

**009DT—Dillwyn-Tivoli complex, 0 to 15 percent slopes****Map Unit Composition**

Dillwyn: 60 percent  
Tivoli: 40 percent

**Component Descriptions****Dillwyn**

*MLRA:* 79 - Great Bend Sand Plains  
*Landform:* Interdune on paleoterrace on river valley, dune on paleoterrace on river valley  
*Parent material:* Sandy eolian deposits  
*Slope:* 0 to 2 percent  
*Drainage class:* Somewhat poorly drained  
*Slowest permeability:* Rapid (About 5.95 in/hr)  
*Available water capacity:* Low (About 4.9 inches)  
*Shrink-swell potential:* Low (About 1.5 LEP)  
*Flooding hazard:* None  
*Depth to seasonal water saturation:* About 12 to 36 inches  
*Runoff class:* Very low  
*Ecological site:* Subirrigated (pe21-28)  
*Land capability (nonirrigated):* 4w

*Typical Profile:*

H1—0 to 8 inches; loamy fine sand  
H2—8 to 60 inches; loamy fine sand

**Tivoli**

*MLRA:* 79 - Great Bend Sand Plains  
*Landform:* Dune on paleoterrace on river valley  
*Parent material:* Sandy eolian deposits  
*Slope:* 5 to 15 percent  
*Drainage class:* Excessively drained  
*Slowest permeability:* Rapid (About 5.95 in/hr)  
*Available water capacity:* Very low (About 3.0 inches)  
*Shrink-swell potential:* Low (About 1.5 LEP)  
*Flooding hazard:* None  
*Depth to seasonal water saturation:* More than 6 feet  
*Runoff class:* Very low  
*Ecological site:* Sands (pe21-28)  
*Land capability (nonirrigated):* 7e

*Typical Profile:*

H1—0 to 6 inches; fine sand  
H2—6 to 60 inches; fine sand

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

*Phase:* Sandy, Depression

**009TV—Tivoli fine sand, 15 to 30 percent slopes****Map Unit Composition**

Tivoli: 100 percent

**Component Descriptions****Tivoli**

*MLRA:* 79 - Great Bend Sand Plains  
*Landform:* Dune on paleoterrace on river valley  
*Parent material:* Sandy eolian deposits  
*Slope:* 5 to 30 percent  
*Drainage class:* Excessively drained  
*Slowest permeability:* Rapid (About 5.95 in/hr)  
*Available water capacity:* Very low (About 3.0 inches)  
*Shrink-swell potential:* Low (About 1.5 LEP)  
*Flooding hazard:* None  
*Depth to seasonal water saturation:* More than 6 feet  
*Runoff class:* Very low  
*Ecological site:* Choppy Sands (pe21-28)  
*Land capability (nonirrigated):* 7e

*Typical Profile:*

H1—0 to 6 inches; fine sand  
H2—6 to 60 inches; fine sand

**Minor Components**  
**Unnamed Hydric Soil****047CS—Carwile-Drummond complex, 0 to 1 percent slopes****Map Unit Composition**

Carwile: 90 percent  
Drummond: 10 percent

## Component Descriptions

### Carwile

*MLRA:* 79 - Great Bend Sand Plains

*Landform:* Depression on paleoterrace on river valley

*Parent material:* Alluvium

*Slope:* 0 to 1 percent

*Drainage class:* Somewhat poorly drained

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

*Available water capacity:* High (About 9.4 inches)

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

*Flooding hazard:* None

*Ponding hazard:* Frequent

*Depth to seasonal water saturation:* About 0 to 0 inches

*Runoff class:* Negligible

*Ecological site:* Sandy (pe21-28)

*Land capability (nonirrigated):* 2w

#### *Typical Profile:*

H1—0 to 11 inches; fine sandy loam

H2—11 to 17 inches; sandy clay loam

H3—17 to 42 inches; clay

H4—42 to 60 inches; clay loam

### Drummond

*MLRA:* 79 - Great Bend Sand Plains

*Landform:* Terrace on river valley

*Parent material:* Clayey and/or loamy alluvium

*Slope:* 0 to 1 percent

*Drainage class:* Moderately well drained

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

*Available water capacity:* Low (About 3.7 inches)

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

*Flooding hazard:* None

*Depth to seasonal water saturation:* About 24 to 72 inches

*Runoff class:* Negligible

*Ecological site:* Saline Lowland (pe21-28)

*Land capability (nonirrigated):* 6s

#### *Typical Profile:*

H1—0 to 8 inches; fine sandy loam

H2—8 to 30 inches; clay loam

H3—30 to 30 inches;

### Minor Components

#### Unnamed Wet Soils

*Phase:* Loamy, Depression

## 151KP—Kanza-Plevna complex, frequently flooded

### Map Unit Composition

Kanza: 50 percent

Plevna: 50 percent

## Component Descriptions

### Kanza

*MLRA:* 79 - Great Bend Sand Plains

*Landform:* Flood plain on river valley

*Parent material:* Alluvium

*Slope:* 0 to 2 percent

*Drainage class:* Poorly drained

*Slowest permeability:* Rapid (About 5.95 in/hr)

*Available water capacity:* Low (About 3.8 inches)

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

*Flooding hazard:* Frequent

*Depth to seasonal water saturation:* About 0 to 36 inches

*Runoff class:* Negligible

*Land capability (nonirrigated):* 5w

#### *Typical Profile:*

H1—0 to 11 inches; loamy fine sand

H2—11 to 40 inches; fine sand

### Plevna

*MLRA:* 79 - Great Bend Sand Plains

*Landform:* Flood plain on river valley

*Parent material:* Alluvium

*Slope:* 0 to 1 percent

*Drainage class:* Poorly drained

*Slowest permeability:* Moderately rapid (About 2.00 in/hr)

*Available water capacity:* Moderate (About 6.9 inches)

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

*Flooding hazard:* Frequent

*Depth to seasonal water saturation:* About 0 to 24 inches

*Runoff class:* Negligible

*Ecological site:* Subirrigated (pe21-28)

*Land capability (nonirrigated):* 5w

#### *Typical Profile:*

H1—0 to 10 inches; fine sandy loam

H2—10 to 40 inches; fine sandy loam

H3—40 to 60 inches; fine sand

**159DP—Dillwyn-Plevna loamy fine sands, 0 to 1 percent slopes****Map Unit Composition**

Dillwyn: 60 percent  
Plevna: 40 percent

**Component Descriptions****Dillwyn**

*MLRA:* 79 - Great Bend Sand Plains

*Landform:* Interdune on paleoterrace on river valley, dune on paleoterrace on river valley

*Parent material:* Sandy eolian deposits

*Slope:* 0 to 1 percent

*Drainage class:* Somewhat poorly drained

*Slowest permeability:* Rapid (About 5.95 in/hr)

*Available water capacity:* Low (About 4.9 inches)

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

*Flooding hazard:* None

*Depth to seasonal water saturation:* About 12 to 36 inches

*Runoff class:* Negligible

*Ecological site:* Subirrigated (pe21-28)

*Land capability (nonirrigated):* 4w

*Typical Profile:*

H1—0 to 9 inches; loamy fine sand

H2—9 to 60 inches; loamy fine sand

**Plevna**

*MLRA:* 79 - Great Bend Sand Plains

*Landform:* Flood plain on river valley

*Parent material:* Alluvium

*Slope:* 0 to 1 percent

*Drainage class:* Poorly drained

*Slowest permeability:* Moderately rapid (About 2.00 in/hr)

*Available water capacity:* Low (About 5.9 inches)

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

*Flooding hazard:* Frequent

*Depth to seasonal water saturation:* About 0 to 24 inches

*Runoff class:* Negligible

*Ecological site:* Subirrigated (pe21-28)

*Land capability (nonirrigated):* 5w

*Typical Profile:*

H1—0 to 10 inches; loamy fine sand

H2—10 to 33 inches; fine sandy loam

H3—33 to 60 inches; fine sand

**159DT—Dillwyn-Tivoli complex, 0 to 20 percent slopes****Map Unit Composition**

Dillwyn: 60 percent  
Tivoli: 40 percent

**Component Descriptions****Dillwyn**

*MLRA:* 79 - Great Bend Sand Plains

*Landform:* Interdune on paleoterrace on river valley, dune on paleoterrace on river valley

*Parent material:* Sandy eolian deposits

*Slope:* 0 to 2 percent

*Drainage class:* Somewhat poorly drained

*Slowest permeability:* Rapid (About 5.95 in/hr)

*Available water capacity:* Low (About 4.9 inches)

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

*Flooding hazard:* None

*Depth to seasonal water saturation:* About 12 to 36 inches

*Runoff class:* Negligible

*Ecological site:* Subirrigated (pe21-28)

*Land capability (nonirrigated):* 4w

*Typical Profile:*

H1—0 to 9 inches; loamy fine sand

H2—9 to 60 inches; fine sand

**Tivoli**

*MLRA:* 79 - Great Bend Sand Plains

*Landform:* Dune on paleoterrace on river valley

*Parent material:* Sandy eolian deposits

*Slope:* 5 to 20 percent

*Drainage class:* Excessively drained

*Slowest permeability:* Rapid (About 5.95 in/hr)

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

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

*Flooding hazard:* None

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

*Runoff class:* Very low

*Ecological site:* Choppy Sands (pe21-28)

*Land capability (nonirrigated):* 7e

*Typical Profile:*

H1—0 to 7 inches; fine sand

H2—7 to 60 inches; fine sand

**Minor Components****Plevna****Unnamed Wet Soils***Phase: Sandy, Depression***159DU—Drummond complex, 0 to 1 percent slopes****Map Unit Composition**

Drummond: 100 percent

**Component Descriptions****Drummond***MLRA: 79 - Great Bend Sand Plains**Landform: Terrace on river valley**Parent material: Clayey and/or loamy alluvium**Slope: 0 to 1 percent**Drainage class: Somewhat poorly drained**Slowest permeability: Very slow (About 0.00 in/hr)**Available water capacity: Low (About 4.9 inches)**Shrink-swell potential: High (About 7.5 LEP)**Flooding hazard: None**Depth to seasonal water saturation: About 24 to 72 inches**Runoff class: Negligible**Ecological site: Saline Lowland (pe21-28)**Land capability (nonirrigated): 6s**Typical Profile:*

H1—0 to 8 inches; silty clay loam

H2—8 to 35 inches; silty clay loam

H3—35 to 60 inches; silty clay loam

**Minor Components****Unnamed Wet Soils***Phase: Clayey, Depression***159PE—Plevna fine sandy loam, frequently flooded****Map Unit Composition**

Plevna: 100 percent

**Component Descriptions****Plevna***MLRA: 79 - Great Bend Sand Plains**Landform: Flood plain on river valley**Parent material: Alluvium**Slope: 0 to 1 percent**Drainage class: Poorly drained**Slowest permeability: Moderately rapid (About 2.00 in/hr)**Available water capacity: Moderate (About 6.3 inches)**Shrink-swell potential: Low (About 1.5 LEP)**Flooding hazard: Frequent**Depth to seasonal water saturation: About 0 to 24 inches**Runoff class: Negligible**Ecological site: Subirrigated (pe21-28)**Land capability (nonirrigated): 5w**Typical Profile:*

H1—0 to 10 inches; fine sandy loam

H2—10 to 33 inches; fine sandy loam

H3—33 to 60 inches; fine sand

**990—Abbyville loam, 0 to 1 percent slopes***Mapunit Information:* The soils in this map unit generally have a non-saline surface layer. The subsoils are very slightly to slightly saline with a high content of adsorbed sodium.**Map Unit Composition**

Abbyville: 95 percent

Minor components: 5 percent

**Component Descriptions****Abbyville***MLRA: 79 - Great Bend Sand Plains**Landform: Terrace on river valley**Parent material: Loamy alluvium**Slope: 0 to 1 percent**Drainage class: Somewhat poorly drained**Slowest permeability: Slow (About 0.06 in/hr)**Available water capacity: Moderate (About 7.2 inches)**Shrink-swell potential: Moderate (About 4.5 LEP)**Flooding hazard: None*

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

*Runoff class:* Very low

*Ecological site:* Saline Subirrigated (pe21-28)

*Land capability (irrigated):* 3s

*Land capability (nonirrigated):* 3s

*Typical Profile:*

A—0 to 8 inches; loam

Btknz1—8 to 15 inches; sandy clay loam

Btknz2—15 to 24 inches; clay loam

Btknz3—24 to 35 inches; clay loam

Btknz4—35 to 49 inches; clay loam

Btkn1—49 to 61 inches; sandy clay loam

Btkn2—61 to 69 inches; loam

Btkn3—69 to 80 inches; clay loam

*Component note:* This soil was formerly mapped as Slickspots. Included with this soil in mapping are small areas that have a fine sandy loam or clay loam surface texture. Also included with this soil in mapping are small areas with very slightly to slightly saline surface layer.

### Minor Components

#### Kisiwa

*Composition:* About 5 percent

*Slope:* 0 to 1 percent

*Drainage class:* Poorly drained

*Ecological site:* Saline Subirrigated (pe21-28)

*General Considerations:* This map unit is poorly suited to the commonly grown crops due to the sodic conditions and wetness. Most areas are used for pasture or range. For areas that are cropped, the hazard of wind or water erosion is slight. Maintaining soil tilth and soil crusting are problems, but they can be improved by adding organic matter. The high sodium content, pH, soluble salts, and water table limit the engineering uses of these soils.

## 991—Abbyville-Kisiwa complex, 0 to 2 percent slopes, flooded

*Mapunit Information:* The Abbyville and Kisiwa soils have a high content of adsorbed sodium. Surface soluble salt content is variable in these two soils. The Saxman soils are sandy and occur on natural levees and high flood plains where sandy sediments have accumulated. The Abbyville soils are on high flood plains and are rarely flooded.

The Kisiwa soils are lower on the landscape and are occasionally flooded.

## Map Unit Composition

Abbyville: 45 percent

Kisiwa: 40 percent

Minor components: 15 percent

## Component Descriptions

### Abbyville

*MLRA:* 79 - Great Bend Sand Plains

*Landform:* Terrace on river valley

*Parent material:* Loamy alluvium

*Slope:* 0 to 2 percent

*Drainage class:* Somewhat poorly drained

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

*Available water capacity:* Moderate (About 7.1 inches)

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

*Flooding hazard:* Rare

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

*Runoff class:* Very low

*Ecological site:* Saline Subirrigated (pe21-28)

*Land capability (irrigated):* 3s

*Land capability (nonirrigated):* 3s

*Typical Profile:*

A—0 to 8 inches; fine sandy loam

Btknz1—8 to 15 inches; sandy clay loam

Btknz2—15 to 24 inches; clay loam

Btknz3—24 to 35 inches; clay loam

Btknz4—35 to 49 inches; clay loam

Btkn1—49 to 61 inches; sandy clay loam

Btkn2—61 to 69 inches; loam

Btkn3—69 to 80 inches; clay loam

*Component note:* This soil was formerly mapped as Slickspots. Included with this soil in mapping are small areas that have a fine sandy loam or clay loam surface texture. Also included with this soil in mapping are small areas with very slightly to slightly saline surface layer. In some places there are slope inclusions of greater than 1 percent.

### Kisiwa

*MLRA:* 79 - Great Bend Sand Plains

*Landform:* Flood plain on river valley, terrace on river valley

*Parent material:* Loamy alluvium over clayey alluvium

*Slope:* 0 to 2 percent

*Drainage class:* Poorly drained

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

*Available water capacity:* Moderate (About 8.7 inches)

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

*Flooding hazard:* Occasional

*Ponding hazard:* Occasional

*Depth to seasonal water saturation:* About 0 to 0 inches

*Runoff class:* Very low

*Ecological site:* Saline Subirrigated (pe21-28)

*Land capability (nonirrigated):* 4s

*Typical Profile:*

Ap1—0 to 4 inches; loam

Ap2—4 to 7 inches; loam

Btkn—7 to 14 inches; clay loam

Btknssg1—14 to 23 inches; clay loam

Btknssg2—23 to 31 inches; clay

Btknssg3—31 to 40 inches; clay

Btknssg4—40 to 46 inches; loam

Btkg—46 to 52 inches; fine sandy loam

BCg—52 to 58 inches; fine sandy loam

Cg—58 to 65 inches; stratified coarse sand to fine sandy loam

2C—65 to 80 inches; stratified coarse sand

*Component note:* This soil was formerly mapped as Slickspots. Included with this soil in mapping are small areas with a fine sandy loam, loam, or loamy fine sand surface texture. Included with this soil are small areas with very slightly saline to moderately saline surface layers. In some places there are slope inclusions of greater than 1 percent.

**Minor Components**

**Saxman**

*Composition:* About 10 percent

*Slope:* 0 to 2 percent

*Drainage class:* Moderately well drained

*Ecological site:* Sandy Lowland (pe21-28)

**Darlow**

*Composition:* About 5 percent

*Slope:* 0 to 2 percent

*Drainage class:* Somewhat poorly drained

*Ecological site:* Clay Pan (pe21-28)

*General Considerations:* This map unit is poorly suited to the commonly grown crops due to the sodic conditions, wetness, and potential flooding. Most areas are used for pasture or range. For areas that are cropped, The hazard of wind erosion is severe on the Abbyville and Saxman soils. Maintaining soil tilth and soil crusting are problems, but they

can be improved by adding organic matter. Ephemeral gully erosion potential is high on the Abbyville and Kisiwa soils. The high sodium content, pH, soluble salts, water tables, and flooding limit the engineering of these soils.

**1005—Albion sandy loam, 1 to 3 percent slopes**

*Mapunit Information:* The Albion soils are generally located on the steeper upper portion of the side slopes.

**Map Unit Composition**

Albion: 75 percent

Minor components: 25 percent

**Component Descriptions**

**Albion**

*MLRA:* 79 - Great Bend Sand Plains

*Landform:* Paleoterrace on river valley

*Parent material:* Loamy alluvium

*Slope:* 1 to 3 percent

*Drainage class:* Well drained

*Slowest permeability:* Moderately rapid (About 2.00 in/hr)

*Available water capacity:* Moderate (About 7.3 inches)

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

*Flooding hazard:* None

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

*Runoff class:* Low

*Ecological site:* Sandy (pe21-28)

*Land capability (nonirrigated):* 3e

*Typical Profile:*

Ap—0 to 9 inches; sandy loam

Bt1—9 to 16 inches; sandy loam

Bt2—16 to 27 inches; sandy loam

BC—27 to 48 inches; loamy coarse sand

C—48 to 80 inches; sand

*Component note:* Included with this soil in mapping are small areas with a gravelly sandy loam, coarse sandy loam, loamy sand, or loamy coarse sand surface texture. Also included with this soil are soils that contain several discontinuous clay lenses occurring within the soil profile between 20 and 80 inches. The clay lenses range in thickness from 1 to 12 inches thick and in texture from silty clay to sandy clay loam.

About 10 to 25 percent of the Albion soils have been subject to moderate erosion, which results in thinner surface layers and low and very low organic matter content. The eroded soils generally have loamy sand, loamy coarse sand, or gravelly loamy coarse sand surface textures.

### Minor Components

#### Shellabarger

*Composition:* About 25 percent  
*Slope:* 1 to 3 percent  
*Drainage class:* Well drained  
*Ecological site:* Sandy (pe21-28)

### Unnamed Wet Soils

*General Considerations:* Most areas are used as cropland, but some areas are in pasture or range. This map unit is moderately well suited to all of the commonly grown crops. Wheat, grain sorghum, soybeans, and irrigated corn are the main crops. The hazard of wind erosion is severe and the hazard of water erosion is moderate for these soils. Ephemeral gully erosion potential is moderate for these soils. Wind and water erosion can be controlled maintaining plant residue through the use of a conservation tillage system, strip cropping, field windbreaks, contour farming, tall grass barriers, terraces and grassed waterways. The moderate water holding capacity of these soils can limit production. This problem can be minimized by increasing organic matter, leaving plant residue, and conservation tillage. In some places, soil test results may show soil reaction (pH) in the strongly acid range. Additions of lime may be required for optimum nutrient balance. The moderately rapid permeability and relatively shallow depths to sandy textures can limit some of the engineering uses of these soils.

## 1011—Albion-Shellabarger sandy loams, 1 to 3 percent slopes

*Mapunit Information:* The Albion soils are generally located on the steeper upper portion of the side slopes. The Shellabarger soils are generally located on the less steep lower side slopes.

## Map Unit Composition

Albion: 70 percent  
 Shellabarger: 30 percent

## Component Descriptions

### Albion

*MLRA:* 79 - Great Bend Sand Plains  
*Landform:* Paleoterrace on river valley  
*Parent material:* Loamy alluvium  
*Slope:* 1 to 3 percent  
*Drainage class:* Well drained  
*Slowest permeability:* Moderately rapid (About 2.00 in/hr)  
*Available water capacity:* Moderate (About 7.3 inches)  
*Shrink-swell potential:* Low (About 1.5 LEP)  
*Flooding hazard:* None  
*Depth to seasonal water saturation:* More than 6 feet  
*Runoff class:* Low  
*Ecological site:* Sandy (pe21-28)  
*Land capability (nonirrigated):* 3e

### Typical Profile:

Ap—0 to 9 inches; sandy loam  
 Bt1—9 to 16 inches; sandy loam  
 Bt2—16 to 27 inches; sandy loam  
 BC—27 to 48 inches; loamy coarse sand  
 C—48 to 80 inches; sand

*Component note:* Included with this soil in mapping are small areas with a gravelly sandy loam, coarse sandy loam, loamy sand, or loamy coarse sand surface texture. Also included with this soil are soils that contain several discontinuous clay lenses occurring within the soil profile between 20 and 80 inches. The clay lenses range in thickness from 1 to 12 inches thick and in texture from silty clay to sandy clay loam. About 10 to 25 percent of the Albion soils have been subject to moderate erosion, which

results in thinner surface layers and low and very low organic matter content. The eroded soils generally have loamy sand, loamy coarse sand, or gravelly loamy coarse sand surface textures.

### Shellabarger

*MLRA:* 79 - Great Bend Sand Plains  
*Landform:* Paleoterrace on river valley  
*Parent material:* Loamy alluvium  
*Slope:* 1 to 3 percent

*Drainage class:* Well drained  
*Slowest permeability:* Moderate (About 0.60 in/hr)  
*Available water capacity:* Moderate (About 8.5 inches)  
*Shrink-swell potential:* Low (About 1.5 LEP)  
*Flooding hazard:* None  
*Depth to seasonal water saturation:* More than 6 feet  
*Runoff class:* Low  
*Ecological site:* Sandy (pe21-28)  
*Land capability (nonirrigated):* 2e

*Typical Profile:*

Ap—0 to 7 inches; sandy loam  
 Bt1—7 to 11 inches; sandy clay loam  
 Bt2—11 to 19 inches; sandy clay loam  
 Bt3—19 to 33 inches; sandy loam  
 BC—33 to 47 inches; coarse sandy loam  
 C1—47 to 59 inches; loamy sand  
 C2—59 to 73 inches; sand  
 C3—73 to 80 inches; sand

*Component note:* These soils are very deep, well drained, moderately permeable soils formed in loamy and sandy old alluvium. They are on positions similar to the Albion soils. These soils have a sandy loam or coarse sandy loam surface texture. The Shellabarger soils contain more clay in the subsoil than Albion soils. Also included in the mapunit are small areas of Nalim Soils. In some places, several laterally discontinuous clay lenses occur within the soil profile between 30 to 80 inches. The lenses range in thickness from 1 to 12 inches thick and also range in texture from silty clay to sandy clay loam.

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

*General Considerations:* Most areas are used as cropland, but some areas are in pasture or range. This map unit is moderately well suited to all of the commonly grown crops. Wheat, grain sorghum, soybeans, and irrigated corn are the main crops. The hazard of wind erosion is severe and the hazard of water erosion is moderate for these soils. Ephemeral gully erosion potential is moderate for these soils. Wind and water erosion can be controlled maintaining plant residue through the use of a conservation tillage system, strip cropping, field windbreaks, contour farming, tall grass barriers, terraces and grassed waterways.

The moderate water holding capacity of these soils can limit production. This problem can be minimized by increasing organic matter, leaving plant residue, and conservation tillage. In some places, soil test results may show soil reaction (pH) in the strongly acid range. Additions of lime may be required for optimum nutrient balance. The moderately rapid permeability and relatively shallow depths to sandy textures can limit some of the engineering uses of these soils.

**1324—Carway and Carbika Soils, 0 to 1 percent slopes**

*Mapunit Information:* Carway soils are in the interdunal areas which sit higher than the Carbika soils in the depressional areas on the paleoterrace.

**Map Unit Composition**

Carway: 50 percent  
 Carbika: 30 percent  
 Minor components: 20 percent

**Component Descriptions**

**Carway**

*MLRA:* 79 - Great Bend Sand Plains  
*Landform:* Interdune on depression on paleoterrace on river valley  
*Parent material:* Loamy eolian deposits over alluvium  
*Slope:* 0 to 1 percent  
*Drainage class:* Somewhat poorly drained  
*Slowest permeability:* Very slow (About 0.00 in/hr)  
*Available water capacity:* High (About 9.0 inches)  
*Shrink-swell potential:* High (About 7.5 LEP)  
*Flooding hazard:* None  
*Ponding hazard:* Frequent  
*Depth to seasonal water saturation:* About 0 to 0 inches  
*Runoff class:* Very low  
*Ecological site:* Subirrigated (pe21-28)  
*Land capability (nonirrigated):* 2w

*Typical Profile:*

Ap—0 to 7 inches; fine sandy loam  
 Bt1—7 to 10 inches; sandy clay loam  
 Bt2—10 to 15 inches; sandy clay loam  
 Bt3—15 to 22 inches; fine sandy loam



Bt4—22 to 35 inches; fine sandy loam  
 2Btb1—35 to 40 inches; clay loam  
 2Btb2—40 to 54 inches; clay loam  
 2Btb3—54 to 63 inches; clay loam  
 2Btb4—63 to 72 inches; clay loam  
 2Btkb—72 to 80 inches; clay loam

*Component note:* This soil was formerly mapped as Carwile. Included with this soil in mapping are small areas with a loamy fine sand surface texture.

### **Carbika**

*MLRA:* 79 - Great Bend Sand Plains

*Landform:* Interdune on depression on paleoterrace on river valley

*Parent material:* Loamy eolian deposits over alluvium

*Slope:* 0 to 1 percent

*Drainage class:* Poorly drained

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

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

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

*Flooding hazard:* None

*Ponding hazard:* Frequent

*Depth to seasonal water saturation:* About 0 to 0 inches

*Runoff class:* Very low

*Ecological site:* Subirrigated (pe21-28)

*Land capability (nonirrigated):* 2w

#### *Typical Profile:*

A—0 to 11 inches; silt loam  
 Bt1—11 to 15 inches; clay  
 Bt2—15 to 22 inches; clay loam  
 Bt3—22 to 34 inches; clay loam  
 Bt4—34 to 41 inches; clay loam  
 Bt5—41 to 60 inches; clay loam  
 Btk—60 to 80 inches; clay loam

*Component note:* This soil was formerly mapped as Carwile.

### **Minor Components**

#### **Solvay**

*Composition:* About 20 percent

*Slope:* 0 to 1 percent

*Drainage class:* Somewhat poorly drained

*Ecological site:* Subirrigated (pe21-28)

*General Considerations:* Most areas are in cropland but, some are in pasture or range. This mapunit is poorly suited for the most commonly grown crops. Wheat and grain sorghum are the predominant crops. The hazard for wind and water erosion is slight. The presence of water tables and potential

for high shrink-swell limit most engineering uses for this mapunit.

## **1359—Clark-Ost loams, 3 to 7 percent slopes**

*Mapunit Information:* Ost soils occur slightly higher on the paleoterrace than Clark soils.

### **Map Unit Composition**

Clark: 70 percent

Ost: 30 percent

### **Component Descriptions**

#### **Clark**

*MLRA:* 79 - Great Bend Sand Plains

*Landform:* Paleoterrace on river valley

*Parent material:* Loamy alluvium

*Slope:* 3 to 7 percent

*Drainage class:* Well drained

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

*Available water capacity:* High (About 10.4 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:* Limy Upland (pe21-28)

*Land capability (nonirrigated):* 2c

#### *Typical Profile:*

Ap—0 to 11 inches; loam  
 Bw—11 to 16 inches; loam  
 Bk1—16 to 28 inches; loam  
 Bk2—28 to 45 inches; fine sandy loam  
 Bck1—45 to 65 inches; fine sandy loam  
 Ck2—65 to 80 inches; very fine sandy loam

*Component note:* Included with this soil in mapping are small areas with a fine sandy loam surface texture. Also included are small areas with slopes of less than 3 percent.

#### **Ost**

*MLRA:* 79 - Great Bend Sand Plains

*Landform:* Paleoterrace on river valley

*Parent material:* Loamy alluvium

*Slope:* 3 to 6 percent

*Drainage class:* Well drained

*Slowest permeability:* Moderately slow (About 0.20 in/hr)  
*Available water capacity:* High (About 10.0 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:* Loamy Upland (pe24-32)  
*Land capability (nonirrigated):* 2c

*Typical Profile:*

Ap—0 to 8 inches; loam  
 Bt1—8 to 12 inches; loam  
 Bt2—12 to 18 inches; loam  
 Bk1—18 to 23 inches; clay loam  
 Bk2—23 to 38 inches; clay loam  
 Bck—38 to 54 inches; loam  
 C—54 to 80 inches; loam

*Component note:* These soils are very deep, well drained, moderately slowly permeable soils formed in loamy alluvium. Some areas may have a fine sandy loam surface texture. In some places there are areas of less than 3 percent slopes.

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

*General Considerations:* Most areas are used as pasture or rangeland. Some areas are used as cropland. The hazard of wind and water erosion is moderately severe. This mapunit is well suited for most engineering practices. The slopes and amount of calcium carbonates can limit some practices.

**1553—Darlow-Elmer complex, 0 to 2 percent slopes**

*Mapunit Information:* Darlow soils generally occur on lower areas of the paleoterrace. The soils in this map unit generally have a non-saline surface layer. The subsoils are very slightly to slightly saline with a high content of adsorbed sodium.

**Map Unit Composition**

Darlow: 70 percent  
 Elmer: 20 percent  
 Minor components: 10 percent

**Component Descriptions**

**Darlow**

*MLRA:* 79 - Great Bend Sand Plains  
*Landform:* Terrace on river valley  
*Parent material:* Loamy 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 7.6 inches)  
*Shrink-swell potential:* Moderate (About 4.5 LEP)  
*Flooding hazard:* None  
*Depth to seasonal water saturation:* More than 6 feet  
*Runoff class:* Very low  
*Ecological site:* Clay Pan (pe21-28)  
*Land capability (irrigated):* 4s  
*Land capability (nonirrigated):* 4s

*Typical Profile:*

Ap1—0 to 5 inches; loam  
 Ap2—5 to 8 inches; loam  
 Btn—8 to 14 inches; loam  
 Btny—14 to 20 inches; clay loam  
 Btknyz—20 to 26 inches; loam  
 Btnz1—26 to 33 inches; loam  
 Btnz2—33 to 44 inches; loam  
 Btn1—44 to 53 inches; loam  
 Btn2—53 to 68 inches; loam  
 2Btn3—68 to 80 inches; sandy loam

*Component note:* This soil was formerly mapped as Farnum-Slickspots. Included with this soil are small areas with a fine sandy loam surface textures. Also included are small areas where the surface layer may be very slightly to slightly saline. In some places there slope inclusions of greater than 1 percent.

**Elmer**

*MLRA:* 79 - Great Bend Sand Plains  
*Landform:* Terrace on river valley  
*Parent material:* Loamy alluvium  
*Slope:* 0 to 2 percent  
*Drainage class:* Moderately well drained  
*Slowest permeability:* Slow (About 0.06 in/hr)  
*Available water capacity:* High (About 9.1 inches)  
*Shrink-swell potential:* High (About 7.5 LEP)  
*Flooding hazard:* None  
*Depth to seasonal water saturation:* More than 6 feet  
*Runoff class:* Very low  
*Ecological site:* Loamy Terrace (pe21-28)  
*Land capability (irrigated):* 3s

*Land capability (nonirrigated): 3s*

**Typical Profile:**

Ap1—0 to 6 inches; fine sandy loam  
 Ap2—6 to 9 inches; fine sandy loam  
 AB—9 to 19 inches; fine sandy loam  
 Btn1—19 to 26 inches; fine sandy loam  
 Btn2—26 to 37 inches; fine sandy loam  
 Btnk1—37 to 43 inches; loam  
 Btnk2—43 to 51 inches; clay loam  
 Btnk3—51 to 61 inches; fine sandy loam  
 Btn1'—61 to 72 inches; fine sandy loam  
 Btn2'—72 to 80 inches; fine sandy loam

**Component note:** This series was formerly mapped as Farnum-Slickspots. These soils are very deep, moderately well drained, slowly permeable saline-sodic soils formed in alluvium. In some places the surface texture may be a loam. In some areas there may be a very slightly to slightly saline surface layer. In some places there are slope inclusions of greater than 1 percent.

**Minor Components**

**Punkin**

*Composition:* About 10 percent  
*Slope:* 0 to 2 percent  
*Drainage class:* Moderately well drained  
*Ecological site:* Clay Pan (pe21-28)

**Carway**

*Slope:* 0 to 1 percent  
*Drainage class:* Somewhat poorly drained  
*Ecological site:* Subirrigated (pe21-28)

**Carbika**

*Slope:* 0 to 1 percent  
*Drainage class:* Poorly drained  
*Ecological site:* Subirrigated (pe21-28)

**General Considerations:** Most areas are in cropland, but some are in pasture or range. This mapunit is moderately well suited for the most commonly grown crops. Wheat and grain sorghum are the major crops. The hazard for wind erosion is severe and water erosion is slight. Maintaining soil tilth and soil crusting are problems but they can be improved by adding organic matter. The high sodium content, pH, and soluble salts can limit the engineering uses of this mapunit.

**1555—Dillhut-Plev complex, 0 to 2 percent slopes**

**Mapunit Information:** Dillhut soils are located on the upper to mid part of the dunes. Dillwyn

soils are located on the lower part of the dune and in the interdunal areas. The Plev soils are located in the depressions between the dunes.

**Map Unit Composition**

Dillhut: 35 percent  
 Plev: 35 percent  
 Minor components: 30 percent

**Component Descriptions**

**Dillhut**

**MLRA:** 79 - Great Bend Sand Plains  
**Landform:** Dune on paleoterrace on river valley  
**Parent material:** Eolian deposits over alluvium  
**Slope:** 0 to 2 percent  
**Drainage class:** Moderately well drained  
**Slowest permeability:** Moderate (About 0.60 in/hr)  
**Available water capacity:** Moderate (About 6.0 inches)  
**Shrink-swell potential:** Low (About 1.5 LEP)  
**Flooding hazard:** None  
**Depth to seasonal water saturation:** More than 6 feet  
**Runoff class:** Very low  
**Ecological site:** Sands (pe21-28)  
**Land capability (irrigated):** 3e  
**Land capability (nonirrigated):** 3e

**Typical Profile:**

A—0 to 4 inches; fine sand  
 AC—4 to 9 inches; fine sand  
 C1—9 to 18 inches; fine sand  
 C2—18 to 26 inches; fine sand  
 2Btb1—26 to 41 inches; fine sandy loam  
 2Btb2—41 to 55 inches; fine sandy loam  
 2BCb1—55 to 65 inches; fine sandy loam  
 2BCb2—65 to 70 inches; fine sandy loam  
 2Cg—70 to 80 inches; fine sandy loam

**Component note:** This soil was formerly mapped as Elsmere. Included with this soil are small areas with a fine sand surface texture.

**Plev**

**MLRA:** 79 - Great Bend Sand Plains  
**Landform:** Depression on paleoterrace on river valley, interdune on paleoterrace on river valley  
**Parent material:** Sandy eolian deposits over loamy alluvium  
**Slope:** 0 to 1 percent  
**Drainage class:** Poorly drained  
**Slowest permeability:** Moderate (About 0.60 in/hr)

*Available water capacity:* Low (About 3.9 inches)  
*Shrink-swell potential:* Low (About 1.5 LEP)  
*Flooding hazard:* None  
*Depth to seasonal water saturation:* About 6 to 6 inches  
*Runoff class:* Very low  
*Ecological site:* Subirrigated (pe21-28)  
*Land capability (nonirrigated):* 5w

*Typical Profile:*

A1—0 to 4 inches; loamy fine sand  
 A2—4 to 12 inches; fine sand  
 Cg1—12 to 35 inches; fine sand  
 Cg2—35 to 46 inches; fine sand  
 2Btgb1—46 to 57 inches; fine sandy loam  
 2Btgb2—57 to 75 inches; fine sandy loam  
 2BCb—75 to 80 inches; loamy fine sand

*Component note:* This soil was formerly mapped as Plevna. Included with this soil are small areas with a fine sand surface texture.

### Minor Components

#### Dillwyn

*Composition:* About 20 percent  
*Slope:* 0 to 2 percent  
*Drainage class:* Somewhat poorly drained  
*Ecological site:* Subirrigated (pe21-28)

#### Warnut

*Composition:* About 10 percent  
*Slope:* 0 to 1 percent  
*Drainage class:* Poorly drained  
*Ecological site:* Subirrigated (pe21-28)

*General Considerations:* Most areas are in pasture or range. This mapunit is poorly suited for most commonly grown crops. The hazard for wind erosion is severe and water erosion is slight. The presence of water tables and sandy textures limits many of the engineering uses of this soil.

## 1556—Dillhut-Solvay complex, 0 to 3 percent slopes

*Mapunit Information:* Dillhut soils occur on upper dunes and Solvay soils occur in the lower interdunal areas.

### Map Unit Composition

Dillhut: 30 percent  
 Solvay: 30 percent  
 Minor components: 40 percent

## Component Descriptions

### Dillhut

*MLRA:* 79 - Great Bend Sand Plains  
*Landform:* Dune on paleoterrace on river valley  
*Parent material:* Eolian deposits over alluvium  
*Slope:* 0 to 3 percent  
*Drainage class:* Moderately well drained  
*Slowest permeability:* Moderate (About 0.60 in/hr)  
*Available water capacity:* Moderate (About 6.0 inches)  
*Shrink-swell potential:* Low (About 1.5 LEP)  
*Flooding hazard:* None  
*Depth to seasonal water saturation:* More than 6 feet  
*Runoff class:* Very low  
*Ecological site:* Sands (pe21-28)  
*Land capability (irrigated):* 3e  
*Land capability (nonirrigated):* 3e

*Typical Profile:*

A—0 to 4 inches; fine sand  
 AC—4 to 9 inches; fine sand  
 C1—9 to 18 inches; fine sand  
 C2—18 to 26 inches; fine sand  
 2Btb1—26 to 41 inches; fine sandy loam  
 2Btb2—41 to 55 inches; fine sandy loam  
 2BCb1—55 to 65 inches; fine sandy loam  
 2BCb2—65 to 70 inches; fine sandy loam  
 2Cg—70 to 80 inches; fine sandy loam

*Component note:* This soil was formerly mapped as Elsmere. Included with this soil are small areas with a fine sand surface texture.

### Solvay

*MLRA:* 79 - Great Bend Sand Plains  
*Landform:* Interdune on paleoterrace on river valley  
*Parent material:* Loamy eolian deposits over alluvium  
*Slope:* 0 to 2 percent  
*Drainage class:* Somewhat poorly drained  
*Slowest permeability:* Moderately slow (About 0.20 in/hr)  
*Available water capacity:* High (About 9.2 inches)  
*Shrink-swell potential:* Low (About 1.5 LEP)  
*Flooding hazard:* None  
*Depth to seasonal water saturation:* About 24 to 48 inches  
*Runoff class:* Very low  
*Ecological site:* Subirrigated (pe21-28)  
*Land capability (nonirrigated):* 2e

**Typical Profile:**

A—0 to 5 inches; fine sandy loam  
 2Bt1—5 to 14 inches; fine sandy loam  
 2Bt2—14 to 23 inches; fine sandy loam  
 2Bt3—23 to 37 inches; fine sandy loam  
 2BC1—37 to 58 inches; fine sandy loam  
 2BC2—58 to 76 inches; loamy fine sand  
 2BC3—76 to 80 inches; loamy fine sand

**Component note:** This soil was formerly mapped as Carwile or Farnum. Included with this soil in mapping are small areas with a loamy fine sand surface texture.

**Minor Components****Dillwyn**

**Composition:** About 25 percent  
**Slope:** 0 to 2 percent  
**Drainage class:** Somewhat poorly drained  
**Ecological site:** Subirrigated (pe21-28)

**Carway**

**Composition:** About 15 percent  
**Slope:** 0 to 2 percent  
**Drainage class:** Somewhat poorly drained  
**Ecological site:** Subirrigated (pe21-28)

**General Considerations:** Most areas are in pasture or range. This mapunit is poorly suited for most commonly grown crops. The hazard for wind erosion is severe and water erosion is slight. The presence of water tables and sandy textures limits many of the engineering uses of this soil.

## 1725—Farnum and Funmar loams, 0 to 1 percent slopes

**Mapunit Information:** The Funmar and Farnum soils are interfingering upon the landscape.

### Map Unit Composition

Funmar: 40 percent  
 Farnum: 40 percent  
 Minor components: 20 percent

### Component Descriptions

**Funmar**

**MLRA:** 79 - Great Bend Sand Plains  
**Landform:** Paleoterrace on river valley  
**Parent material:** Loamy alluvium over alluvium  
**Slope:** 0 to 1 percent  
**Drainage class:** Moderately well drained  
**Slowest permeability:** Slow (About 0.06 in/hr)  
**Available water capacity:** High (About 10.3 inches)

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

**Flooding hazard:** None

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

**Runoff class:** Very low

**Ecological site:** Loamy Upland (pe21-28)

**Land capability (irrigated):** 1

**Land capability (nonirrigated):** 2c

**Typical Profile:**

Ap—0 to 6 inches; loam  
 A—6 to 12 inches; loam  
 Bt1—12 to 17 inches; loam  
 Bt2—17 to 26 inches; clay loam  
 Bt3—26 to 32 inches; loam  
 2Ab—32 to 38 inches; silty clay loam  
 2Btb—38 to 54 inches; silty clay loam  
 2Btkb1—54 to 66 inches; silty clay loam  
 2Btkb2—66 to 80 inches; silty clay loam

**Component note:** This soil was formerly mapped as Farnum and Tabler. Included with this soil are small areas with a surface texture of fine sandy loam. A buried soil occurs below a depth of 32 inches and varies in thickness. The texture of the buried soil varies from sandy clay loam to silty clay and increases in sand content with depth.

**Farnum**

**MLRA:** 79 - Great Bend Sand Plains  
**Landform:** Paleoterrace 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 10.7 inches)  
**Shrink-swell potential:** Moderate (About 4.5 LEP)  
**Flooding hazard:** None  
**Depth to seasonal water saturation:** More than 6 feet  
**Runoff class:** Very low  
**Ecological site:** Loamy Upland (pe21-28)  
**Land capability (irrigated):** 1  
**Land capability (nonirrigated):** 2c

**Typical Profile:**

Ap—0 to 5 inches; loam  
 A—5 to 15 inches; loam  
 Bt1—15 to 21 inches; loam  
 Bt2—21 to 34 inches; sandy clay loam  
 Bt3—34 to 48 inches; loam  
 Bt4—48 to 61 inches; clay loam  
 Bt5—61 to 73 inches; clay loam  
 Btk—73 to 80 inches; loam

*Component note:* Included with this soil are small areas with a fine sandy loam surface texture.

### Minor Components

#### Naron

*Composition:* About 20 percent  
*Slope:* 0 to 1 percent  
*Drainage class:* Well drained  
*Ecological site:* Sandy (pe21-28)

#### Carway

*Slope:* 0 to 1 percent  
*Drainage class:* Somewhat poorly drained  
*Ecological site:* Subirrigated (pe21-28)

#### Carbika

*Slope:* 0 to 1 percent  
*Drainage class:* Poorly drained  
*Ecological site:* Subirrigated (pe21-28)

*General Considerations:* Most areas are in cropland, but some areas are in pasture or range. This mapunit is well suited for the most commonly grown crops. Wheat, grain sorghum, soybeans, and irrigated corn are the predominant crops grown. The hazard for wind and water erosion is slight. The potential for high shrink-swell may limit some of the engineering practices of this mapunit.

## 1726—Funmar and Farnum loams, 1 to 3 percent slopes

*Mapunit Information:* The Funmar and Farnum soils are interfingering upon the landscape.

### Map Unit Composition

Farnum: 40 percent  
 Funmar: 40 percent  
 Minor components: 20 percent

### Component Descriptions

#### Farnum

*MLRA:* 79 - Great Bend Sand Plains  
*Landform:* Paleoterrace on river valley  
*Parent material:* Alluvium  
*Slope:* 1 to 3 percent  
*Drainage class:* Well drained  
*Slowest permeability:* Moderate (About 0.60 in/hr)  
*Available water capacity:* High (About 10.7 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 (pe21-28)

*Land capability (irrigated):* 1

*Land capability (nonirrigated):* 2c

#### Typical Profile:

Ap—0 to 5 inches; loam  
 A—5 to 15 inches; loam  
 Bt1—15 to 21 inches; loam  
 Bt2—21 to 34 inches; sandy clay loam  
 Bt3—34 to 48 inches; loam  
 Bt4—48 to 61 inches; clay loam  
 Bt5—61 to 73 inches; clay loam  
 Btk—73 to 80 inches; loam

*Component note:* Included with this soil are small areas with a fine sandy loam surface texture.

#### Funmar

*MLRA:* 79 - Great Bend Sand Plains  
*Landform:* Paleoterrace on river valley  
*Parent material:* Loamy alluvium over alluvium  
*Slope:* 1 to 3 percent  
*Drainage class:* Moderately well drained  
*Slowest permeability:* Slow (About 0.06 in/hr)  
*Available water capacity:* High (About 10.3 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 (pe21-28)  
*Land capability (irrigated):* 1  
*Land capability (nonirrigated):* 2c

#### Typical Profile:

Ap—0 to 6 inches; loam  
 A—6 to 12 inches; loam  
 Bt1—12 to 17 inches; loam  
 Bt2—17 to 26 inches; clay loam  
 Bt3—26 to 32 inches; loam  
 2Ab—32 to 38 inches; silty clay loam  
 2Btb—38 to 54 inches; silty clay loam  
 2Btkb1—54 to 66 inches; silty clay loam  
 2Btkb2—66 to 80 inches; silty clay loam

*Component note:* This soil was formerly mapped as Farnum and Tabler. Included with this soil are small areas with a surface texture of fine sandy loam. A buried soil occurs below a depth of 32 inches and varies in thickness. The texture of the buried soil varies from

sandy clay loam to silty clay and increases in sand content with depth.

### Minor Components

#### Naron

*Composition:* About 20 percent  
*Slope:* 1 to 3 percent  
*Drainage class:* Well drained  
*Ecological site:* Sandy (pe21-28)

#### Carbika

*Slope:* 0 to 1 percent  
*Drainage class:* Poorly drained  
*Ecological site:* Subirrigated (pe21-28)

#### Carway

*Slope:* 0 to 1 percent  
*Drainage class:* Somewhat poorly drained  
*Ecological site:* Subirrigated (pe21-28)

*General Considerations:* Most areas are in cropland, but some areas are in pasture or range. This mapunit is well suited for the most commonly grown crops. Wheat, grain sorghum, soybeans, and irrigated corn are the predominant crops grown. The hazard for wind and water erosion is slight. The potential for high shrink-swell may limit some of the engineering practices of this mapunit.

## 1985—Hayes fine sandy loam, 1 to 5 percent slopes

*Mapunit Information:* Hayes soils are usually located higher on the dune than the Attica soils.

### Map Unit Composition

Hayes: 60 percent  
 Minor components: 40 percent

### Component Descriptions

#### Hayes

*MLRA:* 79 - Great Bend Sand Plains  
*Landform:* Dune on paleoterrace on river valley  
*Parent material:* Loamy eolian deposits over clayey alluvium  
*Slope:* 1 to 5 percent  
*Drainage class:* Well drained  
*Slowest permeability:* Slow (About 0.06 in/hr)  
*Available water capacity:* Moderate (About 8.1 inches)  
*Shrink-swell potential:* Low (About 1.5 LEP)  
*Flooding hazard:* None

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

*Runoff class:* Low

*Ecological site:* Sandy (pe21-28)

*Land capability (irrigated):* 3e

*Land capability (nonirrigated):* 3e

#### Typical Profile:

Ap—0 to 8 inches; fine sandy loam  
 Bt1—8 to 14 inches; fine sandy loam  
 Bt2—14 to 23 inches; fine sandy loam  
 Bt3—23 to 34 inches; fine sandy loam  
 Bt4—34 to 42 inches; fine sandy loam  
 Ab—42 to 47 inches; fine sandy loam  
 2Btb1—47 to 56 inches; sandy clay loam  
 2Btb2—56 to 69 inches; silty clay  
 2Btb3—69 to 80 inches; clay loam

*Component note:* This soil was formerly mapped as Naron or Pratt. A buried soil exists below 40 inches. The buried soil varies in thickness and the texture ranges from sandy clay loam to silty clay. The texture of the buried soil generally increases in sand content with increasing depth. Included in this unit are small areas of slopes greater than 2 percent.

### Minor Components

#### Attica

*Composition:* About 25 percent  
*Slope:* 1 to 5 percent  
*Drainage class:* Well drained  
*Ecological site:* Sandy (pe21-28)

#### Saltcreek

*Composition:* About 15 percent  
*Slope:* 1 to 5 percent  
*Drainage class:* Well drained  
*Ecological site:* Sandy (pe21-28)

*General Considerations:* Most areas are used for cropland, but some areas are in pasture or range. This mapunit is moderately well suited for most commonly grown crops. Wheat, grain sorghum, and irrigated corn are the predominant crops. The hazard for wind erosion is moderate and water erosion is slight. The high shrink-swell potential may limit some of the engineering uses of the soil.

## 1986—Hayes-Solvay loamy fine sands, 0 to 5 percent slopes

*Mapunit Information:* Hayes soils occur on the mid to upper parts of the dunes. The Solvay

soils are in interdunal positions on the paleoterrace.

### Map Unit Composition

Hayes: 55 percent  
Solvay: 20 percent  
Minor components: 25 percent

### Component Descriptions

#### Hayes

*MLRA:* 79 - Great Bend Sand Plains

*Landform:* Dune on paleoterrace on river valley

*Parent material:* Loamy eolian deposits over clayey alluvium

*Slope:* 0 to 5 percent

*Drainage class:* Well drained

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

*Available water capacity:* Moderate (About 7.8 inches)

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

*Flooding hazard:* None

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

*Runoff class:* Low

*Ecological site:* Sandy (pe21-28)

*Land capability (irrigated):* 3e

*Land capability (nonirrigated):* 3e

#### Typical Profile:

Ap—0 to 8 inches; loamy fine sand  
Bt1—8 to 14 inches; fine sandy loam  
Bt2—14 to 23 inches; fine sandy loam  
Bt3—23 to 34 inches; fine sandy loam  
Bt4—34 to 42 inches; fine sandy loam  
Ab—42 to 47 inches; fine sandy loam  
2Btb1—47 to 56 inches; sandy clay loam  
2Btb2—56 to 69 inches; silty clay  
2Btb3—69 to 80 inches; clay loam

*Component note:* This soil was formerly mapped as Naron or Pratt. A buried soil exists below 40 inches. The buried soil varies in thickness and the texture ranges from sandy clay loam to silty clay. The texture of the buried soil generally increases in sand content with increasing depth. Included in this unit are small areas of slopes greater than 2 percent.

#### Solvay

*MLRA:* 79 - Great Bend Sand Plains

*Landform:* Interdune on paleoterrace on river valley

*Parent material:* Loamy eolian deposits over alluvium

*Slope:* 0 to 2 percent

*Drainage class:* Somewhat poorly drained

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

*Available water capacity:* Moderate (About 9.0 inches)

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

*Flooding hazard:* None

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

*Runoff class:* Very low

*Ecological site:* Subirrigated (pe21-28)

*Land capability (nonirrigated):* 2e

#### Typical Profile:

A—0 to 5 inches; loamy fine sand  
2Bt1—5 to 14 inches; fine sandy loam  
2Bt2—14 to 23 inches; fine sandy loam  
2Bt3—23 to 37 inches; fine sandy loam  
2BC1—37 to 58 inches; fine sandy loam  
2BC2—58 to 76 inches; loamy fine sand  
2BC3—76 to 80 inches; loamy fine sand

*Component note:* This soil was formerly mapped as Carwile and Farnum. Included with this soil in mapping are small areas with a loamy fine sand surface texture.

### Minor Components

#### Carway

*Composition:* About 15 percent

*Slope:* 0 to 1 percent

*Drainage class:* Somewhat poorly drained

*Ecological site:* Subirrigated (pe21-28)

#### Farnum

*Composition:* About 10 percent

*Slope:* 0 to 1 percent

*Drainage class:* Well drained

*Ecological site:* Loamy Upland (pe21-28)

*General Considerations:* Most areas are used for cropland, but some areas are in pasture or range. This mapunit is somewhat poorly suited for most commonly grown crops. Wheat and grain sorghum are the predominant crops grown. The hazard for wind erosion is severe and water erosion is slight. Wind erosion can be controlled by plant residue management, conservation tillage, and tall grass barriers. The high water tables, high shrink-swell potential, and sandy textures will limit most engineering uses of this mapunit.



## 1987—Hayes-Turon complex, 0 to 5 percent slopes

*Mapunit Information:* Hayes soils occur on the mid to upper parts of the dunes. The Turon soils usually occur higher on the dune. Naron soils occur on the flatter parts of the dune.

### Map Unit Composition

Hayes: 40 percent  
Turon: 35 percent  
Minor components: 25 percent

### Component Descriptions

#### Hayes

*MLRA:* 79 - Great Bend Sand Plains  
*Landform:* Dune on paleoterrace on river valley  
*Parent material:* Loamy eolian deposits over clayey alluvium  
*Slope:* 0 to 5 percent  
*Drainage class:* Well drained  
*Slowest permeability:* Slow (About 0.06 in/hr)  
*Available water capacity:* Moderate (About 7.8 inches)  
*Shrink-swell potential:* Low (About 1.5 LEP)  
*Flooding hazard:* None  
*Depth to seasonal water saturation:* More than 6 feet  
*Runoff class:* Low  
*Ecological site:* Sandy (pe21-28)  
*Land capability (irrigated):* 3e  
*Land capability (nonirrigated):* 3e

#### Typical Profile:

Ap—0 to 8 inches; loamy fine sand  
Bt1—8 to 14 inches; fine sandy loam  
Bt2—14 to 23 inches; fine sandy loam  
Bt3—23 to 34 inches; fine sandy loam  
Bt4—34 to 42 inches; fine sandy loam  
Ab—42 to 47 inches; fine sandy loam  
2Btb1—47 to 56 inches; sandy clay loam  
2Btb2—56 to 69 inches; silty clay  
2Btb3—69 to 80 inches; clay loam

*Component note:* This soil was formerly mapped as Naron or Pratt. A buried soil exists below 40 inches. The buried soil varies in thickness and the texture ranges from sandy clay loam to silty clay. The texture of the buried soil generally increases in sand content with increasing depth. Included in this unit are small areas of slopes greater than 5 percent.

#### Turon

*MLRA:* 79 - Great Bend Sand Plains  
*Landform:* Dune on paleoterrace on river valley  
*Parent material:* Sandy eolian deposits over alluvium  
*Slope:* 0 to 5 percent  
*Drainage class:* Well drained  
*Slowest permeability:* Very slow (About 0.00 in/hr)  
*Available water capacity:* Moderate (About 7.1 inches)  
*Shrink-swell potential:* Low (About 1.5 LEP)  
*Flooding hazard:* None  
*Depth to seasonal water saturation:* More than 6 feet  
*Runoff class:* Low  
*Ecological site:* Sands (pe21-28)  
*Land capability (irrigated):* 3e  
*Land capability (nonirrigated):* 3e

#### Typical Profile:

Ap—0 to 8 inches; fine sand  
Bt—8 to 28 inches; loamy fine sand  
E&Bt—28 to 40 inches; stratified loamy fine sand to fine sandy loam  
2Btb1—40 to 58 inches; silty clay  
2Btb2—58 to 75 inches; silty clay  
2Btb3—75 to 80 inches; silty clay

*Component note:* This soil was formerly mapped as Pratt. A buried soil occurs below a depth of 40 inches. The buried soil varies in thickness and in texture. The texture varies from sandy clay loam to silty clay. The texture of the buried soil generally increases in sand content with increasing depth.

### Minor Components

#### Naron

*Composition:* About 15 percent  
*Slope:* 0 to 2 percent  
*Drainage class:* Well drained  
*Ecological site:* Sandy (pe21-28)

#### Solvay

*Composition:* About 10 percent  
*Slope:* 0 to 2 percent  
*Drainage class:* Somewhat poorly drained  
*Ecological site:* Subirrigated (pe21-28)

#### Carway

*Slope:* 0 to 1 percent  
*Drainage class:* Somewhat poorly drained  
*Ecological site:* Subirrigated (pe21-28)

*General Considerations:* Most areas are used for cropland, but some areas are in pasture or range. This mapunit is somewhat poorly suited for most commonly grown crops.

Wheat and grain sorghum are the predominant crops grown. The hazard for wind erosion is severe and water erosion is slight. Wind erosion can be controlled by plant residue management, conservation tillage, and tall grass barriers. The high shrink-swell potential, and sandy textures will limit most engineering uses of this mapunit.

## 1988—Hayes loamy fine sand, 5 to 10 percent slopes

*Mapunit Information:* Hayes soils are usually located higher on the dune than the Attica soils.

### Map Unit Composition

Hayes: 70 percent  
Minor components: 30 percent

### Component Descriptions

#### Hayes

*MLRA:* 79 - Great Bend Sand Plains

*Landform:* Dune on paleoterrace on river valley

*Parent material:* Loamy eolian deposits over clayey alluvium

*Slope:* 5 to 10 percent

*Drainage class:* Well drained

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

*Available water capacity:* Moderate (About 8.1 inches)

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

*Flooding hazard:* None

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

*Runoff class:* Low

*Ecological site:* Sandy (pe21-28)

*Land capability (irrigated):* 3e

*Land capability (nonirrigated):* 3e

#### Typical Profile:

Ap—0 to 8 inches; fine sandy loam  
Bt1—8 to 14 inches; fine sandy loam  
Bt2—14 to 23 inches; fine sandy loam  
Bt3—23 to 34 inches; fine sandy loam  
Bt4—34 to 42 inches; fine sandy loam  
Ab—42 to 47 inches; fine sandy loam  
2Btb1—47 to 56 inches; sandy clay loam  
2Btb2—56 to 69 inches; silty clay  
2Btb3—69 to 80 inches; clay loam

*Component note:* This soil was formerly mapped as Naron or Pratt. A buried soil exists below 40 inches. The buried soil varies in thickness and the texture ranges from sandy

clay loam to silty clay. The texture of the buried soil generally increases in sand content with increasing depth. Included in this unit are small areas of slopes less than 5 percent.

### Minor Components

#### Pratt

*Composition:* About 30 percent

*Slope:* 5 to 10 percent

*Drainage class:* Well drained

*Ecological site:* Sands (pe21-28)

*General Considerations:* Most areas are used for pasture or range. The hazard for wind erosion is and and water erosion is moderate. The high shrink-swell potential and slope may limit some of the engineering uses of the soil.

## 2110—Intermittent Water (aquolls)

### Map Unit Composition

Aquolls: 100 percent

### Component Descriptions

#### Aquolls

*MLRA:* 79 - Great Bend Sand Plains, 79 - Great Bend Sand Plains

*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.

## 2381—Kanza-Ninnescah sandy loams, 0 to 2 percent slopes, commonly flooded

*Mapunit Information:* Kanza and Ninnescah soils are interfingering upon the floodplain.

### Map Unit Composition

Kanza: 50 percent  
Ninnescah: 50 percent

### Component Descriptions

#### Kanza

*MLRA:* 79 - Great Bend Sand Plains

*Landform:* Flood plain on river valley

*Parent material:* Alluvium

*Slope:* 0 to 2 percent

*Drainage class:* Poorly drained

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

*Available water capacity:* Low (About 5.7 inches)

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

*Flooding hazard:* Frequent

*Depth to seasonal water saturation:* About 0 to 36 inches

*Runoff class:* Very low

*Ecological site:* Subirrigated (pe21-28)

*Land capability (nonirrigated):* 5w

#### Typical Profile:

A1—0 to 4 inches; sandy loam

A2—4 to 9 inches; loamy fine sand

AC—9 to 17 inches; loamy fine sand

C1—17 to 33 inches; loamy fine sand

C2—33 to 80 inches; sand

*Component note:* This soil was formerly mapped as Plevna or wet alluvial land.

#### Ninnescah

*MLRA:* 79 - Great Bend Sand Plains

*Landform:* Flood plain on river valley

*Parent material:* Loamy alluvium

*Slope:* 0 to 2 percent

*Drainage class:* Poorly drained

*Slowest permeability:* Moderately rapid (About 1.98 in/hr)

*Available water capacity:* Moderate (About 7.4 inches)

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

*Flooding hazard:* Occasional

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

*Runoff class:* Very low

*Ecological site:* Subirrigated (pe21-28)

*Land capability (nonirrigated):* 5w

#### Typical Profile:

Ak1—0 to 6 inches; sandy loam

Ak2—6 to 14 inches; sandy loam

Ak3—14 to 19 inches; sandy loam

Bkg1—19 to 30 inches; sandy loam

Bkg2—30 to 37 inches; sandy loam

Cg1—37 to 52 inches; sandy loam

Cg2—52 to 80 inches; loamy sand

*Component note:* This series was formerly mapped as Plevna. In some places there are slope inclusions of greater than 1 percent slopes.

*General Considerations:* Most areas are in pasture or range. This map unit is poorly suited for the most commonly grown crops. The hazard for wind and water erosion is slight. The water tables, flooding, and depth to sand limit most engineering uses for this mapunit.

## 2556—Langdon fine sand, 0 to 15 percent slopes

*Mapunit Information:* Langdon soils occur on mid to upper parts of the dunes. Tivin soils occur on the upper parts of the dunes. Turon soils occur on the lower part of the dune. Turon soils have a paleosol below 40 inches.

### Map Unit Composition

Langdon: 50 percent  
Minor components: 50 percent

### Component Descriptions

#### Langdon

*MLRA:* 79 - Great Bend Sand Plains

*Landform:* Dune on paleoterrace on river valley

*Parent material:* Sandy eolian deposits

*Slope:* 0 to 15 percent

*Drainage class:* Somewhat excessively drained

*Slowest permeability:* Rapid (About 6.00 in/hr)

*Available water capacity:* Low (About 3.2 inches)

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

*Flooding hazard:* None

*Ponding hazard:* None

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

*Runoff class:* Medium

*Ecological site:* Choppy Sands (pe21-28)

*Land capability (nonirrigated):* 6e

*Typical Profile:*

A—0 to 8 inches; fine sand  
E&Bt—8 to 47 inches; stratified sand to loamy sand  
C—47 to 64 inches; fine sand  
E&Btb—64 to 80 inches; stratified sand to loamy sand

*Component note:* This soil was formerly mapped as Tivoli or Pratt. Typically, this map unit is not cropped, although, in some places the soils occurring on the lower dunes are cultivated.

**Minor Components**

**Turon**

*Composition:* About 25 percent  
*Slope:* 0 to 10 percent  
*Drainage class:* Well drained  
*Ecological site:* Sands (pe21-28)

**Tivin**

*Composition:* About 25 percent  
*Slope:* 1 to 15 percent  
*Drainage class:* Somewhat excessively drained  
*Ecological site:* Choppy Sands (pe21-28)

**Carway**

*Slope:* 0 to 1 percent  
*Drainage class:* Somewhat poorly drained  
*Ecological site:* Subirrigated (pe21-28)

**Warnut**

*Slope:* 0 to 1 percent  
*Drainage class:* Poorly drained  
*Ecological site:* Subirrigated (pe21-28)

*General Considerations:* Most areas are in pasture or range. This mapunit is poorly suited for the most commonly grown crops. The hazard for wind erosion is severe and water erosion is moderate. The sandy textures limit most engineering practices.

**2958—Ninnescah fine sandy loam, 0 to 1 percent slopes, occasionally flooded**

*Mapunit Information:* Kanza and Ninnescah soils are interfingering upon the floodplain.

**Map Unit Composition**

Ninnescah: 85 percent

Minor components: 15 percent

**Component Descriptions**

**Ninnescah**

*MLRA:* 79 - Great Bend Sand Plains

*Landform:* Flood plain on river valley

*Parent material:* Loamy alluvium

*Slope:* 0 to 1 percent

*Drainage class:* Poorly drained

*Slowest permeability:* Moderately rapid (About 1.98 in/hr)

*Available water capacity:* Moderate (About 7.4 inches)

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

*Flooding hazard:* Occasional

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

*Runoff class:* Very low

*Ecological site:* Subirrigated (pe21-28)

*Land capability (nonirrigated):* 5w

*Typical Profile:*

Ak1—0 to 6 inches; fine sandy loam  
Ak2—6 to 14 inches; sandy loam  
Ak3—14 to 19 inches; sandy loam  
Bkg1—19 to 30 inches; sandy loam  
Bkg2—30 to 37 inches; sandy loam  
Cg1—37 to 52 inches; sandy loam  
Cg2—52 to 80 inches; loamy sand

*Component note:* This soil was formerly mapped as Plevna.

**Minor Components**

**Kanza**

*Composition:* About 15 percent

*Slope:* 0 to 1 percent

*Drainage class:* Poorly drained

*Ecological site:* Subirrigated (pe21-28)

*General Considerations:* Most areas are in pasture or range. This map unit is poorly suited for the most commonly grown crops. The hazard for wind and water erosion is slight. The water tables, flooding, and depth to sand limit most engineering uses for this mapunit.

**3053—Ost loam, 1 to 3 percent slopes**

*Mapunit Information:* Ost soils occur slightly higher on the paleoterrace than Clark soils.

## Map Unit Composition

Ost: 85 percent  
Minor components: 15 percent

### Component Descriptions

#### Ost

*MLRA:* 79 - Great Bend Sand Plains  
*Landform:* Paleoterrace on river valley  
*Parent material:* Loamy alluvium  
*Slope:* 1 to 3 percent  
*Drainage class:* Well drained  
*Slowest permeability:* Moderately slow (About 0.20 in/hr)  
*Available water capacity:* High (About 10.0 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 (pe24-32)  
*Land capability (nonirrigated):* 2c

#### Typical Profile:

Ap—0 to 8 inches; loam  
Bt1—8 to 12 inches; loam  
Bt2—12 to 18 inches; loam  
Bk1—18 to 23 inches; clay loam  
Bk2—23 to 38 inches; clay loam  
BCk—38 to 54 inches; loam  
C—54 to 80 inches; loam

*Component note:* Included in mapping are small areas with a fine sandy loam surface texture. Also included are small areas that have slope of less than 1 percent.

### Minor Components

#### Shellabarger

*Composition:* About 15 percent  
*Slope:* 1 to 3 percent  
*Drainage class:* Well drained  
*Ecological site:* Sandy (pe21-28)

### Unnamed Wet Soils

#### Clark

*Slope:* 0 to 1 percent  
*Drainage class:* Well drained  
*Ecological site:* Limy Upland (pe21-28)

*General Considerations:* Most areas are used as cropland. This mapunit is well suited to all commonly grown crops. Wheat, grain sorghum, and soybeans are the predominant

crops. The hazard of wind erosion is moderate and water erosion is slight. This mapunit is well suited for most engineering practices.

## 3180—Pratt fine sand, 5 to 10 percent slopes

### Map Unit Composition

Pratt: 85 percent  
Minor components: 15 percent

### Component Descriptions

#### Pratt

*MLRA:* 79 - Great Bend Sand Plains  
*Landform:* Dune on paleoterrace on river valley  
*Parent material:* Sandy eolian deposits  
*Slope:* 5 to 10 percent  
*Drainage class:* Well drained  
*Slowest permeability:* Rapid (About 5.95 in/hr)  
*Available water capacity:* Moderate (About 6.3 inches)  
*Shrink-swell potential:* Low (About 1.5 LEP)  
*Flooding hazard:* None  
*Depth to seasonal water saturation:* More than 6 feet  
*Runoff class:* Low  
*Ecological site:* Sands (pe21-28)  
*Land capability (irrigated):* 3e  
*Land capability (nonirrigated):* 3e

#### Typical Profile:

Ap—0 to 8 inches; fine sand  
Bt—8 to 24 inches; loamy fine sand  
E&Bt—24 to 64 inches; stratified fine sand to loamy fine sand  
C—64 to 80 inches; fine sand

*Component note:* Included with this soil in mapping are some areas with a loamy fine sand surface texture. Also included are small areas with slopes of less than 5 percent.

### Minor Components

#### Attica

*Composition:* About 15 percent  
*Slope:* 5 to 10 percent  
*Drainage class:* Well drained  
*Ecological site:* Sandy (pe21-28)

*General Considerations:* Most areas are in pasture or range, but some are in cropland. This mapunit is poorly suited for the most

commonly grown crops. The hazard for wind erosion is severe and water erosion is moderate. This mapunit is poorly suited for most engineering practices due to the sandy textures.

### **3181—Pratt-Turon fine sands, 1 to 5 percent slopes**

*Mapunit Information:* Pratt and Turon soils are on similar positions on dunes. Turon soils have a paleosol below 40 inches.

#### **Map Unit Composition**

Pratt: 45 percent  
Turon: 30 percent  
Minor components: 25 percent

#### **Component Descriptions**

##### **Pratt**

*MLRA:* 79 - Great Bend Sand Plains  
*Landform:* Dune on paleoterrace on river valley  
*Parent material:* Sandy eolian deposits  
*Slope:* 1 to 5 percent  
*Drainage class:* Well drained  
*Slowest permeability:* Rapid (About 5.95 in/hr)  
*Available water capacity:* Moderate (About 6.3 inches)  
*Shrink-swell potential:* Low (About 1.5 LEP)  
*Flooding hazard:* None  
*Depth to seasonal water saturation:* More than 6 feet  
*Runoff class:* Low  
*Ecological site:* Sands (pe21-28)  
*Land capability (irrigated):* 3e  
*Land capability (nonirrigated):* 3e

##### *Typical Profile:*

Ap—0 to 8 inches; fine sand  
Bt—8 to 24 inches; loamy fine sand  
E&Bt—24 to 64 inches; stratified fine sand to loamy fine sand  
C—64 to 80 inches; fine sand

*Component note:* Included with this soil are small areas with a loamy fine sand surface texture.

##### **Turon**

*MLRA:* 79 - Great Bend Sand Plains  
*Landform:* Dune on paleoterrace on river valley  
*Parent material:* Sandy eolian deposits over alluvium  
*Slope:* 1 to 5 percent

*Drainage class:* Well drained

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

*Available water capacity:* Moderate (About 7.1 inches)

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

*Flooding hazard:* None

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

*Runoff class:* Low

*Ecological site:* Sands (pe21-28)

*Land capability (irrigated):* 3e

*Land capability (nonirrigated):* 3e

##### *Typical Profile:*

Ap—0 to 8 inches; fine sand  
Bt—8 to 28 inches; loamy fine sand  
E&Bt—28 to 40 inches; stratified loamy fine sand to fine sandy loam  
2Btb1—40 to 58 inches; silty clay  
2Btb2—58 to 75 inches; silty clay  
2Btb3—75 to 80 inches; silty clay

*Component note:* This soil was formerly mapped as Pratt. A buried soil occurs below a depth of 40 inches. The buried soil varies in thickness and in texture. The texture varies from sandy clay loam to silty clay. The texture of the buried soil generally increases in sand content with increasing depth.

#### **Minor Components**

##### **Hayes**

*Composition:* About 25 percent  
*Slope:* 1 to 5 percent  
*Drainage class:* Well drained  
*Ecological site:* Sandy (pe21-28)

##### **Carway**

*Slope:* 0 to 1 percent  
*Drainage class:* Somewhat poorly drained  
*Ecological site:* Subirrigated (pe21-28)

##### **Warnut**

*Slope:* 0 to 1 percent  
*Drainage class:* Poorly drained  
*Ecological site:* Subirrigated (pe21-28)

*General Considerations:* Most areas are in cropland, but some are in pasture and range. Some areas are also in the Conservation Reserve Program. This mapunit is somewhat poorly suited for the most commonly grown crops. Wheat, grain sorghum, and irrigated corn are the predominant crops. The hazard for wind erosion is severe and water erosion is slight. Wind erosion can be controlled by plant residue management, conservation tillage,

and tall grass barriers. This mapunit is moderately well suited for most engineering practices.

### **3511—Saltcreek and Naron fine sandy loams, 0 to 1 percent slopes**

*Mapunit Information:* Saltcreek and Naron soils are interfingering upon the landscape. Both soils occur in similar positions.

#### **Map Unit Composition**

Saltcreek: 70 percent  
Naron: 30 percent

#### **Component Descriptions**

##### **Saltcreek**

*MLRA:* 79 - Great Bend Sand Plains

*Landform:* Dune on paleoterrace on river valley

*Parent material:* Loamy eolian deposits over alluvium

*Slope:* 0 to 1 percent

*Drainage class:* Well drained

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

*Available water capacity:* High (About 9.0 inches)

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

*Flooding hazard:* None

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

*Runoff class:* Very low

*Ecological site:* Sandy (pe21-28)

*Land capability (irrigated):* 1

*Land capability (nonirrigated):* 3e

##### *Typical Profile:*

Ap—0 to 5 inches; fine sandy loam  
Bt1—5 to 10 inches; sandy clay loam  
Bt2—10 to 26 inches; sandy clay loam  
Bt3—26 to 39 inches; fine sandy loam  
2Btb—39 to 56 inches; silty clay  
2Btkb1—56 to 66 inches; silty clay loam  
2Btkb2—66 to 80 inches; silty clay loam

*Component note:* This soil was formerly mapped as Naron. A buried soil occurs from 25 to 60 inches. The buried soil varies in thickness and in texture. The texture ranges from sandy clay loam to silty clay generally increases in sand content with increasing depth. In some areas the buried soil has a higher content of sand.

##### **Naron**

*MLRA:* 79 - Great Bend Sand Plains

*Landform:* Dune on paleoterrace on river valley

*Parent material:* Loamy eolian deposits

*Slope:* 0 to 1 percent

*Drainage class:* Well drained

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

*Available water capacity:* High (About 9.1 inches)

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

*Flooding hazard:* None

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

*Runoff class:* Very low

*Ecological site:* Sandy (pe21-28)

*Land capability (irrigated):* 2e

*Land capability (nonirrigated):* 2e

##### *Typical Profile:*

Ap—0 to 7 inches; fine sandy loam  
A—7 to 19 inches; fine sandy loam  
Bt1—19 to 34 inches; loam  
Bt2—34 to 41 inches; sandy clay loam  
Ck—41 to 61 inches; stratified loam to loamy fine sand to fine sandy loam  
C—61 to 80 inches; coarse sand

*Component note:* These soils are very deep, well drained, moderately permeable soils formed in loamy eolian deposits.

*General Considerations:* Most areas are in cropland, but some areas are in pasture or range. This mapunit is well suited for most commonly grown crops. Wheat, grain sorghum, soybeans, and irrigated corn. The hazard for wind and water erosion is slight. The depth to sand and potential for high shrink-swell may limit some engineering practices for this mapunit.

### **3512—Saltcreek and Naron fine sandy loams, 1 to 3 percent slopes**

*Mapunit Information:* Saltcreek and Naron soils are interfingering upon the landscape. Both soils occur in similar positions.

#### **Map Unit Composition**

Saltcreek: 50 percent  
Naron: 50 percent  
Minor components: 10 percent

## Component Descriptions

### Saltcreek

*MLRA:* 79 - Great Bend Sand Plains

*Landform:* Dune on paleoterrace on river valley

*Parent material:* Loamy eolian deposits over alluvium

*Slope:* 1 to 3 percent

*Drainage class:* Well drained

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

*Available water capacity:* High (About 9.0 inches)

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

*Flooding hazard:* None

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

*Runoff class:* Low

*Ecological site:* Sandy (pe21-28)

*Land capability (irrigated):* 1

*Land capability (nonirrigated):* 3e

#### Typical Profile:

Ap—0 to 5 inches; fine sandy loam  
Bt1—5 to 10 inches; sandy clay loam  
Bt2—10 to 26 inches; sandy clay loam  
Bt3—26 to 39 inches; fine sandy loam  
2Btb—39 to 56 inches; silty clay  
2Btkb1—56 to 66 inches; silty clay loam  
2Btkb2—66 to 80 inches; silty clay loam

*Component note:* This series was formerly mapped as Naron. A buried soil varies laterally in thickness and in texture. The texture of the buried soil varies from sandy clay loam to silty clay and generally increases in sand content with depth. Some areas contain a higher content of sand.

### Naron

*MLRA:* 79 - Great Bend Sand Plains

*Landform:* Dune on paleoterrace on river valley

*Parent material:* Loamy eolian deposits

*Slope:* 1 to 3 percent

*Drainage class:* Well drained

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

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

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

*Flooding hazard:* None

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

*Runoff class:* Low

*Ecological site:* Sandy (pe21-28)

*Land capability (irrigated):* 3e

*Land capability (nonirrigated):* 3e

#### Typical Profile:

Ap—0 to 8 inches; fine sandy loam  
A—8 to 14 inches; fine sandy loam  
Bt1—14 to 28 inches; sandy clay loam  
Bt2—28 to 39 inches; sandy clay loam  
Bt3—39 to 55 inches; sandy clay loam  
BC—55 to 66 inches; fine sandy loam  
C—66 to 80 inches; loamy fine sand

## Minor Components

### Funmar

*Composition:* About 10 percent

*Slope:* 0 to 1 percent

*Drainage class:* Moderately well drained

*Ecological site:* Loamy Upland (pe21-28)

### Carway

*Slope:* 0 to 1 percent

*Drainage class:* Somewhat poorly drained

*Ecological site:* Subirrigated (pe21-28)

### Carbika

*Slope:* 0 to 1 percent

*Drainage class:* Poorly drained

*Ecological site:* Subirrigated (pe21-28)

### Taver

*Slope:* 0 to 1 percent

*Drainage class:* Moderately well drained

*Ecological site:* Clay Upland (pe21-28)

*General Considerations:* Most areas are in cropland, but some areas are in pasture or range. This mapunit is well suited for most commonly grown crops. Wheat, grain sorghum, soybeans, and irrigated corn. The hazard for wind and water erosion is slight. The depth to sand and potential for high shrink-swell may limit some engineering practices for this mapunit.

## 3520—Saxman loamy sand, 0 to 1 percent slopes

### Map Unit Composition

Saxman: 85 percent

Minor components: 15 percent

## Component Descriptions

### Saxman

*MLRA:* 79 - Great Bend Sand Plains

*Landform:* Flood plain on river valley

*Parent material:* Sandy alluvium

*Slope:* 0 to 1 percent

*Drainage class:* Moderately well drained



*Slowest permeability:* Rapid (About 5.95 in/hr)  
*Available water capacity:* Low (About 4.4 inches)  
*Shrink-swell potential:* Low (About 1.5 LEP)  
*Flooding hazard:* Rare  
*Depth to seasonal water saturation:* About 24 to 36 inches  
*Runoff class:* Very low  
*Ecological site:* Sandy Lowland (pe21-28)  
*Land capability (irrigated):* 2e  
*Land capability (nonirrigated):* 3e

*Typical Profile:*

Ap1—0 to 4 inches; loamy sand  
 Ap2—4 to 8 inches; loamy sand  
 A—8 to 13 inches; loamy sand  
 AC—13 to 22 inches; loamy sand  
 C1—22 to 30 inches; sand  
 C2—30 to 37 inches; sand  
 C3—37 to 48 inches; sand  
 C4—48 to 54 inches; fine sand  
 C5—54 to 80 inches; stratified gravelly coarse sand

*Component note:* This series was formerly mapped as Canadian and Wann. Included with this soil in mapping are small places the surface texture may be loamy fine sand.

**Minor Components**

**Willowbrook**

*Composition:* About 15 percent  
*Slope:* 0 to 1 percent  
*Drainage class:* Somewhat poorly drained  
*Ecological site:* Subirrigated (pe21-28)

*General Considerations:* Most areas are used for pasture or range, some areas are used for hay production. This map unit is poorly suited for most commonly grown crops. The hazard for water erosion is slight and wind erosion is severe. Depth to sand and water tables can limit most engineering uses for this map unit. Most areas are used for pasture or range, some areas are used for hay production. This map unit is poorly suited for most commonly grown crops. The hazard for water erosion is slight and wind erosion is severe. Depth to sand and water tables can limit most engineering uses for this map unit.

**3540—Solvay loamy fine sand, 0 to 2 percent slopes**

**Map Unit Composition**

Solvay: 90 percent  
 Minor components: 10 percent

**Component Descriptions**

**Solvay**

*MLRA:* 79 - Great Bend Sand Plains

*Landform:* Interdune on paleoterrace on river valley

*Parent material:* Loamy eolian deposits over alluvium

*Slope:* 0 to 2 percent

*Drainage class:* Somewhat poorly drained

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

*Available water capacity:* Moderate (About 9.0 inches)

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

*Flooding hazard:* None

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

*Runoff class:* Very low

*Ecological site:* Subirrigated (pe21-28)

*Land capability (nonirrigated):* 2e

*Typical Profile:*

A—0 to 5 inches; loamy fine sand  
 2Bt1—5 to 14 inches; fine sandy loam  
 2Bt2—14 to 23 inches; fine sandy loam  
 2Bt3—23 to 37 inches; fine sandy loam  
 2BC1—37 to 58 inches; fine sandy loam  
 2BC2—58 to 76 inches; loamy fine sand  
 2BC3—76 to 80 inches; loamy fine sand

*Component note:* This soil was formerly mapped as Carwile and Farnum. Included with this soil in mapping are small areas with a fine sandy loam surface texture. These soils occur in depressions on the floodplain.

**Minor Components**

**Hayes**

*Composition:* About 10 percent

*Slope:* 0 to 2 percent

*Drainage class:* Well drained

*Ecological site:* Sandy (pe21-28)

**Carway***Slope:* 0 to 1 percent*Drainage class:* Somewhat poorly drained*Ecological site:* Subirrigated (pe21-28)**Carbika***Slope:* 0 to 1 percent*Drainage class:* Poorly drained*Ecological site:* Subirrigated (pe21-28)

*General Considerations:* Most areas are in cropland, but some areas are used for pasture and range. Many areas are in the Conservation Reserve Program. This mapunit is somewhat poorly suited for the most commonly grown crops. Wheat, grain sorghum and irrigated corn are the predominant crops. The hazard for wind erosion is severe and water erosion is slight. Conservation tillage, residue management, and tall grass barriers are ways to control wind erosion. The depth to water tables will limit many engineering practices.

### 3639—Taver loam, 0 to 1 percent slopes

#### Map Unit Composition

Taver: 90 percent

Minor components: 10 percent

#### Component Descriptions

**Taver***MLRA:* 79 - Great Bend Sand Plains*Landform:* Paleoterrace on river valley*Parent material:* Clayey alluvium*Slope:* 0 to 1 percent*Drainage class:* Moderately well drained*Slowest permeability:* Very slow (About 0.00 in/hr)*Available water capacity:* High (About 9.4 inches)*Shrink-swell potential:* High (About 7.5 LEP)*Flooding hazard:* None*Depth to seasonal water saturation:* More than 6 feet*Runoff class:* Very low*Ecological site:* Clay Upland (pe21-28)*Land capability (nonirrigated):* 2s*Typical Profile:*

Ap—0 to 7 inches; loam

2Bt1—7 to 17 inches; silty clay loam

2Bt2—17 to 33 inches; silty clay

2Btk1—33 to 53 inches; silty clay loam

2Btk2—53 to 64 inches; clay loam

3Bt—64 to 80 inches; sandy clay loam

*Component note:* This series was formerly mapped as Tabler.**Minor Components****Saltcreek***Composition:* About 10 percent*Slope:* 0 to 1 percent*Drainage class:* Well drained*Ecological site:* Sandy (pe21-28)**Carbika***Slope:* 0 to 1 percent*Drainage class:* Poorly drained*Ecological site:* Subirrigated (pe21-28)

*General Considerations:* Most areas are used for cropland, but some areas are in pasture or range. This mapunit is well suited for the most commonly grown crops such as wheat, grain sorghum, soybeans, and irrigated corn. The hazard for wind and water erosion is slight. This mapunit is moderately well suited for most engineering practices. The potential for high shrink-swell may limit some practices.

### 3640—Tivin fine sand, 10 to 30 percent slopes

#### Map Unit Composition

Tivin: 95 percent

Minor components: 5 percent

#### Component Descriptions

**Tivin***MLRA:* 79 - Great Bend Sand Plains*Landform:* Dune on paleoterrace on river valley*Parent material:* Sandy eolian deposits*Slope:* 10 to 30 percent*Drainage class:* Somewhat excessively drained*Slowest permeability:* Rapid (About 5.95 in/hr)*Available water capacity:* Low (About 3.2 inches)*Shrink-swell potential:* Low (About 1.5 LEP)*Flooding hazard:* None*Ponding hazard:* None*Depth to seasonal water saturation:* More than 6 feet*Runoff class:* Medium*Ecological site:* Choppy Sands (pe21-28)

*Land capability (nonirrigated):* 6e

*Typical Profile:*

A—0 to 7 inches; fine sand  
AC—7 to 18 inches; fine sand  
C—18 to 80 inches; fine sand

*Component note:* This series was formerly mapped as Tivoli.

**Minor Components**

**Langdon**

*Composition:* About 5 percent  
*Slope:* 10 to 30 percent  
*Drainage class:* Somewhat excessively drained  
*Ecological site:* Choppy Sands (pe21-28)

**Plev**

*Slope:* 0 to 1 percent  
*Drainage class:* Poorly drained  
*Ecological site:* Subirrigated (pe21-28)

*General Considerations:* Most areas are in pasture or range. This mapunit is poorly suited for the most commonly grown crops. The hazard for wind erosion is severe and water erosion is moderate. The sandy textures will limit most engineering practices.

**3641—Tivin-Dillhut fine sands, 0 to 15 percent slopes**

*Mapunit Information:* Tivin soils occur on high dunes, and Dillhut soils occur on low relief dunes.

**Map Unit Composition**

Tivin: 45 percent  
Dillhut: 40 percent  
Minor components: 15 percent

**Component Descriptions**

**Tivin**

*MLRA:* 79 - Great Bend Sand Plains  
*Landform:* Dune on paleoterrace on river valley  
*Parent material:* Sandy eolian deposits  
*Slope:* 1 to 15 percent  
*Drainage class:* Somewhat excessively drained  
*Slowest permeability:* Rapid (About 5.95 in/hr)  
*Available water capacity:* Low (About 3.2 inches)  
*Shrink-swell potential:* Low (About 1.5 LEP)  
*Flooding hazard:* None  
*Ponding hazard:* None

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

*Runoff class:* Medium

*Ecological site:* Choppy Sands (pe21-28)

*Land capability (nonirrigated):* 6e

*Typical Profile:*

A—0 to 7 inches; fine sand  
AC—7 to 18 inches; fine sand  
C—18 to 80 inches; fine sand

*Component note:* This series was formerly mapped as Tivoli.

**Dillhut**

*MLRA:* 79 - Great Bend Sand Plains  
*Landform:* Dune on paleoterrace on river valley  
*Parent material:* Eolian deposits over alluvium  
*Slope:* 0 to 7 percent  
*Drainage class:* Moderately well drained  
*Slowest permeability:* Moderate (About 0.60 in/hr)  
*Available water capacity:* Moderate (About 6.0 inches)  
*Shrink-swell potential:* Low (About 1.5 LEP)  
*Flooding hazard:* None  
*Depth to seasonal water saturation:* More than 6 feet  
*Runoff class:* Very low  
*Ecological site:* Sands (pe21-28)  
*Land capability (irrigated):* 3e  
*Land capability (nonirrigated):* 3e

*Typical Profile:*

A—0 to 4 inches; fine sand  
AC—4 to 9 inches; fine sand  
C1—9 to 18 inches; fine sand  
C2—18 to 26 inches; fine sand  
2Btb1—26 to 41 inches; fine sandy loam  
2Btb2—41 to 55 inches; fine sandy loam  
2BCb1—55 to 65 inches; fine sandy loam  
2BCb2—65 to 70 inches; fine sandy loam  
2Cg—70 to 80 inches; fine sandy loam

*Component note:* This series was formerly mapped as Elsmere. In some places the surface texture may be fine sand.

**Minor Components**

**Solvay**

*Composition:* About 15 percent  
*Slope:* 0 to 2 percent  
*Drainage class:* Somewhat poorly drained  
*Ecological site:* Subirrigated (pe21-28)

**Carway**

*Slope:* 0 to 1 percent  
*Drainage class:* Somewhat poorly drained  
*Ecological site:* Subirrigated (pe21-28)

**Warnut**

*Slope:* 0 to 1 percent  
*Drainage class:* Poorly drained  
*Ecological site:* Subirrigated (pe21-28)

**Plev**

*Slope:* 0 to 1 percent  
*Drainage class:* Poorly drained  
*Ecological site:* Subirrigated (pe21-28)

*General Considerations:* Most areas are in pasture or range. This mapunit is poorly suited for most commonly grown crops. The hazard for wind erosion is severe and water erosion is slight. This mapunit is poorly suited for most engineering practices.

### **3644—Turon-Carway complex, 0 to 5 percent slopes**

*Mapunit Information:* Turon soils occur on the mid to upper parts of the dunes. The Solvay soils are in interdunal positions on the paleoterrace. The Carway soils are on interdunes and also in depressional areas on the paleoterrace.

### **Map Unit Composition**

Turon: 65 percent  
 Carway: 20 percent  
 Minor components: 15 percent

### **Component Descriptions**

**Turon**

*MLRA:* 79 - Great Bend Sand Plains  
*Landform:* Dune on paleoterrace on river valley  
*Parent material:* Sandy eolian deposits over alluvium  
*Slope:* 0 to 5 percent  
*Drainage class:* Well drained  
*Slowest permeability:* Very slow (About 0.00 in/hr)  
*Available water capacity:* Moderate (About 7.1 inches)  
*Shrink-swell potential:* Low (About 1.5 LEP)  
*Flooding hazard:* None  
*Depth to seasonal water saturation:* More than 6 feet  
*Runoff class:* Very low  
*Ecological site:* Sands (pe21-28)  
*Land capability (irrigated):* 3e  
*Land capability (nonirrigated):* 3e

*Typical Profile:*

Ap—0 to 8 inches; fine sand  
 Bt—8 to 28 inches; loamy fine sand  
 E&Bt—28 to 40 inches; stratified loamy fine sand to fine sandy loam  
 2Btb1—40 to 58 inches; silty clay  
 2Btb2—58 to 75 inches; silty clay  
 2Btb3—75 to 80 inches; silty clay

*Component note:* This soil was formerly mapped as Pratt. A buried soil occurs below a depth of 40 inches. The buried soil varies in thickness and in texture. The texture varies from sandy clay loam to silty clay. The texture of the buried soil generally increases in sand content with increasing depth.

**Carway**

*MLRA:* 79 - Great Bend Sand Plains  
*Landform:* Interdune on depression on paleoterrace on river valley  
*Parent material:* Loamy eolian deposits over alluvium  
*Slope:* 0 to 1 percent  
*Drainage class:* Somewhat poorly drained  
*Slowest permeability:* Very slow (About 0.00 in/hr)  
*Available water capacity:* Moderate (About 8.6 inches)  
*Shrink-swell potential:* High (About 7.5 LEP)  
*Flooding hazard:* None  
*Ponding hazard:* Frequent  
*Depth to seasonal water saturation:* About 0 to 0 inches  
*Runoff class:* Very low  
*Ecological site:* Subirrigated (pe21-28)  
*Land capability (nonirrigated):* 2w

*Typical Profile:*

Ap—0 to 7 inches; loamy fine sand  
 Bt1—7 to 10 inches; sandy clay loam  
 Bt2—10 to 15 inches; sandy clay loam  
 Bt3—15 to 22 inches; fine sandy loam  
 Bt4—22 to 35 inches; fine sandy loam  
 2Btb1—35 to 40 inches; clay loam  
 2Btb2—40 to 54 inches; clay loam  
 2Btb3—54 to 63 inches; clay loam  
 2Btb4—63 to 72 inches; clay loam  
 2Btkb—72 to 80 inches; clay loam

*Component note:* This soil was formerly mapped as Carwile. Included with this soil in mapping are small areas with a fine sandy loam surface texture.

**Minor Components****Solvay**

*Composition:* About 15 percent  
*Slope:* 0 to 2 percent  
*Drainage class:* Somewhat poorly drained

*Ecological site:* Subirrigated (pe21-28)

*General Considerations:* Most areas are used for cropland, but some areas are in pasture or range. This mapunit is somewhat poorly suited for most commonly grown crops. Wheat and grain sorghum are the predominant crops grown. The hazard for wind erosion is severe and water erosion is slight. Wind erosion can be controlled by plant residue management, conservation tillage, and tall grass barriers. The high water tables, high shrink-swell potential, and sandy textures will limit most engineering uses of this mapunit.

## 3926—Water

### An—Albion sandy loam, 1 to 4 percent slopes

#### Map Unit Composition

Albion: 100 percent

#### Component Descriptions

##### Albion

*MLRA:* 79 - Great Bend Sand Plains

*Landform:* Paleoterrace on river valley

*Parent material:* Loamy alluvium

*Slope:* 1 to 4 percent

*Drainage class:* Well drained

*Slowest permeability:* Moderately rapid (About 2.00 in/hr)

*Available water capacity:* Moderate (About 6.1 inches)

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

*Flooding hazard:* None

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

*Runoff class:* Very low

*Ecological site:* Sandy (pe21-28)

*Land capability (nonirrigated):* 3e

##### *Typical Profile:*

H1—0 to 10 inches; sandy loam

H2—10 to 20 inches; sandy loam

H3—20 to 30 inches; coarse sandy loam

y—30 to 60 inches; gravelly coarse sand

### At—Attica fine sandy loam, 1 to 4 percent slopes

#### Map Unit Composition

Attica: 100 percent

#### Component Descriptions

##### Attica

*MLRA:* 79 - Great Bend Sand Plains

*Landform:* Dune on paleoterrace on river valley

*Parent material:* Eolian deposits

*Slope:* 1 to 4 percent

*Drainage class:* Well drained

*Slowest permeability:* Moderately rapid (About 2.00 in/hr)

*Available water capacity:* Moderate (About 7.9 inches)

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

*Flooding hazard:* None

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

*Runoff class:* Very low

*Ecological site:* Sandy (pe21-28)

*Land capability (nonirrigated):* 2e

##### *Typical Profile:*

H1—0 to 10 inches; fine sandy loam

H2—10 to 21 inches; fine sandy loam

H3—21 to 60 inches; fine sandy loam

#### Minor Components

##### Carwile

##### Unnamed Wet Soils

*Phase:* Sandy, Depression

### Ba—Blanket silt loam, 0 to 1 percent slopes

#### Map Unit Composition

Blanket: 100 percent

#### Component Descriptions

##### Blanket

*MLRA:* 79 - Great Bend Sand Plains

*Landform:* Paleoterrace on river valley  
*Parent material:* Clayey alluvium  
*Slope:* 0 to 1 percent  
*Drainage class:* Well drained  
*Slowest permeability:* Moderately slow (About 0.20 in/hr)  
*Available water capacity:* High (About 9.2 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 (pe21-28)  
*Land capability (nonirrigated):* 2c

*Typical Profile:*  
 H1—0 to 10 inches; silt loam  
 H2—10 to 52 inches; silty clay  
 H3—52 to 60 inches; silty clay loam

**Minor Components**  
**Unnamed Wet Soils**  
*Phase:* Clayey, Depression

## **BIG—Big Salt Marsh, Little Salt Marsh, and Associated Low Areas**

### **Ca—Carwile fine sandy loam, 0 to 1 percent slopes**

#### **Map Unit Composition**

Carwile: 100 percent

#### **Component Descriptions**

**Carwile**  
*MLRA:* 79 - Great Bend Sand Plains  
*Landform:* Depression on paleoterrace on river valley  
*Parent material:* Alluvium  
*Slope:* 0 to 1 percent  
*Drainage class:* Somewhat poorly drained  
*Slowest permeability:* Slow (About 0.06 in/hr)  
*Available water capacity:* High (About 9.4 inches)  
*Shrink-swell potential:* High (About 7.5 LEP)

*Flooding hazard:* None  
*Ponding hazard:* Frequent  
*Depth to seasonal water saturation:* About 0 to 0 inches  
*Runoff class:* Negligible  
*Ecological site:* Sandy (pe21-28)  
*Land capability (nonirrigated):* 2w

*Typical Profile:*  
 H1—0 to 10 inches; fine sandy loam  
 H2—10 to 18 inches; sandy clay loam  
 H3—18 to 46 inches; clay  
 H4—46 to 60 inches; clay

**Minor Components**  
**Unnamed Wet Soils**  
*Phase:* Loamy, Depression

### **Cw—Carwile complex, 0 to 1 percent slopes**

#### **Map Unit Composition**

Carwile: 100 percent

#### **Component Descriptions**

**Carwile**  
*MLRA:* 79 - Great Bend Sand Plains  
*Landform:* Depression on paleoterrace on river valley  
*Parent material:* Alluvium  
*Slope:* 0 to 1 percent  
*Drainage class:* Somewhat poorly drained  
*Slowest permeability:* Slow (About 0.06 in/hr)  
*Available water capacity:* High (About 9.4 inches)  
*Shrink-swell potential:* High (About 7.5 LEP)  
*Flooding hazard:* None  
*Ponding hazard:* Frequent  
*Depth to seasonal water saturation:* About 0 to 0 inches  
*Runoff class:* Negligible  
*Ecological site:* Sandy (pe21-28)  
*Land capability (nonirrigated):* 2w

*Typical Profile:*  
 H1—0 to 7 inches; fine sandy loam  
 H2—7 to 14 inches; sandy clay loam  
 H3—14 to 38 inches; sandy clay  
 H4—38 to 60 inches; sandy clay loam

**Minor Components****Unnamed Wet Soils***Phase:* Loamy, Depression**Cx—Clark loam, 1 to 3 percent slopes****Map Unit Composition**

Clark: 100 percent

**Component Descriptions****Clark***MLRA:* 79 - Great Bend Sand Plains*Landform:* Paleoterrace on river valley*Parent material:* Loamy alluvium*Slope:* 1 to 3 percent*Drainage class:* Well drained*Slowest permeability:* Moderate (About 0.60 in/hr)*Available water capacity:* High (About 10.3 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:* Limy Upland (pe21-28)*Land capability (nonirrigated):* 3e*Typical Profile:*

H1—0 to 8 inches; loam

H2—8 to 60 inches; loam

*Landform:* Interdune on paleoterrace on river

valley, dune on paleoterrace on river valley

*Parent material:* Sandy eolian deposits*Slope:* 0 to 2 percent*Drainage class:* Somewhat poorly drained*Slowest permeability:* Rapid (About 5.95 in/hr)*Available water capacity:* Low (About 4.9 inches)*Shrink-swell potential:* Low (About 1.5 LEP)*Flooding hazard:* None*Depth to seasonal water saturation:* About 12 to 36 inches*Runoff class:* Negligible*Ecological site:* Subirrigated (pe21-28)*Land capability (nonirrigated):* 4w*Typical Profile:*

H1—0 to 8 inches; loamy fine sand

H2—8 to 60 inches; fine sand

**Plevna***MLRA:* 79 - Great Bend Sand Plains*Landform:* Flood plain on river valley*Parent material:* Alluvium*Slope:* 0 to 1 percent*Drainage class:* Poorly drained*Slowest permeability:* Moderately rapid (About 2.00 in/hr)*Available water capacity:* Moderate (About 6.7 inches)*Shrink-swell potential:* Low (About 1.5 LEP)*Flooding hazard:* Frequent*Depth to seasonal water saturation:* About 0 to 24 inches*Runoff class:* Negligible*Ecological site:* Subirrigated (pe21-28)*Land capability (nonirrigated):* 5w*Typical Profile:*

H1—0 to 12 inches; fine sandy loam

H2—12 to 38 inches; fine sandy loam

H3—38 to 60 inches; fine sand

**Dp—Dillwyn-Plevna complex, 0 to 5 percent slopes****Map Unit Composition**

Dillwyn: 65 percent

Plevna: 35 percent

**Component Descriptions****Dillwyn***MLRA:* 79 - Great Bend Sand Plains**Minor Components****Unnamed Wet Soils***Phase:* Sandy, Depression**Dt—Dillwyn-Tivoli loamy fine sands, 0 to 15 percent slopes****Map Unit Composition**

Dillwyn: 65 percent

Tivoli: 35 percent

### Component Descriptions

#### Dillwyn

*MLRA:* 79 - Great Bend Sand Plains

*Landform:* Interdune on paleoterrace on river valley, dune on paleoterrace on river valley

*Parent material:* Sandy eolian deposits

*Slope:* 0 to 2 percent

*Drainage class:* Somewhat poorly drained

*Slowest permeability:* Rapid (About 5.95 in/hr)

*Available water capacity:* Low (About 4.9 inches)

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

*Flooding hazard:* None

*Depth to seasonal water saturation:* About 12 to 36 inches

*Runoff class:* Negligible

*Ecological site:* Subirrigated (pe21-28)

*Land capability (nonirrigated):* 4w

#### Typical Profile:

H1—0 to 8 inches; loamy fine sand

H2—8 to 60 inches; fine sand

#### Tivoli

*MLRA:* 79 - Great Bend Sand Plains

*Landform:* Dune on paleoterrace on river valley

*Parent material:* Sandy eolian deposits

*Slope:* 5 to 15 percent

*Drainage class:* Excessively drained

*Slowest permeability:* Rapid (About 5.95 in/hr)

*Available water capacity:* Low (About 3.3 inches)

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

*Flooding hazard:* None

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

*Runoff class:* Very low

*Ecological site:* Sands (pe21-28)

*Land capability (nonirrigated):* 7e

#### Typical Profile:

H1—0 to 10 inches; loamy fine sand

H2—10 to 60 inches; fine sand

### Minor Components

#### Carwile

#### Plevna

#### Unnamed Wet Soils

*Phase:* Sandy, Depression

### Fa—Farnum fine sandy loam, 0 to 1 percent slopes

### Map Unit Composition

Farnum: 100 percent

### Component Descriptions

#### Farnum

*MLRA:* 79 - Great Bend Sand Plains

*Landform:* Paleoterrace 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 9.7 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:* Sandy (pe21-28)

*Land capability (irrigated):* 1

*Land capability (nonirrigated):* 2e

#### Typical Profile:

H1—0 to 14 inches; fine sandy loam

H2—14 to 22 inches; loam

H3—22 to 46 inches; clay loam

H4—46 to 60 inches; loam

### Minor Components

#### Carwile

#### Unnamed Wet Soils

*Phase:* Loamy, Depression

### Fr—Farnum loam, 0 to 2 percent slopes

### Map Unit Composition

Farnum: 100 percent



**Component Descriptions****Farnum***MLRA:* 79 - Great Bend Sand Plains*Landform:* Paleoterrace 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 10.3 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 (pe21-28)*Land capability (irrigated):* 1*Land capability (nonirrigated):* 2c*Typical Profile:*

H1—0 to 9 inches; loam

H2—9 to 22 inches; loam

H3—22 to 46 inches; clay loam

H4—46 to 60 inches; clay loam

**Minor Components****Carwile****GRP—Gravel Pits****INT—Aquolls***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.**Kg—Kingman silty clay loam, occasionally flooded****Map Unit Composition**

Kingman: 100 percent

**Component Descriptions****Kingman***MLRA:* 79 - Great Bend Sand Plains*Landform:* Flood plain*Parent material:* Alluvium*Slope:* 0 to 1 percent*Drainage class:* Poorly 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:* Occasional*Depth to seasonal water saturation:* About 0 to 24 inches*Runoff class:* Negligible*Ecological site:* Subirrigated (pe21-28)*Land capability (nonirrigated):* 5w*Typical Profile:*

H1—0 to 10 inches; silty clay loam

H2—10 to 50 inches; silty clay loam

H3—50 to 60 inches; sandy loam

**M-W—Miscellaneous Water****Na—Naron fine sandy loam, 0 to 3 percent slopes****Map Unit Composition**

Naron: 100 percent

**Component Descriptions****Naron***MLRA:* 79 - Great Bend Sand Plains*Landform:* Dune on paleoterrace on river valley*Parent material:* Loamy eolian deposits*Slope:* 0 to 3 percent*Drainage class:* Well drained*Slowest permeability:* Moderate (About 0.60 in/hr)*Available water capacity:* High (About 9.4 inches)*Shrink-swell potential:* Low (About 1.5 LEP)*Flooding hazard:* None

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

*Runoff class:* Low

*Ecological site:* Sandy (pe21-28)

*Land capability (irrigated):* 2e

*Land capability (nonirrigated):* 3e

*Typical Profile:*

H1—0 to 7 inches; fine sandy loam

H2—7 to 44 inches; sandy clay loam

H3—44 to 60 inches; fine sandy loam

#### **Minor Components**

##### **Carwile**

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

*Phase:* Loamy, Depression

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

*Phase:* Loamy, Drainageway

### **NAA—Naron fine sandy loam, 0 to 1 percent slopes**

#### **Map Unit Composition**

Naron: 100 percent

#### **Component Descriptions**

##### **Naron**

*MLRA:* 79 - Great Bend Sand Plains

*Landform:* Dune on paleoterrace on river valley

*Parent material:* Loamy eolian deposits

*Slope:* 0 to 1 percent

*Drainage class:* Well drained

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

*Available water capacity:* High (About 9.1 inches)

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

*Flooding hazard:* None

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

*Runoff class:* Negligible

*Ecological site:* Sandy (pe21-28)

*Land capability (irrigated):* 1

*Land capability (nonirrigated):* 2e

*Typical Profile:*

H1—0 to 14 inches; fine sandy loam

H2—14 to 40 inches; fine sandy loam

H3—40 to 60 inches; fine sandy loam

#### **Minor Components**

##### **Carwile**

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

*Phase:* Loamy, Depression

### **NBB—Naron fine sandy loam, 1 to 3 percent slopes**

#### **Map Unit Composition**

Naron: 100 percent

#### **Component Descriptions**

##### **Naron**

*MLRA:* 79 - Great Bend Sand Plains

*Landform:* Dune on paleoterrace on river valley

*Parent material:* Loamy eolian deposits

*Slope:* 1 to 3 percent

*Drainage class:* Well drained

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

*Available water capacity:* High (About 9.1 inches)

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

*Flooding hazard:* None

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

*Runoff class:* Very low

*Ecological site:* Sandy (pe21-28)

*Land capability (irrigated):* 2e

*Land capability (nonirrigated):* 3e

*Typical Profile:*

H1—0 to 14 inches; fine sandy loam

H2—14 to 40 inches; sandy clay loam

H3—40 to 60 inches; fine sandy loam

#### **Minor Components**

##### **Carwile**

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

*Phase:* Loamy, Depression

## Nu—Natrustolls, occasionally flooded

### Map Unit Composition

Natrustolls: 100 percent

### Component Descriptions

#### Natrustolls

*MLRA:* 79 - Great Bend Sand Plains

*Landform:* Terrace on river valley

*Parent material:* Alluvium

*Slope:* 0 to 1 percent

*Drainage class:* Somewhat poorly drained

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

*Available water capacity:* Very low (About 2.1 inches)

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

*Flooding hazard:* None

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

*Runoff class:* Negligible

*Ecological site:* Saline Subirrigated (pe21-28)

*Land capability (nonirrigated):* 6s

#### Typical Profile:

H1—0 to 10 inches; fine sandy loam

H2—10 to 25 inches; clay loam, silty clay loam

H3—25 to 60 inches;

#### Minor Components

##### Plevna

#### Unnamed Wet Soils

*Phase:* Loamy, Depression

## Pa—Plevna Soils, frequently flooded

### Map Unit Composition

Plevna: 100 percent

### Component Descriptions

#### Plevna

*MLRA:* 79 - Great Bend Sand Plains

*Landform:* Flood plain on river valley

*Parent material:* Alluvium

*Slope:* 0 to 1 percent

*Drainage class:* Poorly drained

*Slowest permeability:* Moderately rapid (About 2.00 in/hr)

*Available water capacity:* Moderate (About 6.7 inches)

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

*Flooding hazard:* Frequent

*Depth to seasonal water saturation:* About 0 to 24 inches

*Runoff class:* Negligible

*Ecological site:* Subirrigated (pe21-28)

*Land capability (nonirrigated):* 5w

#### Typical Profile:

H1—0 to 12 inches; fine sandy loam

H2—12 to 38 inches; fine sandy loam

H3—38 to 60 inches; fine sand

#### Minor Components

##### Unnamed Wet Soils

*Phase:* Sandy, Drainageway

## Pc—Plevna Soils, channeled

### Map Unit Composition

Plevna: 100 percent

### Component Descriptions

#### Plevna

*MLRA:* 79 - Great Bend Sand Plains

*Landform:* Flood plain on river valley

*Parent material:* Alluvium

*Slope:* 0 to 1 percent

*Drainage class:* Poorly drained

*Slowest permeability:* Moderately rapid (About 2.00 in/hr)

*Available water capacity:* Moderate (About 6.7 inches)

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

*Flooding hazard:* Frequent

*Depth to seasonal water saturation:* About 0 to 24 inches

*Runoff class:* Negligible

*Ecological site:* Subirrigated (pe21-28)

*Land capability (nonirrigated):* 5w

#### Typical Profile:

H1—0 to 12 inches; fine sandy loam

H2—12 to 38 inches; fine sandy loam

H3—38 to 60 inches; fine sand

**Minor Components****Unnamed Wet Soils***Phase: Sandy, Drainageway***Ph—Pratt loamy fine sand, 5 to 10 percent slopes****Map Unit Composition**

Pratt: 100 percent

**Component Descriptions****Pratt***MLRA: 79 - Great Bend Sand Plains**Landform: Dune on paleoterrace on river valley**Parent material: Sandy eolian deposits**Slope: 5 to 10 percent**Drainage class: Well drained**Slowest permeability: Rapid (About 5.95 in/hr)**Available water capacity: Moderate (About 6.3 inches)**Shrink-swell potential: Low (About 1.5 LEP)**Flooding hazard: None**Depth to seasonal water saturation: More than 6 feet**Runoff class: Very low**Ecological site: Sands (pe21-28)**Land capability (irrigated): 3e**Land capability (nonirrigated): 4e**Typical Profile:*

H1—0 to 8 inches; loamy fine sand

H2—8 to 28 inches; loamy fine sand

H3—28 to 60 inches; loamy fine sand

**Minor Components****Carwile****Unnamed Wet Soils***Phase: Sandy, Depression***Po—Pratt loamy fine sand, 1 to 5 percent slopes****Map Unit Composition**

Pratt: 100 percent

**Component Descriptions****Pratt***MLRA: 79 - Great Bend Sand Plains**Landform: Dune on paleoterrace on river valley**Parent material: Sandy eolian deposits**Slope: 1 to 5 percent**Drainage class: Well drained**Slowest permeability: Rapid (About 5.95 in/hr)**Available water capacity: Moderate (About 6.3 inches)**Shrink-swell potential: Low (About 1.5 LEP)**Flooding hazard: None**Depth to seasonal water saturation: More than 6 feet**Runoff class: Negligible**Ecological site: Sands (pe21-28)**Land capability (irrigated): 3e**Land capability (nonirrigated): 3e**Typical Profile:*

H1—0 to 8 inches; loamy fine sand

H2—8 to 28 inches; loamy fine sand

H3—28 to 60 inches; loamy fine sand

**Minor Components****Carwile****Unnamed Wet Soils***Phase: Sandy, Depression***Pr—Pratt-Carwile complex, 0 to 8 percent slopes****Map Unit Composition**

Pratt: 60 percent

Carwile: 40 percent

**Component Descriptions****Pratt***MLRA: 79 - Great Bend Sand Plains**Landform: Dune on paleoterrace on river valley**Parent material: Sandy eolian deposits**Slope: 1 to 8 percent**Drainage class: Well drained**Slowest permeability: Rapid (About 5.95 in/hr)**Available water capacity: Moderate (About 6.3 inches)**Shrink-swell potential: Low (About 1.5 LEP)**Flooding hazard: None*

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

*Runoff class:* Very low

*Ecological site:* Sands (pe21-28)

*Land capability (irrigated):* 3e

*Land capability (nonirrigated):* 4e

*Typical Profile:*

H1—0 to 8 inches; loamy fine sand

H2—8 to 28 inches; loamy fine sand

H3—28 to 60 inches; loamy fine sand

**Carwile**

*MLRA:* 79 - Great Bend Sand Plains

*Landform:* Depression on paleoterrace on river valley

*Parent material:* Alluvium

*Slope:* 0 to 1 percent

*Drainage class:* Somewhat poorly drained

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

*Available water capacity:* High (About 9.4 inches)

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

*Flooding hazard:* None

*Ponding hazard:* Frequent

*Depth to seasonal water saturation:* About 0 to 0 inches

*Runoff class:* Negligible

*Ecological site:* Sandy (pe21-28)

*Land capability (nonirrigated):* 2w

*Typical Profile:*

H1—0 to 7 inches; fine sandy loam

H2—7 to 14 inches; sandy clay loam

H3—14 to 38 inches; sandy clay

H4—38 to 60 inches; sandy clay loam

**Minor Components**

**Unnamed Hydric Soils**

**Unnamed Wet Soils**

*Phase:* Sandy, Depression

**Pt—Pratt-Tivoli loamy fine sands,  
5 to 15 percent slopes  
Map Unit Composition**

Pratt: 65 percent

Tivoli: 35 percent

**Component Descriptions**

**Pratt**

*MLRA:* 79 - Great Bend Sand Plains

*Landform:* Dune on paleoterrace on river valley

*Parent material:* Sandy eolian deposits

*Slope:* 5 to 10 percent

*Drainage class:* Well drained

*Slowest permeability:* Rapid (About 5.95 in/hr)

*Available water capacity:* Moderate (About 6.3 inches)

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

*Flooding hazard:* None

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

*Runoff class:* Very low

*Ecological site:* Sands (pe21-28)

*Land capability (irrigated):* 3e

*Land capability (nonirrigated):* 4e

*Typical Profile:*

H1—0 to 8 inches; loamy fine sand

H2—8 to 28 inches; loamy fine sand

H3—28 to 60 inches; loamy fine sand

**Tivoli**

*MLRA:* 79 - Great Bend Sand Plains

*Landform:* Dune on paleoterrace on river valley

*Parent material:* Sandy eolian deposits

*Slope:* 5 to 15 percent

*Drainage class:* Excessively drained

*Slowest permeability:* Rapid (About 5.95 in/hr)

*Available water capacity:* Low (About 3.2 inches)

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

*Flooding hazard:* None

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

*Runoff class:* Very low

*Ecological site:* Sands (pe21-28)

*Land capability (nonirrigated):* 7e

*Typical Profile:*

H1—0 to 6 inches; loamy fine sand

H2—6 to 60 inches; fine sand

**Minor Components**

**Carwile**

**Unnamed Wet Soils**

*Phase:* Sandy, Depression

**Ta—Tabler loam, 0 to 1 percent  
slopes**

**Map Unit Composition**

Tabler: 100 percent

### Component Descriptions

#### Tabler

*MLRA:* 79 - Great Bend Sand Plains

*Landform:* Paleoterrace on river valley

*Parent material:* Clayey alluvium

*Slope:* 0 to 1 percent

*Drainage class:* Moderately well drained

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

*Available water capacity:* High (About 9.4 inches)

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

*Flooding hazard:* None

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

*Runoff class:* Negligible

*Ecological site:* Clay Upland (pe21-28)

*Land capability (nonirrigated):* 2s

#### Typical Profile:

H1—0 to 7 inches; loam

H2—7 to 48 inches; clay

H3—48 to 60 inches; clay

#### Minor Components

##### Carwile

#### Unnamed Wet Soils

*Phase:* Clayey, Depression

### TAA—Tabler clay loam, 0 to 1 percent slopes

#### Map Unit Composition

Tabler: 100 percent

### Component Descriptions

#### Tabler

*MLRA:* 79 - Great Bend Sand Plains

*Landform:* Paleoterrace on river valley

*Parent material:* Clayey alluvium

*Slope:* 0 to 1 percent

*Drainage class:* Moderately well drained

*Slowest permeability:* Very slow (About 0.00 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 low

*Ecological site:* Clay Upland (pe21-28)

*Land capability (nonirrigated):* 2s

#### Typical Profile:

H1—0 to 10 inches; clay loam

H2—10 to 40 inches; silty clay

H3—40 to 60 inches; silty clay

#### Minor Components

##### Carwile

#### Unnamed Wet Soils

*Phase:* Clayey, Depression

#### Unnamed Wet Soils

*Phase:* Clayey, Drainageway

### Tv—Tivoli fine sand, 5 to 20 percent slopes

#### Map Unit Composition

Tivoli: 100 percent

### Component Descriptions

#### Tivoli

*MLRA:* 79 - Great Bend Sand Plains

*Landform:* Dune on paleoterrace on river valley

*Parent material:* Sandy eolian deposits

*Slope:* 5 to 20 percent

*Drainage class:* Excessively drained

*Slowest permeability:* Rapid (About 5.95 in/hr)

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

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

*Flooding hazard:* None

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

*Runoff class:* Very low

*Ecological site:* Choppy Sands (pe21-28)

*Land capability (nonirrigated):* 7e

#### Typical Profile:

H1—0 to 6 inches; fine sand

H2—6 to 60 inches; fine sand

**Minor Components**  
**Carwile**

**Unnamed Wet Soils**  
*Phase: Sandy, Depression*

**Unnamed Wet Soils**  
*Phase: Sandy, Drainageway*

**W—Water**

**Wa—Waldeck fine sandy loam,  
occasionally flooded**

**Map Unit Composition**

Waldeck: 100 percent

**Component Descriptions**

**Waldeck**

*MLRA: 79 - Great Bend Sand Plains*  
*Landform: Flood plain on river valley*  
*Parent material: Alluvium*  
*Slope: 0 to 1 percent*  
*Drainage class: Somewhat poorly drained*  
*Slowest permeability: Moderately rapid (About 2.00 in/hr)*  
*Available water capacity: Moderate (About 6.4 inches)*  
*Shrink-swell potential: Low (About 1.5 LEP)*  
*Flooding hazard: Occasional*  
*Depth to seasonal water saturation: About 24 to 48 inches*  
*Runoff class: Negligible*  
*Ecological site: Subirrigated (pe21-28)*  
*Land capability (nonirrigated): 3w*

*Typical Profile:*

H1—0 to 12 inches; fine sandy loam  
H2—12 to 30 inches; fine sandy loam  
H3—30 to 60 inches; fine sand

**Minor Components**

**Unnamed Wet Soils**  
*Phase: Sandy, Drainageway*

**Za—Zenda-Natrustolls complex,  
occasionally flooded**

**Map Unit Composition**

Zenda: 80 percent  
Natrustolls: 20 percent

**Component Descriptions**

**Zenda**

*MLRA: 79 - Great Bend Sand Plains*  
*Landform: Dune on paleoterrace on river valley*  
*Parent material: Sandy eolian deposits*  
*Slope: 0 to 1 percent*  
*Drainage class: Somewhat poorly drained*  
*Slowest permeability: Moderate (About 0.60 in/hr)*  
*Available water capacity: High (About 10.6 inches)*  
*Shrink-swell potential: Moderate (About 4.5 LEP)*  
*Flooding hazard: Occasional*  
*Depth to seasonal water saturation: About 24 to 48 inches*  
*Runoff class: Negligible*  
*Ecological site: Subirrigated (pe21-28)*  
*Land capability (nonirrigated): 4s*

*Typical Profile:*

H1—0 to 20 inches; loam  
H2—20 to 60 inches; loam

**Natrustolls**

*MLRA: 79 - Great Bend Sand Plains*  
*Slope: 0 to 1 percent*  
*Drainage class: Somewhat poorly drained*  
*Slowest permeability: Very slow (About 0.00 in/hr)*  
*Available water capacity: Very low (About 2.1 inches)*  
*Shrink-swell potential: High (About 7.5 LEP)*  
*Flooding hazard: None*  
*Depth to seasonal water saturation: About 24 to 48 inches*  
*Runoff class: Negligible*  
*Land capability (nonirrigated): 6s*

*Typical Profile:*

H1—0 to 10 inches; fine sandy loam  
H2—10 to 25 inches; clay loam  
H3—25 to 60 inches; variable

**Minor Components****Carwile****Unnamed Wet Soils***Phase:* Loamy, Depression*Runoff class:* Very low*Ecological site:* Subirrigated (pe21-28)*Land capability (nonirrigated):* 4s*Typical Profile:*

H1—0 to 14 inches; clay loam

H2—14 to 60 inches; clay loam

**ZSS—Zenda-Drummond complex,  
occasionally flooded****Map Unit Composition**

Zenda: 50 percent

Drummond: 50 percent

**Component Descriptions****Zenda***MLRA:* 79 - Great Bend Sand Plains*Landform:* Dune on paleoterrace on river valley*Parent material:* Sandy eolian deposits*Slope:* 0 to 2 percent*Drainage class:* Somewhat poorly drained*Slowest permeability:* Moderate (About 0.60 in/hr)*Available water capacity:* High (About 10.5 inches)*Shrink-swell potential:* Moderate (About 4.5 LEP)*Flooding hazard:* Occasional*Depth to seasonal water saturation:* About 24 to 48 inches**Drummond***MLRA:* 79 - Great Bend Sand Plains*Landform:* Terrace on river valley*Parent material:* Clayey and/or loamy alluvium*Slope:* 0 to 2 percent*Drainage class:* Somewhat poorly drained*Slowest permeability:* Very slow (About 0.00 in/hr)*Available water capacity:* Very low (About 2.8 inches)*Shrink-swell potential:* High (About 7.5 LEP)*Flooding hazard:* None*Depth to seasonal water saturation:* About 24 to 48 inches*Runoff class:* Very low*Ecological site:* Saline Lowland (pe21-28)*Land capability (nonirrigated):* 6s*Typical Profile:*

H1—0 to 8 inches; clay loam

H2—8 to 30 inches; clay

H3—30 to 60 inches; variable

**Minor Components****Unnamed Wet Soils***Phase:* Clayey, Depression