

## 017RA—Reading silt loam, 0 to 1 percent slopes, rarely flooded

### Map Unit Composition

Reading: 85 percent  
Minor components: 15 percent

### Component Descriptions

#### Reading

*MLRA:* 76 - Bluestem Hills  
*Landform:* Terrace on river valley  
*Parent material:* Silty alluvium  
*Slope:* 0 to 1 percent  
*Drainage class:* Well drained  
*Slowest permeability:* Moderately slow (About 0.20 in/hr)  
*Available water capacity:* High (About 11.7 inches)  
*Shrink-swell potential:* Moderate (About 4.5 LEP)  
*Flooding hazard:* Rare  
*Depth to seasonal water saturation:* More than 6 feet  
*Runoff class:* Low  
*Ecological site:* Loamy Lowland (pe30-36)  
*Land capability (nonirrigated):* 1

#### Typical Profile:

H1—0 to 17 inches; silt loam  
H2—17 to 48 inches; silty clay loam  
H3—48 to 60 inches; silty clay loam

#### Minor Components

##### Kahola

*Composition:* About 8 percent  
*Slope:* 0 to 2 percent  
*Drainage class:* Well drained  
*Ecological site:* Loamy Lowland (pe30-36)

##### Chase

*Composition:* About 7 percent  
*Slope:* 0 to 2 percent  
*Drainage class:* Somewhat poorly drained  
*Ecological site:* Loamy Lowland (pe30-36)

## 017TU—Tully Cherty silty clay loam, 5 to 15 percent slopes

### Map Unit Composition

Tully: 70 percent  
Minor components: 30 percent

### Component Descriptions

#### Tully

*MLRA:* 76 - Bluestem Hills  
*Landform:* Hillslope on upland  
*Parent material:* Clayey colluvium  
*Slope:* 5 to 15 percent  
*Drainage class:* Well drained  
*Slowest permeability:* Slow (About 0.06 in/hr)  
*Available water capacity:* Moderate (About 7.8 inches)  
*Shrink-swell potential:* High (About 7.5 LEP)  
*Flooding hazard:* None  
*Depth to seasonal water saturation:* More than 6 feet  
*Runoff class:* Very high  
*Ecological site:* Loamy Upland (pe30-36)  
*Land capability (nonirrigated):* 4e

#### Typical Profile:

H1—0 to 14 inches; gravelly silty clay loam  
H2—14 to 60 inches; silty clay

#### Minor Components

##### Martin

*Composition:* About 15 percent  
*Slope:* 2 to 6 percent  
*Drainage class:* Moderately well drained  
*Ecological site:* Loamy Upland (pe30-36)

##### Clime

*Composition:* About 15 percent  
*Slope:* 3 to 25 percent  
*Depth to restrictive feature:* 20 to 40 inches to bedrock (paralithic)  
*Drainage class:* Well drained  
*Ecological site:* Limy Upland (pe30-36)

## 035LE—Labette-Sogn silty clay loams, 2 to 8 percent slopes

### Map Unit Composition

Labette: 60 percent  
Sogn: 30 percent  
Minor components: 10 percent

### Component Descriptions

#### Labette

*MLRA:* 76 - Bluestem Hills  
*Landform:* Hillslope on upland  
*Parent material:* Silty and clayey residuum weathered from limestone-shale  
*Slope:* 2 to 8 percent

*Depth to restrictive feature:* 20 to 40 inches to bedrock (lithic)  
*Drainage class:* Well drained  
*Slowest permeability:* Slow (About 0.06 in/hr)  
*Available water capacity:* Moderate (About 6.0 inches)  
*Shrink-swell potential:* High (About 7.5 LEP)  
*Flooding hazard:* None  
*Depth to seasonal water saturation:* More than 6 feet  
*Runoff class:* High  
*Ecological site:* Loamy Upland (pe30-36)  
*Land capability (nonirrigated):* 6e

*Typical Profile:*

H1—0 to 7 inches; silty clay loam  
 H2—7 to 36 inches; silty clay  
 R—36 to 40 inches; unweathered bedrock

**Sogn**

*MLRA:* 76 - Bluestem Hills  
*Landform:* Hillslope on upland  
*Parent material:* Loamy residuum weathered from limestone, unspecified  
*Slope:* 2 to 8 percent  
*Depth to restrictive feature:* 4 to 20 inches to bedrock (lithic)  
*Drainage class:* Somewhat excessively drained  
*Slowest permeability:* Moderate (About 0.60 in/hr)  
*Available water capacity:* Very low (About 2.0 inches)  
*Shrink-swell potential:* Moderate (About 4.5 LEP)  
*Flooding hazard:* None  
*Depth to seasonal water saturation:* More than 6 feet  
*Runoff class:* Low  
*Ecological site:* Shallow Limy (pe30-36)  
*Land capability (nonirrigated):* 7s

*Typical Profile:*

H1—0 to 10 inches; silty clay loam  
 R—10 to 14 inches; unweathered bedrock

**Minor Components**

**Rock outcrop**

*Composition:* About 10 percent  
*Drainage class:* Moderately well drained

**035MA—Martin silty clay loam, 1 to 3 percent slopes**

**Map Unit Composition**

Martin: 90 percent

Minor components: 10 percent

**Component Descriptions**

**Martin**

*MLRA:* 76 - Bluestem Hills  
*Landform:* Hillslope on upland  
*Hillslope position:* Footslope, backslope  
*Parent material:* Silty and clayey colluvium derived from limestone-shale over silty and clayey residuum weathered from limestone-shale  
*Slope:* 1 to 3 percent  
*Drainage class:* Moderately well drained  
*Slowest permeability:* Slow (About 0.06 in/hr)  
*Available water capacity:* High (About 9.7 inches)  
*Shrink-swell potential:* High (About 7.5 LEP)  
*Flooding hazard:* None  
*Depth to seasonal water saturation:* More than 6 feet  
*Runoff class:* High  
*Ecological site:* Loamy Upland (pe30-36)  
*Land capability (nonirrigated):* 2e

*Typical Profile:*

H1—0 to 9 inches; silty clay loam  
 H2—9 to 15 inches; silty clay loam  
 H3—15 to 60 inches; silty clay

**Minor Components**

**Tabler**

*Composition:* About 5 percent  
*Slope:* 0 to 1 percent  
*Drainage class:* Moderately well drained  
*Ecological site:* Clay Upland (pe24-32)

**Labette**

*Composition:* About 5 percent  
*Slope:* 1 to 3 percent  
*Depth to restrictive feature:* 20 to 40 inches to bedrock (lithic)  
*Drainage class:* Well drained  
*Ecological site:* Loamy Upland (pe30-36)

**035MB—Martin silty clay loam, 3 to 7 percent slopes**

**Map Unit Composition**

Martin: 90 percent  
 Minor components: 10 percent

**Component Descriptions**

**Martin**

*MLRA:* 76 - Bluestem Hills  
*Landform:* Hillslope on upland  
*Hillslope position:* Backslope, footslope  
*Parent material:* Silty and clayey colluvium derived from limestone-shale over silty and clayey residuum weathered from limestone-shale  
*Slope:* 3 to 7 percent  
*Drainage class:* Moderately well drained  
*Slowest permeability:* Slow (About 0.06 in/hr)  
*Available water capacity:* High (About 9.7 inches)  
*Shrink-swell potential:* High (About 7.5 LEP)  
*Flooding hazard:* None  
*Depth to seasonal water saturation:* More than 6 feet  
*Runoff class:* High  
*Ecological site:* Loamy Upland (pe30-36)  
*Land capability (nonirrigated):* 3e

**Typical Profile:**

H1—0 to 8 inches; silty clay loam  
 H2—8 to 15 inches; silty clay loam  
 H3—15 to 60 inches; silty clay

**Minor Components****Clime**

*Composition:* About 5 percent  
*Slope:* 5 to 9 percent  
*Depth to restrictive feature:* 20 to 40 inches to bedrock (paralithic)  
*Drainage class:* Moderately well drained  
*Ecological site:* Limy Upland (pe30-36)

**Labette**

*Composition:* About 5 percent  
*Slope:* 1 to 3 percent  
*Depth to restrictive feature:* 20 to 40 inches to bedrock (lithic)  
*Drainage class:* Well drained  
*Ecological site:* Loamy Upland (pe30-36)

**035SD—Sogn silty clay loam, 0 to 10 percent slopes****Map Unit Composition**

Sogn: 90 percent  
 Minor components: 10 percent

**Component Descriptions****Sogn**

*MLRA:* 76 - Bluestem Hills  
*Landform:* Hillslope on upland  
*Parent material:* Loamy residuum weathered from limestone, unspecified

*Slope:* 0 to 10 percent  
*Depth to restrictive feature:* 4 to 20 inches to bedrock (lithic)  
*Drainage class:* Somewhat excessively drained  
*Slowest permeability:* Moderate (About 0.60 in/hr)  
*Available water capacity:* Very low (About 2.0 inches)  
*Shrink-swell potential:* Moderate (About 4.5 LEP)  
*Flooding hazard:* None  
*Depth to seasonal water saturation:* More than 6 feet  
*Runoff class:* Medium  
*Ecological site:* Shallow Limy (pe30-36)  
*Land capability (nonirrigated):* 7s

**Typical Profile:**

H1—0 to 10 inches; silty clay loam  
 R—10 to 14 inches; unweathered bedrock

**Minor Components****Clime**

*Composition:* About 5 percent  
*Slope:* 7 to 15 percent  
*Depth to restrictive feature:* 20 to 40 inches to bedrock (paralithic)  
*Drainage class:* Moderately well drained  
*Ecological site:* Limy Upland (pe30-36)

**Labette**

*Composition:* About 5 percent  
*Slope:* 1 to 3 percent  
*Depth to restrictive feature:* 20 to 40 inches to bedrock (lithic)  
*Drainage class:* Well drained  
*Ecological site:* Loamy Upland (pe30-36)

**049CK—Clime stony silty clay loam, 20 to 30 percent slopes****Map Unit Composition**

Clime: 100 percent

**Component Descriptions****Clime**

*MLRA:* 76 - Bluestem Hills  
*Landform:* Hillslope on upland  
*Hillslope position:* Backslope  
*Parent material:* Silty and clayey residuum weathered from shale, calcareous  
*Slope:* 20 to 30 percent

*Depth to restrictive feature:* 20 to 40 inches to bedrock (paralithic)  
*Drainage class:* Well drained  
*Slowest permeability:* Slow (About 0.06 in/hr)  
*Available water capacity:* Low (About 5.3 inches)  
*Shrink-swell potential:* High (About 7.5 LEP)  
*Flooding hazard:* None  
*Depth to seasonal water saturation:* More than 6 feet  
*Runoff class:* Very high  
*Ecological site:* Limy Upland (pe30-36)  
*Land capability (nonirrigated):* 7e

*Typical Profile:*

H1—0 to 2 inches; stony silty clay loam  
 H2—2 to 10 inches; silty clay loam  
 H3—10 to 27 inches; silty clay  
 H4—27 to 33 inches; silty clay  
 Cr—33 to 37 inches; unweathered bedrock

## **049FM—Florence-Martin complex, 2 to 12 percent slopes**

### **Map Unit Composition**

Florence: 60 percent  
 Martin: 30 percent  
 Minor components: 10 percent

### **Component Descriptions**

#### **Florence**

*MLRA:* 76 - Bluestem Hills  
*Landform:* Hillslope on upland  
*Hillslope position:* Backslope, summit  
*Parent material:* Limestone, cherty  
*Slope:* 2 to 12 percent  
*Depth to restrictive feature:* 40 to 60 inches to bedrock (lithic)  
*Drainage class:* Well drained  
*Slowest permeability:* Moderately slow (About 0.20 in/hr)  
*Available water capacity:* Low (About 4.2 inches)  
*Shrink-swell potential:* High (About 7.5 LEP)  
*Flooding hazard:* None  
*Depth to seasonal water saturation:* More than 6 feet  
*Runoff class:* High  
*Ecological site:* Loamy Upland (pe30-36)  
*Land capability (nonirrigated):* 6e

*Typical Profile:*

H1—0 to 6 inches; gravelly silt loam  
 H2—6 to 12 inches; gravelly silt loam

H3—12 to 32 inches; extremely gravelly silty clay  
 H4—32 to 49 inches; extremely cobbly clay  
 R—49 to 53 inches; unweathered bedrock

#### **Martin**

*MLRA:* 76 - Bluestem Hills  
*Landform:* Hillslope on upland  
*Hillslope position:* Backslope  
*Parent material:* Silty and clayey colluvium derived from limestone and shale over silty and clayey residuum weathered from limestone and shale  
*Slope:* 2 to 11 percent  
*Drainage class:* Well drained  
*Slowest permeability:* Slow (About 0.06 in/hr)  
*Available water capacity:* High (About 9.5 inches)  
*Shrink-swell potential:* High (About 7.5 LEP)  
*Flooding hazard:* None  
*Depth to seasonal water saturation:* More than 6 feet  
*Runoff class:* Very high  
*Ecological site:* Loamy Upland (pe30-36)  
*Land capability (nonirrigated):* 4e

*Typical Profile:*

H1—0 to 9 inches; silty clay loam  
 H2—9 to 60 inches; silty clay

#### **Minor Components**

##### **Clime**

*Composition:* About 5 percent  
*Geomorphic Position:* hillside on upland  
*Slope:* 5 to 20 percent  
*Depth to restrictive feature:* 20 to 40 inches to bedrock (paralithic)  
*Drainage class:* Moderately well drained  
*Ecological site:* Limy Upland (pe30-36)

##### **Dwight**

*Composition:* About 5 percent  
*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* 40 to 60 inches to bedrock (lithic)  
*Drainage class:* Moderately well drained  
*Ecological site:* Clay Pan (pe30-36)

## **073LS—Labette-Sogn silty clay loams, 0 to 8 percent slopes**

### **Map Unit Composition**

Labette: 50 percent  
 Sogn: 35 percent

Minor components: 15 percent

### Component Descriptions

#### Labette

*MLRA:* 76 - Bluestem Hills

*Landform:* Hillslope on upland

*Parent material:* Silty and clayey residuum weathered from limestone and shale

*Slope:* 1 to 8 percent

*Depth to restrictive feature:* 20 to 40 inches to bedrock (lithic)

*Drainage class:* Well drained

*Slowest permeability:* Slow (About 0.06 in/hr)

*Available water capacity:* Low (About 4.5 inches)

*Shrink-swell potential:* High (About 7.5 LEP)

*Flooding hazard:* None

*Depth to seasonal water saturation:* More than 6 feet

*Runoff class:* High

*Ecological site:* Loamy Upland (pe30-36)

*Land capability (nonirrigated):* 6e

#### Typical Profile:

H1—0 to 9 inches; silty clay loam

H2—9 to 26 inches; silty clay

R—26 to 30 inches; unweathered bedrock

#### Sogn

*MLRA:* 76 - Bluestem Hills

*Landform:* Hillslope on upland

*Parent material:* Loamy residuum weathered from limestone

*Slope:* 0 to 8 percent

*Depth to restrictive feature:* 4 to 20 inches to bedrock (lithic)

*Drainage class:* Somewhat excessively drained

*Slowest permeability:* Moderate (About 0.60 in/hr)

*Available water capacity:* Very low (About 3.0 inches)

*Shrink-swell potential:* Moderate (About 4.5 LEP)

*Flooding hazard:* None

*Depth to seasonal water saturation:* More than 6 feet

*Runoff class:* Low

*Ecological site:* Shallow Limy (pe30-36)

*Land capability (nonirrigated):* 7s

#### Typical Profile:

H1—0 to 15 inches; silty clay loam

R—15 to 19 inches; unweathered bedrock

### Minor Components

#### Clime

*Composition:* About 10 percent

*Geomorphic Position:* hillside on upland

*Slope:* 5 to 20 percent

*Depth to restrictive feature:* 20 to 40 inches to bedrock (paralithic)

*Drainage class:* Well drained

*Ecological site:* Limy Upland (pe30-36)

### Rock outcrop

*Composition:* About 5 percent

## 073MB—Martin silty clay loam, 4 to 7 percent slopes

### Map Unit Composition

Martin: 90 percent

Minor components: 10 percent

### Component Descriptions

#### Martin

*MLRA:* 76 - Bluestem Hills

*Landform:* Hillslope on upland

*Parent material:* Silty and clayey colluvium derived from limestone and shale over silty and

clayey residuum weathered from limestone and shale

*Slope:* 4 to 7 percent

*Drainage class:* Moderately well drained

*Slowest permeability:* Slow (About 0.06 in/hr)

*Available water capacity:* High (About 9.6 inches)

*Shrink-swell potential:* High (About 7.5 LEP)

*Flooding hazard:* None

*Depth to seasonal water saturation:* More than 6 feet

*Runoff class:* Very high

*Ecological site:* Loamy Upland (pe30-36)

*Land capability (nonirrigated):* 3e

#### Typical Profile:

H1—0 to 11 inches; silty clay loam

H2—11 to 52 inches; silty clay

H3—52 to 60 inches; silty clay

### Minor Components

#### Clime

*Composition:* About 10 percent

*Geomorphic Position:* hillside on upland

*Slope:* 5 to 20 percent

*Depth to restrictive feature:* 20 to 40 inches to bedrock (paralithic)

*Drainage class:* Well drained

*Ecological site:* Limy Upland (pe30-36)

**079DE—Detroit silty clay loam,  
rarely flooded****Map Unit Composition**

Detroit: 100 percent

**Component Descriptions****Detroit**

*MLRA:* 75 - Central Loess Plains

*Landform:* River valley, flood plain

*Parent material:* Alluvium

*Slope:* 0 to 1 percent

*Drainage class:* Moderately well drained

*Slowest permeability:* Slow (About 0.06 in/hr)

*Available water capacity:* High (About 10.8 inches)

*Shrink-swell potential:* High (About 7.5 LEP)

*Flooding hazard:* Rare

*Depth to seasonal water saturation:* More than 6 feet

*Runoff class:* Negligible

*Ecological site:* Loamy Terrace (pe25-34)

*Land capability (irrigated):* 1

*Land capability (nonirrigated):* 1

*Typical Profile:*

H1—0 to 11 inches; silty clay loam

H2—11 to 36 inches; silty clay

H3—36 to 60 inches; silty clay loam

**079GC—Geary silt loam, 0 to 1  
percent slopes****Map Unit Composition**

Geary: 100 percent

**Component Descriptions****Geary**

*MLRA:* 75 - Central Loess Plains

*Landform:* Upland, hillslope

*Parent material:* Loess

*Slope:* 0 to 1 percent

*Drainage class:* Well drained

*Slowest permeability:* Moderate (About 0.60 in/hr)

*Available water capacity:* High (About 11.1 inches)

*Shrink-swell potential:* Moderate (About 4.5 LEP)

*Flooding hazard:* None

*Depth to seasonal water saturation:* More than 6 feet

*Runoff class:* Negligible

*Ecological site:* Loamy Upland (pe25-34)

*Land capability (irrigated):* 1

*Land capability (nonirrigated):* 1

*Typical Profile:*

H1—0 to 9 inches; silt loam

H2—9 to 35 inches; silty clay loam

H3—35 to 60 inches; clay loam

**079GD—Geary silt loam, 1 to 3  
percent slopes****Map Unit Composition**

Geary: 100 percent

**Component Descriptions****Geary**

*MLRA:* 75 - Central Loess Plains

*Landform:* Hillslope, upland

*Parent material:* Loess

*Slope:* 1 to 3 percent

*Drainage class:* Well drained

*Slowest permeability:* Moderate (About 0.60 in/hr)

*Available water capacity:* High (About 11.0 inches)

*Shrink-swell potential:* Moderate (About 4.5 LEP)

*Flooding hazard:* None

*Depth to seasonal water saturation:* More than 6 feet

*Runoff class:* Low

*Ecological site:* Loamy Upland (pe25-34)

*Land capability (irrigated):* 2e

*Land capability (nonirrigated):* 2e

*Typical Profile:*

H1—0 to 7 inches; silt loam

H2—7 to 32 inches; silty clay loam

H3—32 to 60 inches; silty clay loam

**079GE—Geary silt loam, 3 to 6 percent slopes****Map Unit Composition**

Geary: 100 percent

**Component Descriptions****Geary**

*MLRA:* 75 - Central Loess Plains

*Landform:* Upland, hillslope

*Parent material:* Loess

*Slope:* 3 to 6 percent

*Drainage class:* Well drained

*Slowest permeability:* Moderate (About 0.60 in/hr)

*Available water capacity:* High (About 11.1 inches)

*Shrink-swell potential:* Moderate (About 4.5 LEP)

*Flooding hazard:* None

*Depth to seasonal water saturation:* More than 6 feet

*Runoff class:* Low

*Ecological site:* Loamy Upland (pe25-34)

*Land capability (irrigated):* 3e

*Land capability (nonirrigated):* 3e

*Typical Profile:*

H1—0 to 9 inches; silt loam

H2—9 to 35 inches; silty clay loam

H3—35 to 60 inches; clay loam

*Available water capacity:* Very high (About 12.6 inches)

*Shrink-swell potential:* Low (About 1.5 LEP)

*Flooding hazard:* Occasional

*Depth to seasonal water saturation:* More than 6 feet

*Runoff class:* Negligible

*Ecological site:* Loamy Lowland (pe25-34)

*Land capability (irrigated):* 2w

*Land capability (nonirrigated):* 2w

*Typical Profile:*

H1—0 to 26 inches; silt loam

H2—26 to 60 inches; silt loam

**Minor Components****Unnamed Wet Soils**

*Phase:* Loamy, Depression

**Unnamed Wet Soils**

*Phase:* Loamy, Drainageway

**115CH—Chase silty clay loam, occasionally flooded****Map Unit Composition**

Chase: 95 percent

Minor components: 5 percent

**Component Descriptions****Chase**

*MLRA:* 76 - Bluestem Hills

*Landform:* Flood plain on river valley

*Parent material:* Silty and clayey alluvium

*Slope:* 0 to 1 percent

*Drainage class:* Somewhat poorly drained

*Slowest permeability:* Slow (About 0.06 in/hr)

*Available water capacity:* High (About 9.7 inches)

*Shrink-swell potential:* High (About 7.5 LEP)

*Flooding hazard:* Occasional

*Depth to seasonal water saturation:* About 24 to 48 inches

*Runoff class:* Medium

*Ecological site:* Loamy Lowland (pe30-36)

*Land capability (nonirrigated):* 2w

*Typical Profile:*

H1—0 to 12 inches; silty clay loam

H2—12 to 60 inches; silty clay

**Minor Components****Verdigris****079HO—Hobbs silt loam, occasionally flooded****Map Unit Composition**

Hobbs: 100 percent

**Component Descriptions****Hobbs**

*MLRA:* 75 - Central Loess Plains

*Landform:* Flood plain

*Parent material:* Alluvium

*Slope:* 0 to 1 percent

*Drainage class:* Well drained

*Slowest permeability:* Moderate (About 0.60 in/hr)

*Composition:* About 5 percent  
*Slope:* 0 to 2 percent  
*Drainage class:* Moderately well drained  
*Ecological site:* Loamy Lowland (pe30-36)

## 115CS—Clime-Sogn silty clay loams, 3 to 20 percent slopes

### Map Unit Composition

Clime: 65 percent  
 Sogn: 20 percent  
 Minor components: 15 percent

### Component Descriptions

#### Clime

*MLRA:* 76 - Bluestem Hills  
*Landform:* Hillslope on upland  
*Parent material:* Silty and clayey residuum weathered from calcareous shale  
*Slope:* 8 to 20 percent  
*Depth to restrictive feature:* 20 to 40 inches to bedrock (paralithic)  
*Drainage class:* Well drained  
*Slowest permeability:* Slow (About 0.06 in/hr)  
*Available water capacity:* Low (About 4.6 inches)  
*Shrink-swell potential:* Moderate (About 4.5 LEP)  
*Flooding hazard:* None  
*Depth to seasonal water saturation:* More than 6 feet  
*Runoff class:* Very high  
*Ecological site:* Limy Upland (pe25-34)  
*Land capability (nonirrigated):* 6e

#### Typical Profile:

H1—0 to 7 inches; silty clay loam  
 H2—7 to 27 inches; silty clay  
 Cr—27 to 31 inches; unweathered bedrock

#### Sogn

*MLRA:* 76 - Bluestem Hills  
*Landform:* Hillslope on upland  
*Parent material:* Loamy residuum weathered from limestone  
*Slope:* 3 to 15 percent  
*Depth to restrictive feature:* 4 to 20 inches to bedrock (lithic)  
*Drainage class:* Somewhat excessively drained  
*Slowest permeability:* Moderate (About 0.60 in/hr)  
*Available water capacity:* Very low (About 1.6 inches)

*Shrink-swell potential:* Moderate (About 4.5 LEP)  
*Flooding hazard:* None  
*Depth to seasonal water saturation:* More than 6 feet  
*Runoff class:* Medium  
*Ecological site:* Shallow Limy (pe25-34)  
*Land capability (nonirrigated):* 6s

#### Typical Profile:

H1—0 to 8 inches; silty clay loam  
 R—8 to 12 inches; unweathered bedrock

### Minor Components

#### Labette

*Composition:* About 10 percent  
*Slope:* 2 to 8 percent  
*Depth to restrictive feature:* 20 to 40 inches to bedrock (lithic)  
*Drainage class:* Well drained  
*Ecological site:* Loamy Upland (pe25-34)

#### Tully

*Composition:* About 5 percent  
*Slope:* 3 to 6 percent  
*Drainage class:* Well drained  
*Ecological site:* Loamy Upland (pe25-34)

## 115LG—Labette-Sogn silty clay loams, 2 to 15 percent slopes

### Map Unit Composition

Labette: 65 percent  
 Sogn: 25 percent  
 Minor components: 10 percent

### Component Descriptions

#### Labette

*MLRA:* 76 - Bluestem Hills  
*Landform:* Hillslope on upland  
*Parent material:* Silty and clayey residuum weathered from limestone and shale  
*Slope:* 2 to 8 percent  
*Depth to restrictive feature:* 20 to 40 inches to bedrock (lithic)  
*Drainage class:* Well drained  
*Slowest permeability:* Slow (About 0.06 in/hr)  
*Available water capacity:* Moderate (About 6.0 inches)  
*Shrink-swell potential:* High (About 7.5 LEP)  
*Flooding hazard:* None  
*Depth to seasonal water saturation:* More than 6 feet  
*Runoff class:* High



*Ecological site:* Loamy Upland (pe25-34)

*Land capability (nonirrigated):* 6e

*Typical Profile:*

H1—0 to 7 inches; silty clay loam

H2—7 to 36 inches; silty clay

R—36 to 40 inches; unweathered bedrock

**Sogn**

*MLRA:* 76 - Bluestem Hills

*Landform:* Hillslope on upland

*Parent material:* Loamy residuum weathered from limestone

*Slope:* 8 to 15 percent

*Depth to restrictive feature:* 4 to 20 inches to bedrock (lithic)

*Drainage class:* Somewhat excessively drained

*Slowest permeability:* Moderate (About 0.60 in/hr)

*Available water capacity:* Very low (About 2.0 inches)

*Shrink-swell potential:* Moderate (About 4.5 LEP)

*Flooding hazard:* None

*Depth to seasonal water saturation:* More than 6 feet

*Runoff class:* Medium

*Ecological site:* Shallow Limy (pe25-34)

*Land capability (nonirrigated):* 6s

*Typical Profile:*

H1—0 to 10 inches; silty clay loam

R—10 to 14 inches; unweathered bedrock

**Minor Components**

**Dwight**

*Composition:* About 10 percent

*Slope:* 0 to 2 percent

*Depth to restrictive feature:* 40 to 60 inches to bedrock (lithic)

*Drainage class:* Moderately well drained

*Ecological site:* Clay Pan (pe30-36)

**115VC—Verdigris silt loam, channeled**

**Map Unit Composition**

Verdigris: 88 percent

Minor components: 12 percent

**Component Descriptions**

**Verdigris**

*MLRA:* 75 - Central Loess Plains, 76 - Bluestem Hills

*Landform:* Flood plain on valley

*Parent material:* Silty alluvium

*Slope:* 0 to 2 percent

*Drainage class:* Well drained

*Slowest permeability:* Moderate (About 0.60 in/hr)

*Available water capacity:* High (About 12.0 inches)

*Shrink-swell potential:* Moderate (About 4.5 LEP)

*Flooding hazard:* Frequent

*Depth to seasonal water saturation:* More than 6 feet

*Runoff class:* Low

*Ecological site:* Loamy Lowland (pe35-42)

*Land capability (nonirrigated):* 5w

*Typical Profile:*

A—0 to 7 inches; silt loam

Bw—7 to 60 inches; silt loam

**Minor Components**

**Bates**

*Composition:* About 3 percent

*Slope:* 3 to 7 percent

*Depth to restrictive feature:* 20 to 40 inches to bedrock (paralithic)

*Drainage class:* Well drained

*Ecological site:* Loamy Upland (pe35-42)

**Eram**

*Composition:* About 3 percent

*Geomorphic Position:* hillside on upland

*Slope:* 3 to 7 percent

*Depth to restrictive feature:* 20 to 40 inches to bedrock (paralithic)

*Drainage class:* Moderately well drained

*Ecological site:* Clay Upland (pe35-42)

**Osage**

*Composition:* About 3 percent

*Slope:* 0 to 1 percent

*Drainage class:* Poorly drained

*Ecological site:* Clay Lowland (pe35-42)

**Rock outcrop**

*Composition:* About 3 percent

*Slope:* 20 to 40 percent

*Depth to restrictive feature:* 0 inches to bedrock (lithic)

**115WB—Wells loam, 1 to 3 percent slopes****Map Unit Composition**

Wells: 90 percent  
 Minor components: 10 percent

**Component Descriptions****Wells**

*MLRA:* 75 - Central Loess Plains, 76 - Bluestem Hills

*Landform:* Hillslope on upland

*Parent material:* Fine-loamy residuum weathered from sandstone

*Slope:* 1 to 3 percent

*Drainage class:* Well drained

*Slowest permeability:* Moderate (About 0.60 in/hr)

*Available water capacity:* High (About 10.2 inches)

*Shrink-swell potential:* Moderate (About 4.5 LEP)

*Flooding hazard:* None

*Depth to seasonal water saturation:* More than 6 feet

*Runoff class:* Low

*Ecological site:* Loamy Upland (pe25-34)

*Land capability (nonirrigated):* 2e

**Typical Profile:**

H1—0 to 15 inches; loam

H2—15 to 36 inches; sandy clay loam

H3—36 to 60 inches; sandy loam

**Minor Components****Clime**

*Composition:* About 5 percent

*Slope:* 1 to 3 percent

*Depth to restrictive feature:* 20 to 40 inches to bedrock (paralithic)

*Drainage class:* Well drained

*Ecological site:* Limy Upland (pe25-34)

**Irwin**

*Composition:* About 5 percent

*Slope:* 1 to 3 percent

*Drainage class:* Moderately well drained

*Ecological site:* Clay Upland (pe25-34)

**173EA—Elandco silt loam, rarely flooded****Map Unit Composition**

Elandco: 100 percent

**Component Descriptions****Elandco**

*MLRA:* 75 - Central Loess Plains

*Landform:* Flood plain on river valley

*Parent material:* Alluvium

*Slope:* 0 to 1 percent

*Drainage class:* Well drained

*Slowest permeability:* Moderate (About 0.60 in/hr)

*Available water capacity:* High (About 11.2 inches)

*Shrink-swell potential:* Moderate (About 4.5 LEP)

*Flooding hazard:* Rare

*Depth to seasonal water saturation:* More than 6 feet

*Runoff class:* Negligible

*Ecological site:* Loamy Terrace (pe24-32)

*Land capability (nonirrigated):* 1

**Typical Profile:**

H1—0 to 40 inches; silt loam

H2—40 to 60 inches; silt loam

**Minor Components****Unnamed Hydric Soils****Unnamed Hydric Soils****Unnamed Wet Soils**

*Phase:* Loamy, Drainageway

**173EC—Elandco silt loam, frequently flooded****Map Unit Composition**

Elandco: 100 percent

**Component Descriptions****Elandco**

*MLRA:* 75 - Central Loess Plains  
*Landform:* Flood plain on river valley  
*Parent material:* Alluvium  
*Slope:* 0 to 1 percent  
*Drainage class:* Well drained  
*Slowest permeability:* Moderate (About 0.60 in/hr)  
*Available water capacity:* High (About 11.2 inches)  
*Shrink-swell potential:* Moderate (About 4.5 LEP)  
*Flooding hazard:* Frequent  
*Depth to seasonal water saturation:* More than 6 feet  
*Runoff class:* Negligible  
*Ecological site:* Loamy Lowland (pe24-32)  
*Land capability (nonirrigated):* 5w

*Typical Profile:*  
 H1—0 to 40 inches; silt loam  
 H2—40 to 60 inches; silt loam

#### **Minor Components**

##### **Unnamed Wet Soils**

*Phase:* Loamy, Depression

##### **Unnamed Wet Soils**

*Phase:* Loamy, Drainageway

##### **Unnamed Wet Soils**

*Phase:* Loamy, Drainageway

### **173VC—Vanoss silt loam, 3 to 6 percent slopes**

#### **Map Unit Composition**

Vanoss: 100 percent

#### **Component Descriptions**

##### **Vanoss**

*MLRA:* 75 - Central Loess Plains  
*Landform:* Paleoterrace on river valley  
*Parent material:* Alluvium  
*Slope:* 3 to 6 percent  
*Drainage class:* Well drained  
*Slowest permeability:* Moderate (About 0.60 in/hr)  
*Available water capacity:* High (About 11.4 inches)  
*Shrink-swell potential:* Moderate (About 4.5 LEP)  
*Flooding hazard:* None

*Depth to seasonal water saturation:* More than 6 feet  
*Runoff class:* Low  
*Ecological site:* Loamy Upland (pe24-32)  
*Land capability (nonirrigated):* 3e

##### *Typical Profile:*

H1—0 to 13 inches; silt loam  
 H2—13 to 16 inches; silty clay loam  
 H3—16 to 60 inches; silty clay loam

### **AED—Arents, Earthen Dam**

### **Be—Benfield-Labette Cherty silty clay loams, 2 to 12 percent slopes**

#### **Map Unit Composition**

Benfield: 60 percent  
 Labette: 20 percent  
 Minor components: 20 percent

#### **Component Descriptions**

##### **Benfield**

*MLRA:* 76 - Bluestem Hills  
*Landform:* Hillslope on upland  
*Hillslope position:* Backslope  
*Parent material:* Calcareous clayey shale  
*Slope:* 2 to 12 percent  
*Depth to restrictive feature:* 20 to 40 inches to bedrock (paralithic)  
*Drainage class:* Well drained  
*Slowest permeability:* Slow (About 0.06 in/hr)  
*Available water capacity:* Moderate (About 6.2 inches)  
*Shrink-swell potential:* High (About 7.5 LEP)  
*Flooding hazard:* None  
*Depth to seasonal water saturation:* More than 6 feet  
*Runoff class:* Very high  
*Ecological site:* Loamy Upland (pe30-36)  
*Land capability (nonirrigated):* 6e

##### *Typical Profile:*

H1—0 to 9 inches; gravelly silty clay loam  
 H2—9 to 35 inches; gravelly silty clay  
 Cr—35 to 39 inches; weathered bedrock

##### **Labette**

*MLRA:* 76 - Bluestem Hills  
*Landform:* Hillslope on upland

*Hillslope position:* Shoulder, summit  
*Parent material:* Silty and clayey residuum weathered from limestone-shale  
*Slope:* 2 to 8 percent  
*Depth to restrictive feature:* 20 to 40 inches to bedrock (lithic)  
*Drainage class:* Well drained  
*Slowest permeability:* Slow (About 0.06 in/hr)  
*Available water capacity:* Moderate (About 7.0 inches)  
*Shrink-swell potential:* High (About 7.5 LEP)  
*Flooding hazard:* None  
*Depth to seasonal water saturation:* More than 6 feet  
*Runoff class:* High  
*Ecological site:* Loamy Upland (pe30-36)

*Typical Profile:*

H1—0 to 13 inches; gravelly silty clay loam  
 H2—13 to 38 inches; gravelly silty clay  
 R—38 to 42 inches; unweathered bedrock

**Minor Components**

**Sogn**

*Composition:* About 10 percent  
*Geomorphic Position:* hillside on upland  
*Slope:* 2 to 12 percent  
*Depth to restrictive feature:* 4 to 20 inches to bedrock (lithic)  
*Drainage class:* Somewhat excessively drained  
*Ecological site:* Shallow Limy (pe30-36)

**Clime**

*Composition:* About 5 percent  
*Geomorphic Position:* hillside on upland  
*Slope:* 2 to 12 percent  
*Depth to restrictive feature:* 20 to 40 inches to bedrock (paralithic)  
*Drainage class:* Well drained  
*Ecological site:* Limy Upland (pe30-36)

**Dwight**

*Composition:* About 5 percent  
*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* 20 to 40 inches to bedrock (lithic)  
*Drainage class:* Moderately well drained  
*Ecological site:* Clay Pan (pe30-36)

**BOP—Borrow Pits**

*General Considerations:* An open excavation from which soil and underlying material have been removed usually for construction purposes.

**Br—Brewer silty clay loam, rarely flooded**

**Map Unit Composition**

Brewer: 85 percent  
 Minor components: 15 percent

**Component Descriptions**

**Brewer**

*MLRA:* 75 - Central Loess Plains  
*Landform:* Flood plain on river valley  
*Parent material:* Clayey alluvium  
*Slope:* 0 to 1 percent  
*Drainage class:* Moderately well drained  
*Slowest permeability:* Slow (About 0.06 in/hr)  
*Available water capacity:* High (About 10.5 inches)  
*Shrink-swell potential:* High (About 7.5 LEP)  
*Flooding hazard:* Rare  
*Depth to seasonal water saturation:* More than 6 feet  
*Runoff class:* Medium  
*Ecological site:* Loamy Terrace (pe25-34)  
*Land capability (nonirrigated):* 1

*Typical Profile:*

H1—0 to 14 inches; silty clay loam  
 H2—14 to 66 inches; silty clay

**Minor Components**

**Osage**

*Composition:* About 10 percent  
*Slope:* 0 to 1 percent  
*Drainage class:* Poorly drained  
*Ecological site:* Clay Lowland (pe25-34)

**Verdigris**

*Composition:* About 5 percent  
*Slope:* 0 to 3 percent  
*Drainage class:* Moderately well drained  
*Ecological site:* Loamy Lowland (pe30-36)

**Cs—Clime-Sogn complex, 3 to 15 percent slopes**

**Map Unit Composition**

Clime: 67 percent  
 Sogn: 30 percent  
 Minor components: 3 percent

## Component Descriptions

### Clime

*MLRA:* 76 - Bluestem Hills

*Landform:* Hillslope on upland

*Hillslope position:* Backslope

*Parent material:* Silty and clayey residuum weathered from shale, calcareous

*Slope:* 3 to 15 percent

*Depth to restrictive feature:* 20 to 40 inches to bedrock (paralithic)

*Drainage class:* Well drained

*Slowest permeability:* Slow (About 0.06 in/hr)

*Available water capacity:* Low (About 4.8 inches)

*Shrink-swell potential:* High (About 7.5 LEP)

*Flooding hazard:* None

*Depth to seasonal water saturation:* More than 6 feet

*Runoff class:* High

*Ecological site:* Limy Upland (pe30-36)

*Land capability (nonirrigated):* 6e

### Typical Profile:

H1—0 to 9 inches; silty clay

H2—9 to 33 inches; silty clay

Cr—33 to 37 inches; unweathered bedrock

### Sogn

*MLRA:* 76 - Bluestem Hills

*Landform:* Hillslope on upland

*Hillslope position:* Summit

*Parent material:* Loamy residuum weathered from limestone, unspecified

*Slope:* 3 to 15 percent

*Depth to restrictive feature:* 4 to 20 inches to bedrock (lithic)

*Drainage class:* Somewhat excessively drained

*Slowest permeability:* Moderate (About 0.60 in/hr)

*Available water capacity:* Very low (About 1.4 inches)

*Shrink-swell potential:* Moderate (About 4.5 LEP)

*Flooding hazard:* None

*Depth to seasonal water saturation:* More than 6 feet

*Runoff class:* Medium

*Ecological site:* Shallow Limy (pe30-36)

### Typical Profile:

H1—0 to 7 inches; silty clay loam

R—7 to 11 inches; unweathered bedrock

## Minor Components

### Rock outcrop

*Composition:* About 3 percent

## Dt—Dwight silt loam, 0 to 2 percent slopes

## Map Unit Composition

Dwight: 90 percent

Minor components: 10 percent

## Component Descriptions

### Dwight

*MLRA:* 76 - Bluestem Hills

*Landform:* Divide on hillslope on upland

*Hillslope position:* Summit

*Parent material:* Silty and clayey residuum weathered from limestone, cherty

*Slope:* 0 to 2 percent

*Depth to restrictive feature:* 20 to 40 inches to bedrock (lithic)

*Drainage class:* Moderately well drained

*Slowest permeability:* Very slow (About 0.00 in/hr)

*Available water capacity:* Low (About 4.5 inches)

*Shrink-swell potential:* High (About 7.5 LEP)

*Flooding hazard:* None

*Depth to seasonal water saturation:* More than 6 feet

*Runoff class:* Very high

*Ecological site:* Clay Pan (pe30-36)

*Land capability (nonirrigated):* 4s

### Typical Profile:

H1—0 to 5 inches; silt loam

H2—5 to 33 inches; silty clay

R—33 to 37 inches; unweathered bedrock

## Minor Components

### Irwin

*Composition:* About 5 percent

*Geomorphic Position:* hillside on upland

*Slope:* 0 to 1 percent

*Drainage class:* Moderately well drained

*Ecological site:* Clay Upland (pe25-34)

### Labette

*Composition:* About 5 percent

*Slope:* 1 to 3 percent

*Depth to restrictive feature:* 20 to 40 inches to bedrock (lithic)

*Drainage class:* Well drained

*Ecological site:* Loamy Upland (pe30-36)

## Dw—Dwight Soils, 1 to 2 percent slopes, eroded

### Map Unit Composition

Dwight: 85 percent  
Minor components: 15 percent

### Component Descriptions

#### Dwight

*MLRA:* 76 - Bluestem Hills  
*Landform:* Hillslope on upland  
*Parent material:* Silty and clayey residuum weathered from limestone, cherty  
*Slope:* 1 to 2 percent  
*Depth to restrictive feature:* 20 to 40 inches to bedrock (lithic)  
*Drainage class:* Moderately well drained  
*Slowest permeability:* Very slow (About 0.00 in/hr)  
*Available water capacity:* Low (About 4.5 inches)  
*Shrink-swell potential:* High (About 7.5 LEP)  
*Flooding hazard:* None  
*Depth to seasonal water saturation:* More than 6 feet  
*Runoff class:* Very high  
*Ecological site:* Clay Pan (pe30-36)  
*Land capability (nonirrigated):* 6e

#### Typical Profile:

H1—0 to 5 inches; silty clay loam  
H2—5 to 33 inches; silty clay  
R—33 to 37 inches; unweathered bedrock

#### Minor Components

##### Labette

*Composition:* About 15 percent  
*Slope:* 1 to 3 percent  
*Depth to restrictive feature:* 20 to 40 inches to bedrock (lithic)  
*Drainage class:* Well drained  
*Ecological site:* Loamy Upland (pe30-36)

## Fc—Florence Cherty silt loam, 5 to 10 percent slopes

### Map Unit Composition

Florence: 85 percent  
Minor components: 15 percent

### Component Descriptions

#### Florence

*MLRA:* 76 - Bluestem Hills  
*Landform:* Hillslope on upland  
*Hillslope position:* Backslope  
*Parent material:* Clayey residuum weathered from clayey shale and/or clayey residuum weathered from cherty limestone  
*Slope:* 5 to 10 percent  
*Depth to restrictive feature:* 40 to 60 inches to bedrock (lithic)  
*Drainage class:* Well drained  
*Slowest permeability:* Moderately slow (About 0.20 in/hr)  
*Available water capacity:* Low (About 4.2 inches)  
*Shrink-swell potential:* High (About 7.5 LEP)  
*Flooding hazard:* None  
*Depth to seasonal water saturation:* More than 6 feet  
*Runoff class:* High  
*Ecological site:* Loamy Upland (pe30-36)  
*Land capability (nonirrigated):* 6e

#### Typical Profile:

H1—0 to 14 inches; gravelly silt loam  
H2—14 to 22 inches; very gravelly silty clay  
H3—22 to 45 inches; very gravelly clay  
R—45 to 49 inches; unweathered bedrock

#### Minor Components

##### Dwight

*Composition:* About 5 percent  
*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* 20 to 40 inches to bedrock (lithic)  
*Drainage class:* Moderately well drained  
*Ecological site:* Clay Pan (pe30-36)

##### Labette

*Composition:* About 5 percent  
*Slope:* 1 to 3 percent  
*Depth to restrictive feature:* 20 to 40 inches to bedrock (lithic)  
*Drainage class:* Well drained  
*Ecological site:* Loamy Upland (pe30-36)

##### Tully

*Composition:* About 5 percent  
*Slope:* 1 to 4 percent  
*Drainage class:* Well drained  
*Ecological site:* Loamy Upland (pe30-36)

## **FLL—Florence-Labette complex, 2 to 12 percent slopes**

### **Map Unit Composition**

Florence: 60 percent  
Labette: 25 percent  
Minor components: 15 percent

### **Component Descriptions**

#### **Florence**

*MLRA:* 76 - Bluestem Hills  
*Landform:* Hillslope on upland  
*Parent material:* Silty and clayey residuum weathered from cherty limestone  
*Slope:* 2 to 12 percent  
*Depth to restrictive feature:* 40 to 60 inches to bedrock (lithic)  
*Drainage class:* Well drained  
*Slowest permeability:* Moderately slow (About 0.20 in/hr)  
*Available water capacity:* Low (About 4.2 inches)  
*Shrink-swell potential:* High (About 7.5 LEP)  
*Flooding hazard:* None  
*Depth to seasonal water saturation:* More than 6 feet  
*Runoff class:* High  
*Ecological site:* Loamy Upland (pe30-36)  
*Land capability (nonirrigated):* 6e

#### *Typical Profile:*

H1—0 to 13 inches; gravelly silt loam  
H2—13 to 19 inches; very gravelly silty clay loam  
H3—19 to 45 inches; very gravelly clay  
R—45 to 49 inches; unweathered bedrock

#### **Labette**

*MLRA:* 76 - Bluestem Hills  
*Landform:* Hillslope on upland  
*Parent material:* Silty and clayey residuum weathered from limestone and shale  
*Slope:* 2 to 8 percent  
*Depth to restrictive feature:* 20 to 40 inches to bedrock (lithic)  
*Drainage class:* Well drained  
*Slowest permeability:* Slow (About 0.06 in/hr)  
*Available water capacity:* Low (About 5.3 inches)  
*Shrink-swell potential:* High (About 7.5 LEP)  
*Flooding hazard:* None  
*Depth to seasonal water saturation:* More than 6 feet  
*Runoff class:* Very high  
*Ecological site:* Loamy Upland (pe30-36)  
*Land capability (nonirrigated):* 4e

#### *Typical Profile:*

H1—0 to 9 inches; silty clay loam  
H2—9 to 31 inches; silty clay  
R—31 to 35 inches; unweathered bedrock

### **Minor Components**

#### **Clime**

*Composition:* About 8 percent  
*Geomorphic Position:* hillside on upland  
*Slope:* 5 to 20 percent  
*Depth to restrictive feature:* 20 to 40 inches to bedrock (paralithic)  
*Drainage class:* Well drained  
*Ecological site:* Limy Upland (pe30-36)

#### **Dwight**

*Composition:* About 7 percent  
*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* 40 to 60 inches to bedrock (lithic)  
*Drainage class:* Moderately well drained  
*Ecological site:* Clay Pan (pe30-36)

## **Go—Goessel silty clay, 0 to 1 percent slopes**

### **Map Unit Composition**

Goessel: 80 percent  
Minor components: 20 percent

### **Component Descriptions**

#### **Goessel**

*MLRA:* 75 - Central Loess Plains  
*Landform:* Divide on upland  
*Hillslope position:* Summit  
*Parent material:* Old clayey alluvium  
*Slope:* 0 to 1 percent  
*Drainage class:* Moderately well drained  
*Slowest permeability:* Very slow (About 0.00 in/hr)  
*Available water capacity:* Moderate (About 7.7 inches)  
*Shrink-swell potential:* High (About 7.5 LEP)  
*Flooding hazard:* None  
*Depth to seasonal water saturation:* About 24 to 36 inches  
*Runoff class:* High  
*Ecological site:* Clay Upland (pe25-34)  
*Land capability (nonirrigated):* 2s

#### *Typical Profile:*

H1—0 to 18 inches; silty clay  
H2—18 to 44 inches; silty clay  
H3—44 to 68 inches; silty clay

**Minor Components****Rosehill**

*Composition:* About 10 percent  
*Geomorphic Position:* hillside on upland  
*Slope:* 1 to 3 percent  
*Depth to restrictive feature:* 20 to 40 inches  
to bedrock (paralithic)  
*Drainage class:* Well drained  
*Ecological site:* Clay Upland (pe25-34)

**Ladysmith**

*Composition:* About 10 percent  
*Slope:* 0 to 2 percent  
*Drainage class:* Somewhat poorly drained  
*Ecological site:* Clay Upland (pe25-34)

**GRP—Gravel Pits****Map Unit Composition**

Gravel Pits: 100 percent

**Gs—Goessel silty clay, 1 to 3 percent slopes****Map Unit Composition**

Goessel: 85 percent  
 Minor components: 15 percent

**Component Descriptions****Goessel**

*MLRA:* 75 - Central Loess Plains  
*Landform:* Hillslope on upland  
*Hillslope position:* Shoulder  
*Parent material:* Old clayey alluvium  
*Slope:* 1 to 3 percent  
*Drainage class:* Moderately well drained  
*Slowest permeability:* Very slow (About 0.00 in/hr)  
*Available water capacity:* Moderate (About 7.7 inches)  
*Shrink-swell potential:* High (About 7.5 LEP)  
*Flooding hazard:* None  
*Depth to seasonal water saturation:* About 24 to 36 inches  
*Runoff class:* Very high  
*Ecological site:* Clay Upland (pe25-34)  
*Land capability (nonirrigated):* 3e

*Typical Profile:*

H1—0 to 18 inches; silty clay  
 H2—18 to 44 inches; silty clay  
 H3—44 to 68 inches; silty clay

**Minor Components****Irwin**

*Composition:* About 8 percent  
*Geomorphic Position:* hillside on upland  
*Slope:* 0 to 1 percent  
*Drainage class:* Moderately well drained  
*Ecological site:* Clay Upland (pe25-34)

**Rosehill**

*Composition:* About 7 percent  
*Geomorphic Position:* hillside on upland  
*Slope:* 1 to 3 percent  
*Depth to restrictive feature:* 20 to 40 inches  
to bedrock (paralithic)  
*Drainage class:* Well drained  
*Ecological site:* Clay Upland (pe25-34)

**Ic—Irwin silty clay loam, 0 to 1 percent slopes****Map Unit Composition**

Irwin: 90 percent  
 Minor components: 10 percent

**Component Descriptions****Irwin**

*MLRA:* 75 - Central Loess Plains  
*Landform:* Hillslope on upland  
*Hillslope position:* Summit  
*Parent material:* Silty and clayey residuum  
weathered from shale, clayey  
*Slope:* 0 to 1 percent  
*Drainage class:* Moderately well drained  
*Slowest permeability:* Very slow (About 0.00 in/hr)  
*Available water capacity:* Moderate (About 8.5 inches)  
*Shrink-swell potential:* High (About 7.5 LEP)  
*Flooding hazard:* None  
*Depth to seasonal water saturation:* More than 6 feet  
*Runoff class:* High  
*Ecological site:* Clay Upland (pe25-34)  
*Land capability (nonirrigated):* 2s

**Typical Profile:**

H1—0 to 11 inches; silty clay loam  
 H2—11 to 42 inches; silty clay  
 H3—42 to 66 inches; silty clay



**Minor Components****Ladysmith**

*Composition:* About 5 percent  
*Slope:* 0 to 2 percent  
*Drainage class:* Somewhat poorly drained  
*Ecological site:* Clay Upland (pe25-34)

**Norge**

*Composition:* About 5 percent  
*Slope:* 1 to 3 percent  
*Drainage class:* Well drained  
*Ecological site:* Loamy Upland (pe25-34)

**Id—Irwin silty clay loam, 1 to 3 percent slopes****Map Unit Composition**

Irwin: 85 percent  
 Minor components: 15 percent

**Component Descriptions****Irwin**

*MLRA:* 75 - Central Loess Plains  
*Landform:* Hillslope on upland  
*Hillslope position:* Shoulder  
*Parent material:* Silty and clayey residuum weathered from clayey shale  
*Slope:* 1 to 3 percent  
*Drainage class:* Moderately well drained  
*Slowest permeability:* Very slow (About 0.00 in/hr)  
*Available water capacity:* Moderate (About 8.5 inches)  
*Shrink-swell potential:* High (About 7.5 LEP)  
*Flooding hazard:* None  
*Depth to seasonal water saturation:* More than 6 feet  
*Runoff class:* Very high  
*Ecological site:* Clay Upland (pe25-34)  
*Land capability (nonirrigated):* 3e

*Typical Profile:*

H1—0 to 11 inches; silty clay loam  
 H2—11 to 42 inches; silty clay  
 H3—42 to 66 inches; silty clay

**Minor Components****Dwight**

*Composition:* About 5 percent  
*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* 20 to 40 inches to bedrock (lithic)  
*Drainage class:* Moderately well drained  
*Ecological site:* Clay Pan (pe30-36)

**Labette**

*Composition:* About 5 percent  
*Slope:* 1 to 3 percent  
*Depth to restrictive feature:* 20 to 40 inches to bedrock (lithic)  
*Drainage class:* Well drained  
*Ecological site:* Loamy Upland (pe30-36)

**Ladysmith**

*Composition:* About 5 percent  
*Slope:* 0 to 2 percent  
*Drainage class:* Somewhat poorly drained  
*Ecological site:* Clay Upland (pe25-34)

**le—Irwin silty clay loam, 3 to 5 percent slopes****Map Unit Composition**

Irwin: 85 percent  
 Minor components: 15 percent

**Component Descriptions****Irwin**

*MLRA:* 75 - Central Loess Plains  
*Landform:* Hillslope on upland  
*Hillslope position:* Backslope  
*Parent material:* Silty and clayey residuum weathered from shale, clayey  
*Slope:* 3 to 5 percent  
*Drainage class:* Moderately well drained  
*Slowest permeability:* Very slow (About 0.00 in/hr)  
*Available water capacity:* Moderate (About 8.5 inches)  
*Shrink-swell potential:* High (About 7.5 LEP)  
*Flooding hazard:* None  
*Depth to seasonal water saturation:* More than 6 feet  
*Runoff class:* Very high  
*Ecological site:* Clay Upland (pe25-34)  
*Land capability (nonirrigated):* 4e

*Typical Profile:*

H1—0 to 11 inches; silty clay loam  
 H2—11 to 42 inches; silty clay  
 H3—42 to 66 inches; silty clay

**Minor Components****Dwight**

*Composition:* About 5 percent  
*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* 20 to 40 inches to bedrock (lithic)  
*Drainage class:* Moderately well drained

*Ecological site:* Clay Pan (pe30-36)

### **Tully**

*Composition:* About 5 percent  
*Slope:* 4 to 7 percent  
*Drainage class:* Well drained  
*Ecological site:* Loamy Upland (pe30-36)

### **Labette**

*Composition:* About 5 percent  
*Slope:* 1 to 3 percent  
*Depth to restrictive feature:* 20 to 40 inches to bedrock (lithic)  
*Drainage class:* Well drained  
*Ecological site:* Loamy Upland (pe30-36)

## **If—Irwin silty clay loam, 2 to 5 percent slopes, eroded**

### **Map Unit Composition**

Irwin: 85 percent  
 Minor components: 15 percent

### **Component Descriptions**

#### **Irwin**

*MLRA:* 75 - Central Loess Plains  
*Landform:* Hillslope on upland  
*Hillslope position:* Backslope  
*Parent material:* Silty and clayey residuum weathered from shale, clayey  
*Slope:* 2 to 5 percent  
*Drainage class:* Moderately well drained  
*Slowest permeability:* Very slow (About 0.00 in/hr)  
*Available water capacity:* Moderate (About 7.9 inches)  
*Shrink-swell potential:* High (About 7.5 LEP)  
*Flooding hazard:* None  
*Depth to seasonal water saturation:* More than 6 feet  
*Runoff class:* Very high  
*Ecological site:* Clay Upland (pe25-34)  
*Land capability (nonirrigated):* 4e

#### *Typical Profile:*

H1—0 to 5 inches; silty clay loam  
 H2—5 to 42 inches; silty clay  
 H3—42 to 66 inches; silty clay

### **Minor Components**

#### **Dwight**

*Composition:* About 15 percent  
*Slope:* 0 to 2 percent

*Depth to restrictive feature:* 20 to 40 inches to bedrock (lithic)  
*Drainage class:* Moderately well drained  
*Ecological site:* Clay Pan (pe30-36)

## **INT—Aquolls**

### **Map Unit Composition**

Aquolls: 100 percent

### **Component Descriptions**

#### **Aquolls**

*MLRA:* -  
*Landform:* Depression on terrace on river valley  
*Parent material:* Alluvium  
*Slope:* 0 to 1 percent  
*Drainage class:* Very poorly drained  
*Flooding hazard:* None  
*Ponding hazard:* Occasional  
*Depth to seasonal water saturation:* About 0 to 0 inches  
*Runoff class:* Negligible  
*Land capability (nonirrigated):* 5w

#### *Typical Profile:*

H1—0 to 72 inches; variable

*General Considerations:* This map unit was formerly labeled as an Intermittent Water spot symbol. These depressional areas contain soils that are occasionally ponded for long duration.

## **IVC—Ivan silt loam, channeled**

### **Map Unit Composition**

Ivan: 85 percent  
 Minor components: 15 percent

### **Component Descriptions**

#### **Ivan**

*MLRA:* 76 - Bluestem Hills  
*Landform:* Channel on flood plain on river valley  
*Parent material:* Silty alluvium  
*Slope:* 0 to 1 percent  
*Drainage class:* Well drained  
*Slowest permeability:* Moderate (About 0.60 in/hr)

*Available water capacity:* Very high (About 12.9 inches)

*Shrink-swell potential:* Moderate (About 4.5 LEP)

*Flooding hazard:* Frequent

*Depth to seasonal water saturation:* More than 6 feet

*Runoff class:* Negligible

*Ecological site:* Loamy Lowland (pe30-36)

*Land capability (nonirrigated):* 5w

*Typical Profile:*

H1—0 to 27 inches; silt loam

H2—27 to 60 inches; silt loam

**Minor Components**

**Chase**

*Composition:* About 4 percent

*Slope:* 0 to 2 percent

*Drainage class:* Somewhat poorly drained

*Ecological site:* Loamy Lowland (pe30-36)

**Osage**

*Composition:* About 4 percent

*Slope:* 0 to 1 percent

*Drainage class:* Poorly drained

*Ecological site:* Clay Lowland (pe30-36)

**Dennis**

*Composition:* About 4 percent

*Slope:* 1 to 4 percent

*Drainage class:* Well drained

*Ecological site:* Loamy Upland (pe30-36)

**Martin**

*Composition:* About 3 percent

*Slope:* 4 to 7 percent

*Drainage class:* Moderately well drained

*Ecological site:* Loamy Upland (pe30-36)

**IVF—Ivan silt loam, occasionally flooded**

**Map Unit Composition**

Ivan: 90 percent

Minor components: 10 percent

**Component Descriptions**

**Ivan**

*MLRA:* 76 - Bluestem Hills

*Landform:* Flood plain on river valley

*Parent material:* Silty alluvium

*Slope:* 0 to 1 percent

*Drainage class:* Well drained

*Slowest permeability:* Moderate (About 0.60 in/hr)

*Available water capacity:* Very high (About 13.2 inches)

*Shrink-swell potential:* Moderate (About 4.5 LEP)

*Flooding hazard:* Occasional

*Depth to seasonal water saturation:* More than 6 feet

*Runoff class:* Negligible

*Ecological site:* Loamy Lowland (pe30-36)

*Land capability (nonirrigated):* 2w

*Typical Profile:*

H1—0 to 38 inches; silt loam

H2—38 to 60 inches; silt loam

**Minor Components**

**Chase**

*Composition:* About 10 percent

*Slope:* 0 to 2 percent

*Drainage class:* Somewhat poorly drained

*Ecological site:* Loamy Lowland (pe30-36)

**La—Labette silty clay loam, 1 to 3 percent slopes**

**Map Unit Composition**

Labette: 90 percent

Minor components: 10 percent

**Component Descriptions**

**Labette**

*MLRA:* 76 - Bluestem Hills

*Landform:* Hillslope on upland

*Parent material:* Silty and clayey residuum weathered from limestone-shale

*Slope:* 1 to 3 percent

*Depth to restrictive feature:* 20 to 40 inches to bedrock (lithic)

*Drainage class:* Well drained

*Slowest permeability:* Slow (About 0.06 in/hr)

*Available water capacity:* Moderate (About 6.6 inches)

*Shrink-swell potential:* High (About 7.5 LEP)

*Flooding hazard:* None

*Depth to seasonal water saturation:* More than 6 feet

*Runoff class:* High

*Ecological site:* Loamy Upland (pe30-36)

*Land capability (nonirrigated):* 2e

*Typical Profile:*

H1—0 to 13 inches; silty clay loam  
 H2—13 to 38 inches; silty clay  
 R—38 to 42 inches; unweathered bedrock

### Minor Components

#### Dwight

*Composition:* About 5 percent  
*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* 20 to 40 inches to bedrock (lithic)  
*Drainage class:* Moderately well drained  
*Ecological site:* Clay Pan (pe30-36)

#### Irwin

*Composition:* About 5 percent  
*Geomorphic Position:* hillside on upland  
*Slope:* 0 to 1 percent  
*Drainage class:* Moderately well drained  
*Ecological site:* Clay Upland (pe25-34)

### Lb—Labette silty clay loam, 1 to 3 percent slopes, eroded

#### Map Unit Composition

Labette: 85 percent  
 Minor components: 15 percent

#### Component Descriptions

##### Labette

*MLRA:* 76 - Bluestem Hills  
*Landform:* Hillslope on upland  
*Parent material:* Silty and clayey residuum weathered from limestone-shale  
*Slope:* 1 to 3 percent  
*Depth to restrictive feature:* 20 to 40 inches to bedrock (lithic)  
*Drainage class:* Well drained  
*Slowest permeability:* Slow (About 0.06 in/hr)  
*Available water capacity:* Moderate (About 6.3 inches)  
*Shrink-swell potential:* High (About 7.5 LEP)  
*Flooding hazard:* None  
*Depth to seasonal water saturation:* More than 6 feet  
*Runoff class:* High  
*Ecological site:* Loamy Upland (pe30-36)  
*Land capability (nonirrigated):* 3e

##### Typical Profile:

H1—0 to 5 inches; silty clay loam  
 H2—5 to 38 inches; silty clay  
 R—38 to 42 inches; unweathered bedrock

### Minor Components

#### Irwin

*Composition:* About 8 percent  
*Geomorphic Position:* hillslope on upland  
*Slope:* 0 to 1 percent  
*Drainage class:* Moderately well drained  
*Ecological site:* Clay Upland (pe25-34)

#### Dwight

*Composition:* About 7 percent  
*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* 20 to 40 inches to bedrock (lithic)  
*Drainage class:* Moderately well drained  
*Ecological site:* Clay Pan (pe30-36)

### Lc—Labette silty clay loam, 3 to 5 percent slopes

#### Map Unit Composition

Labette: 90 percent  
 Minor components: 10 percent

#### Component Descriptions

##### Labette

*MLRA:* 76 - Bluestem Hills  
*Landform:* Hillslope on upland  
*Parent material:* Silty and clayey residuum weathered from limestone-shale  
*Slope:* 3 to 5 percent  
*Depth to restrictive feature:* 20 to 40 inches to bedrock (lithic)  
*Drainage class:* Well drained  
*Slowest permeability:* Slow (About 0.06 in/hr)  
*Available water capacity:* Moderate (About 6.6 inches)  
*Shrink-swell potential:* High (About 7.5 LEP)  
*Flooding hazard:* None  
*Depth to seasonal water saturation:* More than 6 feet  
*Runoff class:* High  
*Ecological site:* Loamy Upland (pe30-36)  
*Land capability (nonirrigated):* 3e

##### Typical Profile:

H1—0 to 13 inches; silty clay loam  
 H2—13 to 38 inches; silty clay  
 R—38 to 42 inches; unweathered bedrock

### Minor Components

#### Irwin

*Composition:* About 5 percent  
*Geomorphic Position:* hillside on upland  
*Slope:* 0 to 1 percent  
*Drainage class:* Moderately well drained  
*Ecological site:* Clay Upland (pe25-34)

**Tully**

*Composition:* About 5 percent  
*Slope:* 1 to 4 percent  
*Drainage class:* Well drained  
*Ecological site:* Loamy Upland (pe30-36)

*Shrink-swell potential:* High (About 7.5 LEP)  
*Flooding hazard:* None  
*Depth to seasonal water saturation:* More than 6 feet  
*Runoff class:* Very high  
*Ecological site:* Clay Pan (pe30-36)

*Typical Profile:*

H1—0 to 5 inches; silt loam  
 H2—5 to 33 inches; silty clay  
 R—33 to 37 inches; unweathered bedrock

**Ld—Labette-Dwight complex, 1 to 3 percent slopes****Map Unit Composition**

Labette: 50 percent  
 Dwight: 40 percent  
 Minor components: 10 percent

**Component Descriptions****Labette**

*MLRA:* 76 - Bluestem Hills  
*Landform:* Hillslope on upland  
*Parent material:* Silty and clayey residuum weathered from limestone-shale  
*Slope:* 1 to 3 percent  
*Depth to restrictive feature:* 20 to 40 inches to bedrock (lithic)  
*Drainage class:* Well drained  
*Slowest permeability:* Slow (About 0.06 in/hr)  
*Available water capacity:* Moderate (About 6.6 inches)  
*Shrink-swell potential:* High (About 7.5 LEP)  
*Flooding hazard:* None  
*Depth to seasonal water saturation:* More than 6 feet  
*Runoff class:* High  
*Ecological site:* Loamy Upland (pe30-36)  
*Land capability (nonirrigated):* 3e

*Typical Profile:*

H1—0 to 13 inches; silty clay loam  
 H2—13 to 38 inches; silty clay  
 R—38 to 42 inches; unweathered bedrock

**Dwight**

*MLRA:* 76 - Bluestem Hills  
*Landform:* Hillslope on upland  
*Parent material:* Silty and clayey residuum weathered from limestone, cherty  
*Slope:* 1 to 3 percent  
*Depth to restrictive feature:* 20 to 40 inches to bedrock (lithic)  
*Drainage class:* Moderately well drained  
*Slowest permeability:* Very slow (About 0.00 in/hr)  
*Available water capacity:* Low (About 4.5 inches)

**Minor Components****Irwin**

*Composition:* About 5 percent  
*Geomorphic Position:* hillside on upland  
*Slope:* 0 to 1 percent  
*Drainage class:* Moderately well drained  
*Ecological site:* Clay Upland (pe25-34)

**Ladysmith**

*Composition:* About 5 percent  
*Slope:* 0 to 2 percent  
*Drainage class:* Somewhat poorly drained  
*Ecological site:* Clay Upland (pe25-34)

**Le—Labette-Sogn complex, 2 to 8 percent slopes****Map Unit Composition**

Labette: 50 percent  
 Sogn: 45 percent

**Component Descriptions****Labette**

*MLRA:* 76 - Bluestem Hills  
*Landform:* Hillslope on upland  
*Parent material:* Silty and clayey residuum weathered from limestone-shale  
*Slope:* 2 to 8 percent  
*Depth to restrictive feature:* 20 to 40 inches to bedrock (lithic)  
*Drainage class:* Well drained  
*Slowest permeability:* Slow (About 0.06 in/hr)  
*Available water capacity:* Moderate (About 6.6 inches)  
*Shrink-swell potential:* High (About 7.5 LEP)  
*Flooding hazard:* None  
*Depth to seasonal water saturation:* More than 6 feet  
*Runoff class:* High  
*Ecological site:* Loamy Upland (pe30-36)  
*Land capability (nonirrigated):* 6e

*Typical Profile:*

H1—0 to 13 inches; silty clay loam  
 H2—13 to 38 inches; silty clay  
 R—38 to 42 inches; unweathered bedrock

**Sogn**

*MLRA:* 76 - Bluestem Hills

*Landform:* Hillslope, upland

*Parent material:* Loamy residuum weathered from limestone, unspecified

*Slope:* 2 to 8 percent

*Depth to restrictive feature:* 4 to 20 inches to bedrock (lithic)

*Drainage class:* Somewhat excessively drained

*Slowest permeability:* Moderate (About 0.60 in/hr)

*Available water capacity:* Very low (About 1.4 inches)

*Shrink-swell potential:* Moderate (About 4.5 LEP)

*Flooding hazard:* None

*Depth to seasonal water saturation:* More than 6 feet

*Runoff class:* Low

*Ecological site:* Shallow Limy (pe30-36)

*Typical Profile:*

H1—0 to 7 inches; silty clay loam  
 R—7 to 11 inches; unweathered bedrock

**Ls—Ladysmith silty clay loam, 0 to 2 percent slopes****Map Unit Composition**

Ladysmith: 90 percent

Minor components: 10 percent

**Component Descriptions****Ladysmith**

*MLRA:* 75 - Central Loess Plains

*Landform:* Paleoterrace on upland

*Parent material:* Clayey alluvium

*Slope:* 0 to 2 percent

*Drainage class:* Somewhat poorly drained

*Slowest permeability:* Very slow (About 0.00 in/hr)

*Available water capacity:* Moderate (About 8.8 inches)

*Shrink-swell potential:* High (About 7.5 LEP)

*Flooding hazard:* None

*Depth to seasonal water saturation:* More than 6 feet

*Runoff class:* High

*Ecological site:* Clay Upland (pe25-34)

*Land capability (nonirrigated):* 3e

*Typical Profile:*

H1—0 to 8 inches; silty clay loam

H2—8 to 38 inches; silty clay

H3—38 to 66 inches; silty clay

**Minor Components****Irwin**

*Composition:* About 5 percent

*Geomorphic Position:* hillside on upland

*Slope:* 0 to 1 percent

*Drainage class:* Moderately well drained

*Ecological site:* Clay Upland (pe25-34)

**Dwight**

*Composition:* About 5 percent

*Slope:* 1 to 2 percent

*Depth to restrictive feature:* 20 to 40 inches to bedrock (lithic)

*Drainage class:* Moderately well drained

*Ecological site:* Clay Pan (pe30-36)

**M-W—Miscellaneous Water****No—Norge silt loam, 0 to 1 percent slopes****Map Unit Composition**

Norge: 90 percent

Minor components: 10 percent

**Component Descriptions****Norge**

*MLRA:* 75 - Central Loess Plains

*Landform:* Hillslope on upland

*Hillslope position:* Summit

*Parent material:* Fine-silty alluvium and/or fine-silty loess

*Slope:* 0 to 1 percent

*Drainage class:* Well drained

*Slowest permeability:* Moderately slow (About 0.20 in/hr)

*Available water capacity:* High (About 11.3 inches)

*Shrink-swell potential:* Moderate (About 4.5 LEP)

*Flooding hazard:* None

*Depth to seasonal water saturation:* More than 6 feet

*Runoff class:* Low

*Ecological site:* Loamy Upland (pe25-34)  
*Land capability (nonirrigated):* 1

*Typical Profile:*

H1—0 to 9 inches; silt loam  
 H2—9 to 72 inches; silty clay loam

**Minor Components**

**Ladysmith**

*Composition:* About 5 percent  
*Slope:* 0 to 2 percent  
*Drainage class:* Somewhat poorly drained  
*Ecological site:* Clay Upland (pe25-34)

**Vanoss**

*Composition:* About 5 percent  
*Slope:* 0 to 1 percent  
*Drainage class:* Well drained  
*Ecological site:* Loamy Upland (pe25-34)

**Nr—Norge silt loam, 1 to 3 percent slopes**

**Map Unit Composition**

Norge: 85 percent  
 Minor components: 15 percent

**Component Descriptions**

**Norge**

*MLRA:* 75 - Central Loess Plains  
*Landform:* Hillslope on upland  
*Parent material:* Fine-silty alluvium and/or fine-silty loess  
*Slope:* 1 to 3 percent  
*Drainage class:* Well drained  
*Slowest permeability:* Moderately slow (About 0.20 in/hr)  
*Available water capacity:* High (About 11.3 inches)  
*Shrink-swell potential:* Moderate (About 4.5 LEP)  
*Flooding hazard:* None  
*Depth to seasonal water saturation:* More than 6 feet  
*Runoff class:* Medium  
*Ecological site:* Loamy Upland (pe25-34)  
*Land capability (nonirrigated):* 2e

*Typical Profile:*

H1—0 to 9 inches; silt loam  
 H2—9 to 72 inches; silty clay loam

**Minor Components**

**Tully**

*Composition:* About 5 percent  
*Slope:* 4 to 7 percent  
*Drainage class:* Well drained  
*Ecological site:* Loamy Upland (pe30-36)

**Irwin**

*Composition:* About 5 percent  
*Geomorphic Position:* hillside on upland  
*Slope:* 1 to 3 percent  
*Drainage class:* Moderately well drained  
*Ecological site:* Clay Upland (pe25-34)

**Vanoss**

*Composition:* About 5 percent  
*Slope:* 0 to 1 percent  
*Drainage class:* Well drained  
*Ecological site:* Loamy Upland (pe25-34)

**Ns—Norge silt loam, 3 to 5 percent slopes**

**Map Unit Composition**

Norge: 85 percent  
 Minor components: 15 percent

**Component Descriptions**

**Norge**

*MLRA:* 75 - Central Loess Plains  
*Landform:* Hillslope on upland  
*Parent material:* Fine-silty alluvium and/or fine-silty loess  
*Slope:* 3 to 5 percent  
*Drainage class:* Well drained  
*Slowest permeability:* Moderately slow (About 0.20 in/hr)  
*Available water capacity:* High (About 11.3 inches)  
*Shrink-swell potential:* Moderate (About 4.5 LEP)  
*Flooding hazard:* None  
*Depth to seasonal water saturation:* More than 6 feet  
*Runoff class:* Medium  
*Ecological site:* Loamy Upland (pe25-34)  
*Land capability (nonirrigated):* 3e

*Typical Profile:*

H1—0 to 9 inches; silt loam  
 H2—9 to 72 inches; silty clay loam

**Minor Components**

**Olpe**

*Composition:* About 8 percent  
*Slope:* 2 to 7 percent

*Drainage class:* Well drained  
*Ecological site:* Loamy Upland (pe30-36)

**Tully**

*Composition:* About 7 percent  
*Slope:* 4 to 7 percent  
*Drainage class:* Well drained  
*Ecological site:* Loamy Upland (pe30-36)

## **Nt—Norge silty clay loam, 3 to 5 percent slopes, eroded**

### **Map Unit Composition**

Norge: 85 percent

### **Component Descriptions**

**Norge**

*MLRA:* 75 - Central Loess Plains  
*Landform:* Hillslope on upland  
*Parent material:* Fine-silty alluvium and/or fine-silty loess  
*Slope:* 3 to 5 percent  
*Drainage class:* Well drained  
*Slowest permeability:* Moderately slow (About 0.20 in/hr)  
*Available water capacity:* High (About 11.2 inches)  
*Shrink-swell potential:* Moderate (About 4.5 LEP)  
*Flooding hazard:* None  
*Depth to seasonal water saturation:* More than 6 feet  
*Runoff class:* Medium  
*Ecological site:* Loamy Upland (pe25-34)  
*Land capability (nonirrigated):* 3e

*Typical Profile:*

H1—0 to 5 inches; silty clay loam  
 H2—5 to 72 inches; silty clay loam

## **Od—Oil-Waste Land**

## **On—Olpe-Norge complex, 2 to 7 percent slopes**

### **Map Unit Composition**

Olpe: 50 percent  
 Norge: 30 percent

### **Component Descriptions**

**Olpe**

*MLRA:* 76 - Bluestem Hills  
*Landform:* Paleoterrace on upland  
*Parent material:* Clayey alluvium  
*Slope:* 2 to 7 percent  
*Drainage class:* Well drained  
*Slowest permeability:* Slow (About 0.06 in/hr)  
*Available water capacity:* Very low (About 1.5 inches)  
*Shrink-swell potential:* High (About 7.5 LEP)  
*Flooding hazard:* None  
*Depth to seasonal water saturation:* More than 6 feet  
*Runoff class:* Very high  
*Ecological site:* Loamy Upland (pe30-36)  
*Land capability (nonirrigated):* 6e

*Typical Profile:*

H1—0 to 10 inches; gravelly silty clay loam  
 H2—10 to 14 inches; gravelly silty clay loam  
 H3—14 to 60 inches; extremely gravelly silty clay

**Norge**

*MLRA:* 76 - Bluestem Hills  
*Landform:* Terrace on upland  
*Parent material:* Fine-silty alluvium and/or fine-silty loess  
*Slope:* 2 to 7 percent  
*Drainage class:* Well drained  
*Slowest permeability:* Moderately slow (About 0.20 in/hr)  
*Available water capacity:* High (About 11.3 inches)  
*Shrink-swell potential:* Moderate (About 4.5 LEP)  
*Flooding hazard:* None  
*Depth to seasonal water saturation:* More than 6 feet  
*Runoff class:* Medium  
*Ecological site:* Loamy Upland (pe30-36)  
*Land capability (nonirrigated):* 4e

*Typical Profile:*

H1—0 to 9 inches; silt loam  
 H2—9 to 72 inches; silty clay loam



**Os—Osage silty clay, occasionally flooded****Map Unit Composition**

Osage: 90 percent  
 Minor components: 10 percent

**Component Descriptions****Osage**

*MLRA:* 76 - Bluestem Hills  
*Landform:* Flood plain on river valley  
*Parent material:* Clayey alluvium  
*Slope:* 0 to 1 percent  
*Drainage class:* Poorly drained  
*Slowest permeability:* Very slow (About 0.00 in/hr)  
*Available water capacity:* Moderate (About 6.4 inches)  
*Shrink-swell potential:* Very high (About 17.0 LEP)  
*Flooding hazard:* Occasional  
*Ponding hazard:* Occasional  
*Depth to seasonal water saturation:* About 0 to 12 inches  
*Runoff class:* High  
*Ecological site:* Clay Lowland (pe25-34)  
*Land capability (nonirrigated):* 3w

*Typical Profile:*

H1—0 to 18 inches; silty clay  
 H2—18 to 66 inches; silty clay

**Minor Components****Brewer**

*Composition:* About 10 percent  
*Slope:* 0 to 1 percent  
*Drainage class:* Moderately well drained  
*Ecological site:* Loamy Terrace (pe25-34)

**QUA—Quarries****Ro—Rosehill silty clay, 1 to 3 percent slopes****Map Unit Composition**

Rosehill: 85 percent  
 Minor components: 10 percent

**Component Descriptions****Rosehill**

*MLRA:* 75 - Central Loess Plains  
*Landform:* Hillslope on upland  
*Hillslope position:* Backslope  
*Parent material:* Clayey residuum weathered from clayey shale  
*Slope:* 1 to 3 percent  
*Depth to restrictive feature:* 20 to 40 inches to bedrock (paralithic)  
*Drainage class:* Well drained  
*Slowest permeability:* Very slow (About 0.00 in/hr)  
*Available water capacity:* Low (About 4.4 inches)  
*Shrink-swell potential:* Very high (About 17.0 LEP)  
*Flooding hazard:* None  
*Depth to seasonal water saturation:* More than 6 feet  
*Runoff class:* Very high  
*Ecological site:* Clay Upland (pe25-34)  
*Land capability (nonirrigated):* 3e

*Typical Profile:*

H1—0 to 9 inches; silty clay  
 H2—9 to 36 inches; silty clay  
 Cr—36 to 40 inches; unweathered bedrock

**Minor Components****Irwin**

*Composition:* About 5 percent  
*Geomorphic Position:* hillside on upland  
*Slope:* 1 to 3 percent  
*Drainage class:* Moderately well drained  
*Ecological site:* Clay Upland (pe25-34)

**Goessel**

*Composition:* About 5 percent  
*Geomorphic Position:* hillside on upland  
*Slope:* 0 to 1 percent  
*Drainage class:* Moderately well drained  
*Ecological site:* Clay Upland (pe25-34)

**So—Sogn Soils, 0 to 8 percent slopes****Map Unit Composition**

Sogn: 90 percent  
 Minor components: 10 percent

**Component Descriptions****Sogn**

*MLRA:* 76 - Bluestem Hills  
*Landform:* Hillslope on upland

*Parent material:* Loamy residuum weathered from limestone, unspecified  
*Slope:* 0 to 8 percent  
*Depth to restrictive feature:* 4 to 20 inches to bedrock (lithic)  
*Drainage class:* Somewhat excessively drained  
*Slowest permeability:* Moderate (About 0.60 in/hr)  
*Available water capacity:* Very low (About 1.4 inches)  
*Shrink-swell potential:* Moderate (About 4.5 LEP)  
*Flooding hazard:* None  
*Depth to seasonal water saturation:* More than 6 feet  
*Runoff class:* Low  
*Ecological site:* Shallow Limy (pe30-36)  
*Land capability (nonirrigated):* 7s

*Typical Profile:*  
 H1—0 to 7 inches; silty clay loam  
 R—7 to 11 inches; unweathered bedrock

#### Minor Components

##### Labette

*Composition:* About 5 percent  
*Slope:* 2 to 8 percent  
*Depth to restrictive feature:* 20 to 40 inches to bedrock (lithic)  
*Drainage class:* Well drained  
*Ecological site:* Loamy Upland (pe30-36)

##### Clime

*Composition:* About 5 percent  
*Geomorphic Position:* hillside on upland  
*Slope:* 3 to 15 percent  
*Depth to restrictive feature:* 20 to 40 inches to bedrock (paralithic)  
*Drainage class:* Well drained  
*Ecological site:* Limy Upland (pe30-36)

### Ts—Tully silty clay loam, 1 to 4 percent slopes

#### Map Unit Composition

Tully: 90 percent  
 Minor components: 10 percent

#### Component Descriptions

##### Tully

*MLRA:* 76 - Bluestem Hills  
*Landform:* Hillslope on upland  
*Parent material:* Clayey colluvium  
*Slope:* 1 to 4 percent

*Drainage class:* Well drained  
*Slowest permeability:* Slow (About 0.06 in/hr)  
*Available water capacity:* Moderate (About 8.5 inches)  
*Shrink-swell potential:* High (About 7.5 LEP)  
*Flooding hazard:* None  
*Depth to seasonal water saturation:* More than 6 feet  
*Runoff class:* High  
*Ecological site:* Loamy Upland (pe30-36)  
*Land capability (nonirrigated):* 2e

##### Typical Profile:

H1—0 to 10 inches; silty clay loam  
 H2—10 to 64 inches; silty clay

#### Minor Components

##### Norge

*Composition:* About 5 percent  
*Slope:* 1 to 3 percent  
*Drainage class:* Well drained  
*Ecological site:* Loamy Upland (pe25-34)

##### Vanoss

*Composition:* About 5 percent  
*Slope:* 0 to 1 percent  
*Drainage class:* Well drained  
*Ecological site:* Loamy Upland (pe25-34)

### Tt—Tully silty clay loam, 3 to 6 percent slopes, eroded

#### Map Unit Composition

Tully: 85 percent  
 Minor components: 15 percent

#### Component Descriptions

##### Tully

*MLRA:* 76 - Bluestem Hills  
*Landform:* Hillslope on upland  
*Parent material:* Clayey colluvium  
*Slope:* 3 to 6 percent  
*Drainage class:* Well drained  
*Slowest permeability:* Slow (About 0.06 in/hr)  
*Available water capacity:* Moderate (About 8.1 inches)  
*Shrink-swell potential:* High (About 7.5 LEP)  
*Flooding hazard:* None  
*Depth to seasonal water saturation:* More than 6 feet  
*Runoff class:* High  
*Ecological site:* Loamy Upland (pe30-36)  
*Land capability (nonirrigated):* 4e

*Typical Profile:*

H1—0 to 6 inches; silty clay loam  
H2—6 to 64 inches; silty clay

**Minor Components****Norge**

*Composition:* About 15 percent  
*Slope:* 1 to 3 percent  
*Drainage class:* Well drained  
*Ecological site:* Loamy Upland (pe25-34)

**Tu—Tully silty clay loam, 4 to 7 percent slopes****Map Unit Composition**

Tully: 90 percent  
Minor components: 10 percent

**Component Descriptions****Tully**

*MLRA:* 76 - Bluestem Hills  
*Landform:* Hillslope on upland  
*Parent material:* Clayey colluvium  
*Slope:* 4 to 7 percent  
*Drainage class:* Well drained  
*Slowest permeability:* Slow (About 0.06 in/hr)  
*Available water capacity:* Moderate (About 8.5 inches)  
*Shrink-swell potential:* High (About 7.5 LEP)  
*Flooding hazard:* None  
*Depth to seasonal water saturation:* More than 6 feet  
*Runoff class:* Very high  
*Ecological site:* Loamy Upland (pe30-36)  
*Land capability (nonirrigated):* 3e

*Typical Profile:*

H1—0 to 10 inches; silty clay loam  
H2—10 to 64 inches; silty clay

**Minor Components****Irwin**

*Composition:* About 5 percent  
*Geomorphic Position:* hillside on upland  
*Slope:* 0 to 1 percent  
*Drainage class:* Moderately well drained  
*Ecological site:* Clay Upland (pe25-34)

**Norge**

*Composition:* About 5 percent  
*Slope:* 1 to 3 percent  
*Drainage class:* Well drained  
*Ecological site:* Loamy Upland (pe25-34)

**Va—Vanoss silt loam, 0 to 1 percent slopes****Map Unit Composition**

Vanoss: 95 percent  
Minor components: 5 percent

**Component Descriptions****Vanoss**

*MLRA:* 75 - Central Loess Plains  
*Landform:* Hillslope on upland  
*Parent material:* Silty alluvium  
*Slope:* 0 to 1 percent  
*Drainage class:* Well drained  
*Slowest permeability:* Moderate (About 0.60 in/hr)  
*Available water capacity:* High (About 11.2 inches)  
*Shrink-swell potential:* Moderate (About 4.5 LEP)  
*Flooding hazard:* None  
*Depth to seasonal water saturation:* More than 6 feet  
*Runoff class:* Negligible  
*Ecological site:* Loamy Upland (pe25-34)  
*Land capability (nonirrigated):* 1

*Typical Profile:*

H1—0 to 12 inches; silt loam  
H2—12 to 18 inches; silty clay loam  
H3—18 to 35 inches; silty clay loam  
H4—35 to 57 inches; silty clay loam

**Minor Components****Norge**

*Composition:* About 5 percent  
*Slope:* 1 to 3 percent  
*Drainage class:* Well drained  
*Ecological site:* Loamy Upland (pe25-34)

**Vb—Vanoss silt loam, 1 to 3 percent slopes****Map Unit Composition**

Vanoss: 85 percent  
Minor components: 15 percent

**Component Descriptions****Vanoss**

*MLRA:* 75 - Central Loess Plains  
*Landform:* Hillslope on upland  
*Parent material:* Silty alluvium  
*Slope:* 1 to 3 percent  
*Drainage class:* Well drained  
*Slowest permeability:* Moderate (About 0.60 in/hr)  
*Available water capacity:* High (About 11.2 inches)  
*Shrink-swell potential:* Moderate (About 4.5 LEP)  
*Flooding hazard:* None  
*Depth to seasonal water saturation:* More than 6 feet  
*Runoff class:* Low  
*Ecological site:* Loamy Upland (pe25-34)  
*Land capability (nonirrigated):* 2e

*Typical Profile:*  
 H1—0 to 12 inches; silt loam  
 H2—12 to 18 inches; silty clay loam  
 H3—18 to 35 inches; silty clay loam  
 H4—35 to 57 inches; silty clay loam

#### Minor Components

##### Norge

*Composition:* About 8 percent  
*Slope:* 1 to 3 percent  
*Drainage class:* Well drained  
*Ecological site:* Loamy Upland (pe25-34)

##### Tully

*Composition:* About 7 percent  
*Slope:* 4 to 7 percent  
*Drainage class:* Well drained  
*Ecological site:* Loamy Upland (pe30-36)

### Vd—Verdigris silt loam, occasionally flooded

#### Map Unit Composition

Verdigris: 90 percent  
 Minor components: 10 percent

#### Component Descriptions

##### Verdigris

*MLRA:* 75 - Central Loess Plains, 76 - Bluestem Hills  
*Landform:* Flood plain on river valley  
*Parent material:* Silty alluvium  
*Slope:* 0 to 3 percent  
*Drainage class:* Moderately well drained  
*Slowest permeability:* Moderate (About 0.60 in/hr)

*Available water capacity:* High (About 11.6 inches)  
*Shrink-swell potential:* Moderate (About 4.5 LEP)  
*Flooding hazard:* Occasional  
*Depth to seasonal water saturation:* More than 6 feet  
*Runoff class:* Low  
*Ecological site:* Loamy Lowland (pe30-36)  
*Land capability (nonirrigated):* 2w

##### Typical Profile:

H1—0 to 8 inches; silt loam  
 H2—8 to 57 inches; silty clay loam

#### Minor Components

##### Brewer

*Composition:* About 10 percent  
*Slope:* 0 to 1 percent  
*Drainage class:* Moderately well drained  
*Ecological site:* Loamy Terrace (pe25-34)

### Ve—Verdigris Soils, frequently flooded

#### Map Unit Composition

Verdigris: 85 percent  
 Minor components: 10 percent

#### Component Descriptions

##### Verdigris

*MLRA:* 75 - Central Loess Plains, 76 - Bluestem Hills  
*Landform:* Flood plain on river valley  
*Parent material:* Silty alluvium  
*Slope:* 0 to 3 percent  
*Drainage class:* Moderately well drained  
*Slowest permeability:* Moderate (About 0.60 in/hr)  
*Available water capacity:* High (About 11.6 inches)  
*Shrink-swell potential:* Moderate (About 4.5 LEP)  
*Flooding hazard:* Frequent  
*Depth to seasonal water saturation:* More than 6 feet  
*Runoff class:* Low  
*Ecological site:* Loamy Lowland (pe30-36)  
*Land capability (nonirrigated):* 5w  
*Typical Profile:*  
 H1—0 to 8 inches; silt loam  
 H2—8 to 57 inches; silty clay loam

**Minor Components**

**Tully**

*Composition:* About 10 percent

*Slope:* 4 to 7 percent

*Drainage class:* Well drained

*Ecological site:* Loamy Upland (pe30-36)

**W—Water**