarse prominent mottles; noncalcareous.

SITE NAME: ST13 **RM677.7 Site 8** Right descending bank, midpoint.
 GEOMORPHIC SURFACE: Mid to late Holocene Mississippi River levee.
 POSITION IN LANDSCAPE: Flat lying.
 PARENT MATERIALS: Mississippi River Holocene alluvium.
 WATER TABLE: 5.9', 180cm.
 SURFACE ELEVATION: approx. 625.0'
 USGS 7.5 MIN. QUADRANGLE: Genoa, WI-MN-IA.
 SLOPE: 0%
 VEGETATION: Red maple and silver maples.
 METHODOLOGY: JMC sampling tube core (1.0" or 1.5" ID).
 DEPTH OF CORE, TRENCH, BORING, OR SOIL PIT: 9.2', 280cm.
 PHOTOGRAPHED: Color slides, and B/W prints.
 DATE DESCRIBED: 9/14/1995
 DESCRIBED BY: Jeff Anderson

REMARKS: Historical alluvium caps the surface, below lies late Holocene levee deposits with two buried soils. Site is about 1.5 miles downstream of L&D 8. Power plant is just upstream. PSA/PSS contact seen in photos.

<u>DEPTH</u> <u>(FT)</u> <u>(CM)</u>	<u>USCS SOIL CLASSIFICATION</u> <u>USDA HORIZON DESIGNATION</u>	<u>SOIL/GEOLOGIC</u> <u>DESCRIPTION</u>
<u>0-4.3</u> 0-132	<u>SM-ML</u> C	10YR 2/2-3/3-6/3-very dark brown, dark brown and pale brown; loam, silt loam and sandy loam (silty sand, and silt); weak medium subangular blocky breaking to moderate medium granular, and weak medium platy structure; friable; few fine roots and root holes; few fine faint mottles; historical flood laminae; some units noncalcareous other calcareous; abrupt boundary.
<u>4.3-4.8</u> 132-147	<u>ML</u> Ab	10YR 2/2-3/1 very dark brown to very dark gray; silt loam (silt); moderate medium subangular blocky structure breaking to moderate medium granular; friable; many fine root holes common fine roots; common medium distinct mottles; noncalcareous; clear boundary.
<u>4.8-5.2</u> 147-157	<u>ML</u> BCb	10YR 3/2-very dark grayish brown; silt loam (silt); weak to moderate medium subangular blocky structure; friable; many fine root holes; common medium distinct mottles;; noncalcareous; clear boundary.
<u>5.2-6.0</u> 157-183	<u>ML</u> Cb	10YR 3/2-4/2-very dark grayish brown to dark grayish brown; silt loam (silt); massive; sticky; few fine root holes; common medium distinct mottles;; noncalcareous; abrupt boundary.
<u>6.0-6.2</u> 183-189	<u>ML</u> Ab2	10YR 2/2-2/3-very dark brown; silt loam (silt); moderate medium subangular blocky breaking to

		moderate medium granular structure; friable; many fine roots and root holes; common medium distinct mottles; noncalcareous; abrupt boundary.
<u>6.2-6.6</u> 189-201	<u>ML</u> Bwb2	10YR 3/2-very dark grayish brown; silt loam (silt); moderate medium subangular blocky structure; friable; many fine root holes; common medium distinct mottles; noncalcareous; abrupt boundary.
<u>6.6-9.2</u> 201-280	<u>SM-SP</u> Cb2	10YR 4/2-dark grayish brown; silt loam to sandy loam (silt to silty sand); massive to single grain; sticky to nonsticky; coarsening with depth becoming saturated medium sand by 7.9', 240cm; common medium distinct mottles; noncalcareous.

SITE NAME: ST14 **RM677.5 Site 9** Left descending bank, midpoint.
 GEOMORPHIC SURFACE: Probable late to very Holocene Mississippi River surface.
 POSITION IN LANDSCAPE: Flat lying.
 PARENT MATERIALS: Dredge spoil and Mississippi River Holocene alluvium.
 WATER TABLE: At or near the surface.
 SURFACE ELEVATION: approx. 625.0'
 USGS 7.5 MIN. QUADRANGLE: Genoa, WI-MN-IA.
 SLOPE: 0%
 VEGETATION: Silver maples.
 METHODOLOGY: JMC sampling tube core (1.0" or 1.5" ID).
 DEPTH OF CORE, TRENCH, BORING, OR SOIL PIT: 2.5', 76cm.
 PHOTOGRAPHED: Color slides, and B/W prints.
 DATE DESCRIBED: 9/14/1995
 DESCRIBED BY: Jeff Anderson

REMARKS: Profile near water's edge on beach terrace, sediment is reworked. Spoil caps the surface of this young Holocene surface. Site is opposite side (east) of Site 8. Photos show historical/native (PSA/PSS) soil contact at Site 8. Site is about 1.5 miles downstream of L&D 8. Power plant is just upstream. ST14, 15, and 16 taken at the same site.

<u>DEPTH (FT) (CM)</u>	<u>USCS SOIL CLASSIFICATION USDA HORIZON DESIGNATION</u>	<u>SOIL/GEOLOGIC DESCRIPTION</u>
<u>0-0.8</u> 0-25	<u>SP</u> C	10YR 7/3-very pale brown; medium coarse sand; single grained; nonsticky; few granules (fine gravel) spoil material; noncalcareous; abrupt boundary.
<u>0.8-1.2</u> 25-36	<u>SP-SM</u> C2	10YR 7/3-very pale brown; loamy sand (medium coarse sand with minor silt); single grain; nonsticky; laminae of coarse sand, silty coarse sand, and silty sand; laminae 0.25"-0.5" (0.5-1.0cm) thick; few granules (fine gravel) reworked spoil material; noncalcareous; abrupt boundary.
<u>1.2-2.5</u> 36-76	<u>SP</u> C3	10YR 7/3-very pale brown; coarse sand; single grain; nonsticky; few granules (fine gravel) reworked clean sand spoil material; noncalcareous.

SITE NAME: ST15 **RM677.5 Site 9** Left descending bank, midpoint.
 GEOMORPHIC SURFACE: Probable late to very Holocene Mississippi River surface.
 POSITION IN LANDSCAPE: Flat lying.
 PARENT MATERIALS: Dredge spoil and Mississippi River Holocene alluvium.
 WATER TABLE: Below depth of core.
 SURFACE ELEVATION: approx. 625.0'
 USGS 7.5 MIN. QUADRANGLE: Genoa, WI-MN-IA.
 SLOPE: 0%
 VEGETATION: Silver maples.
 METHODOLOGY: JMC sampling tube core (1.0" or 1.5" ID).
 DEPTH OF CORE, TRENCH, BORING, OR SOIL PIT: 1.5', 46cm.
 PHOTOGRAPHED:
 DATE DESCRIBED: 9/14/1995
 DESCRIBED BY: Jeff Anderson
 REMARKS: Profile further away (east) from ST14 and channel margin. Site is about 1.5 miles downstream of L&D 8. Power plant is just upstream.

DEPTH (FT) (CM)	<u>USCS SOIL CLASSIFICATION</u> USDA HORIZON DESIGNATION	SOIL/GEOLOGIC DESCRIPTION
<u>0-0.25</u> 0-8	<u>SP-SM</u> AC	10YR 3/3-dark brown; loamy sand (sand with minor silt); weak medium granular structure; friable; weak AC horizon developed in spoil material; noncalcareous; abrupt boundary.
<u>0.25-1.5</u> 8-46	<u>SP</u> C	10YR 7/3-very pale brown; fine medium sand; single grain; end with hole cave-in; loose; noncalcareous.

SITE NAME: ST16 **RM677.5 Site 9** Left descending bank, midpoint.
 GEOMORPHIC SURFACE: Probable late to very Holocene Mississippi River surface.
 POSITION IN LANDSCAPE: Flat lying.
 PARENT MATERIALS: Dredge spoil and historical Mississippi River alluvium.
 WATER TABLE: Below depth of core.
 SURFACE ELEVATION: approx. 625.0'
 USGS 7.5 MIN. QUADRANGLE: Genoa, WI-MN-IA.
 SLOPE: 0%
 VEGETATION: Silver maples.
 METHODOLOGY: JMC sampling tube core (1.0" or 1.5" ID).
 DEPTH OF CORE, TRENCH, BORING, OR SOIL PIT: 2.0', 60cm.
 PHOTOGRAPHED:
 DATE DESCRIBED: 9/14/1995
 DESCRIBED BY: Jeff Anderson

REMARKS: Profile further away (east) from ST14, ST15 and channel margin. Site is about 1.5 miles downstream of L&D 8. Power plant is just upstream. The surface is capped by post-spoil deposition historical alluvium. That is, historical alluvium has accumulated after the dredge material was deposited.

DEPTH (FT) (CM)	<u>USCS SOIL CLASSIFICATION</u> <u>USDA HORIZON DESIGNATION</u>	SOIL/GEOLOGIC DESCRIPTION
<u>0-1.33</u> 0-41	<u>ML</u> C	10YR 3/3-dark brown; silt loam (silt); weak medium granular structure; very friable; many fine roots and root holes; silt highly enriched with partially decomposed organic material (silver maple leaves); noncalcareous; abrupt boundary.
<u>0.25-1.5</u> 8-46	<u>SP</u> C	10YR 7/3-very pale brown; medium sand; single grain; loose; spoil material; noncalcareous.

SITE NAME: ST17 **RM669.5 Site 10** Right descending bank, midpoint.

GEOMORPHIC SURFACE: Very late Holocene Mississippi River to historic surface.

POSITION IN LANDSCAPE: Flat lying.

PARENT MATERIALS: Dredge spoil and historical Mississippi River alluvium.

WATER TABLE: Below depth of core.

SURFACE ELEVATION: approx. 620.0'

USGS 7.5 MIN. QUADRANGLE: DeSoto, WI-IA.

SLOPE: 0%

VEGETATION: Silver maples, grass, wild grape, and ash.

METHODOLOGY: JMC sampling tube core (1.0" or 1.5" ID).

DEPTH OF CORE, TRENCH, BORING, OR SOIL PIT: 4.0', 122cm.

PHOTOGRAPHED:

DATE DESCRIBED: 9/15/1995

DESCRIBED BY: Jeff Anderson

REMARKS: Soil pit to 1.6' (48cm), then sampling tube core. About the upper 2.0 feet is composed of interbedded dredge spoil and historical alluvium. Below is historical alluvium to 4.0 feet (122cm). Sampling tubes 17, 18, 19 and 20 were advanced at this site.

DEPTH (FT) (CM)	<u>USCS SOIL CLASSIFICATION</u> <u>USDA HORIZON DESIGNATION</u>	SOIL/GEOLOGIC DESCRIPTION
<u>0-0.25</u> 0-8	<u>SP-SM</u> AC	10YR 3/3-dark brown; loamy sand (sand with minor silt); weak medium granular structure; friable; historical alluvium; many fine roots and root holes; calcareous; abrupt boundary.
<u>0.25-1.6</u> 8-48	<u>SP</u> C	10YR 6/4-light yellowish brown; medium sand; single grain; loose; spoil; noncalcareous; abrupt boundary.
<u>1.6-1.8</u> 48-53	<u>ML</u> C2	10YR 2/2-very dark brown; silt loam (silt); massive; friable; historical alluvium; calcareous; abrupt boundary.
<u>1.8-1.9</u> 53-58	<u>SP</u> C3	10YR 8/2-white; medium sand; single grain; loose; spoil; calcareous; abrupt boundary.
<u>1.9-3.3</u> 58-102	<u>ML</u> C4	10YR 3/2-very dark grayish brown; silt loam (silt); massive; friable; historical alluvium; few fine faint mottles; calcareous; abrupt boundary.
<u>3.3-4.0</u> 102-122	<u>SM</u> C5	10YR 3/2-very dark grayish brown; loam (silty sand) massive; friable; historical alluvium; common medium distinct mottles; weakly calcareous.

SITE NAME: ST18 **RM669.5 Site 10** Right descending bank, midpoint.
 GEOMORPHIC SURFACE: Very late Holocene Mississippi River to historic surface.
 POSITION IN LANDSCAPE: Flat lying.
 PARENT MATERIALS: Reworked dredge spoil and historical Mississippi River alluvium.
 WATER TABLE: 0.8', 24cm.
 SURFACE ELEVATION: approx. 620.0'
 USGS 7.5 MIN. QUADRANGLE: DeSoto, WI-IA.
 SLOPE: 0%
 VEGETATION: Silver maples, grass, wild grape, and ash.
 METHODOLOGY: JMC sampling tube core (1.0" or 1.5" ID).
 DEPTH OF CORE, TRENCH, BORING, OR SOIL PIT: 5.8', 178cm.
 PHOTOGRAPHED:
 DATE DESCRIBED: 9/15/1995
 DESCRIBED BY: Jeff Anderson
 REMARKS: Located on the beach downslope from ST17, about 1.0' from the stake. Reworked dredge spoil is on the surface and below lie a fine grained poorly drained deposit. Sampling tubes 17, 18, 19 and 20 were advanced at this site.

<u>DEPTH</u> <u>(FT)</u> <u>(CM)</u>	<u>USCS SOIL CLASSIFICATION</u> <u>USDA HORIZON DESIGNATION</u>	<u>SOIL/GEOLOGIC</u> <u>DESCRIPTION</u>
<u>0-0.33</u> 0-10	<u>SP</u> C	10YR 7/3-very pale brown; medium sand; single grain; loose; reworked spoil; noncalcareous; abrupt boundary.
<u>0.33-2.5</u> 10-76	<u>ML</u> 2Cg	10YR 3/1-4/1-very dark gray to dark gray; silt loam (silt); massive; sticky; flood laminae 1/8 to 1/4 inch (0.3cm-0.6cm) thick; saturated; gleyed; common medium distinct mottles; noncalcareous; abrupt boundary.
<u>2.5-2.7</u> 76-81	<u>ML</u> 2ACgb	N3/0-very dark gray; silt loam (silt); moderate medium subangular blocky; sticky; organic enriched; native wetland soil horizon; many medium distinct mottles; saturated; gleyed; noncalcareous; abrupt boundary.
<u>2.7-5.8</u> 81-178	<u>ML</u> 2Cg2b	N3/0-4/0-very dark gray to dark gray; silt loam (silt); weak medium subangular blocky structure to massive; sticky; many medium distinct mottles; saturated; gleyed; noncalcareous.

SITE NAME: ST19a&b **RM669.5 Site 10** Right descending bank, north 1/4 point.
 GEOMORPHIC SURFACE: Very late Holocene Mississippi River to historic surface.
 POSITION IN LANDSCAPE: Flat lying.
 PARENT MATERIALS: Historical, and very late Holocene Mississippi River alluvium.
 WATER TABLE: 5.5', 167cm.
 SURFACE ELEVATION: approx. 620.0'
 USGS 7.5 MIN. QUADRANGLE: DeSoto, WI-IA.
 SLOPE: 0%
 VEGETATION: Silver maples, grass, wild grape, and ash.
 METHODOLOGY: JMC sampling tube core (1.0" or 1.5" ID).
 DEPTH OF CORE, TRENCH, BORING, OR SOIL PIT: 5.8', 178cm.
 PHOTOGRAPHED: Color slide of ST19 and "Monitor".
 DATE DESCRIBED: 9/15/1995
 DESCRIBED BY: Jeff Anderson

REMARKS: Located upstream from the midpoint of site 10. Two cores (a&b) were advanced at this location. Historical alluvium caps a fine grained wetland soil. Sampling tubes 17, 18, 19 and 20 were advanced at this site.

<u>DEPTH</u> <u>(FT)</u> <u>(CM)</u>	<u>USCS SOIL CLASSIFICATION</u> <u>USDA HORIZON DESIGNATION</u>	<u>SOIL/GEOLOGIC</u> <u>DESCRIPTION</u>
<u>0-0.8</u> 0-25	<u>ML</u> C	10YR 3/3-dark brown; silt loam (silt); weak medium granular structure; friable; common fine roots and root holes; historical alluvium; strongly calcareous; abrupt boundary.
<u>0.8-2.3</u> 25-69	<u>SP</u> C2	10YR 6/4-light yellowish brown; medium sand; single grain; loose; historical alluvium; strongly calcareous; abrupt boundary.
<u>2.3-4.3</u> 69-130	<u>ML</u> ACb	10YR 3/3-dark brown; silt loam (silt); weak medium subangular blocky; sticky; few fine root holes; native soil; common medium distinct mottles; noncalcareous; gradual boundary.
<u>4.3-7.2</u> 130-218	<u>SM</u> Cgb	10YR 3/3-4/2-dark brown to dark grayish brown; loam (silty sand); massive; sticky; many medium distinct mottles; saturated; noncalcareous; abrupt boundary.
<u>7.2-7.5</u> 218-229	<u>ML</u> ACgb2	N3/0-very dark gray; silt loam to silty clay loam (silt to clayey silt); massive; sticky; organic enrichment; fine grained channel fill; gleyed; noncalcareous.

SITE NAME: ST20 **RM669.5 Site 10** Right descending bank, north 1/4 point.
 GEOMORPHIC SURFACE: Very late Holocene Mississippi River to historic surface.
 POSITION IN LANDSCAPE: Flat lying.
 PARENT MATERIALS: Historical, and very late Holocene Mississippi River alluvium.
 WATER TABLE: 0.9', 27cm.
 SURFACE ELEVATION: approx. 620.0'
 USGS 7.5 MIN. QUADRANGLE: DeSoto, WI-IA.
 SLOPE: 0%
 VEGETATION: Silver maples, grass, wild grape, and ash.
 METHODOLOGY: JMC sampling tube core (1.0" or 1.5" ID).
 DEPTH OF CORE, TRENCH, BORING, OR SOIL PIT: 4.5', 137cm.
 PHOTOGRAPHED: Color slide.
 DATE DESCRIBED: 9/15/1995
 DESCRIBED BY: Jeff Anderson
 REMARKS: Located downslope from ST19a&b. Historical alluvium caps a fine grained wetland soil. Sampling tubes 17, 18, and 19 were advanced at this site.

<u>DEPTH</u> <u>(FT)</u> <u>(CM)</u>	<u>USCS SOIL CLASSIFICATION</u> <u>USDA HORIZON DESIGNATION</u>	<u>SOIL/GEOLOGIC</u> <u>DESCRIPTION</u>
<u>0-0.25</u> 0-8	<u>SP</u> C	10YR 4/4-light yellowish brown; medium sand; single grain; loose; reworked historical alluvium; calcareous; abrupt boundary.
<u>0.25-0.8</u> 8-25	<u>ML</u> ACb	10YR 3/2-dark brown; silt loam (silt); weak medium subangular blocky breaking to moderate medium granular; sticky; few fine root holes; native soil; common medium distinct mottles; noncalcareous; gradual boundary.
<u>0.8-3.5</u> 25-107	<u>SM</u> Cgb	10YR 3/3-4/2-dark brown to dark grayish brown; loam (silty sand); massive; sticky; many medium distinct mottles; saturated; noncalcareous; abrupt boundary.
<u>3.5-4.5</u> 107-137	<u>ML-CL</u> ACgb2	N3/0-4/0-very dark gray; silt loam to silty clay loam (silt to clayey silt); massive; sticky; organic enrichment; fine grained channel fill; gleyed; noncalcareous.

SITE NAME: ST21T **RM636.0** Left descending bank.

GEOMORPHIC SURFACE: Late Holocene Mississippi River island capped by thick historical alluvium.

POSITION IN LANDSCAPE: Flat lying.

PARENT MATERIALS: Historical alluvium.

WATER TABLE: Below depth of core.

SURFACE ELEVATION: approx. 615.0'

USGS 7.5 MIN. QUADRANGLE: Prairie du Chien, IA-WI.

SLOPE: 0%

VEGETATION: Silver maples.

METHODOLOGY: JMC sampling tube core (1.0" or 1.5" ID).

DEPTH OF CORE, TRENCH, BORING, OR SOIL PIT: 4.0', 122cm.

PHOTOGRAPHED: Color slide.

DATE DESCRIBED: 9/15/1995

DESCRIBED BY: Jeff Anderson

REMARKS: Thick historical alluvium at this location, silver maple root crowns buried. Low buried archaeological potential.

DEPTH (FT) (CM)	<u>USCS SOIL CLASSIFICATION</u> <u>USDA HORIZON DESIGNATION</u>	SOIL/GEOLOGIC DESCRIPTION
<u>0-4.0</u> 0-122	<u>ML</u> C	10YR 6/4-3/3-light yellowish brown and dark brown; silt loam (silt); massive; sticky; historical flood laminae thick bedded; calcareous.

SITE NAME: ST22T **RM621.4** Left descending bank.

GEOMORPHIC SURFACE: Late Holocene Mississippi River island capped by thick historical alluvium.

POSITION IN LANDSCAPE: Flat lying.

PARENT MATERIALS: Historical alluvium.

WATER TABLE: Below depth of core.

SURFACE ELEVATION: approx. 615.0'

USGS 7.5 MIN. QUADRANGLE: Guttenberg, IA-WI.

SLOPE: 0%

VEGETATION: Silver maples.

METHODOLOGY: JMC sampling tube core (1.0" or 1.5" ID).

DEPTH OF CORE, TRENCH, BORING, OR SOIL PIT: 5.9', 180cm.

PHOTOGRAPHED:

DATE DESCRIBED: 9/15/1995

DESCRIBED BY: Jeff Anderson

REMARKS: Thick historical alluvium at this location, silver maple root crowns buried. Low buried archaeological potential. Native A horizon appears to be eroded.

DEPTH (FT) (CM)	<u>USCS SOIL CLASSIFICATION</u> <u>USDA HORIZON DESIGNATION</u>	SOIL/GEOLOGIC DESCRIPTION
<u>0-5.6</u> 0-170	<u>SP-SM</u> C	10YR 7/3-6/3-very pale brown to pale brown; medium sand to loam (silty sand); massive; friable; laminae of historical alluvium of medium sand and silty sand; calcareous; abrupt boundary.
<u>5.6-5.9</u> 170-180	<u>ML</u> ABb	10YR 3/3-dark brown; silt loam (silt); weak medium subangular blocky; sticky; many fine root holes and few fine roots; native soil; few fine faint mottles; noncalcareous.

SITE NAME: ST23 **RM620.5 Site 11** Left descending bank, midpoint.

GEOMORPHIC SURFACE: Late Holocene Mississippi River island capped by thick historical alluvium.

POSITION IN LANDSCAPE: Flat lying.

PARENT MATERIALS: Historical alluvium and very late Holocene alluvium.

WATER TABLE: Below depth of core.

SURFACE ELEVATION: approx. 615.0'

USGS 7.5 MIN. QUADRANGLE: Guttenberg, IA-WI.

SLOPE: 0%

VEGETATION: Silver maples.

METHODOLOGY: JMC sampling tube core (1.0" or 1.5" ID).

DEPTH OF CORE, TRENCH, BORING, OR SOIL PIT: 7.8', 236cm.

PHOTOGRAPHED: B/W vertical print of ST23 with "Monitor" in background.

DATE DESCRIBED: 9/16/1995

DESCRIBED BY: Jeff Anderson

REMARKS: Thick historical alluvium over a very poorly drained very late Holocene soil.
Low buried archaeological potential.

DEPTH (FT) (CM)	USCS SOIL CLASSIFICATION USDA HORIZON DESIGNATION	SOIL/GEOLOGIC DESCRIPTION
<u>0-0.8</u> 0-25	<u>SP</u> C	10YR 7/3-very pale brown; medium sand; single grain; loose; historical alluvium, probable 1993 deposit; weakly calcareous; abrupt boundary.
<u>0.8-1.1</u> 25-33	<u>SM</u> AC	10YR 2/3-very dark brown; loam (silty sand); weak medium subangular blocky breaking to weak medium granular structure; very friable; many fine roots and root holes; weak A horizon developed in historical deposit; weakly calcareous; clear boundary.
<u>1.1-2.5</u> 33-76	<u>SP</u> C	10YR 4/4-6/4-dark yellowish brown to light yellowish brown; loamy sand (sand with minor silt); single grain; loose; historical alluvium; noncalcareous; abrupt boundary.
<u>2.5-2.8</u> 76-84	<u>SM</u> AC2	10YR 2/3-very dark brown; loam (silty sand); weak medium subangular blocky breaking to weak medium granular structure; very friable; few fine roots and root holes; noncalcareous; abrupt boundary.
<u>2.8-4.0</u> 84-122	<u>SP</u> C2	10YR 6/4-light yellowish brown-dry; medium sand; single grain; loose; historical alluvium; noncalcareous; abrupt boundary.
<u>4.0-4.3</u> 122-130	<u>ML</u> C3	10YR 3/3-dark brown; silt loam (silt); weak medium subangular blocky structure; friable; common fine roots and root holes; few fine faint mottles; historical alluvium; strongly calcareous; abrupt boundary.

<p><u>4.3-6.5</u> 130-197</p>	<p><u>SM-SP</u> C4</p>	<p>10YR 3/3-very dark brown; sandy loam to loam (silty sand); massive; sticky; common medium distinct mottles; mottling along bedding planes; historical alluvium; upper portion calcareous, lower noncalcareous; abrupt boundary.</p>
<p><u>6.5-7.8</u> 197-236</p>	<p><u>ML</u> ACgb</p>	<p>N2/0-3/0-black to very dark gray; silt loam (silt) massive; sticky; native A horizon; common medium distinct mottles in upper part of horizon, gleyed lower part; noncalcareous.</p>

SITE NAME: ST24 **RM620.5 Site 11** Left descending bank, midpoint.

GEOMORPHIC SURFACE: Late Holocene Mississippi River island capped by thick historical alluvium.

POSITION IN LANDSCAPE: Flat lying downslope from ST23, near channel margin.

PARENT MATERIALS: Reworked recent sand, historical alluvium and very late Holocene alluvium.

WATER TABLE: At or near the surface.

SURFACE ELEVATION: approx. 615.0'

USGS 7.5 MIN. QUADRANGLE: Guttenberg, IA-WI.

SLOPE: 0%

VEGETATION: Silver maples.

METHODOLOGY: JMC sampling tube core (1.0" or 1.5" ID).

DEPTH OF CORE, TRENCH, BORING, OR SOIL PIT: 2.2', 66cm.

PHOTOGRAPHED:

DATE DESCRIBED: 9/16/1995

DESCRIBED BY: Jeff Anderson

REMARKS: Reworked sand capping historical alluvium and native soil. Low buried archaeological potential.

DEPTH (FT) (CM)	<u>USCS SOIL CLASSIFICATION</u> <u>USDA HORIZON DESIGNATION</u>	SOIL/GEOLOGIC DESCRIPTION
<u>0-0.3</u> 0-10	<u>SP</u> C	10YR 4/4-dark yellowish brown; medium sand; single grain; loose; reworked historical alluvium; calcareous; abrupt boundary.
<u>0.3-2.0</u> 10-61	<u>SM</u> C2	N3/0-very dark gray; loam (silty sand); massive; sticky; gleyed; calcareous; abrupt boundary.
<u>2.0-2.2</u> 10-66	<u>ML-CL</u> ACgb	N2/0-3/0-black to very dark gray; silt loam to silty clay loam (silt to clayey silt); massive; sticky; native A horizon; gleyed; noncalcareous.

SITE NAME: ST25 **RM613.6 Site 12** Left descending bank, midpoint.

GEOMORPHIC SURFACE: The historical deposits capping a mapped EMHOL2.

POSITION IN LANDSCAPE: Flat lying, 6.0 feet from bank.

PARENT MATERIALS: Historical alluvium.

WATER TABLE: 4.1', 125cm.

SURFACE ELEVATION: approx. 610.0'

USGS 7.5 MIN. QUADRANGLE: Guttenberg, IA-WI.

SLOPE: 0%

VEGETATION: Silver maples.

METHODOLOGY: JMC sampling tube core (1.0" or 1.5" ID).

DEPTH OF CORE, TRENCH, BORING, OR SOIL PIT: 7.8', 239cm.

PHOTOGRAPHED:

DATE DESCRIBED: 9/16/1995

DESCRIBED BY: Jeff Anderson

REMARKS: Thick historical alluvium over a mapped mid Holocene surface. The mid Holocene surface probably lies further inland from this near-channel location. Earlier work was conducted at the nearby Ackerman's cut (1984). Buried soils and Woodland pottery were identified in a bank exposure, no site number is assigned. Site 13 is across the channel at the right descending bank.

DEPTH (FT) (CM)	<u>USCS SOIL CLASSIFICATION</u> <u>USDA HORIZON DESIGNATION</u>	SOIL/GEOLOGIC DESCRIPTION
<u>0-0.3</u> 0-10	<u>SP</u> C	10YR 6/4-light yellowish brown; medium sand; single grain; loose; post-spoil historical alluvial deposit; noncalcareous; abrupt boundary.
<u>0.3-0.7</u> 10-20	<u>ML</u> C2	10YR 3/3-dark brown; silt loam (silt); weak medium granular structure; friable; few fine roots and root holes; weak historical laminae 0.25" thick; post-spoil historical alluvial deposit; noncalcareous; clear boundary.
<u>0.7-6.2</u> 20-188	<u>SP</u> C3	10YR 7/3-very pale brown; medium sand; single grain; loose; spoil; noncalcareous; abrupt boundary.
<u>6.2-7.8</u> 188-239	<u>ML</u> Cg	N3/0-very dark gray; silt loam (silt); massive; sticky; common medium roots; gleyed; strongly calcareous.

SITE NAME: ST26 **RM607.5 Site 14** Right descending bank, midpoint.
 GEOMORPHIC SURFACE: Turkey River fan composed of thick historical alluvium, mapped as EMHOL2.
 POSITION IN LANDSCAPE: Flat lying, four feet from bank edge.
 PARENT MATERIALS: Historical alluvium.
 WATER TABLE: 9.5', 291cm.
 SURFACE ELEVATION: approx. 605.0'
 USGS 7.5 MIN. QUADRANGLE: Turkey River, IA-WI.
 SLOPE: 0%
 VEGETATION: Silver maples, weeds.
 METHODOLOGY: JMC sampling tube core (1.0" or 1.5" ID).
 DEPTH OF CORE, TRENCH, BORING, OR SOIL PIT: 10.2', 310cm.
 PHOTOGRAPHED: Took a B/W print and color slide of location, barges on right.
 DATE DESCRIBED: 9/16/1995
 DESCRIBED BY: Jeff Anderson
 REMARKS: Thick historical deposits, location is near the boundary of TRIFAN and EMHOL2. Earlier work in 1984 showed thick historical deposits here. Low buried archaeological potential.

DEPTH (FT) (CM)	<u>USCS SOIL CLASSIFICATION</u> <u>USDA HORIZON DESIGNATION</u>	SOIL/GEOLOGIC DESCRIPTION
0-10.2 0-310	<u>ML-SM</u> C	10YR 4/4-3/3-dark yellowish brown and dark brown; silt loam and loam (silt, clayey silt and very fine sandy silt); weak medium platy structure to massive; friable to sticky; thick bedded historical laminae becoming mottled by 200cm and gleyed by 250cm; calcareous.

SITE NAME: ST27 **RM576.0 Site 15** Left descending bank, midpoint.
 GEOMORPHIC SURFACE: Historical deposits, mid channel island, mapped as ISLAN.
 POSITION IN LANDSCAPE: Flat lying.
 PARENT MATERIALS: Historical alluvium.
 WATER TABLE: 7.2', 220cm.
 SURFACE ELEVATION: approx. 595.0'
 USGS 7.5 MIN. QUADRANGLE: Menominee, IA-IL.
 SLOPE: 0%
 VEGETATION: Silver maples.
 METHODOLOGY: JMC sampling tube core (1.0" or 1.5" ID).
 DEPTH OF CORE, TRENCH, BORING, OR SOIL PIT: 10.2', 310cm.
 PHOTOGRAPHED: Color slide of location with the river and barge behind trees.
 DATE DESCRIBED: 9/17/1995
 DESCRIBED BY: Jeff Anderson
 REMARKS: Thick historical alluvium. Island 228 is a barge mooring area. Archaeological sites 11JD124 and 11JD126 are nearby.

DEPTH (FT) (CM)	USCS SOIL CLASSIFICATION USDA HORIZON DESIGNATION	SOIL/GEOLOGIC DESCRIPTION
<u>0-6.2</u> 0-190	<u>ML</u> C	10YR 3/3-dark brown; silt loam (silt); weak medium platy structure to massive; friable; thick and thin bedded historical alluvium; calcareous upper unit, noncalcareous lower; abrupt boundary.
<u>6.2-7.2</u> 190-220	<u>ML</u> C2	10YR 3/3-dark brown; silt loam (silt); weak medium subangular blocky structure to massive; friable; common fine roots; calcareous; abrupt boundary.
<u>7.2-10.2</u> 220-310	<u>SM</u> Cg	N4/0-dark gray; loam (fine sandy silt); massive; sticky; few fine roots; gleyed; noncalcareous; abrupt boundary.

SITE NAME: ST28T **RM576.0 Site 15** Left descending bank, midpoint.
 GEOMORPHIC SURFACE: Historical deposits, mid channel island, mapped as ISLAN.
 POSITION IN LANDSCAPE: Flat lying, near channel margin.
 PARENT MATERIALS: Historical alluvium.
 WATER TABLE: At or near the surface.
 SURFACE ELEVATION: approx. 595.0'
 USGS 7.5 MIN. QUADRANGLE: Menominee, IA-IL.
 SLOPE: 0%
 VEGETATION: Silver maples.
 METHODOLOGY: JMC sampling tube core (1.0" or 1.5" ID).
 DEPTH OF CORE, TRENCH, BORING, OR SOIL PIT: 3.0', 91cm.
 PHOTOGRAPHED: B/W shot of exposed root bank and barge.
 DATE DESCRIBED: 9/17/1995
 DESCRIBED BY: Jeff Anderson
 REMARKS: Thick historical alluvium. Island 228 is a barge mooring area. Archaeological sites 11JD124 and 11JD126 are nearby. Core is downslope from ST27 next to the water's edge.

DEPTH (FT) (CM)	<u>USCS SOIL CLASSIFICATION</u> <u>USDA HORIZON DESIGNATION</u>	SOIL/GEOLOGIC DESCRIPTION
<u>0-0.1</u> 0-3	<u>SP</u> C	10YR 6/3-pale brown; medium sand; single grain; loose; reworked recent historical deposit; noncalcareous; abrupt boundary.
<u>0.1-2.2</u> 3-66	<u>ML</u> C2	10YR 3/3-dark brown; silt loam (silt); massive; sticky; historical deposit; calcareous; abrupt boundary.
<u>2.2-3.0</u> 66-91	<u>SM</u> Cg	N4/0-dark gray; loam (fine sandy silt); massive; sticky to nonsticky; gleyed; calcareous.

SITE NAME: ST29a&b **RM551.6 Site 16** Left descending bank, midpoint.
 GEOMORPHIC SURFACE: Historical deposits, over late Holocene surface, LAHOL.
 POSITION IN LANDSCAPE: Flat lying.
 PARENT MATERIALS: Historical alluvium, very late Holocene alluvium.
 WATER TABLE: 6.7', 205cm.
 SURFACE ELEVATION: approx. 590.0'
 USGS 7.5 MIN. QUADRANGLE: Green Island IA-IL.
 SLOPE: 0%
 VEGETATION: Silver maples, nettles.
 METHODOLOGY: JMC sampling tube core (1.0" or 1.5" ID).
 DEPTH OF CORE, TRENCH, BORING, OR SOIL PIT: 10.2', 310cm.
 PHOTOGRAPHED: Vertical color slide of location with stakes, and tube in foreground. Took B/W shot looking along the bank noting the old stumps probably marking the PSS.
 DATE DESCRIBED: 9/17/1995
 DESCRIBED BY: Jeff Anderson
 REMARKS: Thick historical alluvium, overlying a poorly drained very late Holocene surface. Well developed paleosol on nearby Kingston terrace Mile 549.6 at the Savanna depot. It may be related to site 11CA44.

DEPTH (FT) (CM)	<u>USCS SOIL CLASSIFICATION</u> <u>USDA HORIZON DESIGNATION</u>	SOIL/GEOLOGIC DESCRIPTION
<u>0-4.3</u> 0-130	<u>ML-SM</u> C	10YR 3/3-4/4-dark brown to dark yellowish brown; silt loam to loam (silt and fine sandy silt); weak medium platy structure to massive; friable; laminae of historical alluvium, laminae vary in thickness; few medium distinct mottles along lower part of horizon; calcareous; abrupt boundary.
<u>4.3-4.9</u> 130-150	<u>ML</u> ACb	10YR 3/3-dark brown; silt loam (silt); moderate medium subangular blocky breaking to moderate medium granular structure; friable; many fine roots and worm holes; common medium distinct mottles; noncalcareous; gradual boundary.
<u>4.9-10.2</u> 150-310	<u>ML</u> Cb	10YR 3/3-4/4-dark brown to dark yellowish brown; silt loam (silt); massive; sticky; common medium distinct mottles, few medium Fe concretions; noncalcareous.

SITE NAME: ST30 **RM512.7 Site 17** Left descending bank, west side of island, upstream 1/4.

GEOMORPHIC SURFACE: Historical deposits, mid channel island, mapped as ISLAN.

POSITION IN LANDSCAPE: Flat lying, upper end of island.

PARENT MATERIALS: Historical alluvium and very late Holocene alluvium.

WATER TABLE: 5.2', 159cm.

SURFACE ELEVATION: approx. 575.0'

USGS 7.5 MIN. QUADRANGLE: Clinton, IA-IL.

SLOPE: 0%

VEGETATION: Silver maples, nettles, grass.

METHODOLOGY: JMC sampling tube core (1.0" or 1.5" ID).

DEPTH OF CORE, TRENCH, BORING, OR SOIL PIT: 7.9', 240cm.

PHOTOGRAPHED:

DATE DESCRIBED: 9/18/1995

DESCRIBED BY: Jeff Anderson

REMARKS: Thick historical alluvium. Small island just down from Beaver Island.

DEPTH (FT) (CM)	<u>USCS SOIL CLASSIFICATION</u> USDA HORIZON DESIGNATION	SOIL/GEOLOGIC DESCRIPTION
<u>0-3.9</u> 0-120	<u>ML</u> C	10YR 3/3-4/4-dark brown to dark yellowish brown; silt loam (silt); weak medium platy structure to massive; friable; few fine roots; thick and thin bedded historical alluvium, few very fine sand laminae; calcareous upper unit, noncalcareous lower; gradual boundary.
<u>3.9-4.4</u> 120-135	<u>ML</u> ACb	10YR 3/3-dark brown; silt loam (silt); moderate medium subangular blocky breaking to moderate medium granular structure; friable; common to many fine roots; few fine faint mottles; noncalcareous; abrupt boundary.
<u>4.4-6.6</u> 135-200	<u>SM</u> C	10YR 6/3 - 10YR 4/1-pale brown and dark gray; loam and sandy loam (silt, silty sand and fine medium sand); massive to single grain; sticky to nonsticky; laminae of gleyed silt and medium fine sand; 2 sand lamina 3.0" thick; oxidized root casts; noncalcareous; abrupt boundary.
<u>6.6-7.9</u> 200-240	<u>ML</u> Cg	10YR 4/1 - N3/0-dark to very dark gray; silt loam (silt); massive; sticky; common coarse prominent mottles, few coarse Fe concretions; calcareous.

SITE NAME: ST31 **RM512.7 Site 17** Left descending bank, east side of island, upstream 1/4.

GEOMORPHIC SURFACE: Historical deposits, mid channel island, mapped as ISLAN.

POSITION IN LANDSCAPE: Flat lying, upper end of island.

PARENT MATERIALS: Historical alluvium and very late Holocene alluvium.

WATER TABLE: 6.2', 190cm.

SURFACE ELEVATION: approx. 575.0'

USGS 7.5 MIN. QUADRANGLE: Clinton, IA-IL.

SLOPE: 0%

VEGETATION: Silver maples, nettles, grass.

METHODOLOGY: JMC sampling tube core (1.0" or 1.5" ID).

DEPTH OF CORE, TRENCH, BORING, OR SOIL PIT: 7.9', 240cm.

PHOTOGRAPHED:

DATE DESCRIBED: 9/18/1995

DESCRIBED BY: Jeff Anderson

REMARKS: Thick historical alluvium. Profile similar to ST30. Small island just down from Beaver Island.

DEPTH (FT) (CM)	USCS SOIL CLASSIFICATION USDA HORIZON DESIGNATION	SOIL/GEOLOGIC DESCRIPTION
<u>0-4.2</u> 0-130	<u>SP</u> C	10YR 7/3-very pale brown; medium fine sand; single grain; loose; few fine roots; historical alluvium; noncalcareous; abrupt boundary.
<u>4.2-4.9</u> 130-150	<u>ML</u> ACb	10YR 3/3-dark brown; silt loam (silt); moderate medium granular structure; friable; many fine roots; common medium distinct mottles; noncalcareous; abrupt boundary.
<u>4.9-7.9</u> 150-240	<u>SM</u> Cg	10YR 5/4 - N3/0-yellowish brown and very dark gray; loam and sandy loam (silt, silty sand and medium sand); massive to single grain; sticky to nonsticky; laminae of thick and thin bedded gleyed calcareous silt and noncalcareous medium sand.

SITE NAME: ST32 **RM512.7 Site 17** left descending bank, midpoint.
 GEOMORPHIC SURFACE: Historical deposits, mid channel island, mapped as ISLAN.
 POSITION IN LANDSCAPE: Flat lying, west side center of island.
 PARENT MATERIALS: Historical alluvium and very late Holocene alluvium.
 WATER TABLE: 5.6', 171cm.
 SURFACE ELEVATION: approx. 575.0'
 USGS 7.5 MIN. QUADRANGLE: Clinton, IA-IL.
 SLOPE: 0%
 VEGETATION: Silver maples, nettles, grass.
 METHODOLOGY: JMC sampling tube core (1.0" or 1.5" ID).
 DEPTH OF CORE, TRENCH, BORING, OR SOIL PIT: 10.2', 310cm.
 PHOTOGRAPHED:
 DATE DESCRIBED: 9/18/1995
 DESCRIBED BY: Jeff Anderson
 REMARKS: Thick historical alluvium. Profile similar to ST30, ST31. Small island just down from Beaver Island.

<u>DEPTH</u> <u>(FT)</u> <u>(CM)</u>	<u>USCS SOIL CLASSIFICATION</u> <u>USDA HORIZON DESIGNATION</u>	<u>SOIL/GEOLOGIC</u> <u>DESCRIPTION</u>
<u>0-2.5</u> 0-75	<u>SP</u> C	10YR 7/3-very pale brown; medium and fine sand; single grain; loose; few fine and medium roots; laminae of fine and medium sand, historical alluvium; noncalcareous; abrupt boundary.
<u>2.5-6.2</u> 75-190	<u>ML</u> C2	10YR 3/3-dark brown; silt loam (silt); weak medium granular structure; friable; few to common fine roots; historical silt laminae; some units calcareous others noncalcareous; gradual boundary.
<u>6.2-6.9</u> 190-210	<u>ML</u> ACb	10YR 3/3-dark brown; silt loam (silt); moderate medium subangular blocky structure; sticky; many fine roots; noncalcareous; gradual boundary.
<u>6.9-9.2</u> 210-280	<u>ML</u> Cb	10YR 3/3-4/4-dark brown to dark yellowish brown; silt loam (silt); massive; sticky; silt flood laminae 0.12" thick; noncalcareous; gradual boundary.
<u>9.2-10.2</u> 280-310	<u>ML</u> ACgb2	10YR 4/1-dark gray; silt loam (silt, to clayey silt); massive; sticky; laminae of calcareous and noncalcareous silt, some laminae organic enriched.

SITE NAME: ST33 **RM466.7 Site 21** left descending bank, midpoint.
 GEOMORPHIC SURFACE: Historical deposits, mid channel island, mapped as ISLAN.
 POSITION IN LANDSCAPE: Flat lying, north side center of island, narrow valley reach.
 PARENT MATERIALS: Historical alluvium and very late Holocene/historical alluvium.
 WATER TABLE: 6.0', 183cm.
 SURFACE ELEVATION: approx. 550.0'
 USGS 7.5 MIN. QUADRANGLE: Montpelier, IA-IL.
 SLOPE: 0%
 VEGETATION: Silver maples, nettles, grass.
 METHODOLOGY: JMC sampling tube core (1.0" or 1.5" ID).
 DEPTH OF CORE, TRENCH, BORING, OR SOIL PIT: 7.9', 240cm.
 PHOTOGRAPHED: 2 B/W shots of location, ST33 and water's edge sampling.
 DATE DESCRIBED: 10/2/1995
 DESCRIBED BY: Jeff Anderson
 REMARKS: Thick historical alluvium, 10 feet from bank scarp. Small island just across from Andalusia Island.

<u>DEPTH</u> <u>(FT)</u> <u>(CM)</u>	<u>USCS SOIL CLASSIFICATION</u> <u>USDA HORIZON DESIGNATION</u>	<u>SOIL/GEOLOGIC</u> <u>DESCRIPTION</u>
<u>0-4.3</u> 0-130	<u>SM</u> C	10YR 3/3-4/4-6/4-dark brown, dark yellowish brown, and light yellowish brown; loam (silt and very fine sand); weak medium granular and weak medium platy structure; friable; common medium roots and root holes; laminae of silt and very fine sand, historical alluvium; few medium distinct mottles, common coarse carbonate concretions at horizon boundary; calcareous; abrupt boundary.
<u>4.3-5.2</u> 130-160	<u>ML</u> Ab	10YR 3/3-2/2-dark to very dark brown; silt loam (silt); massive; sticky; common medium distinct mottles; calcareous; gradual boundary.
<u>5.2-7.9</u> 160-240	<u>ML</u> Cgb	N3/0-dark gray; silt loam (silt); massive; sticky; gleyed; calcareous.

SITE NAME: ST34 **RM466.9 Site 21** left descending bank, upper end.
 GEOMORPHIC SURFACE: Historical deposits, mid channel island, mapped as ISLAN.
 POSITION IN LANDSCAPE: Flat lying, head of the island, narrow valley reach.
 PARENT MATERIALS: Historical alluvium and very late Holocene/historical alluvium.
 WATER TABLE: 4.1', 125cm.
 SURFACE ELEVATION: approx. 550.0'
 USGS 7.5 MIN. QUADRANGLE: Montpelier, IA-IL.
 SLOPE: 0%
 VEGETATION: Silver maples, nettles, grass, poison ivy.
 METHODOLOGY: JMC sampling tube core (1.0" or 1.5" ID).
 DEPTH OF CORE, TRENCH, BORING, OR SOIL PIT: 7.9', 240cm.
 PHOTOGRAPHED: B/W shot of location near ST34 where water's edge sampling occurred.
 DATE DESCRIBED: 10/2/1995
 DESCRIBED BY: Jeff Anderson
 REMARKS: Thick historical alluvium, upper end of island, severe erosion. Small island just across from Andalusia Island.

<u>DEPTH (FT) (CM)</u>	<u>USCS SOIL CLASSIFICATION USDA HORIZON DESIGNATION</u>	<u>SOIL/GEOLOGIC DESCRIPTION</u>
<u>0-4.6</u> 0-140	<u>SM</u> C	10YR 3/3-4/4-6/4-dark brown, dark yellowish brown, and light yellowish brown; loam (silt and very fine sand); weak medium granular and weak medium platy structure; friable; many medium roots and root holes in upper 3.0 feet; laminae of silt and very fine sand, historical alluvium; few medium distinct mottles, common coarse carbonate concretions at horizon boundary; calcareous; abrupt boundary.
<u>4.6-5.1</u> 140-155	<u>ML</u> ACgb	10YR 3/1-very dark gray; silt loam (silt); massive; sticky; common medium distinct mottles; calcareous; gradual boundary.
<u>5.1-7.2</u> 155-220	<u>ML</u> Cgb	N3/0-very dark gray; silt loam (silt); weak medium subangular blocky structure to massive; sticky; few fine roots; gleyed; calcareous; abrupt boundary.
<u>7.2-7.9</u> 220-240	<u>SP</u> Cg2b	10YR 4/1-dark gray; medium sand; single grain; loose; noncalcareous.

SITE NAME: ST35a&b **RM466.3 Site 21** left descending bank, downstream end.
 GEOMORPHIC SURFACE: Historical deposits, mid channel island, mapped as ISLAN.
 POSITION IN LANDSCAPE: Flat lying, downstream end of the island, narrow valley reach.
 PARENT MATERIALS: Historical alluvium and very late Holocene/historical alluvium.
 WATER TABLE: 3.1', 95cm.
 SURFACE ELEVATION: approx. 550.0'
 USGS 7.5 MIN. QUADRANGLE: Montpelier, IA-IL.
 SLOPE: 0%
 VEGETATION: Silver maples.
 METHODOLOGY: JMC sampling tube core (1.0" or 1.5" ID).
 DEPTH OF CORE, TRENCH, BORING, OR SOIL PIT: 7.9', 240cm.
 PHOTOGRAPHED:
 DATE DESCRIBED: 10/2/1995
 DESCRIBED BY: Jeff Anderson
 REMARKS: Thick historical alluvium, lower end of island, root crown exposure and severe erosion. Small island just across from Andalusia Island.

<u>DEPTH (FT) (CM)</u>	<u>USCS SOIL CLASSIFICATION USDA HORIZON DESIGNATION</u>	<u>SOIL/GEOLOGIC DESCRIPTION</u>
<u>0-4.6</u> 0-140	<u>SM</u> C	10YR 3/3-4/4-6/4-dark brown, dark yellowish brown, and light yellowish brown; loam (silt and very fine sand); weak medium granular and weak medium platy structure; friable; many medium roots and root holes in upper 3.0 feet; laminae of silt and very fine sand, historical alluvium; few medium distinct mottles, common coarse carbonate concretions at horizon boundary; calcareous; abrupt boundary.
<u>4.6-4.9</u> 140-150	<u>ML</u> ACgb	10YR 3/1-very dark gray; silt loam (silt); massive; sticky; common medium distinct mottles; calcareous; gradual boundary.
<u>4.9-7.9</u> 150-240	<u>ML</u> Cgb	N3/0-very dark gray; silt loam (silt); weak medium subangular blocky structure to massive; sticky; gleyed; calcareous.

SITE NAME: ST36 **RM436.4 Site 22** left descending bank, upper section.
 GEOMORPHIC SURFACE: Historical deposits, early to mid Holocene surface EMHOL1.
 POSITION IN LANDSCAPE: Flat lying, near channel margin.
 PARENT MATERIALS: Historical alluvium and Holocene alluvium.
 WATER TABLE: Below depth of core.
 SURFACE ELEVATION: approx. 535.0'
 USGS 7.5 MIN. QUADRANGLE: Toolesboro, IA-IL.
 SLOPE: 0%
 VEGETATION: Grass.
 METHODOLOGY: JMC sampling tube core (1.0" or 1.5" ID).
 DEPTH OF CORE, TRENCH, BORING, OR SOIL PIT: 7.9', 240cm.
 PHOTOGRAPHED: 2 slides of site and orange erosion pins.
 DATE DESCRIBED: 10/3/1995
 DESCRIBED BY: Jeff Anderson
 REMARKS: Thick historical alluvium, over an early Holocene surface. Just downstream from lock and dam, cultural material found from 11MC124. PSS is just about at the pool's water level elevation.

<u>DEPTH</u> <u>(FT)</u> <u>(CM)</u>	<u>USCS SOIL CLASSIFICATION</u> <u>USDA HORIZON DESIGNATION</u>	<u>SOIL/GEOLOGIC</u> <u>DESCRIPTION</u>
<u>0-6.2</u> 0-190	<u>ML</u> C	10YR 3/3-4/4-dark brown, and dark yellowish brown; silt loam (silt); weak medium platy structure to massive; friable; common to many medium roots and root holes; laminae of silt historical alluvium; few fine faint mottles; calcareous; abrupt boundary.
<u>6.2-7.1</u> 190-215	<u>ML</u> ABb	10YR 2/2-3/3-very dark brown to dark brown; silt loam (silt); moderate medium subangular blocky breaking to moderate medium granular structure; friable; many fine root holes; noncalcareous; clear boundary.
<u>7.1-7.9</u> 215-240	<u>ML-CL</u> Btb	10YR3/3-dark brown; silty clay loam (clayey silt); moderate medium subangular blocky structure; friable; many fine root holes; few argillans; noncalcareous.

SITE NAME: ST37a&b **RM436.4 Site 22** left descending bank, upper section.

GEOMORPHIC SURFACE: Early to mid Holocene surface EMHOL1, capped by late Holocene..

POSITION IN LANDSCAPE: Flat lying, behind levee about 150 away from channel margin.

PARENT MATERIALS: Holocene alluvium.

WATER TABLE: Below depth of core.

SURFACE ELEVATION: approx. 530.0'

USGS 7.5 MIN. QUADRANGLE: Toolesboro, IA-IL.

SLOPE: 0%

VEGETATION: Ag field (37a) and elm, ash and silver maple forest (37b).

METHODOLOGY: JMC sampling tube core (1.0" or 1.5" ID).

DEPTH OF CORE, TRENCH, BORING, OR SOIL PIT: 3.6', 110cm.

PHOTOGRAPHED: 2 slides of site and orange erosion pins.

DATE DESCRIBED: 10/3/1995

DESCRIBED BY: Jeff Anderson

REMARKS: Late Holocene alluvium, over an early Holocene surface. Just downstream from lock and dam, cultural material found from 11MC124. PSS is just about at the pool's water level elevation. Good place for radiocarbon dates.

DEPTH (FT) (CM)	<u>USCS SOIL CLASSIFICATION</u> <u>USDA HORIZON DESIGNATION</u>	SOIL/GEOLOGIC DESCRIPTION
<u>0-0.7</u> 0-20	<u>ML</u> A	10YR 2/1-black; silt loam (silt); moderate medium granular structure; friable; common to many fine roots; noncalcareous; clear boundary.
<u>0.7-1.8</u> 20-55	<u>ML-CL</u> AB	10YR2/2-very dark brown; silty clay loam (clayey silt); moderate medium subangular blocky structure; friable; common fine roots; noncalcareous; clear boundary.
<u>1.8-2.6</u> 55-80	<u>ML-CL</u> Bw-Bt	10YR 3/3-4/4-dark brown to dark yellowish brown; silty clay loam (clayey silt); moderate medium subangular blocky structure; very friable; many fine root holes; common medium distinct mottles; noncalcareous; abrupt boundary.
<u>2.6-3.3</u> 80-100	<u>ML</u> ABb	10YR2/2-very dark brown; silt loam to silty clay loam (silt to clayey silt); moderate fine to medium columnar structure; friable; common fine roots and root holes; noncalcareous; clear boundary.
<u>3.3-3.6</u> 100-110	<u>ML-CL</u> ABtb	10YR2/2-very dark brown; silty clay loam (clayey silt); moderate medium subangular blocky structure; friable; noncalcareous.

SITE NAME: ST38 **RM436.4 Site 23** right descending bank.
 GEOMORPHIC SURFACE: Late Holocene island capped by PSA, mapped as ISLAN.
 POSITION IN LANDSCAPE: Flat lying.
 PARENT MATERIALS: Historical and Holocene alluvium.
 WATER TABLE: Below depth of core.
 SURFACE ELEVATION: approx. 535.0'
 USGS 7.5 MIN. QUADRANGLE: Toolesboro, IA-IL.
 SLOPE: 0%
 VEGETATION: Silver maple forest.
 METHODOLOGY: JMC sampling tube core (1.0" or 1.5" ID).
 DEPTH OF CORE, TRENCH, BORING, OR SOIL PIT: 7.9', 240cm.
 PHOTOGRAPHED:
 DATE DESCRIBED: 10/3/1995
 DESCRIBED BY: Jeff Anderson
 REMARKS: Late Holocene alluvium, capped by historical alluvium on Keg Island. Just downstream from lock and dam, cultural material found from 11MC124.

<u>DEPTH (FT) (CM)</u>	<u>USCS SOIL CLASSIFICATION USDA HORIZON DESIGNATION</u>	<u>SOIL/GEOLOGIC DESCRIPTION</u>
<u>0-4.9</u> 0-150	<u>ML</u> C	10YR 3/3-4/4-dark brown, and dark yellowish brown; silt loam (silt); weak medium platy structure to massive; friable; common to many medium roots and root holes; laminae of silt historical alluvium; calcareous upper unit noncalcareous below; abrupt boundary.
<u>4.9-5.4</u> 150-165	<u>ML</u> Ab	10YR 2/2-3/3-very dark brown to dark brown; silt loam (silt); weak medium subangular blocky breaking to moderate medium granular structure; friable; many fine root holes; noncalcareous; clear boundary.
<u>5.4-5.9</u> 165-180	<u>ML</u> Bwb	10YR 2/2-3/3-very dark brown to dark brown; silt loam to silty clay loam (silt to clayey silt); moderate medium subangular blocky structure; friable; weak flood laminae, mottling along laminae plates; noncalcareous; clear boundary.
<u>5.9-7.5</u> 180-230	<u>ML</u> ABwb	10YR 3/3-2/2-dark to very dark brown; silt loam to silty clay loam (silt to clayey silt); moderate medium subangular blocky structure; friable; few argillans; common medium distinct mottles, few fine Fe concretions; few organic enriched flood laminae; noncalcareous; clear boundary.
<u>7.5-7.9</u> 230-240	<u>ML</u> Cb	10YR 4/3-dark brown; silt loam (silt); massive; friable; noncalcareous.

SITE NAME: ST39 **RM432.3 Site 25** right descending bank, midpoint.

GEOMORPHIC SURFACE: Historical island, mapped as PSA.

POSITION IN LANDSCAPE: Flat lying.

PARENT MATERIALS: Historical alluvium.

WATER TABLE: Below depth of core.

SURFACE ELEVATION: approx. 535.0'

USGS 7.5 MIN. QUADRANGLE: Joy, IA-IL.

SLOPE: 0%

VEGETATION: Silver maples.

METHODOLOGY: JMC sampling tube core (1.0" or 1.5" ID).

DEPTH OF CORE, TRENCH, BORING, OR SOIL PIT: 7.9', 240cm.

PHOTOGRAPHED: 2 B/W of classic PSA, a color slide and a B/W shot of ST39 location.

DATE DESCRIBED: 10/3/1995

DESCRIBED BY: Jeff Anderson

REMARKS: Thick historical alluvium at a PSA island. This is across from a Savanna terrace near New Boston where site 24 is located.

DEPTH (FT) (CM)	<u>USCS SOIL CLASSIFICATION</u> USDA HORIZON DESIGNATION	SOIL/GEOLOGIC DESCRIPTION
<u>0-2.6</u> 0-80	<u>SP</u> C	10YR 6/4-light yellowish brown; medium and fine sand; single grain; loose; historical alluvium, apparent 1993 flood deposit; calcareous; abrupt boundary.
<u>2.6-7.9</u> 80-240	<u>ML</u> C2	10YR 4/4-3/3-2/2-dark yellowish brown, dark brown and very dark brown; silt loam (silt); massive; friable; calcareous.

SITE NAME: ST40 **RM420.0 Site 26** right descending bank, midpoint.
 GEOMORPHIC SURFACE: Spoil capped late Holocene island with PSA, mapped as ISLAN.
 POSITION IN LANDSCAPE: Flat lying.
 PARENT MATERIALS: Historical alluvium and spoil.
 WATER TABLE: Below depth of core.
 SURFACE ELEVATION: approx. 530.0'
 USGS 7.5 MIN. QUADRANGLE: Oquawka, IA-IL.
 SLOPE: 0%
 VEGETATION: Silver maples.
 METHODOLOGY: JMC sampling tube core (1.0" or 1.5" ID).
 DEPTH OF CORE, TRENCH, BORING, OR SOIL PIT: 2.9', 90cm.
 PHOTOGRAPHED: B/W of eroded spoil note tree root crowns.
 DATE DESCRIBED: 10/3/1995
 DESCRIBED BY: Jeff Anderson
 REMARKS: Historical alluvium overlying coarse sandy dredge spoil.

DEPTH (FT) (CM)	<u>USCS SOIL CLASSIFICATION</u> USDA HORIZON DESIGNATION	SOIL/GEOLOGIC DESCRIPTION
<u>0-0.8</u> 0-25	<u>ML</u> C	10YR 3/3-4/4-dark brown and dark yellowish brown; silt loam (silt); weak medium platy structure to massive; friable; historical alluvial laminae; calcareous; abrupt boundary.
<u>0.8-2.9</u> 25-90	<u>SP</u> C2	10YR 7/3-very pale brown; medium and coarse sand; single grain; loose; common granules; noncalcareous.

SITE NAME: ST41 **RM420.0 Site 26** right descending bank, midpoint.
 GEOMORPHIC SURFACE: Late Holocene island with PSA, mapped as ISLAN.
 POSITION IN LANDSCAPE: Flat lying.
 PARENT MATERIALS: Historical alluvium.
 WATER TABLE: 60cm.
 SURFACE ELEVATION: approx. 525.0'
 USGS 7.5 MIN. QUADRANGLE: Oquawka, IA-IL.
 SLOPE: 0%
 VEGETATION: Silver maples.
 METHODOLOGY: JMC sampling tube core (1.0" or 1.5" ID).
 DEPTH OF CORE, TRENCH, BORING, OR SOIL PIT: 7.9', 240cm.
 PHOTOGRAPHED: Color slide of erosion pin installation.
 DATE DESCRIBED: 10/3/1995
 DESCRIBED BY: Jeff Anderson
 REMARKS: Historical alluvium, downslope away from dredge spoil and channel margin near a mid island wetland filled with PSA.

DEPTH (FT) (CM)	<u>USCS SOIL CLASSIFICATION</u> USDA HORIZON DESIGNATION	SOIL/GEOLOGIC DESCRIPTION
<u>0-2.6</u> 0-80	<u>ML-SM</u> C	10YR 3/3-dark brown; loam to silt loam (silt and very fine sand); weak medium platy structure; friable; historical alluvial laminae; calcareous; gradual boundary.
<u>2.6-7.9</u> 80-240	<u>ML-SM</u> C2	10YR 4/1-dark gray; silt loam to loam (silt, clayey silt, and fine sand); massive and single grain; massive to loose; laminae of historical silt, clayey silt and fine sand; common fine and medium roots and root holes; gleyed; calcareous.

SITE NAME: ST42 **RM360.0 Site 27** Right descending bank, midpoint.
 GEOMORPHIC SURFACE: Very late Holocene Mississippi River to historic surface, LAHOL.
 POSITION IN LANDSCAPE: Flat lying, about 1.0 mile downstream of Des Moines R. confluence.
 PARENT MATERIALS: Historical Mississippi River/Des Moines River alluvium.
 WATER TABLE: Below depth of core.
 SURFACE ELEVATION: approx. 490.0'
 USGS 7.5 MIN. QUADRANGLE: Warsaw IL-MO.
 SLOPE: 0%
 VEGETATION: Grass.
 METHODOLOGY: JMC sampling tube core (1.0" or 1.5" ID).
 DEPTH OF CORE, TRENCH, BORING, OR SOIL PIT: 8.2', 250cm.
 PHOTOGRAPHED: B/W print and color slide erosion pins and bank.
 DATE DESCRIBED: 10/4/1995
 DESCRIBED BY: Jeff Anderson
 REMARKS: Located just downstream of Des Moines River confluence. Thick bedded historical alluvium. Impressive area of desiccated slump blocks calving into the channel. The hot dry summer conditions has accelerated this erosional process erosion.

DEPTH (FT) (CM)	<u>USCS SOIL CLASSIFICATION</u> <u>USDA HORIZON DESIGNATION</u>	SOIL/GEOLOGIC DESCRIPTION
0-8.2 0-250	<u>ML-SM</u> C	10YR 6/4-3/3-light yellowish brown and dark brown; loam and silt loam (silt and very fine sand); massive; very friable; historical flood laminae of alternating thick bedded dark brown silt and thin bedded very fine sand; calcareous.

SITE NAME: ST43 **RM339.3 Site 29** Left descending bank, midpoint.
 GEOMORPHIC SURFACE: Late Holocene Mississippi River Island mapped as ISLAN.
 POSITION IN LANDSCAPE: Flat lying.
 PARENT MATERIALS: Historical Mississippi River alluvium.
 WATER TABLE: 10.2', 310cm.
 SURFACE ELEVATION: approx. 480.0'
 USGS 7.5 MIN. QUADRANGLE: Long Island IL-MO.
 SLOPE: 0%
 VEGETATION: Silver maples.
 METHODOLOGY: JMC sampling tube core (1.0" or 1.5" ID).
 DEPTH OF CORE, TRENCH, BORING, OR SOIL PIT: 10.7', 325cm.
 PHOTOGRAPHED:
 DATE DESCRIBED: 10/5/1995
 DESCRIBED BY: Jeff Anderson
 REMARKS: Located across the upper end of Long Island. Entire profile is thick and thin bedded historical alluvium, medium calcareous sand at the base of the profile.

DEPTH (FT) (CM)	<u>USCS SOIL CLASSIFICATION</u> USDA HORIZON DESIGNATION	SOIL/GEOLOGIC DESCRIPTION
<u>0-9.5</u> 0-290	<u>ML-SM</u> C	10YR 7/3-4/4-3/3-very pale brown, dark yellowish brown and dark brown; loam and silt loam (silt and very fine sand); massive; friable; historical flood laminae of alternating thick and thin bedded dark brown silt and very fine sand; common medium distinct mottles below 200cm, gleyed below 250cm, calcareous; abrupt boundary.
<u>9.5-10.7</u> 290-325	<u>SP</u> C2	10YR 7/3-very pale brown; medium sand; single grain; loose; common coarse prominent mottles; calcareous.

SITE NAME: ST44 **RM339.3 Site 30** Right descending bank, midpoint.
 GEOMORPHIC SURFACE: Early to mid Holocene Mississippi River surface, EMHOL2.
 POSITION IN LANDSCAPE: Flat lying.
 PARENT MATERIALS: Mississippi River alluvium.
 WATER TABLE: Below depth of core.
 SURFACE ELEVATION: approx. 475.0'
 USGS 7.5 MIN. QUADRANGLE: La Grange-MO-IL.
 SLOPE: 0%
 VEGETATION: Silver maples.
 METHODOLOGY: JMC sampling tube core (1.0" or 1.5" ID).
 DEPTH OF CORE, TRENCH, BORING, OR SOIL PIT: 7.9', 240cm.
 PHOTOGRAPHED: One slide, 2 B/W of ST44, Site 30 location looking downstream.
 DATE DESCRIBED: 10/5/1995
 DESCRIBED BY: Jeff Anderson
 REMARKS: Located across from Site 29 and ST43 on the Missouri side of the valley. Area is mapped as FANCO but, below the 480' contour lies the early to mid Holocene surface identified in the field. Somewhat poorly to poorly drained surface. Should be re-mapped as EMHOL2.

DEPTH (FT) (CM)	<u>USCS SOIL CLASSIFICATION</u> <u>USDA HORIZON DESIGNATION</u>	SOIL/GEOLOGIC DESCRIPTION
<u>0-4.6</u> 0-140	<u>ML</u> C	10YR 3/3-2/2-dark brown, and very dark brown; silt loam (silt); weak medium platy structure to massive; friable; common medium roots and root holes; laminae of thin bedded silt historical alluvium; calcareous; abrupt boundary.
<u>4.6-5.4</u> 140-165	<u>ML-CL</u> ABb	N2/0-black; silty clay loam (clayey silt); moderate medium subangular blocky structure; sticky; noncalcareous; clear boundary.
<u>5.4-6.6</u> 165-200	<u>ML-CL</u> Btg1b	N3/0-very dark gray; silty clay loam (clayey silt); moderate medium subangular blocky structure; sticky; few argillans; few fine faint mottles, gleyed; noncalcareous; clear boundary.
<u>6.6-7.9</u> 200-240	<u>ML-CL</u> Btg2b	10YR4/1-dark gray; silty clay loam (clayey silt); massive; sticky; many medium distinct mottles, gleyed; common argillans; noncalcareous.

SITE NAME: ST45 **RM312.5** Right descending bank.

GEOMORPHIC SURFACE: Late Holocene Mississippi River lateral accretion ridge, LAHOL1.

POSITION IN LANDSCAPE: Flat lying.

PARENT MATERIALS: Mississippi River alluvium.

WATER TABLE: 4.3', 130cm.

SURFACE ELEVATION: approx. 465.0'

USGS 7.5 MIN. QUADRANGLE: Marblehead-MO-IL.

SLOPE: 0%

VEGETATION: Fallow ag field.

METHODOLOGY: JMC sampling tube core (1.0" or 1.5" ID).

DEPTH OF CORE, TRENCH, BORING, OR SOIL PIT: 7.9', 240cm.

PHOTOGRAPHED:

DATE DESCRIBED: 10/5/1995

DESCRIBED BY: Jeff Anderson

REMARKS: Lateral accretion ridge at the Bay de Charles. Spot core taken while waiting for group. Protected by artificial levee, no PSA. Fining upward sequence.

DEPTH (FT) (CM)	USCS SOIL CLASSIFICATION USDA HORIZON DESIGNATION	SOIL/GEOLOGIC DESCRIPTION
<u>0-0.7</u> 0-20	<u>ML</u> Ap	10YR 3/3-dark brown; silt loam (silt); weak medium granular structure; friable; common fine roots; probably some historical alluvium mixed into this horizon; noncalcareous; abrupt boundary.
<u>0.7-1.1</u> 20-35	<u>ML-CL</u> AB	10YR 3/2-very dark grayish brown; silty clay loam (clayey silt); moderate medium subangular blocky structure; friable to sticky; many fine roots; noncalcareous; clear boundary.
<u>1.1-2.0</u> 35-60	<u>ML</u> Bw	10YR 4/3-dark brown; silt loam (silt); moderate medium subangular blocky structure; friable; common to many medium distinct mottles; noncalcareous; gradual boundary.
<u>2.0-7.9</u> 60-240	<u>ML-SM</u> C	10YR 4/3-dark brown; silt loam to loam (silt to silty sand); massive; sticky; late Holocene flood laminae, few gleyed clayey silt laminae; common to many medium distinct mottles, common medium Fe concretions; noncalcareous.

SITE NAME: ST46 **RM292.4** Right descending bank.

GEOMORPHIC SURFACE: Early to mid Holocene Mississippi River flood basin, mapped as EMHOL1.

POSITION IN LANDSCAPE: Flat lying.

PARENT MATERIALS: Mississippi River alluvium.

WATER TABLE: 1.3', 40cm.

SURFACE ELEVATION: approx. 455.0'

USGS 7.5 MIN. QUADRANGLE: Ashburn-MO-IL.

SLOPE: 0%

VEGETATION: Fallow ag field.

METHODOLOGY: JMC sampling tube core (1.0" or 1.5" ID).

DEPTH OF CORE, TRENCH, BORING, OR SOIL PIT: 5.9', 180cm.

PHOTOGRAPHED:

DATE DESCRIBED: 10/6/1995

DESCRIBED BY: Jeff Anderson

REMARKS: Early to mid Holocene fine grained, very poorly drained flood basin, just south of Saverton. Nearby Gilbert island is a good study location.

<u>DEPTH</u> <u>(FT)</u> <u>(CM)</u>	<u>USCS SOIL CLASSIFICATION</u> <u>USDA HORIZON DESIGNATION</u>	<u>SOIL/GEOLOGIC</u> <u>DESCRIPTION</u>
<u>0-0.2</u> 0-5	<u>ML</u> C	10YR 3/2-very dark grayish brown; silt loam (silt); weak medium granular structure; friable; common fine roots; thin historical alluvial deposit; noncalcareous; abrupt boundary.
<u>0.2-1.3</u> 5-40	<u>ML-CL</u> ABtg	10YR 3/1-very dark gray; silty clay loam (clayey silt); moderate medium subangular blocky structure; sticky; common medium distinct mottles, gleyed; noncalcareous; gradual boundary.
<u>1.3-5.9</u> 40-180	<u>CL</u> Cg	N3/0-very dark gray; silty clay; massive; sticky; common medium distinct mottles, gleyed; noncalcareous.

SITE NAME: ST47 **RM275.3 Site 32** Right descending bank, midpoint.
 GEOMORPHIC SURFACE: Very late Holocene to historic Mississippi River alluvium, LAHOL.
 POSITION IN LANDSCAPE: Flat lying.
 PARENT MATERIALS: Mississippi River alluvium.
 WATER TABLE: 1.5', 46cm.
 SURFACE ELEVATION: approx. 450.0'
 USGS 7.5 MIN. QUADRANGLE: Pleasant Hill West-MO-IL.
 SLOPE: 0%
 VEGETATION: Weeds and wetland plants.
 METHODOLOGY: JMC sampling tube core (1.0" or 1.5" ID).
 DEPTH OF CORE, TRENCH, BORING, OR SOIL PIT: 9.2', 280cm.
 PHOTOGRAPHED: B/W shot of ST47 location with Dan and Miss. R. channel in background.
 DATE DESCRIBED: 10/12/1995
 DESCRIBED BY: Jeff Anderson
 REMARKS: Very late to historic fine grained deposit, wetland soil. Core taken away from the channel margin.

<u>DEPTH (FT) (CM)</u>	<u>USCS SOIL CLASSIFICATION USDA HORIZON DESIGNATION</u>	<u>SOIL/GEOLOGIC DESCRIPTION</u>
<u>0-3.6</u> 0-110	<u>ML</u> C	10YR 3/3-4/2-dark brown and dark grayish brown; silt loam (silt); weak to moderate medium platy structure; friable; common fine roots; few fine faint mottles along plate faces; historical alluvial deposit; calcareous; gradual boundary.
<u>3.6-8.2</u> 110-250	<u>ML</u> Cgb	N3/0-very dark gray; silt loam (silt); massive; sticky; few fine faint mottles, gleyed; weakly calcareous; abrupt boundary.
<u>8.2-9.2</u> 250-280	<u>CL</u> Cg2b	N3/0-very dark gray; silty clay; massive; sticky; few fine faint mottles, gleyed; weakly calcareous.

SITE NAME: ST48 **RM275.3 Site 32** Right descending bank, midpoint.
 GEOMORPHIC SURFACE: Very late Holocene to historic Mississippi River alluvium, LAHOL.
 POSITION IN LANDSCAPE: Flat lying.
 PARENT MATERIALS: Mississippi River alluvium.
 WATER TABLE: 1.8', 56cm.
 SURFACE ELEVATION: approx. 450.0'
 USGS 7.5 MIN. QUADRANGLE: Pleasant Hill West-MO-IL.
 SLOPE: 0%
 VEGETATION: Silver maples, weeds.
 METHODOLOGY: JMC sampling tube core (1.0" or 1.5" ID).
 DEPTH OF CORE, TRENCH, BORING, OR SOIL PIT: 7.9', 280cm.
 PHOTOGRAPHED:
 DATE DESCRIBED: 10/12/1995
 DESCRIBED BY: Jeff Anderson
 REMARKS: Very late to historic fine grained deposit, wetland soil, core taken about 10.0 feet from the channel margin.

DEPTH (FT) (CM)	USCS SOIL CLASSIFICATION USDA HORIZON DESIGNATION	SOIL/GEOLOGIC DESCRIPTION
<u>0-3.9</u> 0-120	<u>ML</u> C	10YR 3/3-4/2-dark brown, and dark grayish brown; silt loam (silt); weak medium platy structure to massive; friable; laminae of historical very fine sand and silt which vary in thickness; few fine faint mottles; calcareous; abrupt boundary.
<u>3.9-4.9</u> 120-150	<u>ML-CL</u> ACgb	N2/0-3/0-black to very dark gray; silty clay loam (clayey silt); massive; sticky; few to common charcoal fragments; gleyed; weakly calcareous; gradual boundary.
<u>4.9-5.4</u> 150-165	<u>ML-CL</u> BCgb	N3/0-very dark gray; silty clay loam (clayey silt); weak medium subangular blocky structure; sticky; gleyed; noncalcareous; gradual boundary.
<u>5.4-7.9</u> 165-240	<u>ML-CL</u> Cgb	N3/0-very dark gray; silty clay loam (clayey silt); massive; sticky; noncalcareous.

SITE NAME: Bank exposure **RM266.8 Observation** Left descending bank.

GEOMORPHIC SURFACE: Very late Holocene to historic Mississippi River alluvium, ISLAN.

POSITION IN LANDSCAPE: Flat lying.

PARENT MATERIALS: Mississippi River alluvium.

WATER TABLE: Below base of profile.

SURFACE ELEVATION: approx. 445.0'

USGS 7.5 MIN. QUADRANGLE: Annada-MO-IL.

SLOPE: 0%

VEGETATION: Silver maples.

METHODOLOGY: JMC sampling tube core (1.0" or 1.5" ID).

DEPTH OF CORE, TRENCH, BORING, OR SOIL PIT: 8.6', 262cm.

PHOTOGRAPHED: 2 color slides of bank profile, and one of erosion pins.

DATE DESCRIBED: 10/12/1995

DESCRIBED BY: Jeff Anderson

REMARKS: Very late to historic fine grained deposit on Slim Island. The description is of a bank profile exposure. Three erosion pins were installed at this location.

<u>DEPTH (FT) (CM)</u>	<u>USCS SOIL CLASSIFICATION USDA HORIZON DESIGNATION</u>	<u>SOIL/GEOLOGIC DESCRIPTION</u>
<u>0-4.2</u> 0-128	<u>ML</u> C	10YR 7/3-4/4-very pale brown and dark yellowish brown; silt loam (silt); weak medium platy structure to massive; friable; few to common root holes; laminae of historical very fine sand and silt which vary in thickness; calcareous; abrupt boundary.
<u>4.2-6.5</u> 128-198	<u>ML</u> ACgb	10YR 3/3-dark brown; silt loam (silt); moderate medium subangular blocky, moderate medium platy breaking to moderate medium granular structure; friable; common medium distinct mottles; noncalcareous; gradual boundary.
<u>6.5-8.6</u> 198-262	<u>ML-CL</u> ACgb2	10YR 3/1-very dark gray; silty clay loam (clayey silt); weak medium subangular blocky structure; friable; common medium distinct mottles, gleyed; noncalcareous.

SITE NAME: ST49 **RM266.5 Site 33** Left descending bank, midpoint.

GEOMORPHIC SURFACE: Very late Holocene to historic Mississippi River alluvium, ISLAN.

POSITION IN LANDSCAPE: Flat lying.

PARENT MATERIALS: Mississippi River alluvium.

WATER TABLE: Below base of profile.

SURFACE ELEVATION: approx. 445.0'

USGS 7.5 MIN. QUADRANGLE: Annada-MO-IL.

SLOPE: 0%

VEGETATION: Silver maples.

METHODOLOGY: JMC sampling tube core (1.0" or 1.5" ID).

DEPTH OF CORE, TRENCH, BORING, OR SOIL PIT: 9.2', 280cm.

PHOTOGRAPHED: B/W shot of location with Mike on the left.

DATE DESCRIBED: 10/12/1995

DESCRIBED BY: Jeff Anderson

REMARKS: Very late to historic fine grained deposit on Coon Island. A well developed buried A horizon occurs at 210cm. A good study island.

DEPTH (FT) (CM)	USCS SOIL CLASSIFICATION USDA HORIZON DESIGNATION	SOIL/GEOLOGIC DESCRIPTION
<u>0-6.2</u> 0-190	<u>ML</u> C	10YR 7/3-4/4-3/3-very pale brown, dark yellowish brown, and dark brown; silt loam (silt); weak medium platy structure; friable; laminae of historical very fine sand and silt which vary in thickness, mostly thick bedded; calcareous; abrupt boundary.
<u>6.2-6.9</u> 190-210	<u>ML</u> ACb	10YR 2/2-3/3-very dark brown to dark brown; silt loam (silt); moderate medium subangular blocky breaking to moderate medium granular structure; friable; common to many fine root holes, and worm casts; few laminae observed; noncalcareous; gradual boundary.
<u>6.9-8.2</u> 210-250	<u>ML</u> Ab2	10YR 2/2-very dark brown; silt loam (silt); moderate medium subangular blocky breaking to moderate medium granular structure; friable; many fine roots; noncalcareous; gradual boundary.
<u>8.2-9.2</u> 250-280	<u>ML</u> Cb2	10YR 3/3-dark brown; silt loam (silt); massive; friable; very thin laminae of silt and clayey silt; many fine roots; noncalcareous.

SITE NAME: ST50 **RM232.2 Site 34** Right descending bank, midpoint.
 GEOMORPHIC SURFACE: Very late Holocene to historic Mississippi River alluvium, LAHOL.
 POSITION IN LANDSCAPE: Flat lying.
 PARENT MATERIALS: Mississippi River alluvium.
 WATER TABLE: 7.1', 216cm.
 SURFACE ELEVATION: approx. 425.0'
 USGS 7.5 MIN. QUADRANGLE: Winfield-MO-IL.
 SLOPE: 0%
 VEGETATION: Silver maples.
 METHODOLOGY: JMC sampling tube core (1.0" or 1.5" ID).
 DEPTH OF CORE, TRENCH, BORING, OR SOIL PIT: 12.5', 380cm.
 PHOTOGRAPHED:
 DATE DESCRIBED: 10/13/1995
 DESCRIBED BY: Jeff Anderson
 REMARKS: Very late to historic fine grained deposits. Thick historical deposits capping the surface.

DEPTH (FT) (CM)	<u>USCS SOIL CLASSIFICATION</u> USDA HORIZON DESIGNATION	SOIL/GEOLOGIC DESCRIPTION
<u>0-10.5</u> 0-320	<u>ML</u> C	10YR 4/4-3/3-dark yellowish brown, and dark brown; silt loam (silt); weak medium platy structure; friable; laminae of historical very fine sand and silt thick and thin bedded; common to many medium distinct mottles below 6.0'; calcareous; abrupt boundary.
<u>10.5-12.5</u> 320-380	<u>ML</u> ACgb	N3/0-very dark gray; silt loam to silty clay loam (silt to clayey silt); massive; sticky; some organic material and charcoal; gleyed; noncalcareous.

SITE NAME: ST51 **RM222.1 Site 35** Right descending bank, midpoint.
 GEOMORPHIC SURFACE: Very late Holocene to historic Mississippi River alluvium, ISLAN.
 POSITION IN LANDSCAPE: Flat lying.
 PARENT MATERIALS: Mississippi River alluvium.
 WATER TABLE: 9.2', 280cm.
 SURFACE ELEVATION: approx. 425.0'
 USGS 7.5 MIN. QUADRANGLE: Grafton-MO-IL.
 SLOPE: 0%
 VEGETATION: Silver maples.
 METHODOLOGY: JMC sampling tube core (1.0" or 1.5" ID).
 DEPTH OF CORE, TRENCH, BORING, OR SOIL PIT: 10.2', 310cm.
 PHOTOGRAPHED: B/W shot of PSA bank and slumping silver maples.
 DATE DESCRIBED: 10/13/1995
 DESCRIBED BY: Jeff Anderson
 REMARKS: Very late to historic fine grained deposits. Thick historical deposits capping the surface.

DEPTH (FT) (CM)	<u>USCS SOIL CLASSIFICATION</u> USDA HORIZON DESIGNATION	SOIL/GEOLOGIC DESCRIPTION
<u>0-8.9</u> 0-270	<u>ML</u> C	10YR 4/4-3/3-dark yellowish brown, and dark brown; silt loam (silt); weak medium platy structure to massive; friable; common medium and fine root and root holes, and worm casts; laminae of historical very fine sand, silt, and clayey silt, thick and thin bedded; calcareous; abrupt boundary.
<u>8.9-10.2</u> 270-310	<u>ML-CL</u> ACgb	N3/0-very dark gray; silty clay loam (clayey silt); massive; sticky; some organic material and charcoal fragments; gleyed; calcareous.

SITE NAME: ST52 **RM217.5 Site 36** Right descending bank, midpoint.
 GEOMORPHIC SURFACE: Very late Holocene to historic Mississippi River surface.
 POSITION IN LANDSCAPE: Flat lying, just downstream from Illinois River confluence.
 PARENT MATERIALS: Mississippi/Illinois River alluvium.
 WATER TABLE: 6.2', 190cm.
 SURFACE ELEVATION: approx. 425.0'
 USGS 7.5 MIN. QUADRANGLE: Grafton-MO-IL.
 SLOPE: 0%
 VEGETATION: Weeds.
 METHODOLOGY: JMC sampling tube core (1.0" or 1.5" ID).
 DEPTH OF CORE, TRENCH, BORING, OR SOIL PIT: 7.9', 240cm.
 PHOTOGRAPHED: Several slides were taken nearby particularly of confluence.
 DATE DESCRIBED: 10/13/1995
 DESCRIBED BY: Jeff Anderson
 REMARKS: Historic fine, medium, and coarse grained deposits.

<u>DEPTH</u> <u>(FT)</u> <u>(CM)</u>	<u>USCS SOIL CLASSIFICATION</u> <u>USDA HORIZON DESIGNATION</u>	<u>SOIL/GEOLOGIC</u> <u>DESCRIPTION</u>
<u>0-5.9</u> 0-180	<u>ML</u> C	10YR 3/3-dark brown (dry); silt loam (silt); massive; very friable; laminae of historical silt which vary in thickness; few fine faint mottles; calcareous; gradual boundary.
<u>5.9-6.6</u> 180-200	<u>ML-SM</u> C2	10YR3/3-dark brown; silt loam and loam (silty fine sand); massive; friable; common medium distinct mottles; calcareous; abrupt boundary.
<u>6.6-7.2</u> 200-220	<u>SM-SP</u> C3	10YR 4/4-dark yellowish brown; sandy loam (fine sand); single grain; loose; calcareous; abrupt boundary.
<u>7.2-7.9</u> 220-240	<u>SP</u> C4	10YR 4/4-dark yellowish brown; fine medium sand; single grain; loose; calcareous.

SITE NAME: ST53 **RM197.6 Site 37** Right descending bank, midpoint.

GEOMORPHIC SURFACE: Historic Mississippi River surface.

POSITION IN LANDSCAPE: Flat lying.

PARENT MATERIALS: Mississippi River alluvium.

WATER TABLE: Below base of profile.

SURFACE ELEVATION: approx. 410.0'

USGS 7.5 MIN. QUADRANGLE: Wood River-MO-IL.

SLOPE: 0%

VEGETATION: Silver maples.

METHODOLOGY: JMC sampling tube core (1.0" or 1.5" ID).

DEPTH OF CORE, TRENCH, BORING, OR SOIL PIT: 7.9', 240cm.

PHOTOGRAPHED: Took slide of levee breach area behind ST53.

DATE DESCRIBED: 10/14/1995

DESCRIBED BY: Jeff Anderson

REMARKS: This is disturbed area where construction has been going on repairing the levee break. Across the channel is Shell Oil docking area. Disturbed reworked fill and thick bedded PSA. About 1.5 miles upstream of the confluence with the Missouri River.

DEPTH (FT) (CM)	<u>USCS SOIL CLASSIFICATION</u> <u>USDA HORIZON DESIGNATION</u>	SOIL/GEOLOGIC DESCRIPTION
<u>0-4.6</u> 0-140	<u>ML</u> C	10YR 6/4-4/4-light yellowish brown and dark yellowish brown (dry); silt loam (silt and very fine sand); massive; very friable; laminae of historical silt and very fine sand thick and thin bedded; common fine roots, root holes, and worm holes; calcareous; abrupt boundary.
<u>4.6-5.9</u> 140-180	<u>ML</u> C2	10YR2/2-very dark brown; silt loam (silt); weak medium subangular blocky breaking to moderate medium granular structure; friable; common fine roots and worm holes; appears to be reworked topsoil (A horizon); calcareous; abrupt boundary.
<u>5.9-7.9</u> 180-240	<u>ML</u> C3	10YR 3/3-4/4-4/2-dark brown, dark yellowish brown, and dark grayish brown; silt loam (silt and very fine sand); weak medium platy structure; friable; few fine faint mottles; laminae of recent historical deposits; strongly calcareous.

SITE NAME: ST54 **RM174.8 Site 38** Left descending bank, midpoint.
 GEOMORPHIC SURFACE: Mississippi River Late Holocene surface capped by PSA.
 POSITION IN LANDSCAPE: Flat lying.
 PARENT MATERIALS: Mississippi River alluvium.
 WATER TABLE: Below base of profile.
 SURFACE ELEVATION: approx. 410.0'
 USGS 7.5 MIN. QUADRANGLE: Cahokia-MO-IL.
 SLOPE: 0%
 VEGETATION: Silver maples.
 METHODOLOGY: JMC sampling tube core (1.0" or 1.5" ID).
 DEPTH OF CORE, TRENCH, BORING, OR SOIL PIT: 9.2', 280cm.
 PHOTOGRAPHED: Several slides and B/W shots of location and recent flood deposits.
 DATE DESCRIBED: 10/14/1995
 DESCRIBED BY: Jeff Anderson
 REMARKS: Extremely thick bedded silt and sand historical deposits.

DEPTH (FT) (CM)	<u>USCS SOIL CLASSIFICATION</u> USDA HORIZON DESIGNATION	SOIL/GEOLOGIC DESCRIPTION
<u>0-6.6</u> 0-200	<u>ML</u> C	10YR 6/4-5/4-light yellowish brown and yellowish brown (dry); silt loam (silt and very fine sand); massive; very friable; laminae of historical silt and very fine sand thick and thin bedded; individual flood units several inches thick; calcareous; abrupt boundary.
<u>6.6-9.2</u> 200-280	<u>SP</u> C2	10YR7/3-very pale brown; medium sand; single grain; loose; calcareous.

SITE NAME: ST55a&b **Observation site RM134.1** Right descending bank, midpoint.

GEOMORPHIC SURFACE: Mississippi River Late Holocene surface capped by PSA.

POSITION IN LANDSCAPE: Flat lying.

PARENT MATERIALS: Mississippi River alluvium.

WATER TABLE: 16.0', 488cm.

SURFACE ELEVATION: approx. 380.0'

USGS 7.5 MIN. QUADRANGLE: Bloomsdale-MO-IL.

SLOPE: 0%

VEGETATION: Silver maples.

METHODOLOGY: JMC sampling tube core (1.0" or 1.5" ID).

DEPTH OF CORE, TRENCH, BORING, OR SOIL PIT: 20.0', 610cm.

PHOTOGRAPHED: Several slides and B/W shots of location and recent flood deposits.

DATE DESCRIBED: 10/15/1995

DESCRIBED BY: Jeff Anderson

REMARKS: Extremely thick bedded silt and sand historical deposits. Slide shows massive flood debris including a "Century 21" sign in the debris. CCC riprap is in pictures and erosion of about 150' of bank erosion has occurred since riprap placement. Two cores taken to extend profile.

DEPTH (FT) (CM)	<u>USCS SOIL CLASSIFICATION</u> <u>USDA HORIZON DESIGNATION</u>	SOIL/GEOLOGIC DESCRIPTION
<u>0-4.9</u> 0-150	<u>ML</u> C	10YR 3/3-4/4-dark brown and dark yellowish brown (dry); silt loam (silt and very fine sand); weak medium platy structure to massive; friable; laminae of historical silt and very fine sand, thick and thin bedded; few fine faint mottles along bedding planes; common to many root and worm holes in upper 2.0'; calcareous; gradual boundary.
<u>4.9-6.2</u> 150-190	<u>ML</u> C2	10YR2/2-very dark brown; silt loam to silty clay loam (silt to clayey silt); massive; friable; historical flood laminae; strongly calcareous; abrupt boundary.
<u>6.2-11.5</u> 190-350	<u>ML-CL</u> C3	10YR 2/2-very dark brown; silty clay loam (clayey silt); weak medium platy structure to massive; sticky; historical flood laminae; strongly calcareous; abrupt boundary.
<u>11.5-12.5</u> 350-381	<u>ML</u> C4	10YR 3/2-3/3-very dark grayish brown to dark brown; silt loam (silt); weak medium platy structure to massive; sticky; few fine faint mottles along bedding planes; strongly calcareous; abrupt boundary.
<u>12.5-15.5</u> 381-472	<u>ML</u> C5	10YR-3/3-dark brown; silt loam (silt and very fine sand); weak medium platy structure to massive; sticky; strongly calcareous; abrupt boundary .
<u>15.5-16.5</u>	<u>ML-CL</u>	10YR 2/2-3/1-very dark brown to very dark gray;

472-488	C6	silty clay loam (clayey silt); massive; sticky; strongly calcareous; abrupt boundary.
<u>16.5-20.0</u> 488-610	<u>ML</u> Cg7	N3/0-2/0-very dark gray to black; silt loam (silt, clayey silt and very fine sand); weak medium platy structure to massive; sticky; thick bedded historical laminae; gleyed; strongly calcareous.

SITE NAME: ST56 **Site 39 RM112.4** Left descending bank, midpoint.

GEOMORPHIC SURFACE: Mississippi River Late Holocene surface capped by PSA.

POSITION IN LANDSCAPE: Flat lying.

PARENT MATERIALS: Mississippi River alluvium.

WATER TABLE: 1.0', 30cm.

SURFACE ELEVATION: approx. 370.0'

USGS 7.5 MIN. QUADRANGLE: Chester-MO-IL.

SLOPE: 0%

VEGETATION: Silver maples.

METHODOLOGY: JMC sampling tube core (1.0" or 1.5" ID).

DEPTH OF CORE, TRENCH, BORING, OR SOIL PIT: 3.9', 120cm.

PHOTOGRAPHED: Took slide of bank profile with project team for scale, took slide and B/W of green plastic "Purex" bottle.

DATE DESCRIBED: 10/15/1995

DESCRIBED BY: Jeff Anderson

REMARKS: Extremely thick bedded silt and very fine sand historical deposits. A "Purex" brand plastic bottle is buried below 20.45' of historical alluvium.

<u>DEPTH</u> <u>(FT)</u> <u>(CM)</u>	<u>USCS SOIL CLASSIFICATION</u> <u>USDA HORIZON DESIGNATION</u>	<u>SOIL/GEOLOGIC</u> <u>DESCRIPTION</u>
<u>0-1.6</u> 0-50	<u>SP</u> C	10YR 5/4-yellowish brown; medium sand; single grain; loose; reworked sand; calcareous; abrupt boundary.
<u>1.6-2.3</u> 50-70	<u>ML-CL</u> C2	N3/0-very dark gray; silty clay loam (clayey silt); massive; sticky; historical flood laminae; gleyed; calcareous; abrupt boundary.
<u>2.3-3.9</u> 70-120	<u>SP-GP</u> C3	10YR 5/4-yellowish brown; gravelly sand; single grain; loose; historical flood laminae; sand and pebbles; calcareous.

SITE NAME: ST57 **Site 40 RM94.1** Right descending bank, downstream 1/4.
 GEOMORPHIC SURFACE: Mississippi River Late Holocene surface capped by PSA.
 POSITION IN LANDSCAPE: Flat lying.
 PARENT MATERIALS: Mississippi River historical alluvium.
 WATER TABLE: 1.1', 34cm.
 SURFACE ELEVATION: approx. 360.0'
 USGS 7.5 MIN. QUADRANGLE: Rockwood-MO-IL.
 SLOPE: 0%
 VEGETATION: Silver maples.
 METHODOLOGY: JMC sampling tube core (1.0" or 1.5" ID).
 DEPTH OF CORE, TRENCH, BORING, OR SOIL PIT: 10.2', 310cm.
 PHOTOGRAPHED: Took slides of barge and erosion pin location with David and Dan.
 DATE DESCRIBED: 10/16/1995
 DESCRIBED BY: Jeff Anderson
 REMARKS: Extremely thick bedded silt and sand historical deposits. Fuel oil in some of the historical deposits.

<u>DEPTH (FT) (CM)</u>	<u>USCS SOIL CLASSIFICATION USDA HORIZON DESIGNATION</u>	<u>SOIL/GEOLOGIC DESCRIPTION</u>
<u>0-2.5</u> 0-76	<u>ML</u> C	10YR 3/2-very dark grayish brown; silt loam and silty clay loam (silt and clayey silt); weak medium platy structure to massive; friable; laminae of historical silt and clayey silt about 1/4" thick; strongly calcareous; gradual boundary.
<u>2.5-5.0</u> 76-152	<u>ML-CL</u> C2	N3/0-very dark gray; silty clay loam (clayey silt); massive; sticky; historical flood laminae; gleyed; strongly calcareous; abrupt boundary.
<u>5.0-7.5</u> 152-229	<u>ML</u> C3	10YR 3/1-very dark gray; silt loam and very fine sand (silt and very fine sand); massive; sticky to loose; historical flood laminae; strongly calcareous; abrupt boundary.
<u>7.5-10.2</u> 229-310	<u>ML-CL</u> C4	N3/0-very dark gray; silty clay loam (clayey silt); massive; sticky; fuel oil smell in this horizon; calcareous.

SITE NAME: ST58/bank exposure **Site 41 RM77.2** Right descending bank, midpoint.

GEOMORPHIC SURFACE: Holocene alluvial fan and footslope.

POSITION IN LANDSCAPE: Midfan.

PARENT MATERIALS: Reworked loess and colluvium.

WATER TABLE: Below bottom of core/profile.

SURFACE ELEVATION: approx. 360.0'

USGS 7.5 MIN. QUADRANGLE: Neelys Landing-MO-IL.

SLOPE: 15-20%

VEGETATION: Hardwoods, hickory.

METHODOLOGY: JMC sampling tube core (1.0" or 1.5" ID).

DEPTH OF CORE, TRENCH, BORING, OR SOIL PIT: 20.0', 610cm.

PHOTOGRAPHED: Took a slide and B/W to begin two rolls of profile.

DATE DESCRIBED: 10/16/1995

DESCRIBED BY: Jeff Anderson

REMARKS: Eroded late Wisconsinan to early Holocene fan, eroded during high magnitude flows. Barge smears are observed about 20-25 feet above the current water surface. Reworked loess and gravelly chert colluvium/alluvium.

DEPTH (FT) (CM)	USCS SOIL CLASSIFICATION USDA HORIZON DESIGNATION	SOIL/GEOLOGIC DESCRIPTION
<u>0-0.3</u> 0-10	<u>ML-GM</u> A	10YR 4/4-dark yellowish brown (dry); silt loam (gravelly silt); moderate medium granular structure; friable; many fine root and worm holes; noncalcareous; clear boundary.
<u>0.3-0.8</u> 10-25	<u>ML-GM</u> E	10YR6/3-pale brown (dry); silt loam (gravelly silt); massive; friable; core refusal from gravel; noncalcareous; clear boundary.
<u>0.8-2.5</u> 25-75	<u>ML-GM</u> Bt	7.5YR 6/4-light brown; silty clay loam (gravelly clayey silt); weak medium subangular blocky structure to massive; friable; noncalcareous; abrupt boundary.
<u>2.3-3.0</u> 75-91	<u>GW</u> C	10YR 4/4-dark yellowish brown; gravel; single grained; loose; noncalcareous; abrupt boundary.
<u>3.0-4.0</u> 91-122	<u>ML-GM</u> C2	10YR-6/4-light yellowish brown; silt loam (gravelly silt); massive; nonsticky; noncalcareous; abrupt boundary .
<u>4.0-5.0</u> 122-152	<u>GW</u> C3	10YR 4/4-dark yellowish brown; gravel; single grained; loose; noncalcareous; abrupt boundary.
<u>5.0-8.0</u> 152-244	<u>ML</u> C4	10YR 4/4-dark yellowish brown; silt loam (silt); massive; friable; reworked loess; noncalcareous; abrupt boundary.

<u>8.0-10.0</u> 244-305	<u>GW</u> C5	10YR 4/4-dark yellowish brown; gravel; single grained; loose; noncalcareous; abrupt boundary.
<u>10.0-20.0</u> 305-610	<u>ML</u> C6	10YR 4/4-dark yellowish brown; silt loam (silt); massive; friable; reworked loess; noncalcareous.

SITE NAME: ST59 **Site 42 RM52.3** Left descending bank, midpoint.
 GEOMORPHIC SURFACE: Mississippi River Late Holocene surface capped by PSA.
 POSITION IN LANDSCAPE: Flat lying.
 PARENT MATERIALS: Mississippi River historical alluvium.
 WATER TABLE: Below depth of core.
 SURFACE ELEVATION: approx. 330.0'
 USGS 7.5 MIN. QUADRANGLE: Cape Girardeau-MO-IL.
 SLOPE: 0%
 VEGETATION: Weeds.
 METHODOLOGY: JMC sampling tube core (1.0" or 1.5" ID).
 DEPTH OF CORE, TRENCH, BORING, OR SOIL PIT: 10.2', 310cm.
 PHOTOGRAPHED: Took slides of slump block falling into the channel.
 DATE DESCRIBED: 10/17/1995
 DESCRIBED BY: Jeff Anderson
 REMARKS: Extremely thick bedded silt, clayey silt, very fine and medium sand historical deposits.

<u>DEPTH</u> <u>(FT)</u> <u>(CM)</u>	<u>USCS SOIL CLASSIFICATION</u> <u>USDA HORIZON DESIGNATION</u>	<u>SOIL/GEOLOGIC</u> <u>DESCRIPTION</u>
<u>0-1.5</u> 0-45	<u>ML-SM</u> C	10YR 4/4-4/2-3/1-dark yellowish brown, dark grayish brown, and very dark gray; silt loam, silty clay loam, and loam (silt, fine sandy silt, and clayey silt); massive; friable; laminae of thick bedded historical silt, clayey silt and very fine sand; strongly calcareous; gradual boundary.
<u>1.5-2.1</u> 45-65	<u>ML-CL</u> C2	N3/0-very dark gray; silty clay loam (clayey silt); weak medium platy structure to massive; sticky; historical flood laminae; gleyed; strongly calcareous; abrupt boundary.
<u>2.1-3.0</u> 65-90	<u>ML</u> C3	10YR 4/2-dark grayish brown; silt loam (silt); massive; sticky; historical flood silt laminae; gleyed; strongly calcareous; abrupt boundary.
<u>3.0-10.2</u> 90-310	<u>ML-SM</u> C4	10YR 4/1-dark gray; silt loam, silty clay loam, and loam (silt, clayey silt, and very fine and medium sand); massive to single grained; sticky to loose; thick bedded laminae; strongly calcareous.

SITE NAME: Bank exposure/ST60 **Site 43 RM45.2** Left descending bank, midpoint.
 GEOMORPHIC SURFACE: Holocene alluvial fan over Wisconsinan loess, over basal Loveland(?) loess and shale.
 POSITION IN LANDSCAPE: Midfan.
 PARENT MATERIALS: Reworked loess and colluvium.
 WATER TABLE: Below bottom of exposure/core.
 SURFACE ELEVATION: approx. 360.0'
 USGS 7.5 MIN. QUADRANGLE: Thebes-MO-IL.
 SLOPE: 5-10%
 VEGETATION: Hardwoods, hickory.
 METHODOLOGY: JMC sampling tube core (1.0" or 1.5" ID).
 DEPTH OF CORE, TRENCH, BORING, OR SOIL PIT: 26.5', 808cm.
 PHOTOGRAPHED: Took a slide of profile.
 DATE DESCRIBED: 10/17/1995
 DESCRIBED BY: Jeff Anderson
 REMARKS: Eroded Wisconsinan to early Holocene fan. Unclear what age the basal deposits are. Well developed multiple paleosols are recognized in the profile. Needs further study to determine if the buried soils are Wisconsinan or Holocene. Initial thought is that the buried soils are Wisconsinan aged based on the relatively high degree of paleosol profile development, and the basal highly oxidized unit over shale is Loveland loess (Sangamon soil). However, this Illinoian(?) loess could be too low stratigraphically.

<u>DEPTH (FT) (CM)</u>	<u>USCS SOIL CLASSIFICATION USDA HORIZON DESIGNATION</u>	<u>SOIL/GEOLOGIC DESCRIPTION</u>
<u>0-1.0</u> 0-30	<u>ML</u> EB	5YR 5/4-reddish brown; silt loam (silt); weak medium subangular blocky structure; friable; many fine root and worm holes; A horizon is eroded; noncalcareous; clear boundary.
<u>1.0-1.5</u> 30-46	<u>ML-CL</u> Bt	5YR4/4-reddish brown; silty clay loam (clayey silt); moderate medium subangular blocky structure; friable; common argillans; noncalcareous; clear boundary.
<u>1.5-2.5</u> 46-76	<u>ML</u> EBb	5YR 5/4-reddish brown; silt loam (silt); moderate medium subangular blocky structure; friable; many fine root and worm holes; A horizon is eroded or oxidized/altered; noncalcareous; clear boundary.
<u>2.5-5.5</u> 76-168	<u>ML-CL</u> Btb	5YR4/4-reddish brown; silty clay loam (clayey silt); strong medium to coarse subangular blocky structure; friable; common argillans, many silans, few Mn smears; noncalcareous; clear boundary.
<u>5.5-8.0</u> 168-244	<u>ML</u> BCb	5YR 5/4-reddish brown; silt loam (silt); weak medium subangular blocky structure; friable; common silans; noncalcareous; abrupt boundary.

<u>8.0-10.0</u> 244-305	<u>ML-CL</u> ABtb2	7.5YR 3/3-dark brown; silty clay loam (clayey silt); moderate medium subangular blocky structure; friable; common silans, few argillans; noncalcareous; abrupt boundary.
<u>10.0-14.0</u> 305-427	<u>ML-CL</u> Btb2	7.5YR 4/4-brown; silty clay loam (clayey silt); moderate medium subangular blocky structure; friable; common silans and argillans; noncalcareous; clear boundary.
<u>14.0-16.0</u> 427-488	<u>ML-CL</u> ABtb3	7.5YR 3/3-dark brown; silty clay loam (clayey silt); moderate medium subangular blocky structure; friable; common silans, few argillans; noncalcareous; abrupt boundary.
<u>16.0-18.0</u> 488-549	<u>ML-CL</u> Btb3	7.5YR 4/4-brown; silty clay loam (clayey silt); moderate medium subangular blocky structure; friable; common silans and argillans; noncalcareous; clear boundary.
<u>18.0-20.5</u> 549-625	<u>ML</u> Cb3	7.5YR 4/4-brown; silt loam (silt); massive; friable; noncalcareous; abrupt boundary.
<u>20.5-22.0</u> 625-671	<u>ML-CL</u> ABtb4	7.5YR 3/3-dark brown; silty clay loam (clayey silt); moderate medium subangular blocky structure; friable; common silans, few argillans; noncalcareous; abrupt boundary.
<u>22.0-24.0</u> 671-732	<u>ML-SM</u> 2BCb4	7.5YR 4/4-brown; silt loam to loam (silt to silty sand); moderate medium subangular blocky structure; friable; alluvial unit; calcareous; abrupt boundary.
<u>24.0-25.0</u> 732-762	<u>SM</u> 2Cb4	7.5YR 4/4-brown; loam (silty sand); massive to single grained; friable; alluvial laminae of silt and fine sand; common medium distinct mottles; calcareous; abrupt boundary.
<u>25.0-26.5</u> 762-808	<u>ML-CL</u> 3ABtb5	2.5YR4/4-reddish brown; silty clay loam (clayey silt); moderate medium subangular blocky structure; friable; many fine root holes; common argillans; Sangamon soil(?); noncalcareous; refusal from shale bedrock at 26.5'.

SITE NAME: ST61a&b **Site 44 RM25.8** Right descending bank, midpoint.

GEOMORPHIC SURFACE: Mississippi River historical surface.

POSITION IN LANDSCAPE: Flat lying.

PARENT MATERIALS: Mississippi River historical alluvium.

WATER TABLE: 40cm, 1.3'.

SURFACE ELEVATION: approx. 320.0'

USGS 7.5 MIN. QUADRANGLE: Cache-MO-IL.

SLOPE: 0%

VEGETATION: Weeds.

METHODOLOGY: JMC sampling tube core (1.0" or 1.5" ID).

DEPTH OF CORE, TRENCH, BORING, OR SOIL PIT: 2.6', 80cm.

PHOTOGRAPHED: Took 2 slides and 2 B/W of Site 44 area. One shot is of buried duck blind in bank, and note plastic bottle is 13.21 feet from the dune top.

DATE DESCRIBED: 10/17/1995

DESCRIBED BY: Jeff Anderson

REMARKS: Extremely thick bedded silt and very fine sand historical deposits. A plastic bottle is buried and ST61 is 22.02 feet below PSA dune top, plastic bottle is 13.21 feet below the dune top. Refusal from gravel below medium sand. Thick bedded silt and sand lie above the core, or upper 22.02 feet.

DEPTH (FT) (CM)	<u>USCS SOIL CLASSIFICATION</u> <u>USDA HORIZON DESIGNATION</u>	SOIL/GEOLOGIC DESCRIPTION
<u>0-2.6</u> 0-80	<u>SP</u> C	10YR 6/3-pale brown; medium sand; single grain; loose; reworked sand; calcareous; refusal from coarser gravel below.