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**County specific computer generated reports.*

ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Woodson County, Kansas: Published

Map symbol	Soil name	Acres	Percent
001CA	Catoosa Silt Loam, 0 To 2 Percent Slopes-----	1,479	0.5
001CB	Catoosa-Rock Outcrop Complex, 1 To 8 Percent Slopes-----	36	*
001CC	Collinsville-Bates Complex, 2 To 15 Percent Slopes-----	83	*
001ZB	Zaar Silty Clay, 3 To 7 Percent Slopes-----	30	*
031EP	Eram-Apperson Silty Clay Loams, 4 To 7 Percent Slopes-----	12	*
031ES	Eram-Shidler Silty Clay Loams, 4 To 15 Percent Slopes-----	445	0.1
073AT	Aquents, Frequently Flooded-----	18	*
073CA	Chase Silty Clay Loam, Occasionally Flooded-----	12	*
073CM	Clime Silty Clay, 3 To 7 Percent Slopes-----	411	0.1
073CS	Clime-Sogn Complex, 5 To 20 Percent Slopes-----	1,158	0.4
073DS	Dennis Silty Clay Loam, 2 To 6 Percent Slopes, Eroded-----	19	*
073IC	Ivan Silt Loam, Channeled-----	133	*
073IF	Ivan Silt Loam, Occasionally Flooded-----	257	*
073KE	Kenoma Silty Clay Loam, 2 To 5 Percent Slopes, Eroded-----	14	*
073LA	Labette Silty Clay Loam, 1 To 4 Percent Slopes-----	11	*
073LD	Labette-Dwight Complex, 0 To 3 Percent Slopes-----	235	*
073MA	Martin Silty Clay Loam, 1 To 4 Percent Slopes-----	156	*
073NZ	Niotaze-Darnell Complex, 6 To 35 Percent Slopes-----	702	0.2
073RE	Reading Silt Loam, 0 To 2 Percent Slopes, Rarely Flooded-----	21	*
073ST	Steedman Stony Loam, 3 To 12 Percent Slopes-----	2,432	0.8
205BH	Bates-Collinsville Loams, 3 To 7 Percent Slopes-----	122	*
205BO	Bates-Collinsville Loams, 7 To 20 Percent Slopes-----	2,063	0.6
205DW	Dennis-Dwight Silt Loams, 1 To 5 Percent Slopes-----	44	*
205EB	Eram Silt Loam, 1 To 3 Percent Slopes-----	40	*
205EC	Eram Silt Loam, 3 To 7 Percent Slopes-----	13	*
205LA	Lanton Silt Loam, Occasionally Flooded-----	11	*
205ND	Niotaze-Darnell Complex, 4 To 30 Percent Slopes-----	191	*
205SC	Shidler-Catoosa Complex, 1 To 8 Percent Slopes-----	53	*
205SF	Steedman Gravelly Silt Loam, 4 To 25 Percent Slopes, Stony-----	601	0.2
AED	Arents, Earthen Dam-----	40	*
Bb	Bates Loam, 1 To 4 Percent Slopes-----	12,539	3.9
Bc	Bates Loam, 4 To 7 Percent Slopes-----	3,651	1.1
BOP	Borrow Pits-----	126	*
Ca	Clareson-Sogn Complex, 1 To 8 Percent Slopes-----	2,543	0.8
Cd	Cleora Fine Sandy Loam, Occasionally Flooded-----	893	0.3
Dd	Darnell-Niotaze Complex, 24 To 45 Percent Slopes-----	1,414	0.4
Da	Dennis Silt Loam, 1 To 3 Percent Slopes-----	41,675	12.9
De	Dennis Silt Loam, 3 To 6 Percent Slopes-----	3,839	1.2
Df	Dennis Silty Clay Loam, 1 To 3 Percent Slopes, Eroded-----	7,001	2.2
Dg	Dennis And Eram Soils, 3 To 7 Percent Slopes, Eroded-----	1,043	0.3
Dw	Dwight Silt Loam, 0 To 2 Percent Slopes-----	3,058	0.9
Eb	Eram Silty Clay Loam, 1 To 4 Percent Slopes-----	4,137	1.3
Ec	Eram Silty Clay Loam, 4 To 7 Percent Slopes-----	3,188	1.0
Ex	Eram-Collinsville Complex, 4 To 25 Percent Slopes-----	28,529	8.8
GRP	Gravel Pits And Quarries-----	112	*
Ha	Hepler Silt Loam, Occasionally Flooded-----	9,532	2.9
Ka	Kenoma Silt Loam, 1 To 2 Percent Slopes-----	46,310	14.3
Ko	Kenoma-Olpe Complex, 2 To 7 Percent Slopes-----	1,075	0.3
Kw	Kenoma And Woodson Soils, 1 To 3 Percent Slopes, Eroded-----	1,533	0.5
La	Leanna Silt Loam, Occasionally Flooded-----	5,533	1.7
Lb	Lula Silt Loam, 0 To 2 Percent Slopes-----	11,461	3.5
Ld	Lula-Dwight Complex, 0 To 2 Percent Slopes-----	1,821	0.6
Ma	Mason Silt Loam, Rarely Flooded-----	4,938	1.5
Ns	Niotaze-Stephenville Complex, 4 To 25 Percent Slopes-----	6,700	2.1
Od	Olpe Soils, 4 To 15 Percent Slopes-----	380	0.1
Og	Osage Silty Clay, Occasionally Flooded-----	4,047	1.3
Os	Osage Silty Clay Loam, Occasionally Flooded-----	2,820	0.9
Rc	Ringo Silty Clay Loam, 4 To 7 Percent Slopes-----	6,895	2.1
Rd	Ringo-Sogn Complex, 4 To 15 Percent Slopes-----	7,907	2.4
Sa	Stephenville Fine Sandy Loam, 1 To 4 Percent Slopes-----	1,182	0.4
Sd	Summit Silty Clay Loam, 1 To 4 Percent Slopes-----	13,000	4.0
Se	Summit Silty Clay Loam, 4 To 7 Percent Slopes-----	2,272	0.7
Va	Verdigris Silt Loam, Occasionally Flooded-----	3,424	1.1
Vc	Verdigris Soils, Channeled-----	21,029	6.5
W	Water-----	3,437	1.1
Wa	Woodson Silt Loam, 0 To 2 Percent Slopes-----	42,614	13.2
Za	Zaar Silty Clay, 1 To 4 Percent Slopes-----	853	0.3
	Total-----	323,353	100.0

* Less than 0.1 percent.

Nontechnical Soil Descriptions
Woodson County, Kansas

Nontechnical soil descriptions describe soil properties or management considerations specific to a soil map unit or group of map units, shown in the NonTechnical Descriptions report. These descriptions are written in terminology that Non-technical users of soil survey information can understand. Nontechnical soil descriptions are a powerful tool for creating reports. These high quality, easy to read reports can be generated by conservation planners and other NRCS employees for distribution to land users. Soil map unit descriptions and National Soil Information System records are the basis for these descriptions.

001CA Catoosa Silt Loam, 0 To 2 Percent Slopes

Catoosa soil makes up 90 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a nearly level to gently sloping summit ridge on upland. The runoff class is medium. The parent material consists of residuum weathered from limestone. The soil is 20 to 40 inches deep to bedrock (lithic). This soil is well drained. The slowest permeability is moderately slow. It has a low available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Loamy Upland (pe35-42) range site. It is in the nonirrigated land capability classification 2e.

001CB Catoosa-Rock Outcrop Complex, 1 To 8 Percent Slopes

Catoosa soil makes up 60 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a gently sloping to strongly sloping backslope hillslope on upland. The runoff class is medium. The parent material consists of residuum weathered from limestone. The soil is 20 to 40 inches deep to bedrock (lithic). This soil is well drained. The slowest permeability is moderately slow. It has a low available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Loamy Upland (pe35-42) range site. It is in the nonirrigated land capability classification 6s.

001CC Collinsville-Bates Complex, 2 To 15 Percent Slopes

Collinsville soil makes up 50 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a gently sloping to moderately steep backslope hillslope on upland. The runoff class is low. The parent material consists of sandstone residuum. The soil is 4 to 20 inches deep to bedrock (lithic). This soil is well drained. The slowest permeability is moderately rapid. It has a very low available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Shallow Sandstone (pe35-42) range site. It is in the nonirrigated land capability classification 6e.

Bates soil makes up 40 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a gently sloping to moderately sloping backslope hillslope on upland. The runoff class is medium. The parent material consists of sandy and silty residuum weathered from sandstone over sandy and silty residuum weathered from sandstone and shale. The soil is 20 to 40 inches deep to bedrock (paralithic). This soil is well drained. The slowest permeability is moderate. It has a low available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Loamy Upland (pe35-42) range site. It is in the nonirrigated land capability classification 6e.

001ZB Zaar Silty Clay, 3 To 7 Percent Slopes

Zaar soil makes up 100 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a moderately sloping footslope hillslope on upland. The runoff class is very high. The parent material consists of residuum weathered from shale. This soil is somewhat poorly drained. The slowest permeability is very slow. It has a moderate available water capacity and a very high shrink swell potential. This soil is not flooded and is not ponded. The top of the seasonal high water table is at 18 inches. This soil is in the Clay Upland (pe35-42) range site. It is in the nonirrigated land capability classification 4e.

031EP Eram-Apperson Silty Clay Loams, 4 To 7 Percent Slopes

Eram soil makes up 50 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a moderately sloping backslope hillslope on upland. The runoff class is very high. The parent material consists of silty and clayey residuum weathered from shale, unspecified. The soil is 20 to 40 inches deep to bedrock (paralithic). This soil is moderately well drained. The slowest permeability is slow. It has a low available water capacity and a moderate shrink swell potential. This soil is not flooded and is not ponded. The top of the seasonal high water table is at 12 inches. This soil is in the Clay Upland (pe35-42) range site. It is in the nonirrigated land capability classification 4e.

Apperson soil makes up 35 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a moderately sloping backslope hillslope on upland. The runoff class is high. The parent material consists of clayey residuum. The soil is 40 to 60 inches deep to bedrock (lithic). This soil is moderately well drained. The slowest permeability is slow. It has a moderate available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The top of the seasonal high water table is at 15 inches. This soil is in the Loamy Upland (pe35-42) range site. It is in the nonirrigated land capability classification 4e.

Nontechnical Soil Descriptions--Continued
Woodson County, Kansas

031ES Eram-Shidler Silty Clay Loams, 4 To 15 Percent Slopes

Eram soil makes up 60 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a moderately sloping to moderately steep summit, backslope hillslope on upland. The runoff class is very high. The parent material consists of silty and clayey residuum weathered from shale, unspecified. The soil is 20 to 40 inches deep to bedrock (paralithic). This soil is moderately well drained. The slowest permeability is slow. It has a low available water capacity and a moderate shrink swell potential. This soil is not flooded and is not ponded. The top of the seasonal high water table is at 12 inches. This soil is in the Clay Upland (pe35-42) range site. It is in the nonirrigated land capability classification 6e.

Shidler soil makes up 25 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a moderately sloping to moderately steep shoulder rim on upland. The runoff class is medium. The parent material consists of residuum weathered from limestone. The soil is 4 to 20 inches deep to bedrock (lithic). This soil is well drained. The slowest permeability is moderate. It has a very low available water capacity and a moderate shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Shallow Limy (pe35-42) range site. It is in the nonirrigated land capability classification 7s.

073AT Aqueuts, Frequently Flooded

Aqueuts soil makes up 100 percent of the map unit. This map unit is in the Bluestem Hills Major Land Resource Area. This soil occurs on a nearly level to moderately sloping flood plain on river valley. <runoff is missing> <parent material is missing> This soil is somewhat poorly drained. It has a very low available water capacity and a low shrink swell potential. This soil is occasionally flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. It is in the nonirrigated land capability classification 5w.

073CA Chase Silty Clay Loam, Occasionally Flooded

Chase soil makes up 90 percent of the map unit. This map unit is in the Bluestem Hills Major Land Resource Area. This soil occurs on a nearly level to gently sloping flood plain on river valley. The runoff class is high. The parent material consists of silty and clayey alluvium. This soil is somewhat poorly drained. The slowest permeability is slow. It has a high available water capacity and a moderate shrink swell potential. This soil is occasionally flooded and is not ponded. The top of the seasonal high water table is at 36 inches. This soil is in the Loamy Lowland (pe30-36) range site. It is in the nonirrigated land capability classification 2w.

073CM Clime Silty Clay, 3 To 7 Percent Slopes

Clime soil makes up 90 percent of the map unit. This map unit is in the Bluestem Hills Major Land Resource Area. This soil occurs on a moderately sloping backslope hillslope on upland. The runoff class is very high. The parent material consists of silty and clayey residuum weathered from calcareous shale. The soil is 20 to 40 inches deep to bedrock (paralithic). This soil is well drained. The slowest permeability is slow. It has a low available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. The soil contains a maximum amount of 15 percent calcium carbonate. This soil is in the Limy Upland (pe30-36) range site. It is in the nonirrigated land capability classification 4e.

073CS Clime-Sogn Complex, 5 To 20 Percent Slopes

Clime soil makes up 60 percent of the map unit. This map unit is in the Bluestem Hills Major Land Resource Area. This soil occurs on a moderately sloping to moderately steep backslope ridge on upland. The runoff class is very high. The parent material consists of silty and clayey residuum weathered from calcareous shale. The soil is 20 to 40 inches deep to bedrock (paralithic). This soil is well drained. The slowest permeability is slow. It has a low available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. The soil contains a maximum amount of 15 percent calcium carbonate. This soil is in the Limy Upland (pe30-36) range site. It is in the nonirrigated land capability classification 6e.

Sogn soil makes up 20 percent of the map unit. This map unit is in the Bluestem Hills Major Land Resource Area. This soil occurs on a moderately sloping to moderately steep backslope ridge on upland. The runoff class is medium. The parent material consists of loamy residuum weathered from limestone. The soil is 4 to 20 inches deep to bedrock (lithic). This soil is somewhat excessively drained. The slowest permeability is moderate. It has a very low available water capacity and a moderate shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Shallow Limy (pe30-36) range site. It is in the nonirrigated land capability classification 7s.

073DS Dennis Silty Clay Loam, 2 To 6 Percent Slopes, Eroded

Dennis, eroded, soil makes up 100 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a gently sloping to moderately sloping footslope, backslope hillslope on upland. The runoff class is high. The parent material consists of silty and clayey residuum weathered from shale. This soil is moderately well drained. The slowest permeability is slow. It has a high available water capacity and a very high shrink swell potential. This soil is not flooded and is not ponded. The top of the seasonal high water table is at 15 inches. This soil is in the Loamy Upland (pe30-36) range site. It is in the nonirrigated land capability classification 3e.

Nontechnical Soil Descriptions--Continued
Woodson County, Kansas

073IC Ivan Silt Loam, Channeled

Ivan soil makes up 85 percent of the map unit. This map unit is in the Bluestem Hills Major Land Resource Area. This soil occurs on a nearly level channel on flood plain on river valley. The runoff class is low. The parent material consists of alluvium. This soil is well drained. The slowest permeability is moderate. It has a very high available water capacity and a low shrink swell potential. This soil is frequently flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. The soil contains a maximum amount of 15 percent calcium carbonate. This soil is in the Loamy Lowland (pe30-36) range site. It is in the nonirrigated land capability classification 5w.

073IF Ivan Silt Loam, Occasionally Flooded

Ivan soil makes up 90 percent of the map unit. This map unit is in the Bluestem Hills Major Land Resource Area. This soil occurs on a nearly level flood plain on river valley. The runoff class is low. The parent material consists of alluvium. This soil is well drained. The slowest permeability is moderate. It has a very high available water capacity and a moderate shrink swell potential. This soil is occasionally flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. The soil contains a maximum amount of 15 percent calcium carbonate. This soil is in the Loamy Lowland (pe30-36) range site. It is in the nonirrigated land capability classification 2w.

073KE Kenoma Silty Clay Loam, 2 To 5 Percent Slopes, Eroded

Kenoma, eroded, soil makes up 100 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a gently sloping to moderately sloping shoulder, summit hillslope on upland. The runoff class is high. The parent material consists of loess over ancient clayey alluvium and/or residuum weathered from limestone and shale. This soil is moderately well drained. The slowest permeability is slow. It has a high available water capacity and a moderate shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil contains a very slightly saline horizon. This soil is in the Clay Upland (pe30-36) range site. It is in the nonirrigated land capability classification 4e.

073LA Labette Silty Clay Loam, 1 To 4 Percent Slopes

Labette soil makes up 90 percent of the map unit. This map unit is in the Bluestem Hills Major Land Resource Area. This soil occurs on a gently sloping to moderately sloping summit, shoulder hillslope on upland. The runoff class is medium. The parent material consists of silty and clayey residuum weathered from limestone and shale. The soil is 20 to 40 inches deep to bedrock (lithic). This soil is well drained. The slowest permeability is moderately slow. It has a low available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Loamy Upland (pe30-36) range site. It is in the nonirrigated land capability classification 2e.

073LD Labette-Dwight Complex, 0 To 3 Percent Slopes

Labette soil makes up 65 percent of the map unit. This map unit is in the Bluestem Hills Major Land Resource Area. This soil occurs on a nearly level to gently sloping summit hillslope on upland. The runoff class is medium. The parent material consists of silty and clayey residuum weathered from limestone and shale. The soil is 20 to 40 inches deep to bedrock (lithic). This soil is well drained. The slowest permeability is moderately slow. It has a low available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Loamy Upland (pe30-36) range site. It is in the nonirrigated land capability classification 3e.

Dwight soil makes up 30 percent of the map unit. This map unit is in the Bluestem Hills Major Land Resource Area. This soil occurs on a nearly level to gently sloping summit hillslope on upland. The runoff class is very high. The parent material consists of loess over clayey ancient alluvium over residuum. The soil is 40 to 60 inches deep to bedrock (lithic). This soil is moderately well drained. The slowest permeability is very slow. It has a low available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. It has a horizon that is moderately sodic. This soil is in the Clay Pan (pe30-36) range site. It is in the nonirrigated land capability classification 4s.

073MA Martin Silty Clay Loam, 1 To 4 Percent Slopes

Martin soil makes up 100 percent of the map unit. This map unit is in the Bluestem Hills Major Land Resource Area. This soil occurs on a gently sloping to moderately sloping footslope hillslope on upland. The runoff class is medium. The parent material consists of silty and clayey colluvium derived from limestone-shale over silty and clayey residuum weathered from limestone-shale. This soil is moderately well drained. The slowest permeability is slow. It has a high available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The top of the seasonal high water table is at 18 inches. This soil is in the Loamy Upland (pe30-36) range site. It is in the nonirrigated land capability classification 2e.

073NZ Niotaze-Darnell Complex, 6 To 35 Percent Slopes

Niotaze soil makes up 75 percent of the map unit. This map unit is in the Cross Timbers Major Land Resource Area. This soil occurs on a moderately sloping to steep backslope hillslope on upland. The runoff class is very high. The parent material consists of clayey residuum weathered from sandstone and shale. The soil is 20 to 40 inches deep to bedrock (paralithic). This soil is somewhat poorly drained. The slowest permeability is moderately slow. It has a low available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The top of the seasonal high water table is at 18 inches. This soil is in the Savannah (pe35-42) range site. It is in the nonirrigated land capability classification 6e.

Nontechnical Soil Descriptions--Continued
Woodson County, Kansas

Darnell soil makes up 15 percent of the map unit. This map unit is in the Cross Timbers Major Land Resource Area. This soil occurs on a moderately sloping to steep summit hillslope on upland. The runoff class is medium. The parent material consists of loamy residuum. The soil is 10 to 20 inches deep to bedrock (paralithic). This soil is well drained. The slowest permeability is moderately rapid. It has a very low available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Shallow Savannah (pe35-42) range site. It is in the nonirrigated land capability classification 7e.

073RE Reading Silt Loam, 0 To 2 Percent Slopes, Rarely Flooded

Reading soil makes up 90 percent of the map unit. This map unit is in the Bluestem Hills Major Land Resource Area. This soil occurs on a nearly level stream terrace on river valley. The runoff class is negligible. The parent material consists of silty alluvium. This soil is well drained. The slowest permeability is moderately slow. It has a high available water capacity and a moderate shrink swell potential. This soil is rarely flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Loamy Lowland (pe30-36) range site. It is in the nonirrigated land capability classification 1.

073ST Steedman Stony Loam, 3 To 12 Percent Slopes

Steedman soil makes up 85 percent of the map unit. This map unit is in the Cross Timbers Major Land Resource Area. This soil occurs on a moderately sloping to strongly sloping backslope hillslope on upland. The runoff class is very high. The parent material consists of clayey residuum weathered from clayey shale. The soil is 20 to 40 inches deep to bedrock (paralithic). This soil is moderately well drained. The slowest permeability is slow. It has a low available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The top of the seasonal high water table is at 18 inches. The soil contains a maximum amount of 1 percent calcium carbonate. This soil is in the Loamy Upland (pe35-42) range site. It is in the nonirrigated land capability classification 6e.

205BH Bates-Collinsville Loams, 3 To 7 Percent Slopes

Bates soil makes up 50 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a moderately sloping summit ridge on upland. The runoff class is high. The parent material consists of sandy and silty residuum weathered from sandstone, unspecified over sandy and silty residuum weathered from sandstone-shale. The soil is 20 to 40 inches deep to bedrock (paralithic). This soil is well drained. The slowest permeability is moderately slow. It has a low available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Loamy Upland (pe35-42) range site. It is in the nonirrigated land capability classification 4e.

Collinsville soil makes up 35 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a moderately sloping backslope hillslope on upland. The runoff class is very low. The parent material consists of sandstone residuum. The soil is 4 to 20 inches deep to bedrock (lithic). This soil is well drained. The slowest permeability is moderately rapid. It has a very low available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Shallow Sandstone (pe35-42) range site. It is in the nonirrigated land capability classification 6s.

205BO Bates-Collinsville Loams, 7 To 20 Percent Slopes

Bates soil makes up 45 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a moderately sloping to strongly sloping summit ridge on upland. The runoff class is high. The parent material consists of sandy and silty residuum weathered from sandstone, unspecified over sandy and silty residuum weathered from sandstone-shale. The soil is 20 to 40 inches deep to bedrock (paralithic). This soil is well drained. The slowest permeability is moderately slow. It has a low available water capacity and a moderate shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Loamy Upland (pe35-42) range site. It is in the nonirrigated land capability classification 6e.

Collinsville soil makes up 40 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a strongly sloping to moderately steep backslope hillslope on upland. The runoff class is low. The parent material consists of sandstone residuum. The soil is 4 to 20 inches deep to bedrock (lithic). This soil is well drained. The slowest permeability is moderately rapid. It has a very low available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Shallow Sandstone (pe35-42) range site. It is in the nonirrigated land capability classification 7s.

205DW Dennis-Dwight Silt Loams, 1 To 5 Percent Slopes

Dennis soil makes up 65 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a gently sloping to moderately sloping footslope hillslope on upland. The runoff class is high. The parent material consists of silty and clayey residuum weathered from shale, unspecified. This soil is moderately well drained. The slowest permeability is slow. It has a high available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The top of the seasonal high water table is at 24 inches. This soil is in the Loamy Upland (pe35-42) range site. It is in the nonirrigated land capability classification 3e.

Nontechnical Soil Descriptions--Continued
Woodson County, Kansas

Dwight soil makes up 25 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a gently sloping footslope hillslope on paleoterrace on upland. The runoff class is very high. The parent material consists of silty and clayey residuum weathered from limestone, cherty. This soil is moderately well drained. The slowest permeability is very slow. It has a moderate available water capacity and a very high shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil contains a moderately saline horizon, it has a horizon that is slightly sodic. This soil is in the Clay Pan (pe30-36) range site. It is in the nonirrigated land capability classification 4s.

205EB Eram Silt Loam, 1 To 3 Percent Slopes

Eram soil makes up 90 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a gently sloping summit, backslope hillslope on upland. The runoff class is high. The parent material consists of silty and clayey residuum weathered from shale, unspecified. The soil is 20 to 40 inches deep to bedrock (paralithic). This soil is moderately well drained. The slowest permeability is slow. It has a low available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The top of the seasonal high water table is at 12 inches. This soil is in the Clay Upland (pe35-42) range site. It is in the nonirrigated land capability classification 3e.

205EC Eram Silt Loam, 3 To 7 Percent Slopes

Eram soil makes up 90 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a moderately sloping backslope hillslope on upland. The runoff class is high. The parent material consists of silty and clayey residuum weathered from shale, unspecified. The soil is 20 to 40 inches deep to bedrock (paralithic). This soil is moderately well drained. The slowest permeability is slow. It has a low available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The top of the seasonal high water table is at 12 inches. This soil is in the Clay Upland (pe35-42) range site. It is in the nonirrigated land capability classification 4e.

205LA Lanton Silt Loam, Occasionally Flooded

Lanton soil makes up 90 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a nearly level to gently sloping flood plain on river valley. The runoff class is medium. The parent material consists of silty and clayey alluvium. This soil is somewhat poorly drained. The slowest permeability is slow. It has a high available water capacity and a moderate shrink swell potential. This soil is occasionally flooded and is not ponded. The top of the seasonal high water table is at 12 inches. This soil is in the Loamy Lowland (pe35-42) range site. It is in the nonirrigated land capability classification 2w.

205ND Niotaze-Darnell Complex, 4 To 30 Percent Slopes

Niotaze soil makes up 50 percent of the map unit. This map unit is in the Cross Timbers Major Land Resource Area. This soil occurs on a moderately sloping to steep footslope hillslope on upland. The runoff class is high. The parent material consists of clayey residuum weathered from sandstone and shale. The soil is 20 to 40 inches deep to bedrock (paralithic). This soil is somewhat poorly drained. The slowest permeability is slow. It has a low available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The top of the seasonal high water table is at 12 inches. This soil is in the Savannah (pe35-38) range site. It is in the nonirrigated land capability classification 6e.

Darnell soil makes up 35 percent of the map unit. This map unit is in the Cross Timbers Major Land Resource Area. This soil occurs on a moderately sloping to moderately steep backslope hillslope on upland. The runoff class is low. The parent material consists of loamy residuum. The soil is 10 to 20 inches deep to bedrock (paralithic). This soil is well drained. The slowest permeability is moderate. It has a very low available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Shallow Savannah (pe35-38) range site. It is in the nonirrigated land capability classification 6e.

205SC Shidler-Catoosa Complex, 1 To 8 Percent Slopes

Shidler soil makes up 70 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a gently sloping to strongly sloping shoulder ridge on upland. The runoff class is medium. The parent material consists of residuum weathered from limestone. The soil is inches bedrock (lithic). This soil is well drained. The slowest permeability is moderate. It has a very low available water capacity and a moderate shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Shallow Limy (pe35-42) range site. It is in the nonirrigated land capability classification 6e.

Catoosa soil makes up 20 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a nearly level to gently sloping summit ridge on upland. The runoff class is medium. The parent material consists of residuum weathered from limestone. The soil is inches bedrock (lithic). This soil is well drained. The slowest permeability is moderately slow. It has a low available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Loamy Upland (pe35-42) range site. It is in the nonirrigated land capability classification 2e.

Nontechnical Soil Descriptions--Continued
Woodson County, Kansas

205SF Steedman Gravelly Silt Loam, 4 To 25 Percent Slopes, Stony

Steedman soil makes up 90 percent of the map unit. This map unit is in the Cross Timbers Major Land Resource Area. This soil occurs on a moderately sloping to steep summit, backslope hillslope on upland. The runoff class is very high. The parent material consists of clayey residuum weathered from clayey shale. The soil is 20 to 40 inches deep to bedrock (paralithic). This soil is moderately well drained. The slowest permeability is slow. It has a low available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The top of the seasonal high water table is at 6 inches. This soil is in the Loamy Upland (pe35-38) range site. It is in the nonirrigated land capability classification 6e.

Bb Bates Loam, 1 To 4 Percent Slopes

Bates soil makes up 98 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a gently sloping to moderately sloping summit, backslope hillslope on upland. The runoff class is medium. The parent material consists of sandy and silty residuum weathered from sandstone, unspecified over sandy and silty residuum weathered from sandstone-shale. The soil is 20 to 40 inches deep to bedrock (paralithic). This soil is well drained. The slowest permeability is moderately slow. It has a moderate available water capacity and a moderate shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Loamy Upland (pe35-42) range site. It is in the nonirrigated land capability classification 2e.

Bc Bates Loam, 4 To 7 Percent Slopes

Bates soil makes up 97 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a moderately sloping backslope hillslope on upland. The runoff class is medium. The parent material consists of sandy and silty residuum weathered from sandstone, unspecified over sandy and silty residuum weathered from sandstone-shale. The soil is 20 to 40 inches deep to bedrock (paralithic). This soil is well drained. The slowest permeability is moderately slow. It has a moderate available water capacity and a moderate shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Loamy Upland (pe35-42) range site. It is in the nonirrigated land capability classification 3e.

Ca Clareson-Sogn Complex, 1 To 8 Percent Slopes

Clareson soil makes up 50 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a gently sloping to strongly sloping backslope hillslope on upland. The runoff class is high. The parent material consists of silty and clayey residuum weathered from limestone, unspecified. The soil is 20 to 40 inches deep to bedrock (lithic). This soil is well drained. The slowest permeability is moderately slow. It has a low available water capacity and a moderate shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Shallow Flats (pe35-42) range site. It is in the nonirrigated land capability classification 6e.

Sogn soil makes up 35 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a gently sloping to strongly sloping summit hillslope on upland. <runoff is missing> The parent material consists of loamy residuum weathered from limestone, unspecified. The soil is 4 to 20 inches deep to bedrock (lithic). This soil is somewhat excessively drained. The slowest permeability is moderate. It has a very low available water capacity and a moderate shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Shallow Limy (pe35-42) range site. It is in the nonirrigated land capability classification 7s.

Cd Cleora Fine Sandy Loam, Occasionally Flooded

Cleora soil makes up 98 percent of the map unit. This map unit is in the Cross Timbers Major Land Resource Area. This soil occurs on a nearly level flood plain on river valley. The runoff class is very low. The parent material consists of loamy alluvium. This soil is well drained. The slowest permeability is moderately rapid. It has a high available water capacity and a low shrink swell potential. This soil is occasionally flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Loamy Lowland (pe35-42) range site. It is in the nonirrigated land capability classification 2w.

Da Darnell-Niotaze Complex, 24 To 45 Percent Slopes

Darnell soil makes up 55 percent of the map unit. This map unit is in the Cross Timbers Major Land Resource Area. This soil occurs on a steep to steep backslope, shoulder hillslope on upland. The runoff class is medium. The parent material consists of loamy residuum. The soil is 10 to 20 inches deep to bedrock (paralithic). This soil is well drained. The slowest permeability is moderately rapid. It has a very low available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Shallow Savannah (pe35-38) range site. It is in the nonirrigated land capability classification 7s.

Niotaze soil makes up 40 percent of the map unit. This map unit is in the Cross Timbers Major Land Resource Area. This soil occurs on a steep to steep backslope hillslope on upland. The runoff class is very high. The parent material consists of clayey residuum weathered from sandstone and shale. The soil is 20 to 40 inches deep to bedrock (paralithic). This soil is somewhat poorly drained. The slowest permeability is moderately slow. It has a low available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The top of the seasonal high water table is at 18 inches. This soil is in the Savannah (pe35-38) range site. It is in the nonirrigated land capability classification 7e.

Nontechnical Soil Descriptions--Continued
Woodson County, Kansas

Dd Dennis Silt Loam, 1 To 3 Percent Slopes

Dennis soil makes up 98 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a gently sloping backslope hillslope on upland. The runoff class is high. The parent material consists of silty and clayey residuum weathered from shale, unspecified. This soil is moderately well drained. The slowest permeability is very slow. It has a high available water capacity and a very high shrink swell potential. This soil is not flooded and is not ponded. The top of the seasonal high water table is at 15 inches. This soil is in the Loamy Upland (pe35-42) range site. It is in the nonirrigated land capability classification 2e.

De Dennis Silt Loam, 3 To 6 Percent Slopes

Dennis soil makes up 98 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a moderately sloping backslope hillslope on upland. The runoff class is very high. The parent material consists of silty and clayey residuum weathered from shale, unspecified. This soil is moderately well drained. The slowest permeability is very slow. It has a high available water capacity and a very high shrink swell potential. This soil is not flooded and is not ponded. The top of the seasonal high water table is at 15 inches. This soil is in the Loamy Upland (pe35-42) range site. It is in the nonirrigated land capability classification 3e.

Df Dennis Silty Clay Loam, 1 To 3 Percent Slopes, Eroded

Dennis, eroded, soil makes up 98 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a gently sloping backslope hillslope on upland. The runoff class is high. The parent material consists of silty and clayey residuum weathered from shale, unspecified. This soil is moderately well drained. The slowest permeability is very slow. It has a high available water capacity and a very high shrink swell potential. This soil is not flooded and is not ponded. The top of the seasonal high water table is at 15 inches. This soil is in the Loamy Upland (pe35-42) range site. It is in the nonirrigated land capability classification 3e.

Dg Dennis And Eram Soils, 3 To 7 Percent Slopes, Eroded

Dennis, eroded, soil makes up 50 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a moderately sloping backslope hillslope on upland. The runoff class is very high. The parent material consists of silty and clayey residuum weathered from shale, unspecified. This soil is moderately well drained. The slowest permeability is very slow. It has a high available water capacity and a very high shrink swell potential. This soil is not flooded and is not ponded. The top of the seasonal high water table is at 15 inches. This soil is in the Loamy Upland (pe35-42) range site. It is in the nonirrigated land capability classification 4e.

Eram, eroded, soil makes up 30 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a moderately sloping footslope hillslope on upland. <runoff is missing> The parent material consists of silty and clayey residuum weathered from shale, unspecified. The soil is 20 to 40 inches deep to bedrock (paralithic). This soil is moderately well drained. The slowest permeability is slow. It has a low available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The top of the seasonal high water table is at 12 inches. This soil is in the Clay Upland (pe35-42) range site. It is in the nonirrigated land capability classification 6e.

Dw Dwight Silt Loam, 0 To 2 Percent Slopes

Dwight soil makes up 98 percent of the map unit. This map unit is in the Bluestem Hills Major Land Resource Area. This soil occurs on a nearly level to gently sloping summit divide on hillslope on upland. The runoff class is very high. The parent material consists of loess over clayey ancient alluvium over residuum. The soil is 40 to 60 inches deep to bedrock (paralithic). This soil is moderately well drained. The slowest permeability is very slow. It has a moderate available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. It has a horizon that is moderately sodic. This soil is in the Clay Pan (pe30-36) range site. It is in the nonirrigated land capability classification 4s.

Eb Eram Silty Clay Loam, 1 To 4 Percent Slopes

Eram soil makes up 98 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a gently sloping to moderately sloping summit hillslope on upland. The runoff class is high. The parent material consists of silty and clayey residuum weathered from shale, unspecified. The soil is 20 to 40 inches deep to bedrock (paralithic). This soil is moderately well drained. The slowest permeability is slow. It has a low available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The top of the seasonal high water table is at 12 inches. This soil is in the Clay Upland (pe35-42) range site. It is in the nonirrigated land capability classification 3e.

Ec Eram Silty Clay Loam, 4 To 7 Percent Slopes

Eram soil makes up 98 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a moderately sloping backslope hillslope on upland. The runoff class is very high. The parent material consists of silty and clayey residuum weathered from shale, unspecified. The soil is 20 to 40 inches deep to bedrock (paralithic). This soil is moderately well drained. The slowest permeability is slow. It has a low available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The top of the seasonal high water table is at 12 inches. This soil is in the Clay Upland (pe35-42) range site. It is in the nonirrigated land capability classification 4e.

Nontechnical Soil Descriptions--Continued
Woodson County, Kansas

Ex Eram-Collinsville Complex, 4 To 25 Percent Slopes

Eram soil makes up 60 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a moderately sloping to strongly sloping summit hillslope on upland. The runoff class is very high. The parent material consists of silty and clayey residuum weathered from shale, unspecified. The soil is 20 to 40 inches deep to bedrock (paralithic). This soil is moderately well drained. The slowest permeability is slow. It has a low available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The top of the seasonal high water table is at 12 inches. This soil is in the Clay Upland (pe35-42) range site. It is in the nonirrigated land capability classification 6e.

Collinsville soil makes up 20 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a strongly sloping to moderately steep backslope hillslope on upland. The runoff class is low. The parent material consists of sandstone residuum. The soil is 4 to 20 inches deep to bedrock (lithic). This soil is well drained. The slowest permeability is moderately rapid. It has a very low available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Shallow Sandstone (pe35-42) range site. It is in the nonirrigated land capability classification 7s.

Ha Hepler Silt Loam, Occasionally Flooded

Hepler soil makes up 97 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a nearly level flood plain on river valley. The runoff class is medium. The parent material consists of silty alluvium. This soil is somewhat poorly drained. The slowest permeability is moderately slow. It has a high available water capacity and a moderate shrink swell potential. This soil is occasionally flooded and is not ponded. The top of the seasonal high water table is at 24 inches. This soil is in the Loamy Lowland (pe35-42) range site. It is in the nonirrigated land capability classification 2w.

Ka Kenoma Silt Loam, 1 To 2 Percent Slopes

Kenoma soil makes up 98 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a gently sloping summit hillslope on paleoterrace on upland. The runoff class is high. The parent material consists of loess over ancient clayey alluvium and/or residuum weathered from limestone and shale. This soil is moderately well drained. The slowest permeability is slow. It has a high available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The top of the seasonal high water table is at 12 inches. This soil contains a very slightly saline horizon. This soil is in the Clay Upland (pe35-42) range site. It is in the nonirrigated land capability classification 3e.

Ko Kenoma-Olpe Complex, 2 To 7 Percent Slopes

Kenoma soil makes up 50 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a gently sloping to moderately sloping backslope hillslope on paleoterrace on upland. The runoff class is very high. The parent material consists of loess over ancient clayey alluvium and/or residuum weathered from limestone and shale. This soil is moderately well drained. The slowest permeability is slow. It has a high available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The top of the seasonal high water table is at 12 inches. This soil contains a very slightly saline horizon. This soil is in the Clay Upland (pe35-42) range site. It is in the nonirrigated land capability classification 4e.

Olpe soil makes up 30 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a gently sloping to moderately sloping backslope, summit hillslope on paleoterrace on upland. The runoff class is very high. The parent material consists of clayey alluvium. This soil is well drained. The slowest permeability is slow. It has a low available water capacity and a moderate shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Loamy Upland (pe35-42) range site. It is in the nonirrigated land capability classification 4e.

Kw Kenoma And Woodson Soils, 1 To 3 Percent Slopes, Eroded

Kenoma, eroded, soil makes up 60 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a gently sloping backslope, shoulder hillslope on paleoterrace on upland. The runoff class is high. The parent material consists of loess over ancient clayey alluvium and/or residuum weathered from limestone and shale. This soil is moderately well drained. The slowest permeability is slow. It has a high available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The top of the seasonal high water table is at 12 inches. This soil contains a very slightly saline horizon. This soil is in the Clay Upland (pe35-42) range site. It is in the nonirrigated land capability classification 4e.

Woodson, eroded, soil makes up 30 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a gently sloping summit divide on paleoterrace on upland. The runoff class is high. The parent material consists of silty and clayey alluvium over silty and clayey residuum weathered from shale, clayey. This soil is somewhat poorly drained. The slowest permeability is slow. It has a moderate available water capacity and a very high shrink swell potential. This soil is not flooded and is not ponded. The top of the seasonal high water table is at 15 inches. This soil is in the Clay Upland (pe35-42) range site. It is in the nonirrigated land capability classification 4s.

La Leanna Silt Loam, Occasionally Flooded

Leanna, drained, soil makes up 90 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a nearly level flood plain on river valley. The runoff class is medium. The parent material consists of silty and clayey alluvium. This soil is somewhat poorly drained. The slowest permeability is slow. It has a high available water capacity and a high shrink swell potential. This soil is occasionally flooded and is not ponded. The top of the seasonal high water table is at 15 inches. This soil is in the Clay Lowland (pe35-42) range site. It is in the nonirrigated land capability classification 2w.

Nontechnical Soil Descriptions--Continued
Woodson County, Kansas

Lb Lula Silt Loam, 0 To 2 Percent Slopes

Lula soil makes up 98 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a nearly level to gently sloping summit hillslope on upland. The runoff class is low. The parent material consists of fine-silty residuum weathered from limestone. The soil is 40 to 60 inches deep to bedrock (lithic). This soil is well drained. The slowest permeability is moderate. It has a high available water capacity and a moderate shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Loamy Upland (pe35-42) range site. It is in the nonirrigated land capability classification 2e.

Ld Lula-Dwight Complex, 0 To 2 Percent Slopes

Lula soil makes up 45 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a nearly level to gently sloping summit hillslope on upland. The runoff class is low. The parent material consists of residuum weathered from limestone, unspecified. The soil is 40 to 60 inches deep to bedrock (lithic). This soil is well drained. The slowest permeability is moderate. It has a high available water capacity and a moderate shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Loamy Upland (pe35-42) range site. It is in the nonirrigated land capability classification 3e.

Dwight soil makes up 30 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a nearly level to gently sloping summit divide on hillslope on upland. The runoff class is very high. The parent material consists of loess over clayey ancient alluvium over residuum. The soil is 40 to 60 inches deep to bedrock (paralithic). This soil is moderately well drained. The slowest permeability is very slow. It has a moderate available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. It has a horizon that is moderately sodic. This soil is in the Clay Pan (pe35-42) range site. It is in the nonirrigated land capability classification 4s.

Ma Mason Silt Loam, Rarely Flooded

Mason soil makes up 98 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a nearly level stream terrace on river valley. The runoff class is medium. The parent material consists of silty alluvium. This soil is well drained. The slowest permeability is moderately slow. It has a high available water capacity and a moderate shrink swell potential. This soil is rarely flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Loamy Lowland (pe35-42) range site. It is in the nonirrigated land capability classification 1.

Ns Niotaze-Stephenville Complex, 4 To 25 Percent Slopes

Niotaze soil makes up 50 percent of the map unit. This map unit is in the Cross Timbers Major Land Resource Area. This soil occurs on a moderately sloping to steep backslope hillslope on upland. The runoff class is very high. The parent material consists of clayey residuum weathered from sandstone and shale. The soil is 20 to 40 inches deep to bedrock (paralithic). This soil is somewhat poorly drained. The slowest permeability is moderately slow. It has a low available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The top of the seasonal high water table is at 18 inches. This soil is in the Savannah (pe35-38) range site. It is in the nonirrigated land capability classification 6e.

Stephenville soil makes up 40 percent of the map unit. This map unit is in the Cross Timbers Major Land Resource Area. This soil occurs on a moderately sloping to moderately steep backslope hillslope on upland. The runoff class is high. The parent material consists of fine-loamy residuum weathered from sandstone. The soil is 20 to 40 inches deep to bedrock (paralithic). This soil is well drained. The slowest permeability is moderate. It has a low available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Savannah (pe35-38) range site. It is in the nonirrigated land capability classification 6e.

Od Olpe Soils, 4 To 15 Percent Slopes

Olpe soil makes up 98 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a moderately sloping to moderately steep backslope, summit hillslope on paleoterrace on upland. The runoff class is very high. The parent material consists of clayey alluvium. This soil is well drained. The slowest permeability is slow. It has a low available water capacity and a moderate shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Loamy Upland (pe35-42) range site. It is in the nonirrigated land capability classification 6e.

Og Osage Silty Clay, Occasionally Flooded

Osage soil makes up 97 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a nearly level flood plain on river valley. The runoff class is high. The parent material consists of clayey alluvium. This soil is poorly drained. The slowest permeability is very slow. It has a moderate available water capacity and a very high shrink swell potential. This soil is occasionally flooded and is occasional ponded. The top of the seasonal high water table is at 6 inches. This soil is in the Clay Lowland (pe35-42) range site. It is in the nonirrigated land capability classification 3w.

Os Osage Silty Clay Loam, Occasionally Flooded

Osage soil makes up 97 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a nearly level flood plain on river valley. The runoff class is high. The parent material consists of clayey alluvium. This soil is poorly drained. The slowest permeability is very slow. It has a moderate available water capacity and a very high shrink swell potential. This soil is occasionally flooded and is occasional ponded. The top of the seasonal high water table is at 12 inches. This soil is in the Clay Lowland (pe35-42) range site. It is in the nonirrigated land capability classification 2w.

Nontechnical Soil Descriptions--Continued
Woodson County, Kansas

Rc Ringo Silty Clay Loam, 4 To 7 Percent Slopes

Ringo soil makes up 99 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a moderately sloping backslope hillslope on upland. The runoff class is very high. The parent material consists of residuum weathered from limestone. The soil is 40 to 60 inches deep to bedrock (paralithic). This soil is well drained. The slowest permeability is very slow. It has a moderate available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Clay Upland (pe35-42) range site. It is in the nonirrigated land capability classification 3e.

Rd Ringo-Sogn Complex, 4 To 15 Percent Slopes

Ringo soil makes up 50 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a moderately sloping to moderately steep backslope hillslope on upland. The runoff class is very high. The parent material consists of residuum weathered from limestone. The soil is 40 to 60 inches deep to bedrock (paralithic). This soil is well drained. The slowest permeability is very slow. It has a moderate available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Clay Upland (pe35-42) range site. It is in the nonirrigated land capability classification 6e.

Sogn soil makes up 30 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a moderately sloping to moderately steep backslope hillslope on upland. The runoff class is low. The parent material consists of loamy residuum weathered from limestone. The soil is 4 to 20 inches deep to bedrock (lithic). This soil is somewhat excessively drained. The slowest permeability is moderate. It has a very low available water capacity and a moderate shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Shallow Limy (pe35-42) range site. It is in the nonirrigated land capability classification 7s.

Sa Stephenville Fine Sandy Loam, 1 To 4 Percent Slopes

Stephenville soil makes up 98 percent of the map unit. This map unit is in the Cross Timbers Major Land Resource Area. This soil occurs on a gently sloping to moderately sloping shoulder hillslope on upland. The runoff class is medium. The parent material consists of fine-loamy residuum weathered from sandstone. The soil is 20 to 40 inches deep to bedrock (paralithic). This soil is well drained. The slowest permeability is moderate. It has a low available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Savannah (pe35-38) range site. It is in the nonirrigated land capability classification 2e.

Sd Summit Silty Clay Loam, 1 To 4 Percent Slopes

Summit soil makes up 98 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a gently sloping to moderately sloping footslope hillslope on upland. The runoff class is medium. The parent material consists of silty and clayey residuum weathered from shale, calcareous. This soil is somewhat poorly drained. The slowest permeability is slow. It has a high available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The top of the seasonal high water table is at 30 inches. This soil is in the Loamy Upland (pe35-42) range site. It is in the nonirrigated land capability classification 2e.

Se Summit Silty Clay Loam, 4 To 7 Percent Slopes

Summit soil makes up 99 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a moderately sloping footslope hillslope on upland. The runoff class is high. The parent material consists of silty and clayey residuum weathered from shale, calcareous. This soil is somewhat poorly drained. The slowest permeability is slow. It has a high available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The top of the seasonal high water table is at 30 inches. This soil is in the Loamy Upland (pe35-42) range site. It is in the nonirrigated land capability classification 3e.

Va Verdigris Silt Loam, Occasionally Flooded

Verdigris soil makes up 97 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a nearly level flood plain on river valley. The runoff class is low. The parent material consists of silty alluvium. This soil is moderately well drained. The slowest permeability is moderate. It has a very high available water capacity and a low shrink swell potential. This soil is occasionally flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Loamy Lowland (pe35-42) range site. It is in the nonirrigated land capability classification 2w.

Vc Verdigris Soils, Channeled

Verdigris soil makes up 98 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a nearly level to gently sloping flood plain on river valley. The runoff class is low. The parent material consists of silty alluvium. This soil is moderately well drained. The slowest permeability is moderate. It has a very high available water capacity and a low shrink swell potential. This soil is frequently flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Loamy Lowland (pe35-42) range site. It is in the nonirrigated land capability classification 5w.

Nontechnical Soil Descriptions--Continued
Woodson County, Kansas

Wa Woodson Silt Loam, 0 To 2 Percent Slopes

Woodson soil makes up 98 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a nearly level to gently sloping summit divide on paleoterrace on upland. The runoff class is high. The parent material consists of loess over clayey alluvium residuum weathered from shale. This soil is somewhat poorly drained. The slowest permeability is slow. It has a moderate available water capacity and a very high shrink swell potential. This soil is not flooded and is not ponded. The top of the seasonal high water table is at 15 inches. This soil is in the Clay Upland (pe35-42) range site. It is in the nonirrigated land capability classification 2s.

Za Zaar Silty Clay, 1 To 4 Percent Slopes

Zaar soil makes up 85 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a gently sloping to moderately sloping footslope hillslope on upland. The runoff class is medium. The parent material consists of clayey colluvium and/or residuum weathered from shale. This soil is somewhat poorly drained. The slowest permeability is very slow. It has a moderate available water capacity and a very high shrink swell potential. This soil is not flooded and is not ponded. The top of the seasonal high water table is at 12 inches. This soil is in the Clay Upland (pe35-42) range site. It is in the nonirrigated land capability classification 3e.

001CA—Catoosa silt loam, 0 to 2 percent slopes**Map Unit Composition**

Catoosa: 90 percent
 Minor components: 10 percent

Component Descriptions**Catoosa**

MLRA: 112 - Cherokee Prairies

Landform: Ridge on upland

Hillslope position: Summit

Parent material: Residuum weathered from limestone

Slope: 0 to 2 percent

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

Drainage class: Well drained

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

Available water capacity: Low (About 5.4 inches)

Shrink-swell potential: High (About 6.0 LEP)

Flooding hazard: None

Depth to seasonal water saturation: More than 6 feet

Runoff class: Medium

Ecological site: Loamy Upland (pe35-42)

Land capability (nonirrigated): 2e

Typical Profile:

H1—0 to 11 inches; silt loam

H2—11 to 27 inches; silty clay loam

R—27 to 31 inches; unweathered bedrock

Minor Components**Kenoma**

Composition: About 6 percent

Landform: hillslope on upland

Slope: 1 to 3 percent

Drainage class: Moderately well drained

Ecological site: Clay Upland (pe35-42)

Zaar

Composition: About 4 percent

Landform: hillslope on upland

Slope: 3 to 7 percent

Drainage class: Somewhat poorly drained

Ecological site: Clay Upland (pe35-42)

001CB—Catoosa-Rock outcrop complex, 1 to 8 percent slopes**Map Unit Composition**

Catoosa: 60 percent
 Rock outcrop: 30 percent
 Minor components: 10 percent

Component Descriptions**Catoosa**

MLRA: 112 - Cherokee Prairies

Landform: Ridge on upland

Hillslope position: Summit

Parent material: Residuum weathered from limestone

Slope: 1 to 8 percent

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

Drainage class: Well drained

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

Available water capacity: Low (About 5.4 inches)

Shrink-swell potential: High (About 6.0 LEP)

Flooding hazard: None

Depth to seasonal water saturation: More than 6 feet

Runoff class: Medium

Ecological site: Loamy Upland (pe35-42)

Land capability (nonirrigated): 6s

Typical Profile:

H1—0 to 11 inches; silty clay loam

H2—11 to 27 inches; silty clay loam

R—27 to 31 inches; unweathered bedrock

Rock outcrop

MLRA: 112 - Cherokee Prairies

Landform: Hillslope on upland

Depth to seasonal water saturation: More than 6 feet

Land capability (nonirrigated): 8

Minor Components**Eram**

Composition: About 10 percent

Landform: ridge on upland

Drainage class: Moderately well drained

Slope: 4 to 7 percent

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

Drainage class: Moderately well drained

Ecological site: Clay Upland (pe35-42)

001CC—Collinsville-Bates complex, 2 to 15 percent slopes

Map Unit Composition

Collinsville: 50 percent
Bates: 40 percent
Minor components: 10 percent

Component Descriptions

Collinsville

MLRA: 112 - Cherokee Prairies
Landform: Hillslope on upland
Hillslope position: Backslope
Parent material: Residuum weathered from sandstone
Slope: 2 to 15 percent
Depth to restrictive feature: 4 to 20 inches to bedrock (lithic)
Drainage class: Well drained
Slowest permeability: Moderately rapid (About 2.00 in/hr)
Available water capacity: Very low (About 2.0 inches)
Shrink-swell potential: Low (About 1.8 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Low
Ecological site: Shallow Sandstone (pe35-42)
Land capability (nonirrigated): 6e

Typical Profile:

H1—0 to 7 inches; fine sandy loam
H2—7 to 15 inches; gravelly fine sandy loam
R—15 to 17 inches; unweathered bedrock

Bates

MLRA: 112 - Cherokee Prairies
Landform: Hillslope on upland
Hillslope position: Backslope
Parent material: Sandy and silty residuum weathered from sandstone
Slope: 2 to 7 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: Low (About 5.2 inches)
Shrink-swell potential: Low (About 2.8 LEP)
Flooding hazard: None

Depth to seasonal water saturation: More than 6 feet

Runoff class: Medium

Ecological site: Loamy Upland (pe35-42)

Land capability (nonirrigated): 6e

Typical Profile:

H1—0 to 8 inches; loam
H2—8 to 11 inches; loam
H3—11 to 32 inches; gravelly clay loam
Cr—32 to 34 inches; weathered bedrock

Minor Components

Catoosa

Composition: About 4 percent
Landform: ridge on upland
Slope: 1 to 8 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Ecological site: Loamy Upland (pe35-42)

Eram

Composition: About 3 percent
Landform: drainageway on upland ridge on upland
Slope: 4 to 7 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Moderately well drained
Ecological site: Clay Upland (pe35-42)

Dennis

Composition: About 3 percent
Landform: hillslope on upland
Slope: 3 to 7 percent
Drainage class: Moderately well drained
Ecological site: Loamy Upland (pe35-42)

001ZB—Zaar silty clay, 3 to 7 percent slopes

Map Unit Composition

Zaar: 100 percent

Component Descriptions

Zaar

MLRA: 112 - Cherokee Prairies
Landform: Hillslope on upland, drainageway on upland
Hillslope position: Footslope
Parent material: Residuum weathered from shale

Slope: 3 to 7 percent
Drainage class: Somewhat poorly drained
Slowest permeability: Very slow (About 0.00 in/hr)
Available water capacity: Moderate (About 8.5 inches)
Shrink-swell potential: Very high (About 11.2 LEP)
Flooding hazard: None
Depth to seasonal water saturation: About 12 to 24 inches
Runoff class: High
Ecological site: Clay Upland (pe35-42)
Land capability (nonirrigated): 4e

Typical Profile:

H1—0 to 18 inches; silty clay
 H2—18 to 57 inches; silty clay
 H3—57 to 63 inches; silty clay

031EP—Eram-Apperson silty clay loams, 4 to 7 percent slopes

Map Unit Composition

Eram: 50 percent
 Apperson: 35 percent
 Minor components: 15 percent

Component Descriptions

Eram

MLRA: 112 - Cherokee Prairies
Landform: Hillslope on upland
Hillslope position: Backslope
Parent material: Silty and clayey residuum weathered from shale, unspecified
Slope: 4 to 7 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Moderately well drained
Slowest permeability: Slow (About 0.06 in/hr)
Available water capacity: Low (About 4.0 inches)
Shrink-swell potential: Moderate (About 4.8 LEP)
Flooding hazard: None
Depth to seasonal water saturation: About 6 to 18 inches
Runoff class: Very high
Ecological site: Clay Upland (pe35-42)
Land capability (nonirrigated): 4e

Typical Profile:

H1—0 to 8 inches; silty clay loam

H2—8 to 26 inches; silty clay
 Cr—26 to 30 inches; weathered bedrock

Apperson

MLRA: 112 - Cherokee Prairies
Landform: Hillslope on upland
Hillslope position: Backslope
Parent material: Clayey residuum
Slope: 4 to 7 percent
Depth to restrictive feature: 40 to 60 inches to bedrock (lithic)
Drainage class: Moderately well drained
Slowest permeability: Slow (About 0.06 in/hr)
Available water capacity: Moderate (About 7.0 inches)
Shrink-swell potential: High (About 8.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: About 12 to 18 inches
Runoff class: High
Ecological site: Loamy Upland (pe35-42)
Land capability (nonirrigated): 4e

Typical Profile:

H1—0 to 9 inches; silty clay loam
 H2—9 to 14 inches; silty clay loam
 H3—14 to 42 inches; silty clay
 R—42 to 46 inches; unweathered bedrock

Minor Components

Shidler

Composition: About 5 percent
Landform: rim on upland
Slope: 1 to 5 percent
Depth to restrictive feature: 4 to 20 inches to bedrock (lithic)
Drainage class: Well drained
Ecological site: Shallow Limy (pe35-42)

Clareson

Composition: About 5 percent
Landform: ridge on upland
Slope: 1 to 5 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Ecological site: Shallow Flats (pe35-42)

Rock outcrop

Composition: About 5 percent

031ES—Eram-Shidler silty clay loams, 4 to 15 percent slopes

Map Unit Composition

Eram: 60 percent
Shidler: 25 percent
Minor components: 15 percent

Component Descriptions

Eram

MLRA: 112 - Cherokee Prairies
Landform: Hillslope on upland
Hillslope position: Backslope, summit
Parent material: Silty and clayey residuum weathered from shale, unspecified
Slope: 4 to 15 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Moderately well drained
Slowest permeability: Slow (About 0.06 in/hr)
Available water capacity: Low (About 4.0 inches)
Shrink-swell potential: Moderate (About 4.8 LEP)
Flooding hazard: None
Depth to seasonal water saturation: About 6 to 18 inches
Runoff class: Very high
Ecological site: Clay Upland (pe35-42)
Land capability (nonirrigated): 6e

Typical Profile:

H1—0 to 8 inches; silty clay loam
H2—8 to 26 inches; silty clay
Cr—26 to 30 inches; weathered bedrock

Shidler

MLRA: 112 - Cherokee Prairies
Landform: Rim on upland
Hillslope position: Shoulder
Parent material: Residuum weathered from limestone
Slope: 4 to 15 percent
Depth to restrictive feature: 4 to 20 inches to bedrock (lithic)
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: Very low (About 2.4 inches)
Shrink-swell potential: Moderate (About 4.6 LEP)
Flooding hazard: None

Depth to seasonal water saturation: More than 6 feet

Runoff class: Medium

Ecological site: Shallow Limy (pe35-42)

Land capability (nonirrigated): 7s

Typical Profile:

H1—0 to 12 inches; silty clay loam
R—12 to 16 inches; unweathered bedrock

Minor Components

Olpe

Composition: About 15 percent
Landform: hillslope on upland
Slope: 4 to 15 percent
Drainage class: Well drained
Ecological site: Loamy Upland (pe35-42)

073AT—Aquents, frequently flooded

Map Unit Composition

Aquents: 100 percent

Component Descriptions

Aquents

MLRA: 76 - Bluestem Hills
Landform: Flood plain on river valley
Parent material: Alluvium
Slope: 0 to 5 percent
Drainage class: Somewhat poorly drained
Flooding hazard: Occasional
Depth to seasonal water saturation: More than 6 feet
Runoff class: Negligible
Land capability (nonirrigated): 5w

Typical Profile:

H1—0 to 60 inches; stratified variable

073CA—Chase silty clay loam, occasionally flooded

Map Unit Composition

Chase: 90 percent
Minor components: 10 percent

Component Descriptions

Chase

MLRA: 76 - Bluestem Hills

Landform: Flood plain on river valley

Parent material: Silty and clayey alluvium

Slope: 0 to 2 percent

Drainage class: Somewhat poorly drained

Slowest permeability: Slow (About 0.06 in/hr)

Available water capacity: High (About 9.9 inches)

Shrink-swell potential: Moderate (About 5.4 LEP)

Flooding hazard: Occasional

Depth to seasonal water saturation: About 24 to 48 inches

Runoff class: High

Ecological site: Loamy Lowland (pe30-36)

Land capability (nonirrigated): 2w

Typical Profile:

H1—0 to 14 inches; silty clay loam

H2—14 to 45 inches; silty clay loam

H3—45 to 60 inches; silty clay

Minor Components

Ivan

Composition: About 5 percent

Slope: 0 to 1 percent

Drainage class: Well drained

Ecological site: Loamy Lowland (pe30-36)

Reading

Composition: About 5 percent

Slope: 0 to 1 percent

Drainage class: Well drained

Ecological site: Loamy Lowland (pe30-36)

073CM—Clime silty clay, 3 to 7 percent slopes

Map Unit Composition

Clime: 90 percent

Minor components: 10 percent

Component Descriptions

Clime

MLRA: 76 - Bluestem Hills

Landform: Hillslope on upland

Hillslope position: Backslope

Parent material: Silty and clayey residuum weathered from calcareous shale

Slope: 3 to 7 percent

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

Drainage class: Well drained

Slowest permeability: Slow (About 0.06 in/hr)

Available water capacity: Low (About 4.4 inches)

Shrink-swell potential: High (About 7.7 LEP)

Flooding hazard: None

Depth to seasonal water saturation: More than 6 feet

Runoff class: Very high

Ecological site: Limy Upland (pe30-36)

Land capability (nonirrigated): 4e

Typical Profile:

H1—0 to 11 inches; silty clay

H2—11 to 23 inches; silty clay

H3—23 to 33 inches; silty clay

Cr—33 to 37 inches; unweathered bedrock

Minor Components

Martin

Composition: About 10 percent

Landform: hillslope on upland

Slope: 4 to 7 percent

Drainage class: Moderately well drained

Ecological site: Loamy Upland (pe30-36)

073CS—Clime-Sogn complex, 5 to 20 percent slopes

Map Unit Composition

Clime: 60 percent

Sogn: 20 percent

Minor components: 20 percent

Component Descriptions

Clime

MLRA: 76 - Bluestem Hills

Landform: Ridge on upland

Hillslope position: Backslope

Parent material: Silty and clayey residuum weathered from calcareous shale

Slope: 5 to 20 percent

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

Drainage class: Well drained

Slowest permeability: Slow (About 0.06 in/hr)

Available water capacity: Low (About 4.4 inches)

Shrink-swell potential: High (About 7.7 LEP)

Flooding hazard: None

Depth to seasonal water saturation: More than 6 feet

Runoff class: Very high
Ecological site: Limy Upland (pe30-36)
Land capability (nonirrigated): 6e

Typical Profile:

H1—0 to 11 inches; silty clay
 H2—11 to 23 inches; silty clay
 H3—23 to 33 inches; silty clay
 Cr—33 to 37 inches; unweathered bedrock

Sogn

MLRA: 76 - Bluestem Hills
Landform: Ridge on upland
Hillslope position: Backslope
Parent material: Loamy residuum weathered from limestone
Slope: 5 to 20 percent
Depth to restrictive feature: 4 to 20 inches to bedrock (lithic)
Drainage class: Somewhat excessively drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: Very low (About 1.4 inches)
Shrink-swell potential: Moderate (About 4.2 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Medium
Ecological site: Shallow Limy (pe30-36)
Land capability (nonirrigated): 7s

Typical Profile:

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

Minor Components

Dwight

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

Labette

Composition: About 5 percent
Landform: hillslope on upland
Slope: 1 to 4 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Ecological site: Loamy Upland (pe30-36)

Rock outcrop

Composition: About 5 percent

Martin

Composition: About 5 percent
Landform: hillslope on upland
Slope: 4 to 7 percent
Drainage class: Moderately well drained
Ecological site: Loamy Upland (pe30-36)

073DS—Dennis silty clay loam, 2 to 6 percent slopes, eroded

Map Unit Composition

Dennis: 100 percent

Component Descriptions

Dennis

MLRA: 112 - Cherokee Prairies
Landform: Hillslope on upland
Hillslope position: Footslope, backslope
Parent material: Silty and clayey residuum weathered from shale
Slope: 2 to 6 percent
Drainage class: Moderately well drained
Slowest permeability: Slow (About 0.06 in/hr)
Available water capacity: High (About 9.3 inches)
Shrink-swell potential: Very high (About 9.2 LEP)
Flooding hazard: None
Depth to seasonal water saturation: About 12 to 18 inches
Runoff class: High
Ecological site: Loamy Upland (pe30-36)
Land capability (nonirrigated): 3e

Typical Profile:

H1—0 to 6 inches; silty clay loam
 H2—6 to 16 inches; silty clay loam
 H3—16 to 60 inches; silty clay

073IC—Ivan silt loam, channeled

Map Unit Composition

Ivan: 85 percent
 Minor components: 15 percent

Component Descriptions

Ivan*MLRA:* 76 - Bluestem Hills*Landform:* Channel on flood plain on river valley*Parent material:* Alluvium*Slope:* 0 to 1 percent*Drainage class:* Well drained*Slowest permeability:* Moderate (About 0.60 in/hr)*Available water capacity:* Very high (About 12.9 inches)*Shrink-swell potential:* Moderate (About 4.7 LEP)*Flooding hazard:* Frequent*Depth to seasonal water saturation:* More than 6 feet*Runoff class:* Low*Ecological site:* Loamy Lowland (pe30-36)*Land capability (nonirrigated):* 5w*Typical Profile:*

H1—0 to 27 inches; silt loam

H2—27 to 60 inches; silt loam

Minor Components**Chase***Composition:* About 4 percent*Slope:* 0 to 2 percent*Drainage class:* Somewhat poorly drained*Ecological site:* Loamy Lowland (pe30-36)**Osage***Composition:* About 4 percent*Slope:* 0 to 1 percent*Drainage class:* Poorly drained*Ecological site:* Clay Lowland (pe30-36)**Dennis***Composition:* About 4 percent*Landform:* hillslope on upland*Slope:* 1 to 4 percent*Drainage class:* Moderately well drained*Ecological site:* Loamy Upland (pe30-36)**Martin***Composition:* About 3 percent*Landform:* hillslope on upland*Slope:* 4 to 7 percent*Drainage class:* Moderately well drained*Ecological site:* Loamy Upland (pe30-36)**073IF—Ivan silt loam, occasionally flooded****Map Unit Composition**

Ivan: 90 percent

Minor components: 10 percent

Component Descriptions**Ivan***MLRA:* 76 - Bluestem Hills*Landform:* Flood plain on river valley*Parent material:* Alluvium*Slope:* 0 to 1 percent*Drainage class:* Well drained*Slowest permeability:* Moderate (About 0.60 in/hr)*Available water capacity:* Very high (About 13.2 inches)*Shrink-swell potential:* Moderate (About 4.7 LEP)*Flooding hazard:* Occasional*Depth to seasonal water saturation:* More than 6 feet*Runoff class:* Low*Ecological site:* Loamy Lowland (pe30-36)*Land capability (nonirrigated):* 2w*Typical Profile:*

H1—0 to 38 inches; silt loam

H2—38 to 60 inches; silt loam

Minor Components**Chase***Composition:* About 10 percent*Slope:* 0 to 2 percent*Drainage class:* Somewhat poorly drained*Ecological site:* Loamy Lowland (pe30-36)**073KE—Kenoma silty clay loam, 2 to 5 percent slopes, eroded****Map Unit Composition**

Kenoma: 100 percent

Component Descriptions**Kenoma***MLRA:* 112 - Cherokee Prairies*Landform:* Hillslope on upland

Hillslope position: Shoulder, summit
Parent material: Loess over ancient clayey alluvium and/or residuum weathered from limestone and shale
Slope: 2 to 5 percent
Drainage class: Moderately well drained
Slowest permeability: Slow (About 0.06 in/hr)
Available water capacity: High (About 9.4 inches)
Shrink-swell potential: Moderate (About 5.6 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: High
Ecological site: Clay Upland (pe30-36)
Land capability (nonirrigated): 4e

Typical Profile:
 H1—0 to 4 inches; silty clay loam
 H2—4 to 36 inches; silty clay
 H3—36 to 60 inches; silty clay loam

073LA—Labette silty clay loam, 1 to 4 percent slopes

Map Unit Composition

Labette: 90 percent
 Minor components: 10 percent

Component Descriptions

Labette

MLRA: 76 - Bluestem Hills
Landform: Hillslope on upland
Hillslope position: Shoulder, summit
Parent material: Silty and clayey residuum weathered from limestone and shale
Slope: 1 to 4 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Slowest permeability: Moderately slow (About 0.20 in/hr)
Available water capacity: Low (About 4.6 inches)
Shrink-swell potential: Very high (About 14.0 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Medium

Ecological site: Loamy Upland (pe30-36)
Land capability (nonirrigated): 2e

Typical Profile:

H1—0 to 9 inches; silty clay loam
 H2—9 to 19 inches; silty clay loam
 H3—19 to 27 inches; silty clay
 R—27 to 31 inches; unweathered bedrock

Minor Components

Sogn

Composition: About 10 percent
Landform: hillslope on upland
Slope: 5 to 20 percent
Depth to restrictive feature: 4 to 20 inches to bedrock (lithic)
Drainage class: Somewhat excessively drained
Ecological site: Shallow Limy (pe30-36)

073LD—Labette-Dwight complex, 0 to 3 percent slopes

Map Unit Composition

Labette: 65 percent
 Dwight: 30 percent
 Minor components: 5 percent

Component Descriptions

Labette

MLRA: 76 - Bluestem Hills
Landform: Hillslope on upland
Hillslope position: Summit
Parent material: Silty and clayey residuum weathered from limestone and shale
Slope: 0 to 3 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Slowest permeability: Moderately slow (About 0.20 in/hr)
Available water capacity: Low (About 4.6 inches)
Shrink-swell potential: Very high (About 14.0 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Medium
Ecological site: Loamy Upland (pe30-36)
Land capability (nonirrigated): 3e

Typical Profile:

H1—0 to 9 inches; silty clay loam

H2—9 to 19 inches; silty clay loam
 H3—19 to 27 inches; silty clay
 R—27 to 31 inches; unweathered bedrock

Dwight

MLRA: 76 - Bluestem Hills

Landform: Hillslope on upland

Hillslope position: Summit

Parent material: Loess over clayey ancient alluvium over residuum

Slope: 0 to 3 percent

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

Drainage class: Moderately well drained

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

Available water capacity: Low (About 5.8 inches)

Shrink-swell potential: Very high (About 9.7 LEP)

Flooding hazard: None

Depth to seasonal water saturation: More than 6 feet

Runoff class: Very high

Ecological site: Clay Pan (pe30-36)

Land capability (nonirrigated): 4s

Typical Profile:

H1—0 to 4 inches; silt loam

H2—4 to 32 inches; clay

H3—32 to 44 inches; silty clay

R—44 to 48 inches; unweathered bedrock

Minor Components**Zaar**

Composition: About 5 percent

Landform: hillslope on upland

Slope: 0 to 2 percent

Drainage class: Somewhat poorly drained

Ecological site: Clay Upland (pe30-36)

073MA—Martin silty clay loam, 1 to 4 percent slopes**Map Unit Composition**

Martin: 100 percent

Component Descriptions**Martin**

MLRA: 76 - Bluestem Hills

Landform: Hillslope on upland

Hillslope position: Footslope

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

residuum weathered from limestone-shale

Slope: 1 to 4 percent

Drainage class: Moderately well drained

Slowest permeability: Slow (About 0.06 in/hr)

Available water capacity: High (About 11.3 inches)

Shrink-swell potential: High (About 7.7 LEP)

Flooding hazard: None

Depth to seasonal water saturation: About inches

Runoff class: Medium

Ecological site: Loamy Upland (pe30-36)

Land capability (nonirrigated): 2e

Typical Profile:

H1—0 to 11 inches; silty clay loam

H2—11 to 52 inches; silty clay

H3—52 to 60 inches; clay

073NZ—Niotaze-Darnell complex, 6 to 35 percent slopes**Map Unit Composition**

Niotaze: 75 percent

Darnell: 15 percent

Minor components: 10 percent

Component Descriptions**Niotaze**

MLRA: 84A - Cross Timbers

Landform: Hillslope on upland

Hillslope position: Backslope

Parent material: Clayey residuum weathered from sandstone and shale

Slope: 6 to 35 percent

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

Drainage class: Somewhat poorly drained

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

Available water capacity: Low (About 4.3 inches)

Shrink-swell potential: High (About 7.5 LEP)

Flooding hazard: None

Depth to seasonal water saturation: About 12 to 24 inches

Runoff class: Very high

Ecological site: Savannah (pe35-42)

Land capability (nonirrigated): 6e

Typical Profile:

H1—0 to 9 inches; loam
 H2—9 to 27 inches; silty clay
 Cr—27 to 31 inches; weathered bedrock

Darnell

MLRA: 84A - Cross Timbers

Landform: Hillslope on upland

Hillslope position: Summit

Parent material: Loamy residuum

Slope: 6 to 35 percent

Depth to restrictive feature: 10 to 20 inches to bedrock (paralithic)

Drainage class: Well drained

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

Available water capacity: Very low (About 2.3 inches)

Shrink-swell potential: Low (About 1.5 LEP)

Flooding hazard: None

Depth to seasonal water saturation: More than 6 feet

Runoff class: Medium

Ecological site: Shallow Savannah (pe35-42)

Land capability (nonirrigated): 7e

Typical Profile:

H1—0 to 6 inches; fine sandy loam
 H2—6 to 16 inches; fine sandy loam
 Cr—16 to 20 inches; weathered bedrock

Minor Components**Rock outcrop**

Composition: About 10 percent

073RE—Reading silt loam, 0 to 2 percent slopes, rarely flooded**Map Unit Composition**

Reading: 90 percent

Minor components: 10 percent

Component Descriptions**Reading**

MLRA: 76 - Bluestem Hills

Landform: Stream terrace on river valley

Parent material: Silty alluvium

Slope: 0 to 1 percent

Drainage class: Well drained

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

Available water capacity: High (About 11.4 inches)

Shrink-swell potential: Moderate (About 4.4 LEP)

Flooding hazard: Rare

Depth to seasonal water saturation: More than 6 feet

Runoff class: Negligible

Ecological site: Loamy Lowland (pe30-36)

Land capability (nonirrigated): 1

Typical Profile:

H1—0 to 13 inches; silt loam
 H2—13 to 44 inches; silty clay loam
 H3—44 to 60 inches; silty clay loam

Minor Components**Chase**

Composition: About 5 percent

Slope: 0 to 2 percent

Drainage class: Somewhat poorly drained

Ecological site: Loamy Lowland (pe30-36)

Reading

Composition: About 5 percent

Slope: 7 to 12 percent

Drainage class: Well drained

Ecological site: Loamy Lowland (pe30-36)

073ST—Steedman stony loam, 3 to 12 percent slopes**Map Unit Composition**

Steedman: 85 percent

Minor components: 15 percent

Component Descriptions**Steedman**

MLRA: 84A - Cross Timbers

Landform: Hillslope on upland

Hillslope position: Backslope

Parent material: Clayey residuum weathered from clayey shale

Slope: 3 to 12 percent

Surface fragments: About

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

Drainage class: Moderately well drained

Slowest permeability: Slow (About 0.06 in/hr)

Available water capacity: Low (About 3.8 inches)

Shrink-swell potential: High (About 7.2 LEP)

Flooding hazard: None

Depth to seasonal water saturation: About 12 to 24 inches

Runoff class: Very high

Ecological site: Loamy Upland (pe35-42)

Land capability (nonirrigated): 6e

Typical Profile:

H1—0 to 8 inches; stony loam

H2—8 to 30 inches; silty clay

Cr—30 to 34 inches; weathered bedrock

Minor Components

Rock outcrop

Composition: About 10 percent

Darnell

Composition: About 5 percent

Landform: hillslope on upland

Slope: 6 to 12 percent

Depth to restrictive feature: 10 to 20 inches to bedrock (paralithic)

Drainage class: Well drained

Ecological site: Shallow Savannah (pe35-42)

**205BH—Bates-Collinsville loams,
3 to 7 percent slopes**

Map Unit Composition

Bates: 50 percent

Collinsville: 35 percent

Minor components: 15 percent

Component Descriptions

Bates

MLRA: 112 - Cherokee Prairies

Landform: Ridge on upland

Hillslope position: Summit

Parent material: Sandy and silty residuum weathered from sandstone, unspecified over sandy and

silty residuum weathered from sandstone-shale

Slope: 3 to 7 percent

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

Drainage class: Well drained

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

Available water capacity: Low (About 5.0 inches)

Shrink-swell potential: Moderate (About 3.1 LEP)

Flooding hazard: None

Depth to seasonal water saturation: More than 6 feet

Runoff class: High

Ecological site: Loamy Upland (pe35-42)

Land capability (nonirrigated): 4e

Typical Profile:

H1—0 to 10 inches; loam

H2—10 to 12 inches; loam

H3—12 to 19 inches; clay loam

H4—19 to 27 inches; gravelly clay loam

Cr—27 to 31 inches; weathered bedrock

Collinsville

MLRA: 112 - Cherokee Prairies

Landform: Hillslope on upland

Hillslope position: Backslope

Parent material: Sandstone residuum

Slope: 3 to 7 percent

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

Drainage class: Well drained

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

Available water capacity: Very low (About 2.2 inches)

Shrink-swell potential: Low (About 1.8 LEP)

Flooding hazard: None

Depth to seasonal water saturation: More than 6 feet

Runoff class: Very low

Ecological site: Shallow Sandstone (pe35-42)

Land capability (nonirrigated): 6s

Typical Profile:

H1—0 to 6 inches; loam

H2—6 to 14 inches; fine sandy loam

R—14 to 18 inches; unweathered bedrock

Minor Components

Dennis

Composition: About 8 percent

Landform: hillslope on upland

Slope: 4 to 7 percent

Drainage class: Moderately well drained

Ecological site: Loamy Upland (pe35-42)

Eram

Composition: About 7 percent

Landform: hillslope on upland

Slope: 3 to 7 percent

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

Drainage class: Moderately well drained

Ecological site: Clay Upland (pe35-42)

205BO—Bates-Collinsville loams, 7 to 20 percent slopes

Map Unit Composition

Bates: 45 percent
Collinsville: 40 percent
Minor components: 15 percent

Component Descriptions

Bates

MLRA: 112 - Cherokee Prairies
Landform: Ridge on upland
Hillslope position: Summit
Parent material: Sandy and silty residuum weathered from sandstone, unspecified over sandy and silty residuum weathered from sandstone-shale
Slope: 3 to 8 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Well drained
Slowest permeability: Moderately slow (About 0.20 in/hr)
Available water capacity: Low (About 4.4 inches)
Shrink-swell potential: Moderate (About 3.3 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: High
Ecological site: Loamy Upland (pe35-42)
Land capability (nonirrigated): 6e

Typical Profile:

H1—0 to 7 inches; loam
H2—7 to 13 inches; loam
H3—13 to 20 inches; clay loam
H4—20 to 25 inches; gravelly clay loam
Cr—25 to 29 inches; weathered bedrock

Collinsville

MLRA: 112 - Cherokee Prairies
Landform: Hillslope on upland
Hillslope position: Backslope
Parent material: Sandstone residuum
Slope: 7 to 20 percent
Depth to restrictive feature: 4 to 20 inches to bedrock (lithic)
Drainage class: Well drained
Slowest permeability: Moderately rapid (About 2.00 in/hr)
Available water capacity: Very low (About 2.2 inches)
Shrink-swell potential: Low (About 1.8 LEP)
Flooding hazard: None

Depth to seasonal water saturation: More than 6 feet

Runoff class: Low

Ecological site: Shallow Sandstone (pe35-42)

Land capability (nonirrigated): 7s

Typical Profile:

H1—0 to 6 inches; loam
H2—6 to 14 inches; fine sandy loam
R—14 to 18 inches; unweathered bedrock

Minor Components

Dennis

Composition: About 8 percent
Landform: hillslope on upland
Slope: 4 to 7 percent
Drainage class: Moderately well drained
Ecological site: Loamy Upland (pe35-42)

Eram

Composition: About 7 percent
Landform: hillslope on upland
Slope: 3 to 7 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Moderately well drained
Ecological site: Clay Upland (pe35-42)

205DW—Dennis-Dwight silt loams, 1 to 5 percent slopes

Map Unit Composition

Dennis: 65 percent
Dwight: 25 percent
Minor components: 10 percent

Component Descriptions

Dennis

MLRA: 112 - Cherokee Prairies
Landform: Hillslope on upland
Hillslope position: Footslope
Parent material: Silty and clayey residuum weathered from shale, unspecified
Slope: 1 to 5 percent
Drainage class: Moderately well drained
Slowest permeability: Slow (About 0.06 in/hr)
Available water capacity: High (About 9.3 inches)
Shrink-swell potential: High (About 8.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: About 12 to 28 inches
Runoff class: High

Ecological site: Loamy Upland (pe35-42)
Land capability (nonirrigated): 3e

Typical Profile:

H1—0 to 10 inches; silt loam
 H2—10 to 16 inches; silty clay loam
 H3—16 to 60 inches; silty clay

Dwight

MLRA: 112 - Cherokee Prairies
Landform: Hillslope on paleoterrace on upland
Hillslope position: Footslope
Parent material: Silty and clayey residuum weathered from limestone, cherty
Slope: 1 to 3 percent
Drainage class: Moderately well drained
Slowest permeability: Very slow (About 0.00 in/hr)
Available water capacity: Moderate (About 7.5 inches)
Shrink-swell potential: Very high (About 9.0 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Very high
Ecological site: Clay Pan (pe30-36)
Land capability (nonirrigated): 4s

Typical Profile:

H1—0 to 4 inches; silt loam
 H2—4 to 42 inches; silty clay
 H3—42 to 60 inches; silty clay

Minor Components

Bates

Composition: About 10 percent
Landform: ridge on upland
Slope: 1 to 4 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Well drained
Ecological site: Loamy Upland (pe35-42)

205EB—Eram silt loam, 1 to 3 percent slopes

Map Unit Composition

Eram: 90 percent
 Minor components: 10 percent

Component Descriptions

Eram

MLRA: 112 - Cherokee Prairies
Landform: Hillslope on upland
Hillslope position: Backslope, summit
Parent material: Silty and clayey residuum weathered from shale, unspecified
Slope: 1 to 3 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Moderately well drained
Slowest permeability: Slow (About 0.06 in/hr)
Available water capacity: Low (About 4.8 inches)
Shrink-swell potential: High (About 8.3 LEP)
Flooding hazard: None
Depth to seasonal water saturation: About 6 to 18 inches
Runoff class: High
Ecological site: Clay Upland (pe35-42)
Land capability (nonirrigated): 3e

Typical Profile:

H1—0 to 9 inches; silt loam
 H2—9 to 24 inches; silty clay
 H3—24 to 32 inches; silty clay
 Cr—32 to 36 inches; weathered bedrock

Minor Components

Bates

Composition: About 5 percent
Landform: ridge on upland
Slope: 1 to 4 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Well drained
Ecological site: Loamy Upland (pe35-42)

Ringo

Composition: About 5 percent
Landform: hillslope on upland
Slope: 15 to 35 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Moderately well drained
Ecological site: Clay Upland (pe35-42)

205EC—Eram silt loam, 3 to 7 percent slopes

Map Unit Composition

Eram: 90 percent
 Minor components: 10 percent

Component Descriptions

Eram

MLRA: 112 - Cherokee Prairies

Landform: Hillslope on upland

Hillslope position: Backslope

Parent material: Silty and clayey residuum weathered from shale, unspecified

Slope: 3 to 7 percent

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

Drainage class: Moderately well drained

Slowest permeability: Slow (About 0.06 in/hr)

Available water capacity: Low (About 3.7 inches)

Shrink-swell potential: High (About 8.3 LEP)

Flooding hazard: None

Depth to seasonal water saturation: About 6 to 18 inches

Runoff class: High

Ecological site: Clay Upland (pe35-42)

Land capability (nonirrigated): 4e

Typical Profile:

H1—0 to 9 inches; silt loam

H2—9 to 20 inches; silty clay loam

H3—20 to 24 inches; silty clay

Cr—24 to 28 inches; weathered bedrock

Minor Components

Ringo

Composition: About 5 percent

Landform: hillslope on upland

Slope: 15 to 35 percent

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

Drainage class: Moderately well drained

Ecological site: Clay Upland (pe35-42)

Bates

Composition: About 5 percent

Landform: hillslope on upland

Slope: 4 to 7 percent

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

Drainage class: Well drained

Ecological site: Loamy Upland (pe35-42)

205LA—Lanton silt loam, occasionally flooded

Map Unit Composition

Lanton: 90 percent

Minor components: 10 percent

Component Descriptions

Lanton

MLRA: 112 - Cherokee Prairies

Landform: Flood plain on river valley

Parent material: Silty and clayey alluvium

Slope: 0 to 2 percent

Drainage class: Somewhat poorly drained

Slowest permeability: Slow (About 0.06 in/hr)

Available water capacity: High (About 10.7 inches)

Shrink-swell potential: Moderate (About 4.6 LEP)

Flooding hazard: Occasional

Depth to seasonal water saturation: About 12 to 24 inches

Runoff class: Medium

Ecological site: Loamy Lowland (pe35-42)

Land capability (nonirrigated): 2w

Typical Profile:

H1—0 to 7 inches; silt loam

H2—7 to 37 inches; silty clay loam

H3—37 to 60 inches; silty clay

Minor Components

Mason

Composition: About 5 percent

Slope: 0 to 2 percent

Drainage class: Well drained

Ecological site: Loamy Lowland (pe35-42)

Osage

Composition: About 5 percent

Slope: 0 to 1 percent

Drainage class: Poorly drained

Ecological site: Clay Lowland (pe35-42)

205ND—Niotaze-Darnell complex, 4 to 30 percent slopes

Map Unit Composition

Niotaze: 50 percent

Darnell: 35 percent

Minor components: 15 percent

Component Descriptions

Niotaze

MLRA: 84A - Cross Timbers

Landform: Hillslope on upland

Hillslope position: Footslope

Parent material: Clayey residuum weathered from sandstone and shale

Slope: 4 to 30 percent

Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Somewhat poorly drained
Slowest permeability: Slow (About 0.06 in/hr)
Available water capacity: Low (About 4.8 inches)
Shrink-swell potential: High (About 7.0 LEP)
Flooding hazard: None
Depth to seasonal water saturation: About 12 to 24 inches
Runoff class: High
Ecological site: Savannah (pe35-38)
Land capability (nonirrigated): 6e

Typical Profile:

H1—0 to 5 inches; cobbly fine sandy loam
 H2—5 to 9 inches; cobbly fine sandy loam
 H3—9 to 24 inches; silty clay
 H4—24 to 36 inches; silty clay
 Cr—36 to 40 inches; weathered bedrock

Darnell

MLRA: 84A - Cross Timbers
Landform: Hillslope on upland
Hillslope position: Backslope
Parent material: Loamy residuum
Slope: 4 to 15 percent
Depth to restrictive feature: 10 to 20 inches to bedrock (paralithic)
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: Very low (About 2.4 inches)
Shrink-swell potential: Low (About 1.3 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Low
Ecological site: Shallow Savannah (pe35-38)
Land capability (nonirrigated): 6e

Typical Profile:

H1—0 to 6 inches; fine sandy loam
 H2—6 to 17 inches; fine sandy loam
 Cr—17 to 21 inches; weathered bedrock

Minor Components

Stephenville

Composition: About 10 percent
Landform: hillslope on upland
Slope: 6 to 15 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Well drained
Ecological site: Savannah (pe35-38)

Rock outcrop

Composition: About 5 percent

205SC—Shidler-Catoosa complex, 1 to 8 percent slopes

Map Unit Composition

Shidler: 70 percent
 Catoosa: 20 percent
 Minor components: 10 percent

Component Descriptions

Shidler

MLRA: 112 - Cherokee Prairies
Landform: Ridge on upland
Hillslope position: Shoulder
Parent material: Residuum weathered from limestone
Slope: 1 to 8 percent
Depth to restrictive feature: 4 to 20 inches to bedrock (lithic)
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: Very low (About 2.0 inches)
Shrink-swell potential: Moderate (About 4.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Medium
Ecological site: Shallow Limy (pe35-42)
Land capability (nonirrigated): 6e

Typical Profile:

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

Catoosa

MLRA: 112 - Cherokee Prairies
Landform: Ridge on upland
Hillslope position: Summit
Parent material: Residuum weathered from limestone
Slope: 0 to 2 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Slowest permeability: Moderately slow (About 0.20 in/hr)
Available water capacity: Low (About 5.0 inches)
Shrink-swell potential: High (About 6.0 LEP)

Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Medium
Ecological site: Loamy Upland (pe35-42)
Land capability (nonirrigated): 2e

Typical Profile:

H1—0 to 8 inches; silt loam
 H2—8 to 26 inches; silty clay loam
 R—26 to 30 inches; unweathered bedrock

Minor Components

Ringo

Composition: About 4 percent
Landform: hillslope on upland
Slope: 15 to 35 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Moderately well drained
Ecological site: Clay Upland (pe35-42)

Apperson

Composition: About 3 percent
Landform: hillslope on upland
Slope: 0 to 2 percent
Depth to restrictive feature: 40 to 60 inches to bedrock (lithic)
Drainage class: Moderately well drained
Ecological site: Loamy Upland (pe35-42)

Girard

Composition: About 3 percent
Slope: 0 to 1 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Poorly drained
Ecological site: Clay Lowland (pe35-42)

Slope: 4 to 25 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Moderately well drained
Slowest permeability: Slow (About 0.06 in/hr)
Available water capacity: Low (About 4.1 inches)
Shrink-swell potential: High (About 7.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: About 6 to 12 inches
Runoff class: Very high
Ecological site: Loamy Upland (pe35-38)
Land capability (nonirrigated): 6e

Typical Profile:

H1—0 to 8 inches; gravelly silt loam
 H2—8 to 32 inches; silty clay
 Cr—32 to 36 inches; weathered bedrock

Minor Components

Bates

Composition: About 5 percent
Landform: ridge on upland
Slope: 3 to 8 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Well drained
Ecological site: Loamy Upland (pe35-42)

Collinsville

Composition: About 5 percent
Landform: hillslope on upland
Slope: 7 to 20 percent
Depth to restrictive feature: 4 to 20 inches to bedrock (lithic)
Drainage class: Well drained
Ecological site: Shallow Sandstone (pe35-42)

205SF—Steedman gravelly silt loam, 4 to 25 percent slopes, stony

Map Unit Composition

Steedman: 90 percent
 Minor components: 10 percent

Component Descriptions

Steedman

MLRA: 84A - Cross Timbers
Landform: Hillslope on upland
Hillslope position: Summit, backslope
Parent material: Clayey residuum weathered from clayey shale

AED—Arents, Earthen Dam

Bb—Bates loam, 1 to 4 percent slopes

Map Unit Composition

Bates: 98 percent
 Minor components: 2 percent

Component Descriptions

Bates

MLRA: 112 - Cherokee Prairies

Landform: Hillslope on upland
Hillslope position: Summit, backslope
Parent material: Sandy and silty residuum weathered from sandstone, unspecified over sandy and silty residuum weathered from sandstone-shale
Slope: 1 to 4 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Well drained
Slowest permeability: Moderately slow (About 0.20 in/hr)
Available water capacity: Moderate (About 6.3 inches)
Shrink-swell potential: Moderate (About 3.3 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Medium
Ecological site: Loamy Upland (pe35-42)
Land capability (nonirrigated): 2e

Typical Profile:

H1—0 to 16 inches; loam
H2—16 to 27 inches; clay loam
H3—27 to 33 inches; very gravelly clay loam
Cr—33 to 37 inches;

Minor Components

Dennis

Composition: About 1 percent
Landform: hillslope on upland
Slope: 1 to 3 percent
Drainage class: Moderately well drained
Ecological site: Loamy Upland (pe35-42)

Eram

Composition: About 1 percent
Landform: hillslope on upland
Slope: 1 to 4 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Moderately well drained
Ecological site: Clay Upland (pe35-42)

Bc—Bates loam, 4 to 7 percent slopes

Map Unit Composition

Bates: 97 percent
Minor components: 3 percent

Component Descriptions

Bates

MLRA: 112 - Cherokee Prairies
Landform: Hillslope on upland
Hillslope position: Backslope
Parent material: Sandy and silty residuum weathered from sandstone, unspecified over sandy and silty residuum weathered from sandstone-shale
Slope: 4 to 7 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Well drained
Slowest permeability: Moderately slow (About 0.20 in/hr)
Available water capacity: Moderate (About 6.3 inches)
Shrink-swell potential: Moderate (About 3.1 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Medium
Ecological site: Loamy Upland (pe35-42)
Land capability (nonirrigated): 3e

Typical Profile:

H1—0 to 16 inches; loam
H2—16 to 27 inches; clay loam
H3—27 to 33 inches; extremely gravelly clay loam
Cr—33 to 37 inches; weathered bedrock

Minor Components

Collinsville

Composition: About 1 percent
Landform: hillslope on upland
Slope: 7 to 20 percent
Depth to restrictive feature: 4 to 20 inches to bedrock (lithic)
Drainage class: Well drained
Ecological site: Shallow Sandstone (pe35-42)

Dennis

Composition: About 1 percent
Landform: hillslope on upland
Slope: 3 to 6 percent
Drainage class: Moderately well drained
Ecological site: Loamy Upland (pe35-42)

Eram

Composition: About 1 percent
Landform: hillslope on upland
Slope: 4 to 7 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Moderately well drained
Ecological site: Clay Upland (pe35-42)

BOP—Borrow Pits

Map Unit Composition

Borrow Pits: 100 percent

Component Descriptions

Borrow Pits

MLRA: 112 - Cherokee Prairies

Depth to seasonal water saturation: More than 6 feet

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

Ca—Clareson-Sogn complex, 1 to 8 percent slopes

Map Unit Composition

Clareson: 50 percent

Sogn: 35 percent

Minor components: 15 percent

Component Descriptions

Clareson

MLRA: 112 - Cherokee Prairies

Landform: Hillslope on upland

Hillslope position: Backslope

Parent material: Silty and clayey residuum weathered from limestone, unspecified

Slope: 1 to 8 percent

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

Drainage class: Well drained

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

Available water capacity: Low (About 3.3 inches)

Shrink-swell potential: Moderate (About 5.9 LEP)

Flooding hazard: None

Depth to seasonal water saturation: More than 6 feet

Runoff class: High

Ecological site: Shallow Flats (pe35-42)

Land capability (nonirrigated): 6e

Typical Profile:

H1—0 to 9 inches; silty clay loam

H2—9 to 16 inches; flaggy silty clay loam

H3—16 to 25 inches; very flaggy silty clay

R—25 to 33 inches; unweathered bedrock

Sogn

MLRA: 112 - Cherokee Prairies

Landform: Hillslope on upland

Hillslope position: Summit

Parent material: Loamy residuum weathered from limestone, unspecified

Slope: 1 to 8 percent

Surface fragments: About 10 to 25 percent boulders

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

Drainage class: Somewhat excessively drained

Slowest permeability: Moderate (About 0.60 in/hr)

Available water capacity: Very low (About 1.8 inches)

Shrink-swell potential: Moderate (About 4.6 LEP)

Flooding hazard: None

Depth to seasonal water saturation: More than 6 feet

Ecological site: Shallow Limy (pe35-42)

Land capability (nonirrigated): 7s

Typical Profile:

H1—0 to 9 inches; silty clay loam

R—9 to 13 inches; unweathered bedrock

Minor Components

Lula

Composition: About 15 percent

Landform: hillslope on upland

Slope: 0 to 2 percent

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

Drainage class: Well drained

Ecological site: Loamy Upland (pe35-42)

Cd—Cleora fine sandy loam, occasionally flooded

Map Unit Composition

Cleora: 98 percent

Minor components: 2 percent

Component Descriptions

Cleora

MLRA: 84A - Cross Timbers

Landform: Flood plain on river valley
Parent material: Loamy alluvium
Slope: 0 to 1 percent
Drainage class: Well drained
Slowest permeability: Moderately rapid (About 2.00 in/hr)
Available water capacity: Moderate (About 8.9 inches)
Shrink-swell potential: Low (About 1.6 LEP)
Flooding hazard: Occasional
Depth to seasonal water saturation: More than 6 feet
Runoff class: Very low
Ecological site: Loamy Lowland (pe35-42)
Land capability (nonirrigated): 2w

Typical Profile:

H1—0 to 18 inches; fine sandy loam
 H2—18 to 90 inches; fine sandy loam

Minor Components

Mason

Composition: About 1 percent
Slope: 0 to 1 percent
Drainage class: Well drained
Ecological site: Loamy Lowland (pe35-42)

Verdigris

Composition: About 1 percent
Slope: 0 to 1 percent
Drainage class: Moderately well drained
Ecological site: Loamy Lowland (pe35-42)

Da—Darnell-Niotaze complex, 24 to 45 percent slopes

Map Unit Composition

Darnell: 55 percent
 Niotaze: 40 percent
 Minor components: 5 percent

Component Descriptions

Darnell

MLRA: 84A - Cross Timbers
Landform: Hillslope on upland
Hillslope position: Shoulder, backslope
Parent material: Loamy residuum
Slope: 25 to 45 percent
Surface fragments: About 10 to 25 percent flagstones
Depth to restrictive feature: 10 to 20 inches to bedrock (paralithic)
Drainage class: Well drained

Slowest permeability: Moderately rapid (About 2.00 in/hr)
Available water capacity: Very low (About 2.3 inches)
Shrink-swell potential: Low (About 1.6 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Medium
Ecological site: Shallow Savannah (pe35-38)
Land capability (nonirrigated): 7s

Typical Profile:

H1—0 to 4 inches; fine sandy loam
 H2—4 to 16 inches; fine sandy loam
 R—16 to 20 inches; unweathered bedrock

Niotaze

MLRA: 84A - Cross Timbers
Landform: Hillslope on upland
Hillslope position: Backslope
Parent material: Clayey residuum weathered from sandstone and shale
Slope: 25 to 45 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Somewhat poorly drained
Slowest permeability: Moderately slow (About 0.20 in/hr)
Available water capacity: Low (About 3.9 inches)
Shrink-swell potential: High (About 7.3 LEP)
Flooding hazard: None
Depth to seasonal water saturation: About 12 to 24 inches
Runoff class: Very high
Ecological site: Savannah (pe35-38)
Land capability (nonirrigated): 7e

Typical Profile:

H1—0 to 9 inches; loam
 H2—9 to 24 inches; silty clay
 Cr—24 to 28 inches; weathered bedrock

Minor Components

Stephenville

Composition: About 5 percent
Landform: hillslope on upland
Slope: 1 to 4 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Well drained
Ecological site: Savannah (pe35-38)

Dd—Dennis silt loam, 1 to 3 percent slopes**Map Unit Composition**

Dennis: 98 percent
 Minor components: 2 percent

Component Descriptions**Dennis**

MLRA: 112 - Cherokee Prairies
Landform: Hillslope on upland
Hillslope position: Backslope
Parent material: Silty and clayey residuum weathered from shale, unspecified
Slope: 1 to 3 percent
Drainage class: Moderately well drained
Slowest permeability: Very slow (About 0.00 in/hr)
Available water capacity: High (About 9.3 inches)
Shrink-swell potential: Very high (About 9.2 LEP)
Flooding hazard: None
Depth to seasonal water saturation: About 12 to 18 inches
Runoff class: High
Ecological site: Loamy Upland (pe35-42)
Land capability (nonirrigated): 2e

Typical Profile:

H1—0 to 10 inches; silt loam
 H2—10 to 15 inches; silty clay loam
 H3—15 to 74 inches; silty clay
 H4—74 to 90 inches; silty clay loam

Minor Components**Eram**

Composition: About 1 percent
Landform: hillslope on upland
Slope: 1 to 4 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Moderately well drained
Ecological site: Clay Upland (pe35-42)

Kenoma

Composition: About 1 percent
Landform: hillslope on paleoterrace on upland
Slope: 1 to 2 percent
Drainage class: Moderately well drained
Ecological site: Clay Upland (pe35-42)

De—Dennis silt loam, 3 to 6 percent slopes**Map Unit Composition**

Dennis: 98 percent
 Minor components: 2 percent

Component Descriptions**Dennis**

MLRA: 112 - Cherokee Prairies
Landform: Hillslope on upland
Hillslope position: Backslope
Parent material: Silty and clayey residuum weathered from shale, unspecified
Slope: 3 to 6 percent
Drainage class: Moderately well drained
Slowest permeability: Very slow (About 0.00 in/hr)
Available water capacity: High (About 9.3 inches)
Shrink-swell potential: Very high (About 9.2 LEP)
Flooding hazard: None
Depth to seasonal water saturation: About 12 to 18 inches
Runoff class: Very high
Ecological site: Loamy Upland (pe35-42)
Land capability (nonirrigated): 3e

Typical Profile:

H1—0 to 10 inches; silt loam
 H2—10 to 15 inches; silty clay loam
 H3—15 to 74 inches; silty clay
 H4—74 to 90 inches; silty clay loam

Minor Components**Bates**

Composition: About 1 percent
Landform: hillslope on upland
Slope: 4 to 7 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Well drained
Ecological site: Loamy Upland (pe35-42)

Eram

Composition: About 1 percent
Landform: hillslope on upland
Slope: 4 to 7 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Moderately well drained
Ecological site: Clay Upland (pe35-42)

Df—Dennis silty clay loam, 1 to 3 percent slopes, eroded**Map Unit Composition**

Dennis: 98 percent
 Minor components: 2 percent

Component Descriptions**Dennis**

MLRA: 112 - Cherokee Prairies
Landform: Hillslope on upland
Hillslope position: Backslope
Parent material: Silty and clayey residuum weathered from shale, unspecified
Slope: 1 to 3 percent
Drainage class: Moderately well drained
Slowest permeability: Very slow (About 0.00 in/hr)
Available water capacity: High (About 9.1 inches)
Shrink-swell potential: Very high (About 9.2 LEP)
Flooding hazard: None
Depth to seasonal water saturation: About 12 to 18 inches
Runoff class: High
Ecological site: Loamy Upland (pe35-42)
Land capability (nonirrigated): 3e

Typical Profile:

H1—0 to 8 inches; silty clay loam
 H2—8 to 67 inches; silty clay
 H3—67 to 83 inches; silty clay loam

Minor Components**Eram**

Composition: About 1 percent
Landform: hillslope on upland
Slope: 1 to 4 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Moderately well drained
Ecological site: Clay Upland (pe35-42)

Bates

Composition: About 1 percent
Landform: hillslope on upland
Slope: 1 to 4 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Well drained
Ecological site: Loamy Upland (pe35-42)

Dg—Dennis And Eram Soils, 3 to 7 percent slopes, eroded**Map Unit Composition**

Dennis: 50 percent
 Eram: 30 percent
 Minor components: 20 percent

Component Descriptions**Dennis**

MLRA: 112 - Cherokee Prairies
Landform: Hillslope on upland
Hillslope position: Backslope
Parent material: Silty and clayey residuum weathered from shale, unspecified
Slope: 3 to 7 percent
Drainage class: Moderately well drained
Slowest permeability: Very slow (About 0.00 in/hr)
Available water capacity: High (About 9.1 inches)
Shrink-swell potential: Very high (About 9.2 LEP)
Flooding hazard: None
Depth to seasonal water saturation: About 12 to 18 inches
Runoff class: Very high
Ecological site: Loamy Upland (pe35-42)
Land capability (nonirrigated): 4e

Typical Profile:

H1—0 to 8 inches; silty clay loam
 H2—8 to 67 inches; silty clay
 H3—67 to 83 inches; silty clay loam

Eram

MLRA: 112 - Cherokee Prairies
Landform: Hillslope on upland
Hillslope position: Footslope
Parent material: Silty and clayey residuum weathered from shale, unspecified
Slope: 3 to 7 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Moderately well drained
Slowest permeability: Slow (About 0.06 in/hr)
Available water capacity: Low (About 4.6 inches)
Shrink-swell potential: High (About 8.3 LEP)
Flooding hazard: None
Depth to seasonal water saturation: About 6 to 18 inches
Ecological site: Clay Upland (pe35-42)

Land capability (nonirrigated): 6e

Typical Profile:

H1—0 to 7 inches; silty clay
H2—7 to 31 inches; silty clay
Cr—31 to 35 inches; weathered bedrock

Minor Components

Bates

Composition: About 20 percent
Landform: hillslope on upland
Slope: 4 to 7 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Well drained
Ecological site: Loamy Upland (pe35-42)

Dw—Dwight silt loam, 0 to 2 percent slopes

Map Unit Composition

Dwight: 98 percent
Minor components: 2 percent

Component Descriptions

Dwight

MLRA: 76 - Bluestem Hills
Landform: Divide on hillslope on upland
Hillslope position: Summit
Parent material: Loess over clayey ancient alluvium over residuum
Slope: 0 to 2 percent
Depth to restrictive feature: 40 to 60 inches to bedrock (paralithic)
Drainage class: Moderately well drained
Slowest permeability: Very slow (About 0.00 in/hr)
Available water capacity: Moderate (About 6.9 inches)
Shrink-swell potential: High (About 7.6 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Very high
Ecological site: Clay Pan (pe30-36)
Land capability (nonirrigated): 4s

Typical Profile:

H1—0 to 4 inches; silt loam
H2—4 to 32 inches; clay
H3—32 to 52 inches; silty clay
Cr—52 to 60 inches; weathered bedrock

Minor Components

Kenoma

Composition: About 1 percent
Landform: hillslope on paleoterrace on upland
Slope: 1 to 2 percent
Drainage class: Moderately well drained
Ecological site: Clay Upland (pe35-42)

Woodson

Composition: About 1 percent
Landform: divide on paleoterrace on upland
Slope: 0 to 2 percent
Drainage class: Somewhat poorly drained
Ecological site: Clay Upland (pe35-42)

Eb—Eram silty clay loam, 1 to 4 percent slopes

Map Unit Composition

Eram: 98 percent
Minor components: 2 percent

Component Descriptions

Eram

MLRA: 112 - Cherokee Prairies
Landform: Hillslope on upland
Hillslope position: Summit
Parent material: Silty and clayey residuum weathered from shale, unspecified
Slope: 1 to 4 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Moderately well drained
Slowest permeability: Slow (About 0.06 in/hr)
Available water capacity: Low (About 4.7 inches)
Shrink-swell potential: High (About 6.6 LEP)
Flooding hazard: None
Depth to seasonal water saturation: About 6 to 18 inches
Runoff class: High
Ecological site: Clay Upland (pe35-42)
Land capability (nonirrigated): 3e

Typical Profile:

H1—0 to 10 inches; silty clay loam
H2—10 to 31 inches; silty clay
Cr—31 to 35 inches;

Minor Components

Bates

Composition: About 1 percent
Landform: hillslope on upland

Slope: 1 to 4 percent
Depth to restrictive feature: 20 to 40 inches
 to bedrock (paralithic)
Drainage class: Well drained
Ecological site: Loamy Upland (pe35-42)

Dennis

Composition: About 1 percent
Landform: hillslope on upland
Slope: 1 to 3 percent
Drainage class: Moderately well drained
Ecological site: Loamy Upland (pe35-42)

Ec—Eram silty clay loam, 4 to 7 percent slopes**Map Unit Composition**

Eram: 98 percent
 Minor components: 2 percent

Component Descriptions**Eram**

MLRA: 112 - Cherokee Prairies
Landform: Hillslope on upland
Hillslope position: Backslope
Parent material: Silty and clayey residuum
 weathered from shale, unspecified
Slope: 4 to 7 percent
Depth to restrictive feature: 20 to 40 inches to
 bedrock (paralithic)
Drainage class: Moderately well drained
Slowest permeability: Slow (About 0.06 in/hr)
Available water capacity: Low (About 4.7 inches)
Shrink-swell potential: High (About 6.6 LEP)
Flooding hazard: None
Depth to seasonal water saturation: About 6 to
 18 inches
Runoff class: Very high
Ecological site: Clay Upland (pe35-42)
Land capability (nonirrigated): 4e

Typical Profile:

H1—0 to 10 inches; silty clay loam
 H2—10 to 31 inches; silty clay
 Cr—31 to 35 inches;

Minor Components**Dennis**

Composition: About 1 percent
Landform: hillslope on upland
Slope: 3 to 6 percent
Drainage class: Moderately well drained
Ecological site: Loamy Upland (pe35-42)

Bates

Composition: About 1 percent
Landform: hillslope on upland
Slope: 4 to 7 percent
Depth to restrictive feature: 20 to 40 inches
 to bedrock (paralithic)
Drainage class: Well drained
Ecological site: Loamy Upland (pe35-42)

Ex—Eram-Collinsville complex, 4 to 25 percent slopes**Map Unit Composition**

Eram: 60 percent
 Collinsville: 20 percent
 Minor components: 20 percent

Component Descriptions**Eram**

MLRA: 112 - Cherokee Prairies
Landform: Hillslope on upland
Hillslope position: Summit
Parent material: Silty and clayey residuum
 weathered from shale, unspecified
Slope: 4 to 12 percent
Depth to restrictive feature: 20 to 40 inches to
 bedrock (paralithic)
Drainage class: Moderately well drained
Slowest permeability: Slow (About 0.06 in/hr)
Available water capacity: Low (About 4.3 inches)
Shrink-swell potential: High (About 6.6 LEP)
Flooding hazard: None
Depth to seasonal water saturation: About 6 to
 18 inches
Runoff class: Very high
Ecological site: Clay Upland (pe35-42)
Land capability (nonirrigated): 6e

Typical Profile:

H1—0 to 7 inches; silty clay loam
 H2—7 to 28 inches; silty clay
 Cr—28 to 32 inches; weathered bedrock

Collinsville

MLRA: 112 - Cherokee Prairies
Landform: Hillslope on upland
Hillslope position: Backslope
Parent material: Sandstone residuum
Slope: 7 to 20 percent
Surface fragments: About 0 to 10 percent
 (shape or size unspecified)

Depth to restrictive feature: 4 to 20 inches to bedrock (lithic)
Drainage class: Well drained
Slowest permeability: Moderately rapid (About 2.00 in/hr)
Available water capacity: Very low (About 2.2 inches)
Shrink-swell potential: Low (About 1.6 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Low
Ecological site: Shallow Sandstone (pe35-42)
Land capability (nonirrigated): 7s

Typical Profile:

H1—0 to 6 inches; loam
 H2—6 to 14 inches; loam
 R—14 to 18 inches; unweathered bedrock

Minor Components

Dennis

Composition: About 10 percent
Landform: hillslope on upland
Slope: 3 to 6 percent
Drainage class: Moderately well drained
Ecological site: Loamy Upland (pe35-42)

Bates

Composition: About 10 percent
Landform: hillslope on upland
Slope: 4 to 7 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Well drained
Ecological site: Loamy Upland (pe35-42)

GRP—Gravel Pits And Quarries

Ha—Hepler silt loam, occasionally flooded

Map Unit Composition

Hepler: 97 percent
 Minor components: 3 percent

Component Descriptions

Hepler

MLRA: 112 - Cherokee Prairies
Landform: Flood plain on river valley
Parent material: Silty alluvium

Slope: 0 to 1 percent
Drainage class: Somewhat poorly drained
Slowest permeability: Moderately slow (About 0.20 in/hr)
Available water capacity: High (About 11.8 inches)
Shrink-swell potential: Moderate (About 3.3 LEP)
Flooding hazard: Occasional
Depth to seasonal water saturation: About 12 to 36 inches
Runoff class: Medium
Ecological site: Loamy Lowland (pe35-42)
Land capability (nonirrigated): 2w

Typical Profile:

H1—0 to 30 inches; silt loam
 H2—30 to 37 inches; silt loam
 H3—37 to 80 inches; silty clay loam

Minor Components

Leanna

Phase: Drained
Composition: About 1 percent
Slope: 0 to 1 percent
Drainage class: Somewhat poorly drained
Ecological site: Clay Lowland (pe35-42)

Osage

Composition: About 1 percent
Slope: 0 to 1 percent
Drainage class: Poorly drained
Ecological site: Clay Lowland (pe35-42)

Verdigris

Composition: About 1 percent
Slope: 0 to 1 percent
Drainage class: Moderately well drained
Ecological site: Loamy Lowland (pe35-42)

Ka—Kenoma silt loam, 1 to 2 percent slopes

Map Unit Composition

Kenoma: 98 percent
 Minor components: 2 percent

Component Descriptions

Kenoma

MLRA: 112 - Cherokee Prairies
Landform: Hillslope on paleoterrace on upland
Hillslope position: Summit

Parent material: Loess over ancient clayey alluvium and/or residuum weathered from limestone and shale
Slope: 1 to 2 percent
Drainage class: Moderately well drained
Slowest permeability: Slow (About 0.06 in/hr)
Available water capacity: High (About 10.6 inches)
Shrink-swell potential: High (About 8.4 LEP)
Flooding hazard: None
Depth to seasonal water saturation: About 6 to 18 inches
Runoff class: High
Ecological site: Clay Upland (pe35-42)
Land capability (nonirrigated): 3e

Typical Profile:
 H1—0 to 11 inches; silt loam
 H2—11 to 28 inches; silty clay
 H3—28 to 80 inches; silty clay

Minor Components

Dennis

Composition: About 1 percent
Landform: hillslope on upland
Slope: 1 to 3 percent
Drainage class: Moderately well drained
Ecological site: Loamy Upland (pe35-42)

Woodson

Composition: About 1 percent
Landform: divide on paleoterrace on upland
Slope: 0 to 2 percent
Drainage class: Somewhat poorly drained
Ecological site: Clay Upland (pe35-42)

Ko—Kenoma-Olpe complex, 2 to 7 percent slopes

Map Unit Composition

Kenoma: 50 percent
 Olpe: 30 percent
 Minor components: 20 percent

Component Descriptions

Kenoma

MLRA: 112 - Cherokee Prairies
Landform: Hillslope on paleoterrace on upland
Hillslope position: Backslope
Parent material: Loess over ancient clayey alluvium and/or residuum weathered from limestone and

shale
Slope: 2 to 7 percent
Drainage class: Moderately well drained
Slowest permeability: Slow (About 0.06 in/hr)
Available water capacity: High (About 10.6 inches)
Shrink-swell potential: High (About 7.9 LEP)
Flooding hazard: None
Depth to seasonal water saturation: About 6 to 18 inches
Runoff class: Very high
Ecological site: Clay Upland (pe35-42)
Land capability (nonirrigated): 4e

Typical Profile:
 H1—0 to 11 inches; silt loam
 H2—11 to 28 inches; silty clay
 H3—28 to 80 inches; silty clay

Olpe

MLRA: 112 - Cherokee Prairies
Landform: Hillslope on paleoterrace on upland
Hillslope position: Backslope, summit
Parent material: Clayey alluvium
Slope: 2 to 7 percent
Drainage class: Well drained
Slowest permeability: Slow (About 0.06 in/hr)
Available water capacity: Low (About 4.0 inches)
Shrink-swell potential: High (About 6.7 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Very high
Ecological site: Loamy Upland (pe35-42)
Land capability (nonirrigated): 4e

Typical Profile:
 H1—0 to 6 inches; silt loam
 H2—6 to 15 inches; very gravelly silt loam
 H3—15 to 24 inches; very gravelly silty clay loam
 H4—24 to 60 inches; very gravelly clay loam

Minor Components

Dennis

Composition: About 10 percent
Landform: hillslope on upland
Slope: 3 to 6 percent
Drainage class: Moderately well drained
Ecological site: Loamy Upland (pe35-42)

Eram

Composition: About 10 percent
Landform: hillslope on upland
Slope: 4 to 7 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Moderately well drained
Ecological site: Clay Upland (pe35-42)

Kw—Kenoma And Woodson Soils, 1 to 3 percent slopes, eroded

Map Unit Composition

Kenoma: 60 percent
Woodson: 30 percent
Minor components: 10 percent

Component Descriptions

Kenoma

MLRA: 112 - Cherokee Prairies
Landform: Hillslope on paleoterrace on upland
Hillslope position: Backslope, shoulder
Parent material: Loess over ancient clayey alluvium and/or residuum weathered from limestone and shale
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: High (About 7.9 LEP)
Flooding hazard: None
Depth to seasonal water saturation: About 6 to 18 inches
Runoff class: High
Ecological site: Clay Upland (pe35-42)
Land capability (nonirrigated): 4e

Typical Profile:

H1—0 to 7 inches; silt loam
H2—7 to 28 inches; silty clay
H3—28 to 76 inches; silty clay

Woodson

MLRA: 112 - Cherokee Prairies
Landform: Divide on paleoterrace on upland
Hillslope position: Summit
Parent material: Silty and clayey alluvium over silty and clayey residuum weathered from shale, clayey
Slope: 1 to 3 percent
Drainage class: Somewhat poorly drained
Slowest permeability: Slow (About 0.06 in/hr)
Available water capacity: Moderate (About 8.6 inches)
Shrink-swell potential: Very high (About 13.5 LEP)

Flooding hazard: None

Depth to seasonal water saturation: About 6 to 24 inches

Runoff class: High

Ecological site: Clay Upland (pe35-42)

Land capability (nonirrigated): 4s

Typical Profile:

H1—0 to 7 inches; silt loam
H2—7 to 28 inches; silty clay
H3—28 to 74 inches; silty clay

Minor Components

Dwight

Composition: About 5 percent
Landform: divide on hillslope on upland
Slope: 0 to 2 percent
Depth to restrictive feature: 40 to 60 inches to bedrock (paralithic)
Drainage class: Moderately well drained
Ecological site: Clay Pan (pe30-36)

Dennis

Phase: Eroded
Composition: About 5 percent
Landform: hillslope on upland
Slope: 1 to 3 percent
Drainage class: Moderately well drained
Ecological site: Loamy Upland (pe35-42)

La—Leanna silt loam, occasionally flooded

Map Unit Composition

Leanna: 90 percent
Minor components: 10 percent

Component Descriptions

Leanna

MLRA: 112 - Cherokee Prairies
Landform: Flood plain on river valley
Parent material: Silty and clayey alluvium
Slope: 0 to 1 percent
Drainage class: Somewhat poorly drained
Slowest permeability: Slow (About 0.06 in/hr)
Available water capacity: High (About 10.2 inches)
Shrink-swell potential: High (About 6.9 LEP)
Flooding hazard: Occasional
Depth to seasonal water saturation: About 6 to 24 inches
Runoff class: Medium
Ecological site: Clay Lowland (pe35-42)

Land capability (nonirrigated): 2w

Typical Profile:

H1—0 to 16 inches; silt loam
H2—16 to 52 inches; silty clay
H3—52 to 60 inches; silty clay loam

Minor Components

Osage

Composition: About 5 percent
Slope: 0 to 1 percent
Drainage class: Poorly drained
Ecological site: Clay Lowland (pe35-42)

Hepler

Composition: About 5 percent
Slope: 0 to 1 percent
Drainage class: Somewhat poorly drained
Ecological site: Loamy Lowland (pe35-42)

Lb—Lula silt loam, 0 to 2 percent slopes

Map Unit Composition

Lula: 98 percent
Minor components: 2 percent

Component Descriptions

Lula

MLRA: 112 - Cherokee Prairies
Landform: Hillslope on upland
Hillslope position: Summit
Parent material: Fine-silty residuum weathered from limestone
Slope: 0 to 2 percent
Depth to restrictive feature: 40 to 60 inches to bedrock (lithic)
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 5.2 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Low
Ecological site: Loamy Upland (pe35-42)
Land capability (nonirrigated): 2e

Typical Profile:

H1—0 to 9 inches; silt loam

H2—9 to 18 inches; silty clay loam
H3—18 to 57 inches; silty clay loam
R—57 to 65 inches; unweathered bedrock

Minor Components

Clareson

Composition: About 1 percent
Landform: hillslope on upland
Slope: 1 to 8 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Ecological site: Shallow Flats (pe35-42)

Kenoma

Composition: About 1 percent
Landform: hillslope on paleoterrace on upland
Slope: 1 to 2 percent
Drainage class: Moderately well drained
Ecological site: Clay Upland (pe35-42)

Ld—Lula-Dwight complex, 0 to 2 percent slopes

Map Unit Composition

Lula: 45 percent
Dwight: 30 percent
Minor components: 25 percent

Component Descriptions

Lula

MLRA: 112 - Cherokee Prairies
Landform: Hillslope on upland
Hillslope position: Summit
Parent material: Residuum weathered from limestone, unspecified
Slope: 0 to 2 percent
Depth to restrictive feature: 40 to 60 inches to bedrock (lithic)
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 5.2 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Low
Ecological site: Loamy Upland (pe35-42)
Land capability (nonirrigated): 3e

Typical Profile:

H1—0 to 9 inches; silt loam
 H2—9 to 18 inches; silty clay loam
 H3—18 to 57 inches; silty clay loam
 R—57 to 65 inches; unweathered bedrock

Dwight

MLRA: 112 - Cherokee Prairies

Landform: Divide on hillslope on upland

Hillslope position: Summit

Parent material: Loess over clayey ancient alluvium over residuum

Slope: 0 to 2 percent

Depth to restrictive feature: 40 to 60 inches to bedrock (paralithic)

Drainage class: Moderately well drained

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

Available water capacity: Moderate (About 6.9 inches)

Shrink-swell potential: High (About 7.6 LEP)

Flooding hazard: None

Depth to seasonal water saturation: More than 6 feet

Runoff class: Very high

Ecological site: Clay Pan (pe35-42)

Land capability (nonirrigated): 4s

Typical Profile:

H1—0 to 4 inches; silt loam
 H2—4 to 32 inches; clay
 H3—32 to 52 inches; silty clay
 Cr—52 to 60 inches; weathered bedrock

Minor Components**Kenoma**

Composition: About 20 percent

Landform: hillslope on paleoterrace on upland

Slope: 1 to 2 percent

Drainage class: Moderately well drained

Ecological site: Clay Upland (pe35-42)

Clareson

Composition: About 5 percent

Landform: hillslope on upland

Slope: 1 to 8 percent

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

Drainage class: Well drained

Ecological site: Shallow Flats (pe35-42)

Ma—Mason silt loam, rarely flooded**Map Unit Composition**

Mason: 98 percent

Minor components: 2 percent

Component Descriptions**Mason**

MLRA: 112 - Cherokee Prairies

Landform: Stream terrace on river valley

Parent material: Silty alluvium

Slope: 0 to 1 percent

Drainage class: Well drained

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

Available water capacity: High (About 10.6 inches)

Shrink-swell potential: Moderate (About 4.5 LEP)

Flooding hazard: Rare

Depth to seasonal water saturation: More than 6 feet

Runoff class: Medium

Ecological site: Loamy Lowland (pe35-42)

Land capability (nonirrigated): 1

Typical Profile:

H1—0 to 12 inches; silt loam
 H2—12 to 20 inches; silt loam
 H3—20 to 46 inches; silty clay loam
 H4—46 to 60 inches; clay loam

Minor Components**Verdigris**

Composition: About 1 percent

Slope: 0 to 1 percent

Drainage class: Moderately well drained

Ecological site: Loamy Lowland (pe35-42)

Hepler

Composition: About 1 percent

Slope: 0 to 1 percent

Drainage class: Somewhat poorly drained

Ecological site: Loamy Lowland (pe35-42)

Ns—Niotaze-Stephenville complex, 4 to 25 percent slopes

Map Unit Composition

Niotaze: 50 percent
 Stephenville: 40 percent
 Minor components: 10 percent

Component Descriptions

Niotaze

MLRA: 84A - Cross Timbers
Landform: Hillslope on upland
Hillslope position: Backslope
Parent material: Clayey residuum weathered from sandstone and shale
Slope: 4 to 25 percent
Surface fragments: About 0 to 10 percent flagstones
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Somewhat poorly drained
Slowest permeability: Moderately slow (About 0.20 in/hr)
Available water capacity: Low (About 3.9 inches)
Shrink-swell potential: High (About 7.3 LEP)
Flooding hazard: None
Depth to seasonal water saturation: About 12 to 24 inches
Runoff class: Very high
Ecological site: Savannah (pe35-38)
Land capability (nonirrigated): 6e

Typical Profile:

H1—0 to 9 inches; loam
 H2—9 to 24 inches; silty clay
 Cr—24 to 28 inches; weathered bedrock

Stephenville

MLRA: 84A - Cross Timbers
Landform: Hillslope on upland
Hillslope position: Backslope
Parent material: Fine-loamy residuum weathered from sandstone
Slope: 4 to 15 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: Low (About 4.2 inches)
Shrink-swell potential: Low (About 2.2 LEP)
Flooding hazard: None

Depth to seasonal water saturation: More than 6 feet

Runoff class: High

Ecological site: Savannah (pe35-38)

Land capability (nonirrigated): 6e

Typical Profile:

H1—0 to 14 inches; fine sandy loam
 H2—14 to 31 inches; sandy clay loam
 Cr—31 to 35 inches; weathered bedrock

Minor Components

Darnell

Composition: About 10 percent
Landform: hillslope on upland
Slope: 25 to 45 percent
Depth to restrictive feature: 10 to 20 inches to bedrock (paralithic)
Drainage class: Well drained
Ecological site: Shallow Savannah (pe35-38)

Od—Olpe Soils, 4 to 15 percent slopes

Map Unit Composition

Olpe: 98 percent
 Minor components: 2 percent

Component Descriptions

Olpe

MLRA: 112 - Cherokee Prairies
Landform: Hillslope on paleoterrace on upland
Hillslope position: Summit, backslope
Parent material: Clayey alluvium
Slope: 4 to 15 percent
Drainage class: Well drained
Slowest permeability: Slow (About 0.06 in/hr)
Available water capacity: Low (About 4.0 inches)
Shrink-swell potential: High (About 6.7 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Very high
Ecological site: Loamy Upland (pe35-42)
Land capability (nonirrigated): 6e

Typical Profile:

H1—0 to 6 inches; silt loam
 H2—6 to 15 inches; very gravelly silt loam
 H3—15 to 24 inches; very gravelly silty clay loam
 H4—24 to 60 inches; very gravelly clay loam

Minor Components**Kenoma**

Composition: About 1 percent
Landform: hillslope on paleoterrace on upland
Slope: 1 to 2 percent
Drainage class: Moderately well drained
Ecological site: Clay Upland (pe35-42)

Lula

Composition: About 1 percent
Landform: hillslope on upland
Slope: 0 to 2 percent
Depth to restrictive feature: 40 to 60 inches to bedrock (lithic)
Drainage class: Well drained
Ecological site: Loamy Upland (pe35-42)

Phase: Drained
Composition: About 1 percent
Slope: 0 to 1 percent
Drainage class: Somewhat poorly drained
Ecological site: Clay Lowland (pe35-42)

Verdigris

Composition: About 1 percent
Slope: 0 to 1 percent
Drainage class: Moderately well drained
Ecological site: Loamy Lowland (pe35-42)

Osage

Composition: About 1 percent
Slope: 0 to 1 percent
Drainage class: Poorly drained
Ecological site: Clay Lowland (pe35-42)

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

Osage: 97 percent
 Minor components: 3 percent

Component Descriptions**Osage**

MLRA: 112 - Cherokee Prairies
Landform: Flood plain on river valley
Parent material: Clayey alluvium
Slope: 0 to 1 percent
Drainage class: Poorly drained
Slowest permeability: Very slow (About 0.00 in/hr)
Available water capacity: Moderate (About 6.4 inches)
Shrink-swell potential: Very high (About 13.5 LEP)
Flooding hazard: Occasional
Ponding hazard: Occasional
Depth to seasonal water saturation: About 0 to 12 inches
Runoff class: High
Ecological site: Clay Lowland (pe35-42)
Land capability (nonirrigated): 3w

Typical Profile:

H1—0 to 18 inches; silty clay
 H2—18 to 70 inches; silty clay
 H3—70 to 90 inches; silty clay

Minor Components**Leanna****Os—Osage silty clay loam, occasionally flooded****Map Unit Composition**

Osage: 97 percent
 Minor components: 3 percent

Component Descriptions**Osage**

MLRA: 112 - Cherokee Prairies
Landform: Flood plain on river valley
Parent material: Clayey alluvium
Slope: 0 to 1 percent
Drainage class: Poorly drained
Slowest permeability: Very slow (About 0.00 in/hr)
Available water capacity: Moderate (About 7.0 inches)
Shrink-swell potential: Very high (About 13.5 LEP)
Flooding hazard: Occasional
Ponding hazard: Occasional
Depth to seasonal water saturation: About 0 to 18 inches
Runoff class: High
Ecological site: Clay Lowland (pe35-42)
Land capability (nonirrigated): 2w

Typical Profile:

H1—0 to 18 inches; silty clay loam
 H2—18 to 70 inches; silty clay
 H3—70 to 90 inches; silty clay

Minor Components**Osage**

Composition: About 1 percent
Slope: 0 to 1 percent
Drainage class: Poorly drained
Ecological site: Clay Lowland (pe35-42)

Leanna

Phase: Drained
Composition: About 1 percent
Slope: 0 to 1 percent
Drainage class: Somewhat poorly drained
Ecological site: Clay Lowland (pe35-42)

Verdigris

Composition: About 1 percent
Slope: 0 to 1 percent
Drainage class: Moderately well drained
Ecological site: Loamy Lowland (pe35-42)

Rc—Ringo silty clay loam, 4 to 7 percent slopes**Map Unit Composition**

Ringo: 99 percent
 Minor components: 1 percent

Component Descriptions**Ringo**

MLRA: 112 - Cherokee Prairies
Landform: Hillslope on upland
Hillslope position: Backslope
Parent material: Residuum weathered from limestone
Slope: 4 to 7 percent
Depth to restrictive feature: 40 to 60 inches to bedrock (paralithic)
Drainage class: Well drained
Slowest permeability: Very slow (About 0.00 in/hr)
Available water capacity: Moderate (About 8.9 inches)
Shrink-swell potential: High (About 7.8 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Very high
Ecological site: Clay Upland (pe35-42)
Land capability (nonirrigated): 3e

Typical Profile:

H1—0 to 8 inches; silty clay loam
 H2—8 to 37 inches; silty clay
 H3—37 to 50 inches; silty clay
 Cr—50 to 60 inches; weathered bedrock

Minor Components**Summit**

Composition: About 1 percent
Landform: hillslope on upland
Slope: 4 to 7 percent
Drainage class: Somewhat poorly drained
Ecological site: Loamy Upland (pe35-42)

Rd—Ringo-Sogn complex, 4 to 15 percent slopes**Map Unit Composition**

Ringo: 50 percent
 Sogn: 30 percent
 Minor components: 20 percent

Component Descriptions**Ringo**

MLRA: 112 - Cherokee Prairies
Landform: Hillslope on upland
Hillslope position: Backslope
Parent material: Residuum weathered from limestone
Slope: 4 to 15 percent
Depth to restrictive feature: 40 to 60 inches to bedrock (paralithic)
Drainage class: Well drained
Slowest permeability: Very slow (About 0.00 in/hr)
Available water capacity: Moderate (About 8.9 inches)
Shrink-swell potential: High (About 7.8 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Very high
Ecological site: Clay Upland (pe35-42)
Land capability (nonirrigated): 6e

Typical Profile:

H1—0 to 8 inches; silty clay loam
 H2—8 to 37 inches; silty clay
 H3—37 to 50 inches; silty clay
 Cr—50 to 60 inches; weathered bedrock

Sogn

MLRA: 112 - Cherokee Prairies
Landform: Hillslope on upland
Hillslope position: Backslope
Parent material: Loamy residuum weathered from limestone

Slope: 4 to 15 percent
Surface fragments: About 0 to 10 percent boulders
Depth to restrictive feature: 4 to 20 inches to bedrock (lithic)
Drainage class: Somewhat excessively drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: Very low (About 1.8 inches)
Shrink-swell potential: Moderate (About 4.6 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Low
Ecological site: Shallow Limy (pe35-42)
Land capability (nonirrigated): 7s

Typical Profile:
 H1—0 to 9 inches; silty clay loam
 R—9 to 13 inches; unweathered bedrock

Minor Components

Clareson

Composition: About 20 percent
Landform: hillslope on upland
Slope: 1 to 8 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Ecological site: Shallow Flats (pe35-42)

Sa—Stephenville fine sandy loam, 1 to 4 percent slopes

Map Unit Composition

Stephenville: 98 percent
 Minor components: 2 percent

Component Descriptions

Stephenville

MLRA: 84A - Cross Timbers
Landform: Hillslope on upland
Hillslope position: Shoulder
Parent material: Fine-loamy residuum weathered from sandstone
Slope: 1 to 4 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Well drained

Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: Low (About 4.2 inches)
Shrink-swell potential: Low (About 2.2 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Medium
Ecological site: Savannah (pe35-38)
Land capability (nonirrigated): 2e

Typical Profile:

H1—0 to 14 inches; fine sandy loam
 H2—14 to 31 inches; sandy clay loam
 Cr—31 to 35 inches; weathered bedrock

Minor Components

Niotaze

Composition: About 1 percent
Landform: hillslope on upland
Slope: 4 to 25 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Somewhat poorly drained
Ecological site: Savannah (pe35-38)

Darnell

Composition: About 1 percent
Landform: hillslope on upland
Slope: 25 to 45 percent
Depth to restrictive feature: 10 to 20 inches to bedrock (paralithic)
Drainage class: Well drained
Ecological site: Shallow Savannah (pe35-38)

Sd—Summit silty clay loam, 1 to 4 percent slopes

Map Unit Composition

Summit: 98 percent
 Minor components: 2 percent

Component Descriptions

Summit

MLRA: 112 - Cherokee Prairies
Landform: Hillslope on upland
Hillslope position: Footslope
Parent material: Silty and clayey residuum weathered from shale, calcareous
Slope: 1 to 4 percent
Drainage class: Somewhat poorly drained
Slowest permeability: Slow (About 0.06 in/hr)

Available water capacity: Moderate (About 8.9 inches)
Shrink-swell potential: High (About 8.2 LEP)
Flooding hazard: None
Depth to seasonal water saturation: About 24 to 36 inches
Runoff class: Medium
Ecological site: Loamy Upland (pe35-42)
Land capability (nonirrigated): 2e

Typical Profile:

H1—0 to 16 inches; silty clay loam
 H2—16 to 40 inches; silty clay
 H3—40 to 64 inches; silty clay

Minor Components

Ringo

Composition: About 1 percent
Landform: hillslope on upland
Slope: 4 to 7 percent
Depth to restrictive feature: 40 to 60 inches to bedrock (paralithic)
Drainage class: Well drained
Ecological site: Clay Upland (pe35-42)

Woodson

Composition: About 1 percent
Landform: divide on paleoterrace on upland
Slope: 0 to 2 percent
Drainage class: Somewhat poorly drained
Ecological site: Clay Upland (pe35-42)

Se—Summit silty clay loam, 4 to 7 percent slopes

Map Unit Composition

Summit: 99 percent
 Minor components: 1 percent

Component Descriptions

Summit

MLRA: 112 - Cherokee Prairies
Landform: Hillslope on upland
Hillslope position: Footslope
Parent material: Silty and clayey residuum weathered from shale, calcareous
Slope: 4 to 7 percent
Drainage class: Somewhat poorly drained
Slowest permeability: Slow (About 0.06 in/hr)
Available water capacity: Moderate (About 8.9 inches)
Shrink-swell potential: High (About 8.2 LEP)
Flooding hazard: None

Depth to seasonal water saturation: About 24 to 36 inches
Runoff class: High
Ecological site: Loamy Upland (pe35-42)
Land capability (nonirrigated): 3e

Typical Profile:

H1—0 to 16 inches; silty clay loam
 H2—16 to 40 inches; silty clay
 H3—40 to 64 inches; silty clay

Minor Components

Ringo

Composition: About 1 percent
Landform: hillslope on upland
Slope: 4 to 7 percent
Depth to restrictive feature: 40 to 60 inches to bedrock (paralithic)
Drainage class: Well drained
Ecological site: Clay Upland (pe35-42)

Va—Verdigris silt loam, occasionally flooded

Map Unit Composition

Verdigris: 97 percent
 Minor components: 3 percent

Component Descriptions

Verdigris

MLRA: 112 - Cherokee Prairies
Landform: Flood plain on river valley
Parent material: Silty alluvium
Slope: 0 to 1 percent
Drainage class: Moderately well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: High (About 11.9 inches)
Shrink-swell potential: Low (About 2.2 LEP)
Flooding hazard: Occasional
Depth to seasonal water saturation: More than 6 feet
Runoff class: Low
Ecological site: Loamy Lowland (pe35-42)
Land capability (nonirrigated): 2w

Typical Profile:

H1—0 to 6 inches; silt loam
 H2—6 to 82 inches; silty clay loam

Minor Components

Mason

Composition: About 1 percent
Slope: 0 to 1 percent
Drainage class: Well drained
Ecological site: Loamy Lowland (pe35-42)

Hepler

Composition: About 1 percent
Slope: 0 to 1 percent
Drainage class: Somewhat poorly drained
Ecological site: Loamy Lowland (pe35-42)

Osage

Composition: About 1 percent
Slope: 0 to 1 percent
Drainage class: Poorly drained
Ecological site: Clay Lowland (pe35-42)

Vc—Verdigris Soils, channeled**Map Unit Composition**

Verdigris: 98 percent
 Minor components: 2 percent

Component Descriptions**Verdigris**

MLRA: 112 - Cherokee Prairies
Landform: Flood plain on river valley
Parent material: Silty alluvium
Slope: 0 to 2 percent
Drainage class: Moderately well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: High (About 11.9 inches)
Shrink-swell potential: Low (About 2.2 LEP)
Flooding hazard: Frequent
Depth to seasonal water saturation: More than 6 feet
Runoff class: Low
Ecological site: Loamy Lowland (pe35-42)
Land capability (nonirrigated): 5w

Typical Profile:

H1—0 to 6 inches; silt loam
 H2—6 to 82 inches; silty clay loam

Minor Components**Hepler**

Composition: About 1 percent
Slope: 0 to 1 percent
Drainage class: Somewhat poorly drained
Ecological site: Loamy Lowland (pe35-42)

Leanna

Phase: Drained
Composition: About 1 percent
Slope: 0 to 1 percent
Drainage class: Somewhat poorly drained
Ecological site: Clay Lowland (pe35-42)

W—Water**Map Unit Composition**

Water: 100 percent

Component Descriptions**Water**

MLRA: -
Depth to seasonal water saturation: More than 6 feet

Wa—Woodson silt loam, 0 to 2 percent slopes**Map Unit Composition**

Woodson: 98 percent
 Minor components: 2 percent

Component Descriptions**Woodson**

MLRA: 112 - Cherokee Prairies
Landform: Divide on paleoterrace on upland
Hillslope position: Summit
Parent material: Loess over clayey alluvium residuum weathered from shale
Slope: 0 to 2 percent
Drainage class: Somewhat poorly drained
Slowest permeability: Slow (About 0.06 in/hr)
Available water capacity: Moderate (About 8.7 inches)
Shrink-swell potential: Very high (About 13.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: About 6 to 24 inches
Runoff class: High
Ecological site: Clay Upland (pe35-42)
Land capability (nonirrigated): 2s

Typical Profile:

H1—0 to 8 inches; silt loam
 H2—8 to 29 inches; silty clay
 H3—29 to 75 inches; silty clay

Minor Components

Summit

Composition: About 1 percent
Landform: hillslope on upland
Slope: 1 to 4 percent
Drainage class: Somewhat poorly drained
Ecological site: Loamy Upland (pe35-42)

Kenoma

Composition: About 1 percent
Landform: hillslope on paleoterrace on upland
Slope: 1 to 2 percent
Drainage class: Moderately well drained
Ecological site: Clay Upland (pe35-42)

Za—Zaar silty clay, 1 to 4 percent slopes

Map Unit Composition

Zaar: 85 percent
 Minor components: 15 percent

Component Descriptions

Zaar

MLRA: 112 - Cherokee Prairies
Landform: Hillslope on upland
Hillslope position: Footslope
Parent material: Clayey colluvium and/or residuum weathered from shale
Slope: 1 to 4 percent

Drainage class: Somewhat poorly drained
Slowest permeability: Very slow (About 0.00 in/hr)

Available water capacity: Moderate (About 8.7 inches)

Shrink-swell potential: Very high (About 18.9 LEP)

Flooding hazard: None

Depth to seasonal water saturation: About 12 to 24 inches

Runoff class: Medium

Ecological site: Clay Upland (pe35-42)

Land capability (nonirrigated): 3e

Typical Profile:

H1—0 to 10 inches; silty clay
 H2—10 to 24 inches; silty clay
 H3—24 to 56 inches; silty clay
 H4—56 to 60 inches; silty clay

Minor Components

Eram

Composition: About 10 percent
Landform: hillslope on upland
Slope: 1 to 3 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Moderately well drained
Ecological site: Clay Upland (pe35-42)

Woodson

Composition: About 5 percent
Landform: ridge on paleoterrace on upland
Slope: 0 to 1 percent
Drainage class: Somewhat poorly drained
Ecological site: Clay Upland (pe35-42)

Prime farmland is one of several kinds of important farmland defined by the U.S. Department of Agriculture. It is of major importance in meeting the Nation's short- and long-range needs for food and fiber. Because the supply of high-quality farmland is limited, the U.S. Department of Agriculture recognizes that responsible levels of government, as well as individuals, should encourage and facilitate the wise use of our Nation's prime farmland.

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, forestland, or other land, but it is not urban or built-up land or water areas. The soil qualities, growing season, and moisture supply are those needed for the soil to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied. In general, prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, an acceptable salt and sodium content, and few or no rocks. It is permeable to water and air. It is not excessively erodible or saturated with water for long periods, and it either is not frequently flooded during the growing season or is protected from flooding. Slope ranges mainly from 0 to 6 percent. More detailed information about the criteria for prime farmland is available at the local office of the Natural Resources Conservation Service.

A recent trend in land use in some parts of the survey area has been the loss of some prime farmland to industrial and urban uses. The loss of prime farmland to other uses puts pressure on marginal lands, which generally are more erodible, droughty, and less productive and cannot be easily cultivated.

The map units in the survey area that are considered prime farmland are listed in the following table. This list does not constitute a recommendation for a particular land use. On some soils included in the list, measures that overcome a hazard or limitation, such as flooding, wetness, and droughtiness, are needed. Onsite evaluation is needed to determine whether or not the hazard or limitation has been overcome by corrective measures. The extent of each listed map unit is shown in the "Acres and Proportionate Extent of Soils" table. The location is shown on the detailed soil maps. The soil qualities that affect use and management are described in other tables in this document."

Map symbol	Mapunit name	Farmland Classification
001CA	Catoosa silt loam, 0 to 2 percent slopes	All areas are prime farmland
001ZB	Zaar silty clay, 3 to 7 percent slopes	All areas are prime farmland
073CA	Chase silty clay loam, occasionally flooded	All areas are prime farmland
073IF	Ivan silt loam, occasionally flooded	All areas are prime farmland
073LA	Labette silty clay loam, 1 to 4 percent slopes	All areas are prime farmland
073MA	Martin silty clay loam, 1 to 4 percent slopes	All areas are prime farmland
073RE	Reading silt loam, 0 to 2 percent slopes, rarely flooded	All areas are prime farmland
205EB	Eram silt loam, 1 to 3 percent slopes	All areas are prime farmland
Bb	Bates loam, 1 to 4 percent slopes	All areas are prime farmland
Bc	Bates loam, 4 to 7 percent slopes	All areas are prime farmland
Cd	Cleora fine sandy loam, occasionally flooded	All areas are prime farmland
Dd	Dennis silt loam, 1 to 3 percent slopes	All areas are prime farmland
De	Dennis silt loam, 3 to 6 percent slopes	All areas are prime farmland
Df	Dennis silty clay loam, 1 to 3 percent slopes, eroded	All areas are prime farmland
Eb	Eram silty clay loam, 1 to 4 percent slopes	All areas are prime farmland
Ka	Kenoma silt loam, 1 to 2 percent slopes	All areas are prime farmland
Lb	Lula silt loam, 0 to 2 percent slopes	All areas are prime farmland
Ma	Mason silt loam, rarely flooded	All areas are prime farmland
Sa	Stephenville fine sandy loam, 1 to 4 percent slopes	All areas are prime farmland
Sd	Summit silty clay loam, 1 to 4 percent slopes	All areas are prime farmland
Se	Summit silty clay loam, 4 to 7 percent slopes	All areas are prime farmland
Va	Verdigris silt loam, occasionally flooded	All areas are prime farmland
Wa	Woodson silt loam, 0 to 2 percent slopes	All areas are prime farmland
Za	Zaar silty clay, 1 to 4 percent slopes	All areas are prime farmland
205LA	Lanton silt loam, occasionally flooded	Prime farmland if drained
Ha	Hepler silt loam, occasionally flooded	Prime farmland if drained
La	Leanna silt loam, occasionally flooded	Prime farmland if drained
Og	Osage silty clay, occasionally flooded	Prime farmland if drained
Os	Osage silty clay loam, occasionally flooded	Prime farmland if drained

The "Soil Rating for Plant Growth, modified 1998" (SRPG) is a relative rating of the capacity of a soil to produce a specific plant under a defined management system. The index is determined from yield data on a few benchmark soils and is used to calculate yields, the net returns from crops, land assessment values, and taxes and to perform risk analysis when land management decisions are made. Specific information on plants and yields can be obtained from the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

Map symbol	Soil name	Crop Index
001CA	Catoosa Silt Loam, 0 To 2 Percent Slopes-----	48
001CB	Catoosa-Rock Outcrop Complex, 1 To 8 Percent Slopes-----	30
001CC	Collinsville-Bates Complex, 2 To 15 Percent Slopes-----	28
001ZB	Zaar Silty Clay, 3 To 7 Percent Slopes-----	64
031EP	Eram-Apperson Silty Clay Loams, 4 To 7 Percent Slopes-----	40
031ES	Eram-Shidler Silty Clay Loams, 4 To 15 Percent Slopes-----	23
073AT	Aquents, Frequently Flooded-----	0
073CA	Chase Silty Clay Loam, Occasionally Flooded-----	77
073CM	Clime Silty Clay, 3 To 7 Percent Slopes-----	42
073CS	Clime-Sogn Complex, 5 To 20 Percent Slopes-----	29
073DS	Dennis Silty Clay Loam, 2 To 6 Percent Slopes, Eroded-----	68
073IC	Ivan Silt Loam, Channeled-----	52
073IF	Ivan Silt Loam, Occasionally Flooded-----	63
073KE	Kenoma Silty Clay Loam, 2 To 5 Percent Slopes, Eroded-----	74
073LA	Labette Silty Clay Loam, 1 To 4 Percent Slopes-----	38
073LD	Labette-Dwight Complex, 0 To 3 Percent Slopes-----	46
073MA	Martin Silty Clay Loam, 1 To 4 Percent Slopes-----	84
073NZ	Niotaze-Darnell Complex, 6 To 35 Percent Slopes-----	16
073RE	Reading Silt Loam, 0 To 2 Percent Slopes, Rarely Flooded-----	86
073ST	Steedman Stony Loam, 3 To 12 Percent Slopes-----	14
205BH	Bates-Collinsville Loams, 3 To 7 Percent Slopes-----	30
205BO	Bates-Collinsville Loams, 7 To 20 Percent Slopes-----	25
205DW	Dennis-Dwight Silt Loams, 1 To 5 Percent Slopes-----	63
205EB	Eram Silt Loam, 1 To 3 Percent Slopes-----	43
205EC	Eram Silt Loam, 3 To 7 Percent Slopes-----	27
205LA	Lanton Silt Loam, Occasionally Flooded-----	79
205ND	Niotaze-Darnell Complex, 4 To 30 Percent Slopes-----	21
205SC	Shidler-Catoosa Complex, 1 To 8 Percent Slopes-----	16
205SF	Steedman Gravelly Silt Loam, 4 To 25 Percent Slopes, Stony-----	20
AED	Arents, Earthen Dam-----	0
BOP	Borrow Pits-----	0
Bb	Bates Loam, 1 To 4 Percent Slopes-----	59
Bc	Bates Loam, 4 To 7 Percent Slopes-----	56
Ca	Clareson-Sogn Complex, 1 To 8 Percent Slopes-----	29
Cd	Cleora Fine Sandy Loam, Occasionally Flooded-----	65
Da	Darnell-Niotaze Complex, 24 To 45 Percent Slopes-----	3
Dd	Dennis Silt Loam, 1 To 3 Percent Slopes-----	69
De	Dennis Silt Loam, 3 To 6 Percent Slopes-----	66
Df	Dennis Silty Clay Loam, 1 To 3 Percent Slopes, Eroded-----	71
Dg	Dennis And Eram Soils, 3 To 7 Percent Slopes, Eroded-----	58
Dw	Dwight Silt Loam, 0 To 2 Percent Slopes-----	54
Eb	Eram Silty Clay Loam, 1 To 4 Percent Slopes-----	44
Ec	Eram Silty Clay Loam, 4 To 7 Percent Slopes-----	42
Ex	Eram-Collinsville Complex, 4 To 25 Percent Slopes-----	34
GRP	Gravel Pits And Quarries-----	0
Ha	Hepler Silt Loam, Occasionally Flooded-----	82
Ka	Kenoma Silt Loam, 1 To 2 Percent Slopes-----	80
Ko	Kenoma-Olpe Complex, 2 To 7 Percent Slopes-----	61
Kw	Kenoma And Woodson Soils, 1 To 3 Percent Slopes, Eroded-----	76
La	Leanna Silt Loam, Occasionally Flooded-----	72
Lb	Lula Silt Loam, 0 To 2 Percent Slopes-----	82
Ld	Lula-Dwight Complex, 0 To 2 Percent Slopes-----	71
Ma	Mason Silt Loam, Rarely Flooded-----	80
Ns	Niotaze-Stephenville Complex, 4 To 25 Percent Slopes-----	23
Od	Olpe Soils, 4 To 15 Percent Slopes-----	36
Og	Osage Silty Clay, Occasionally Flooded-----	55
Os	Osage Silty Clay Loam, Occasionally Flooded-----	58
Rc	Ringo Silty Clay Loam, 4 To 7 Percent Slopes-----	65
Rd	Ringo-Sogn Complex, 4 To 15 Percent Slopes-----	37
Sa	Stephenville Fine Sandy Loam, 1 To 4 Percent Slopes-----	37
Sd	Summit Silty Clay Loam, 1 To 4 Percent Slopes-----	75
Se	Summit Silty Clay Loam, 4 To 7 Percent Slopes-----	72
Va	Verdigris Silt Loam, Occasionally Flooded-----	84
Vc	Verdigris Soils, Channeled-----	67
W	Water-----	0
Wa	Woodson Silt Loam, 0 To 2 Percent Slopes-----	76
Za	Zaar Silty Clay, 1 To 4 Percent Slopes-----	63

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(Entries under "Erosion factors--T" apply to the entire profile. Entries under "K", "Kf", "Wind Erodibility Group" and "Wind Erodibility Index" apply only to the surface layer)

Map symbol and soil name	Percent	Irr Cap Class	Nonirr Cap Class	Prime Farmland	Hydro- logic Group	Range site name	Windbreak suitability group	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
								K	Kf	T		
001CA:CATOOSA---	90	N/A	2e	All areas are prime farmland	B	Loamy Upland (pe35-42)	7	.37	.37	2	6	48
001CB:CATOOSA---	60	N/A	6s	Not prime farmland	B	Loamy Upland (pe35-42)	7	.37	.37	2	6	48
001CB:ROCK OUTCROP-----	30	N/A	8	Not prime farmland	D	Unspecified		---	---	-	---	---
001CC:COLLINSVIL LE-----	50	N/A	6e	Not prime farmland	D	Shallow Sandstone (pe35- 42)	3	.20	.20	1	3	86
001CC:BATES-----	40	N/A	6e	Not prime farmland	B	Loamy Upland (pe35-42)	6	.32	.32	3	5	56
001ZB:ZAAR-----	100	N/A	4e	All areas are prime farmland	D	Clay Upland (pe35-42)	4	.28	.28	5	4	86
031EP:ERAM-----	50	N/A	4e	Not prime farmland	C	Clay Upland (pe35-42)	8	.37	.37	3	7	38
031EP:APPERSON--	35	N/A	4e	Not prime farmland	C	Loamy Upland (pe35-42)	8	.37	.37	3	7	38
031ES:ERAM-----	60	N/A	6e	Not prime farmland	C	Clay Upland (pe35-42)	8	.37	.37	3	7	38
031ES:SHIDLER---	25	N/A	7s	Not prime farmland	D	Shallow Limy (pe35-42)	5	.32	.32	1	4L	86
073AT:AQUENTS---	100	N/A	5w	Not prime farmland		Unspecified		---	---	-	---	0
073CA:CHASE-----	90	N/A	2w	All areas are prime farmland	C	Loamy Lowland (pe30-36)	8	.37	.37	5	7	38
073CM:CLIME-----	90	N/A	4e	Not prime farmland	C	Limy Upland (pe30-36)	4	.28	.28	3	4	86
073CS:CLIME-----	60	N/A	6e	Not prime farmland	C	Limy Upland (pe30-36)	4	.28	.28	3	4	86
073CS:SOGN-----	20	N/A	7s	Not prime farmland	D	Shallow Limy (pe30-36)	5	.32	.32	1	4L	86
073DS:DENNIS----	100	N/A	3e	Not prime farmland	C	Loamy Upland (pe30-36)	8	.37	.37	5	7	38
073IC:IVAN-----	85	N/A	5w	Not prime farmland	B	Loamy Lowland (pe30-36)	5	.32	.32	5	4L	86
073IF:IVAN-----	90	N/A	2w	All areas are prime farmland	B	Loamy Lowland (pe30-36)	5	.32	.32	5	4L	86
073KE:KENOMA----	100	N/A	4e	Not prime farmland	D	Clay Upland (pe30-36)	8	.37	.37	3	7	38

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Map symbol and soil name	Percent	Irr Cap Class	Nonirr Cap Class	Prime Farmland	Hydro- logic Group	Range site name	Windbreak suitability group	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
								K	Kf	T		
073LA:LABETTE---	90	N/A	2e	All areas are prime farmland	C	Loamy Upland (pe30-36)	8	.37	.37	2	7	38
073LD:LABETTE---	65	N/A	3e	Not prime farmland	C	Loamy Upland (pe30-36)	8	.37	.37	2	7	38
073LD:DWIGHT----	30	N/A	4s	Not prime farmland	D	Clay Pan (pe30- 36)	7	.43	.43	2	6	48
073MA:MARTIN----	100	N/A	2e	All areas are prime farmland	C	Loamy Upland (pe30-36)	8	.37	.37	5	7	38
073NZ:NIOTAZE---	75	N/A	6e	Not prime farmland	C	Savannah (pe35- 42)	6	.37	.37	3	5	56
073NZ:DARNELL---	15	N/A	7e	Not prime farmland	C	Shallow Savannah (pe35-42)	3	.24	.24	2	3	86
073RE:READING---	90	N/A	1	All areas are prime farmland	B	Loamy Lowland (pe30-36)	7	.32	.32	5	6	48
073ST:STEEDMAN--	85	N/A	6e	Not prime farmland	C	Loamy Upland (pe35-42)	9	.24	.43	3	8	0
205BH:BATES-----	50	N/A	4e	Not prime farmland	B	Loamy Upland (pe35-42)	6	.32	.32	3	5	56
205BH:COLLINSVIL LE-----	35	N/A	6s	Not prime farmland	D	Shallow Sandstone (pe35- 42)	6	.32	.32	1	5	56
205BO:BATES-----	45	N/A	6e	Not prime farmland	B	Loamy Upland (pe35-42)	6	.32	.32	3	5	56
205BO:COLLINSVIL LE-----	40	N/A	7s	Not prime farmland	D	Shallow Sandstone (pe35- 42)	6	.32	.32	1	5	56
205DW:DENNIS----	65	N/A	3e	Not prime farmland	C	Loamy Upland (pe35-42)	7	.43	.43	5	6	48
205DW:DWIGHT----	25	N/A	4s	Not prime farmland	D	Clay Pan (pe30- 36)	7	.43	.43	2	6	48
205EB:ERAM-----	90	N/A	3e	All areas are prime farmland	C	Clay Upland (pe35-42)	7	.43	.43	3	6	48
205EC:ERAM-----	90	N/A	4e	Not prime farmland	C	Clay Upland (pe35-42)	7	.43	.43	3	6	48
205LA:LANTON----	90	N/A	2w	Prime farmland if drained	C	Loamy Lowland (pe35-42)	7	.37	.37	5	6	48
205ND:NIOTAZE---	50	N/A	6e	Not prime farmland	C	Savannah (pe35- 38)	9	.20	.32	3	8	0
205ND:DARNELL---	35	N/A	6e	Not prime farmland	C	Shallow Savannah (pe35-38)	3	.24	.32	2	3	86

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Map symbol and soil name	Percent	Irr Cap Class	Nonirr Cap Class	Prime Farmland	Hydro- logic Group	Range site name	Windbreak suitability group	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
								K	Kf	T		
205SC:SHIDLER---	70	N/A	6e	Not prime farmland	D	Shallow Limy (pe35-42)	8	.32	.37	1	7	38
205SC:CATOOSA---	20	N/A	2e	Not prime farmland	B	Loamy Upland (pe35-42)	7	.37	.37	2	6	48
205SF:STEEDMAN--	90	N/A	6e	Not prime farmland	C	Loamy Upland (pe35-38)	9	.28	.43	3	8	0
AED:ARENTS, EARTHEN DAM----	100	N/A	8	Not prime farmland		Unspecified		---	---	-	---	---
BOP:BORROW PITS-	100	N/A	N/A	Not prime farmland		Unspecified		---	---	-	---	---
Bb:BATES-----	98	N/A	2e	All areas are prime farmland	B	Loamy Upland (pe35-42)	6	.32	.32	3	5	56
Bc:BATES-----	97	N/A	3e	All areas are prime farmland	B	Loamy Upland (pe35-42)	6	.32	.32	3	5	56
Ca:CLARESON-----	50	N/A	6e	Not prime farmland	C	Shallow Flats (pe35-42)	8	.32	.32	2	7	38
Ca:SOGN-----	35	N/A	7s	Not prime farmland	D	Shallow Limy (pe35-42)	5	.32	.32	1	4L	86
Cd:CLEORA-----	98	N/A	2w	All areas are prime farmland	B	Loamy Lowland (pe35-42)	3	.20	.20	5	3	86
Da:DARNELL-----	55	N/A	7s	Not prime farmland	C	Shallow Savannah (pe35-38)	3	.24	.24	2	3	86
Da:NIOTAZE-----	40	N/A	7e	Not prime farmland	C	Savannah (pe35- 38)	6	.37	.37	3	5	56
Dd:DENNIS-----	98	N/A	2e	All areas are prime farmland	C	Loamy Upland (pe35-42)	7	.43	.43	5	6	48
De:DENNIS-----	98	N/A	3e	All areas are prime farmland	C	Loamy Upland (pe35-42)	7	.43	.43	5	6	48
Df:DENNIS-----	98	N/A	3e	All areas are prime farmland	C	Loamy Upland (pe35-42)	8	.37	.37	5	7	38
Dg:DENNIS-----	50	N/A	4e	Not prime farmland	C	Loamy Upland (pe35-42)	8	.37	.37	5	7	38
Dg:ERAM-----	30	N/A	6e	Not prime farmland	C	Clay Upland (pe35-42)	8	.37	.37	3	7	38
Dw:DWIGHT-----	98	N/A	4s	Not prime farmland	D	Clay Pan (pe30- 36)	7	.43	.43	2	6	48
Eb:ERAM-----	98	N/A	3e	All areas are prime farmland	C	Clay Upland (pe35-42)	8	.37	.37	3	7	38

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Map symbol and soil name	Percent	Irr Cap Class	Nonirr Cap Class	Prime Farmland	Hydro- logic Group	Range site name	Windbreak suitability group	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
								K	Kf	T		
Ec:ERAM-----	98	N/A	4e	Not prime farmland	C	Clay Upland (pe35-42)	8	.37	.37	3	7	38
Ex:ERAM-----	60	N/A	6e	Not prime farmland	C	Clay Upland (pe35-42)	8	.37	.37	3	7	38
Ex:COLLINSVILLE-	20	N/A	7s	Not prime farmland	D	Shallow Sandstone (pe35- 42)	6	.32	.32	1	5	56
GRP:GRAVEL PITS-	100	N/A	N/A	Not prime farmland		Unspecified		---	---	-	---	---
Ha:HEPLER-----	97	N/A	2w	Prime farmland if drained	C	Loamy Lowland (pe35-42)	7	.37	.37	5	6	48
Ka:KENOMA-----	98	N/A	3e	All areas are prime farmland	D	Clay Upland (pe35-42)	7	.43	.43	3	6	48
Ko:KENOMA-----	50	N/A	4e	Not prime farmland	D	Clay Upland (pe35-42)	7	.43	.43	3	6	48
Ko:OLPE-----	30	N/A	4e	Not prime farmland	C	Loamy Upland (pe35-42)	7	.43	.43	5	6	48
Kw:KENOMA-----	60	N/A	4e	Not prime farmland	D	Clay Upland (pe35-42)	8	.37	.37	3	7	38
Kw:WOODSON-----	30	N/A	4s	Not prime farmland	D	Clay Upland (pe35-42)	8	.37	.37	3	7	38
La:LEANNA-----	90	N/A	2w	Prime farmland if drained	D	Clay Lowland (pe35-42)	7	.32	.32	3	6	48
Lb:LULA-----	98	N/A	2e	All areas are prime farmland	B	Loamy Upland (pe35-42)	7	.37	.37	3	6	48
Ld:LULA-----	45	N/A	3e	Not prime farmland	B	Loamy Upland (pe35-42)	7	.37	.37	3	6	48
Ld:DWIGHT-----	30	N/A	4s	Not prime farmland	D	Clay Pan (pe35- 42)	7	.43	.43	2	6	48
Ma:MASON-----	98	N/A	1	All areas are prime farmland	B	Loamy Lowland (pe35-42)	7	.37	.37	5	6	48
Ns:NIOTAZE-----	50	N/A	6e	Not prime farmland	C	Savannah (pe35- 38)	6	.37	.37	3	5	56
Ns:STEPHENVILLE-	40	N/A	6e	Not prime farmland	B	Savannah (pe35- 38)	3	.24	.24	3	3	86
Od:OLPE-----	98	N/A	6e	Not prime farmland	C	Loamy Upland (pe35-42)	7	.43	.43	5	6	48
Og:OSAGE-----	97	N/A	3w	Prime farmland if drained	D	Clay Lowland (pe35-42)	4	.28	.28	5	4	86

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Map symbol and soil name	Percent	Irr Cap Class	Nonirr Cap Class	Prime Farmland	Hydro- logic Group	Range site name	Windbreak suitability group	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
								K	Kf	T		
Os:OSAGE-----	97	N/A	2w	Prime farmland if drained	D	Clay Lowland (pe35-42)	4	.37	.37	5	4	86
Rc:RINGO-----	99	N/A	3e	Not prime farmland	D	Clay Upland (pe35-42)	4	.37	.37	3	4	86
Rd:RINGO-----	50	N/A	6e	Not prime farmland	D	Clay Upland (pe35-42)	4	.37	.37	3	4	86
Rd:SOGN-----	30	N/A	7s	Not prime farmland	D	Shallow Limy (pe35-42)	5	.32	.32	1	4L	86
Sa:STEPHENVILLE-	98	N/A	2e	All areas are prime farmland	B	Savannah (pe35- 38)	3	.24	.24	3	3	86
Sd:SUMMIT-----	98	N/A	2e	All areas are prime farmland	C	Loamy Upland (pe35-42)	4	.37	.37	5	4	86
Se:SUMMIT-----	99	N/A	3e	All areas are prime farmland	C	Loamy Upland (pe35-42)	4	.37	.37	5	4	86
Va:VERDIGRIS----	97	N/A	2w	All areas are prime farmland	B	Loamy Lowland (pe35-42)	7	.32	.32	5	6	48
Vc:VERDIGRIS----	98	N/A	5w	Not prime farmland	B	Loamy Lowland (pe35-42)	7	.32	.32	5	6	48
W:WATER-----	100	N/A	N/A			Unspecified		---	---	-	---	---
Wa:WOODSON-----	98	N/A	2s	All areas are prime farmland	D	Clay Upland (pe35-42)	7	.43	.43	3	6	48
Za:ZAAR-----	85	N/A	3e	All areas are prime farmland	D	Clay Upland (pe35-42)	4	.28	.28	5	4	86

RANGELAND PRODUCTIVITY
Woodson County, Kansas

Use and Explanation of Rangeland, Grazed Forest Land, Native Pastureland Interpretations

Information in this subsection can be used to plan the use and management of soils for rangeland, grazed forest land, and native pasture. Different kinds of soils vary in their capacity to produce native grasses and other plants suitable for grazing. Information in this subsection provides groupings of similar soils and estimates of potential forage production, which can be used to determine livestock stocking rates.

Rangeland. Range is land on which the native vegetation (climax or natural potential plant community) is predominantly grasses, grasslike plants, forbs, and shrubs suitable for grazing and browsing. Range includes natural grasslands, savannas, many wetlands, some deserts, tundra, and certain shrub and forb communities. Rangeland receives no regular or frequent cultural treatment. The composition and production of the plant community are determined by soil, climate, topography, overstory canopy, and grazing management.

Grazed Forest Land. Includes land on which the understory includes, as an integral part of the forest plant community, plants that can be grazed without significantly impairing other forest values.

Native Pasture. Includes land on which the native vegetation (climax or natural potential plant community) is forest but which is used and managed primarily for production of native plants for forage. Native pasture includes cut-over forest land and forest land cleared and now managed for native or naturalized forage plants.

Rangeland

In areas that have similar climate and topography, differences in the kind and amount of vegetation produced on rangeland are closely related to the kind of soil. Effective management based on the relationship between the soils and vegetation and water.

The Rangeland, Grazed Forest land, Native Pastureland Interpretations shows, for each soil that supports rangeland vegetation, the ecological site and the potential annual production of vegetation in favorable, normal, unfavorable years. An explanation of the column headings in this table follows.

An ecological site is the product of all the environmental factors responsible for its development. It has characteristic soils that have developed over time throughout the soil development process; a characteristic hydrology, particularly infiltration and runoff, that has developed over time; and a characteristic plant community (kind and amount of vegetation). The hydrology of a site is influenced by development of the soil and plant community. The vegetation, soils, and hydrology are all interrelated. Each is influenced by the others and influences the development of the others. The plant community on an ecological site is typified by an association of species that differs from that of other ecological sites in the kind and/or proportion of species or in total production. Descriptions of ecological sites are provided in the Field Office Technical Guide, which is available in local offices of the Natural Resources Conservation Service.

Total dry-weight production is the amount of vegetation that can be expected to grow annually on well managed rangeland that is supporting the potential natural plant community. It includes all vegetation, whether or not it is palatable to grazing animals. It includes the current year's growth of leaves, twigs, and fruits of woody plants. It does not include the increase in stem diameter of trees and shrubs. It is expressed in pounds per acre of air-dry vegetation for favorable, average, and unfavorable years. In a favorable year, the amount and distribution of precipitation and the temperatures make growing conditions substantially better than average. In a normal year, growing conditions are about average. In an unfavorable year, growing conditions are well below average, generally because of low available soil moisture. Yields are adjusted to a common percent of air-dry moisture content.

Range management requires a knowledge of the kinds of soil and of the potential natural plant community. It also requires an evaluation of the present range similarity index and rangeland trend. Range similarity index is determined by comparing the present plant community with the potential natural plant community on a particular rangeland ecological site. The more closely the existing community resembles the potential community, the higher the range similarity index. Rangeland trend is defined as the direction of change in an existing plant community relative to the potential natural plant community. Further information about the range similarity index and rangeland trend is available in chapter 4 of the National Range and Pasture Handbook, which is available in local offices of the Natural Resources Conservation Service. The objective in range management is to control grazing so that the plants growing on a site are about the same in kind and amount as the potential natural plant community for that site. Such management generally results in the optimum production of vegetation, control of undesirable brush species, conservation of water, and control of erosion. Sometimes, however, an area with a range similarity index somewhat below the potential meets grazing needs, provides wildlife habitat, and protects soil and water resources.

RANGELAND PRODUCTIVITY--Continued
Woodson County, Kansas

(Only the soils that support rangeland vegetation suitable for grazing are rated.) Refer to range site description to determine the percentage allowable of grasses, forbs, and shrubs for the range ecological site.

Map symbol and soil name	Ecological site	Total dry-weight production		
		Favorable year	Average year	Unfavorable year
		Lb/acre	Lb/acre	Lb/acre
001CA: Catoosa-----	Loamy Upland (pe35-42)	6,250	4,750	3,250
001CB: Catoosa-----	Loamy Upland (pe35-42)	6,250	4,750	3,250
Rock Outcrop-----	---	---	---	---
001CC: Collinsville-----	Shallow Sandstone (pe35-42)	2,600	1,850	1,250
Bates-----	Loamy Upland (pe35-42)	6,250	4,750	3,250
001ZB: Zaar-----	Clay Upland (pe35-42)	6,000	4,000	2,500
031EP: Eram-----	Clay Upland (pe35-42)	6,000	4,000	2,500
Apperson-----	Loamy Upland (pe35-42)	6,250	4,750	3,250
031ES: Eram-----	Clay Upland (pe35-42)	6,000	4,000	2,500
Shidler-----	Shallow Limy (pe35-42)	3,500	2,500	1,750
073AT: Aquents-----	---	---	---	---
073CA: Chase-----	Loamy Lowland (pe30-36)	8,000	7,000	6,000
073CM: Clime-----	Limy Upland (pe30-36)	4,000	3,500	3,000
073CS: Clime-----	Limy Upland (pe30-36)	4,000	3,500	3,000
Sogn-----	Shallow Limy (pe30-36)	2,500	2,250	2,000
073DS: Dennis, eroded-----	Loamy Upland (pe30-36)	6,250	4,750	3,250
073IC: Ivan-----	Loamy Lowland (pe30-36)	8,000	7,000	6,000
073IF: Ivan-----	Loamy Lowland (pe30-36)	8,000	7,000	6,000
073KE: Kenoma, eroded-----	Clay Upland (pe30-36)	6,000	4,000	2,500
073LA: Labette-----	Loamy Upland (pe30-36)	5,000	4,250	3,500
073LD: Labette-----	Loamy Upland (pe30-36)	5,000	4,250	3,500
Dwight-----	Clay Pan (pe30-36)	3,000	2,500	2,000
073MA: Martin-----	Loamy Upland (pe30-36)	5,000	4,250	3,500
073NZ: Niotaze-----	Savannah (pe35-42)	5,000	4,000	3,000
Darnell-----	Shallow Savannah (pe35-42)	2,600	1,850	1,250
073RE: Reading-----	Loamy Lowland (pe30-36)	8,000	7,000	6,000
073ST: Steedman-----	Loamy Upland (pe35-42)	5,000	4,250	3,500
205BH: Bates-----	Loamy Upland (pe35-42)	6,250	4,750	3,250
Collinsville-----	Shallow Sandstone (pe35-42)	4,000	3,000	2,000
205BO: Bates-----	Loamy Upland (pe35-42)	6,250	4,750	3,250
Collinsville-----	Shallow Sandstone (pe35-42)	4,000	3,000	2,000
205DW: Dennis-----	Loamy Upland (pe35-42)	6,250	4,750	3,250
Dwight-----	Clay Pan (pe30-36)	3,500	2,500	750
205EB: Eram-----	Clay Upland (pe35-42)	6,000	4,000	2,500
205EC: Eram-----	Clay Upland (pe35-42)	6,000	4,000	2,500
205LA: Lanton-----	Loamy Lowland (pe35-42)	9,000	7,000	5,500
205ND: Niotaze-----	Savannah (pe35-38)	5,000	4,000	3,000
Darnell-----	Shallow Savannah (pe35-38)	2,600	1,850	1,250
205SC: Shidler-----	Shallow Limy (pe35-42)	3,500	2,500	1,750
Catoosa-----	Loamy Upland (pe35-42)	6,250	4,750	3,250
205SF: Steedman-----	Loamy Upland (pe35-38)	6,250	4,750	3,250
AED: Arents, Earthen Dam-----	---	---	---	---
Bb: Bates-----	Loamy Upland (pe35-42)	6,250	4,750	3,250
Bc: Bates-----	Loamy Upland (pe35-42)	6,250	4,750	3,250
BOP: Borrow Pits-----	---	---	---	---
Ca: Clareson-----	Shallow Flats (pe35-42)	5,000	4,000	3,000
Sogn-----	Shallow Limy (pe35-42)	3,500	2,500	1,750
Cd: Cleora-----	Loamy Lowland (pe35-42)	9,000	7,000	5,500
Da: Darnell-----	Shallow Savannah (pe35-38)	2,600	1,850	1,250

RANGELAND PRODUCTIVITY--Continued
Woodson County, Kansas

(Only the soils that support rangeland vegetation suitable for grazing are rated.) Refer to range site description to determine the percentage allowable of grasses, forbs, and shrubs for the range ecological site.

Map symbol and soil name	Ecological site	Total dry-weight production		
		Favorable year	Average year	Unfavorable year
		Lb/acre	Lb/acre	Lb/acre
Niotaze-----	Savannah (pe35-38)	5,000	4,000	3,000
Dd:				
Dennis-----	Loamy Upland (pe35-42)	6,250	4,750	3,250
De:				
Dennis-----	Loamy Upland (pe35-42)	6,250	4,750	3,250
Df:				
Dennis, eroded-----	Loamy Upland (pe35-42)	6,000	4,000	2,500
Dg:				
Dennis, eroded-----	Loamy Upland (pe35-42)	6,000	4,000	2,500
Eram, eroded-----	Clay Upland (pe35-42)	6,000	4,000	2,500
Dw:				
Dwight-----	Clay Pan (pe30-36)	3,500	2,500	750
Eb:				
Eram-----	Clay Upland (pe35-42)	6,000	4,000	2,500
Ec:				
Eram-----	Clay Upland (pe35-42)	6,000	4,000	2,500
Ex:				
Eram-----	Clay Upland (pe35-42)	6,000	4,000	2,500
Collinsville-----	Shallow Sandstone (pe35-42)	2,600	1,850	1,250
GRP:				
Gravel Pits-----	---	---	---	---
Ha:				
Hepler-----	Loamy Lowland (pe35-42)	9,000	7,000	5,500
Ka:				
Kenoma-----	Clay Upland (pe35-42)	6,000	4,000	2,500
Ko:				
Kenoma-----	Clay Upland (pe35-42)	6,000	4,000	2,500
Olpe-----	Loamy Upland (pe35-42)	6,250	4,750	3,250
Kw:				
Kenoma, eroded-----	Clay Upland (pe35-42)	6,000	4,500	2,500
Woodson, eroded-----	Clay Upland (pe35-42)	6,000	4,500	2,500
La:				
Leanna, drained-----	Clay Lowland (pe35-42)	8,750	6,250	4,500
Lb:				
Lula-----	Loamy Upland (pe35-42)	6,250	4,750	3,250
Ld:				
Lula-----	Loamy Upland (pe35-42)	6,250	4,750	3,250
Dwight-----	Clay Pan (pe35-42)	3,500	2,500	750
Ma:				
Mason-----	Loamy Lowland (pe35-42)	9,000	7,000	5,500
Ns:				
Niotaze-----	Savannah (pe35-38)	5,000	4,000	3,000
Stephenville-----	Savannah (pe35-38)	5,000	4,000	3,000
Od:				
Olpe-----	Loamy Upland (pe35-42)	6,250	4,750	3,250
Og:				
Osage-----	Clay Lowland (pe35-42)	8,750	6,250	4,500
Os:				
Osage-----	Clay Lowland (pe35-42)	8,750	6,250	4,500
Rc:				
Ringo-----	Clay Upland (pe35-42)	6,000	4,000	2,500
Rd:				
Ringo-----	Clay Upland (pe35-42)	6,000	4,000	2,500
Sogn-----	Shallow Limy (pe35-42)	3,500	2,500	1,750
Sa:				
Stephenville-----	Savannah (pe35-38)	5,000	4,000	3,000
Sd:				
Summit-----	Loamy Upland (pe35-42)	6,250	4,750	3,250
Se:				
Summit-----	Loamy Upland (pe35-42)	6,250	4,750	3,250
Va:				
Verdigris-----	Loamy Lowland (pe35-42)	9,000	7,000	5,500
Vc:				
Verdigris-----	Loamy Lowland (pe35-42)	9,000	7,000	5,500
W:				
Water-----	---	---	---	---
Wa:				
Woodson-----	Clay Upland (pe35-42)	6,000	4,000	2,500
Za:				
Zaar-----	Clay Upland (pe35-42)	6,000	4,000	2,500

BUILDING SITE DEVELOPMENT
Woodson County, Kansas

Building Site Development

Soil properties influence the development of building sites, including the selection of the site, the design of the structure, construction, performance after construction, and maintenance. The following tables show the degree and kind of soil limitations that affect dwellings with and without basements, small commercial buildings, local roads and streets, shallow excavations, and lawns and landscaping.

The ratings in the tables are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect building site development. Not limited indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. Slightly limited indicates that the soil has features that are favorable for the specified use. The limitations are minor and can be easily overcome. Good performance and low maintenance can be expected. Somewhat limited indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. Very limited indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.00 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Dwellings are single-family houses of three stories or less. For dwellings without basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. For dwellings with basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of about 7 feet. The ratings for dwellings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility. Compressibility is inferred from the Unified classification. The properties that affect the ease and amount of excavation include depth to a water table, ponding, flooding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

Small commercial buildings are structures that are less than three stories high and do not have basements. The foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. The ratings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility (which is inferred from the Unified classification). The properties that affect the ease and amount of excavation include flooding, depth to a water table, ponding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material; a base of gravel, crushed rock, or soil material stabilized by lime or cement; and a surface of flexible material (asphalt), rigid material (concrete), or gravel with a binder. The ratings are based on the soil properties that affect the ease of excavation and grading and the traffic-supporting capacity. The properties that affect the ease of excavation and grading are depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, depth to a water table, ponding, flooding, the amount of large stones, and slope. The properties that affect the traffic-supporting capacity are soil strength (as inferred from the AASHTO group index number), subsidence, linear extensibility (shrink-swell potential), the potential for frost action, depth to a water table, and ponding.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for graves, utility lines, open ditches, or other purposes. The ratings are based on the soil properties that influence the ease of digging and the resistance to sloughing. Depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, the amount of large stones, and dense layers influence the ease of digging, filling, and compacting. Depth to the seasonal high water table, flooding, and ponding may restrict the period when excavations can be made. Slope influences the ease of using machinery. Soil texture, depth to the water table, and linear extensibility (shrink-swell potential) influence the resistance to sloughing.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. Irrigation is not considered in the ratings. The ratings are based on the soil properties that affect plant growth and trafficability after vegetation is established. The properties that affect plant growth are reaction; depth to a water table; ponding; depth to bedrock or a cemented pan; the available water capacity in the upper 40 inches; the content of salts, sodium, or calcium carbonate; and sulfidic materials. The properties that affect trafficability are flooding, depth to a water table, ponding, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer.

BUILDING SITE DEVELOPMENT--Continued
Woodson County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
001CA: Catoosa-----	90	Very limited Shrink-swell	1.00	Very limited Depth to hard bedrock	1.00	Very limited Shrink-swell	1.00
		Depth to hard bedrock	0.74	Shrink-swell	1.00	Depth to hard bedrock	0.74
001CB: Catoosa-----	60	Very limited Shrink-swell	1.00	Very limited Depth to hard bedrock	1.00	Very limited Shrink-swell	1.00
		Depth to hard bedrock	0.74	Shrink-swell	1.00	Depth to hard bedrock	0.74
Rock Outcrop-----	30	Not rated		Not rated		Not rated	
001CC: Collinsville-----	50	Very limited Depth to hard bedrock	1.00	Very limited Depth to hard bedrock	1.00	Very limited Depth to hard bedrock	1.00
		Slope	0.04	Slope	0.04	Slope	1.00
Bates-----	40	Not limited		Somewhat limited Depth to soft bedrock	0.29	Somewhat limited Slope	0.12
001ZB: Zaar-----	100	Very limited Shrink-swell	1.00	Very limited Depth to saturated zone	1.00	Very limited Shrink-swell	1.00
		Depth to saturated zone	1.00	Shrink-swell	1.00	Depth to saturated zone	1.00
						Slope	0.12
031EP: Eram-----	50	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
		Shrink-swell	0.68	Depth to soft bedrock	0.79	Shrink-swell	0.68
				Shrink-swell	0.68	Slope	0.48
Apperson-----	35	Very limited Shrink-swell	1.00	Very limited Depth to saturated zone	1.00	Very limited Shrink-swell	1.00
		Depth to saturated zone	1.00	Shrink-swell	1.00	Depth to saturated zone	1.00
				Depth to hard bedrock	0.96	Slope	0.12
031ES: Eram-----	60	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
		Shrink-swell	0.68	Depth to soft bedrock	0.79	Slope	1.00
		Slope	0.37	Shrink-swell	0.68	Shrink-swell	0.68
				Slope	0.37		
Shidler-----	25	Very limited Depth to hard bedrock	1.00	Very limited Depth to hard bedrock	1.00	Very limited Depth to hard bedrock	1.00
		Shrink-swell	0.56	Shrink-swell	0.56	Shrink-swell	0.56
						Slope	0.48
073AT: Aguents-----	100	Very limited Flooding	1.00	Very limited Flooding	1.00	Very limited Flooding	1.00
073CA: Chase-----	90	Very limited Flooding	1.00	Very limited Flooding	1.00	Very limited Flooding	1.00
		Shrink-swell	0.92	Depth to saturated zone	0.95	Shrink-swell	0.92
				Shrink-swell	0.92		
073CM: Clime-----	90	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00
				Depth to soft bedrock	0.20	Slope	0.12

BUILDING SITE DEVELOPMENT--Continued
Woodson County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
073CS: Cline-----	60	Very limited Shrink-swell Slope	1.00 0.84	Very limited Shrink-swell Slope Depth to soft bedrock	1.00 0.84 0.20	Very limited Shrink-swell Slope	1.00 1.00
Sogn-----	20	Very limited Depth to hard bedrock Slope Shrink-swell	1.00 0.84 0.32	Very limited Depth to hard bedrock Slope Shrink-swell	1.00 0.84 0.32	Very limited Depth to hard bedrock Slope Shrink-swell	1.00 1.00 0.32
073DS: Dennis, eroded-----	100	Very limited Shrink-swell Depth to saturated zone	1.00 1.00	Very limited Depth to saturated zone Shrink-swell	1.00 1.00	Very limited Shrink-swell Depth to saturated zone Slope	1.00 1.00 0.00
073IC: Ivan-----	85	Very limited Flooding Shrink-swell	1.00 0.62	Very limited Flooding	1.00	Very limited Flooding Shrink-swell	1.00 0.62
073IF: Ivan-----	90	Very limited Flooding Shrink-swell	1.00 0.62	Very limited Flooding Shrink-swell	1.00 0.62	Very limited Flooding Shrink-swell	1.00 0.62
073KE: Kenoma, eroded-----	100	Somewhat limited Shrink-swell	0.11	Somewhat limited Shrink-swell	0.11	Somewhat limited Shrink-swell Slope	0.11 0.00
073LA: Labette-----	90	Very limited Shrink-swell Depth to hard bedrock	1.00 0.74	Very limited Shrink-swell Depth to hard bedrock	1.00 1.00	Very limited Shrink-swell Depth to hard bedrock	1.00 0.74
073LD: Labette-----	65	Very limited Shrink-swell Depth to hard bedrock	1.00 0.74	Very limited Shrink-swell Depth to hard bedrock	1.00 1.00	Very limited Shrink-swell Depth to hard bedrock	1.00 0.74
Dwight-----	30	Very limited Shrink-swell	1.00	Very limited Shrink-swell Depth to hard bedrock	1.00 0.88	Very limited Shrink-swell	1.00
073MA: Martin-----	100	Very limited Shrink-swell Depth to saturated zone	1.00 1.00	Very limited Depth to saturated zone Shrink-swell	1.00 1.00	Very limited Shrink-swell Depth to saturated zone	1.00 1.00
073NZ: Niotaze-----	75	Very limited Shrink-swell Slope Depth to saturated zone	1.00 1.00 1.00	Very limited Depth to saturated zone Shrink-swell Slope Depth to soft bedrock	1.00 1.00 1.00 0.71	Very limited Shrink-swell Slope Depth to saturated zone	1.00 1.00 1.00
Darnell-----	15	Very limited Depth to soft bedrock Slope	1.00 1.00	Very limited Depth to soft bedrock Slope	1.00 1.00	Very limited Depth to soft bedrock Slope	1.00 1.00
073RE: Reading-----	90	Very limited Flooding Shrink-swell	1.00 0.44	Very limited Flooding Shrink-swell	1.00 0.44	Very limited Flooding Shrink-swell	1.00 0.44
073ST: Steedman-----	85	Very limited Shrink-swell Depth to saturated zone Slope	1.00 1.00 0.00	Very limited Depth to saturated zone Shrink-swell Depth to soft bedrock Slope	1.00 1.00 0.46 0.00	Very limited Shrink-swell Slope Depth to saturated zone	1.00 1.00 1.00

BUILDING SITE DEVELOPMENT--Continued
Woodson County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
205BH: Bates-----	50	Not limited		Somewhat limited Depth to soft bedrock	0.71	Somewhat limited Slope	0.12
Collinsville-----	35	Very limited Depth to hard bedrock	1.00	Very limited Depth to hard bedrock	1.00	Very limited Depth to hard bedrock Slope	0.12
205BO: Bates-----	45	Somewhat limited Shrink-swell	0.02	Somewhat limited Depth to soft bedrock	0.84	Somewhat limited Slope	0.48
Collinsville-----	40	Very limited Depth to hard bedrock Slope	1.00 0.96	Very limited Depth to hard bedrock Slope	1.00 0.96	Very limited Depth to hard bedrock Slope	1.00 1.00
205DW: Dennis-----	65	Very limited Shrink-swell	1.00	Very limited Depth to saturated zone Shrink-swell	1.00	Very limited Shrink-swell	1.00
Dwight-----	25	Depth to saturated zone	0.44	Depth to saturated zone Shrink-swell	1.00	Depth to saturated zone	0.44
205EB: Eram-----	90	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00
		Depth to saturated zone	1.00	Depth to saturated zone Shrink-swell	1.00	Depth to saturated zone	1.00
				Depth to soft bedrock	0.29		
205EC: Eram-----	90	Very limited Shrink-swell	1.00	Very limited Depth to saturated zone Shrink-swell	1.00	Very limited Shrink-swell	1.00
		Depth to saturated zone	1.00	Depth to soft bedrock	0.90	Depth to saturated zone Slope	1.00 0.12
205LA: Lanton-----	90	Very limited Flooding Depth to saturated zone Shrink-swell	1.00 1.00 0.56	Very limited Flooding Depth to saturated zone Shrink-swell	1.00 1.00 0.56	Very limited Flooding Depth to saturated zone Shrink-swell	1.00 1.00 0.56
205ND: Niotaze-----	50	Very limited Shrink-swell	1.00	Very limited Depth to saturated zone Shrink-swell	1.00	Very limited Shrink-swell	1.00
		Depth to saturated zone	1.00	Depth to saturated zone Shrink-swell	1.00	Depth to saturated zone	1.00
		Slope	1.00	Slope Depth to soft bedrock	1.00 0.06	Slope	1.00
Darnell-----	35	Somewhat limited Depth to soft bedrock Slope	1.00 0.16	Very limited Depth to soft bedrock Slope	1.00 0.16	Very limited Depth to soft bedrock Slope	1.00 1.00
205SC: Shidler-----	70	Very limited Depth to hard bedrock Shrink-swell	1.00 0.50	Very limited Depth to hard bedrock Shrink-swell	1.00 0.50	Very limited Depth to hard bedrock Shrink-swell Slope	1.00 0.50 0.12
Catoosa-----	20	Very limited Shrink-swell	1.00	Very limited Depth to hard bedrock Shrink-swell	1.00	Very limited Shrink-swell	1.00
		Depth to hard bedrock	0.79	Depth to hard bedrock	1.00	Depth to hard bedrock	0.79

BUILDING SITE DEVELOPMENT--Continued
Woodson County, Kansas

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Map symbol and soil name	Pct of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
205SF: Steedman-----	90	Very limited Depth to saturated zone Shrink-swell Slope	1.00 1.00 1.00	Very limited Depth to saturated zone Shrink-swell Slope Depth to soft bedrock	1.00 1.00 1.00 0.29	Very limited Depth to saturated zone Shrink-swell Slope	1.00 1.00 1.00
AED: Arents, Earthen Dam-	100	Not rated		Not rated		Not rated	
Bb: Bates-----	98	Somewhat limited Shrink-swell	0.02	Somewhat limited Depth to soft bedrock Shrink-swell	0.20 0.02	Somewhat limited Shrink-swell	0.02
Bc: Bates-----	97	Somewhat limited Shrink-swell	0.00	Somewhat limited Depth to soft bedrock Shrink-swell	0.20 0.00	Somewhat limited Slope Shrink-swell	0.48 0.00
BOP: Borrow Pits-----	100	Not rated		Not rated		Not rated	
Ca: Clareson-----	50	Somewhat limited Shrink-swell Depth to hard bedrock Content of large stones	0.99 0.84 0.22	Very limited Depth to hard bedrock Shrink-swell Content of large stones	1.00 0.99 0.22	Very limited Shrink-swell Depth to hard bedrock Content of large stones Slope	0.99 0.84 0.22 0.12
Sogn-----	35	Very limited Depth to hard bedrock Shrink-swell	1.00 0.56	Very limited Depth to hard bedrock Shrink-swell	1.00 0.56	Very limited Depth to hard bedrock Shrink-swell Slope	1.00 0.56 0.12
Cd: Cleora-----	98	Very limited Flooding	1.00	Very limited Flooding	1.00	Very limited Flooding	1.00
Da: Darnell-----	55	Very limited Slope Depth to soft bedrock	1.00 1.00	Very limited Slope Depth to soft bedrock	1.00 1.00	Very limited Slope Depth to soft bedrock	1.00 1.00
Niotaze-----	40	Very limited Slope Shrink-swell Depth to saturated zone	1.00 1.00 1.00	Very limited Slope Depth to saturated zone Shrink-swell Depth to soft bedrock	1.00 1.00 1.00 0.90	Very limited Slope Shrink-swell Depth to saturated zone	1.00 1.00 1.00
Dd: Dennis-----	98	Very limited Shrink-swell Depth to saturated zone	1.00 1.00	Very limited Depth to saturated zone Shrink-swell	1.00 1.00	Very limited Shrink-swell Depth to saturated zone	1.00 1.00
De: Dennis-----	98	Very limited Shrink-swell Depth to saturated zone	1.00 1.00	Very limited Depth to saturated zone Shrink-swell	1.00 1.00	Very limited Shrink-swell Depth to saturated zone Slope	1.00 1.00 0.12
DF: Dennis, eroded-----	98	Very limited Shrink-swell Depth to saturated zone	1.00 1.00	Very limited Depth to saturated zone Shrink-swell	1.00 1.00	Very limited Shrink-swell Depth to saturated zone	1.00 1.00

BUILDING SITE DEVELOPMENT--Continued
Woodson County, Kansas

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Map symbol and soil name	Pct of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Dg: Dennis, eroded-----	50	Very limited Shrink-swell	1.00	Very limited Depth to saturated zone	1.00	Very limited Shrink-swell	1.00
		Depth to saturated zone	1.00	Shrink-swell	1.00	Depth to saturated zone	1.00
Eram, eroded-----	30	Very limited Shrink-swell	1.00	Very limited Depth to saturated zone	1.00	Very limited Shrink-swell	1.00
		Depth to saturated zone	1.00	Shrink-swell	1.00	Depth to saturated zone	1.00
				Depth to soft bedrock	0.35	Slope	0.12
Dw: Dwight-----	98	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00
Eb: Eram-----	98	Very limited Shrink-swell	1.00	Very limited Depth to saturated zone	1.00	Very limited Shrink-swell	1.00
		Depth to saturated zone	1.00	Shrink-swell	1.00	Depth to saturated zone	1.00
				Depth to soft bedrock	0.35		
Ec: Eram-----	98	Very limited Shrink-swell	1.00	Very limited Depth to saturated zone	1.00	Very limited Shrink-swell	1.00
		Depth to saturated zone	1.00	Shrink-swell	1.00	Depth to saturated zone	1.00
				Depth to soft bedrock	0.35	Slope	0.48
Ex: Eram-----	60	Very limited Shrink-swell	1.00	Very limited Depth to saturated zone	1.00	Very limited Shrink-swell	1.00
		Depth to saturated zone	1.00	Shrink-swell	1.00	Depth to saturated zone	1.00
		Slope	0.00	Depth to soft bedrock	0.61	Slope	1.00
				Slope	0.00		
Collinsville-----	20	Very limited Depth to hard bedrock	1.00	Very limited Depth to hard bedrock	1.00	Very limited Depth to hard bedrock	1.00
		Slope	0.96	Slope	0.96	Slope	1.00
GRP: Gravel Pits-----	100	Not rated		Not rated		Not rated	
Ha: Hepler-----	97	Very limited Flooding	1.00	Very limited Flooding	1.00	Very limited Flooding	1.00
		Depth to saturated zone	0.44	Depth to saturated zone	1.00	Depth to saturated zone	0.44
				Shrink-swell	0.02		
Ka: Kenoma-----	98	Very limited Shrink-swell	1.00	Very limited Depth to saturated zone	1.00	Very limited Shrink-swell	1.00
		Depth to saturated zone	1.00			Depth to saturated zone	1.00
Ko: Kenoma-----	50	Very limited Shrink-swell	1.00	Very limited Depth to saturated zone	1.00	Very limited Shrink-swell	1.00
		Depth to saturated zone	1.00			Depth to saturated zone	1.00
						Slope	0.12
Olpe-----	30	Somewhat limited Shrink-swell	0.44	Somewhat limited Shrink-swell	0.44	Somewhat limited Shrink-swell	0.44
						Slope	0.12

BUILDING SITE DEVELOPMENT--Continued
Woodson County, Kansas

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Map symbol and soil name	Pct of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Kw: Kenoma, eroded-----	60	Very limited Shrink-swell	1.00	Very limited Depth to saturated zone	1.00	Very limited Shrink-swell	1.00
		Depth to saturated zone	1.00			Depth to saturated zone	1.00
Woodson, eroded-----	30	Very limited Shrink-swell	1.00	Very limited Depth to saturated zone	1.00	Very limited Shrink-swell	1.00
		Depth to saturated zone	1.00	Shrink-swell	1.00	Depth to saturated zone	1.00
La: Leanna, drained-----	90	Very limited Flooding Shrink-swell	1.00 1.00	Very limited Flooding Depth to saturated zone	1.00 1.00	Very limited Flooding Shrink-swell	1.00 1.00
		Depth to saturated zone	1.00	Shrink-swell	1.00	Depth to saturated zone	1.00
Lb: Lula-----	98	Somewhat limited Shrink-swell	0.86	Somewhat limited Shrink-swell Depth to hard bedrock	0.86 0.02	Somewhat limited Shrink-swell	0.86
Ld: Lula-----	45	Somewhat limited Shrink-swell	0.86	Somewhat limited Shrink-swell Depth to hard bedrock	0.86 0.02	Somewhat limited Shrink-swell	0.86
Dwight-----	30	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00
Ma: Mason-----	98	Very limited Flooding Shrink-swell	1.00 0.50	Very limited Flooding Shrink-swell	1.00 0.50	Very limited Flooding Shrink-swell	1.00 0.50
Ns: Niotaze-----	50	Very limited Shrink-swell	1.00	Very limited Depth to saturated zone	1.00	Very limited Shrink-swell	1.00
		Slope Depth to saturated zone	1.00 1.00	Shrink-swell Slope	1.00 1.00	Slope Depth to saturated zone	1.00 1.00
				Depth to soft bedrock	0.90		
Stephenville-----	40	Somewhat limited Slope	0.16	Somewhat limited Depth to soft bedrock Slope	0.35 0.16	Very limited Slope	1.00
Od: Olpe-----	98	Somewhat limited Shrink-swell Slope	0.44 0.16	Somewhat limited Shrink-swell Slope	0.44 0.16	Very limited Slope Shrink-swell	1.00 0.44
Og: Osage-----	97	Very limited Ponding Flooding Depth to saturated zone Shrink-swell	1.00 1.00 1.00 1.00	Very limited Ponding Flooding Depth to saturated zone Shrink-swell	1.00 1.00 1.00 1.00	Very limited Ponding Flooding Depth to saturated zone Shrink-swell	1.00 1.00 1.00 1.00
Os: Osage-----	97	Very limited Ponding Flooding Shrink-swell	1.00 1.00 1.00	Very limited Ponding Flooding Depth to saturated zone Shrink-swell	1.00 1.00 1.00	Very limited Ponding Flooding Shrink-swell	1.00 1.00 1.00
		Depth to saturated zone	1.00	Shrink-swell	1.00	Depth to saturated zone	1.00
Rc: Ringo-----	99	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00	Very limited Shrink-swell Slope	1.00 0.48

BUILDING SITE DEVELOPMENT--Continued
Woodson County, Kansas

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Map symbol and soil name	Pct of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Rd: Ringo-----	50	Very limited Shrink-swell Slope	1.00 0.16	Very limited Shrink-swell Slope	1.00 0.16	Very limited Shrink-swell Slope	1.00 1.00
Sogn-----	30	Very limited Depth to hard bedrock Shrink-swell Slope	1.00 0.56 0.16	Very limited Depth to hard bedrock Shrink-swell Slope	1.00 0.56 0.16	Very limited Depth to hard bedrock Slope Shrink-swell	1.00 1.00 1.00 0.56
Sa: Stephenville-----	98	Not limited		Somewhat limited Depth to soft bedrock	0.35	Not limited	
Sd: Summit-----	98	Very limited Shrink-swell	1.00	Very limited Shrink-swell Depth to saturated zone	1.00 1.00	Very limited Shrink-swell	1.00
Se: Summit-----	99	Very limited Shrink-swell	1.00	Very limited Shrink-swell Depth to saturated zone	1.00 1.00	Very limited Shrink-swell Slope	1.00 0.48
Va: Verdigris-----	97	Very limited Flooding	1.00	Very limited Flooding	1.00	Very limited Flooding	1.00
Vc: Verdigris-----	98	Very limited Flooding	1.00	Very limited Flooding	1.00	Very limited Flooding	1.00
W: Water-----	100	Not rated		Not rated		Not rated	
Wa: Woodson-----	98	Very limited Shrink-swell Depth to saturated zone	1.00 1.00	Very limited Depth to saturated zone Shrink-swell	1.00 1.00	Very limited Shrink-swell Depth to saturated zone	1.00 1.00
Za: Zaar-----	85	Very limited Shrink-swell Depth to saturated zone	1.00 1.00	Very limited Depth to saturated zone Shrink-swell	1.00 1.00	Very limited Shrink-swell Depth to saturated zone	1.00 1.00

BUILDING SITE DEVELOPMENT--Continued
Woodson County, Kansas

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Map symbol and soil name	Pct of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
001CA: Catoosa-----	90	Very limited Shrink-swell	1.00	Very limited Depth to hard bedrock	1.00	Somewhat limited Depth to bedrock	0.74
		Depth to hard bedrock	0.74	Cutbanks cave	0.10		
001CB: Catoosa-----	60	Very limited Shrink-swell	1.00	Very limited Depth to hard bedrock	1.00	Somewhat limited Depth to bedrock	0.74
		Depth to hard bedrock	0.74	Cutbanks cave	0.10		
Rock Outcrop-----	30	Not rated		Not rated		Not rated	
001CC: Collinsville-----	50	Very limited Depth to hard bedrock	1.00	Very limited Depth to hard bedrock	1.00	Very limited Depth to bedrock	1.00
		Slope	0.04	Cutbanks cave	0.10	Droughty Slope	1.00
Bates-----	40	Not limited		Somewhat limited Depth to soft bedrock	0.29	Somewhat limited Depth to bedrock	0.29
				Cutbanks cave	0.10		
001ZB: Zaar-----	100	Very limited Shrink-swell	1.00	Very limited Depth to saturated zone	1.00	Very limited Too clayey	1.00
		Depth to saturated zone	0.75	Too clayey	0.92	Depth to saturated zone	0.75
				Cutbanks cave	0.10		
031EP: Eram-----	50	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
		Shrink-swell	0.68	Depth to soft bedrock	0.79	Depth to bedrock	0.80
				Too clayey	0.50	Droughty	0.00
Apperson-----	35	Very limited Shrink-swell	1.00	Very limited Depth to saturated zone	1.00	Somewhat limited Depth to saturated zone	0.94
		Depth to saturated zone	0.94	Depth to hard bedrock	0.96		
				Too clayey	0.18		
				Cutbanks cave	0.10		
031ES: Eram-----	60	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
		Shrink-swell	0.68	Depth to soft bedrock	0.79	Depth to bedrock	0.80
		Slope	0.37	Too clayey	0.50	Slope	0.37
				Slope	0.37	Droughty	0.00
				Cutbanks cave	0.10		
Shidler-----	25	Very limited Depth to hard bedrock	1.00	Very limited Depth to hard bedrock	1.00	Very limited Depth to bedrock	1.00
		Shrink-swell	0.56	Cutbanks cave	0.10	Droughty	0.92
073AT: Aguents-----	100	Very limited Flooding	1.00	Somewhat limited Flooding	0.60	Somewhat limited Flooding	0.60
				Cutbanks cave	0.10		
073CA: Chase-----	90	Very limited Frost action	1.00	Somewhat limited Depth to saturated zone	0.95	Somewhat limited Flooding	0.60
		Flooding	1.00	Flooding	0.60		
		Shrink-swell	0.92	Cutbanks cave	0.10		
				Too clayey	0.02		
073CM: Cline-----	90	Very limited Shrink-swell	1.00	Somewhat limited Too clayey	0.95	Very limited Too clayey	1.00
		Frost action	0.50	Depth to soft bedrock	0.20	Depth to bedrock	0.20
				Cutbanks cave	0.10		

BUILDING SITE DEVELOPMENT--Continued
Woodson County, Kansas

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Map symbol and soil name	Pct of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
073CS: Cline-----	60	Very limited Shrink-swell Slope Frost action	1.00 0.84 0.50	Somewhat limited Too clayey Slope Depth to soft bedrock Cutbanks cave	0.95 0.84 0.20 0.10	Very limited Too clayey Slope Depth to bedrock	1.00 0.84 0.20
Sogn-----	20	Very limited Depth to hard bedrock Slope Frost action Shrink-swell	1.00 0.84 0.50 0.32	Very limited Depth to hard bedrock Slope Cutbanks cave	1.00 0.84 0.10	Very limited Depth to bedrock Droughty Slope Content of large stones	1.00 0.84 0.00
073DS: Dennis, eroded-----	100	Very limited Shrink-swell Depth to saturated zone	1.00 0.94	Very limited Depth to saturated zone Too clayey Cutbanks cave	1.00 0.59 0.10	Somewhat limited Depth to saturated zone	0.94
073IC: Ivan-----	85	Very limited Flooding Shrink-swell Frost action	1.00 0.62 0.50	Somewhat limited Flooding Cutbanks cave	0.80 0.10	Very limited Flooding	1.00
073IF: Ivan-----	90	Very limited Flooding Shrink-swell Frost action	1.00 0.62 0.50	Somewhat limited Flooding Cutbanks cave	0.60 0.10	Somewhat limited Flooding	0.60
073KE: Kenoma, eroded-----	100	Somewhat limited Shrink-swell	0.11	Somewhat limited Too clayey Cutbanks cave	0.50 0.10	Not limited	
073LA: Labette-----	90	Very limited Shrink-swell Depth to hard bedrock Frost action	1.00 0.74 0.50	Very limited Depth to hard bedrock Too clayey Cutbanks cave	1.00 0.88 0.10	Somewhat limited Depth to bedrock	0.74
073LD: Labette-----	65	Very limited Shrink-swell Depth to hard bedrock Frost action	1.00 0.74 0.50	Very limited Depth to hard bedrock Too clayey Cutbanks cave	1.00 0.88 0.10	Somewhat limited Depth to bedrock	0.74
Dwight-----	30	Very limited Shrink-swell Frost action	1.00 0.50	Somewhat limited Too clayey Depth to hard bedrock Cutbanks cave	0.99 0.88 0.10	Not limited	
073MA: Martin-----	100	Very limited Shrink-swell Depth to saturated zone Frost action	1.00 0.78 0.50	Very limited Depth to saturated zone Too clayey Cutbanks cave	1.00 0.68 0.10	Somewhat limited Depth to saturated zone	0.78
073NZ: Niotaze-----	75	Very limited Shrink-swell Slope Depth to saturated zone	1.00 1.00 0.75	Very limited Depth to saturated zone Slope Too clayey Depth to soft bedrock Cutbanks cave	1.00 1.00 0.82 0.71 0.10	Very limited Slope Depth to saturated zone Depth to bedrock	1.00 0.75 0.71
Darnell-----	15	Very limited Depth to soft bedrock Slope	1.00 1.00	Very limited Depth to soft bedrock Slope Cutbanks cave	1.00 1.00 0.10	Very limited Depth to bedrock Slope Droughty	1.00 1.00 0.96

BUILDING SITE DEVELOPMENT--Continued
Woodson County, Kansas

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Map symbol and soil name	Pct of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
073RE: Reading-----	90	Somewhat limited Frost action Shrink-swell Flooding	0.50 0.44 0.40	Somewhat limited Cutbanks cave	0.10	Not limited	
073ST: Steedman-----	85	Very limited Shrink-swell	1.00	Very limited Depth to saturated zone	1.00	Somewhat limited Depth to saturated zone	0.75
		Depth to saturated zone	0.75	Depth to soft bedrock	0.46	Depth to bedrock	0.46
		Slope	0.00	Too clayey	0.32	Droughty	0.01
				Cutbanks cave	0.10	Content of large stones	0.00
				Slope	0.00	Slope	0.00
205BH: Bates-----	50	Not limited		Very limited Cutbanks cave	1.00	Somewhat limited Depth to bedrock	0.71
				Depth to soft bedrock	0.71		
Collinsville-----	35	Very limited Depth to hard bedrock	1.00	Very limited Depth to hard bedrock	1.00	Very limited Depth to bedrock	1.00
				Cutbanks cave	0.10	Droughty	0.98
205BO: Bates-----	45	Somewhat limited Shrink-swell	0.02	Very limited Cutbanks cave	1.00	Somewhat limited Depth to bedrock	0.84
				Depth to soft bedrock	0.84		
Collinsville-----	40	Very limited Depth to hard bedrock	1.00	Very limited Depth to hard bedrock	1.00	Very limited Depth to bedrock	1.00
		Slope	0.96	Slope	0.96	Droughty	0.98
				Cutbanks cave	0.10	Slope	0.96
205DW: Dennis-----	65	Very limited Shrink-swell	1.00	Very limited Depth to saturated zone	1.00	Somewhat limited Depth to saturated zone	0.19
		Depth to saturated zone	0.19	Too clayey	0.59		
				Cutbanks cave	0.10		
Dwight-----	25	Very limited Shrink-swell	1.00	Somewhat limited Too clayey	0.76	Not limited	
		Frost action	0.50	Cutbanks cave	0.10		
205EB: Eram-----	90	Very limited Shrink-swell	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Too clayey	0.82	Depth to bedrock	0.29
				Depth to soft bedrock	0.29		
				Cutbanks cave	0.10		
205EC: Eram-----	90	Very limited Shrink-swell	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Depth to soft bedrock	0.90	Depth to bedrock	0.90
				Too clayey	0.50	Droughty	0.03
				Cutbanks cave	0.10		
205LA: Lanton-----	90	Very limited Flooding	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Flooding	0.60	Flooding	0.60
		Shrink-swell	0.56	Cutbanks cave	0.10		

BUILDING SITE DEVELOPMENT--Continued
Woodson County, Kansas

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Map symbol and soil name	Pct of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
205ND: Niotaze-----	50	Very limited Shrink-swell	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Slope	1.00	Slope	1.00
		Slope	1.00	Too clayey	0.82	Content of large stones	0.97
				Cutbanks cave	0.10	Depth to bedrock	0.06
				Depth to soft bedrock	0.06		
Darnell-----	35	Somewhat limited Depth to soft bedrock	1.00	Very limited Depth to soft bedrock	1.00	Very limited Depth to bedrock	1.00
		Slope	0.16	Slope	0.16	Droughty	0.92
				Cutbanks cave	0.10	Slope	0.16
205SC: Shidler-----	70	Very limited Depth to hard bedrock	1.00	Very limited Depth to hard bedrock	1.00	Very limited Depth to bedrock	1.00
		Shrink-swell	0.50	Cutbanks cave	0.10	Droughty	1.00
						Content of large stones	0.00
Catoosa-----	20	Very limited Shrink-swell	1.00	Very limited Depth to hard bedrock	1.00	Somewhat limited Depth to bedrock	0.80
		Depth to hard bedrock	0.79	Cutbanks cave	0.10		
205SF: Steedman-----	90	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
		Shrink-swell	1.00	Slope	1.00	Slope	1.00
		Slope	1.00	Too clayey	0.32	Gravel content	0.46
				Depth to soft bedrock	0.29	Depth to bedrock	0.29
				Cutbanks cave	0.10		
AED: Arents, Earthen Dam-	100	Not rated		Not rated		Not rated	
Bb: Bates-----	98	Somewhat limited Shrink-swell	0.02	Very limited Cutbanks cave	1.00	Somewhat limited Depth to bedrock	0.20
				Depth to soft bedrock	0.20		
Bc: Bates-----	97	Somewhat limited Shrink-swell	0.00	Very limited Cutbanks cave	1.00	Somewhat limited Depth to bedrock	0.20
				Depth to soft bedrock	0.20		
BOP: Borrow Pits-----	100	Not rated		Not rated		Not rated	
Ca: Clareson-----	50	Very limited Shrink-swell	0.99	Very limited Depth to hard bedrock	1.00	Somewhat limited Depth to bedrock	0.84
		Depth to hard bedrock	0.84	Too clayey	1.00	Droughty	0.21
		Content of large stones	0.22	Content of large stones	0.22		
				Cutbanks cave	0.10		
Sogn-----	35	Very limited Depth to hard bedrock	1.00	Very limited Depth to hard bedrock	1.00	Very limited Depth to bedrock	1.00
		Shrink-swell	0.56	Cutbanks cave	0.10	Droughty	1.00
Cd: Cleora-----	98	Very limited Flooding	1.00	Somewhat limited Flooding	0.60	Somewhat limited Flooding	0.60
				Cutbanks cave	0.10		

BUILDING SITE DEVELOPMENT--Continued
Woodson County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Da: Darnell-----	55	Very limited Slope	1.00	Very limited Depth to soft bedrock	1.00	Very limited Depth to bedrock	1.00
		Depth to soft bedrock	1.00	Slope	1.00	Slope	1.00
Niotaze-----	40	Very limited Slope	1.00	Cutbanks cave	0.10	Droughty	0.96
		Shrink-swell	1.00	Very limited Slope	1.00	Very limited Slope	1.00
		Depth to saturated zone	0.75	Depth to saturated zone	1.00	Depth to bedrock	0.90
				Depth to soft bedrock	0.90	Depth to saturated zone	0.75
				Too clayey	0.88	Droughty	0.00
				Cutbanks cave	0.10		
Dd: Dennis-----	98	Very limited Shrink-swell	1.00	Very limited Depth to saturated zone	1.00	Somewhat limited Depth to saturated zone	0.94
		Depth to saturated zone	0.94	Too clayey	0.59		
				Cutbanks cave	0.10		
De: Dennis-----	98	Very limited Shrink-swell	1.00	Very limited Depth to saturated zone	1.00	Somewhat limited Depth to saturated zone	0.94
		Depth to saturated zone	0.94	Too clayey	0.59		
				Cutbanks cave	0.10		
Df: Dennis, eroded-----	98	Very limited Shrink-swell	1.00	Very limited Depth to saturated zone	1.00	Somewhat limited Depth to saturated zone	0.94
		Depth to saturated zone	0.94	Too clayey	0.59		
				Cutbanks cave	0.10		
Dg: Dennis, eroded-----	50	Very limited Shrink-swell	1.00	Very limited Depth to saturated zone	1.00	Somewhat limited Depth to saturated zone	0.94
		Depth to saturated zone	0.94	Too clayey	0.59		
				Cutbanks cave	0.10		
Eram, eroded-----	30	Very limited Shrink-swell	1.00	Cutbanks cave	0.10	Very limited Too clayey	1.00
		Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Depth to saturated zone	1.00
				Too clayey	0.82	Depth to bedrock	0.35
				Depth to soft bedrock	0.35		
				Cutbanks cave	0.10		
Dw: Dwight-----	98	Very limited Shrink-swell	1.00	Somewhat limited Too clayey	0.76	Not limited	
		Frost action	0.50	Cutbanks cave	0.10		
Eb: Eram-----	98	Very limited Shrink-swell	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Too clayey	0.82	Depth to bedrock	0.35
				Depth to soft bedrock	0.35		
				Cutbanks cave	0.10		
Ec: Eram-----	98	Very limited Shrink-swell	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Too clayey	0.82	Depth to bedrock	0.35
				Depth to soft bedrock	0.35		
				Cutbanks cave	0.10		

BUILDING SITE DEVELOPMENT--Continued
Woodson County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Ex: Eram-----	60	Very limited Shrink-swell	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Too clayey	0.82	Depth to bedrock	0.61
		Slope	0.00	Depth to soft bedrock	0.61	Slope	0.00
				Cutbanks cave	0.10		
				Slope	0.00		
Collinsville-----	20	Very limited Depth to hard bedrock	1.00	Very limited Depth to hard bedrock	1.00	Very limited Depth to bedrock	1.00
		Slope	0.96	Slope	0.96	Droughty	0.98
				Cutbanks cave	0.10	Slope	0.96
GRP: Gravel Pits-----	100	Not rated		Not rated		Not rated	
Ha: Hepler-----	97	Very limited Flooding	1.00	Very limited Depth to saturated zone	1.00	Somewhat limited Flooding	0.60
		Depth to saturated zone	0.19	Flooding	0.60	Depth to saturated zone	0.19
				Cutbanks cave	0.10		
Ka: Kenoma-----	98	Very limited Shrink-swell	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Too clayey	0.41		
				Cutbanks cave	0.10		
Ko: Kenoma-----	50	Very limited Shrink-swell	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Too clayey	0.41		
				Cutbanks cave	0.10		
Olpe-----	30	Somewhat limited Shrink-swell	0.44	Very limited Cutbanks cave	1.00	Somewhat limited Droughty	0.81
				Too clayey	0.12		
Kw: Kenoma, eroded-----	60	Very limited Shrink-swell	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Too clayey	0.41		
				Cutbanks cave	0.10		
Woodson, eroded-----	30	Very limited Shrink-swell	1.00	Very limited Depth to saturated zone	1.00	Somewhat limited Depth to saturated zone	0.94
		Depth to saturated zone	0.94	Too clayey	0.92		
				Cutbanks cave	0.10		
La: Leanna, drained-----	90	Very limited Flooding	1.00	Very limited Depth to saturated zone	1.00	Somewhat limited Depth to saturated zone	0.94
		Shrink-swell	1.00	Flooding	0.60	Flooding	0.60
		Depth to saturated zone	0.94	Cutbanks cave	0.10		
				Too clayey	0.02		
Lb: Lula-----	98	Somewhat limited Shrink-swell	0.86	Somewhat limited Cutbanks cave	0.10	Not limited	
				Depth to hard bedrock	0.02		
Ld: Lula-----	45	Somewhat limited Shrink-swell	0.86	Somewhat limited Cutbanks cave	0.10	Not limited	
				Depth to hard bedrock	0.02		
Dwight-----	30	Very limited Shrink-swell	1.00	Somewhat limited Too clayey	0.76	Not limited	
		Frost action	0.50	Cutbanks cave	0.10		

BUILDING SITE DEVELOPMENT--Continued
Woodson County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Ma: Mason-----	98	Somewhat limited Shrink-swell Flooding	0.50 0.40	Somewhat limited Cutbanks cave	0.10	Not limited	
Ns: Niotaze-----	50	Very limited Shrink-swell Slope Depth to saturated zone	1.00 1.00 0.75	Very limited Depth to saturated zone Slope Depth to soft bedrock Too clayey Cutbanks cave	1.00 1.00 0.90 0.88 0.10	Very limited Slope Depth to bedrock Depth to saturated zone Droughty	1.00 0.90 0.75 0.00
Stephenville-----	40	Somewhat limited Slope	0.16	Somewhat limited Depth to soft bedrock Slope Cutbanks cave	0.35 0.16 0.10	Somewhat limited Depth to bedrock Slope	0.35 0.16
Od: Olpe-----	98	Somewhat limited Shrink-swell Slope	0.44 0.16	Very limited Cutbanks cave Slope Too clayey	1.00 0.16 0.12	Somewhat limited Droughty Slope	0.81 0.16
Og: Osage-----	97	Very limited Shrink-swell Ponding Depth to saturated zone Flooding	1.00 1.00 1.00 1.00	Very limited Ponding Depth to saturated zone Flooding Too clayey Cutbanks cave	1.00 1.00 0.60 0.18 0.10	Very limited Ponding Depth to saturated zone Too clayey Flooding	1.00 1.00 1.00 0.60
Os: Osage-----	97	Very limited Shrink-swell Ponding Flooding Depth to saturated zone	1.00 1.00 1.00 1.00	Very limited Ponding Depth to saturated zone Flooding Too clayey Cutbanks cave	1.00 1.00 0.60 0.18 0.10	Very limited Ponding Depth to saturated zone Flooding	1.00 1.00 0.60
Rc: Ringo-----	99	Very limited Shrink-swell	1.00	Somewhat limited Cutbanks cave Too clayey	0.10 0.04	Not limited	
Rd: Ringo-----	50	Very limited Shrink-swell Slope	1.00 0.16	Somewhat limited Slope Cutbanks cave Too clayey	0.16 0.10 0.04	Somewhat limited Slope	0.16
Sogn-----	30	Very limited Depth to hard bedrock Shrink-swell Frost action Slope	1.00 0.56 0.50 0.16	Very limited Depth to hard bedrock Slope Cutbanks cave	1.00 0.16 0.10	Very limited Depth to bedrock Droughty Slope	1.00 1.00 0.16
Sa: Stephenville-----	98	Not limited		Somewhat limited Depth to soft bedrock Cutbanks cave	0.35 0.10	Somewhat limited Depth to bedrock	0.35
Sd: Summit-----	98	Very limited Shrink-swell	1.00	Very limited Depth to saturated zone Cutbanks cave Too clayey	1.00 0.10 0.08	Not limited	
Se: Summit-----	99	Very limited Shrink-swell	1.00	Very limited Depth to saturated zone Cutbanks cave Too clayey	1.00 0.10 0.08	Not limited	
Va: Verdigris-----	97	Very limited Flooding	1.00	Somewhat limited Flooding Cutbanks cave	0.60 0.10	Somewhat limited Flooding	0.60

BUILDING SITE DEVELOPMENT--Continued
Woodson County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Vc: Verdigris-----	98	Very limited Flooding	1.00	Somewhat limited Flooding Cutbanks cave	0.80 0.10	Very limited Flooding	1.00
W: Water-----	100	Not rated		Not rated		Not rated	
Wa: Woodson-----	98	Very limited Shrink-swell	1.00	Very limited Depth to saturated zone	1.00	Somewhat limited Depth to saturated zone	0.94
		Depth to saturated zone	0.94	Too clayey	0.92		
				Cutbanks cave	0.10		
Za: Zaar-----	85	Very limited Shrink-swell	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Too clayey	0.41	Too clayey	1.00
				Cutbanks cave	0.10		

CONSTRUCTION MATERIALS
Woodson County, Kansas

Construction Materials

The following tables give information about the soils as potential sources of gravel, sand, topsoil, reclamation material, and roadfill. Normal compaction, minor processing, and other standard construction practices are assumed.

The soils are rated good, fair, or poor as potential sources of topsoil, reclamation material, and roadfill. The features that limit the soils as sources of these materials are specified in the tables. The numerical ratings given after the specified features indicate the degree to which the features limit the soils as sources of topsoil, reclamation material, or roadfill. The lower the number, the greater the limitation.

The soils are rated as a probable or improbable source of sand and gravel. A rating of probable means that the source material is likely to be in or below the soil. The numerical ratings in these columns indicate the degree of probability. The number 0.00 indicates that the soil is an improbable source. A number between 0.00 and 1.00 indicates the degree to which the soil is a probable source of sand or gravel.

Sand and gravel are natural aggregates suitable for commercial use with a minimum of processing. They are used in many kinds of construction. Specifications for each use vary widely. In these tables, only the probability of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material. The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the Unified classification of the soil), the thickness of suitable material, and the content of rock fragments. If the lowest layer of the soil contains sand or gravel, the soil is rated as a probable source regardless of thickness. The assumption is that the sand or gravel layer below the depth of observation exceeds the minimum thickness.

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area. The ratings are based on the soil properties that affect plant growth; the ease of excavating, loading, and spreading the material; and reclamation of the borrow area. Toxic substances, soil reaction, and the properties that are inferred from soil texture, such as available water capacity and fertility, affect plant growth. The ease of excavating, loading, and spreading is affected by rock fragments, slope, depth to a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, depth to a water table, rock fragments, depth to bedrock or a cemented pan, and toxic material.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

Reclamation material is used in areas that have been drastically disturbed by surface mining or similar activities. When these areas are reclaimed, layers of soil material or unconsolidated geological material, or both, are replaced in a vertical sequence. The reconstructed soil favors plant growth. The ratings in the table do not apply to quarries and other mined areas that require an offsite source of reconstruction material. The ratings are based on the soil properties that affect erosion and stability of the surface and the productive potential of the reconstructed soil. These properties include the content of sodium, salts, and calcium carbonate; reaction; available water capacity; erodibility; texture; content of rock fragments; and content of organic matter and other features that affect fertility.

Roadfill is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the whole soil, from the surface to a depth of about 5 feet. It is assumed that soil layers will be mixed when the soil material is excavated and spread.

The ratings are based on the amount of suitable material and on soil properties that affect the ease of excavation and the performance of the material after it is in place. The thickness of the suitable material is a major consideration. The ease of excavation is affected by large stones, depth to a water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the AASHTO classification of the soil) and linear extensibility (shrink-swell potential).

CONSTRUCTION MATERIALS--Continued
Woodson County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The ratings given for the thickest layer are for the thickest layer above and excluding the bottom layer. The numbers in the value columns range from 0.00 to 0.99. The greater the value, the greater the likelihood that the bottom layer or thickest layer of the soil is a source of sand or gravel. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
001CA: Catoosa-----	90	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
001CB: Catoosa-----	60	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Rock Outcrop-----	30	Not rated		Not rated	
001CC: Collinsville-----	50	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Bates-----	40	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
001ZB: Zaar-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
031EP: Eram-----	50	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Apperson-----	35	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
031ES: Eram-----	60	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Shidler-----	25	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
073AT: Aqunts-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
073CA: Chase-----	90	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
073CM: Clime-----	90	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
073CS: Clime-----	60	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Sogn-----	20	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
073DS: Dennis, eroded-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
073IC: Ivan-----	85	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00

CONSTRUCTION MATERIALS--Continued
Woodson County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The ratings given for the thickest layer are for the thickest layer above and excluding the bottom layer. The numbers in the value columns range from 0.00 to 0.99. The greater the value, the greater the likelihood that the bottom layer or thickest layer of the soil is a source of sand or gravel. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
073IF: Ivan-----	90	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
073KE: Kenoma, eroded-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
073LA: Labette-----	90	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
073LD: Labette-----	65	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Dwight-----	30	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
073MA: Martin-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
073NZ: Niotaze-----	75	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Darnell-----	15	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
073RE: Reading-----	90	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
073ST: Steedman-----	85	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
205BH: Bates-----	50	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Collinsville-----	35	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
205BO: Bates-----	45	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Collinsville-----	40	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
205DW: Dennis-----	65	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Dwight-----	25	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
205EB: Eram-----	90	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00

CONSTRUCTION MATERIALS--Continued
Woodson County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The ratings given for the thickest layer are for the thickest layer above and excluding the bottom layer. The numbers in the value columns range from 0.00 to 0.99. The greater the value, the greater the likelihood that the bottom layer or thickest layer of the soil is a source of sand or gravel. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
205EC: Eram-----	90	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
205LA: Lanton-----	90	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
205ND: Niotaze-----	50	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Darnell-----	35	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
205SC: Shidler-----	70	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Catoosa-----	20	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
205SF: Steedman-----	90	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
AED: Arents, Earthen Dam-	100	Not rated		Not rated	
Bb: Bates-----	98	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Bc: Bates-----	97	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
BOP: Borrow Pits-----	100	Not rated		Not rated	
Ca: Clareson-----	50	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Sogn-----	35	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Cd: Cleora-----	98	Poor Bottom layer Thickest layer	0.00 0.00	Fair Bottom layer Thickest layer	0.09 0.09
Da: Darnell-----	55	Poor Bottom layer Thickest layer	0.00 0.00	Fair Bottom layer Thickest layer	0.00 0.01
Niotaze-----	40	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Dd: Dennis-----	98	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00

CONSTRUCTION MATERIALS--Continued
Woodson County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The ratings given for the thickest layer are for the thickest layer above and excluding the bottom layer. The numbers in the value columns range from 0.00 to 0.99. The greater the value, the greater the likelihood that the bottom layer or thickest layer of the soil is a source of sand or gravel. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
De: Dennis-----	98	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Df: Dennis, eroded-----	98	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Dg: Dennis, eroded-----	50	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Eram, eroded-----	30	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Dw: Dwight-----	98	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Eb: Eram-----	98	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Ec: Eram-----	98	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Ex: Eram-----	60	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Collinsville-----	20	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
GRP: Gravel Pits-----	100	Not rated		Not rated	
Ha: Hepler-----	97	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Ka: Kenoma-----	98	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Ko: Kenoma-----	50	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Olpe-----	30	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Kw: Kenoma, eroded-----	60	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Woodson, eroded-----	30	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
La: Leanna, drained-----	90	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00

CONSTRUCTION MATERIALS--Continued
Woodson County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The ratings given for the thickest layer are for the thickest layer above and excluding the bottom layer. The numbers in the value columns range from 0.00 to 0.99. The greater the value, the greater the likelihood that the bottom layer or thickest layer of the soil is a source of sand or gravel. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
Lb: Lula-----	98	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Ld: Lula-----	45	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Dwight-----	30	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Ma: Mason-----	98	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Ns: Niotaze-----	50	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Stephenville-----	40	Poor Bottom layer Thickest layer	0.00 0.00	Fair Bottom layer Thickest layer	0.00 0.03
Od: Olpe-----	98	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Og: Osage-----	97	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Os: Osage-----	97	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Rc: Ringo-----	99	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Rd: Ringo-----	50	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Sogn-----	30	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Sa: Stephenville-----	98	Poor Bottom layer Thickest layer	0.00 0.00	Fair Bottom layer Thickest layer	0.00 0.03
Sd: Summit-----	98	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Se: Summit-----	99	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Va: Verdigris-----	97	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00

CONSTRUCTION MATERIALS--Continued
Woodson County, Kansas

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Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
Vc: Verdigris-----	98	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
W: Water-----	100	Not rated		Not rated	
Wa: Woodson-----	98	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Za: Zaar-----	85	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00

CONSTRUCTION MATERIALS--Continued
Woodson County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.00 to 0.99. The smaller the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
001CA: Catoosa-----	90	Poor Too clayey Depth to bedrock Too acid Droughty No water erosion limitation	0.00 0.26 0.74 0.93 0.99	Poor Depth to bedrock Shrink-swell	0.00 0.61	Poor Too Clayey Depth to bedrock	0.00 0.26
001CB: Catoosa-----	60	Poor Too clayey Depth to bedrock Too acid Droughty No water erosion limitation	0.00 0.26 0.74 0.93 0.99	Poor Depth to bedrock Shrink-swell	0.00 0.61	Poor Too Clayey Depth to bedrock	0.00 0.26
Rock Outcrop-----	30	Not rated		Not rated		Not rated	
001CC: Collinsville-----	50	Poor Droughty Depth to bedrock Too acid	0.00 0.00 0.54	Poor Depth to bedrock	0.00	Poor Depth to bedrock Rock fragments Slope Too acid	0.00 0.01 0.96 0.98
Bates-----	40	Fair Too clayey Too acid Depth to bedrock Low content of organic matter Droughty	0.32 0.61 0.71 0.88 0.90	Poor Depth to bedrock	0.00	Fair Too Clayey Depth to bedrock Too acid	0.23 0.71 0.99
001ZB: Zaar-----	100	Poor Too clayey	0.00	Poor Shrink-swell Depth to saturated zone	0.00 0.14	Poor Too Clayey Depth to saturated zone	0.00 0.14
031EP: Eram-----	50	Poor Too clayey Depth to bedrock Droughty Too acid No water erosion limitation	0.00 0.21 0.23 0.84 0.99	Poor Depth to bedrock Depth to saturated zone Shrink-swell	0.00 0.00 0.82	Poor Too Clayey Depth to saturated zone Depth to bedrock	0.00 0.00 0.21
Apperson-----	35	Poor Too clayey Too acid No water erosion limitation	0.00 0.84 0.99	Fair Shrink-swell Depth to saturated zone Depth to bedrock	0.03 0.04 0.04	Poor Too Clayey Depth to saturated zone Rock fragments	0.00 0.04 0.95
031ES: Eram-----	60	Poor Too clayey Depth to bedrock Droughty Too acid No water erosion limitation	0.00 0.21 0.23 0.84 0.99	Poor Depth to bedrock Depth to saturated zone Shrink-swell	0.00 0.00 0.82	Poor Too Clayey Depth to saturated zone Depth to bedrock Slope	0.00 0.00 0.21 0.63
Shidler-----	25	Poor Droughty Depth to bedrock Too clayey	0.00 0.00 0.98	Poor Depth to bedrock Shrink-swell	0.00 0.86	Poor Depth to bedrock Rock fragments Too Clayey	0.00 0.88 0.98
073AT: Aguents-----	100	Poor Low content of organic matter	0.00	Good		Good	

CONSTRUCTION MATERIALS--Continued
Woodson County, Kansas

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Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
073CA: Chase-----	90	Fair Too clayey No water erosion limitation	0.32 0.99	Fair Shrink-swell	0.55	Fair Too Clayey	0.30
073CM: Cline-----	90	Poor Too clayey Droughty Depth to bedrock	0.00 0.50 0.79	Poor Depth to bedrock Shrink-swell	0.00 0.13	Poor Too Clayey Depth to bedrock	0.00 0.79
073CS: Cline-----	60	Poor Too clayey Droughty Depth to bedrock	0.00 0.50 0.79	Poor Depth to bedrock Shrink-swell	0.00 0.13	Poor Too Clayey Slope Depth to bedrock	0.00 0.16 0.79
Sogn-----	20	Poor Droughty Depth to bedrock Too clayey	0.00 0.00 0.00 0.98	Poor Depth to bedrock	0.00	Poor Depth to bedrock Slope Rock fragments Too Clayey	0.00 0.16 0.68 0.93
073DS: Dennis, eroded-----	100	Poor Too clayey Low content of organic matter Too acid No water erosion limitation	0.00 0.50 0.74 0.99	Fair Shrink-swell Depth to saturated zone	0.02 0.04	Poor Too Clayey Depth to saturated zone	0.00 0.04
073IC: Ivan-----	85	Good		Good		Good	
073IF: Ivan-----	90	Good		Fair Shrink-swell	0.99	Good	
073KE: Kenoma, eroded-----	100	Poor Too clayey Too acid No water erosion limitation	0.00 0.97 0.99	Fair Shrink-swell	0.86	Poor Too Clayey	0.00
073LA: Labette-----	90	Fair Too clayey Depth to bedrock Droughty Too acid No water erosion limitation	0.08 0.26 0.64 0.95 0.99	Poor Depth to bedrock Shrink-swell	0.00 0.00	Fair Too Clayey Depth to bedrock	0.07 0.26
073LD: Labette-----	65	Fair Too clayey Depth to bedrock Droughty Too acid No water erosion limitation	0.08 0.26 0.64 0.95 0.99	Poor Depth to bedrock Shrink-swell	0.00 0.00	Fair Too Clayey Depth to bedrock	0.07 0.26
Dwight-----	30	Poor Too clayey Too acid Water erosion Sodium content Droughty	0.00 0.84 0.90 0.97 0.99	Poor Shrink-swell Depth to bedrock	0.00 0.12	Poor Too Clayey Sodium content	0.00 0.98
073MA: Martin-----	100	Poor Too clayey Too acid No water erosion limitation	0.00 0.95 0.99	Fair Shrink-swell Depth to saturated zone	0.09 0.12	Poor Too Clayey Depth to saturated zone	0.00 0.12

CONSTRUCTION MATERIALS--Continued
Woodson County, Kansas

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Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
073NZ: Niotaze-----	75	Poor Too clayey Depth to bedrock Droughty Too acid No water erosion limitation	0.00 0.29 0.45 0.61 0.99	Poor Depth to bedrock Shrink-swell Depth to saturated zone Slope	0.00 0.12 0.14 0.32	Poor Too Clayey Slope Depth to saturated zone Depth to bedrock	0.00 0.00 0.14 0.29
Darnell-----	15	Poor Droughty Depth to bedrock Low content of organic matter Too acid	0.00 0.00 0.12 0.61	Poor Depth to bedrock Slope	0.00 0.32	Poor Depth to bedrock Slope Too acid	0.00 0.00 0.99
073RE: Reading-----	90	Fair Too clayey Water erosion Too acid	0.82 0.90 0.95	Fair Shrink-swell	0.84	Fair Too Clayey	0.75
073ST: Steedman-----	85	Poor Too clayey Droughty Depth to bedrock Too acid Low content of organic matter	0.00 0.18 0.54 0.61 0.88	Poor Depth to bedrock Depth to saturated zone Shrink-swell	0.00 0.14 0.18	Poor Too Clayey Depth to saturated zone Depth to bedrock	0.00 0.14 0.54
205BH: Bates-----	50	Fair Depth to bedrock Droughty Too acid	0.29 0.83 0.84	Poor Depth to bedrock	0.00	Fair Depth to bedrock	0.29
Collinsville-----	35	Poor Droughty Depth to bedrock Too acid	0.00 0.00 0.68	Poor Depth to bedrock	0.00	Poor Depth to bedrock Rock fragments	0.00 0.41
205BO: Bates-----	45	Fair Depth to bedrock Droughty Too acid	0.16 0.48 0.84	Poor Depth to bedrock	0.00	Fair Depth to bedrock	0.16
Collinsville-----	40	Poor Droughty Depth to bedrock Too acid	0.00 0.00 0.68	Poor Depth to bedrock	0.00	Poor Depth to bedrock Slope Rock fragments	0.00 0.04 0.41
205DW: Dennis-----	65	Poor Too clayey Low content of organic matter Too acid Water erosion	0.00 0.50 0.74 0.90	Fair Shrink-swell Depth to saturated zone	0.03 0.53	Poor Too Clayey Depth to saturated zone	0.00 0.53
Dwight-----	25	Poor Too clayey Too acid Water erosion Salinity	0.00 0.84 0.90 0.97	Poor Shrink-swell	0.00	Poor Too Clayey Salinity	0.00 0.88
205EB: Eram-----	90	Poor Too clayey Depth to bedrock Droughty Too acid Water erosion	0.00 0.71 0.73 0.84 0.90	Poor Depth to bedrock Depth to saturated zone Shrink-swell	0.00 0.00 0.46	Poor Too Clayey Depth to saturated zone Depth to bedrock	0.00 0.00 0.71

CONSTRUCTION MATERIALS--Continued
Woodson County, Kansas

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Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
205EC: Eram-----	90	Fair Too clayey Depth to bedrock Droughty Too acid Water erosion	0.02 0.10 0.14 0.84 0.90	Poor Depth to bedrock Depth to saturated zone Shrink-swell	0.00 0.00 0.41	Poor Depth to saturated zone Too Clayey Depth to bedrock	0.00 0.02 0.10
205LA: Lanton-----	90	Fair Too acid No water erosion limitation	0.95 0.99	Poor Depth to saturated zone Shrink-swell	0.00 0.89	Poor Depth to saturated zone	0.00
205ND: Niotaze-----	50	Poor Too clayey Too acid Droughty Depth to bedrock	0.00 0.54 0.74 0.93	Poor Depth to bedrock Depth to saturated zone Shrink-swell Slope	0.00 0.00 0.23 0.92	Poor Too Clayey Depth to saturated zone Slope Depth to bedrock Too acid	0.00 0.00 0.00 0.93 0.98
Darnell-----	35	Poor Droughty Depth to bedrock Too sandy Low content of organic matter Too acid	0.00 0.00 0.04 0.12 0.54	Poor Depth to bedrock	0.00	Poor Depth to bedrock Too sandy Slope Too acid	0.00 0.04 0.84 0.98
205SC: Shidler-----	70	Poor Droughty Depth to bedrock Too clayey Too acid	0.00 0.00 0.98 0.99	Poor Depth to bedrock	0.00	Poor Depth to bedrock Rock fragments Too Clayey	0.00 0.88 0.98
Catoosa-----	20	Fair Too clayey Depth to bedrock Droughty No water erosion limitation	0.08 0.21 0.82 0.99	Poor Depth to bedrock Shrink-swell	0.00 0.50	Fair Too Clayey Depth to bedrock	0.07 0.21
205SF: Steedman-----	90	Poor Too clayey Droughty Depth to bedrock Too acid Low content of organic matter	0.00 0.32 0.71 0.84 0.88	Poor Depth to bedrock Depth to saturated zone Shrink-swell	0.00 0.00 0.12	Poor Too Clayey Depth to saturated zone Slope Depth to bedrock	0.00 0.00 0.00 0.71
AED: Arents, Earthen Dam-	100	Not rated		Not rated		Not rated	
Bb: Bates-----	98	Fair Depth to bedrock Too acid	0.79 0.84	Poor Depth to bedrock	0.00	Fair Depth to bedrock	0.79
Bc: Bates-----	97	Fair Depth to bedrock Too acid	0.79 0.84	Poor Depth to bedrock	0.00	Fair Depth to bedrock	0.79
BOP: Borrow Pits-----	100	Not rated		Not rated		Not rated	

CONSTRUCTION MATERIALS--Continued
Woodson County, Kansas

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Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Ca: Clareson-----	50	Poor Too clayey Droughty Depth to bedrock Cobble content	0.00 0.03 0.16 0.78	Poor Depth to bedrock Cobble content Shrink-swell	0.00 0.47 0.74	Poor Too Clayey Depth to bedrock	0.00 0.16
Sogn-----	35	Poor Droughty Depth to bedrock Too clayey	0.00 0.00 0.98	Poor Depth to bedrock	0.00	Poor Depth to bedrock Too Clayey	0.00 0.98
Cd: Cleora-----	98	Fair Too acid	0.84	Good		Good	
Da: Darnell-----	55	Poor Droughty Depth to bedrock Low content of organic matter Too acid	0.00 0.00 0.12 0.61	Poor Depth to bedrock Slope	0.00 0.00	Poor Slope Depth to bedrock Rock fragments Too acid	0.00 0.00 0.95 0.99
Niotaze-----	40	Poor Too clayey Depth to bedrock Droughty Too acid No water erosion limitation	0.00 0.10 0.21 0.26 0.99	Poor Depth to bedrock Slope Depth to saturated zone Shrink-swell	0.00 0.00 0.14 0.16	Poor Slope Too Clayey Depth to bedrock Depth to saturated zone Too acid	0.00 0.00 0.10 0.14 0.82
Dd: Dennis-----	98	Poor Too clayey Low content of organic matter Too acid Water erosion	0.00 0.50 0.74 0.90	Fair Shrink-swell Depth to saturated zone	0.01 0.04	Poor Too Clayey Depth to saturated zone	0.00 0.04
De: Dennis-----	98	Poor Too clayey Low content of organic matter Too acid Water erosion	0.00 0.50 0.74 0.90	Fair Shrink-swell Depth to saturated zone	0.01 0.04	Poor Too Clayey Depth to saturated zone	0.00 0.04
Df: Dennis, eroded-----	98	Poor Too clayey Low content of organic matter Too acid No water erosion limitation	0.00 0.50 0.74 0.99	Poor Shrink-swell Depth to saturated zone	0.00 0.04	Poor Too Clayey Depth to saturated zone	0.00 0.04
Dg: Dennis, eroded-----	50	Poor Too clayey Low content of organic matter Too acid No water erosion limitation	0.00 0.50 0.74 0.99	Poor Shrink-swell Depth to saturated zone	0.00 0.04	Poor Too Clayey Depth to saturated zone	0.00 0.04
Eram, eroded-----	30	Poor Too clayey Droughty Depth to bedrock Too acid Low content of organic matter No water erosion limitation	0.00 0.63 0.65 0.80 0.88 0.99	Poor Depth to bedrock Depth to saturated zone Shrink-swell	0.00 0.00 0.32	Poor Too Clayey Depth to saturated zone Depth to bedrock	0.00 0.00 0.65

CONSTRUCTION MATERIALS--Continued
Woodson County, Kansas

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Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Dw: Dwight-----	98	Poor Too clayey Water erosion Too acid Sodium content	0.00 0.90 0.97 0.97	Fair Shrink-swell Depth to bedrock	0.11 0.74	Poor Too Clayey Sodium content	0.00 0.98
Eb: Eram-----	98	Poor Too clayey Depth to bedrock Droughty Too acid No water erosion limitation	0.00 0.65 0.69 0.84 0.99	Poor Depth to bedrock Depth to saturated zone Shrink-swell	0.00 0.00 0.32	Poor Too Clayey Depth to saturated zone Depth to bedrock	0.00 0.00 0.65
Ec: Eram-----	98	Poor Too clayey Depth to bedrock Droughty Too acid No water erosion limitation	0.00 0.65 0.69 0.84 0.99	Poor Depth to bedrock Depth to saturated zone Shrink-swell	0.00 0.00 0.32	Poor Too Clayey Depth to saturated zone Depth to bedrock	0.00 0.00 0.65
Ex: Eram-----	60	Poor Too clayey Droughty Depth to bedrock Too acid No water erosion limitation	0.00 0.39 0.39 0.84 0.99	Poor Depth to bedrock Depth to saturated zone Shrink-swell	0.00 0.00 0.32	Poor Too Clayey Depth to saturated zone Depth to bedrock	0.00 0.00 0.39
Collinsville-----	20	Poor Droughty Depth to bedrock Too acid	0.00 0.00 0.00 0.84	Poor Depth to bedrock	0.00	Poor Depth to bedrock Rock fragments Slope	0.00 0.00 0.04
GRP: Gravel Pits-----	100	Not rated		Not rated		Not rated	
Ha: Hepler-----	97	Fair Low content of organic matter Too acid No water erosion limitation	0.50 0.84 0.99	Fair Depth to saturated zone	0.53	Fair Depth to saturated zone	0.53
Ka: Kenoma-----	98	Poor Too clayey Too acid Water erosion	0.00 0.84 0.90	Poor Depth to saturated zone Shrink-swell	0.00 0.83	Poor Too Clayey Depth to saturated zone	0.00 0.00
Ko: Kenoma-----	50	Poor Too clayey Too acid Water erosion	0.00 0.84 0.90	Poor Depth to saturated zone Shrink-swell	0.00 0.86	Poor Too Clayey Depth to saturated zone Rock fragments	0.00 0.00 0.92
Olpe-----	30	Poor Too clayey Low content of organic matter Droughty Too acid Water erosion	0.00 0.08 0.26 0.84 0.90	Fair Shrink-swell	0.81	Poor Too Clayey Hard to reclaim Rock fragments	0.00 0.00 0.00

CONSTRUCTION MATERIALS--Continued
Woodson County, Kansas

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Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Kw: Kenoma, eroded-----	60	Poor Too clayey Too acid No water erosion limitation	0.00 0.84 0.99	Poor Depth to saturated zone Shrink-swell	0.00 0.84	Poor Too Clayey Depth to saturated zone Rock fragments	0.00 0.00 0.92
Woodson, eroded-----	30	Poor Too clayey Too acid Low content of organic matter No water erosion limitation	0.00 0.84 0.88 0.99	Poor Shrink-swell Depth to saturated zone	0.00 0.04	Poor Too Clayey Depth to saturated zone	0.00 0.04
La: Leanna, drained-----	90	Poor Too clayey Too acid No water erosion limitation	0.00 0.74 0.99	Fair Depth to saturated zone Shrink-swell	0.04 0.39	Poor Too Clayey Depth to saturated zone	0.00 0.04
Lb: Lula-----	98	Fair Low content of organic matter Too clayey Too acid No water erosion limitation	0.32 0.68 0.95 0.99	Fair Shrink-swell Depth to bedrock	0.75 0.98	Fair Too Clayey	0.42
Ld: Lula-----	45	Fair Low content of organic matter Too clayey Too acid No water erosion limitation	0.32 0.68 0.95 0.99	Fair Shrink-swell Depth to bedrock	0.75 0.98	Fair Too Clayey	0.42
Dwight-----	30	Poor Too clayey Water erosion Too acid Sodium content	0.00 0.90 0.97 0.97	Fair Shrink-swell Depth to bedrock	0.11 0.74	Poor Too Clayey Sodium content	0.00 0.98
Ma: Mason-----	98	Fair Too acid Low content of organic matter No water erosion limitation	0.84 0.88 0.99	Fair Shrink-swell	0.96	Good	
Ns: Niotaze-----	50	Poor Too clayey Depth to bedrock Droughty Too acid No water erosion limitation	0.00 0.10 0.21 0.26 0.99	Poor Depth to bedrock Depth to saturated zone Shrink-swell	0.00 0.14 0.16	Poor Too Clayey Slope Depth to bedrock Depth to saturated zone Too acid	0.00 0.00 0.10 0.14 0.82
Stephenville-----	40	Fair Droughty Low content of organic matter Too acid Depth to bedrock Too clayey	0.36 0.50 0.54 0.65 0.98	Poor Depth to bedrock	0.00	Fair Too Clayey Depth to bedrock Slope Too acid	0.64 0.65 0.84 0.98

CONSTRUCTION MATERIALS--Continued
Woodson County, Kansas

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Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Od: Olpe-----	98	Poor Too clayey Low content of organic matter Droughty Too acid Water erosion	0.00 0.08 0.26 0.84 0.90	Fair Shrink-swell	0.81	Poor Too Clayey Hard to reclaim Rock fragments Slope	0.00 0.00 0.00 0.84
Og: Osage-----	97	Poor Too clayey Too acid	0.00 0.84	Poor Depth to saturated zone Shrink-swell	0.00 0.00	Poor Depth to saturated zone Too Clayey	0.00 0.00
Os: Osage-----	97	Poor Too clayey Too acid No water erosion limitation	0.00 0.00 0.84 0.99	Poor Shrink-swell Depth to saturated zone	0.00 0.00	Poor Depth to saturated zone Too Clayey	0.00 0.00
Rc: Ringo-----	99	Poor Too clayey No water erosion limitation	0.00 0.99	Fair Shrink-swell Depth to bedrock	0.08 0.58	Poor Too Clayey	0.00
Rd: Ringo-----	50	Poor Too clayey No water erosion limitation	0.00 0.99	Fair Shrink-swell Depth to bedrock	0.08 0.58	Poor Too Clayey Slope	0.00 0.84
Sogn-----	30	Poor Droughty Depth to bedrock Too clayey	0.00 0.00 0.98	Poor Depth to bedrock	0.00	Poor Depth to bedrock Slope Too Clayey	0.00 0.84 0.98
Sa: Stephenville-----	98	Fair Droughty Low content of organic matter Too acid Depth to bedrock Too clayey	0.36 0.50 0.54 0.65 0.98	Poor Depth to bedrock	0.00	Fair Too Clayey Depth to bedrock Too acid	0.64 0.65 0.98
Sd: Summit-----	98	Poor Too clayey No water erosion limitation	0.00 0.99	Fair Shrink-swell Depth to saturated zone	0.15 0.89	Poor Too Clayey Depth to saturated zone	0.00 0.89
Se: Summit-----	99	Poor Too clayey No water erosion limitation	0.00 0.99	Fair Shrink-swell Depth to saturated zone	0.15 0.89	Poor Too Clayey Depth to saturated zone	0.00 0.89
Va: Verdigris-----	97	Good		Good		Good	
Vc: Verdigris-----	98	Good		Good		Good	
W: Water-----	100	Not rated		Not rated		Not rated	

CONSTRUCTION MATERIALS--Continued
Woodson County, Kansas

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Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Wa: Woodson-----	98	Poor Too clayey Too acid Low content of organic matter Water erosion	0.00 0.84 0.88 0.90	Poor Shrink-swell Depth to saturated zone	0.00 0.04	Poor Too Clayey Depth to saturated zone	0.00 0.04
Za: Zaar-----	85	Poor Too clayey	0.00	Poor Shrink-swell Depth to saturated zone	0.00 0.00	Poor Too Clayey Depth to saturated zone	0.00 0.00

RECREATIONAL INTERPRETATIONS
Woodson County, Kansas

Recreation

The soils of the survey area are rated in the following tables according to limitations that affect their suitability for recreation. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the recreational uses. Not limited indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. Slightly limited indicates that the soil has features that are favorable for the specified use. The limitations are minor and can be easily overcome. Good performance and low maintenance can be expected. Somewhat limited indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. Very limited indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.00 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

The ratings in the tables are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewer lines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation also are important. Soils that are subject to flooding are limited for recreational uses by the duration and intensity of flooding and the season when flooding occurs. In planning recreational facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

The information in this table can be supplemented by other information in this survey, for example, interpretations for building site development, construction materials, sanitary facilities, and water management.

Camp areas require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The ratings are based on the soil properties that affect the ease of developing camp areas and the performance of the areas after development. Slope, stoniness, and depth to bedrock or a cemented pan are the main concerns affecting the development of camp areas.

The soil properties that affect the performance of the areas after development are those that influence trafficability and promote the growth of vegetation, especially in heavily used areas. For good trafficability, the surface of camp areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The ratings are based on the soil properties that affect the ease of developing picnic areas and that influence trafficability and the growth of vegetation after development. Slope and stoniness are the main concerns affecting the development of picnic areas. For good trafficability, the surface of picnic areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Playgrounds require soils that are nearly level, are free of stones, and can withstand intensive foot traffic. The ratings are based on the soil properties that affect the ease of developing playgrounds and that influence trafficability and the growth of vegetation after development. Slope and stoniness are the main concerns affecting the development of playgrounds. For good trafficability, the surface of the playgrounds should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Paths and trails for hiking and horseback riding should require little or no slope modification through cutting and filling. The ratings are based on the soil properties that affect trafficability and erodibility. These properties are stoniness, depth to a water table, ponding, flooding, slope, and texture of the surface layer.

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. Irrigation is not considered in the ratings. The ratings are based on the soil properties that affect plant growth and trafficability after vegetation is established. The properties that affect plant growth are reaction; depth to a water table; ponding; depth to bedrock or a cemented pan; the available water capacity in the upper 40 inches; the content of salts, sodium, or calcium carbonate; and sulfidic materials. The properties that affect trafficability are flooding, depth to a water table, ponding, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer. The suitability of the soil for traps, tees, roughs, and greens is not considered in the ratings.

RECREATIONAL INTERPRETATIONS--Continued
Woodson County, Kansas

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Map symbol and soil name	Pct of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
001CA: Catoosa-----	90	Somewhat limited Restricted permeability	0.15	Somewhat limited Restricted permeability	0.15	Somewhat limited Restricted permeability	0.15
001CB: Catoosa-----	60	Somewhat limited Restricted permeability	0.15	Somewhat limited Restricted permeability	0.15	Somewhat limited Depth to bedrock Slope Restricted permeability	0.74 0.28 0.15
Rock Outcrop-----	30	Not rated		Not rated		Not rated	
001CC: Collinsville-----	50	Very limited Depth to bedrock Slope	1.00 0.04	Very limited Depth to bedrock Slope	1.00 0.04	Very limited Depth to bedrock Slope	1.00 1.00
Bates-----	40	Not limited		Not limited		Somewhat limited Slope Depth to bedrock	0.87 0.29
001ZB: Zaar-----	100	Very limited Too clayey Depth to saturated zone Restricted permeability	1.00 1.00 0.15	Very limited Too clayey Depth to saturated zone Restricted permeability	1.00 0.75 0.15	Very limited Too clayey Depth to saturated zone Slope Restricted permeability	1.00 1.00 0.87 0.15
031EP: Eram-----	50	Very limited Depth to saturated zone Restricted permeability	1.00 0.94	Very limited Depth to saturated zone Restricted permeability	1.00 0.94	Very limited Depth to saturated zone Slope Restricted permeability Depth to bedrock	1.00 1.00 0.94 0.80
Apperson-----	35	Very limited Depth to saturated zone Restricted permeability	1.00 0.94	Somewhat limited Restricted permeability Depth to saturated zone	0.94 0.94	Very limited Depth to saturated zone Restricted permeability Slope	1.00 0.94 0.87
031ES: Eram-----	60	Very limited Depth to saturated zone Restricted permeability Slope	1.00 0.94 0.37	Very limited Depth to saturated zone Restricted permeability Slope	1.00 0.94 0.37	Very limited Depth to saturated zone Slope Restricted permeability Depth to bedrock	1.00 1.00 0.94 0.80
Shidler-----	25	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock Slope Gravel content	1.00 1.00 0.18
073AT: Aguents-----	100	Very limited Flooding Restricted permeability	1.00 1.00	Very limited Restricted permeability	1.00	Very limited Restricted permeability Flooding	1.00 0.60
073CA: Chase-----	90	Very limited Flooding Restricted permeability	1.00 0.94	Somewhat limited Restricted permeability	0.94	Somewhat limited Restricted permeability Flooding	0.94 0.60
073CM: Clime-----	90	Somewhat limited Too clayey Restricted permeability	0.50 0.39	Somewhat limited Too clayey Restricted permeability	0.50 0.39	Somewhat limited Slope Too clayey Restricted permeability Depth to bedrock	0.87 0.50 0.39 0.20
073CS: Clime-----	60	Somewhat limited Slope Too clayey	0.84 0.50	Somewhat limited Slope Too clayey	0.84 0.50	Very limited Slope Too clayey	1.00 0.50

RECREATIONAL INTERPRETATIONS--Continued
Woodson County, Kansas

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Map symbol and soil name	Pct of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Sogn-----	20	Restricted permeability	0.39	Restricted permeability	0.39	Restricted permeability	0.39
		Very limited Depth to bedrock	1.00	Very limited Depth to bedrock	1.00	Depth to bedrock	0.20
		Slope	0.84	Slope	0.84	Very limited Depth to bedrock Slope Gravel content Content of large stones	1.00 1.00 0.45 0.00
073DS: Dennis, eroded-----	100	Very limited Depth to saturated zone	1.00	Somewhat limited Restricted permeability	0.94	Very limited Depth to saturated zone	1.00
		Restricted permeability	0.94	Depth to saturated zone	0.94	Restricted permeability Slope	0.94 0.50
073IC: Ivan-----	85	Very limited Flooding	1.00	Somewhat limited Flooding	0.40	Very limited Flooding	1.00
073IF: Ivan-----	90	Very limited Flooding	1.00	Not limited		Somewhat limited Flooding	0.60
073KE: Kenoma, eroded-----	100	Somewhat limited Restricted permeability	0.94	Somewhat limited Restricted permeability	0.94	Somewhat limited Restricted permeability Slope	0.94 0.50
073LA: Labette-----	90	Not limited		Not limited		Somewhat limited Depth to bedrock Slope	0.74 0.13
073LD: Labette-----	65	Not limited		Not limited		Somewhat limited Slope	0.00
Dwight-----	30	Somewhat limited Restricted permeability	0.45	Somewhat limited Restricted permeability	0.45	Somewhat limited Restricted permeability Slope	0.45 0.00
073MA: Martin-----	100	Very limited Depth to saturated zone	1.00	Somewhat limited Depth to saturated zone	0.78	Very limited Depth to saturated zone	1.00
073NZ: Niotaze-----	75	Restricted permeability	0.15	Restricted permeability	0.15	Restricted permeability Slope	0.15 0.13
		Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
Darnell-----	15	Depth to saturated zone	1.00	Depth to saturated zone	0.75	Depth to saturated zone	1.00
		Very limited Depth to bedrock Slope	1.00 1.00	Very limited Depth to bedrock Slope	1.00 1.00	Depth to bedrock Very limited Depth to bedrock Slope	0.71 1.00 1.00
073RE: Reading-----	90	Very limited Flooding	1.00	Not limited		Not limited	
073ST: Steedman-----	85	Very limited Depth to saturated zone	1.00	Somewhat limited Depth to saturated zone	0.75	Very limited Slope	1.00
		Restricted permeability	0.39	Restricted permeability	0.39	Depth to saturated zone	1.00
		Slope	0.00	Slope	0.00	Depth to bedrock Restricted permeability Gravel content	0.46 0.39 0.23
205BH: Bates-----	50	Somewhat limited Restricted permeability	0.15	Somewhat limited Restricted permeability	0.15	Somewhat limited Slope	0.87
Collinsville-----	35	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock	1.00	Depth to bedrock Restricted permeability	0.71 0.15
						Very limited Depth to bedrock Slope	1.00 0.87
205BO: Bates-----	45	Somewhat limited Restricted permeability	0.15	Somewhat limited Restricted permeability	0.15	Very limited Slope	1.00
						Depth to bedrock	0.84

RECREATIONAL INTERPRETATIONS--Continued
Woodson County, Kansas

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Map symbol and soil name	Pct of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Collinsville-----	40	Very limited Depth to bedrock Slope	1.00 0.96	Very limited Depth to bedrock Slope	1.00 0.96	Restricted permeability Very limited Slope Depth to bedrock	0.15 1.00 1.00
205DW: Dennis-----	65	Somewhat limited Restricted permeability Depth to saturated zone	0.94 0.44	Somewhat limited Restricted permeability Depth to saturated zone	0.94 0.19	Somewhat limited Restricted permeability Depth to saturated zone Slope	0.94 0.44 0.13
Dwight-----	25	Somewhat limited Restricted permeability	0.45	Somewhat limited Restricted permeability	0.45	Somewhat limited Restricted permeability Slope	0.45 0.00
205EB: Eram-----	90	Very limited Depth to saturated zone Restricted permeability	1.00 0.94	Very limited Depth to saturated zone Restricted permeability	1.00 0.94	Very limited Depth to saturated zone Restricted permeability Slope	1.00 0.94 0.00
205EC: Eram-----	90	Very limited Depth to saturated zone Restricted permeability	1.00 0.94	Very limited Depth to saturated zone Restricted permeability	1.00 0.94	Very limited Depth to saturated zone Restricted permeability Depth to bedrock Slope	1.00 0.94 0.90 0.87
205LA: Lanton-----	90	Very limited Flooding Depth to saturated zone Restricted permeability	1.00 1.00 0.94	Very limited Depth to saturated zone Restricted permeability	1.00 0.94	Very limited Depth to saturated zone Restricted permeability Flooding	1.00 0.94 0.60
205ND: Niotaze-----	50	Very limited Depth to saturated zone Slope Restricted permeability Content of large stones	1.00 1.00 0.39 0.00	Very limited Depth to saturated zone Slope Restricted permeability Content of large stones	1.00 1.00 0.39 0.00	Very limited Slope Depth to saturated zone Content of large stones Gravel content Restricted permeability	1.00 1.00 0.97 0.95 0.39
Darnell-----	35	Very limited Depth to bedrock Too sandy Slope	1.00 0.41 0.16	Very limited Depth to bedrock Too sandy Slope	1.00 0.41 0.16	Very limited Depth to bedrock Slope Too sandy	1.00 1.00 0.41
205SC: Shidler-----	70	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock Slope Gravel content Content of large stones	1.00 0.87 0.15 0.00
Catoosa-----	20	Somewhat limited Restricted permeability	0.15	Somewhat limited Restricted permeability	0.15	Somewhat limited Restricted permeability	0.15
205SF: Steedman-----	90	Very limited Depth to saturated zone Slope Gravel content Restricted permeability	1.00 1.00 0.46 0.39	Very limited Depth to saturated zone Slope Gravel content Restricted permeability	1.00 1.00 0.46 0.39	Very limited Depth to saturated zone Slope Gravel content Restricted permeability Depth to bedrock	1.00 1.00 1.00 0.39 0.29
AED: Arents, Earthen Dam-	100	Not rated		Not rated		Not rated	
Bb: Bates-----	98	Somewhat limited Restricted permeability	0.15	Somewhat limited Restricted permeability	0.15	Somewhat limited Depth to bedrock	0.20

RECREATIONAL INTERPRETATIONS--Continued
Woodson County, Kansas

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Map symbol and soil name	Pct of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Bc: Bates-----	97	Somewhat limited Restricted permeability	0.15	Somewhat limited Restricted permeability	0.15	Restricted permeability	0.15
						Slope	0.13
						Very limited Slope	1.00
						Depth to bedrock Restricted permeability	0.20 0.15
BOP: Borrow Pits-----	100	Not rated		Not rated		Not rated	
Ca: Clareson-----	50	Somewhat limited Restricted permeability	0.15	Somewhat limited Restricted permeability	0.15	Somewhat limited Slope	0.87
						Depth to bedrock Restricted permeability	0.84 0.15
						Very limited Depth to bedrock Too Stony Slope	1.00 1.00 0.87
Sogn-----	35	Very limited Depth to bedrock Too Stony	1.00 1.00	Very limited Depth to bedrock Too Stony	1.00 1.00		
Cd: Cleora-----	98	Very limited Flooding	1.00	Not limited		Somewhat limited Flooding	0.60
Da: Darnell-----	55	Very limited Slope Depth to bedrock Too Stony	1.00 1.00 1.00	Very limited Slope Depth to bedrock Too Stony	1.00 1.00 1.00	Very limited Slope	1.00
						Depth to bedrock Too Stony	1.00 1.00
						Very limited Slope Depth to saturated zone Depth to bedrock	1.00 1.00 0.90
Dd: Dennis-----	98	Very limited Depth to saturated zone Restricted permeability	1.00 0.94	Somewhat limited Restricted permeability Depth to saturated zone	0.94 0.94	Very limited Depth to saturated zone	1.00
						Restricted permeability Slope	0.94 0.00
						Very limited Depth to saturated zone Restricted permeability Slope	1.00 0.94 0.87
Df: Dennis, eroded-----	98	Very limited Depth to saturated zone Restricted permeability	1.00 0.94	Somewhat limited Restricted permeability Depth to saturated zone	0.94 0.94	Very limited Depth to saturated zone Restricted permeability Slope	1.00 0.94 0.00
Dg: Dennis, eroded-----	50	Very limited Depth to saturated zone Restricted permeability	1.00 0.94	Somewhat limited Restricted permeability Depth to saturated zone	0.94 0.94	Very limited Depth to saturated zone	1.00
						Restricted permeability Slope	0.94 0.87
						Very limited Depth to saturated zone Too clayey	1.00 1.00
Eram, eroded-----	30	Very limited Depth to saturated zone Too clayey Restricted permeability	1.00 1.00 0.94	Very limited Too clayey Depth to saturated zone Restricted permeability	1.00 1.00 0.94	Restricted permeability Slope Depth to bedrock	0.94 0.87 0.35
Dw: Dwight-----	98	Somewhat limited Restricted permeability	0.45	Somewhat limited Restricted permeability	0.45	Somewhat limited Restricted permeability	0.45
Eb: Eram-----	98	Very limited		Very limited		Very limited	

RECREATIONAL INTERPRETATIONS--Continued
Woodson County, Kansas

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Map symbol and soil name	Pct of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Ec: Eram-----	98	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Restricted permeability	0.94	Restricted permeability	0.94	Restricted permeability	0.94
						Depth to bedrock	0.35
						Slope	0.13
Ex: Eram-----	60	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
		Restricted permeability	0.94	Restricted permeability	0.94	Slope	1.00
						Restricted permeability	0.94
						Depth to bedrock	0.35
Collinsville-----	20	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
		Restricted permeability	0.94	Restricted permeability	0.94	Slope	1.00
		Slope	0.00	Slope	0.00	Restricted permeability	0.94
						Depth to bedrock	0.61
GRP: Gravel Pits-----	100	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock	1.00	Very limited Slope	1.00
		Too Stony	1.00	Too Stony	1.00	Depth to bedrock	1.00
		Slope	0.96	Slope	0.96	Too Stony	1.00
Ha: Hepler-----	97	Not rated		Not rated		Not rated	
Ka: Kenoma-----	98	Very limited Flooding	1.00	Somewhat limited Depth to saturated zone	0.19	Somewhat limited Flooding	0.60
		Depth to saturated zone	0.44	Restricted permeability	0.15	Depth to saturated zone	0.44
		Restricted permeability	0.15			Restricted permeability	0.15
Ko: Kenoma-----	50	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
		Restricted permeability	0.94	Restricted permeability	0.94	Restricted permeability	0.94
						Slope	0.87
Olpe-----	30	Somewhat limited Restricted permeability	0.94	Somewhat limited Restricted permeability	0.94	Somewhat limited Restricted permeability	0.94
						Slope	0.87
						Gravel content	0.44
Kw: Kenoma, eroded-----	60	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
		Restricted permeability	0.94	Restricted permeability	0.94	Restricted permeability	0.94
						Slope	0.00
Woodson, eroded-----	30	Very limited Depth to saturated zone	1.00	Somewhat limited Restricted permeability	0.94	Very limited Depth to saturated zone	1.00
		Restricted permeability	0.94	Depth to saturated zone	0.94	Restricted permeability	0.94
						Slope	0.00
La: Leanna, drained-----	90	Very limited Flooding	1.00	Somewhat limited Depth to saturated zone	0.94	Very limited Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Restricted permeability	0.15	Flooding	0.60
		Restricted permeability	0.15			Restricted permeability	0.15
Lb: Lula-----	98	Not limited		Not limited		Not limited	

RECREATIONAL INTERPRETATIONS--Continued
Woodson County, Kansas

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Map symbol and soil name	Pct of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Ld: Lula----- Dwight-----	45 30	Not limited Somewhat limited Restricted permeability	0.45	Not limited Somewhat limited Restricted permeability	0.45	Not limited Somewhat limited Restricted permeability	0.45
Ma: Mason-----	98	Very limited Flooding Restricted permeability	1.00 0.15	Somewhat limited Restricted permeability	0.15	Somewhat limited Restricted permeability	0.15
Ns: Niotaze-----	50	Very limited Too Stony Slope Depth to saturated zone	1.00 1.00 1.00	Very limited Too Stony Slope Depth to saturated zone	1.00 1.00 0.75	Very limited Slope Too Stony Depth to saturated zone	1.00 1.00 1.00
Stephenville-----	40	Somewhat limited Too sandy Slope	0.18 0.16	Somewhat limited Too sandy Slope	0.18 0.16	Very limited Slope Depth to bedrock Too sandy	0.90 1.00 0.35 0.18
Od: Olpe-----	98	Somewhat limited Restricted permeability Slope	0.94 0.16	Somewhat limited Restricted permeability Slope	0.94 0.16	Very limited Slope Restricted permeability Gravel content	1.00 0.94 0.44
Og: Osage-----	97	Very limited Depth to saturated zone Flooding Ponding Too clayey Restricted permeability	1.00 1.00 1.00 1.00 0.94	Very limited Ponding Depth to saturated zone Too clayey Restricted permeability	1.00 1.00 1.00 0.94	Very limited Depth to saturated zone Ponding Too clayey Restricted permeability Flooding	1.00 1.00 1.00 0.94 0.60
Os: Osage-----	97	Very limited Flooding Ponding Depth to saturated zone Restricted permeability	1.00 1.00 1.00 0.94	Very limited Ponding Depth to saturated zone Restricted permeability	1.00 1.00 0.94	Very limited Ponding Depth to saturated zone Restricted permeability Flooding	1.00 1.00 0.94 0.60
Rc: Ringo-----	99	Very limited Restricted permeability	1.00	Very limited Restricted permeability	1.00	Very limited Restricted permeability Slope	1.00 1.00
Rd: Ringo-----	50	Very limited Restricted permeability Slope	1.00 0.16	Very limited Restricted permeability Slope	1.00 0.16	Very limited Restricted permeability Slope	1.00 1.00
Sogn-----	30	Very limited Depth to bedrock Too Stony Slope	1.00 1.00 0.16	Very limited Depth to bedrock Too Stony Slope	1.00 1.00 0.16	Very limited Depth to bedrock Slope Too Stony	1.00 1.00 1.00
Sa: Stephenville-----	98	Somewhat limited Too sandy	0.18	Somewhat limited Too sandy	0.18	Somewhat limited Depth to bedrock Too sandy Slope	0.35 0.18 0.13
Sd: Summit-----	98	Somewhat limited Restricted permeability	0.15	Somewhat limited Restricted permeability	0.15	Somewhat limited Restricted permeability Slope	0.15 0.13
Se: Summit-----	99	Somewhat limited Restricted permeability	0.15	Somewhat limited Restricted permeability	0.15	Very limited Slope Restricted permeability	1.00 0.15
Va: Verdigris-----	97	Very limited Flooding	1.00	Not limited		Somewhat limited Flooding	0.60

RECREATIONAL INTERPRETATIONS--Continued
Woodson County, Kansas

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Map symbol and soil name	Pct of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Vc: Verdigris-----	98	Very limited Flooding	1.00	Somewhat limited Flooding	0.40	Very limited Flooding	1.00
W: Water-----	100	Not rated		Not rated		Not rated	
Wa: Woodson-----	98	Very limited Depth to saturated zone	1.00	Somewhat limited Restricted permeability	0.94	Very limited Depth to saturated zone	1.00
		Restricted permeability	0.94	Depth to saturated zone	0.94	Restricted permeability	0.94
Za: Zaar-----	85	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
		Too clayey	1.00	Too clayey	1.00	Too clayey	1.00
		Restricted permeability	0.60	Restricted permeability	0.60	Restricted permeability	0.60
						Slope	0.13

RECREATIONAL INTERPRETATIONS--Continued
Woodson County, Kansas

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Map symbol and soil name	Pct of map unit	Paths and trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value
001CA: Catoosa-----	90	Not limited		Somewhat limited Depth to bedrock	0.74
001CB: Catoosa-----	60	Not limited		Somewhat limited Depth to bedrock	0.74
Rock Outcrop-----	30	Not rated		Not rated	
001CC: Collinsville-----	50	Not limited		Very limited Depth to bedrock	1.00
				Droughty	1.00
				Slope	0.04
Bates-----	40	Not limited		Somewhat limited Depth to bedrock	0.29
001ZB: Zaar-----	100	Very limited Too clayey Depth to saturated zone	1.00 0.44	Very limited Too clayey Depth to saturated zone	1.00 0.75
031EP: Eram-----	50	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
				Depth to bedrock	0.80
				Droughty	0.00
Apperson-----	35	Somewhat limited Depth to saturated zone	0.86	Somewhat limited Depth to saturated zone	0.94
031ES: Eram-----	60	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
				Depth to bedrock	0.80
				Slope	0.37
				Droughty	0.00
Shidler-----	25	Not limited		Very limited Depth to bedrock	1.00
				Droughty	0.92
073AT: Aguents-----	100	Not limited		Somewhat limited Flooding	0.60
073CA: Chase-----	90	Not limited		Somewhat limited Flooding	0.60
073CM: Clime-----	90	Somewhat limited Too clayey	0.50	Very limited Too clayey Depth to bedrock	1.00 0.20
073CS: Clime-----	60	Somewhat limited Too clayey	0.50	Very limited Too clayey Slope Depth to bedrock	1.00 0.84 0.20
Sogn-----	20	Not limited		Very limited Depth to bedrock	1.00
				Droughty	1.00
				Slope	0.84
				Content of large stones	0.00
073DS: Dennis, eroded-----	100	Somewhat limited Depth to saturated zone	0.86	Somewhat limited Depth to saturated zone	0.94
073IC: Ivan-----	85	Somewhat limited Flooding	0.40	Very limited Flooding	1.00
073IF: Ivan-----	90	Not limited		Somewhat limited Flooding	0.60
073KE: Kenoma, eroded-----	100	Not limited		Not limited	
073LA: Labette-----	90	Not limited		Somewhat limited Depth to bedrock	0.74
073LD: Labette-----	65	Not limited		Somewhat limited Depth to bedrock	0.74
Dwight-----	30	Not limited		Not limited	

RECREATIONAL INTERPRETATIONS--Continued
Woodson County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Paths and trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value
073MA: Martin-----	100	Somewhat limited Depth to saturated zone	0.50	Somewhat limited Depth to saturated zone	0.78
073NZ: Niotaze-----	75	Somewhat limited Slope Depth to saturated zone	0.68 0.44	Very limited Slope Depth to saturated zone Depth to bedrock	1.00 0.75 0.71
Darnell-----	15	Somewhat limited Slope	0.68	Very limited Depth to bedrock Slope Droughty	1.00 1.00 0.96
073RE: Reading-----	90	Not limited		Not limited	
073ST: Steedman-----	85	Somewhat limited Depth to saturated zone	0.44	Somewhat limited Depth to saturated zone Depth to bedrock Droughty Content of large stones Slope	0.75 0.46 0.01 0.00 0.00
205BH: Bates-----	50	Not limited		Somewhat limited Depth to bedrock	0.71
Collinsville-----	35	Not limited		Very limited Depth to bedrock Droughty	1.00 0.98
205BO: Bates-----	45	Not limited		Somewhat limited Depth to bedrock	0.84
Collinsville-----	40	Not limited		Very limited Depth to bedrock Droughty Slope	1.00 0.98 0.96
205DW: Dennis-----	65	Not limited		Somewhat limited Depth to saturated zone	0.19
Dwight-----	25	Not limited		Not limited	
205EB: Eram-----	90	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Depth to bedrock	1.00 0.29
205EC: Eram-----	90	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Depth to bedrock Droughty	1.00 0.90 0.03
205LA: Lanton-----	90	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Flooding	1.00 0.60
205ND: Niotaze-----	50	Very limited Depth to saturated zone Slope Content of large stones	1.00 0.08 0.00	Very limited Depth to saturated zone Slope Content of large stones Depth to bedrock	1.00 1.00 0.97 0.06
Darnell-----	35	Somewhat limited Too sandy	0.41	Very limited Depth to bedrock Droughty Slope	1.00 0.92 0.16
205SC: Shidler-----	70	Not limited		Very limited Depth to bedrock Droughty Content of large stones	1.00 1.00 0.00
Catoosa-----	20	Not limited		Somewhat limited Depth to bedrock	0.80
205SF: Steedman-----	90	Very limited		Very limited	

RECREATIONAL INTERPRETATIONS--Continued
Woodson County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Paths and trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Slope	0.00	Slope	1.00
				Gravel content	0.46
				Depth to bedrock	0.29
AED: Arents, Earthen Dam-	100	Not rated		Not rated	
Bb: Bates-----	98	Not limited		Somewhat limited Depth to bedrock	0.20
Bc: Bates-----	97	Not limited		Somewhat limited Depth to bedrock	0.20
BOP: Borrow Pits-----	100	Not rated		Not rated	
Ca: Clareson-----	50	Not limited		Somewhat limited Depth to bedrock	0.84
				Droughty	0.21
Sogn-----	35	Very limited Too Stony	1.00	Very limited Depth to bedrock	1.00
				Droughty	1.00
Cd: Cleora-----	98	Not limited		Somewhat limited Flooding	0.60
Da: Darnell-----	55	Very limited Too Stony Slope	1.00 1.00	Very limited Depth to bedrock	1.00
				Slope	1.00
				Droughty	0.96
Niotaze-----	40	Very limited Slope	1.00	Very limited Slope	1.00
		Depth to saturated zone	0.44	Depth to bedrock	0.90
				Depth to saturated zone	0.75
				Droughty	0.00
Dd: Dennis-----	98	Somewhat limited Depth to saturated zone	0.86	Somewhat limited Depth to saturated zone	0.94
De: Dennis-----	98	Somewhat limited Depth to saturated zone	0.86	Somewhat limited Depth to saturated zone	0.94
Df: Dennis, eroded-----	98	Somewhat limited Depth to saturated zone	0.86	Somewhat limited Depth to saturated zone	0.94
Dg: Dennis, eroded-----	50	Somewhat limited Depth to saturated zone	0.86	Somewhat limited Depth to saturated zone	0.94
Eram, eroded-----	30	Very limited Too clayey Depth to saturated zone	1.00 1.00	Very limited Too clayey Depth to saturated zone	1.00 1.00
				Depth to bedrock	0.35
Dw: Dwight-----	98	Not limited		Not limited	
Eb: Eram-----	98	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
				Depth to bedrock	0.35
Ec: Eram-----	98	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
				Depth to bedrock	0.35
Ex: Eram-----	60	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
				Depth to bedrock	0.61
Collinsville-----	20	Very limited		Slope	0.00
				Very limited	

RECREATIONAL INTERPRETATIONS--Continued
Woodson County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Paths and trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value
		Too Stony	1.00	Depth to bedrock	1.00
				Droughty	0.98
				Slope	0.96
GRP: Gravel Pits-----	100	Not rated		Not rated	
Ha: Hepler-----	97	Not limited		Somewhat limited	
				Flooding	0.60
				Depth to saturated zone	0.19
Ka: Kenoma-----	98	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
Ko: Kenoma-----	50	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
Olpe-----	30	Not limited		Somewhat limited Droughty	0.81
Kw: Kenoma, eroded-----	60	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
Woodson, eroded-----	30	Somewhat limited Depth to saturated zone	0.86	Somewhat limited Depth to saturated zone	0.94
La: Leanna, drained-----	90	Somewhat limited Depth to saturated zone	0.86	Somewhat limited Depth to saturated zone	0.94
				Flooding	0.60
Lb: Lula-----	98	Not limited		Not limited	
Ld: Lula-----	45	Not limited		Not limited	
Dwight-----	30	Not limited		Not limited	
Ma: Mason-----	98	Not limited		Not limited	
Ns: Niotaze-----	50	Very limited Too Stony	1.00	Very limited Slope	1.00
		Depth to saturated zone	0.44	Depth to bedrock	0.90
		Slope	0.00	Depth to saturated zone	0.75
				Droughty	0.00
Stephenville-----	40	Somewhat limited Too sandy	0.18	Somewhat limited Depth to bedrock	0.35
				Slope	0.16
Od: Olpe-----	98	Not limited		Somewhat limited Droughty	0.81
				Slope	0.16
Og: Osage-----	97	Very limited Depth to saturated zone	1.00	Very limited Ponding	1.00
		Ponding	1.00	Depth to saturated zone	1.00
		Too clayey	1.00	Too clayey	1.00
				Flooding	0.60
Os: Osage-----	97	Very limited Ponding	1.00	Very limited Ponding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
				Flooding	0.60
Rc: Ringo-----	99	Not limited		Not limited	
Rd: Ringo-----	50	Not limited		Somewhat limited Slope	0.16
Sogn-----	30	Very limited Too Stony	1.00	Very limited Depth to bedrock	1.00
				Droughty	1.00
				Slope	0.16
Sa: Stephenville-----	98	Somewhat limited		Somewhat limited	

RECREATIONAL INTERPRETATIONS--Continued
Woodson County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Paths and trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value
Sd: Summit-----	98	Too sandy	0.18	Depth to bedrock	0.35
Se: Summit-----	99	Not limited		Not limited	
Va: Verdigris-----	97	Not limited		Not limited	
Vc: Verdigris-----	98	Somewhat limited Flooding	0.40	Somewhat limited Flooding	0.60
W: Water-----	100	Not rated		Very limited Flooding	1.00
Wa: Woodson-----	98	Not rated		Not rated	
Za: Zaar-----	85	Somewhat limited Depth to saturated zone	0.86	Somewhat limited Depth to saturated zone	0.94
		Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
		Too clayey	1.00	Too clayey	1.00

WILDLIFE INTERPRETATIONS
Woodson County, Kansas

Use and Explanation of Wildlife Interpretations

Soils directly affect the kind and amount of vegetation that is available to wildlife as food and cover. They also affect the development of water impoundments. The kind and abundance of wildlife that populate an area depend largely on the amount and distribution of food, cover, water, and living space. If any one of these elements is missing, inadequate, or inaccessible, wildlife will be scarce or will not inhabit the area. If the soils have the potential, wildlife habitat can be created or improved by planting appropriate vegetation, properly managing the existing plant cover, and fostering the natural establishment of desirable plants.

In the Wildlife Interpretations table, the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in determining the intensity of management needed for each element of the habitat.

Suitability Ratings

The potential of the soil is rated good, fair, poor, or very poor.

Good - means that the element of wildlife habitat or the kind of habitat is easily created, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected if the soil is used for the designated purpose.

Fair - means that the element of wildlife habitat or kind of habitat can be created, improved, or maintained in most places. Moderately intensive management is required for satisfactory results.

Poor - means that limitations are severe for the designated element or kind of wildlife habitat. Habitat can be created, improved, or maintained in most places, but management is difficult and requires intensive effort.

Very Poor - means that limitations are very severe for the designated element or kind of wildlife habitat. Habitat is difficult to create, improve, or maintain in most places, and management is difficult and requires intensive effort.

Description of Wildlife Habitat Elements

Openland habitat consists of croplands, pastures, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. The kind of wildlife attracted to these areas include bobwhite quail, pheasant, meadowlark, field sparrow, killdeer, cottontail rabbit, red fox, and coyote.

Woodland habitat consists of hardwood or conifers, or a mixture of these and associated grasses, legumes and wild herbaceous plants. Examples of wildlife attracted to this habitat are wild turkey, thrushes, woodpeckers, owl, tree squirrels, raccoon, and deer.

Wetland habitat consists of water-tolerant plants in open, marshy or swampy, shallow water areas. Examples of wildlife attracted to this habitat are ducks, geese, herons, bitterns, rails, kingfishers, shorebirds, muskrat, mink, and beaver.

The elements of wildlife habitat are described in the following paragraphs.

Grain and seed crops are domestic grains and seed-producing herbaceous plants. Soil properties and features that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, surface stoniness, and flooding. Soil temperature and soil moisture also are considerations. Examples of grain and seed crops are corn, wheat, oats, and barley.

Grasses and legumes are domestic perennial grasses and herbaceous legumes. Soil properties and features that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, flooding, and slope. Soil temperature and soil moisture also are considerations. Examples of grasses and legumes are fescue, lovegrass, bromegrass, clover, and alfalfa.

Wild herbaceous plants are native or naturally established grasses and forbs, including weeds. Soil properties and features that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, and flooding. Soil temperature and soil moisture also are considerations. Examples of wild herbaceous plants are bluestem, goldenrod, beggarweed, wheatgrass, and grama.

Hardwood trees and woody understory produce nuts or other fruit, buds, catkins, twigs, bark, and foliage. Soil properties and features that affect the growth of hardwood trees and shrubs are depth of the root zone, available water capacity, and wetness. Examples of these plants are oak, poplar, cherry, sweetgum, apple, hawthorn, dogwood, hickory, blackberry, and blueberry. Examples of fruit-producing shrubs that are suitable for planting on soils rated good are Russian-olive, autumn-olive, and crabapple.

Coniferous plants furnish browse and seeds. Soil properties and features that affect the growth of coniferous trees, shrubs, and ground cover are depth of the root zone, available water capacity, and wetness. Examples of coniferous plants are pine, spruce, fir, cedar, and juniper.

Shrubs are bushy woody plants that produce fruit, buds, twigs, bark, and foliage. Soil properties and features that affect the growth of shrubs are depth of the root zone, available water capacity, salinity, and soil moisture. Examples of shrubs are fragrant sumac, chokecherry, American plum, sand plum, and gorden currant.

Wetland plants are annual and perennial wild herbaceous plants that grow on moist or wet sites. Submerged or floating aquatic plants are excluded. Soil properties and features affecting wetland plants are texture of the surface layer, wetness, reaction, salinity, slope, and surface stoniness. Examples of wetland plants are smartweed, wild millet, saltgrass, cordgrass, rushes, sedges, and cattails.

Shallow water areas have an average depth of less than 5 feet. Some are naturally wet areas. Others are created by dams, levees, or other water-control structures. Soil properties and features affecting shallow water areas are depth to bedrock, wetness, surface stoniness, slope, and permeability. Examples of shallow water areas are marshes, waterfowl feeding areas, and ponds.

The habitat for various kinds of wildlife is described in the following paragraphs.

Habitat for openland wildlife consists of cropland, pasture, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. Wildlife attracted to these areas include bobwhite quail, pheasant, meadowlark, field sparrow, cottontail, red fox and coyote.

Habitat for woodland wildlife consists of areas of deciduous and/or coniferous plants and associated grasses, legumes, and wild herbaceous plants. Wildlife attracted to these areas include wild turkey, thrushes, woodpeckers, squirrels, gray fox, raccoon, and deer.

Habitat for wetland wildlife consists of open, marshy or swampy shallow water areas. Some of the wildlife attracted to such areas are ducks, geese, herons, shore birds, muskrat, mink, and beaver.

Habitat for rangeland wildlife consists of areas of shrubs and wild herbaceous plants. Wildlife attracted to rangeland include antelope, deer, cottontail rabbit, prairie chicken, meadowlark, quail, and pheasant.

WILDLIFE INTERPRETATIONS
Woodson County, Kansas

Map symbol and soil name	Potential for habitat elements								Potential as habitat for--			
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hard- wood trees	Conif- erous plants	Shrubs	Wetland plants	Shallow water areas	Open- land wild- life	Wood- land wild- life	Wetland wild- life	Range- land wild- life
001CA: CATOOSA-----	Fair	Good	Good	Good	Good	---	Poor	Very poor	Good	Good	Very poor	Good
001CB: CATOOSA-----	Fair	Good	Good	Good	Good	---	Poor	Very poor	Good	Good	Very poor	Good
ROCK OUTCROP----	---	---	---	---	---	---	---	---	---	---	---	---
001CC: COLLINSVILLE----	Very poor	Poor	Poor	Very poor	Very poor	---	Very poor	Very poor	Poor	Very poor	Very poor	Fair
BATES-----	Good	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor	Good
001ZB: ZAAR-----	Fair	Fair	Fair	Good	Good	Good	Poor	Very poor	Fair	Good	Very poor	Fair
031EP: ERAM-----	Good	Good	Good	Good	Good	---	Poor	Very poor	Good	Good	Very poor	Good
APPERSON-----	Good	Good	Fair	Good	Good	---	Poor	Poor	Good	Good	Poor	Good
031ES: ERAM-----	Fair	Good	Good	Good	Good	Poor	Very poor	Very poor	Good	Good	Very poor	Good
SHIDLER-----	Very poor	Very poor	Poor	Poor	Poor	Poor	Very poor	Very poor	Very poor	Poor	Very poor	Poor
073AT: AQUENTS-----	---	---	---	---	---	---	---	---	---	---	---	---
073CA: CHASE-----	Good	Good	Good	Good	Good	Good	Good	Fair	Good	Good	Fair	Fair
073CM: CLIME-----	Fair	Fair	Good	---	---	Fair	Very poor	Very poor	Fair	---	Very poor	Fair
073CS: CLIME-----	Fair	Fair	Good	---	---	Fair	Very poor	Very poor	Fair	---	Very poor	Fair
SOGN-----	Very poor	Very poor	Poor	---	---	Poor	Very poor	Very poor	Very poor	---	Very poor	Poor
073DS: DENNIS-----	Good	Good	Good	Good	Good	Poor	Poor	Very poor	Good	Good	Very poor	Good
073IC: IVAN-----	Poor	Fair	Fair	Good	Good	Good	Poor	Fair	Fair	Good	Poor	Good
073IF: IVAN-----	Good	Good	Good	Good	Good	Good	Poor	Fair	Good	Good	Poor	Good
073KE: KENOMA-----	Good	Good	Fair	Fair	Fair	Fair	Poor	Fair	Good	Fair	Poor	Fair
073LA: LABETTE-----	Fair	Good	Fair	---	---	Fair	Poor	Poor	Fair	---	Poor	Fair
073LD: LABETTE-----	Fair	Good	Fair	---	---	Fair	Poor	Poor	Fair	---	Poor	Fair
DWIGHT-----	Fair	Fair	Fair	---	---	Fair	Poor	Fair	Fair	---	Poor	Fair
073MA: MARTIN-----	Good	Good	Good	Fair	Fair	Good	Poor	Poor	Good	Fair	Poor	Good
073NZ: NIOTAZE-----	Poor	Fair	Good	Fair	Fair	Fair	Very poor	Very poor	Fair	Fair	Very poor	Fair
DARNELL-----	Poor	Poor	Fair	Fair	---	Fair	Very poor	Very poor	Poor	Fair	Very poor	Fair
073RE: READING-----	Good	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor	Good

WILDLIFE INTERPRETATIONS--Continued
Woodson County, Kansas

Map symbol and soil name	Potential for habitat elements								Potential as habitat for--			
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hard- wood trees	Conif- erous plants	Shrubs	Wetland plants	Shallow water areas	Open- land wild- life	Wood- land wild- life	Wetland wild- life	Range- land wild- life
073ST: STEEDMAN-----	Poor	Fair	Good	Fair	Fair	Fair	Very poor	Very poor	Fair	---	Very poor	Fair
205BH: BATES-----	Good	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor	Good
COLLINSVILLE----	Very poor	Poor	Poor	Very poor	Very poor	---	Very poor	Very poor	Fair	Very poor	Very poor	Fair
205BO: BATES-----	Good	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor	Good
COLLINSVILLE----	Very poor	Poor	Poor	Very poor	Very poor	---	Very poor	Very poor	Fair	Very poor	Very poor	Fair
205DW: DENNIS-----	Good	Good	Good	Good	Good	---	Poor	Very poor	Good	Good	Very poor	Good
DWIGHT-----	Fair	Fair	Fair	---	---	Fair	Poor	Fair	Fair	---	Poor	Fair
205EB: ERAM-----	Good	Good	Good	Good	Good	---	Poor	Very poor	Good	Good	Very poor	Good
205EC: ERAM-----	Fair	Good	Good	Good	Good	---	Very poor	Very poor	Good	Good	Very poor	Good
205LA: LANTON-----	Fair	Good	Fair	Good	Good	Good	Fair	Good	Fair	Good	Fair	Good
205ND: NIOTAZE-----	Poor	Fair	Good	Fair	Fair	Fair	Very poor	Very poor	Fair	Fair	Very poor	Fair
DARNELL-----	Poor	Poor	Fair	Fair	---	Fair	Very poor	Very poor	Poor	Fair	Very poor	Fair
205SC: SHIDLER-----	Very poor	Very poor	Poor	Poor	---	Poor	Very poor	Very poor	Very poor	Poor	Very poor	Poor
CATOOSA-----	Fair	Good	Good	Good	Good	---	Poor	Very poor	Good	Good	Very poor	Good
205SF: STEEDMAN-----	Poor	Fair	Good	Fair	Fair	Fair	Very poor	Very poor	Fair	---	Very poor	Fair
AED: ARENTS, EARTHEN DAM-----	---	---	---	---	---	---	---	---	---	---	---	---
Bb: BATES-----	Good	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor	Good
Bc: BATES-----	Good	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor	Good
BOP: BORROW PITS-----	---	---	---	---	---	---	---	---	---	---	---	---
Ca: CLARESON-----	Fair	Good	Good	Fair	Fair	Fair	Very poor	Very poor	Good	Fair	Very poor	Fair
SOGN-----	Very poor	Very poor	Poor	---	---	Poor	Very poor	Very poor	Very poor	---	Very poor	Poor
Cd: CLEORA-----	Good	Good	Good	Good	Good	---	Poor	Very poor	Good	Good	Very poor	---
Da: DARNELL-----	Very poor	Poor	Fair	Fair	---	Fair	Very poor	Very poor	Poor	Fair	Very poor	Fair

WILDLIFE INTERPRETATIONS--Continued
Woodson County, Kansas

Map symbol and soil name	Potential for habitat elements								Potential as habitat for--			
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hard- wood trees	Conif- erous plants	Shrubs	Wetland plants	Shallow water areas	Open- land wild- life	Wood- land wild- life	Wetland wild- life	Range- land wild- life
NIOTAZE-----	Poor	Fair	Good	Fair	Fair	Fair	Very poor	Very poor	Fair	Fair	Very poor	Fair
Dd: DENNIS-----	Good	Good	Good	Good	Good	---	Poor	Poor	Good	Good	Poor	Good
De: DENNIS-----	Good	Good	Good	Good	Good	---	Poor	Very poor	Good	Good	Very poor	Good
Df: DENNIS-----	Good	Good	Good	Good	Good	---	Poor	Poor	Good	Good	Poor	Good
Dg: DENNIS-----	Good	Good	Good	Good	Good	---	Poor	Very poor	Good	Good	Very poor	Good
ERAM-----	Fair	Good	Good	Good	Good	---	Very poor	Very poor	Good	Good	Very poor	Good
Dw: DWIGHT-----	Fair	Fair	Fair	---	---	Fair	Poor	Fair	Fair	---	Poor	Fair
Eb: ERAM-----	Good	Good	Good	Good	Good	---	Poor	Very poor	Good	Good	Very poor	Good
Ec: ERAM-----	Fair	Good	Good	Good	Good	---	Very poor	Very poor	Good	Good	Very poor	Good
Ex: ERAM-----	Fair	Good	Good	Good	Good	---	Very poor	Very poor	Good	Good	Very poor	Good
COLLINSVILLE----	Very poor	Poor	Poor	Very poor	Very poor	---	Very poor	Very poor	Fair	Very poor	Very poor	Fair
GRP: GRAVEL PITS----	---	---	---	---	---	---	---	---	---	---	---	---
Ha: HEPLER-----	Fair	Good	Good	Good	Good	Good	Good	Fair	Good	Good	Fair	Good
Ka: KENOMA-----	Good	Good	Fair	Fair	Fair	Fair	Poor	Fair	Good	Fair	Poor	Fair
Ko: KENOMA-----	Good	Good	Fair	Fair	Fair	Fair	Poor	Fair	Good	Fair	Poor	Fair
OLPE-----	Good	Good	Good	Fair	Fair	Good	Poor	Very poor	Good	Fair	Very poor	Good
Kw: KENOMA-----	Good	Good	Fair	Fair	Fair	Fair	Poor	Fair	Good	Fair	Poor	Fair
WOODSON-----	Fair	Good	Fair	Poor	Poor	Fair	Poor	Good	Fair	Fair	Fair	Fair
La: LEANNA-----	Fair	Good	Fair	Good	Good	Good	Fair	Good	Fair	Good	Fair	Good
Lb: LULA-----	Good	Good	Good	Good	Good	Fair	Poor	Very poor	Good	Good	Very poor	Good
Ld: LULA-----	Good	Good	Good	Good	Good	---	Poor	Very poor	Good	Good	Very poor	Good
DWIGHT-----	Fair	Fair	Fair	---	---	Fair	Poor	Fair	Fair	---	Poor	Fair
Ma: MASON-----	Good	Good	Good	Good	Good	---	Poor	Very poor	Good	Good	Very poor	Good
Ns: NIOTAZE-----	Fair	Good	Good	Fair	Fair	Fair	Very poor	Very poor	Good	Fair	Very poor	Fair
STEPHENVILLE----	Fair	Good	Good	Good	---	Good	Very poor	Very poor	Good	Good	Very poor	Good

WILDLIFE INTERPRETATIONS--Continued
Woodson County, Kansas

Map symbol and soil name	Potential for habitat elements								Potential as habitat for--			
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hard- wood trees	Conif- erous plants	Shrubs	Wetland plants	Shallow water areas	Open- land wild- life	Wood- land wild- life	Wetland wild- life	Range- land wild- life
Od: OLPE-----	Fair	Good	Good	Fair	Fair	Good	Poor	Very poor	Good	Fair	Very poor	Good
Og: OSAGE-----	Fair	Fair	Fair	Fair	Fair	---	Poor	Good	Fair	Fair	Fair	Fair
Os: OSAGE-----	Fair	Fair	Fair	Fair	Fair	---	Good	Good	Fair	Fair	Good	Fair
Rc: RINGO-----	Fair	Fair	Fair	Fair	Fair	Good	Poor	Very poor	Fair	---	Very poor	Fair
Rd: RINGO-----	Poor	Fair	Fair	Fair	Fair	Good	Poor	Very poor	Fair	Fair	Very poor	Fair
SOGN-----	Very poor	Very poor	Poor	---	---	Poor	Very poor	Very poor	Very poor	---	Very poor	Poor
Sa: STEPHENVILLE---	Fair	Good	Good	Good	---	Good	Poor	Very poor	Good	Good	Very poor	Good
Sd: SUMMIT-----	Good	Good	Fair	Good	Good	---	Poor	Poor	Good	Good	Poor	Good
Se: SUMMIT-----	Fair	Good	Fair	Good	Good	---	Poor	Very poor	Fair	Good	Very poor	Good
Va: VERDIGRIS-----	Good	Good	Good	Good	Good	Good	Poor	Fair	Good	Good	Poor	Good
Vc: VERDIGRIS-----	Poor	Fair	Fair	Good	Good	Good	Poor	Fair	Fair	Good	Poor	Good
W: WATER-----	---	---	---	---	---	---	---	---	---	---	---	---
Wa: WOODSON-----	Fair	Good	Fair	Poor	Poor	Fair	Poor	Good	Good	Fair	Fair	Good
Za: ZAAR-----	Fair	Fair	Fair	Good	Good	Good	Poor	Fair	Fair	Good	Poor	Fair

YIELDS PER ACRE OF PASTURE AND HAYLAND
Woodson County, Kansas

Use and Explanation of Pastureland and Hayland Interpretations

This subsection provides information concerning the suitability of soils for the production of pasture and hayland. This subsection may contain pasture and hayland suitability groupings, land capability and yield estimates, yield estimates for individual grasses or legumes, or other information pertaining to the production of forage.

Pasture and Hayland Suitability Groupings

Soils are placed in pasture and hayland groups according to their suitability for the production of forage. The soils in each group are enough alike to be suited to the same grasses or legumes, to have similar limitations and hazards, to require similar management, and to have similar productivity and other responses to management. Thus, the pasture and hayland suitability group is a convenient way of grouping the soils for their management. If used, these groupings are identified and described in other reports in the subsection.

Yield Estimates

The average yields per acre that can be expected of the principal pasture or hayland crops, under a high level of management, are presented in this subsection. In any given year, yields may be higher or lower than those indicated in the tables because of variations in rainfall or other climatic factors. The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby counties and results of field trials and demonstrations are also considered.

Under good management, proper grazing is essential for the production of high quality forage, stand survival, and erosion control. Proper grazing helps plants maintain sufficient and generally vigorous top growth during the growing season. Brush control is essential in many areas, and weed control generally is needed. Rotation grazing and renovation are also important management practices.

The Pasture and Hayland table show yield estimates in tons per acre and animal unit months for pasture and hayland groups. An animal unit month is the amount of forage required by one animal unit (AU) for 30 days. On animal unit (AU) is one (1000 pound) mature cow and a calf up to weaning age (usually six months of age) or their equivalent. The Natural Resources Conservation Service uses 900 pounds of air dry forage as the amount needed to meet this requirement. To maintain a healthy and vigorous plant community, the degree of use should never be greater than 50 percent. Therefore only 25 percent of the total biomass grown is considered consumed by the grazing animal. Animal Unit Months can be converted to air dry pounds per acre production by multiplying the AUM by 30 days, then by 30 pounds per day, and then by four. This figure is the amount of total forage production.

Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil in the Nontechnical Description section. Specific information on plants and yields can be obtained from the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

YIELDS PER ACRE OF PASTURE AND HAYLAND--Continued
Woodson County, Kansas

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(Yields in the "N" columns are for nonirrigated soils; those in the "I" columns are for irrigated soils. Yields are those that can be expected under a high level of nonirrigated and irrigated management by component. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil)
Animal-unit-month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

Map symbol and soil name	Land capability		Alfalfa hay		Red clover hay		Smooth brome grass		Tall fescue	
	N	I	N	I	N	I	N	I	N	I
			Tons	Tons	Tons	Tons	AUM	AUM	AUM	AUM
001CA: Catoosa-----	2e	---	4.30	---	---	---	---	---	4.40	---
001CB: Catoosa-----	6s	---	5.60	---	2.10	---	3.70	---	4.40	---
Rock Outcrop-----	8	---	---	---	---	---	---	---	---	---
001CC: Collinsville-----	6e	---	---	---	---	---	---	---	---	---
Bates-----	6e	---	5.60	---	2.10	---	4.40	---	4.40	---
001ZB: Zaar-----	4e	---	---	---	---	---	3.70	---	4.40	---
031EP: Eram-----	4e	---	3.50	---	---	---	3.20	---	3.70	---
Apperson-----	4e	---	4.90	---	3.20	---	3.70	---	4.30	---
031ES: Eram-----	6e	---	---	---	---	---	3.70	---	4.50	---
Shidler-----	7s	---	---	---	---	---	---	---	---	---
073AT: Aguents-----	5w	---	---	---	---	---	---	---	---	---
073CA: Chase-----	2w	---	---	---	---	---	---	---	3.70	---
073CM: Cline-----	4e	---	3.50	---	---	---	3.10	---	---	---
073CS: Cline-----	6e	---	3.60	---	---	---	3.20	---	---	---
Sogn-----	7s	---	---	---	---	---	---	---	---	---
073DS: Dennis, eroded-----	3e	---	---	---	---	---	2.50	---	2.50	---
073IC: Ivan-----	5w	---	---	---	---	---	---	---	---	---
073IF: Ivan-----	2w	---	5.60	---	---	---	5.00	---	5.00	---
073KE: Kenoma, eroded-----	4e	---	3.50	---	---	---	3.10	---	3.10	---
073LA: Labette-----	2e	---	3.50	---	---	---	3.10	---	3.10	---
073LD: Labette-----	3e	---	3.50	---	---	---	3.10	---	3.10	---
Dwight-----	4s	---	---	---	---	---	2.50	---	---	---
073MA: Martin-----	2e	---	1.20	---	---	---	3.70	---	3.70	---
073NZ: Niotaze-----	6e	---	---	---	---	---	---	---	---	---
Darnell-----	7e	---	---	---	---	---	---	---	---	---
073RE: Reading-----	1	---	5.60	---	---	---	5.00	---	5.00	---
073ST: Steedman-----	6e	---	---	---	---	---	3.70	---	4.40	---
205BH: Bates-----	4e	---	4.30	---	2.10	---	3.80	---	4.50	---
Collinsville-----	6s	---	---	---	---	---	---	---	---	---

(Yields in the "N" columns are for nonirrigated soils; those in the "I" columns are for irrigated soils. Yields are those that can be expected under a high level of nonirrigated and irrigated management by component. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil)
Animal-unit-month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

Map symbol and soil name	Land capability		Alfalfa hay		Red clover hay		Smooth brome grass		Tall fescue	
	N	I	N	I	N	I	N	I	N	I
			Tons	Tons	Tons	Tons	AUM	AUM	AUM	AUM
205B0: Bates-----	6e	---	4.30	---	2.10	---	3.80	---	4.50	---
Collinsville-----	7s	---	---	---	---	---	---	---	---	---
205DW: Dennis-----	3e	---	5.10	---	2.50	---	4.50	---	5.10	---
Dwight-----	4s	---	---	---	---	---	---	---	---	---
205EB: Eram-----	3e	---	---	---	---	---	3.80	---	4.50	---
205EC: Eram-----	4e	---	---	---	---	---	3.80	---	4.50	---
205LA: Lanton-----	2w	---	---	---	---	---	---	---	5.10	---
205ND: Niotaze-----	6e	---	4.20	---	---	---	3.20	---	3.80	---
Darnell-----	6e	---	---	---	---	---	---	---	---	---
205SC: Shidler-----	6e	---	---	---	---	---	---	---	---	---
Catoosa-----	2e	---	4.30	---	2.10	---	3.80	---	4.50	---
205SF: Steedman-----	6e	---	---	---	---	---	3.20	---	3.80	---
AED: Arents, Earthen Dam-----	8	---	---	---	---	---	---	---	---	---
Bb: Bates-----	2e	---	4.20	---	2.10	---	3.70	---	---	---
Bc: Bates-----	3e	---	4.20	---	2.10	---	3.70	---	---	---
BOP: Borrow Pits-----	---	---	---	---	---	---	---	---	---	---
Ca: Clareson-----	6e	---	4.20	---	2.10	---	3.70	---	---	---
Sogn-----	7s	---	---	---	---	---	---	---	---	---
Cd: Cleora-----	2w	---	5.60	---	2.50	---	5.60	---	---	---
Da: Darnell-----	7s	---	---	---	---	---	---	---	---	---
Niotaze-----	7e	---	---	---	---	---	---	---	---	---
Dd: Dennis-----	2e	---	4.90	---	2.50	---	4.40	---	---	---
De: Dennis-----	3e	---	4.90	---	2.50	---	4.40	---	---	---
Df: Dennis, eroded-----	3e	---	---	---	---	---	---	---	---	---
Dg: Dennis, eroded-----	4e	---	---	---	---	---	---	---	---	---
Eram, eroded-----	6e	---	---	---	---	---	---	---	---	---
Dw: Dwight-----	4s	---	---	---	---	---	---	---	---	---
Eb: Eram-----	3e	---	---	---	---	---	3.70	---	---	---
Ec: Eram-----	4e	---	---	---	---	---	3.70	---	---	---

YIELDS PER ACRE OF PASTURE AND HAYLAND--Continued
Woodson County, Kansas

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(Yields in the "N" columns are for nonirrigated soils; those in the "I" columns are for irrigated soils. Yields are those that can be expected under a high level of nonirrigated and irrigated management by component. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil)
Animal-unit-month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

Map symbol and soil name	Land capability		Alfalfa hay		Red clover hay		Smooth brome grass		Tall fescue	
	N	I	N	I	N	I	N	I	N	I
			Tons	Tons	Tons	Tons	AUM	AUM	AUM	AUM
Ex:										
Eram-----	6e	---	---	---	---	---	3.70	---	---	---
Collinsville-----	7s	---	---	---	---	---	---	---	---	---
GRP:										
Gravel Pits-----	---	---	---	---	---	---	---	---	---	---
Ha:										
Hepler-----	2w	---	---	---	---	---	---	---	---	---
Ka:										
Kenoma-----	3e	---	---	---	---	---	3.70	---	---	---
Ko:										
Kenoma-----	4e	---	---	---	---	---	3.70	---	---	---
Olpe-----	4e	---	4.20	---	2.10	---	3.70	---	---	---
Kw:										
Kenoma, eroded-----	4e	---	---	---	---	---	---	---	---	---
Woodson, eroded-----	4s	---	---	---	---	---	---	---	---	---
La:										
Leanna, drained-----	2w	---	---	---	---	---	---	---	---	---
Lb:										
Lula-----	2e	---	4.90	---	2.50	---	4.40	---	---	---
Ld:										
Lula-----	3e	---	4.90	---	2.50	---	4.40	---	---	---
Dwight-----	4s	---	---	---	---	---	---	---	---	---
Ma:										
Mason-----	1	---	5.60	---	2.50	---	5.00	---	---	---
Ns:										
Niotaze-----	6e	---	---	---	---	---	---	---	---	---
Stephenville-----	6e	---	---	---	---	---	---	---	---	---
Od:										
Olpe-----	6e	---	4.20	---	2.10	---	3.70	---	---	---
Og:										
Osage-----	3w	---	---	---	---	---	---	---	---	---
Os:										
Osage-----	2w	---	---	---	---	---	---	---	---	---
Rc:										
Ringo-----	3e	---	---	---	---	---	3.70	---	---	---
Rd:										
Ringo-----	6e	---	---	---	---	---	---	---	---	---
Sogn-----	7s	---	---	---	---	---	---	---	---	---
Sa:										
Stephenville-----	2e	---	4.20	---	2.10	---	3.20	---	---	---
Sd:										
Summit-----	2e	---	4.90	---	2.50	---	4.40	---	---	---
Se:										
Summit-----	3e	---	4.90	---	2.50	---	4.40	---	---	---
Va:										
Verdigris-----	2w	---	5.60	---	2.50	---	5.00	---	---	---
Vc:										
Verdigris-----	5w	---	---	---	---	---	---	---	---	---
W:										
Water-----	---	---	---	---	---	---	---	---	---	---
Wa:										
Woodson-----	2s	---	---	---	---	---	3.70	---	---	---

(Yields in the "N" columns are for nonirrigated soils; those in the "I" columns are for irrigated soils. Yields are those that can be expected under a high level of nonirrigated and irrigated management by component. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil)
Animal-unit-month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

Map symbol and soil name	Land capability		Alfalfa hay		Red clover hay		Smooth brome grass		Tall fescue	
	N	I	N	I	N	I	N	I	N	I
			Tons	Tons	Tons	Tons	AUM	AUM	AUM	AUM
Za: Zaar-----	3e	---	---	---	---	---	3.80	---	4.50	---

CONSERVATION TREE AND SHRUB MANAGEMENT
Woodson County, Kansas

A Conservation Tree/Shrub Suitability Group (CTSG), formerly Windbreak Suitability Group, is a physiographic unit or area having similar climatic and edaphic characteristics that control the selection and height growth of trees and shrubs.

In this table, the Conservation Tree and Shrub Grouping is expressed as a group index number. The group index for Conservation Tree and Shrub groups (CTSG) are a guide for species best suited for different kinds of soil and for prediction height, growth, and effectiveness. The groupings can be used when selection woody plants for windbreaks, wildlife plantings riparian buffers, reforestation, other environmental plantings, recreation, landscaping, wetland restoration or enhancement and critical area plantings. CTSG's are developed to assure satisfactory species selection and adaptation to specific conditions of soil, climate and physiography. CTSG's are a guide for selection species best suited for different kinds of soil and prediction height growth and effectiveness.

All soil series mapped in the state have been placed in 10 groups of similar soil characteristics. Groups 1, 2, 3, 4, 6, and 9 are further divided into subgroups. In addition, all groups provide information by Major Land Resource Areas.

Each tree or shrub species has certain climatic and physiographic limits. Within these parameters a tree or shrub may be well or poorly suited because of soil characteristics. Each tree or shrub also has definable potentials of height growth depending on the factors just mentioned. Accurate definitions of potential heights are necessary for proper windbreak planning and design.

Windbreaks protect livestock, buildings, roads and yards from wind and snow. They also protect fruit trees and gardens, and they furnish habitat for wildlife. Several rows of low-growing and high-growing broadleaf and coniferous trees and shrubs provide the most protection.

Field windbreaks are narrow plantings made at right angles to the prevailing wind and at specific intervals across the field. The interval depends on the erodibility of the soil. Field windbreaks protect cropland and crops from wind, help to keep snow on the fields, and provide food and cover for wildlife.

Environmental plantings help to beautify and screen houses and other buildings and to abate noise. The plants, mostly evergreen shrubs and trees, are closely spaced. To ensure plant survival, a healthy planting stock of suitable species should be planted properly on a well prepared site and maintained in good condition.

Windbreaks are often planted on land that did not grow trees originally. Knowledge of how trees perform on such land can be gained only by observing and recording their performance where trees have been planted and survived. The problem is compounded by the fact that many favorite windbreak species are not indigenous to the areas in which they are planted.

The Kansas Field Office Technical Guide Notice KS-230, Conservation Tree and Shrub Plantings Suitability Groups shows the adapted species listing for each group index number. Showing the height that locally grown trees and shrubs are expected to reach in 20 years on various soils. The estimates are based on measurements and observation of established plantings that have been given adequate care. This information should be used to determine the placement of a windbreak, the area protected and the arrangement of species.

A number of attributes are included in the CTSG species tables for each group number found in this section of the Field Office Technical Guide. These attributes were rated subjectively and assigned a relative value to further assist those unfamiliar with individual species characteristics or desirability for the intended use. Definitions and explanations can be found. Additional information on planning windbreaks and screens and planting and caring for trees and shrubs can be obtained from the local office of the Natural Resources Conservation Service or of the Cooperative Extension Service or from a commercial nursery. See part 537 of the National Forestry Manual for additional information.

In the Tree and Shrub Management table interpretive ratings are given for various aspects of forest and conservation tree and shrub management. Some rating class terms indicate the degree to which the soils are suited to a specified forest management practice. Well suited indicates that the soil has features that are favorable for the specified practice and has no limitations. Good performance can be expected, and little or no maintenance is needed. Moderately well suited indicates that the soil has features that are moderately favorable for the specified practice. One or more soil properties are less than desirable and fair performance can be expected. Some maintenance is needed. Poorly suited indicates that the soil has one or more properties that are unfavorable for the specified practice. Overcoming the unfavorable properties requires special design, extra maintenance, and costly alteration. Unsited indicates that the expected performance of the soil is unacceptable for the specified practice or that extreme measures are needed to overcome the undesirable soil properties.

The paragraphs that follow indicate the soil properties considered in rating the soils for forest and conservation tree and shrub management practices. More detailed information about the criteria used in the ratings is available in the "National Forestry Manual," which is available in local offices of the Natural Resources Conservation Service or on the Internet. Also, in the Kansas Field Office Technical Guide Notice KS-230, Conservation Tree and Shrub Plantings Suitability Groups.

Ratings in the columns suitability for hand planting and suitability for mechanical planting are based on slope, depth to a restrictive layer, content of sand, plasticity index, rock fragments on or below the surface, depth to a water table, and ponding. The soils are described as well suited, moderately well suited, poorly suited, or unsited to these methods of planting. It is assumed that necessary site preparation is completed before seedlings are planted.

Ratings in the column suitability for mechanical site preparation (surface) are based on slope, depth to a restrictive layer, plasticity index, rock fragments on or below the surface, depth to a water table, and ponding. The soils are described as well suited, poorly suited, or unsited to this management activity. The part of the soil from the surface to a depth of about 1-foot is considered in the ratings.

Ratings in the column suitability for mechanical site preparation (deep) are based on slope, depth to a restrictive layer, rock fragments on or below the surface, depth to a water table, and ponding. The soils are described as well suited, poorly suited, or unsited to this management activity. The part of the soil from the surface to a depth of about 3 feet is considered in the ratings.

Ratings in the column potential for seedling mortality are based on flooding, ponding, depth to a water table, content of lime, reaction, salinity, available water capacity, soil moisture regime, soil temperature regime, aspect, and slope. The soils are described as having a low, moderate, or high potential for seedling mortality. See the National Forestry Manual, Subpart B for criteria used in rating management concerns. Specific information on plants and yields can be obtained from the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

CONSERVATION TREE AND SHRUB MANAGEMENT
Woodson County,
Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. Pines and spruces are prone to disease problems. See text for further explanation of ratings in this table.)

Map symbol and soil name	Wind break Group	Suitability for hand planting	Suitability for mechanical planting	Suitability for mechanical site preparation (surface)	Suitability for mechanical site preparation (deep)	Potential for seedling mortality
		Rating class and limiting features	Rating class and limiting features	Rating class and limiting features	Rating class and limiting features	Rating class and limiting features
001CA: Catoosa-----	6D	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Poorly suited Restrictive layer	Low
001CB: Catoosa-----	6D	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Poorly suited Restrictive layer	Low
Rock Outcrop-----		Not rated	Not rated	Not rated	Not rated	Not rated
001CC: Collinsville-----	10	Well suited	Moderately suited Slope	Well suited	Well suited	Low
Bates-----	6D	Moderately suited Stickiness	Moderately suited Slope Stickiness Rock fragments	Well suited	Well suited	Low
001ZB: Zaar-----	4C	Poorly suited Stickiness	Poorly suited Stickiness Slope	Poorly suited Stickiness	Well suited	Low
031EP: Eram-----	4C	Poorly suited Stickiness	Poorly suited Stickiness Slope	Poorly suited Stickiness	Well suited	High Wetness
Apperson-----	4C	Moderately suited Stickiness	Moderately suited Stickiness Slope	Well suited	Well suited	High Wetness
031ES: Eram-----	4C	Poorly suited Stickiness	Poorly suited Stickiness Slope	Poorly suited Stickiness	Well suited	High Wetness
Shidler-----	10	Moderately suited Stickiness	Moderately suited Slope Stickiness	Well suited	Unsuited Restrictive layer	Low
073AT: Aquents-----		Well suited	Well suited	Well suited	Well suited	High Soil reaction
073CA: Chase-----	1	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Well suited	Low
073CM: Clime-----	8	Poorly suited Stickiness	Poorly suited Stickiness Slope	Poorly suited Stickiness	Well suited	Moderate Available water
073CS: Clime-----	8	Poorly suited Stickiness	Poorly suited Stickiness Slope	Poorly suited Stickiness	Well suited	Moderate Available water
Sogn-----	10	Unsuited Restrictive layer Stickiness	Unsuited Restrictive layer Slope Stickiness	Unsuited Restrictive layer	Unsuited Restrictive layer	Low
073DS: Dennis, eroded-----	4C	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Well suited	High Wetness Available water
073IC: Ivan-----	1K	Well suited	Well suited	Well suited	Well suited	Low
073IF: Ivan-----	1K	Well suited	Well suited	Well suited	Well suited	Low
073KE: Kenoma, eroded-----	4C	Poorly suited Stickiness	Poorly suited Stickiness	Poorly suited Stickiness	Well suited	Low

CONSERVATION TREE AND SHRUB MANAGEMENT
Woodson County,
Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. Pines and spruces are prone to disease problems. See text for further explanation of ratings in this table.)

Map symbol and soil name	Wind break Group	Suitability for hand planting	Suitability for mechanical planting	Suitability for mechanical site preparation (surface)	Suitability for mechanical site preparation (deep)	Potential for seedling mortality
		Rating class and limiting features	Rating class and limiting features	Rating class and limiting features	Rating class and limiting features	Rating class and limiting features
073LA: Labette-----	4C	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Poorly suited Restrictive layer	Low
073LD: Labette-----	4C	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Poorly suited Restrictive layer	Low
Dwight-----	9C	Poorly suited Stickiness	Poorly suited Stickiness	Poorly suited Stickiness	Well suited	Low
073MA: Martin-----	4C	Poorly suited Stickiness	Poorly suited Stickiness	Poorly suited Stickiness	Well suited	High Wetness
073NZ: Niotaze-----	4C	Poorly suited Stickiness	Poorly suited Slope Stickiness Rock fragments	Poorly suited Slope Stickiness	Poorly suited Slope	Low
Darnell-----	10	Well suited	Poorly suited Slope Rock fragments	Poorly suited Slope	Poorly suited Slope	Low
073RE: Reading-----	1	Well suited	Well suited	Well suited	Well suited	Low
073ST: Steedman-----	4C	Poorly suited Stickiness	Poorly suited Stickiness Slope	Poorly suited Stickiness	Well suited	Low
205BH: Bates-----	6D	Moderately suited Stickiness	Moderately suited Slope Stickiness	Well suited	Well suited	Low
Collinsville-----	10	Well suited	Moderately suited Slope	Well suited	Well suited	Low
205BO: Bates-----	6D	Well suited	Moderately suited Slope	Well suited	Well suited	Low
Collinsville-----	10	Well suited	Moderately suited Slope	Well suited	Well suited	Low
205DW: Dennis-----	4C	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Well suited	Low
Dwight-----	9C	Poorly suited Stickiness	Poorly suited Stickiness	Poorly suited Stickiness	Well suited	Moderate Salinity
205EB: Eram-----	4C	Poorly suited Stickiness	Poorly suited Stickiness	Poorly suited Stickiness	Well suited	High Wetness
205EC: Eram-----	4C	Moderately suited Stickiness	Moderately suited Stickiness Slope	Poorly suited Stickiness	Well suited	High Wetness
205LA: Lanton-----	1	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Well suited	High Wetness
205ND: Niotaze-----	6D	Poorly suited Stickiness	Poorly suited Rock fragments Slope	Poorly suited Slope	Poorly suited Slope	High Wetness
Darnell-----	10	Well suited	Stickiness Moderately suited Slope	Rock fragments Stickiness Well suited	Well suited	Low
205SC: Shidler-----	10	Unsuited Restrictive layer Stickiness	Unsuited Restrictive layer Slope Stickiness	Unsuited Restrictive layer	Unsuited Restrictive layer	Low

CONSERVATION TREE AND SHRUB MANAGEMENT
Woodson County,
Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. Pines and spruces are prone to disease problems. See text for further explanation of ratings in this table.)

Map symbol and soil name	Wind break Group	Suitability for hand planting	Suitability for mechanical planting	Suitability for mechanical site preparation (surface)	Suitability for mechanical site preparation (deep)	Potential for seedling mortality
		Rating class and limiting features	Rating class and limiting features	Rating class and limiting features	Rating class and limiting features	Rating class and limiting features
Catoosa-----	6D	Unsuited Restrictive layer Stickiness	Unsuited Restrictive layer Stickiness	Unsuited Restrictive layer	Unsuited Restrictive layer	Low
205SF: Steedman-----	4C	Poorly suited Stickiness	Poorly suited Stickiness Slope	Poorly suited Stickiness Slope	Poorly suited Slope	High Wetness
AED: Arents, Earthen Dam-		Not rated	Not rated	Not rated	Not rated	Not rated
Bb: Bates-----	6D	Well suited	Well suited	Well suited	Well suited	Low
Bc: Bates-----	6D	Well suited	Moderately suited Slope	Well suited	Well suited	Low
BOP: Borrow Pits-----		Not rated	Not rated	Not rated	Not rated	Not rated
Ca: Clareson-----	6D	Moderately suited Stickiness Rock fragments	Poorly suited Rock fragments Stickiness	Poorly suited Rock fragments	Poorly suited Rock fragments Restrictive layer	Low
Sogn-----	10	Unsuited Restrictive layer Rock fragments Stickiness	Slope Unsuited Restrictive layer Rock fragments Slope Stickiness	Unsuited Rock fragments Restrictive layer	Unsuited Restrictive layer Rock fragments	Low
Cd: Cleora-----	1	Well suited	Well suited	Well suited	Well suited	Low
Da: Darnell-----	10	Poorly suited Rock fragments Slope	Unsuited Slope Rock fragments	Unsuited Rock fragments Slope	Unsuited Rock fragments Slope	Low
Niotaze-----	4C	Poorly suited Stickiness Slope	Unsuited Slope Stickiness	Poorly suited Slope Stickiness	Poorly suited Slope	Low
Dd: Dennis-----	4C	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Well suited	High Wetness
De: Dennis-----	4C	Moderately suited Stickiness	Moderately suited Slope Stickiness	Well suited	Well suited	High Wetness
Df: Dennis, eroded-----	4C	Poorly suited Stickiness	Poorly suited Stickiness	Poorly suited Stickiness	Well suited	High Wetness
Dg: Dennis, eroded-----	4C	Poorly suited Stickiness	Poorly suited Stickiness Slope	Poorly suited Stickiness	Well suited	High Wetness
Eram, eroded-----	4C	Poorly suited Stickiness	Poorly suited Stickiness Slope	Poorly suited Stickiness	Well suited	High Wetness
Dw: Dwight-----	9C	Poorly suited Stickiness	Poorly suited Stickiness	Poorly suited Stickiness	Well suited	Low
Eb: Eram-----	4C	Poorly suited Stickiness	Poorly suited Stickiness	Poorly suited Stickiness	Well suited	High Wetness
Ec: Eram-----	4C	Poorly suited Stickiness	Poorly suited Stickiness Slope	Poorly suited Stickiness	Well suited	High Wetness
Ex: Eram-----	4C	Poorly suited Stickiness	Poorly suited Stickiness Slope	Poorly suited Stickiness	Well suited	High Wetness

CONSERVATION TREE AND SHRUB MANAGEMENT
Woodson County,
Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. Pines and spruces are prone to disease problems. See text for further explanation of ratings in this table.)

Map symbol and soil name	Wind break Group	Suitability for hand planting	Suitability for mechanical planting	Suitability for mechanical site preparation (surface)	Suitability for mechanical site preparation (deep)	Potential for seedling mortality
		Rating class and limiting features	Rating class and limiting features	Rating class and limiting features	Rating class and limiting features	Rating class and limiting features
Collinsville-----	10	Moderately suited Rock fragments	Poorly suited Rock fragments Slope	Poorly suited Rock fragments	Poorly suited Rock fragments	Low
GRP: Gravel Pits-----		Not rated	Not rated	Not rated	Not rated	Not rated
Ha: Hepler-----	1	Well suited	Well suited	Well suited	Well suited	Low
Ka: Kenoma-----	4C	Poorly suited Stickiness	Poorly suited Stickiness	Poorly suited Stickiness	Well suited	High Wetness
Ko: Kenoma-----	4C	Poorly suited Stickiness	Poorly suited Stickiness Slope	Poorly suited Stickiness	Well suited	High Wetness
Olpe-----	6D	Moderately suited Stickiness	Moderately suited Stickiness Rock fragments Slope	Well suited	Well suited	Low
Kw: Kenoma, eroded-----	4C	Poorly suited Stickiness	Poorly suited Stickiness	Poorly suited Stickiness	Well suited	High Wetness
Woodson, eroded-----	4C	Poorly suited Stickiness	Poorly suited Stickiness	Poorly suited Stickiness	Well suited	High Wetness
La: Leanna, drained-----	2	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Well suited	High Wetness
Lb: Lula-----	3	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Well suited	Low
Ld: Lula-----	3	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Well suited	Low
Dwight-----	9C	Poorly suited Stickiness	Poorly suited Stickiness	Poorly suited Stickiness	Well suited	Low
Ma: Mason-----	1	Well suited	Well suited	Well suited	Well suited	Low
Ns: Niotaze-----	4C	Poorly suited Stickiness Rock fragments	Poorly suited Stickiness Rock fragments Slope	Poorly suited Slope Rock fragments Stickiness	Poorly suited Slope Rock fragments	Low
Stephenville-----	6D	Well suited	Moderately suited Slope	Well suited	Well suited	Low
Od: Olpe-----	6D	Moderately suited Stickiness	Moderately suited Stickiness Rock fragments Slope	Well suited	Well suited	Low
Og: Osage-----	2	Poorly suited Stickiness	Poorly suited Stickiness	Poorly suited Stickiness	Well suited	High Wetness
Os: Osage-----	2	Moderately suited Stickiness	Moderately suited Stickiness	Poorly suited Stickiness	Well suited	High Wetness
Rc: Ringo-----	4C	Poorly suited Stickiness	Poorly suited Stickiness Slope	Poorly suited Stickiness	Well suited	Low
Rd: Ringo-----	4C	Poorly suited Stickiness	Poorly suited Stickiness Slope	Poorly suited Stickiness	Well suited	Low
Sogn-----	10	Unsuited Restrictive layer Stickiness	Unsuited Restrictive layer Rock fragments	Unsuited Restrictive layer Rock fragments	Unsuited Restrictive layer Rock fragments	Low

CONSERVATION TREE AND SHRUB MANAGEMENT
Woodson County,
Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. Pines and spruces are prone to disease problems. See text for further explanation of ratings in this table.)

Map symbol and soil name	Wind break Group	Suitability for hand planting	Suitability for mechanical planting	Suitability for mechanical site preparation (surface)	Suitability for mechanical site preparation (deep)	Potential for seedling mortality
		Rating class and limiting features	Rating class and limiting features	Rating class and limiting features	Rating class and limiting features	Rating class and limiting features
		Rock fragments	Slope Stickiness			
Sa: Stephenville-----	6D	Well suited	Well suited	Well suited	Well suited	Low
Sd: Summit-----	4C	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Well suited	Low
Se: Summit-----	4C	Moderately suited Stickiness	Moderately suited Slope Stickiness	Well suited	Well suited	Low
Va: Verdigris-----	1	Well suited	Well suited	Well suited	Well suited	Low
Vc: Verdigris-----	1	Well suited	Well suited	Well suited	Well suited	Low
W: Water-----		Not rated	Not rated	Not rated	Not rated	Not rated
Wa: Woodson-----	4C	Poorly suited Stickiness	Poorly suited Stickiness	Poorly suited Stickiness	Well suited	High Wetness
Za: Zaar-----	4C	Poorly suited Stickiness	Poorly suited Stickiness	Poorly suited Stickiness	Well suited	High Wetness

ENGINEERING INDEX PROPERTIES
Woodson County, Kansas

Engineering Index Properties table gives the engineering classifications and the range of index properties for the layers of each soil in the survey area. Depth to the upper and lower boundaries of each layer is indicated. Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. Loam, for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is 15 percent or more, an appropriate modifier is added, for example, gravelly. Textural terms are defined in the Glossary.

Classification of the soils is determined according to the Unified soil classification system (ASTM, 1998) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO, 1998). The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to particle-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of particle-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection. If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest. The AASHTO classification for soils tested, with group index numbers in parentheses, is given in Engineering Index Properties table.

Rock fragments larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage. Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an oven-dry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and plasticity index (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination. The estimates of particle-size distribution, liquid limit, and plasticity index are generally rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterberg limits extend a marginal amount (1 or 2 percentage points) across classification boundaries, the classification in the marginal zone is generally omitted in the table.

ENGINEERING INDEX PROPERTIES--Continued
Woodson County, Kansas

(Absence of an entry indicates that the data were not estimated.)

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
001CA: Catoosa-----	0-11	Silt loam	CL, ML	A-7, A-7-5, A-6, A-5, A- 4, A-7-6	0	0	100	100	96-100	65-97	25-45	7-20
	11-27	Silty clay loam	ML, CL	A-5, A-7, A- 7-5, A-7-6, A-4, A-6	0	0	100	100	96-100	65-98	28-50	9-30
	27-31	Unweathered bedrock			---	---	---	---	---	---	---	---
001CB: Catoosa-----	0-11	Silt loam	ML, CL	A-6, A-4, A- 7-6, A-7, A- 7-5, A-5	0	0	100	100	96-100	65-97	25-45	7-20
	11-27	Silty clay loam	CL, ML	A-7-6, A-4, A-5, A-6, A- 7, A-7-5	0	0	100	100	96-100	65-98	28-50	9-30
	27-31	Unweathered bedrock			---	---	---	---	---	---	---	---
Rock Outcrop---	---	---	---	---	---	---	---	---	---	---	---	---
001CC: Collinsville---	0-7	Fine sandy loam	CL, SC, CL- ML, ML, SC- SM, SM	A-2-4, A-2, A-4	---	0-15	85-100	85-100	75-95	30-60	15-26	NP-9
	7-15	Gravelly fine sandy loam	SM, SC-SM, SC	A-2-4, A-2, A-4	---	0-45	55-100	55-100	50-95	15-45	15-30	NP-10
	15-17	Unweathered bedrock			---	---	---	---	---	---	---	---
Bates-----	0-8	Loam	CL, CL-ML, ML	A-4, A-6	0	0	90-100	85-100	80-100	55-90	20-40	3-15
	8-11	Loam	CL, ML, SC, SM	A-5, A-7-5, A-7-6, A-4, A-6, A-7	0	0	85-100	85-100	80-100	45-85	25-45	8-20
	11-32	Clay loam	SC, SM, ML, CL	A-2-4, A-2-5, A-2-6, A-2- 7, A-2, A-4, A-6, A-5, A- 7, A-7-5, A- 7-6	0	0	65-100	60-100	50-100	25-85	20-45	8-30
	32-34	Weathered bedrock			---	---	---	---	---	---	---	---
001ZB: Zaar-----	0-18	Silty clay	CH, MH, CL	A-7, A-7-5, A-7-6	0	0	100	100	95-100	90-100	50-70	25-40
	18-57	Silty clay	MH, CL, CH	A-7-6, A-7-5, A-7	0	0	100	100	95-100	90-100	50-70	25-40
	57-63	Silty clay	CH, CL, MH, ML	A-7-6, A-7, A-7-5	0	0	100	100	95-100	90-100	43-80	15-55
031EP: Eram-----	0-8	Silty clay loam	MH, CL, CH, ML	A-7-6, A-6, A-7-5, A-7	0	0	85-100	85-100	85-100	70-95	36-61	15-30
	8-26	Silty clay	MH, ML, CH, CL	A-7-6, A-7, A-7-5	0	0	95-100	94-100	90-100	80-98	43-61	21-40
	26-30	Weathered bedrock			---	---	---	---	---	---	---	---
Apperson-----	0-9	Silty clay loam	CH, MH, ML, CL	A-6, A-7-6, A-7-5, A-7	0	0	100	100	95-100	75-98	40-51	20-29
	9-14	Silty clay loam	CL, CH, MH	A-7, A-7-6, A-7-5	0	0	100	100	95-100	80-99	45-61	25-36
	14-42	Silty clay	CL, CH, MH	A-7, A-7-6, A-7-5	0	0	85-100	83-100	80-100	75-99	45-76	30-49
	42-46	Unweathered bedrock			---	---	---	---	---	---	---	---
031ES: Eram-----	0-8	Silty clay loam	CH, CL, MH, ML	A-7, A-6, A- 7-6, A-7-5	0	0	85-100	85-100	85-100	70-95	36-55	15-30
	8-26	Silty clay	MH, CL, ML, CH	A-7-6, A-7, A-7-5	0	0	95-100	94-100	90-100	80-98	43-61	21-35
	26-30	Weathered bedrock			---	---	---	---	---	---	---	---
Shidler-----	0-12	Silty clay loam	CH, MH, ML, CL	A-7-6, A-6, A-7, A-7-5	---	0-25	75-100	75-100	70-100	65-98	33-55	12-27
	12-16	Unweathered bedrock			---	---	---	---	---	---	---	---
073AT: Aguents-----	0-60	Stratified variable			---	---	---	---	---	---	---	---
073CA: Chase-----	0-14	Silty clay loam	ML, CH, MH, CL	A-7-6, A-7, A-7-5, A-6	0	0	100	100	95-100	90-100	40-51	15-29
	14-45	Silty clay loam	ML, CH, CL, MH	A-7-6, A-7-5, A-7	0	0	100	100	95-100	90-100	45-71	20-45
	45-60	Silty clay	MH, CH, CL	A-7-5, A-7, A-7-6	0	0	100	100	95-100	90-100	45-66	25-41

ENGINEERING INDEX PROPERTIES--Continued
Woodson County, Kansas

(Absence of an entry indicates that the data were not estimated.)

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
073CM: Cline-----	0-11	Silty clay	MH, CH, CL	A-7, A-7-6, A-7-5	0	0-5	90-100	90-100	85-100	80-95	48-57	25-38
	11-23	Silty clay	CH, CL, MH, ML	A-7-6, A-7, A-7-5	0	0	95-100	95-100	85-100	85-95	43-57	21-38
	23-33	Silty clay	MH, CL, CH	A-7, A-7-5, A-7-6	0	0	95-100	95-100	95-100	85-100	48-57	25-38
	33-37	Unweathered bedrock			---	---	---	---	---	---	---	---
073CS: Cline-----	0-11	Silty clay	MH, CH, CL	A-7-6, A-7, A-7-5	0	0-5	90-100	90-100	85-100	80-95	48-57	25-38
	11-23	Silty clay	CH, CL, ML, MH	A-7-5, A-7, A-7-6	0	0	95-100	95-100	85-100	85-95	43-57	21-38
	23-33	Silty clay	CL, CH, MH	A-7-5, A-7, A-7-6	0	0	95-100	95-100	95-100	85-100	48-57	25-38
	33-37	Unweathered bedrock			---	---	---	---	---	---	---	---
Sogn-----	0-7	Silty clay loam	CL, ML	A-7-6, A-6, A-7-5, A-7	0	0-10	85-100	80-100	80-100	70-100	36-45	15-23
	7-11	Unweathered bedrock			---	---	---	---	---	---	---	---
073DS: Dennis, eroded-	0-6	Silty clay loam	CL, ML	A-7-5, A-7-6, A-6, A-7	0	0	100	98-100	94-100	75-98	36-43	15-25
	6-16	Silty clay loam	ML, CL	A-6, A-7, A- 7-5, A-7-6	0	0	98-100	97-100	93-100	75-98	36-43	15-25
	16-60	Silty clay	ML, MH, CH, CL	A-7-6, A-7-5, A-7	0	0	98-100	97-100	94-100	75-98	43-61	21-40
073IC: Ivan-----	0-27	Silt loam	CL, ML	A-7-6, A-4, A-5, A-6, A- 7-5, A-7	0	0	95-100	95-100	90-100	70-100	26-45	8-20
	27-60	Silt loam	ML, CL	A-6, A-7-5, A-7, A-5, A- 4, A-7-6	0	0	95-100	95-100	90-100	65-100	28-40	9-20
073IF: Ivan-----	0-38	Silt loam	CL, ML	A-7-5, A-7-6, A-4, A-7, A- 6, A-5	0	0	95-100	95-100	90-100	70-100	26-45	8-20
	38-60	Silt loam	ML, CL	A-4, A-6	0	0	95-100	95-100	90-100	65-100	28-40	9-20
073KE: Kenoma, eroded-	0-4	Silty clay loam	ML, CH, CL, MH	A-7, A-7-5, A-7-6	0	0	85-100	85-100	84-100	80-100	43-51	22-28
	4-36	Silty clay	CH, CL, MH	A-7, A-7-5, A-7-6	0	0	85-100	85-100	84-100	80-100	50-76	30-49
	36-60	Silty clay loam	CH, CL, ML	A-7, A-7-5, A-7-6	0	0	85-100	85-100	75-100	75-95	46-66	25-41
073LA: Labette-----	0-9	Silty clay loam	ML, CL	A-7, A-6, A- 7-6, A-7-5	0	0	85-100	85-100	75-100	68-100	37-50	16-25
	9-19	Silty clay loam	ML, MH, SC, CL, SM, CH	A-7, A-7-6, A-7-5	0	0-20	55-100	50-100	50-100	45-100	43-57	21-35
	19-27	Silty clay	CL, CH, SM, MH, ML, SC	A-7-6, A-7, A-7-5	0	0-20	55-100	50-100	50-100	45-100	43-65	21-45
	27-31	Unweathered bedrock			---	---	---	---	---	---	---	---
073LD: Labette-----	0-9	Silty clay loam	ML, CL	A-7, A-7-5, A-7-6, A-6	0	0	85-100	85-100	75-100	68-95	37-50	16-25
	9-19	Silty clay loam	CH, SM, CL, MH, SC, ML	A-7-6, A-7, A-7-5	0	0-20	55-100	50-100	50-100	45-100	43-57	21-32
	19-27	Silty clay	CH, ML, MH, SC, SM, CL	A-7-5, A-7, A-7-6	0	0-20	55-100	50-100	50-100	45-100	43-65	21-45
	27-31	Unweathered bedrock			---	---	---	---	---	---	---	---
Dwight-----	0-4	Silt loam	ML, CL	A-6, A-7, A- 7-5, A-7-6	0	0	100	100	95-100	85-100	34-45	15-22
	4-32	Clay	MH, CH	A-7, A-7-5, A-7-6	0	0	100	95-100	90-100	85-100	61-76	37-49
	32-44	Silty clay	MH, CH	A-7, A-7-6, A-7-5	0	0	100	85-100	85-100	80-100	51-66	29-45
	44-48	Unweathered bedrock			---	---	---	---	---	---	---	---
073MA: Martin-----	0-11	Silty clay loam	MH, CL, CH, ML	A-7, A-6, A- 7-6, A-7-5	0	0	100	100	95-100	80-100	35-55	15-30
	11-52	Silty clay	ML, CL, CH, MH	A-7-6, A-7-5, A-7, A-6	0	0	100	100	95-100	80-100	35-60	15-40
	52-60	Clay	MH, CH, CL	A-7-5, A-7, A-6, A-7-6	0	0	100	95-100	90-100	80-100	40-70	25-40

ENGINEERING INDEX PROPERTIES--Continued
Woodson County, Kansas

(Absence of an entry indicates that the data were not estimated.)

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index	
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200			
	In				Pct	Pct					Pct		
073NZ: Niotaze-----	0-9	Loam	ML, CL	A-4, A-7-6, A-7-5, A-7, A-6, A-5	0	0-25	75-100	70-100	65-100	50-95	26-43	9-22	
	9-27	Silty clay	MH, ML, CH, CL	A-7-6, A-7, A-7-5	0	0	95-100	95-100	90-100	90-100	43-55	22-40	
	27-31	Weathered bedrock			---	---	---	---	---	---	---	---	
Darnell-----	0-6	Fine sandy loam	CL, SC-SM, CL-ML, ML, SC, SM	A-6, A-2, A- 2-4, A-2-6, A-4	0	0-15	90-100	90-100	75-100	30-60	21-30	4-12	
	6-16	Fine sandy loam	CL, ML, SC, SC-SM, SM, CL-ML	A-6, A-4, A- 2-6, A-2-4, A-2	0	0-10	70-100	70-100	60-100	25-60	21-35	4-15	
	16-20	Weathered bedrock			---	---	---	---	---	---	---	---	
073RE: Reading-----	0-13	Silt loam	ML, CL-ML, CL	A-4, A-6	0	0	100	100	90-100	80-98	23-40	6-20	
	13-44	Silty clay loam	ML, CL	A-7-5, A-7, A-6, A-7-6	0	0	100	100	95-100	85-98	30-45	11-25	
	44-60	Silty clay loam	CL, ML	A-7-6, A-6, A-7-5, A-7	0	0	100	100	95-100	80-98	39-50	18-30	
073ST: Steedman-----	0-8	Stony loam	SM, CL, SC, ML	A-6, A-2-7, A-2, A-2-6, A-7-6, A-7- 5, A-7	0-5	0-15	60-95	50-90	40-90	30-70	34-43	15-22	
	8-30	Silty clay	MH, CH	A-7, A-7-6, A-7-5	0	0	95-100	90-100	90-100	80-98	56-71	33-45	
	30-34	Weathered bedrock			---	---	---	---	---	---	---	---	
205BH: Bates-----	0-10	Loam	CL-ML, ML, CL	A-4, A-6	0	0	90-100	85-100	80-100	55-90	20-40	3-15	
	10-12	Loam	ML, CL-ML, CL	A-4, A-6	0	0	90-100	85-100	80-100	55-90	20-40	3-20	
	12-19	Clay loam	CL, ML, SC, SM	A-7-5, A-6, A-7-6, A-7, A-4, A-5	0	0	85-100	80-100	80-100	45-85	25-45	8-25	
	19-27	Gravelly clay loam	SM, SC, ML, CL	A-7-6, A-2-4, A-2-7, A-5, A-7, A-7-5, A-4, A-6, A- 2-6, A-2-5	0	0-15	70-100	60-100	50-100	20-85	20-45	8-30	
	27-31	Weathered bedrock			---	---	---	---	---	---	---	---	
	Collinsville---	0-6	Loam	CL-ML, CL, ML	A-6, A-4	---	0-15	85-100	85-100	75-95	55-85	22-35	2-15
6-14		Fine sandy loam	CL-ML, SM, CL, SC, ML, SC-SM	A-4, A-2-4, A-2	---	0-45	55-100	55-100	50-95	20-85	15-30	NP-10	
	14-18	Unweathered bedrock			---	---	---	---	---	---	---	---	
	205BO: Bates-----	0-7	Loam	CL, CL-ML, ML	A-6, A-4	0	0	90-100	85-100	80-100	55-90	20-40	3-15
		7-13	Loam	CL, SC, SM, ML	A-7-5, A-4, A-6, A-7-6, A-5	0	0	85-100	85-100	80-100	45-85	25-45	8-20
13-20		Clay loam	ML, CL, SC, SM	A-5, A-6, A- 2-7, A-7-5, A-4, A-2, A- 2-4, A-2-5, A-2-6, A-7, A-7-6	0	0-15	70-100	80-100	80-100	20-85	20-45	8-25	
	20-25	Gravelly clay loam	CL, SC, SM, ML	A-2-4, A-2-5, A-2-6, A-2- 7, A-5, A-6, A-7, A-7-5, A-7-6, A-4, A-2	0	0-15	70-100	60-100	50-100	20-85	20-45	8-25	
	25-29	Weathered bedrock			---	---	---	---	---	---	---	---	
	Collinsville---	0-6	Loam	ML, CL-ML, CL	A-4	---	0-15	85-100	85-100	75-95	55-85	22-35	2-10
6-14		Fine sandy loam	ML, SC-SM, CL, CL-ML, SC, SM	A-2, A-2-4, A-4	---	0-45	55-100	55-100	50-95	20-85	15-30	NP-10	
	14-18	Unweathered bedrock			---	---	---	---	---	---	---	---	
	205DW: Dennis-----	0-10	Silt loam	CL-ML, CL, ML	A-4, A-6	0	0	100	100	96-100	65-97	20-37	1-15
		10-16	Silty clay loam	ML, CL	A-7-6, A-7-5, A-7, A-6	0	0	98-100	98-100	94-100	75-98	33-48	13-25
16-60		Silty clay	MH, CL, CH, ML	A-7-5, A-7-6, A-6, A-7	0	0	98-100	98-100	94-100	75-98	37-65	15-40	
Dwight-----	0-4	Silt loam	CL, CL-ML, ML	A-7-5, A-7, A-6, A-4, A- 7-6, A-5	0	0	100	100	95-100	85-100	25-45	5-20	
	4-42	Silty clay	CH, MH, CL	A-7-5, A-7-6, A-7	0	0	100	100	95-100	90-100	50-70	25-40	
	42-60	Silty clay	CL, CH, MH	A-7-6, A-7, A-7-5	0	0	100	100	95-100	90-100	50-70	25-40	

ENGINEERING INDEX PROPERTIES--Continued
Woodson County, Kansas

(Absence of an entry indicates that the data were not estimated.)

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
205EB: Eram-----	0-9	Silt loam	CL, MH, ML, CH	A-7, A-7-6, A-4, A-5, A- 6, A-7-5	0	0	85-100	85-100	85-100	70-95	30-55	8-30
	9-24	Silty clay	CL, MH, ML, CH	A-7, A-7-6, A-7-5, A-6	0	0	95-100	95-100	90-100	80-98	37-65	15-40
	24-32	Silty clay	ML, CH, MH, CL	A-7-6, A-6, A-7-5, A-7	0	0	95-100	95-100	90-100	80-98	37-65	15-40
	32-36	Weathered bedrock			---	---	---	---	---	---	---	---
205EC: Eram-----	0-9	Silt loam	ML, MH, CL, CH	A-7-5, A-7, A-6, A-5, A- 4, A-7-6	0	0	85-100	85-100	85-100	70-95	28-55	9-30
	9-20	Silty clay loam	ML, CH, CL, MH	A-7-6, A-7, A-7-5	0	0	95-100	95-100	90-100	80-98	43-61	21-35
	20-24	Silty clay	ML, CH, CL, MH	A-7, A-7-6, A-7-5	0	0	95-100	95-100	90-100	80-98	43-61	21-35
	24-28	Weathered bedrock			---	---	---	---	---	---	---	---
205LA: Lanton-----	0-7	Silt loam	CL, ML	A-6, A-4	0	0	100	100	96-100	80-97	30-37	8-13
	7-37	Silty clay loam	CL, ML	A-7-5, A-7, A-6, A-7-6	0	0	100	100	98-100	90-98	33-42	12-25
	37-60	Silty clay	CL, MH, CH, ML	A-7-6, A-7-5, A-6, A-7	0	0	100	100	98-100	90-98	33-55	12-30
205ND: Niotaze-----	0-5	Cobbly fine sandy loam	SC-SM, GM, SM, GC, GC- GM, SC	A-1, A-2, A- 1-b, A-2-4, A-4	---	10-50	50-90	50-80	35-75	15-45	15-30	NP-7
	5-9	Cobbly fine sandy loam	SM, SC-SM, SC, GC, GC- GM, GM	A-2-4, A-1-b, A-4, A-2, A- 1	---	10-50	50-90	50-80	35-75	15-45	15-30	NP-10
	9-24	Silty clay	MH, CL, CH, ML	A-7-6, A-7-5, A-7, A-6	0	0	95-100	95-100	90-100	90-100	35-65	15-40
	24-36	Silty clay	ML, MH, CL, CH	A-7-6, A-6, A-7, A-7-5	0	0	95-100	95-100	90-100	90-100	35-65	15-40
	36-40	Weathered bedrock			---	---	---	---	---	---	---	---
Darnell-----	0-6	Fine sandy loam	CL-ML, SM, SC-SM, CL, ML, SC	A-2, A-2-4, A-4	0	0-15	90-100	90-100	85-100	30-60	15-30	NP-10
	6-17	Fine sandy loam	CL, ML, SC, SM, SC-SM, CL-ML	A-2-4, A-2, A-4	0	0-10	70-100	70-100	60-100	25-60	15-30	NP-10
	17-21	Weathered bedrock			---	---	---	---	---	---	---	---
205SC: Shidler-----	0-10	Silty clay loam	ML, CH, CL, MH	A-7-6, A-6, A-7, A-7-5	---	0-25	75-100	75-100	70-100	65-98	33-55	12-27
	10-14	Unweathered bedrock			---	---	---	---	---	---	---	---
Catoosa-----	0-8	Silt loam	ML, CL	A-7-6, A-7-5, A-7, A-6, A- 5, A-4	0	0	100	100	96-100	65-97	30-45	8-20
	8-26	Silty clay loam	CL, ML	A-7, A-7-6, A-6, A-7-5	0	0	85-100	85-100	85-100	70-98	33-48	12-30
	26-30	Unweathered bedrock			---	---	---	---	---	---	---	---
205SF: Steedman-----	0-8	Gravelly silt loam	SC, ML, CL, SM	A-2-4, A-2, A-6, A-2-7, A-4, A-2-6	0-5	0-15	60-95	50-90	45-90	35-80	30-40	10-20
	8-32	Silty clay	MH, CH	A-7-6, A-7, A-7-5	0	0	95-100	95-100	90-100	80-95	55-70	33-45
	32-36	Weathered bedrock			---	---	---	---	---	---	---	---
AED: Arents, Earthen Dam-----	---	---	---	---	---	---	---	---	---	---	---	
Bb: Bates-----	0-16	Loam	ML, CL-ML, CL	A-6, A-4	0	0	90-100	85-100	80-100	55-90	20-40	3-15
	16-27	Clay loam	SM, SC, ML, CL	A-5, A-7-6, A-7, A-4, A- 6, A-7-5	0	0	85-100	85-100	80-100	45-85	25-45	8-25
	27-33	Very gravelly clay loam	SC, SM	A-2-4, A-2, A-2-6, A-2- 5, A-2-7, A- 4, A-7-6, A- 6, A-7-5, A- 7, A-5	0	0-15	60-100	30-100	25-100	20-85	20-45	8-30
	33-37				---	---	---	---	---	---	---	---

ENGINEERING INDEX PROPERTIES--Continued
Woodson County, Kansas

(Absence of an entry indicates that the data were not estimated.)

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
Bc: Bates-----	0-16	Loam	ML, CL, CL-ML	A-6, A-4	0	0	90-100	85-100	80-100	55-90	20-40	3-15
	16-27	Clay loam	CL, ML, SC, SM	A-6, A-7-6, A-7-5, A-7, A-5, A-4	0	0	85-100	80-100	75-100	45-85	25-45	8-25
	27-33	Extremely gravelly clay loam	SC, SM	A-2, A-4, A- 7-6, A-7-5, A-7, A-6, A- 5, A-2-5, A- 2-6, A-2-7, A-2-4	0	0-20	60-100	25-100	20-100	15-85	20-45	8-25
	33-37	Weathered bedrock			---	---	---	---	---	---	---	---
BOP: Borrow Pits----	---	---	---	---	---	---	---	---	---	---	---	---
Ca: Clareson-----	0-9	Silty clay loam	CH, ML, MH, CL	A-7, A-7-5, A-7-6, A-5, A-6, A-4	---	0-25	90-100	90-100	85-95	85-95	30-60	8-35
	9-16	Flaggy silty clay loam	ML, CH, CL, MH	A-6, A-7-6, A-7, A-7-5	---	0-65	90-100	85-100	85-95	85-95	35-60	11-35
	16-25	Very flaggy silty clay	CH, CL, MH, ML	A-7, A-7-5, A-7-6	---	50-85	85-100	85-100	80-95	80-95	41-85	18-60
	25-33	Unweathered bedrock			---	---	---	---	---	---	---	---
Sogn-----	0-9	Silty clay loam	CH, CL, MH, ML	A-4, A-7-5, A-7-6, A-6, A-7, A-5	0	0-10	85-100	85-100	80-100	70-100	25-55	10-25
	9-13	Unweathered bedrock			---	---	---	---	---	---	---	---
Cd: Cleora-----	0-18	Fine sandy loam	SM, CL, SC, SC-SM, ML, CL-ML	A-4, A-6	0	0	100	98-100	80-100	36-60	15-35	NP-15
	18-90	Fine sandy loam	ML, SC, CL- ML, SC-SM, CL, SM	A-4, A-6	0	0	100	98-100	80-100	36-85	15-35	NP-15
Da: Darnell-----	0-4	Fine sandy loam	CL-ML, SM, SC-SM, ML, CL, SC	A-2, A-6, A- 4, A-2-6, A- 2-4	0	0-15	90-100	90-100	85-100	30-60	15-30	NP-13
	4-16	Fine sandy loam	SM, SC, ML, CL, CL-ML, SC-SM	A-2, A-6, A- 4, A-2-6, A- 2-4	0	0-10	70-100	70-100	60-100	25-60	15-35	NP-15
	16-20	Unweathered bedrock			---	---	---	---	---	---	---	---
Niotaze-----	0-9	Loam	CL-ML, ML, CL	A-4, A-6	0	0-25	75-100	75-100	65-95	50-95	20-40	5-15
	9-24	Silty clay	ML, CL, MH, CH	A-7, A-7-5, A-6, A-7-6	0	0	95-100	95-100	90-100	90-100	35-65	15-40
	24-28	Weathered bedrock			---	---	---	---	---	---	---	---
Dd: Dennis-----	0-10	Silt loam	CL-ML, CL, ML	A-6, A-4	0	0	100	100	96-100	65-97	20-37	1-15
	10-15	Silty clay loam	CL, ML	A-7-6, A-6, A-7, A-7-5	0	0	98-100	98-100	94-100	75-98	33-48	13-25
	15-74	Silty clay	CL, CH, ML, MH	A-6, A-7, A- 7-5, A-7-6	0	0	98-100	96-100	94-100	75-98	37-65	15-40
	74-90	Silty clay loam	ML, CL	A-6, A-7-6, A-7-5, A-7	0	0	98-100	98-100	94-100	75-98	33-48	13-30
De: Dennis-----	0-10	Silt loam	CL, CL-ML, ML	A-6, A-4	0	0	100	100	94-100	65-97	20-37	1-15
	10-15	Silty clay loam	ML, CL	A-6, A-7, A- 7-5, A-7-6	0	0	98-100	98-100	94-100	75-98	33-48	13-25
	15-74	Silty clay	CH, CL, MH, ML	A-7-6, A-7, A-6, A-7-5	0	0	98-100	96-100	94-100	75-98	37-65	15-40
	74-90	Silty clay loam	ML, CL	A-7-5, A-7, A-6, A-7-6	0	0	98-100	98-100	94-100	75-98	33-48	13-30
Df: Dennis, eroded-	0-8	Silty clay loam	ML, CL	A-7-5, A-7, A-6, A-7-6	0	0	98-100	98-100	94-100	75-98	33-48	13-25
	8-67	Silty clay	ML, CH, CL, MH	A-7-6, A-6, A-7, A-7-5	0	0	98-100	96-100	94-100	75-98	37-65	15-40
	67-83	Silty clay loam	CL, ML	A-7-6, A-6, A-7, A-7-5	0	0	98-100	98-100	94-100	75-98	33-48	13-35
Dg: Dennis, eroded-	0-8	Silty clay loam	CL, ML	A-7-6, A-6, A-7, A-7-5	0	0	98-100	98-100	94-100	75-98	33-48	13-25
	8-67	Silty clay	ML, MH, CH, CL	A-7, A-7-6, A-6, A-7-5	0	0	98-100	96-100	94-100	75-98	37-65	15-40
	67-83	Silty clay loam	CL, ML	A-6, A-7, A- 7-5, A-7-6	0	0	98-100	98-100	94-100	75-98	33-48	13-35
Eram, eroded---	0-7	Silty clay	MH, CL, CH, ML	A-6, A-7-6, A-7-5, A-7	0	0	85-100	85-100	85-100	70-95	33-60	12-35
	7-31	Silty clay	MH, CL, CH, ML	A-6, A-7-6, A-7, A-7-5	0	0	95-100	90-100	85-100	80-98	37-65	15-40
	31-35	Weathered bedrock			---	---	---	---	---	---	---	---

ENGINEERING INDEX PROPERTIES--Continued
Woodson County, Kansas

(Absence of an entry indicates that the data were not estimated.)

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
Dw: Dwight-----	0-4	Silt loam	CL-ML, ML, CL	A-5, A-6, A-7, A-7-5, A-4, A-7-6	0	0	100	100	90-100	80-100	25-45	3-20
	4-32	Clay	MH, CH, CL	A-7-6, A-7-5, A-7	0	0	100	100	95-100	85-100	50-75	25-50
	32-52	Silty clay	MH, CH, CL	A-7-6, A-7-5, A-7	0	0	100	100	95-100	85-100	45-65	25-40
	52-60	Weathered bedrock			---	---	---	---	---	---	---	---
Eb: Eram-----	0-10	Silty clay loam	MH, ML, CH, CL	A-6, A-7-6, A-7-5, A-7	0	0	85-100	85-100	85-100	70-95	33-60	12-30
	10-31	Silty clay	ML, CL, MH, CH	A-6, A-7-6, A-7-5, A-7	0	0	95-100	90-100	85-100	80-98	37-65	15-40
	31-35				---	---	---	---	---	---	---	---
Ec: Eram-----	0-10	Silty clay loam	CL, MH, CH, ML	A-7, A-7-5, A-6, A-7-6	0	0	85-100	85-100	85-100	70-95	33-60	12-30
	10-31	Silty clay	CH, CL, ML, MH	A-6, A-7-6, A-7-5, A-7	0	0	95-100	90-100	85-100	80-98	37-65	15-40
	31-35				---	---	---	---	---	---	---	---
Ex: Eram-----	0-7	Silty clay loam	MH, CL, CH, ML	A-6, A-7-6, A-7, A-7-5	0	0	85-100	85-100	85-100	70-95	33-60	12-30
	7-28	Silty clay	MH, CH, CL, ML	A-7, A-7-5, A-6, A-7-6	0	0	95-100	90-100	85-100	80-98	37-65	15-40
	28-32	Weathered bedrock			---	---	---	---	---	---	---	---
Collinsville---	0-6	Loam	ML, CL-ML, CL	A-4	0-5	0-15	85-100	85-100	75-95	55-85	22-35	2-10
	6-14	Loam	SC, ML, CL, SC-SM, SM, CL-ML	A-2-4, A-4, A-2	0	0-45	55-100	55-100	50-95	20-85	15-30	NP-10
	14-18	Unweathered bedrock			---	---	---	---	---	---	---	---
GRP: Gravel Pits----	---	---	---	---	---	---	---	---	---	---	---	---
Ha: Hepler-----	0-30	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	100	100	90-100	75-98	20-35	2-15
	30-37	Silt loam	ML, CL, CL-ML	A-6, A-4	0	0	100	100	95-100	85-98	20-35	2-15
	37-80	Silty clay loam	CL, ML	A-6, A-7-6, A-7-5, A-7	0	0	100	100	95-100	85-98	35-50	15-30
Ka: Kenoma-----	0-11	Silt loam	CL, CL-ML, ML	A-6, A-4	0	0	85-100	85-100	85-100	85-100	25-40	3-18
	11-28	Silty clay	CL, MH, CH	A-7-5, A-7-6, A-7	0	0	85-100	85-100	85-100	85-100	50-75	30-48
	28-80	Silty clay	MH, CL, CH	A-7-5, A-7, A-7-6	0	0	85-100	85-100	75-100	75-95	45-65	25-44
Ko: Kenoma-----	0-11	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	85-100	85-100	85-100	85-100	25-40	3-18
	11-28	Silty clay	CL, CH, MH	A-7-6, A-7-5, A-7	0	0	85-100	85-100	85-100	80-100	50-75	30-48
	28-80	Silty clay	MH, CH, CL	A-7-6, A-7-5, A-7	0	0	85-100	85-100	75-100	75-95	45-65	25-44
Olpe-----	0-6	Silt loam	CL, ML	A-7, A-7-5, A-7-6, A-6	0	0	80-100	75-100	60-100	50-95	31-43	13-22
	6-15	Very gravelly silt loam	ML, SM, GC, SC, MH, GM, CL, CH	A-2-6, A-2-7, A-7, A-7-5, A-7-6, A-2, A-6	0	0	20-80	10-75	10-75	10-70	35-56	20-33
	15-24	Very gravelly silty clay loam	GC, SM, GM, GP-GC, SC, SP-SC	A-7-6, A-7-5, A-7, A-6, A-2-7, A-2-6, A-2	0	0	20-70	10-50	10-45	10-40	35-66	25-41
	24-60	Very gravelly clay loam	CL, CH, SM, SC, MH	A-7-6, A-7-5, A-7, A-2-7, A-2	0	0	60-100	40-100	35-100	30-95	51-66	29-41
Kw: Kenoma, eroded-	0-7	Silt loam	CL, CL-ML, ML	A-6, A-4	0	0	85-100	85-100	85-100	85-100	25-40	3-18
	7-28	Silty clay	MH, CH, CL	A-7-5, A-7, A-7-6	0	0	85-100	85-100	85-100	80-100	50-75	30-48
	28-76	Silty clay	CL, CH, MH	A-7-6, A-7-5, A-7	0	0	85-100	85-100	75-100	75-95	45-65	25-44
Woodson, eroded	0-7	Silt loam	ML, CL, CL-ML	A-4, A-6	0	0	100	100	90-100	85-100	25-40	5-20
	7-28	Silty clay	CL, CH, MH	A-7-6, A-7-5, A-7	0	0	100	95-100	95-100	90-100	50-65	30-45
	28-74	Silty clay	CH, MH, CL	A-7, A-7-6, A-7-5	0	0	100	95-100	95-100	90-100	45-65	20-40
La: Leanna, drained	0-16	Silt loam	ML, CL, CL-ML	A-5, A-6, A-4, A-7, A-7-5, A-7-6	0	0	100	100	95-100	85-100	25-48	7-25
	16-52	Silty clay	ML, CL, CH, MH	A-7-5, A-7, A-7-6	0	0	100	100	95-100	90-100	43-57	21-32
	52-60	Silty clay loam	ML, CH, CL, MH	A-7, A-7-6, A-7-5, A-6	0	0	100	100	95-100	90-100	36-52	15-30

ENGINEERING INDEX PROPERTIES--Continued
Woodson County, Kansas

(Absence of an entry indicates that the data were not estimated.)

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
Lb: Lula-----	0-9	Silt loam	ML, CL-ML, CL	A-7-6, A-7-5, A-6, A-5, A-4, A-7	0	0	100	100	96-100	65-97	25-45	7-20
	9-18	Silty clay loam	MH, CL, CH, ML	A-6, A-7-6, A-7-5, A-7, A-5, A-4	0	0	100	100	96-100	65-98	28-55	9-30
	18-57	Silty clay loam	CL, ML	A-7-5, A-7-6, A-6, A-7	0	0-30	85-100	85-100	80-100	70-98	36-50	15-30
	57-65	Unweathered bedrock			---	---	---	---	---	---	---	---
Ld: Lula-----	0-9	Silt loam	ML, CL, CL-ML	A-7-6, A-4, A-7-5, A-7, A-6, A-5	0	0	100	100	96-100	65-97	25-45	7-20
	9-18	Silty clay loam	ML, CH, CL, MH	A-4, A-6, A-7-6, A-7-5, A-7, A-5	0	0	100	100	96-100	65-98	28-55	9-30
	18-57	Silty clay loam	ML, CL	A-6, A-7-6, A-7, A-7-5	0	0-30	85-100	85-100	80-100	70-98	36-50	15-30
	57-65	Unweathered bedrock			---	---	---	---	---	---	---	---
Dwight-----	0-4	Silt loam	CL, CL-ML, ML	A-5, A-6, A-7, A-7-5, A-4, A-7-6	0	0	100	100	90-100	80-100	25-45	3-20
	4-32	Clay	MH, CH, CL	A-7-6, A-7-5, A-7	0	0	100	100	95-100	80-100	50-75	25-45
	32-52	Silty clay	MH, CL, CH	A-7-6, A-7-5, A-7	0	0	100	100	95-100	85-100	45-65	25-40
	52-60	Weathered bedrock			---	---	---	---	---	---	---	---
Ma: Mason-----	0-12	Silt loam	CL, ML	A-4, A-7-6, A-7-5, A-7, A-6, A-5	0	0	100	100	96-100	65-98	30-45	8-20
	12-20	Silt loam	CL, ML	A-4, A-7-5, A-6, A-5, A-7, A-7-6	0	0	100	100	96-100	65-98	30-45	8-20
	20-46	Silty clay loam	CL, ML	A-6, A-4, A-7-6, A-7-5, A-7, A-5	0	0	98-100	98-100	96-100	65-98	30-50	9-28
	46-60	Clay loam	CL, ML	A-7, A-5, A-7-5, A-7-6, A-4	0	0	98-100	98-100	96-100	65-98	30-50	9-28
Ns: Niotaze-----	0-9	Loam	ML, CL-ML, CL	A-4, A-6	0	0-25	75-100	75-100	55-95	50-95	20-40	5-15
	9-24	Silty clay	CH, MH, CL, ML	A-7-6, A-6, A-7-5, A-7	0	0	95-100	95-100	90-100	90-100	35-65	15-40
	24-28	Weathered bedrock			---	---	---	---	---	---	---	---
Stephenville---	0-14	Fine sandy loam	CL-ML, SC-SM, CL, ML, SC, SM	A-4, A-2-4, A-2	0	0-15	85-100	85-100	80-100	25-60	15-30	NP-10
	14-31	Sandy clay loam	ML, SC-SM, SC, CL-ML, CL, SM	A-6, A-4	0	0	100	98-100	90-100	36-65	20-37	7-25
	31-35	Weathered bedrock			---	---	---	---	---	---	---	---
Od: Olpe-----	0-6	Silt loam	ML, CL	A-6, A-7-6, A-7-5, A-7	0	0	80-100	75-100	60-100	50-95	31-43	13-22
	6-15	Very gravelly silt loam	GC, ML, SC, SP-SC, SM, CH, MH, GM, GP-GC, CL	A-2, A-6, A-7-6, A-7-5, A-7, A-7, A-2-7, A-2-6	0	0	20-80	10-75	10-75	10-70	35-56	22-33
	15-24	Very gravelly silty clay loam	SP-SC, GC, SC, SM, GP- GC, GM	A-2-6, A-2-7, A-7, A-7-5, A-2, A-7-6	0	0	20-65	10-50	10-45	10-40	40-66	25-41
	24-60	Very gravelly clay loam	CH, SM, SC, ML, CL	A-7-6, A-7-5, A-2-7, A-2, A-7	0	0	60-100	40-100	35-100	30-95	51-66	29-41
Og: Osage-----	0-18	Silty clay	MH, CH, CL	A-7-5, A-7, A-7-6	0	0	100	100	100	95-100	50-75	30-55
	18-70	Silty clay	CH, MH, CL, ML	A-7-6, A-7-5, A-7	0	0	100	100	100	95-100	40-80	20-50
	70-90	Silty clay	ML, CH, CL, MH	A-7-6, A-7-5, A-6, A-7	0	0	100	100	100	95-100	40-80	20-50
Os: Osage-----	0-18	Silty clay loam	MH, CL, CH	A-7-6, A-7-5, A-7	0	0	100	100	90-100	90-100	50-75	30-55
	18-70	Silty clay	ML, CH, CL, MH	A-7-6, A-7, A-6, A-7-5	0	0	100	100	100	95-100	40-80	20-50
	70-90	Silty clay	ML, CH, MH, CL	A-7-5, A-7, A-6, A-7-6	0	0	100	100	100	95-100	40-80	20-50

ENGINEERING INDEX PROPERTIES--Continued
Woodson County, Kansas

(Absence of an entry indicates that the data were not estimated.)

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
Rc: Ringo-----	0-8	Silty clay loam	CL, CH, MH	A-7-6, A-7-5, A-6, A-7	---	0-5	90-100	90-100	85-100	85-100	40-60	25-35
	8-37	Silty clay	CL, ML, CH, MH	A-7-5, A-7, A-7-6	---	0-5	90-100	90-100	85-100	85-95	50-65	20-40
	37-50	Silty clay	CL, ML, CH, MH	A-7-5, A-7-6	---	0-5	90-100	90-100	85-100	85-95	50-65	20-40
	50-60	Weathered bedrock			---	---	---	---	---	---	---	---
Rd: Ringo-----	0-8	Silty clay loam	MH, CL, CH	A-7-6, A-7-5, A-7	---	0-5	90-100	90-100	85-100	85-100	40-60	25-35
	8-37	Silty clay	CL, ML, CH, MH	A-7, A-7-5, A-7-6	---	0-5	90-100	90-100	85-100	85-95	50-65	20-40
	37-50	Silty clay	CL, CH, ML, MH	A-7-6, A-7-5, A-7	---	0-5	90-100	90-100	85-100	85-95	50-65	20-40
	50-60	Weathered bedrock			---	---	---	---	---	---	---	---
Sogn-----	0-9	Silty clay loam	CH, MH, ML, CL	A-6, A-7-6, A-7-5, A-7, A-5, A-4	0	0-10	85-100	85-100	80-100	70-100	25-55	10-25
	9-13	Unweathered bedrock			---	---	---	---	---	---	---	---
Sa: Stephenville---	0-14	Fine sandy loam	CL-ML, SC-SM, CL, ML, SC, SM	A-2, A-2-4, A-4	0	0-15	85-100	85-100	80-100	25-60	15-30	NP-10
	14-31	Sandy clay loam	SC-SM, CL-ML, ML, SC, SM, CL	A-4, A-6	0	0	100	98-100	90-100	36-65	20-40	7-25
	31-35	Weathered bedrock			---	---	---	---	---	---	---	---
Sd: Summit-----	0-16	Silty clay loam	MH, CL, CH, ML	A-7, A-7-6, A-6, A-7-5	0	0	90-100	85-100	80-100	70-99	35-65	11-30
	16-40	Silty clay	CL, CH, ML, MH	A-6, A-7-6, A-7, A-7-5	0	0	85-100	85-100	75-100	60-99	37-65	15-40
	40-64	Silty clay	MH, CL, CH, ML	A-7, A-7-5, A-7-6	0	0	85-100	75-100	70-100	55-98	41-70	18-40
Se: Summit-----	0-16	Silty clay loam	ML, CH, CL, MH	A-7-6, A-7, A-6, A-7-5	0	0	90-100	85-100	80-100	70-99	35-65	11-30
	16-40	Silty clay	MH, CL, CH, ML	A-6, A-7-6, A-7-5, A-7	0	0	85-100	85-100	75-100	60-99	37-65	15-40
	40-64	Silty clay	MH, ML, CH, CL	A-7-6, A-7-5, A-7	0	0	85-100	75-100	70-100	55-98	41-70	18-40
Va: Verdigris-----	0-6	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	100	100	95-100	65-100	22-38	2-15
	6-82	Silty clay loam	ML, CL	A-6, A-4, A- 5, A-7-6, A- 7-5, A-7	0	0	100	100	95-100	80-100	30-45	8-23
Vc: Verdigris-----	0-6	Silt loam	CL-ML, CL, ML	A-6, A-4	0	0	100	100	95-100	65-100	22-38	2-15
	6-82	Silty clay loam	CL, ML	A-5, A-4, A- 6, A-7-6, A- 7-5, A-7	0	0	100	100	95-100	80-100	30-45	8-23
W: Water-----	---	---	---	---	---	---	---	---	---	---	---	---
Wa: Woodson-----	0-8	Silt loam	CL, CL-ML, ML	A-6, A-4	0	0	100	100	90-100	85-100	25-40	5-20
	8-29	Silty clay	MH, CL, CH	A-7-6, A-7-5, A-7	0	0	100	95-100	95-100	90-100	50-65	30-45
	29-75	Silty clay	ML, CH, CL, MH	A-7, A-7-5, A-7-6	0	0	100	95-100	95-100	90-100	45-65	20-40
Za: Zaar-----	0-10	Silty clay	MH, CL, CH	A-7-6, A-7, A-7-5	0	0	100	100	95-100	90-100	50-70	25-40
	10-24	Silty clay	CL, CH, MH	A-7, A-7-5, A-7-6	0	0	100	100	95-100	90-100	50-70	25-40
	24-56	Silty clay	MH, CL, CH	A-7-6, A-7, A-7-5	0	0	100	100	95-100	90-100	50-80	25-50
	56-60	Silty clay	CL, CH, MH	A-7-6, A-7, A-7-5	0	0	100	100	95-100	90-100	50-70	25-40

Physical Properties table shows estimates of some physical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Particle size is the effective diameter of a soil particle as measured by sedimentation, sieving, or micrometric methods. Particle sizes are expressed as classes with specific effective diameter class limits. The broad classes are sand, silt, and clay, ranging from the larger to the smaller.

Sand as a soil separate consists of mineral soil particles that are 0.05 millimeter to 2 millimeters in diameter. In this table, the estimated sand content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Silt as a soil separate consists of mineral soil particles that are 0.002 to 0.05 millimeter in diameter. In this table, the estimated silt content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of sand, silt, and clay affects the physical behavior of a soil. Particle size is important for engineering and agronomic interpretations, for determination of soil hydrologic qualities, and for soil classification.

The amount and kind of clay affect the fertility and physical condition of the soil and the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, permeability, plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earth moving operations.

Moist bulk density is the weight of soil (oven-dry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at 1/3- or 1/10-bar (33kPa or 10kPa) moisture tension. Weight is determined after the soil is dried at 105 degrees C. In the table, the estimated moist bulk density of each soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. Depending on soil texture, a bulk density of more than 1.4 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Permeability ($K \rightarrow \text{sat}$) refers to the ability of a soil to transmit water or air. The term "permeability," as used in soil surveys, indicates saturated hydraulic conductivity ($K \rightarrow \text{sat}$). The estimates in the table indicate the rate of water movement, in inches per hour, when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each soil layer. The capacity varies, depending on soil properties that affect retention of water. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Linear extensibility refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. It is an expression of the volume change between the water content of the clod at 1/3- or 1/10-bar tension (33kPa or 10kPa tension) and oven dryness. The volume change is reported in the table as percent change for the whole soil. Volume change is influenced by the amount and type of clay minerals in the soil.

Linear extensibility is used to determine the shrink-swell potential of soils. The shrink-swell potential is low if the soil has a linear extensibility of less than 3 percent; moderate if 3 to 6 percent; high if 6 to 9 percent; and very high if more than 9 percent. If the linear extensibility is more than 3, shrinking and swelling can cause damage to buildings, roads, and other structures and to plant roots. Special design commonly is needed.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In Physical Properties table, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter. The content of organic matter in a soil can be maintained by returning crop residue to the soil. Organic matter has a positive effect on available water capacity, water infiltration, soil organism activity, and tilth. It is a source of nitrogen and other nutrients for crops and soil organisms.

Erosion factors are shown in the Physical Properties table as the K factor (K_w and K_f) and the T factor. Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and permeability. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor K_w indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Erosion factor K_f indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to

wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. The groups are as follows:

1. Coarse sands, sands, fine sands, and very fine sands.
2. Loamy coarse sands, loamy sands, loamy fine sands, loamy very fine sands, ash material, and sapric soil material.
3. Coarse sandy loams, sandy loams, fine sandy loams, and very fine sandy loams.
- 4L. Calcareous loams, silt loams, clay loams, and silty clay loams.
4. Clays, silty clays, noncalcareous clay loams, and silty clay loams that are more than 35 percent clay.
5. Noncalcareous loams and silt loams that are less than 20 percent clay and sandy clay loams, sandy clays, and hemic soil material.
6. Noncalcareous loams and silt loams that are more than 20 percent clay and noncalcareous clay loams that are less than 35 percent clay.
7. Silts, noncalcareous silty clay loams that are less than 35 percent clay, and fibric soil material.
8. Soils that are not subject to wind erosion because of coarse fragments on the surface or because of surface wetness.

Wind erodibility index is a numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion. There is a close correlation between wind erosion and the texture of the surface layer, the size and durability of surface clods, rock fragments, organic matter, and a calcareous reaction. Soil moisture and frozen soil layers also influence wind erosion.

Explanation of Wind Erodibility Groups

Soil erodibility by wind is directly related to the percentage of dry non-erodible surface soil aggregates larger than 0.84 mm in diameter. From this percentage, the wind erodibility index (I-factor) is determined. The I-factor is an expression of the stability of these soil aggregates against breakdown by tillage and abrasion from wind erosion. Soils are placed in Wind Erodibility Groups (WEG) having similar percentages of dry soil aggregates larger than 0.84 mm as shown in the following table.

WEG	Properties of Soil Surface Layer	Dry Soil Aggregates >0.84mm Percent	Wind Erodibility Index T/Ac/Yr (I)
1	Very fine sand, fine sand, sand, or coarse sand	1 2 3 5 7	310 1/ 250 220 180 160
2	Loamy very fine sand, loamy fine sand, loamy sand, loamy coarse sand, organic soil materials.	10	134
3	Very fine sandy loam, fine sandy loam, sandy loam, or coarse sandy loam.	25	86
4	Clay, silty clay, non-calcareous clay loam, or silty clay loam with >35 percent clay content.	25	86
4L	Calcareous 2/ loam, silt loam, clay loam, or silty clay loam.	25	86
5	Non-calcareous loam and silt loam with <20 percent clay content, or sandy clay loam, sandy clay, and hemic 3/ organic soil materials.	40	56
6	Non-calcareous loam and silt loam with >20 percent clay content, or non-calcareous clay loam with <35 percent clay content.	45	48
7	Silt, non-calcareous silty clay loam with >35 percent clay content and fibric 3/ organic soil material.	50	38
8	Soils not suitable for cultivation due to coarse fragments or wetness; wind erosion is not a problem.	--	0

1/ The "I" values for WEG 1 vary from 160 for coarse sands to 310 for very fine sands. Use an "I" of 220 as an average figure. For coarser sand that has gravel, use a lower figure. For a soil that has no gravel and very fine sand, use a higher figure. (Modification for coarse fragments is preparation.)

2/ Calcareous is a strongly or violently effervescent reaction to cold dilute (1N) HCL.

3/ See Soil Taxonomy for definition.

PHYSICAL PROPERTIES OF THE SOILS--Continued
Woodson County, Kansas: Published

(Single entries under "Sand and Silt" are a representative percentage are calculated using an algorithm. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" and "Wind erodibility index" apply only to the surface layer)

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea- bility (Ksat)	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
										K	Kf	T		
001CA: Catoosa-----	In	Pct	Pct	Pct	g/cc	in/hr	In/in	Pct	Pct					
	0-11	4	69	15-35	1.30-1.55	0.60-2.00	0.15-0.24	0.0-2.9	1.0-5.0	.37	.37	2	6	48
	11-27	4	56	27-55	1.20-1.70	0.20-0.60	0.15-0.24	3.0-7.0	0.5-2.0	.37	.37			
	27-31			---	---	---	---	---	---	---	---			
001CB: Catoosa-----	0-11	4	69	15-35	1.30-1.55	0.60-2.00	0.15-0.24	0.0-3.0	1.0-5.0	.37	.37	2	6	48
	11-27	4	56	27-55	1.20-1.70	0.20-0.60	0.15-0.24	3.0-6.5	0.5-2.0	.37	.37			
	27-31			---	---	---	---	---	---	---	---			
Rock Outcrop- 001CC: Collinsville-	0-7	67	20	5-20	1.30-1.60	2.00-6.00	0.09-0.15	0.0-2.9	1.0-3.0	.20	.20	1	3	86
	7-15	67	20	5-20	1.40-1.70	2.00-6.00	0.07-0.20	0.0-2.9	0.5-2.0	.20	.20			
	15-17			---	---	---	---	---	---	---	---			
Bates-----	0-8	44	37	15-27	1.40-1.50	0.60-2.00	0.15-0.22	0.0-2.9	1.0-3.0	.32	.32	3	5	56
	8-11	41	35	18-35	1.40-1.60	0.60-2.00	0.15-0.19	0.0-2.9	1.0-3.0	.28	.32			
	11-32	39	25	18-39	1.40-1.50	0.60-2.00	0.14-0.16	0.0-2.9	0.5-1.0	.20	.43			
	32-34			---	---	0.20-0.57	---	---	---	---	---			
001ZB: Zaar-----	0-18	3	54	40-60	1.20-1.30	0.20-0.60	0.12-0.14	6.0-13.0	2.0-4.0	.28	.28	5	4	86
	18-57	3	53	40-60	1.20-1.50	0.20-0.60	0.11-0.18	6.0-15.0	1.0-3.0	.28	.28			
	57-63	2	42	35-60	1.10-1.50	0.00-0.06	0.10-0.18	6.0-20.0	0.5-2.0	.28	.28			
031EP: Eram-----	0-8	1-20	45-70	27-40	1.30-1.40	0.20-0.60	0.15-0.20	3.0-5.9	1.0-3.0	.37	.37	3	7	38
	8-26	1-25	30-60	35-55	1.35-1.70	0.06-0.20	0.10-0.18	4.0-8.9	0.5-1.5	.37	.37			
	26-30			---	---	---	---	---	---	---	---			
Apperson----	0-9	1-10	60-70	27-35	1.20-1.60	0.20-0.60	0.16-0.20	3.0-5.9	1.0-3.0	.37	.37	3	7	38
	9-14	1-10	50-60	35-45	1.25-1.70	0.20-0.60	0.16-0.20	6.0-8.9	1.0-2.0	.37	.37			
	14-42	1-10	40-50	40-60	1.35-1.60	0.06-0.20	0.14-0.18	6.0-8.9	0.5-1.5	.32	.32			
	42-46			---	---	---	---	---	---	---	---			
031ES: Eram-----	0-8	1-20	45-70	27-40	1.30-1.40	0.20-0.60	0.15-0.20	3.0-5.9	1.0-3.0	.37	.37	3	7	38
	8-26	1-25	30-60	35-55	1.35-1.70	0.06-0.20	0.10-0.18	4.0-8.9	0.5-1.5	.37	.37			
	26-30			---	---	---	---	---	---	---	---			
Shidler-----	0-12	1-20	45-70	27-35	1.30-1.60	0.60-2.00	0.18-0.22	3.0-5.9	2.0-4.0	.32	.32	1	4L	86
	12-16			---	---	---	---	---	---	---	---			
073AT: Aquent-----	0-60			---	---	---	---	---	---	---	---	-	---	0
073CA: Chase-----	0-14	1-10	50-70	27-35	1.30-1.45	0.20-0.60	0.21-0.23	3.0-5.9	2.0-4.0	.37	.37	5	7	38
	14-45	1-10	35-70	35-55	1.35-1.45	0.06-0.20	0.11-0.19	5.0-8.9	1.0-3.0	.28	.28			
	45-60	1-10	40-65	27-50	1.35-1.45	0.06-0.20	0.11-0.18	6.0-8.9	0.5-2.0	.28	.28			
073CM: Clime-----	0-11	3-15	40-50	40-50	1.35-1.45	0.06-0.20	0.12-0.14	3.0-5.9	1.0-4.0	.28	.28	3	4	86
	11-23	3-15	30-50	35-60	1.35-1.50	0.06-0.60	0.12-0.18	6.0-8.9	1.0-3.0	.28	.28			
	23-33	3-15	30-50	35-60	1.40-1.50	0.06-0.20	0.10-0.15	6.0-8.9	0.5-1.0	.32	.32			
	33-37			---	---	0.00-0.20	---	---	---	---	---			
073CS: Clime-----	0-11	3-15	40-50	40-50	1.35-1.45	0.06-0.20	0.12-0.14	3.0-5.9	1.0-4.0	.28	.28	3	4	86
	11-23	3-15	30-50	35-60	1.35-1.50	0.06-0.60	0.12-0.18	6.0-8.9	1.0-3.0	.28	.28			
	23-33	3-15	30-50	35-60	1.40-1.50	0.06-0.20	0.10-0.15	6.0-8.9	0.5-1.0	.32	.32			
	33-37			---	---	0.00-0.20	---	---	---	---	---			
Sogn-----	0-7	1-15	50-70	27-35	1.15-1.20	0.60-2.00	0.17-0.22	3.0-5.9	1.0-3.0	.32	.32	1	4L	86
	7-11			---	---	---	---	---	---	---	---			
073DS: Dennis, eroded-----	0-6	10-30	50-70	27-35	1.30-1.40	0.20-0.60	0.15-0.20	3.0-5.9	0.5-2.0	.37	.37	5	7	38
	6-16	10-25	45-65	27-35	1.35-1.45	0.20-0.60	0.15-0.20	3.0-5.9	0.5-1.5	.37	.37			
	16-60	5-20	30-55	35-55	1.20-1.50	0.06-0.20	0.12-0.20	6.0-9.5	0.1-1.0	.37	.37			
073IC: Ivan-----	0-27	1-10	50-75	16-27	1.30-1.45	0.60-2.00	0.22-0.24	1.5-5.0	2.0-4.0	.32	.32	5	4L	86
	27-60	1-10	45-75	18-35	1.35-1.55	0.60-2.00	0.19-0.22	1.0-5.9	1.0-3.0	.32	.32			
073IF: Ivan-----	0-38	1-10	50-75	16-27	1.30-1.45	0.60-2.00	0.22-0.24	1.5-5.0	2.0-4.0	.32	.32	5	4L	86
	38-60	1-10	45-75	18-35	1.35-1.55	0.60-2.00	0.19-0.22	1.0-5.9	1.0-3.0	.32	.32			
073KE: Kenoma, eroded-----	0-4	1-10	50-75	27-45	1.20-1.60	0.20-0.60	0.21-0.23	1.5-4.5	0.8-2.0	.37	.37	3	7	38
	4-36	1-10	30-60	40-60	1.30-1.60	0.20-0.60	0.10-0.15	3.0-8.9	0.4-1.5	.32	.32			
	36-60	1-10	40-60	30-50	1.30-1.50	0.06-0.20	0.18-0.20	5.0-8.9	0.2-0.5	.32	.32			
073LA: Labette-----	0-9	1-12	50-70	28-40	1.10-1.45	0.20-0.60	0.17-0.23	3.0-5.9	2.0-4.0	.37	.37	2	7	38
	9-19	1-12	40-60	35-60	1.05-1.50	0.20-0.60	0.12-0.19	6.0-8.9	1.0-2.0	.37	.64			
	19-27	1-12	40-60	35-65	1.10-1.50	0.20-0.60	0.12-0.19	6.0-15.0	1.0-2.0	.37	.64			
	27-31			---	---	---	---	---	---	---	---			
073LD: Labette-----	0-9	1-12	50-70	28-40	1.10-1.45	0.20-0.60	0.17-0.23	3.0-5.9	2.0-4.0	.37	.37	2	7	38
	9-19	1-12	40-60	35-60	1.05-1.50	0.20-0.60	0.12-0.19	6.0-8.9	1.0-2.0	.37	.64			
	19-27	1-12	40-60	35-65	1.10-1.50	0.20-0.60	0.12-0.19	6.0-15.0	1.0-2.0	.37	.64			
	27-31			---	---	---	---	---	---	---	---			
Dwight-----	0-4	1-10	60-75	18-27	1.10-1.35	0.60-2.00	0.21-0.24	3.0-5.9	2.0-4.0	.43	.43	2	6	48
	4-32	1-15	25-50	45-60	1.30-1.40	0.00-0.06	0.10-0.14	6.0-9.0	1.0-3.0	.32	.32			
	32-44	1-10	35-60	35-55	1.20-1.40	0.06-0.20	0.10-0.15	6.0-10.0	0.5-1.0	.32	.32			
	44-48			---	---	---	---	---	---	---	---			

PHYSICAL PROPERTIES OF THE SOILS--Continued
Woodson County, Kansas: Published

(Single entries under "Sand and Silt" are a representative percentage are calculated using an algorithm. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" and "Wind erodibility index" apply only to the surface layer)

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea- bility (Ksat)	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
										K	Kf	T		
073MA: Martin-----	In	Pct	Pct	Pct	g/cc	in/hr	In/in	Pct	Pct					
	0-11	11	49	27-50	1.10-1.40	0.20-0.60	0.21-0.23	3.0-5.9	2.0-4.0	.37	.37	5	7	38
	11-52	8	41	27-60	1.35-1.40	0.20-0.60	0.18-0.20	3.0-8.0	0.5-2.0	.37	.37			
	52-60	12	36	40-60	1.40-1.50	0.06-0.20	0.12-0.18	6.0-8.9	0.0-1.0	.37	.37			
073NZ: Niotaze-----	0-9	30-52	30-50	10-27	1.30-1.40	0.60-2.00	0.16-0.24	1.0-5.9	1.0-3.0	.37	.37	3	5	56
	9-27	3-40	30-65	35-55	1.35-1.45	0.20-0.60	0.10-0.18	6.0-8.9	0.5-1.5	.32	.32			
	27-31					0.00-0.20								
Darnell-----	0-6	52-80	1-30	10-20	1.30-1.65	2.00-6.00	0.12-0.16	0.0-2.9	0.3-1.0	.24	.24	2	3	86
	6-16	35-80	1-30	10-25	1.40-1.70	2.00-6.00	0.12-0.16	0.0-2.9	0.1-0.5	.32	.32			
	16-20					0.20-0.60								
073RE: Reading-----	0-13	7	68	18-27	1.35-1.40	0.60-2.00	0.22-0.24	1.5-4.5	2.0-4.0	.32	.32	5	6	48
	13-44	6	61	27-35	1.40-1.50	0.20-2.00	0.18-0.20	3.0-5.9	0.5-3.0	.43	.43			
	44-60	9	56	30-42	1.30-1.50	0.20-2.00	0.13-0.20	3.0-5.9	0.5-1.0	.43	.43			
073ST: Steedman-----	0-8	10-45	28-50	18-27	1.30-1.50	0.60-2.00	0.14-0.22	3.0-5.9	0.5-3.0	.24	.43	3	8	0
	8-30	5-45	20-50	40-55	1.35-1.60	0.06-0.20	0.09-0.13	6.0-8.9	0.5-1.0	.32	.32			
	30-34					0.00-0.20								
205BH: Bates-----	0-10	35-55	30-40	15-27	1.40-1.50	0.60-2.00	0.20-0.24	0.0-2.9	1.0-4.0	.32	.32	3	5	56
	10-12	35-55	30-40	15-27	1.40-1.50	0.60-2.00	0.20-0.24	0.0-2.9	1.0-4.0	.32	.32			
	12-19	35-55	20-40	18-40	1.40-1.60	0.60-2.00	0.15-0.19	0.0-3.5	0.8-3.0	.28	.32			
	19-27	35-55	20-35	18-40	1.40-1.50	0.20-0.60	0.14-0.16	0.0-2.9	0.2-1.0	.20	.43			
	27-31					0.20-0.60								
Collinsville--	0-6	30-52	28-50	7-20	1.30-1.55	2.00-6.00	0.13-0.20	0.0-2.9	1.0-3.0	.32	.32	1	5	56
	6-14	30-70	10-50	5-20	1.40-1.70	2.00-6.00	0.07-0.20	0.0-2.9	0.5-2.0	.20	.20			
	14-18													
205BO: Bates-----	0-7	35-55	30-40	15-27	1.40-1.50	0.60-2.00	0.20-0.24	0.0-2.9	1.0-4.0	.32	.32	3	5	56
	7-13	35-55	20-40	18-35	1.40-1.60	0.60-2.00	0.15-0.19	0.0-2.9	1.0-3.0	.28	.32			
	13-20	35-55	20-35	18-35	1.40-1.50	0.60-2.00	0.14-0.16	0.0-4.0	0.5-1.5	.20	.43			
	20-25	35-55	20-35	18-40	1.40-1.50	0.20-0.60	0.14-0.16	0.0-2.9	0.2-1.0	.20	.43			
	25-29					0.20-0.60								
Collinsville--	0-6	30-52	28-50	7-20	1.30-1.55	2.00-6.00	0.13-0.20	0.0-2.9	1.0-3.0	.32	.32	1	5	56
	6-14	30-70	10-50	5-20	1.40-1.70	2.00-6.00	0.07-0.20	0.0-2.9	0.5-2.0	.20	.20			
	14-18													
205DW: Dennis-----	0-10	10-30	50-70	10-27	1.30-1.40	0.60-2.00	0.15-0.20	1.5-4.5	1.0-3.0	.43	.43	5	6	48
	10-16	10-25	45-65	27-35	1.35-1.45	0.20-0.60	0.15-0.20	3.0-7.0	0.5-2.0	.37	.37			
	16-60	5-20	30-55	35-55	1.40-1.50	0.06-0.20	0.12-0.20	6.0-8.9	0.2-1.0	.37	.37			
Dwight-----	0-4	1-10	60-75	18-27	1.20-1.35	0.60-2.00	0.21-0.24	3.0-5.9	2.0-4.0	.43	.43	2	6	48
	4-42	1-10	30-50	45-60	1.30-1.40	0.00-0.06	0.10-0.14	6.0-9.5	0.5-3.0	.32	.32			
	42-60	1-10	30-50	45-60	1.30-1.40	0.00-0.06	0.10-0.14	6.0-9.5	0.2-1.5	.32	.32			
205EB: Eram-----	0-9	1-25	50-75	18-45	1.30-1.60	0.20-2.00	0.15-0.20	0.0-8.9	1.0-3.0	.43	.43	3	6	48
	9-24	1-25	30-60	35-60	1.35-1.65	0.06-0.20	0.10-0.18	6.0-8.9	0.5-2.0	.37	.37			
	24-32	1-25	30-60	35-55	1.35-1.65	0.06-0.20	0.10-0.18	4.0-8.9	0.2-1.0	.37	.37			
	32-36					0.00-0.20								
205EC: Eram-----	0-9	1-25	50-75	18-45	1.30-1.60	0.20-2.00	0.15-0.20	3.0-8.9	1.0-3.0	.43	.43	3	6	48
	9-20	1-25	30-60	35-60	1.35-1.65	0.06-0.20	0.10-0.18	6.0-8.9	0.5-2.0	.37	.37			
	20-24	1-25	30-60	35-55	1.35-1.65	0.06-0.20	0.10-0.18	4.0-8.9	0.2-1.5	.37	.37			
	24-28					0.00-0.20								
205LA: Lanton-----	0-7	1-10	50-75	18-27	1.30-1.50	0.60-2.00	0.18-0.22	1.5-4.5	2.0-4.0	.37	.37	5	6	48
	7-37	1-10	50-75	27-35	1.35-1.70	0.20-0.60	0.18-0.22	3.0-5.9	1.0-3.0	.32	.32			
	37-60	1-10	40-65	30-45	1.35-1.65	0.06-0.20	0.12-0.18	4.0-8.9	0.2-1.5	.32	.32			
205ND: Niotaze-----	0-5	55-75	10-50	5-20	1.25-1.45	0.60-6.00	0.06-0.11	0.0-2.9	1.0-4.0	.20	.32	3	8	0
	5-9	55-75	10-50	5-20	1.25-1.45	0.60-6.00	0.06-0.11	0.0-2.9	1.0-2.5	.20	.32			
	9-24	3-40	30-65	35-55	1.35-1.45	0.20-0.60	0.10-0.20	6.0-8.9	0.5-1.5	.28	.55			
	24-36	3-40	30-65	35-55	1.35-1.65	0.06-0.20	0.10-0.20	6.0-8.9	0.0-1.2	.28	.55			
	36-40					0.00-0.20								
Darnell-----	0-6	52-85	1-30	2-20	1.30-1.65	0.60-6.00	0.12-0.16	0.0-2.9	0.3-2.0	.24	.32	2	3	86
	6-17	35-85	1-30	2-25	1.40-1.70	0.60-6.00	0.12-0.16	0.0-2.9	0.1-0.5	.32	.37			
	17-21					0.20-0.60								
205SC: Shidler-----	0-10	1-20	45-70	27-35	1.30-1.60	0.60-2.00	0.18-0.22	3.0-5.9	1.0-5.0	.32	.37	1	7	38
	10-14													
Catoosa-----	0-8	1-15	50-75	15-40	1.20-1.60	0.60-2.00	0.15-0.24	1.5-4.5	1.0-6.0	.37	.37	2	6	48
	8-26	1-25	45-65	27-45	1.10-1.60	0.20-0.60	0.15-0.22	3.0-6.5	0.5-4.0	.32	.32			
	26-30													
205SF: Steedman-----	0-8	10-20	50-75	18-27	1.30-1.50	0.60-2.00	0.14-0.24	0.0-2.9	0.5-3.0	.28	.43	3	8	0
	8-32	5-45	20-45	40-55	1.35-1.60	0.06-0.20	0.09-0.13	6.0-8.9	0.5-1.0	.32	.32			
	32-36					0.00-0.20								
AED: Arents, Earthen Dam-	---													

PHYSICAL PROPERTIES OF THE SOILS--Continued
Woodson County, Kansas: Published

(Single entries under "Sand and Silt" are a representative percentage are calculated using an algorithm. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" and "Wind erodibility index" apply only to the surface layer)

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea- bility (Ksat)	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
										K	Kf	T		
Bb:	In	Pct	Pct	Pct	g/cc	in/hr	In/in	Pct	Pct					
Bates-----	0-16	35-55	30-40	15-27	1.40-1.50	0.60-2.00	0.20-0.24	0.0-2.9	1.0-4.0	.32	.32	3	5	56
	16-27	35-55	20-40	18-35	1.30-1.60	0.60-2.00	0.15-0.19	0.0-4.0	1.0-3.0	.28	.32			
	27-33	35-55	20-30	18-40	1.30-1.50	0.20-0.60	0.14-0.16	0.0-2.9	0.5-1.0	.20	.43			
	33-37	---	---	---	---	0.20-0.60	---	---	---	---	---			
Bc:	0-16	35-55	30-40	15-27	1.40-1.50	0.60-2.00	0.20-0.24	0.0-2.9	1.0-4.0	.32	.32	3	5	56
Bates-----	16-27	35-55	20-40	18-35	1.30-1.60	0.60-2.00	0.15-0.19	0.0-3.5	1.0-3.0	.28	.32			
	27-33	35-55	20-30	18-40	1.30-1.50	0.20-0.60	0.14-0.16	0.0-2.9	0.5-1.0	.20	.43			
	33-37	---	---	---	---	0.20-0.60	---	---	---	---	---			
BOP:	---	---	---	---	---	---	---	---	---	---	---	-	---	---
Borrow Pits--	---	---	---	---	---	---	---	---	---	---	---			
Ca:	0-9	1-10	50-70	27-40	1.20-1.35	0.20-0.60	0.16-0.22	3.0-6.0	1.0-5.0	.32	.32	2	7	38
Clareson-----	9-16	1-10	50-70	27-40	1.20-1.40	0.20-0.60	0.09-0.21	3.0-5.9	0.5-3.0	.24	.24			
	16-25	1-10	25-60	35-70	1.05-1.45	0.20-0.60	0.04-0.07	5.5-8.9	0.2-1.0	.24	.24			
	25-33	---	---	---	---	---	---	---	---	---	---			
Sogn-----	0-9	1-25	45-70	27-35	1.15-1.20	0.60-2.00	0.17-0.22	3.0-5.9	1.0-4.0	.32	.32	1	4L	86
	9-13	---	---	---	---	---	---	---	---	---	---			
Cd:	0-18	52-80	1-35	10-18	1.30-1.60	2.00-6.00	0.11-0.15	0.0-2.9	1.0-3.0	.20	.20	5	3	86
Cleora-----	18-90	52-80	1-35	10-18	1.40-1.70	2.00-6.00	0.11-0.20	0.0-2.9	0.5-2.0	.32	.32			
Da:	0-4	52-80	1-30	10-20	1.30-1.65	2.00-6.00	0.12-0.16	0.0-2.9	0.3-1.0	.24	.24	2	3	86
Darnell-----	4-16	35-80	1-30	10-25	1.40-1.70	2.00-6.00	0.12-0.16	0.0-2.9	0.1-0.5	.32	.32			
	16-20	---	---	---	---	---	---	---	---	---	---			
Niotaze-----	0-9	30-52	30-50	10-27	1.30-1.40	0.60-2.00	0.16-0.24	0.0-2.9	1.0-4.0	.37	.37	3	5	56
	9-24	3-40	30-65	35-60	1.35-1.45	0.20-0.60	0.10-0.18	6.0-8.9	0.5-1.5	.32	.32			
	24-28	---	---	---	---	0.00-0.20	---	---	---	---	---			
Dd:	0-10	10-30	50-70	10-27	1.30-1.40	0.60-2.00	0.15-0.20	1.5-4.5	1.0-4.0	.43	.43	5	6	48
Dennis-----	10-15	10-25	45-65	27-35	1.35-1.45	0.20-0.60	0.15-0.20	3.0-5.9	0.5-2.0	.37	.37			
	15-74	3-15	30-55	35-55	1.20-1.50	0.06-0.20	0.12-0.20	6.0-10.0	0.2-1.0	.37	.37			
	74-90	10-25	45-65	27-60	1.30-1.45	0.00-0.06	0.15-0.20	3.0-6.5	0.1-0.8	.37	.37			
De:	0-10	10-30	50-70	10-27	1.30-1.40	0.60-2.00	0.15-0.20	1.5-4.5	1.0-4.0	.43	.43	5	6	48
Dennis-----	10-15	10-25	45-65	27-35	1.35-1.45	0.20-0.60	0.15-0.20	3.0-5.9	0.5-2.0	.37	.37			
	15-74	3-15	30-55	35-55	1.20-1.50	0.06-0.20	0.12-0.20	6.0-10.0	0.2-1.0	.37	.37			
	74-90	10-25	45-65	27-60	1.30-1.45	0.00-0.06	0.15-0.20	3.0-7.0	0.1-0.8	.37	.37			
Df:	0-8	10-25	45-65	27-35	1.35-1.45	0.20-0.60	0.15-0.20	3.0-5.9	0.5-2.0	.37	.37	5	7	38
Dennis, eroded-----	8-67	3-15	30-55	35-55	1.20-1.50	0.06-0.20	0.12-0.20	6.0-10.0	0.2-1.0	.37	.37			
	67-83	10-25	45-65	27-60	1.30-1.45	0.00-0.06	0.15-0.20	3.0-7.0	0.1-0.8	.37	.37			
Dg:	0-8	10-25	45-65	27-35	1.35-1.45	0.20-0.60	0.15-0.20	3.0-5.9	0.5-2.0	.37	.37	5	7	38
Dennis, eroded-----	8-67	3-15	30-55	35-55	1.20-1.50	0.06-0.20	0.12-0.20	6.0-10.0	0.2-1.0	.37	.37			
	67-83	10-25	45-65	27-60	1.30-1.45	0.00-0.06	0.15-0.20	3.0-7.0	0.1-0.8	.37	.37			
Eram, eroded-	0-7	1-20	40-70	27-50	1.30-1.60	0.20-0.60	0.15-0.20	3.0-9.0	1.0-3.0	.37	.37	3	7	38
	7-31	1-25	30-60	35-55	1.35-1.65	0.06-0.20	0.10-0.18	6.0-8.9	0.5-1.5	.37	.37			
	31-35	---	---	---	---	0.00-0.20	---	---	---	---	---			
Dw:	0-4	1-25	50-75	18-27	1.20-1.35	0.60-2.00	0.21-0.24	1.5-4.5	2.0-4.0	.43	.43	2	6	48
Dwight-----	4-32	1-20	25-50	45-60	1.30-1.40	0.00-0.06	0.10-0.14	6.0-8.9	1.0-3.0	.32	.32			
	32-52	1-10	35-60	35-50	1.30-1.40	0.00-0.06	0.09-0.16	6.0-8.9	0.5-1.0	.32	.32			
	52-60	---	---	---	---	0.00-0.20	---	---	---	---	---			
Eb:	0-10	1-20	45-70	27-40	1.30-1.60	0.20-0.60	0.15-0.20	3.0-5.9	1.0-4.0	.37	.37	3	7	38
Eram-----	10-31	1-25	30-60	35-55	1.35-1.65	0.06-0.20	0.10-0.18	6.0-8.9	0.5-2.0	.37	.37			
	31-35	---	---	---	---	0.00-0.20	---	---	---	---	---			
Ec:	0-10	1-20	45-70	27-40	1.30-1.60	0.20-0.60	0.15-0.20	3.0-5.9	1.0-4.0	.37	.37	3	7	38
Eram-----	10-31	1-25	30-60	35-55	1.35-1.65	0.06-0.20	0.10-0.18	6.0-8.9	0.5-2.0	.37	.37			
	31-35	---	---	---	---	0.00-0.20	---	---	---	---	---			
Ex:	0-7	1-20	45-70	27-40	1.30-1.60	0.20-0.60	0.15-0.20	3.0-5.9	1.0-4.0	.37	.37	3	7	38
Eram-----	7-28	1-25	30-60	35-55	1.35-1.65	0.06-0.20	0.10-0.18	6.0-8.9	0.5-2.0	.37	.37			
	28-32	---	---	---	---	0.00-0.20	---	---	---	---	---			
Collinsville-	0-6	30-52	28-50	7-20	1.30-1.55	2.00-6.00	0.13-0.20	0.0-2.9	1.0-3.0	.32	.32	1	5	56
	6-14	30-70	10-50	5-20	1.40-1.70	2.00-6.00	0.07-0.20	0.0-2.9	0.5-2.0	.20	.20			
	14-18	---	---	---	---	---	---	---	---	---	---			
GRP:	---	---	---	---	---	---	---	---	---	---	---	-	---	---
Gravel Pits--	---	---	---	---	---	---	---	---	---	---	---			
Ha:	0-30	1-10	55-80	12-27	1.25-1.45	0.60-2.00	0.22-0.24	1.1-4.5	1.0-2.0	.37	.37	5	6	48
Heppler-----	30-37	1-10	55-75	12-35	1.30-1.40	0.60-2.00	0.18-0.20	1.5-4.5	0.5-1.0	.37	.37			
	37-80	1-10	55-75	27-42	1.35-1.45	0.20-0.60	0.14-0.17	3.0-8.9	0.2-0.8	.37	.37			
Ka:	0-11	1-10	50-75	18-27	1.35-1.45	0.20-0.60	0.22-0.24	1.5-4.5	2.0-4.0	.43	.43	3	6	48
Kenoma-----	11-28	1-10	30-60	40-60	1.40-1.50	0.20-0.60	0.10-0.15	6.0-8.9	1.0-3.0	.32	.32			
	28-80	1-10	40-60	30-50	1.35-1.60	0.06-0.20	0.18-0.20	2.0-8.9	0.5-2.0	.32	.32			

PHYSICAL PROPERTIES OF THE SOILS--Continued
Woodson County, Kansas: Published

(Single entries under "Sand and Silt" are a representative percentage are calculated using an algorithm. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" and "Wind erodibility index" apply only to the surface layer)

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea- bility (Ksat)	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
										K	Kf	T		
Ko:	In	Pct	Pct	Pct	g/cc	in/hr	In/in	Pct	Pct					
Kenoma-----	0-11	1-10	50-75	18-27	1.35-1.45	0.20-0.60	0.22-0.24	1.5-4.5	2.0-4.0	.43	.43	3	6	48
	11-28	1-10	30-60	40-60	1.40-1.50	0.20-0.60	0.10-0.15	6.0-8.9	1.0-3.0	.32	.32			
	28-80	1-10	40-60	30-50	1.35-1.60	0.06-0.20	0.18-0.20	2.5-8.9	0.5-2.0	.32	.32			
Olpe-----	0-6	1-30	50-75	15-30	1.25-1.35	0.60-2.00	0.15-0.20	1.5-4.5	1.0-2.0	.43	.43	5	6	48
	6-15	1-20	50-70	27-40	1.30-1.40	0.20-0.60	0.02-0.04	3.0-5.9	0.5-1.0	.24	.24			
	15-24	1-10	30-55	40-50	1.35-1.45	0.20-0.60	0.01-0.03	6.0-8.9	0.2-0.5	.24	.24			
	24-60	1-30	25-55	40-50	1.40-1.55	0.06-0.20	0.05-0.08	4.0-8.9	0.1-0.4	.24	.24			
Kw:														
Kenoma, eroded-----	0-7	1-10	50-75	18-27	1.35-1.45	0.20-0.60	0.22-0.24	1.5-4.5	2.0-4.0	.37	.37	3	7	38
	7-28	1-10	30-60	40-60	1.40-1.50	0.20-0.60	0.10-0.15	6.0-8.9	1.0-3.0	.32	.32			
	28-76	1-10	40-60	30-50	1.35-1.60	0.06-0.20	0.18-0.20	2.0-8.9	0.5-2.0	.32	.32			
Woodson, eroded-----	0-7	1-10	50-75	18-27	1.25-1.45	0.20-0.60	0.22-0.24	0.0-2.9	1.0-5.0	.37	.37	3	7	38
	7-28	1-10	30-60	40-60	1.30-1.45	0.20-0.60	0.12-0.15	6.0-14.0	1.0-3.0	.32	.32			
	28-74	1-10	30-60	30-50	1.35-1.45	0.06-0.20	0.10-0.15	6.0-11.0	0.5-1.0	.32	.32			
La:														
Leanna, drained-----	0-16	1-10	50-75	15-30	1.10-1.35	0.20-0.60	0.22-0.24	1.5-4.5	1.0-5.0	.32	.32	3	6	48
	16-52	1-10	35-60	35-50	1.35-1.50	0.20-0.60	0.11-0.18	6.0-8.9	1.0-3.0	.37	.37			
	52-60	1-10	40-65	27-45	1.35-1.55	0.06-0.20	0.11-0.20	5.0-8.9	0.5-1.5	.37	.37			
Lb:														
Lula-----	0-9	1-10	50-75	15-27	1.20-1.40	0.60-2.00	0.16-0.20	1.5-4.5	1.0-3.0	.37	.37	3	6	48
	9-18	1-25	40-70	18-35	1.30-1.50	0.60-2.00	0.16-0.20	3.0-5.9	1.0-2.0	.37	.37			
	18-57	1-25	45-65	27-35	1.30-1.50	0.60-2.00	0.16-0.20	3.0-5.9	0.2-0.6	.32	.32			
	57-65													
Ld:														
Lula-----	0-9	1-10	50-75	15-27	1.20-1.40	0.60-2.00	0.16-0.20	1.5-4.5	1.0-3.0	.37	.37	3	6	48
	9-18	1-25	40-70	18-35	1.30-1.50	0.60-2.00	0.16-0.20	3.0-5.9	1.0-2.0	.37	.37			
	18-57	1-25	45-65	27-35	1.30-1.50	0.60-2.00	0.16-0.20	3.0-5.9	0.2-0.6	.32	.32			
	57-65													
Dwight-----	0-4	1-25	50-75	18-27	1.20-1.35	0.60-2.00	0.21-0.24	1.5-4.5	2.0-4.0	.43	.43	2	6	48
	4-32	1-20	25-50	45-60	1.30-1.40	0.00-0.06	0.10-0.14	6.0-8.9	1.0-3.0	.32	.32			
	32-52	1-10	35-60	35-50	1.30-1.40	0.00-0.06	0.09-0.16	6.0-8.9	0.5-1.0	.32	.32			
	52-60					0.00-0.20								
Ma:														
Mason-----	0-12	1-15	50-75	12-27	1.30-1.50	0.60-2.00	0.16-0.20	0.0-2.9	1.0-4.0	.37	.37	5	6	48
	12-20	1-15	50-75	12-27	1.30-1.50	0.60-2.00	0.16-0.20	0.0-2.9	1.0-3.0	.37	.37			
	20-46	1-10	45-65	20-35	1.40-1.70	0.20-0.60	0.16-0.20	3.0-5.9	0.5-1.0	.37	.37			
	46-60	1-30	40-65	20-35	1.40-1.70	0.20-0.60	0.16-0.20	3.0-5.9	0.2-0.8	.37	.37			
Ns:														
Niotaze-----	0-9	30-52	30-50	10-27	1.30-1.40	0.60-2.00	0.16-0.24	0.0-2.9	1.0-4.0	.37	.37	3	5	56
	9-24	3-40	30-65	35-60	1.35-1.45	0.20-0.60	0.10-0.18	6.0-8.9	0.5-1.5	.32	.32			
	24-28					0.00-0.20								
Stephenville-	0-14	55-80	10-50	3-20	1.30-1.60	2.00-6.00	0.11-0.15	0.0-2.9	0.5-2.0	.24	.24	3	3	86
	14-31	45-75	10-45	18-35	1.50-1.70	0.60-2.00	0.11-0.17	0.0-2.9	0.2-0.9	.32	.32			
	31-35					0.20-0.60								
Od:														
Olpe-----	0-6	1-30	50-75	15-30	1.25-1.35	0.60-2.00	0.15-0.20	1.5-4.5	1.0-2.0	.43	.43	5	6	48
	6-15	1-20	50-70	27-40	1.30-1.40	0.20-0.60	0.02-0.04	3.0-5.9	0.5-1.0	.24	.24			
	15-24	1-10	30-55	40-50	1.35-1.45	0.20-0.60	0.01-0.03	6.0-8.9	0.2-0.5	.24	.24			
	24-60	1-30	25-55	40-50	1.40-1.55	0.06-0.20	0.05-0.08	4.0-8.9	0.1-0.4	.24	.24			
Og:														
Osage-----	0-18	1-5	54	40-50	1.10-1.60	0.06-0.20	0.12-0.14	8.0-25.0	1.0-5.0	.28	.28	5	4	86
	18-70	1-5	51	35-60	1.10-1.70	0.06-0.20	0.08-0.12	9.0-25.0	0.5-2.0	.28	.28			
	70-90	1-5	49	35-60	1.10-1.70	0.00-0.06	0.08-0.12	9.0-25.0	0.1-1.0	.28	.28			
Os:														
Osage-----	0-18	1-5	50	35-50	1.10-1.60	0.20-0.60	0.12-0.18	8.0-25.0	1.0-5.0	.37	.37	5	4	86
	18-70	1-5	51	35-60	1.10-1.70	0.06-0.20	0.08-0.12	9.0-25.0	0.5-2.0	.28	.28			
	70-90	1-5	49	35-60	1.10-1.70	0.00-0.06	0.08-0.12	9.0-25.0	0.1-1.0	.28	.28			
Rc:														
Ringo-----	0-8	5-15	40-65	35-40	1.35-1.40	0.20-0.60	0.15-0.18	6.0-8.9	2.0-4.0	.37	.37	3	4	86
	8-37	5-15	30-65	35-50	1.35-1.50	0.06-0.20	0.15-0.21	6.0-8.9	0.5-2.0	.28	.28			
	37-50	5-15	30-65	35-50	1.35-1.50	0.00-0.06	0.15-0.21	6.0-8.9	0.5-2.0	.28	.28			
	50-60					0.00-0.20								
Rd:														
Ringo-----	0-8	5-15	40-65	35-40	1.35-1.40	0.20-0.60	0.15-0.18	6.0-8.9	2.0-4.0	.37	.37	3	4	86
	8-37	5-15	30-65	35-50	1.35-1.50	0.06-0.20	0.15-0.21	6.0-8.9	0.5-2.0	.28	.28			
	37-50	5-15	30-65	35-50	1.35-1.50	0.00-0.06	0.15-0.21	6.0-8.9	0.5-2.0	.28	.28			
	50-60					0.00-0.20								
Sogn-----	0-9	1-25	45-70	27-35	1.15-1.20	0.60-2.00	0.17-0.22	3.0-5.9	1.0-4.0	.32	.32	1	4L	86
	9-13													
Sa:														
Stephenville-	0-14	55-80	10-50	3-20	1.30-1.60	2.00-6.00	0.11-0.15	0.0-2.9	0.5-2.0	.24	.24	3	3	86
	14-31	45-75	10-45	18-35	1.50-1.70	0.60-2.00	0.11-0.17	0.0-2.9	0.2-0.9	.32	.32			
	31-35					0.20-0.60								
Sd:														
Summit-----	0-16	5-15	50-65	27-45	1.25-1.50	0.20-0.60	0.16-0.20	3.0-5.9	2.0-4.0	.37	.37	5	4	86
	16-40	5-15	30-65	32-45	1.35-1.65	0.20-0.60	0.10-0.18	6.0-8.9	1.0-2.0	.37	.37			
	40-64	1-15	30-60	40-60	1.35-1.60	0.06-0.20	0.10-0.18	6.0-8.9	0.5-1.5	.32	.32			

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(Single entries under "Sand and Silt" are a representative percentage are calculated using an algorithm. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" and "Wind erodibility index" apply only to the surface layer)

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea- bility (Ksat)	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
										K	Kf	T		
	In	Pct	Pct	Pct	g/cc	in/hr	In/in	Pct	Pct					
Se: Summit-----	0-16	5-15	50-65	27-45	1.25-1.50	0.20-0.60	0.16-0.20	3.0-5.9	2.0-4.0	.37	.37	5	4	86
	16-40	5-15	30-65	32-45	1.35-1.65	0.20-0.60	0.10-0.18	6.0-8.9	1.0-2.0	.37	.37			
	40-64	1-15	30-60	40-60	1.35-1.60	0.06-0.20	0.10-0.18	6.0-8.9	0.5-1.5	.32	.32			
Va: Verdigris----	0-6	5-20	50-75	15-27	1.30-1.60	0.60-2.00	0.20-0.24	1.5-4.5	2.0-4.0	.32	.32	5	6	48
	6-82	5-20	50-75	18-35	1.40-1.60	0.60-2.00	0.17-0.22	2.0-5.9	0.5-1.5	.32	.32			
Vc: Verdigris----	0-6	5-20	50-75	15-27	1.30-1.60	0.60-2.00	0.20-0.24	1.5-4.5	2.0-4.0	.32	.32	5	6	48
	6-82	5-20	50-75	18-35	1.40-1.60	0.60-2.00	0.17-0.22	1.0-5.9	0.5-1.5	.32	.32			
W: Water-----	---			---	---	---	---	---	---	---	---	-	---	---
Wa: Woodson-----	0-8	1-10	50-75	18-27	1.25-1.45	0.20-0.60	0.22-0.24	0.0-2.9	1.0-5.0	.43	.43	3	6	48
	8-29	1-10	30-60	40-60	1.30-1.45	0.20-0.60	0.12-0.15	6.0-14.0	1.0-3.0	.32	.32			
	29-75	1-10	30-60	30-50	1.35-1.45	0.06-0.20	0.10-0.15	6.0-10.0	0.5-1.0	.32	.32			
Za: Zaar-----	0-10	1-10	40-60	40-60	1.20-1.30	0.20-0.60	0.12-0.14	6.0-13.0	2.0-5.0	.28	.28	5	4	86
	10-24	1-10	35-60	40-60	1.10-1.50	0.20-0.60	0.11-0.18	6.0-15.0	1.0-4.0	.28	.28			
	24-56	1-10	35-50	40-60	1.10-1.50	0.20-0.60	0.11-0.18	6.0-20.0	0.5-2.0	.28	.28			
	56-60	1-10	35-50	40-60	1.10-1.50	0.00-0.06	0.11-0.18	6.0-15.0	0.1-2.0	.28	.28			

CHEMICAL PROPERTIES OF THE SOILS
Woodson County, Kansas

The Chemical Properties table shows estimates of some characteristics and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils. Depth to the upper and lower boundaries of each layer is indicated.

Cation-exchange capacity is the total amount of extractable bases that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. Soils having a low cation-exchange capacity hold fewer cations and may require more frequent applications of fertilizer than soils having a high cation-exchange capacity. Soils having a high cation-exchange capacity can retain cations. The ability to retain cations helps to prevent the pollution of ground water.

Effective cation-exchange capacity refers to the sum of extractable bases plus aluminum expressed in terms of milliequivalents per 100 grams of soil. It is determined for soils that have pH of less than 5.5.

Soil reaction is a measure of acidity or alkalinity and is expressed as a range in pH values. The range in pH of each major horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Calcium carbonate equivalent is the percent of carbonates, by weight, in the fraction of the soil less than 2 millimeters in size. The availability of plant nutrients is influenced by the amount of carbonates in the soil. Incorporating nitrogen fertilizer into calcareous soils helps to prevent nitrite accumulation and ammonium-N volatilization.

Gypsum is expressed as a percent, by weight, of hydrated calcium sulfates in the fraction of the soil less than 20 millimeters in size. Gypsum is partially soluble in water and can be dissolved and removed by water. Soils that have a high content of gypsum may collapse if the gypsum is removed by percolating water.

Salinity is a measure of soluble salts in the soil at saturation. It is expressed as the electrical conductivity of the saturation extract, in millimhos per centimeter at 25 degrees C. Estimates are based on field and laboratory measurements at representative sites of nonirrigated soils. The salinity of irrigated soils is affected by the quality of the irrigation water and by the frequency of water application. Hence, the salinity of soils in individual fields can differ greatly from the value given in the table. Salinity affects the suitability of a soil for crop production, the stability of soil if used as construction material, and the potential of the soil to corrode metal and concrete.

Sodium adsorption ratio (SAR) is a measure of the amount of sodium (Na) relative to calcium (Ca) and magnesium (Mg) in the water extract from saturated soil paste. It is the ratio of the Na concentration divided by the square root of one-half of the Ca + Mg concentration. Soils that have SAR values of 13 or more may be characterized by an increased dispersion of organic matter and clay particles, reduced permeability and aeration, and a general degradation of soil structure.

CHEMICAL PROPERTIES OF THE SOILS--Continued
Woodson County, Kansas

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Map symbol and soil name	Depth	Cation- exchange capacity	Effective Cation Exchange Capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	In	meq/100g	pH	Pct	Pct	mmhos/cm		
001CA: Catoosa-----	0-11	8.0-31	---	5.6-6.5	0	0	0	0
	11-27	12-37	---	5.1-6.5	0	0	0	0
	27-31	---	---	---	---	---	---	---
001CB: Catoosa-----	0-11	8.0-31	---	5.6-6.5	0	0	0	0
	11-27	12-37	---	5.1-6.5	0	0	0	0
	27-31	---	---	---	---	---	---	---
Rock Outcrop----	---	---	---	---	---	---	---	---
001CC: Collinsville----	0-7	4.0-18	---	5.1-6.5	0	0	0	0
	7-15	3.0-16	---	5.1-6.5	0	0	0	0
	15-17	---	---	---	---	---	---	---
Bates-----	0-8	8.0-22	---	5.6-6.5	0	0	0	0
	8-11	9.0-27	---	5.1-6.5	0	0	0	0
	11-32	8.0-25	---	5.1-6.5	0	0	0	0
	32-34	---	---	---	---	---	---	---
001ZB: Zaar-----	0-18	20-44	---	5.6-7.3	---	---	---	---
	18-57	18-42	---	6.1-8.4	---	---	---	---
	57-63	15-40	---	6.6-8.4	---	---	---	---
031EP: Eram-----	0-8	13-30	---	5.6-6.5	0	0	0	0
	8-26	15-36	---	5.1-7.3	0	0	0	0
	26-30	---	---	---	---	---	---	---
Apperson-----	0-9	13-27	---	5.6-6.5	0	0	0	0
	9-14	16-31	---	5.6-7.8	0	0	0	0
	14-42	17-39	---	6.1-8.4	0	0	0	0
	42-46	---	---	---	---	---	---	---
031ES: Eram-----	0-8	13-30	---	5.6-6.5	0	0	0	0
	8-26	15-36	---	5.1-7.3	0	0	0	0
	26-30	---	---	---	---	---	---	---
Shidler-----	0-12	13-31	---	6.1-8.4	0	0	0	0
	12-16	---	---	---	---	---	---	---
073AT: Aguents-----	0-60	---	---	---	---	---	---	---
073CA: Chase-----	0-14	15-29	---	5.6-7.3	0	0	0	0
	14-45	16-39	---	5.6-7.8	0	0	0	0
	45-60	12-34	---	6.1-8.4	0	0	0	0
073CM: Clime-----	0-11	18-38	---	6.6-8.4	5-10	0	0	0
	11-23	16-42	---	7.4-8.4	5-10	0	0	0
	23-33	15-38	---	7.4-8.4	10-15	0	0	0
	33-37	---	---	---	---	---	---	---
073CS: Clime-----	0-11	18-38	---	6.6-8.4	5-10	0	0	0
	11-23	16-42	---	7.4-8.4	5-10	0	0	0
	23-33	15-38	---	7.4-8.4	10-15	0	0	0
	33-37	---	---	---	---	---	---	---
Sogn-----	0-7	13-27	---	6.1-8.4	0	0	0	0
	7-11	---	---	---	---	---	---	---
073DS: Dennis, eroded--	0-6	12-25	---	5.1-6.0	0	0	0	0
	6-16	12-24	---	5.1-6.0	0	0	0	0
	16-60	14-35	---	5.1-8.4	0	0	0	0
073IC: Ivan-----	0-27	10-24	---	7.4-8.4	1-10	0	0	0
	27-60	9.0-27	---	7.9-8.4	10-15	0	0	0
073IF: Ivan-----	0-38	10-24	---	7.4-8.4	1-10	0	0	0
	38-60	9.0-27	---	7.9-8.4	10-15	0	0	0
073KE: Kenoma, eroded--	0-4	12-31	---	5.1-6.5	0	0	0.0-2.0	0
	4-36	17-39	---	5.1-7.8	0	0	0.0-2.0	0
	36-60	12-31	---	6.1-8.4	0	0	0.0-4.0	0
073LA: Labette-----	0-9	15-32	---	5.6-6.5	0	0	0	0
	9-19	16-40	---	5.6-8.4	0	0	0	0
	19-27	16-43	---	5.6-8.4	0	0	0	0
	27-31	---	---	---	---	---	---	---
073LD: Labette-----	0-9	15-32	---	5.6-6.5	0	0	0	0
	9-19	16-40	---	5.6-8.4	0	0	0	0
	19-27	16-43	---	5.6-8.4	0	0	0	0
	27-31	---	---	---	---	---	---	---
Dwight-----	0-4	11-24	---	5.6-7.3	0	0	0.0-1.0	0-4
	4-32	20-42	---	6.1-8.4	0	0	0.0-2.0	0-13
	32-44	15-35	---	6.6-8.4	0	0	0.0-2.0	0-13
	44-48	---	---	---	---	---	---	---

CHEMICAL PROPERTIES OF THE SOILS--Continued
Woodson County, Kansas

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Map symbol and soil name	Depth	Cation- exchange capacity	Effective Cation Exchange Capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	In	meq/100g	pH	Pct	Pct	mmhos/cm		
073MA: Martin-----	0-11	15-38	---	5.6-6.5	0	0	0	0
	11-52	12-40	---	5.6-7.3	0	0	0	0
	52-60	16-38	---	5.6-7.8	0	0	0	0
073NZ: Niotaze-----	0-9	6.0-22	---	5.1-6.0	0	0	0	0
	9-27	15-36	---	5.1-7.3	0	0	0	0
	27-31	---	---	---	---	---	---	---
Darnell-----	0-6	5.0-14	---	5.1-6.5	0	0	0	0
	6-16	4.0-16	---	5.1-6.5	0	0	0	0
	16-20	---	---	---	---	---	---	---
073RE: Reading-----	0-13	11-24	---	5.6-6.5	0	0	0	0
	13-44	12-27	---	5.6-6.5	0	0	0	0
	44-60	13-27	---	6.1-8.4	0	0	0	0
073ST: Steedman-----	0-8	8.0-22	---	5.1-6.5	0	0	0	0
	8-30	17-35	---	5.6-8.4	0-1	0	0	0
	30-34	---	---	---	---	---	---	---
205BH: Bates-----	0-10	8.0-24	---	5.1-6.5	0	0	0	0
	10-12	8.0-24	---	5.1-6.5	0	0	0	0
	12-19	9.0-30	---	5.1-6.5	0	0	0	0
	19-27	8.0-26	---	5.1-6.5	0	0	0	0
	27-31	---	---	---	---	---	---	---
Collinsville----	0-6	5.0-18	---	4.5-6.5	0	0	0	0
	6-14	3.0-16	---	4.5-6.5	0	0	0	0
	14-18	---	---	---	---	---	---	---
205BO: Bates-----	0-7	8.0-24	---	5.1-6.5	0	0	0	0
	7-13	9.0-27	---	5.1-6.5	0	0	0	0
	13-20	8.0-24	---	5.1-6.5	0	0	0	0
	20-25	8.0-26	---	5.1-6.5	0	0	0	0
	25-29	---	---	---	---	---	---	---
Collinsville----	0-6	5.0-18	---	4.5-6.5	0	0	0	0
	6-14	3.0-16	---	4.5-6.5	0	0	0	0
	14-18	---	---	---	---	---	---	---
205DW: Dennis-----	0-10	6.0-22	---	5.1-6.0	0	0	0	0
	10-16	12-25	---	5.1-6.0	0	0	0	0
	16-60	14-35	---	5.1-8.4	0	0	0	0
Dwight-----	0-4	11-24	---	5.6-7.3	0	0	0.0-4.0	0-1
	4-42	19-42	---	6.1-8.4	0	0	0.0-13.0	0-2
	42-60	19-39	---	6.1-8.4	0	0	0.0-13.0	0-2
205EB: Eram-----	0-9	9.0-33	---	5.6-6.5	0	0	0	0
	9-24	15-40	---	5.1-7.3	0	0	0	0
	24-32	15-35	---	5.1-7.3	0	0	0	0
	32-36	---	---	---	---	---	---	---
205EC: Eram-----	0-9	9.0-33	---	5.6-6.5	0	0	0	0
	9-20	15-40	---	5.1-7.3	0	0	0	0
	20-24	15-36	---	5.1-7.3	0	0	0	0
	24-28	---	---	---	---	---	---	---
205LA: Lanton-----	0-7	11-24	---	5.6-6.5	0	0	0	0
	7-37	13-27	---	5.6-6.5	0	0	0	0
	37-60	13-30	---	6.6-7.3	0	0	0	0
205ND: Niotaze-----	0-5	4.0-20	---	5.1-6.0	0	0	0	0
	5-9	4.0-17	---	5.1-6.0	0	0	0	0
	9-24	15-36	---	4.5-7.3	0	0	0	0
	24-36	14-36	---	4.5-7.3	0	0	0	0
	36-40	---	---	---	---	---	---	---
Darnell-----	0-6	1.0-16	---	5.1-7.3	0	0	0	0
	6-17	1.0-16	---	5.1-7.3	0	0	0	0
	17-21	---	---	---	---	---	---	---
205SC: Shidler-----	0-10	13-31	---	6.1-8.4	---	---	---	---
	10-14	---	---	---	---	---	---	---
Catoosa-----	0-8	8.0-36	---	5.6-6.5	0	0	0	0
	8-26	12-35	---	5.1-7.3	0	0	0	0
	26-30	---	---	---	---	---	---	---
205SF: Steedman-----	0-8	8.0-22	---	5.1-6.5	0	0	0	0
	8-32	17-35	---	5.6-8.4	0	0	0	0
	32-36	---	---	---	---	---	---	---
AED: Arents, Earthen Dam-----	---	---	---	---	---	---	---	---

CHEMICAL PROPERTIES OF THE SOILS--Continued
Woodson County, Kansas

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Map symbol and soil name	Depth	Cation- exchange capacity	Effective Cation Exchange Capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	In	meq/100g	pH	Pct	Pct	mmhos/cm		
Bb:								
Bates-----	0-16	8.0-24	---	5.1-6.5	0	0	0	0
	16-27	9.0-27	---	5.1-6.5	0	0	0	0
	27-33	8.0-26	---	5.1-6.5	0	0	0	0
	33-37	---	---	---	---	---	---	---
Bc:								
Bates-----	0-16	8.0-24	---	5.1-6.5	0	0	0	0
	16-27	9.0-27	---	5.1-6.5	0	0	0	0
	27-33	8.0-26	---	5.1-6.5	0	0	0	0
	33-37	---	---	---	---	---	---	---
BOP:								
Borrow Pits----	---	---	---	---	---	---	---	---
Ca:								
Clareson-----	0-9	13-34	---	5.6-7.3	0	0	0	0
	9-16	12-30	---	5.6-7.3	0	0	0	0
	16-25	14-44	---	5.6-7.3	0	0	0	0
	25-33	---	---	---	---	---	---	---
Sogn-----	0-9	13-29	---	6.1-8.4	0	0	0	0
	9-13	---	---	---	---	---	---	---
Cd:								
Cleora-----	0-18	6.0-17	---	5.6-7.3	0	0	0	0
	18-90	5.0-15	---	5.6-7.3	0	0	0	0
Da:								
Darnell-----	0-4	5.0-14	---	5.1-7.3	0	0	0	0
	4-16	4.0-16	---	5.1-7.3	0	0	0	0
	16-20	---	---	---	---	---	---	---
Niotaze-----	0-9	6.0-24	---	5.1-6.0	0	0	0	0
	9-24	15-39	---	4.5-7.3	0	0	0	0
	24-28	---	---	---	---	---	---	---
Dd:								
Dennis-----	0-10	6.0-24	---	5.1-6.0	0	0	0	0
	10-15	12-25	---	5.1-6.0	0	0	0	0
	15-74	14-35	---	5.1-7.8	0	0	0	0
	74-90	11-38	---	6.1-7.8	0	0	0	0
De:								
Dennis-----	0-10	6.0-24	---	5.1-6.0	0	0	0	0
	10-15	12-25	---	5.1-6.0	0	0	0	0
	15-74	14-35	---	5.1-7.8	0	0	0	0
	74-90	11-38	---	6.1-7.8	0	0	0	0
Df:								
Dennis, eroded--	0-8	12-25	---	5.1-6.0	0	0	0	0
	8-67	14-35	---	5.1-7.8	0	0	0	0
	67-83	11-38	---	6.1-7.8	0	0	0	0
Dg:								
Dennis, eroded--	0-8	12-25	---	5.1-6.0	0	0	0	0
	8-67	14-35	---	5.1-7.8	0	0	0	0
	67-83	11-38	---	6.1-7.8	0	0	0	0
Eram, eroded----	0-7	13-36	---	5.6-6.5	0	0	0	0
	7-31	15-36	---	5.1-7.3	0	0	0	0
	31-35	---	---	---	---	---	---	---
Dw:								
Dwight-----	0-4	11-24	---	5.6-7.3	0	0	0.0-1.0	0-4
	4-32	20-42	---	6.1-8.4	0	0	0.0-2.0	0-13
	32-52	15-32	---	6.6-8.4	0	0	0.0-2.0	0-13
	52-60	---	---	---	---	---	---	---
Eb:								
Eram-----	0-10	13-32	---	5.6-6.5	0	0	0	0
	10-31	15-37	---	5.1-7.3	0	0	0	0
	31-35	---	---	---	---	---	---	---
Ec:								
Eram-----	0-10	13-32	---	5.6-6.5	0	0	0	0
	10-31	15-37	---	5.1-7.3	0	0	0	0
	31-35	---	---	---	---	---	---	---
Ex:								
Eram-----	0-7	13-32	---	5.6-6.5	0	0	0	0
	7-28	15-37	---	5.1-7.3	0	0	0	0
	28-32	---	---	---	---	---	---	---
Collinsville----	0-6	5.0-18	---	5.1-6.5	0	0	0	0
	6-14	3.0-16	---	5.6-6.5	0	0	0	0
	14-18	---	---	---	---	---	---	---
GRP:								
Gravel Pits----	---	---	---	---	---	---	---	---
Ha:								
Hepler-----	0-30	7.0-20	---	5.6-6.5	0	0	0	0
	30-37	6.0-23	---	5.6-6.5	0	0	0	0
	37-80	11-27	---	5.6-7.3	0	0	0	0
Ka:								
Kenoma-----	0-11	11-24	---	5.1-6.5	0	0	0.0-2.0	0
	11-28	18-42	---	5.6-7.8	0	0	0.0-2.0	0
	28-80	13-34	---	6.1-8.4	0	0	0.0-4.0	0

CHEMICAL PROPERTIES OF THE SOILS--Continued
Woodson County, Kansas

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Map symbol and soil name	Depth	Cation- exchange capacity	Effective Cation Exchange Capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	In	meq/100g	pH	Pct	Pct	mmhos/cm		
Ko:								
Kenoma-----	0-11	11-24	---	5.1-6.5	0	0	0.0-2.0	0
	11-28	18-42	---	5.6-7.8	0	0	0.0-2.0	0
	28-80	13-34	---	6.1-8.4	0	0	0.0-4.0	0
Olpe-----	0-6	8.0-22	---	5.1-6.5	0	0	0	0
	6-15	12-26	---	5.1-6.5	0	0	0	0
	15-24	17-31	---	5.6-7.3	0	0	0	0
	24-60	16-31	---	5.6-7.8	0	0	0	0
Kw:								
Kenoma, eroded--	0-7	11-24	---	5.1-6.5	0	0	0.0-2.0	0
	7-28	18-42	---	5.6-7.8	0	0	0.0-2.0	0
	28-76	13-34	---	6.1-8.4	0	0	0.0-4.0	0
Woodson, eroded--	0-7	9.0-26	---	5.6-6.5	0	0	0	0
	7-28	18-42	---	5.6-7.3	0	0	0	0
	28-74	13-32	---	5.6-7.8	0	0	0	0
La:								
Leanna, drained--	0-16	8.0-28	---	5.1-6.5	0	0	0	0
	16-52	16-36	---	5.1-7.3	0	0	0	0
	52-60	12-30	---	5.6-7.3	0	0	0	0
Lb:								
Lula-----	0-9	8.0-22	---	5.6-6.5	0	0	0	0
	9-18	9.0-25	---	5.6-6.5	0	0	0	0
	18-57	11-22	---	5.1-7.3	0	0	0	0
	57-65	---	---	---	---	---	---	---
Ld:								
Lula-----	0-9	8.0-22	---	5.6-6.5	0	0	0	0
	9-18	9.0-25	---	5.6-6.5	0	0	0	0
	18-57	11-22	---	5.1-7.3	0	0	0	0
	57-65	---	---	---	---	---	---	---
Dwight-----	0-4	11-24	---	5.6-7.3	0	0	0.0-1.0	0-4
	4-32	20-42	---	6.1-8.4	0	0	0.0-2.0	0-13
	32-52	15-32	---	6.6-8.4	0	0	0.0-2.0	0-13
	52-60	---	---	---	---	---	---	---
Ma:								
Mason-----	0-12	7.0-24	---	5.1-7.3	0	0	0	0
	12-20	7.0-22	---	5.6-7.3	0	0	0	0
	20-46	9.0-23	---	5.6-7.8	0	0	0	0
	46-60	9.0-23	---	5.1-7.8	0	0	0	0
Ns:								
Niotaze-----	0-9	6.0-24	---	5.1-6.0	0	0	0	0
	9-24	15-39	---	4.5-7.3	0	0	0	0
	24-28	---	---	---	---	---	---	---
Stephenville----	0-14	2.0-16	---	5.1-6.5	0	0	0	0
	14-31	8.0-23	7.0-21	4.5-6.0	0	0	0	0
	31-35	---	0.0-0.0	---	---	---	---	---
Od:								
Olpe-----	0-6	8.0-22	---	5.1-6.5	0	0	0	0
	6-15	12-26	---	5.1-6.5	0	0	0	0
	15-24	16-31	---	5.6-7.3	0	0	0	0
	24-60	16-31	---	5.6-7.8	0	0	0	0
Og:								
Osage-----	0-18	18-40	---	5.1-7.8	---	---	---	---
	18-70	15-40	---	5.6-7.8	---	---	---	---
	70-90	14-38	---	5.6-7.8	---	---	---	---
Os:								
Osage-----	0-18	16-40	---	5.1-7.8	---	---	---	---
	18-70	15-40	---	5.6-7.8	---	---	---	---
	70-90	14-38	---	5.6-7.8	---	---	---	---
Rc:								
Ringo-----	0-8	18-32	---	6.1-8.4	0	0	0	0
	8-37	15-34	---	6.6-8.4	0	0	0	0
	37-50	15-34	---	7.4-8.4	0	0	0	0
	50-60	---	---	---	---	---	---	---
Rd:								
Ringo-----	0-8	18-32	---	6.1-8.4	0	0	0	0
	8-37	15-34	---	6.6-8.4	0	0	0	0
	37-50	15-34	---	7.4-8.4	0	0	0	0
	50-60	---	---	---	---	---	---	---
Sogn-----	0-9	13-29	---	6.1-8.4	0	0	0	0
	9-13	---	---	---	---	---	---	---
Sa:								
Stephenville----	0-14	2.0-16	---	5.1-6.5	0	0	0	0
	14-31	8.0-23	7.0-21	4.5-6.0	0	0	0	0
	31-35	---	0.0-0.0	---	---	---	---	---
Sd:								
Summit-----	0-16	15-35	---	5.6-7.3	0	0	0	0
	16-40	15-31	---	6.1-7.3	0	0	0	0
	40-64	17-39	---	6.6-8.4	0	0	0	0
Se:								
Summit-----	0-16	15-35	---	5.6-7.3	0	0	0	0
	16-40	15-31	---	6.1-7.3	0	0	0	0
	40-64	17-39	---	6.6-8.4	0	0	0	0

CHEMICAL PROPERTIES OF THE SOILS--Continued
Woodson County, Kansas

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Map symbol and soil name	Depth	Cation- exchange capacity	Effective Cation Exchange Capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	In	meq/100g	pH	Pct	Pct	mmhos/cm		
Va:								
Verdigris-----	0-6	10-24	---	5.6-7.3	0	0	0	0
	6-82	8.0-24	---	6.1-7.3	0	0	0	0
Vc:								
Verdigris-----	0-6	10-24	---	5.6-7.3	0	0	0	0
	6-82	8.0-24	---	6.1-7.3	0	0	0	0
W:								
Water-----	---	---	---	---	---	---	---	---
Wa:								
Woodson-----	0-8	9.0-26	---	5.6-6.5	0	0	0	0
	8-29	18-42	---	5.6-7.3	0	0	0	0
	29-75	13-32	---	5.6-7.8	0	0	0	0
Za:								
Zaar-----	0-10	20-46	---	5.6-7.3	0	0	0	0
	10-24	18-44	---	6.1-8.4	0	0	0	0
	24-56	17-40	---	6.1-8.4	0	0	0	0
	56-60	16-40	---	6.1-8.4	0	0	0	0

WATER FEATURES Woodson County, Kansas

The Water Features table gives estimates of various water features. The estimates are used in land use planning that involves engineering considerations. Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

The months in the table indicate the portion of the year in which the feature is most likely to be a concern.

Water table refers to a saturated zone in the soil. The Water Features table indicates, by month, depth to the top (upper limit) and base (lower limit) of the saturated zone in most years. Estimates of the upper and lower limits are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors or mottles (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table. Ponding is standing water in a closed depression. Unless a drainage system is installed, the water is removed only by percolation, transpiration, or evaporation. The Water Features table indicates surface water depth and the duration and frequency of ponding. Duration is expressed as very brief if less than 2 days, brief if 2 to 7 days, long if 7 to 30 days, and very long if more than 30 days. Frequency is expressed as none, rare, occasional, and frequent. None means that ponding is not probable; rare that it is unlikely but possible under unusual weather conditions (the chance of ponding is nearly 0 percent to 5 percent in any year); occasional that it occurs, on the average, once or less in 2 years (the chance of ponding is 5 to 50 percent in any year); and frequent that it occurs, on the average, more than once in 2 years (the chance of ponding is more than 50 percent in any year).

Flooding, the temporary inundation of an area, is caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered flooding, and water standing in swamps and marshes is considered ponding rather than flooding.

Duration and frequency are estimated. Duration is expressed as extremely brief if 0.1 hour to 4 hours, very brief if 4 hours to 2 days, brief if 2 to 7 days, long if 7 to 30 days, and very long if more than 30 days. Frequency is expressed as none, very rare, rare, occasional, frequent, and very frequent. None means that flooding is not probable; very rare that it is very unlikely but possible under extremely unusual weather conditions (the chance of flooding is less than 1 percent in any year); rare that it is unlikely but possible under unusual weather conditions (the chance of flooding is 1 to 5 percent in any year); occasional that it occurs infrequently under normal weather conditions (the chance of flooding is 5 to 50 percent in any year); frequent that it is likely to occur often under normal weather conditions (the chance of flooding is more than 50 percent in any year but is less than 50 percent in all months in any year); and very frequent that it is likely to occur very often under normal weather conditions (the chance of flooding is more than 50 percent in all months of any year).

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

(Depths of layers are in feet. See text for definitions of terms used in this table. Estimates of the frequency of ponding and flooding apply to the whole year rather than to individual months. Absence of an entry indicates that the feature is not a concern or that data were not estimated.)

Map symbol and soil name	Hydro- logic group	Month	Soil Saturation		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
001CA: Catoosa-----	B		Ft	Ft	Ft				
001CB: Catoosa-----	B		---	---	---	---	---	---	---
Rock Outcrop-----	D		---	---	---	---	---	---	---
001CC: Collinsville-----	D		---	---	---	---	---	---	---
Bates-----	B		---	---	---	---	---	---	---
001ZB: Zaar-----	D		---	---	---	---	---	---	---
031EP: Eram-----	C	January	1.0-2.0	>6.0	---	---	---	---	None
		February	1.0-2.0	>6.0	---	---	---	---	None
		March	1.0-2.0	>6.0	---	---	---	---	None
		April	1.0-2.0	>6.0	---	---	---	---	None
		December	1.0-2.0	>6.0	---	---	---	---	None
Apperson-----	C	January	0.5-1.5	1.5-2.5	---	---	---	---	None
		February	0.5-1.5	1.5-2.5	---	---	---	---	None
		March	0.5-1.5	1.5-2.5	---	---	---	---	None
		April	0.5-1.5	1.5-2.5	---	---	---	---	None
		November	0.5-1.5	1.5-2.5	---	---	---	---	None
		December	0.5-1.5	1.5-2.5	---	---	---	---	None
031ES: Eram-----	C	January	1.0-1.5	1.5-2.0	---	---	---	---	None
		February	1.0-1.5	1.5-2.0	---	---	---	---	None
		March	1.0-1.5	1.5-2.0	---	---	---	---	None
		April	1.0-1.5	1.5-2.0	---	---	---	---	None
		December	1.0-1.5	1.5-2.0	---	---	---	---	None
Shidler-----	D	January	0.5-1.5	1.5-2.5	---	---	---	---	None
		February	0.5-1.5	1.5-2.5	---	---	---	---	None
		March	0.5-1.5	1.5-2.5	---	---	---	---	None
		April	0.5-1.5	1.5-2.5	---	---	---	---	None
		November	0.5-1.5	1.5-2.5	---	---	---	---	None
		December	0.5-1.5	1.5-2.5	---	---	---	---	None
073AT: Aguents-----	---		---	---	---	---	---	---	---
073CA: Chase-----	C	March	---	---	---	---	---	Very brief	Occasional
		April	---	---	---	---	---	Very brief	Occasional
		May	---	---	---	---	---	Very brief	Occasional
		June	---	---	---	---	---	Very brief	Occasional
		July	---	---	---	---	---	Very brief	Occasional
		August	---	---	---	---	---	Very brief	Occasional
		September	---	---	---	---	---	Very brief	Occasional
073CM: Clime-----	C	January	---	---	---	---	---	---	Rare
		February	2.0-4.0	>6.0	---	---	---	---	Rare
		March	2.0-4.0	>6.0	---	---	---	Very brief	Occasional
		April	2.0-4.0	>6.0	---	---	---	Very brief	Occasional
		May	2.0-4.0	>6.0	---	---	---	Very brief	Occasional
		June	---	---	---	---	---	Very brief	Occasional
		July	---	---	---	---	---	Very brief	Occasional
		August	---	---	---	---	---	Very brief	Occasional
		September	---	---	---	---	---	Very brief	Occasional
		October	---	---	---	---	---	Very brief	Occasional
		November	---	---	---	---	---	---	Rare
		December	---	---	---	---	---	---	Rare
073CS: Clime-----	C		---	---	---	---	---	---	---
Sogn-----	D		---	---	---	---	---	---	---
073DS: Dennis, eroded-----	C		---	---	---	---	---	---	---
073IC:	C	January	1.0-1.5	2.0-3.0	---	---	---	---	None
		February	1.0-1.5	2.0-3.0	---	---	---	---	None
		March	1.0-1.5	2.0-3.0	---	---	---	---	None
		April	1.0-1.5	2.0-3.0	---	---	---	---	None
		December	1.0-1.5	2.0-3.0	---	---	---	---	None

(Depths of layers are in feet. See text for definitions of terms used in this table. Estimates of the frequency of ponding and flooding apply to the whole year rather than to individual months. Absence of an entry indicates that the feature is not a concern or that data were not estimated.)

Map symbol and soil name	Hydro- logic group	Month	Soil Saturation		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
Ivan-----	B		Ft	Ft	Ft				
		January	---	---	---	---	---	---	Rare
		February	---	---	---	---	---	---	Rare
		March	---	---	---	---	---	Very brief	Frequent
		April	---	---	---	---	---	Very brief	Frequent
		May	---	---	---	---	---	Very brief	Frequent
		June	---	---	---	---	---	Very brief	Frequent
		July	---	---	---	---	---	Very brief	Frequent
		August	---	---	---	---	---	Very brief	Frequent
		September	---	---	---	---	---	Very brief	Frequent
		October	---	---	---	---	---	Very brief	Frequent
		November	---	---	---	---	---	---	Rare
		December	---	---	---	---	---	---	Rare
073IF: Ivan-----	B								
		January	---	---	---	---	---	---	Rare
		February	---	---	---	---	---	---	Rare
		March	---	---	---	---	---	Very brief	Occasional
		April	---	---	---	---	---	Very brief	Occasional
		May	---	---	---	---	---	Very brief	Occasional
		June	---	---	---	---	---	Very brief	Occasional
		July	---	---	---	---	---	Very brief	Occasional
		August	---	---	---	---	---	Very brief	Occasional
		September	---	---	---	---	---	Very brief	Occasional
		October	---	---	---	---	---	Very brief	Occasional
		November	---	---	---	---	---	---	Rare
		December	---	---	---	---	---	---	Rare
073KE: Kenoma, eroded-----	D								
			---	---	---	---	---	---	---
073LA: Labette-----	C								
			---	---	---	---	---	---	---
073LD: Labette-----	C								
			---	---	---	---	---	---	---
Dwight-----	D								
			---	---	---	---	---	---	---
073MA: Martin-----	C								
		January	---	---	---	---	---	---	None
		February	---	---	---	---	---	---	None
		March	---	---	---	---	---	---	None
		April	---	---	---	---	---	---	None
		December	---	---	---	---	---	---	None
073NZ: Niotaze-----	C								
		January	1.0-2.0	1.0-2.0	---	---	---	---	None
		February	1.0-2.0	1.0-2.0	---	---	---	---	None
		March	1.0-2.0	1.0-2.0	---	---	---	---	None
		April	1.0-2.0	1.0-2.0	---	---	---	---	None
		May	1.0-2.0	1.0-2.0	---	---	---	---	None
		June	1.0-2.0	1.0-2.0	---	---	---	---	None
		November	1.0-2.0	1.0-2.0	---	---	---	---	None
		December	1.0-2.0	1.0-2.0	---	---	---	---	None
Darnell-----	C								
			---	---	---	---	---	---	---
073RE: Reading-----	B								
		March	---	---	---	---	---	Very brief	Rare
		April	---	---	---	---	---	Very brief	Rare
		May	---	---	---	---	---	Very brief	Rare
		June	---	---	---	---	---	Very brief	Rare
		July	---	---	---	---	---	Very brief	Rare
		August	---	---	---	---	---	Very brief	Rare
		September	---	---	---	---	---	Very brief	Rare
		October	---	---	---	---	---	Very brief	Rare
		November	---	---	---	---	---	Very brief	Rare
073ST: Steedman-----	C								
		January	1.0-2.0	3.0-4.0	---	---	---	---	None
		February	1.0-2.0	3.0-4.0	---	---	---	---	None
		March	1.0-2.0	3.0-4.0	---	---	---	---	None
		April	1.0-2.0	3.0-4.0	---	---	---	---	None
		November	1.0-2.0	3.0-4.0	---	---	---	---	None
		December	1.0-2.0	3.0-4.0	---	---	---	---	None
205BH: Bates-----	B								
			---	---	---	---	---	---	---
Collinsville-----	D								
			---	---	---	---	---	---	---
205BO: Bates-----	B								

(Depths of layers are in feet. See text for definitions of terms used in this table. Estimates of the frequency of ponding and flooding apply to the whole year rather than to individual months. Absence of an entry indicates that the feature is not a concern or that data were not estimated.)

Map symbol and soil name	Hydro- logic group	Month	Soil Saturation		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
Collinsville-----	D		Ft ---	Ft ---	Ft ---	---	---	---	---
205DW: Dennis-----	C		---	---	---	---	---	---	---
		January	1.0-2.3	2.0-3.0	---	---	---	---	None
		February	1.0-2.3	2.0-3.0	---	---	---	---	None
		March	1.0-2.3	2.0-3.0	---	---	---	---	None
		April	1.0-2.3	2.0-3.0	---	---	---	---	None
		December	1.0-2.3	2.0-3.0	---	---	---	---	None
Dwight-----	D		---	---	---	---	---	---	---
205EB: Eram-----	C		---	---	---	---	---	---	---
		January	0.5-1.5	1.5-2.5	---	---	---	---	None
		February	0.5-1.5	1.5-2.5	---	---	---	---	None
		March	0.5-1.5	1.5-2.5	---	---	---	---	None
		April	0.5-1.5	1.5-2.5	---	---	---	---	None
		November	0.5-1.5	1.5-2.5	---	---	---	---	None
		December	0.5-1.5	1.5-2.5	---	---	---	---	None
205EC: Eram-----	C		---	---	---	---	---	---	---
		January	0.5-1.5	1.5-2.5	---	---	---	---	None
		February	0.5-1.5	1.5-2.5	---	---	---	---	None
		March	0.5-1.5	1.5-2.5	---	---	---	---	None
		April	0.5-1.5	1.5-2.5	---	---	---	---	None
		November	0.5-1.5	1.5-2.5	---	---	---	---	None
		December	0.5-1.5	1.5-2.5	---	---	---	---	None
205LA: Lanton-----	C		---	---	---	---	---	---	---
		January	1.0-2.0	2.0-3.5	---	---	---	Very brief	Occasional
		February	1.0-2.0	2.0-3.5	---	---	---	Very brief	Occasional
		March	1.0-2.0	2.0-3.5	---	---	---	Very brief	Occasional
		April	1.0-2.0	2.0-3.5	---	---	---	Very brief	Occasional
		May	1.0-2.0	2.0-3.5	---	---	---	Very brief	Occasional
		June	---	---	---	---	---	---	Rare
		July	---	---	---	---	---	---	Rare
		August	---	---	---	---	---	---	Rare
		September	---	---	---	---	---	---	Rare
		October	---	---	---	---	---	---	Rare
		November	---	---	---	---	---	---	Rare
		December	1.0-2.0	2.0-3.5	---	---	---	---	Rare
205ND: Niotaze-----	C		---	---	---	---	---	---	---
		January	1.0-2.0	1.0-2.3	---	---	---	---	None
		February	1.0-2.0	1.0-2.3	---	---	---	---	None
		March	1.0-2.0	1.0-2.3	---	---	---	---	None
		April	1.0-2.0	1.0-2.3	---	---	---	---	None
		May	1.0-2.0	1.0-2.3	---	---	---	---	None
		June	1.0-2.0	1.0-2.3	---	---	---	---	None
		November	1.0-2.0	1.0-2.3	---	---	---	---	None
		December	1.0-2.0	1.0-2.3	---	---	---	---	None
Darnell-----	C		---	---	---	---	---	---	---
205SC: Shidler-----	D		---	---	---	---	---	---	---
Catoosa-----	B		---	---	---	---	---	---	---
205SF: Steedman-----	C		---	---	---	---	---	---	---
		January	0.5-1.0	0.7-1.3	---	---	---	---	None
		February	0.5-1.0	0.7-1.3	---	---	---	---	None
		March	0.5-1.0	0.7-1.3	---	---	---	---	None
		November	0.5-1.0	0.7-1.3	---	---	---	---	None
		December	0.5-1.0	0.7-1.3	---	---	---	---	None
Bb: Bates-----	B		---	---	---	---	---	---	---
Bc: Bates-----	B		---	---	---	---	---	---	---
BOP: Borrow Pits-----	---		---	---	---	---	---	---	---
Ca: Clareson-----	C		---	---	---	---	---	---	---
Sogn-----	D		---	---	---	---	---	---	---
Cd:			---	---	---	---	---	---	---

(Depths of layers are in feet. See text for definitions of terms used in this table. Estimates of the frequency of ponding and flooding apply to the whole year rather than to individual months. Absence of an entry indicates that the feature is not a concern or that data were not estimated.)

Map symbol and soil name	Hydro- logic group	Month	Soil Saturation		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
Cleora-----	B		Ft	Ft	Ft				
		January	---	---	---	---	---	---	Rare
		February	---	---	---	---	---	---	Rare
		March	---	---	---	---	---	Very brief	Occasional
		April	---	---	---	---	---	Very brief	Occasional
		May	---	---	---	---	---	Very brief	Occasional
		June	---	---	---	---	---	Very brief	Occasional
		July	---	---	---	---	---	Very brief	Occasional
		August	---	---	---	---	---	Very brief	Occasional
		September	---	---	---	---	---	Very brief	Occasional
		October	---	---	---	---	---	Very brief	Occasional
		November	---	---	---	---	---	---	Rare
		December	---	---	---	---	---	---	Rare
Da: Darnell-----	C		---	---	---	---	---	---	---
Niotaze-----	C		---	---	---	---	---	---	---
		January	1.0-2.0	1.0-2.0	---	---	---	---	None
		February	1.0-2.0	1.0-2.0	---	---	---	---	None
		March	1.0-2.0	1.0-2.0	---	---	---	---	None
		April	1.0-2.0	1.0-2.0	---	---	---	---	None
		May	1.0-2.0	1.0-2.0	---	---	---	---	None
		June	1.0-2.0	1.0-2.0	---	---	---	---	None
		November	1.0-2.0	1.0-2.0	---	---	---	---	None
		December	1.0-2.0	1.0-2.0	---	---	---	---	None
Dd: Dennis-----	C		---	---	---	---	---	---	---
		January	1.0-1.5	2.0-3.0	---	---	---	---	None
		February	1.0-1.5	2.0-3.0	---	---	---	---	None
		March	1.0-1.5	2.0-3.0	---	---	---	---	None
		April	1.0-1.5	2.0-3.0	---	---	---	---	None
		December	1.0-1.5	2.0-3.0	---	---	---	---	None
De: Dennis-----	C		---	---	---	---	---	---	---
		January	1.0-1.5	2.0-3.0	---	---	---	---	None
		February	1.0-1.5	2.0-3.0	---	---	---	---	None
		March	1.0-1.5	2.0-3.0	---	---	---	---	None
		April	1.0-1.5	2.0-3.0	---	---	---	---	None
		December	1.0-1.5	2.0-3.0	---	---	---	---	None
Df: Dennis, eroded-----	C		---	---	---	---	---	---	---
		January	1.0-1.5	2.0-3.0	---	---	---	---	None
		February	1.0-1.5	2.0-3.0	---	---	---	---	None
		March	1.0-1.5	2.0-3.0	---	---	---	---	None
		April	1.0-1.5	2.0-3.0	---	---	---	---	None
		December	1.0-1.5	2.0-3.0	---	---	---	---	None
Dg: Dennis, eroded-----	C		---	---	---	---	---	---	---
		January	1.0-1.5	2.0-3.0	---	---	---	---	None
		February	1.0-1.5	2.0-3.0	---	---	---	---	None
		March	1.0-1.5	2.0-3.0	---	---	---	---	None
		April	1.0-1.5	2.0-3.0	---	---	---	---	None
		December	1.0-1.5	2.0-3.0	---	---	---	---	None
Eram, eroded-----	C		---	---	---	---	---	---	---
		January	0.5-1.5	1.5-2.5	---	---	---	---	None
		February	0.5-1.5	1.5-2.5	---	---	---	---	None
		March	0.5-1.5	1.5-2.5	---	---	---	---	None
		April	0.5-1.5	1.5-2.5	---	---	---	---	None
		November	0.5-1.5	1.5-2.5	---	---	---	---	None
		December	0.5-1.5	1.5-2.5	---	---	---	---	None
Dw: Dwight-----	D		---	---	---	---	---	---	---
Eb: Eram-----	C		---	---	---	---	---	---	---
		January	0.5-1.5	1.5-2.5	---	---	---	---	None
		February	0.5-1.5	1.5-2.5	---	---	---	---	None
		March	0.5-1.5	1.5-2.5	---	---	---	---	None
		April	0.5-1.5	1.5-2.5	---	---	---	---	None
		November	0.5-1.5	1.5-2.5	---	---	---	---	None
		December	0.5-1.5	1.5-2.5	---	---	---	---	None
Ec: Eram-----	C		---	---	---	---	---	---	---
		January	0.5-1.5	1.5-2.5	---	---	---	---	None
		February	0.5-1.5	1.5-2.5	---	---	---	---	None
		March	0.5-1.5	1.5-2.5	---	---	---	---	None
		April	0.5-1.5	1.5-2.5	---	---	---	---	None
		November	0.5-1.5	1.5-2.5	---	---	---	---	None
		December	0.5-1.5	1.5-2.5	---	---	---	---	None
Ex:									

(Depths of layers are in feet. See text for definitions of terms used in this table. Estimates of the frequency of ponding and flooding apply to the whole year rather than to individual months. Absence of an entry indicates that the feature is not a concern or that data were not estimated.)

Map symbol and soil name	Hydro- logic group	Month	Soil Saturation		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
			Ft	Ft	Ft				
Eram-----	C	January	0.5-1.5	1.5-2.5	---	---	---	---	None
		February	0.5-1.5	1.5-2.5	---	---	---	---	None
		March	0.5-1.5	1.5-2.5	---	---	---	---	None
		April	0.5-1.5	1.5-2.5	---	---	---	---	None
		November	0.5-1.5	1.5-2.5	---	---	---	---	None
		December	0.5-1.5	1.5-2.5	---	---	---	---	None
Collinsville-----	D		---	---	---	---	---	---	---
GRP: Gravel Pits-----	---		---	---	---	---	---	---	---
Ha: Hepler-----	C	January	1.0-3.0	>6.0	---	---	---	---	Rare
		February	1.0-3.0	>6.0	---	---	---	---	Rare
		March	1.0-3.0	>6.0	---	---	---	Very brief	Occasional
		April	---	---	---	---	---	Very brief	Occasional
		May	---	---	---	---	---	Very brief	Occasional
		June	---	---	---	---	---	Very brief	Occasional
		July	---	---	---	---	---	Very brief	Occasional
		August	---	---	---	---	---	Very brief	Occasional
		September	---	---	---	---	---	Very brief	Occasional
		October	---	---	---	---	---	Very brief	Occasional
		November	1.0-3.0	>6.0	---	---	---	---	Rare
		December	1.0-3.0	>6.0	---	---	---	---	Rare
Ka: Kenoma-----	D	January	0.5-1.5	1.0-1.5	---	---	---	---	None
		February	0.5-1.5	1.0-1.5	---	---	---	---	None
		March	0.5-1.5	1.0-1.5	---	---	---	---	None
		November	0.5-1.5	1.0-1.5	---	---	---	---	None
		December	0.5-1.5	1.0-1.5	---	---	---	---	None
Ko: Kenoma-----	D	January	0.5-1.5	1.0-1.5	---	---	---	---	None
		February	0.5-1.5	1.0-1.5	---	---	---	---	None
		March	0.5-1.5	1.0-1.5	---	---	---	---	None
		November	0.5-1.5	1.0-1.5	---	---	---	---	None
		December	0.5-1.5	1.0-1.5	---	---	---	---	None
Olpe-----	C		---	---	---	---	---	---	---
Kw: Kenoma, eroded-----	D	January	0.5-1.5	1.0-1.5	---	---	---	---	None
		February	0.5-1.5	1.0-1.5	---	---	---	---	None
		March	0.5-1.5	1.0-1.5	---	---	---	---	None
		November	0.5-1.5	1.0-1.5	---	---	---	---	None
		December	0.5-1.5	1.0-1.5	---	---	---	---	None
Woodson, eroded-----	D	January	0.5-2.0	0.5-1.5	---	---	---	---	None
		February	0.5-2.0	0.5-1.5	---	---	---	---	None
		March	0.5-2.0	0.5-1.5	---	---	---	---	None
		April	0.5-2.0	0.5-1.5	---	---	---	---	None
		December	0.5-2.0	0.5-1.5	---	---	---	---	None
La: Leanna, drained-----	D	January	0.5-2.0	1.0-2.0	---	---	---	---	Rare
		February	0.5-2.0	1.0-2.0	---	---	---	---	Rare
		March	0.5-2.0	1.0-2.0	---	---	---	Very brief	Occasional
		April	0.5-2.0	1.0-2.0	---	---	---	Very brief	Occasional
		May	---	---	---	---	---	Very brief	Occasional
		June	---	---	---	---	---	Very brief	Occasional
		July	---	---	---	---	---	Very brief	Occasional
		August	---	---	---	---	---	Very brief	Occasional
		September	---	---	---	---	---	Very brief	Occasional
		October	---	---	---	---	---	Very brief	Occasional
		November	---	---	---	---	---	---	Rare
		December	0.5-2.0	1.0-2.0	---	---	---	---	Rare
Lb: Lula-----	B		---	---	---	---	---	---	---
Ld: Lula-----	B		---	---	---	---	---	---	---
Dwight-----	D		---	---	---	---	---	---	---
Ma:			---	---	---	---	---	---	---

(Depths of layers are in feet. See text for definitions of terms used in this table. Estimates of the frequency of ponding and flooding apply to the whole year rather than to individual months. Absence of an entry indicates that the feature is not a concern or that data were not estimated.)

Map symbol and soil name	Hydro- logic group	Month	Soil Saturation		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
Mason-----	B		Ft	Ft	Ft				
		January	---	---	---	---	---	---	Rare
		February	---	---	---	---	---	---	Rare
		March	---	---	---	---	---	---	Rare
		April	---	---	---	---	---	---	Rare
		May	---	---	---	---	---	---	Rare
		June	---	---	---	---	---	---	Rare
		July	---	---	---	---	---	---	Rare
		August	---	---	---	---	---	---	Rare
		September	---	---	---	---	---	---	Rare
		October	---	---	---	---	---	---	Rare
		November	---	---	---	---	---	---	Rare
		December	---	---	---	---	---	---	Rare
Ns: Niotaze-----	C								
		January	1.0-2.0	1.0-2.0	---	---	---	---	None
		February	1.0-2.0	1.0-2.0	---	---	---	---	None
		March	1.0-2.0	1.0-2.0	---	---	---	---	None
		April	1.0-2.0	1.0-2.0	---	---	---	---	None
		May	1.0-2.0	1.0-2.0	---	---	---	---	None
		June	1.0-2.0	1.0-2.0	---	---	---	---	None
		November	1.0-2.0	1.0-2.0	---	---	---	---	None
		December	1.0-2.0	1.0-2.0	---	---	---	---	None
Stephenville-----	B								
			---	---	---	---	---	---	---
Od: Olpe-----	C								
			---	---	---	---	---	---	---
Og: Osage-----	D								
		January	0.0-1.0	>6.0	---	Long	Occasional	---	Rare
		February	0.0-1.0	>6.0	---	Long	Occasional	---	Rare
		March	0.0-1.0	>6.0	---	Long	Occasional	Very brief	Occasional
		April	0.0-1.0	>6.0	---	Long	Occasional	Very brief	Occasional
		May	0.0-1.0	>6.0	---	Long	Occasional	Very brief	Occasional
		June	---	---	---	---	---	Very brief	Occasional
		July	---	---	---	---	---	Very brief	Occasional
		August	---	---	---	---	---	Very brief	Occasional
		September	---	---	---	---	---	Very brief	Occasional
		October	---	---	---	---	---	Very brief	Occasional
		November	0.0-1.0	>6.0	---	Long	Occasional	---	Rare
		December	0.0-1.0	>6.0	---	Long	Occasional	---	Rare
Os: Osage-----	D								
		January	0.0-1.5	>6.0	---	Long	Occasional	---	Rare
		February	0.0-1.5	>6.0	---	Long	Occasional	---	Rare
		March	0.0-1.5	>6.0	---	Long	Occasional	Very brief	Occasional
		April	0.0-1.5	>6.0	---	Long	Occasional	Very brief	Occasional
		May	0.0-1.5	>6.0	---	Long	Occasional	Very brief	Occasional
		June	---	---	---	---	---	Very brief	Occasional
		July	---	---	---	---	---	Very brief	Occasional
		August	---	---	---	---	---	Very brief	Occasional
		September	---	---	---	---	---	Very brief	Occasional
		October	---	---	---	---	---	Very brief	Occasional
		November	0.0-1.5	>6.0	---	Long	Occasional	---	Rare
		December	0.0-1.5	>6.0	---	Long	Occasional	---	Rare
Rc: Ringo-----	D								
			---	---	---	---	---	---	---
Rd: Ringo-----	D								
			---	---	---	---	---	---	---
Sogn-----	D								
			---	---	---	---	---	---	---
Sa: Stephenville-----	B								
			---	---	---	---	---	---	---
Sd: Summit-----	C								
		January	2.0-3.0	2.0-3.0	---	---	---	---	None
		February	2.0-3.0	2.0-3.0	---	---	---	---	None
		March	2.0-3.0	2.0-3.0	---	---	---	---	None
		April	2.0-3.0	2.0-3.0	---	---	---	---	None
		December	2.0-3.0	2.0-3.0	---	---	---	---	None
Se: Summit-----	C								
		January	2.0-3.0	2.0-3.0	---	---	---	---	None
		February	2.0-3.0	2.0-3.0	---	---	---	---	None
		March	2.0-3.0	2.0-3.0	---	---	---	---	None
		April	2.0-3.0	2.0-3.0	---	---	---	---	None
		December	2.0-3.0	2.0-3.0	---	---	---	---	None
Va:									

(Depths of layers are in feet. See text for definitions of terms used in this table. Estimates of the frequency of ponding and flooding apply to the whole year rather than to individual months. Absence of an entry indicates that the feature is not a concern or that data were not estimated.)

Map symbol and soil name	Hydro- logic group	Month	Soil Saturation		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
Verdigris-----	B	January	---	---	---	---	---	---	Rare
		February	---	---	---	---	---	---	Rare
		March	---	---	---	---	---	Very brief	Occasional
		April	---	---	---	---	---	Very brief	Occasional
		May	---	---	---	---	---	Very brief	Occasional
		June	---	---	---	---	---	Very brief	Occasional
		July	---	---	---	---	---	Very brief	Occasional
		August	---	---	---	---	---	Very brief	Occasional
		September	---	---	---	---	---	Very brief	Occasional
		October	---	---	---	---	---	Very brief	Occasional
		November	---	---	---	---	---	---	Rare
		December	---	---	---	---	---	---	Rare
Vc: Verdigris-----	B	January	---	---	---	---	---	---	Rare
		February	---	---	---	---	---	---	Rare
		March	---	---	---	---	---	Very brief	Frequent
		April	---	---	---	---	---	Very brief	Frequent
		May	---	---	---	---	---	Very brief	Frequent
		June	---	---	---	---	---	Very brief	Frequent
		July	---	---	---	---	---	Very brief	Frequent
		August	---	---	---	---	---	Very brief	Frequent
		September	---	---	---	---	---	Very brief	Frequent
		October	---	---	---	---	---	Very brief	Frequent
		November	---	---	---	---	---	---	Rare
		December	---	---	---	---	---	---	Rare
W: Water-----	---		---	---	---	---	---	---	---
Wa: Woodson-----	D	January	0.5-2.0	0.5-2.0	---	---	---	---	None
		February	0.5-2.0	0.5-2.0	---	---	---	---	None
		March	0.5-2.0	0.5-2.0	---	---	---	---	None
		April	0.5-2.0	0.5-2.0	---	---	---	---	None
		December	0.5-2.0	0.5-2.0	---	---	---	---	None
Za: Zaar-----	D	January	1.0-2.0	1.6-6.0	---	---	---	---	None
		February	1.0-2.0	1.6-6.0	---	---	---	---	None
		March	1.0-2.0	1.6-6.0	---	---	---	---	None
		April	1.0-2.0	1.6-6.0	---	---	---	---	None
		December	1.0-2.0	1.6-6.0	---	---	---	---	None

The following table gives estimates of various soil features. The estimates are used in land use planning that involves engineering considerations.

A restrictive layer is a nearly continuous layer that has one or more physical, chemical, or thermal properties that significantly impede the movement of water and air through the soil or that restrict roots or otherwise provide an unfavorable root environment. Examples are bedrock, cemented layers, dense layers, and frozen layers. The table indicates the hardness and thickness of the restrictive layer, both of which significantly affect the ease of excavation. Depth to top is the vertical distance from the soil surface to the upper boundary of the restrictive layer.

Potential for frost action is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, permeability, content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured, clayey soils that have a high water table in winter are the most susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage to pavements and other rigid structures.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that corrodes or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel or concrete in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than the steel or concrete in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as low, moderate, or high, is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion also is expressed as low, moderate, or high. It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

SOIL FEATURES--Continued
Woodson County, Kansas

Map symbol and soil name	Restrictive layer				Potential for Frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness		Uncoated Steel	Concrete
001CA: Catoosa-----	20-40	In Bedrock (lithic)	In ---	Indurated	---	Moderate	Moderate
001CB: Catoosa-----	20-40	Bedrock (lithic)	---	Indurated	---	Moderate	Moderate
Rock Outcrop----	---	---	---	---	---	---	---
001CC: Collinsville----	4-20	Bedrock (lithic)	---	Strongly cemented	---	Low	Moderate
Bates-----	20-40	Bedrock (paralithic)	---	Moderately cemented	---	Low	Moderate
001ZB: Zaar-----	---	---	---	---	---	High	Moderate
031EP: Eram-----	20-40	Bedrock (paralithic)	---	Weakly cemented	---	High	Moderate
Apperson-----	40-60	Bedrock (lithic)	---	Indurated	---	High	Low
031ES: Eram-----	20-40	Bedrock (paralithic)	---	Weakly cemented	---	High	Moderate
Shidler-----	4-20	Bedrock (lithic)	---	Indurated	---	Moderate	Low
073AT: Aquents-----	---	---	---	---	---	---	---
073CA: Chase-----	---	---	---	---	High	High	Low
073CM: Clime-----	20-40	Bedrock (paralithic)	---	Moderately cemented	Moderate	High	Low
073CS: Clime-----	20-40	Bedrock (paralithic)	---	Moderately cemented	Moderate	High	Low
Sogn-----	4-20	Bedrock (lithic)	---	Indurated	Moderate	Low	Low
073DS: Dennis, eroded--	---	---	---	---	---	High	Moderate
073IC: Ivan-----	---	---	---	---	Moderate	Low	Low
073IF: Ivan-----	---	---	---	---	Moderate	Low	Low
073KE: Kenoma, eroded--	---	---	---	---	---	High	Moderate
073LA: Labette-----	20-40	Bedrock (lithic)	---	Indurated	Moderate	High	Low
073LD: Labette-----	20-40	Bedrock (lithic)	---	Indurated	Moderate	High	Low
Dwight-----	40-60	Bedrock (lithic)	---	Indurated	Moderate	High	Moderate
073MA: Martin-----	---	---	---	---	Moderate	High	Low
073NZ: Niotaze-----	20-40	Bedrock (paralithic)	---	Weakly cemented	---	High	Moderate
Darnell-----	10-20	Bedrock (paralithic)	---	Moderately cemented	---	Low	Moderate
073RE: Reading-----	---	---	---	---	Moderate	Moderate	Low
073ST: Steedman-----	20-40	Bedrock (paralithic)	---	Weakly cemented	---	Moderate	Moderate
205BH: Bates-----	20-40	Bedrock (paralithic)	---	Weakly cemented	---	Low	Moderate
Collinsville----	4-20	Bedrock (lithic)	---	Strongly cemented	---	Low	Moderate
205BO: Bates-----	20-40	Bedrock (paralithic)	---	Weakly cemented	---	Low	Moderate
Collinsville----	4-20	Bedrock (lithic)	---	Strongly cemented	---	Low	Moderate
205DW: Dennis-----	---	---	---	---	---	High	Moderate
Dwight-----	---	---	---	---	Moderate	High	Moderate
205EB: Eram-----	20-40	Bedrock (paralithic)	---	Weakly cemented	---	High	Moderate
205EC: Eram-----	20-40	Bedrock (paralithic)	---	Weakly cemented	---	High	Moderate
205LA: Lanton-----	---	---	---	---	---	High	Moderate
205ND: Niotaze-----	20-40	Bedrock (paralithic)	---	Weakly cemented	---	High	Moderate
Darnell-----	10-20	Bedrock (paralithic)	---	Moderately cemented	---	Low	Moderate
205SC: Shidler-----	---	Bedrock (lithic)	---	Indurated	---	Moderate	Low
Catoosa-----	---	Bedrock (lithic)	---	Indurated	---	Moderate	Moderate
205SF: Steedman-----	20-40	Bedrock (paralithic)	---	Weakly cemented	---	Moderate	Moderate

SOIL FEATURES--Continued
Woodson County, Kansas

Map symbol and soil name	Restrictive layer				Potential for Frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness		Uncoated Steel	Concrete
AED: Arents, Earthen Dam-----	---	In	In	---	---	---	---
Bb: Bates-----	20-40	Bedrock (paralithic)	---	Weakly cemented	---	Low	Moderate
Bc: Bates-----	20-40	Bedrock (paralithic)	---	Weakly cemented	---	Low	Moderate
BOP: Borrow Pits----	---	---	---	---	---	---	---
Ca: Clareson-----	20-40	Bedrock (lithic)	---	Indurated	---	High	Moderate
Sogn-----	4-20	Bedrock (lithic)	---	Indurated	---	Low	Low
Cd: Cleora-----	---	---	---	---	---	Low	Moderate
Da: Darnell-----	10-20	Bedrock (paralithic)	---	Strongly cemented	---	Low	Moderate
Niotaze-----	20-40	Bedrock (paralithic)	---	Weakly cemented	---	High	Moderate
Dd: Dennis-----	---	---	---	---	---	High	Moderate
De: Dennis-----	---	---	---	---	---	High	Moderate
Df: Dennis, eroded--	---	---	---	---	---	High	Moderate
Dg: Dennis, eroded--	---	---	---	---	---	High	Moderate
Eram, eroded----	20-40	Bedrock (paralithic)	---	Weakly cemented	---	High	Moderate
Dw: Dwight-----	40-60	Bedrock (paralithic)	---	Weakly cemented	Moderate	High	Moderate
Eb: Eram-----	20-40	Bedrock (paralithic)	---	Weakly cemented	---	High	Moderate
Ec: Eram-----	20-40	Bedrock (paralithic)	---	Weakly cemented	---	High	Moderate
Ex: Eram-----	20-40	Bedrock (paralithic)	---	Weakly cemented	---	High	Moderate
Collinsville----	4-20	Bedrock (lithic)	---	Strongly cemented	---	Low	Moderate
GRP: Gravel Pits----	---	---	---	---	---	---	---
Ha: Hepler-----	---	---	---	---	---	High	Moderate
Ka: Kenoma-----	---	---	---	---	---	High	Moderate
Ko: Kenoma-----	---	---	---	---	---	High	Moderate
Olpe-----	---	---	---	---	---	High	Moderate
Kw: Kenoma, eroded--	---	---	---	---	---	High	Moderate
Woodson, eroded--	---	---	---	---	---	High	Moderate
La: Leanna, drained-	---	---	---	---	---	High	Moderate
Lb: Lula-----	40-60	Bedrock (lithic)	---	Indurated	---	Moderate	Moderate
Ld: Lula-----	40-60	Bedrock (lithic)	---	Indurated	---	Moderate	Moderate
Dwight-----	40-60	Bedrock (paralithic)	---	Weakly cemented	Moderate	High	Moderate
Ma: Mason-----	---	---	---	---	---	Moderate	Moderate
Ns: Niotaze-----	20-40	Bedrock (paralithic)	---	Weakly cemented	---	High	Moderate
Stephenville----	20-40	Bedrock (paralithic)	---	Weakly cemented	---	Moderate	Moderate
Od: Olpe-----	---	---	---	---	---	High	Moderate
Og: Osage-----	---	---	---	---	---	High	Moderate
Os: Osage-----	---	---	---	---	---	High	Moderate
Rc: Ringo-----	40-60	Bedrock (paralithic)	---	Weakly cemented	---	High	Low
Rd: Ringo-----	40-60	Bedrock (paralithic)	---	Weakly cemented	---	High	Low
Sogn-----	4-20	Bedrock (lithic)	---	Indurated	Moderate	Low	Low
Sa: Stephenville----	20-40	Bedrock (paralithic)	---	Weakly cemented	---	Moderate	Moderate

Map symbol and soil name	Restrictive layer				Potential for Frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness		Uncoated Steel	Concrete
Sd: Summit-----	---	In	In	---	---	High	Low
Se: Summit-----	---	---	---	---	---	High	Low
Va: Verdigris-----	---	---	---	---	---	Low	Low
Vc: Verdigris-----	---	---	---	---	---	Low	Low
W: Water-----	---	---	---	---	Low	---	---
Wa: Woodson-----	---	---	---	---	Low	High	Moderate
Za: Zaar-----	---	---	---	---	---	High	Moderate

WATER MANAGEMENT
Woodson County, Kansas

The soils of the survey area are rated in the Water Management table according to limitations that affect their suitability for water management. Soils are rated for pond reservoir areas, drainage, irrigation, terraces and diversions, and grassed waterways. Restrictive features that affect each soil for the specified use is also provided in the table.

The ratings in the table are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. Not limited indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. Slightly limited indicates that the soil has features that are favorable for the specified use. The limitations are minor and can be easily overcome. Good performance and low maintenance can be expected. Moderately limited indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. Limited indicates that the soil has one or more features that are significant limitations for the specified use. The limitations can be overcome, but generally require special design, soil reclamation, or installation procedures that may result in additional expense. Fair performance and moderate to high maintenance can be expected. Very limited indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Limitation class terms, such as very limited or limited, etc., limitation ratings, and numerical ratings are shown for each soil feature listed. As many as three soil features may be listed for each soil component if applicable. The overall limitation rating for the soil component is based on the most severe limitation.

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil and the depth to fractured bedrock or other permeable material. Excessive slope can affect the storage capacity of the reservoir area.

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth even greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders, organic matter, or salts or sodium. A high water table affects the amount of usable material. It also affects traffic ability.

Aquifer-fed excavated ponds are pits or dugouts that extend to a ground-water aquifer or to a depth below a permanent water table. Excluded are ponds that are fed only by surface runoff and embankment ponds that impound water 3 feet or more above the original surface. Excavated ponds are affected by depth to a permanent water table, permeability of the aquifer, and quality of the water as inferred from the salinity of the soil. Depth to bedrock and the content of large stones affect the ease of excavation.

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to bedrock, to a cemented pan, or to other layers that affect the rate of water movement; permeability; depth to a high water table or depth of standing water if the soil is subject to ponding; slope; susceptibility to flooding; subsidence of organic layers; and the potential for frost action. Excavating and grading and the stability of ditch banks are affected by depth to bedrock or to a cemented pan, large stones, slope, and the hazard of cutbanks caving. The productivity of the soil after drainage is adversely affected by extreme acidity or by toxic substances in the root zone, such as salts, sodium, and sulfur. Availability of drainage outlets is not considered in the ratings.

Irrigation is the controlled application of water to supplement rainfall and support plant growth. The design and management of an irrigation system are affected by depth to the water table, the need for drainage, flooding, available water capacity, intake rate, permeability, erosion hazard, and slope. The construction of a system is affected by large stones and depth to bedrock or to a cemented pan. The performance of a system is affected by the depth of the root zone, the amount of salts or sodium, and soil reaction.

Terraces and diversions are embankments or a combination of channels and ridges constructed across a slope to control erosion and conserve moisture by intercepting runoff. Slope, wetness, large stones, and depth to bedrock or to a cemented pan affect the construction of terraces and diversions. A restricted rooting depth, a very limited hazard of wind erosion or water erosion, an excessively coarse texture, and restricted permeability adversely affect maintenance.

Grassed waterways are natural or constructed channels, generally broad and shallow, which conduct surface water to outlets at a non-erosive velocity. Large stones, wetness, slope, and depth to bedrock or to a cemented pan affect the construction of grassed waterways. A hazard of wind erosion, low available water capacity, restricted rooting depth, toxic substances such as salts and sodium, and restricted permeability adversely affect the growth and maintenance of the grass after construction.

WATER MANAGEMENT--Continued
Woodson County, Kansas

(The information in this report indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Map symbol and soil name	Features affecting--			
	Drainage	Irrigation	Terraces and diversions	Grassed waterways
001CA: Catoosa-----	Limitation: deep to water	Limitation: erodes easily depth to rock	Limitation: erodes easily depth to rock	Limitation: erodes easily depth to rock
001CB: Catoosa-----	Limitation: deep to water	Limitation: erodes easily slope depth to rock	Limitation: erodes easily depth to rock	Limitation: erodes easily depth to rock
Rock Outcrop----	---	---	---	---
001CC: Collinsville----	Limitation: deep to water	Limitation: large stones slope droughty	Limitation: large stones slope depth to rock	Limitation: large stones slope droughty
Bates-----	Limitation: deep to water	Limitation: slope depth to rock	Limitation: depth to rock	Limitation: depth to rock
001ZB: Zaar-----	Limitation: percs slowly slope	Limitation: slope slow intake wetness	Limitation: percs slowly wetness	Limitation: percs slowly wetness
031EP: Eram-----	Limitation: percs slowly slope depth to rock	Limitation: percs slowly slope wetness	Limitation: erodes easily wetness depth to rock	Limitation: erodes easily wetness depth to rock
Apperson-----	Limitation: percs slowly slope	Limitation: percs slowly slope wetness	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily percs slowly wetness
031ES: Eram-----	Limitation: percs slowly slope depth to rock	Limitation: percs slowly slope wetness	Limitation: erodes easily slope depth to rock	Limitation: erodes easily slope wetness
Shidler-----	Limitation: deep to water	Limitation: slope depth to rock	Limitation: large stones depth to rock	Limitation: large stones depth to rock
073AT: Aguents-----	---	---	---	---
073CA: Chase-----	Limitation: flooding frost action percs slowly	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily percs slowly
073CM: Clime-----	Limitation: deep to water	Limitation: percs slowly slope slow intake	Limitation: area reclaim percs slowly	Limitation: area reclaim percs slowly
073CS: Clime-----	Limitation: deep to water	Limitation: percs slowly slope slow intake	Limitation: area reclaim percs slowly slope	Limitation: area reclaim percs slowly slope
Sogn-----	Limitation: deep to water	Limitation: slope thin layer	Limitation: area reclaim slope depth to rock	Limitation: area reclaim slope depth to rock
073DS: Dennis, eroded--	Limitation: percs slowly slope	Limitation: percs slowly rooting depth wetness	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily percs slowly rooting depth
073IC: Ivan-----	Limitation: deep to water	Limitation: flooding	Favorable	Favorable
073IF: Ivan-----	Limitation: deep to water	Limitation: flooding	Favorable	Favorable
073KE: Kenoma, eroded--	Limitation: percs slowly slope	Limitation: percs slowly slope wetness	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily percs slowly wetness
073LA: Labette-----	Limitation: deep to water	Limitation: percs slowly thin layer	Limitation: area reclaim depth to rock	Limitation: area reclaim erodes easily depth to rock

WATER MANAGEMENT--Continued
Woodson County, Kansas

(The information in this report indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Map symbol and soil name	Features affecting--			
	Drainage	Irrigation	Terraces and diversions	Grassed waterways
073LD: Labette-----	Limitation: deep to water	Limitation: percs slowly thin layer	Limitation: area reclaim depth to rock	Limitation: area reclaim erodes easily depth to rock
Dwight-----	Limitation: deep to water	Limitation: erodes easily excess sodium percs slowly	Limitation: erodes easily percs slowly	Limitation: erodes easily excess sodium percs slowly
073MA: Martin-----	Limitation: frost action percs slowly	Limitation: percs slowly wetness	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily percs slowly
073NZ: Niotaze-----	Limitation: percs slowly slope thin layer	Limitation: percs slowly slope wetness	Limitation: area reclaim erodes easily slope	Limitation: erodes easily slope wetness
Darnell-----	Limitation: deep to water	Limitation: slope thin layer	Limitation: area reclaim slope	Limitation: area reclaim slope
073RE: Reading-----	Limitation: deep to water	Favorable	Limitation: erodes easily	Limitation: erodes easily
073ST: Steedman-----	Limitation: percs slowly slope thin layer	Limitation: slope wetness	Limitation: area reclaim erodes easily wetness	Limitation: area reclaim erodes easily wetness
205BH: Bates-----	Limitation: deep to water	Limitation: slope thin layer	Limitation: area reclaim	Limitation: area reclaim
Collinsville----	Limitation: deep to water	Limitation: slope thin layer	Limitation: large stones thin layer	Limitation: large stones thin layer
205BO: Bates-----	Limitation: deep to water	Limitation: slope thin layer	Limitation: area reclaim	Limitation: area reclaim
Collinsville----	Limitation: deep to water	Limitation: slope thin layer	Limitation: large stones slope depth to rock	Limitation: large stones slope depth to rock
205DW: Dennis-----	Limitation: percs slowly slope	Limitation: percs slowly wetness	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily percs slowly
Dwight-----	Limitation: deep to water	Limitation: erodes easily excess sodium percs slowly	Limitation: erodes easily percs slowly	Limitation: erodes easily excess sodium percs slowly
205EB: Eram-----	Limitation: percs slowly thin layer	Limitation: erodes easily percs slowly thin layer	Limitation: area reclaim erodes easily wetness	Limitation: area reclaim erodes easily wetness
205EC: Eram-----	Limitation: percs slowly slope thin layer	Limitation: percs slowly slope thin layer	Limitation: area reclaim erodes easily wetness	Limitation: area reclaim erodes easily wetness
205LA: Lanton-----	Limitation: flooding percs slowly	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily percs slowly wetness
205ND: Niotaze-----	Limitation: percs slowly slope thin layer	Limitation: percs slowly slope wetness	Limitation: area reclaim large stones slope	Limitation: large stones slope wetness
Darnell-----	Limitation: deep to water	Limitation: slope thin layer	Limitation: area reclaim slope	Limitation: area reclaim slope
205SC: Shidler-----	Limitation: deep to water	Limitation: slope thin layer	Limitation: area reclaim	Limitation: area reclaim
Catoosa-----	Limitation: deep to water	Limitation: rooting depth thin layer	Limitation: area reclaim erodes easily	Limitation: area reclaim erodes easily

WATER MANAGEMENT--Continued
Woodson County, Kansas

(The information in this report indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Map symbol and soil name	Features affecting--			
	Drainage	Irrigation	Terraces and diversions	Grassed waterways
205SF: Steedman-----	Limitation: percs slowly slope thin layer	Limitation: slope thin layer wetness	Limitation: area reclaim slope wetness	Limitation: area reclaim slope wetness
AED: Arents, Earthen Dam-----	---	---	---	---
Bb: Bates-----	Limitation: deep to water	Limitation: thin layer	Limitation: area reclaim	Limitation: area reclaim
Bc: Bates-----	Limitation: deep to water	Limitation: slope thin layer	Limitation: area reclaim	Limitation: area reclaim
BOP: Borrow Pits-----	---	---	---	---
Ca: Clareson-----	Limitation: deep to water	Limitation: large stones slope droughty	Limitation: area reclaim large stones depth to rock	Limitation: area reclaim large stones droughty
Sogn-----	Limitation: deep to water	Limitation: slope thin layer	Limitation: area reclaim depth to rock	Limitation: area reclaim depth to rock
Cd: Cleora-----	Limitation: deep to water	Limitation: flooding	Favorable	Favorable
Da: Darnell-----	Limitation: deep to water	Limitation: slope thin layer depth to rock	Limitation: area reclaim slope	Limitation: area reclaim slope
Niotaze-----	Limitation: percs slowly slope thin layer	Limitation: percs slowly slope wetness	Limitation: area reclaim erodes easily slope	Limitation: erodes easily slope wetness
Dd: Dennis-----	Limitation: percs slowly	Limitation: percs slowly rooting depth wetness	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily percs slowly rooting depth
De: Dennis-----	Limitation: percs slowly slope	Limitation: percs slowly rooting depth wetness	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily percs slowly rooting depth
Df: Dennis, eroded--	Limitation: percs slowly	Limitation: percs slowly rooting depth wetness	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily percs slowly rooting depth
Dg: Dennis, eroded--	Limitation: percs slowly slope	Limitation: percs slowly rooting depth wetness	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily percs slowly rooting depth
Eram, eroded----	Limitation: percs slowly slope thin layer	Limitation: percs slowly slope thin layer	Limitation: area reclaim erodes easily wetness	Limitation: area reclaim erodes easily wetness
Dw: Dwight-----	Limitation: deep to water	Limitation: erodes easily excess sodium percs slowly	Limitation: erodes easily percs slowly	Limitation: erodes easily excess sodium percs slowly
Eb: Eram-----	Limitation: percs slowly thin layer	Limitation: erodes easily percs slowly thin layer	Limitation: area reclaim erodes easily wetness	Limitation: area reclaim erodes easily wetness
Ec: Eram-----	Limitation: percs slowly slope thin layer	Limitation: percs slowly slope thin layer	Limitation: area reclaim erodes easily wetness	Limitation: area reclaim erodes easily wetness
Ex: Eram-----	Limitation: percs slowly slope thin layer	Limitation: percs slowly slope thin layer	Limitation: area reclaim erodes easily slope	Limitation: erodes easily slope wetness
Collinsville----	Limitation: deep to water	Limitation: slope thin layer	Limitation: large stones slope depth to rock	Limitation: large stones slope depth to rock

WATER MANAGEMENT--Continued
Woodson County, Kansas

(The information in this report indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Map symbol and soil name	Features affecting--			
	Drainage	Irrigation	Terraces and diversions	Grassed waterways
GRP: Gravel Pits-----	---	---	---	---
Ha: Hepler-----	Limitation: flooding	Limitation: erodes easily flooding wetness	Limitation: erodes easily wetness	Limitation: erodes easily wetness
Ka: Kenoma-----	Limitation: percs slowly	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily percs slowly wetness
Ko: Kenoma-----	Limitation: percs slowly	Limitation: percs slowly slope wetness	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily percs slowly wetness
Olpe-----	Limitation: deep to water	Limitation: percs slowly slope droughty	Limitation: erodes easily percs slowly	Limitation: erodes easily droughty
Kw: Kenoma, eroded--	Limitation: percs slowly	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily percs slowly wetness
Woodson, eroded--	Limitation: percs slowly	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily percs slowly wetness
La: Leanna, drained--	Limitation: flooding percs slowly	Limitation: percs slowly wetness	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily percs slowly wetness
Lb: Lula-----	Limitation: deep to water	Limitation: erodes easily	Limitation: erodes easily	Limitation: erodes easily
Ld: Lula-----	Limitation: deep to water	Limitation: erodes easily	Limitation: erodes easily	Limitation: erodes easily
Dwight-----	Limitation: deep to water	Limitation: erodes easily excess sodium percs slowly	Limitation: erodes easily percs slowly	Limitation: erodes easily excess sodium percs slowly
Ma: Mason-----	Limitation: deep to water	Limitation: erodes easily	Limitation: erodes easily	Limitation: erodes easily
Ns: Niotaze-----	Limitation: percs slowly slope thin layer	Limitation: percs slowly slope wetness	Limitation: area reclaim erodes easily slope	Limitation: erodes easily slope wetness
Stephenville----	Limitation: deep to water	Limitation: slope thin layer	Limitation: area reclaim slope	Limitation: area reclaim slope
Od: Olpe-----	Limitation: deep to water	Limitation: percs slowly slope droughty	Limitation: erodes easily percs slowly slope	Limitation: erodes easily slope droughty
Og: Osage-----	Limitation: flooding percs slowly	Limitation: percs slowly slow intake wetness	Limitation: percs slowly wetness	Limitation: percs slowly wetness
Os: Osage-----	Limitation: flooding percs slowly	Limitation: percs slowly wetness	Limitation: percs slowly wetness	Limitation: percs slowly wetness
Rc: Ringo-----	Limitation: deep to water	Limitation: percs slowly slope thin layer	Limitation: area reclaim percs slowly	Limitation: area reclaim percs slowly
Rd: Ringo-----	Limitation: deep to water	Limitation: percs slowly slope thin layer	Limitation: area reclaim percs slowly slope	Limitation: area reclaim percs slowly slope
Sogn-----	Limitation: deep to water	Limitation: slope thin layer	Limitation: area reclaim slope depth to rock	Limitation: area reclaim slope depth to rock

WATER MANAGEMENT--Continued
Woodson County, Kansas

(The information in this report indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Map symbol and soil name	Features affecting--			
	Drainage	Irrigation	Terraces and diversions	Grassed waterways
Sa: Stephenville----	Limitation: deep to water	Limitation: thin layer	Limitation: area reclaim	Limitation: area reclaim
Sd: Summit-----	Limitation: percs slowly	Limitation: erodes easily percs slowly	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily percs slowly
Se: Summit-----	Limitation: percs slowly slope	Limitation: erodes easily percs slowly slope	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily percs slowly
Va: Verdigris-----	Limitation: deep to water	Favorable	Favorable	Favorable
Vc: Verdigris-----	Limitation: deep to water	Limitation: flooding	Favorable	Favorable
W: Water-----	---	---	---	---
Wa: Woodson-----	Limitation: percs slowly	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily percs slowly wetness
Za: Zaar-----	Limitation: percs slowly	Limitation: slow intake wetness	Limitation: percs slowly wetness	Limitation: percs slowly wetness

WATER MANAGEMENT--Continued
Woodson County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Pond Reservoir Area		Embankments, Dikes, and Levees		Excavated Ponds (Aquifer- fed)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
001CA: Catoosa-----	90	Somewhat limited Depth to bedrock Seepage	0.93 0.05	Somewhat limited Thin layer	0.94	Very limited Deep to water	1.00
001CB: Catoosa-----	60	Somewhat limited Depth to bedrock Seepage	0.93 0.05	Somewhat limited Thin layer	0.94	Very limited Deep to water	1.00
Rock Outcrop-----	30	Not rated		Not rated		Not rated	
001CC: Collinsville-----	50	Very limited Seepage Depth to bedrock	1.00 1.00	Very limited Thin layer Seepage	1.00 0.09	Very limited Deep to water	1.00
Bates-----	40	Somewhat limited Seepage Depth to bedrock	0.70 0.08	Somewhat limited Thin layer	0.81	Very limited Deep to water	1.00
001ZB: Zaar-----	100	Somewhat limited Seepage	0.05	Very limited Depth to saturated zone Hard to pack	1.00 0.99	Very limited Deep to water	1.00
031EP: Eram-----	50	Somewhat limited Depth to bedrock	0.23	Very limited Depth to saturated zone Thin layer Hard to pack	1.00 0.95 0.82	Very limited Deep to water	1.00
Apperson-----	35	Somewhat limited Depth to bedrock	0.37	Very limited Depth to saturated zone Hard to pack Thin layer	1.00 0.71 0.37	Very limited Deep to water	1.00
031ES: Eram-----	60	Somewhat limited Depth to bedrock Slope	0.23 0.00	Very limited Depth to saturated zone Thin layer Hard to pack	1.00 0.95 0.82	Very limited Deep to water	1.00
Shidler-----	25	Very limited Seepage Depth to bedrock	1.00 1.00	Very limited Thin layer Hard to pack	1.00 0.08	Very limited Deep to water	1.00
073AT: Aguents-----	100	Very limited Seepage	1.00	Not limited		Very limited Deep to water	1.00
073CA: Chase-----	90	Not limited		Somewhat limited Depth to saturated zone	0.43	Very limited Deep to water	1.00
073CM: Clime-----	90	Somewhat limited Depth to bedrock Seepage	0.06 0.01	Somewhat limited Hard to pack Thin layer	0.87 0.77	Very limited Deep to water	1.00
073CS: Clime-----	60	Somewhat limited Depth to bedrock Seepage Slope	0.06 0.01 0.01	Somewhat limited Hard to pack Thin layer	0.87 0.77	Very limited Deep to water	1.00
Sogn-----	20	Very limited Seepage Depth to bedrock Slope	1.00 1.00 0.01	Very limited Thin layer	1.00	Very limited Deep to water	1.00
073DS: Dennis, eroded-----	100	Not limited		Very limited		Very limited	

WATER MANAGEMENT--Continued
Woodson County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Pond Reservoir Area		Embankments, Dikes, and Levees		Excavated Ponds (Aquifer- fed)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
073IC: Ivan-----	85	Somewhat limited Seepage	0.70	Depth to saturated zone Hard to pack	1.00 0.87	Deep to water	1.00
073IF: Ivan-----	90	Somewhat limited Seepage	0.70	Somewhat limited Piping	0.11	Very limited Deep to water	1.00
073KE: Kenoma, eroded-----	100	Somewhat limited Seepage	0.05	Somewhat limited Hard to pack	0.81	Very limited Deep to water	1.00
073LA: Labette-----	90	Somewhat limited Depth to bedrock Seepage	0.93 0.05	Somewhat limited Thin layer Hard to pack	0.94 0.85	Very limited Deep to water	1.00
073LD: Labette-----	65	Somewhat limited Depth to bedrock Seepage	0.93 0.05	Somewhat limited Thin layer Hard to pack	0.94 0.85	Very limited Deep to water	1.00
Dwight-----	30	Somewhat limited Depth to bedrock	0.29	Very limited Hard to pack Thin layer	1.00 0.29	Very limited Deep to water	1.00
073MA: Martin-----	100	Somewhat limited Seepage	0.05	Very limited Depth to saturated zone Hard to pack	1.00 0.91	Very limited Deep to water	1.00
073NZ: Niotaze-----	75	Somewhat limited Depth to bedrock	0.19	Very limited Depth to saturated zone	1.00	Very limited Deep to water	1.00
		Slope	0.15	Hard to pack	0.95		
		Seepage	0.05	Thin layer	0.93		
Darnell-----	15	Somewhat limited Depth to bedrock Slope Seepage	0.61 0.15 0.01	Very limited Thin layer Seepage	1.00 0.07	Very limited Deep to water	1.00
073RE: Reading-----	90	Somewhat limited Seepage	0.57	Not limited		Very limited Deep to water	1.00
073ST: Steedman-----	85	Somewhat limited Depth to bedrock	0.11	Very limited Depth to saturated zone Hard to pack Thin layer	1.00 1.00 0.86	Very limited Deep to water	1.00
205BH: Bates-----	50	Somewhat limited Depth to bedrock Seepage	0.19 0.05	Somewhat limited Thin layer	0.93	Very limited Deep to water	1.00
Collinsville-----	35	Very limited Seepage Depth to bedrock	1.00 1.00	Very limited Thin layer Seepage	1.00 0.09	Very limited Deep to water	1.00
205BO: Bates-----	45	Somewhat limited Seepage Depth to bedrock	0.70 0.26	Somewhat limited Thin layer	0.96	Very limited Deep to water	1.00
Collinsville-----	40	Very limited Seepage Depth to bedrock Slope	1.00 1.00 0.02	Very limited Thin layer Seepage	1.00 0.09	Very limited Deep to water	1.00
205DW: Dennis-----	65	Not limited		Very limited		Very limited	

WATER MANAGEMENT--Continued
Woodson County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Pond Reservoir Area		Embankments, Dikes, and Levees		Excavated Ponds (Aquifer- fed)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Dwight-----	25	Not limited		Depth to saturated zone Hard to pack	1.00 0.85	Deep to water	1.00
205EB: Eram-----	90	Somewhat limited Depth to bedrock	0.08	Somewhat limited Hard to pack Salinity	0.96 0.03	Very limited Deep to water	1.00
205EC: Eram-----	90	Somewhat limited Depth to bedrock	0.30	Very limited Depth to saturated zone Hard to pack Thin layer	1.00 0.92 0.81	Very limited Deep to water	1.00
205LA: Lanton-----	90	Somewhat limited Seepage	0.05	Very limited Depth to saturated zone Thin layer Hard to pack	1.00 0.98 0.60	Very limited Deep to water	1.00
205ND: Niotaze-----	50	Somewhat limited Slope Seepage Depth to bedrock	0.06 0.05 0.03	Very limited Depth to saturated zone Hard to pack Thin layer	1.00 0.94 0.66	Very limited Deep to water	1.00
Darnell-----	35	Somewhat limited Depth to bedrock Seepage	0.58 0.01	Very limited Thin layer Seepage	1.00 0.36	Very limited Deep to water	1.00
205SC: Shidler-----	70	Very limited Seepage Depth to bedrock	1.00 1.00	Very limited Thin layer	1.00	Very limited Deep to water	1.00
Catoosa-----	20	Somewhat limited Depth to bedrock Seepage	0.95 0.05	Somewhat limited Thin layer	0.95	Very limited Deep to water	1.00
205SF: Steedman-----	90	Somewhat limited Depth to bedrock Slope	0.08 0.03	Very limited Depth to saturated zone Hard to pack Thin layer	1.00 1.00 0.81	Very limited Deep to water	1.00
AED: Arents, Earthen Dam-	100	Not rated		Not rated		Not rated	
Bb: Bates-----	98	Somewhat limited Seepage Depth to bedrock	0.70 0.06	Somewhat limited Thin layer Piping	0.77 0.03	Very limited Deep to water	1.00
Bc: Bates-----	97	Somewhat limited Seepage Depth to bedrock	0.70 0.06	Somewhat limited Thin layer Piping	0.77 0.03	Very limited Deep to water	1.00
BOP: Borrow Pits-----	100	Not rated		Not rated		Not rated	
Ca: Clareson-----	50	Somewhat limited Depth to bedrock Seepage	0.96 0.05	Very limited Hard to pack Thin layer	1.00 0.96	Very limited Deep to water	1.00

WATER MANAGEMENT--Continued
Woodson County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Pond Reservoir Area		Embankments, Dikes, and Levees		Excavated Ponds (Aquifer- fed)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Sogn-----	35	Very limited Seepage Depth to bedrock	1.00 1.00	Content of large stones Very limited Thin layer	0.22 1.00	Very limited Deep to water	1.00
Cd: Cleora-----	98	Very limited Seepage	1.00	Somewhat limited Seepage	0.09	Very limited Deep to water	1.00
Da: Darnell-----	55	Very limited Seepage Slope Depth to bedrock	1.00 0.72 0.61	Very limited Thin layer Seepage	1.00 0.07	Very limited Deep to water	1.00
Niotaze-----	40	Somewhat limited Slope Depth to bedrock Seepage	0.72 0.30 0.05	Very limited Depth to saturated zone Thin layer Hard to pack	1.00 0.98 0.95	Very limited Deep to water	1.00
Dd: Dennis-----	98	Not limited		Very limited Depth to saturated zone Hard to pack	1.00 0.87	Very limited Deep to water	1.00
De: Dennis-----	98	Not limited		Very limited Depth to saturated zone Hard to pack	1.00 0.87	Very limited Deep to water	1.00
Df: Dennis, eroded-----	98	Not limited		Very limited Depth to saturated zone Hard to pack	1.00 0.89	Very limited Deep to water	1.00
Dg: Dennis, eroded-----	50	Not limited		Very limited Depth to saturated zone Hard to pack	1.00 0.89	Very limited Deep to water	1.00
Eram, eroded-----	30	Somewhat limited Depth to bedrock	0.09	Very limited Depth to saturated zone Hard to pack Thin layer	1.00 0.98 0.83	Very limited Deep to water	1.00
Dw: Dwight-----	98	Somewhat limited Depth to bedrock	0.00	Very limited Hard to pack Thin layer	1.00 0.06	Very limited Deep to water	1.00
Eb: Eram-----	98	Somewhat limited Depth to bedrock	0.09	Very limited Depth to saturated zone Hard to pack Thin layer	1.00 0.95 0.83	Very limited Deep to water	1.00
Ec: Eram-----	98	Somewhat limited Depth to bedrock	0.09	Very limited Depth to saturated zone Hard to pack Thin layer	1.00 0.95 0.83	Very limited Deep to water	1.00
Ex: Eram-----	60	Somewhat limited Depth to bedrock	0.16	Very limited Depth to saturated zone Hard to pack Thin layer	1.00 0.95 0.90	Very limited Deep to water	1.00
Collinsville-----	20	Very limited		Very limited		Very limited	

WATER MANAGEMENT--Continued
Woodson County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Pond Reservoir Area		Embankments, Dikes, and Levees		Excavated Ponds (Aquifer- fed)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
		Seepage Depth to bedrock Slope	1.00 1.00 0.02	Thin layer	1.00	Deep to water	1.00
GRP: Gravel Pits-----	100	Not rated		Not rated		Not rated	
Ha: Hepler-----	97	Somewhat limited Seepage	0.70	Very limited Depth to saturated zone Piping	1.00 0.47	Somewhat limited Slow refill Cutbanks cave Deep to water	0.30 0.10 0.00
Ka: Kenoma-----	98	Somewhat limited Seepage	0.05	Very limited Depth to saturated zone	1.00	Very limited Deep to water	1.00
Ko: Kenoma-----	50	Somewhat limited Seepage	0.05	Very limited Depth to saturated zone	1.00	Very limited Deep to water	1.00
Olpe-----	30	Somewhat limited Seepage	0.05	Not limited		Very limited Deep to water	1.00
Kw: Kenoma, eroded-----	60	Somewhat limited Seepage	0.05	Very limited Depth to saturated zone	1.00	Very limited Deep to water	1.00
Woodson, eroded-----	30	Somewhat limited Seepage	0.05	Very limited Depth to saturated zone Hard to pack	1.00 0.96	Very limited Deep to water	1.00
La: Leanna, drained-----	90	Somewhat limited Seepage	0.05	Very limited Depth to saturated zone	1.00	Very limited Deep to water	1.00
Lb: Lula-----	98	Somewhat limited Seepage Depth to bedrock	0.70 0.00	Somewhat limited Thin layer	0.00	Very limited Deep to water	1.00
Ld: Lula-----	45	Somewhat limited Seepage Depth to bedrock	0.70 0.00	Somewhat limited Thin layer	0.00	Very limited Deep to water	1.00
Dwight-----	30	Somewhat limited Depth to bedrock	0.00	Very limited Hard to pack Thin layer	1.00 0.06	Very limited Deep to water	1.00
Ma: Mason-----	98	Somewhat limited Seepage	0.70	Not limited		Very limited Deep to water	1.00
Ns: Niotaze-----	50	Somewhat limited Depth to bedrock Seepage Slope	0.30 0.05 0.03	Very limited Depth to saturated zone Thin layer Hard to pack	1.00 0.98 0.95	Very limited Deep to water	1.00
Stephenville-----	40	Somewhat limited Seepage Depth to bedrock	0.70 0.09	Somewhat limited Thin layer Seepage	0.83 0.03	Very limited Deep to water	1.00
Od: Olpe-----	98	Somewhat limited Seepage	0.05	Not limited		Very limited Deep to water	1.00
Og: Osage-----	97	Not limited		Very limited Ponding	1.00	Very limited Slow refill	1.00

WATER MANAGEMENT--Continued
Woodson County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Pond Reservoir Area		Embankments, Dikes, and Levees		Excavated Ponds (Aquifer- fed)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Os: Osage-----	97	Not limited		Depth to saturated zone Hard to pack Very limited Ponding Depth to saturated zone Hard to pack	1.00 0.86 1.00 1.00 0.85	Cutbanks cave Somewhat limited Slow refill Cutbanks cave	0.10 0.95 0.10
Rc: Ringo-----	99	Somewhat limited Depth to bedrock	0.00	Somewhat limited Hard to pack Thin layer	0.92 0.11	Very limited Deep to water	1.00
Rd: Ringo-----	50	Somewhat limited Depth to bedrock	0.00	Somewhat limited Hard to pack Thin layer	0.92 0.11	Very limited Deep to water	1.00
Sogn-----	30	Very limited Seepage Depth to bedrock	1.00 1.00	Very limited Thin layer	1.00	Very limited Deep to water	1.00
Sa: Stephenville-----	98	Somewhat limited Seepage Depth to bedrock	0.70 0.09	Somewhat limited Thin layer Seepage	0.83 0.03	Very limited Deep to water	1.00
Sd: Summit-----	98	Somewhat limited Seepage	0.05	Somewhat limited Hard to pack Depth to saturated zone	0.88 0.86	Very limited Deep to water	1.00
Se: Summit-----	99	Somewhat limited Seepage	0.05	Somewhat limited Hard to pack Depth to saturated zone	0.88 0.86	Very limited Deep to water	1.00
Va: Verdigris-----	97	Somewhat limited Seepage	0.70	Somewhat limited Piping	0.08	Very limited Deep to water	1.00
Vc: Verdigris-----	98	Somewhat limited Seepage	0.70	Somewhat limited Piping	0.08	Very limited Deep to water	1.00
W: Water-----	100	Not rated		Not rated		Not rated	
Wa: Woodson-----	98	Somewhat limited Seepage	0.05	Very limited Depth to saturated zone Hard to pack	1.00 0.96	Very limited Deep to water	1.00
Za: Zaar-----	85	Somewhat limited Seepage	0.05	Very limited Depth to saturated zone Hard to pack	1.00 1.00	Very limited Deep to water	1.00

SANITARY FACILITIES
Woodson County, Kansas

Sanitary Facilities

The following tables show the degree and kind of soil limitations that affect septic tank absorption fields, sewage lagoons, sanitary landfills, and daily cover for landfill. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect these uses. Not limited indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. Slightly limited indicates that the soil has features that are favorable for the specified use. The limitations are minor and can be easily overcome. Good performance and low maintenance can be expected. Somewhat limited indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. Very limited indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.00 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 60 inches is evaluated. The ratings are based on the soil properties that affect absorption of the effluent, construction and maintenance of the system, and public health. Permeability, depth to a water table, ponding, depth to bedrock or a cemented pan, and flooding affect absorption of the effluent. Stones and boulders, ice, and bedrock or a cemented pan interfere with installation. Subsidence interferes with installation and maintenance. Excessive slope may cause lateral seepage and surfacing of the effluent in downslope areas.

Some soils are underlain by loose sand and gravel or fractured bedrock at a depth of less than 4 feet below the distribution lines. In these soils the absorption field may not adequately filter the effluent, particularly when the system is new. As a result, the ground water may become contaminated.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water. Considered in the ratings are slope, permeability, depth to a water table, ponding, depth to bedrock or a cemented pan, flooding, large stones, and content of organic matter.

Soil permeability is a critical property affecting the suitability for sewage lagoons. Most porous soils eventually become sealed when they are used as sites for sewage lagoons. Until sealing occurs, however, the hazard of pollution is severe. Soils that have a permeability rate of more than 2 inches per hour are too porous for the proper functioning of sewage lagoons. In these soils, seepage of the effluent can result in contamination of the ground water. Ground-water contamination is also a hazard if fractured bedrock is within a depth of 40 inches, if the water table is high enough to raise the level of sewage in the lagoon, or if floodwater overtops the lagoon.

A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope, bedrock, and cemented pans can cause construction problems, and large stones can hinder compaction of the lagoon floor. If the lagoon is to be uniformly deep throughout, the slope must be gentle enough and the soil material must be thick enough over bedrock or a cemented pan to make land smoothing practical.

A trench sanitary landfill is an area where solid waste is placed in successive layers in an excavated trench. The waste is spread, compacted, and covered daily with a thin layer of soil excavated at the site. When the trench is full, a final cover of soil material at least 2 feet thick is placed over the landfill. The ratings in the table are based on the soil properties that affect the risk of pollution, the ease of excavation, trafficability, and revegetation. These properties include permeability, depth to bedrock or a cemented pan, depth to a water table, ponding, slope, flooding, texture, stones and boulders, highly organic layers, soil reaction, and content of salts and sodium. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, onsite investigation may be needed.

Hard, nonrippable bedrock, creviced bedrock, or highly permeable strata in or directly below the proposed trench bottom can affect the ease of excavation and the hazard of ground-water pollution. Slope affects construction of the trenches and the movement of surface water around the landfill. It also affects the construction and performance of roads in areas of the landfill.

Soil texture and consistence affect the ease with which the trench is dug and the ease with which the soil can be used as daily or final cover. They determine the workability of the soil when dry and when wet. Soils that are plastic and sticky when wet are difficult to excavate, grade, or compact and are difficult to place as a uniformly thick cover over a layer of refuse.

The soil material used as the final cover for a trench landfill should be suitable for plants. It should not have excess sodium or salts and should not be too acid. The surface layer generally has the best workability, the highest content of organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

SANITARY FACILITIES
Woodson County, Kansas

In an area sanitary landfill, solid waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site. A final cover of soil material at least 2 feet thick is placed over the completed landfill. The ratings in the table are based on the soil properties that affect trafficability and the risk of pollution. These properties include flooding, permeability, depth to a water table, ponding, slope, and depth to bedrock or a cemented pan.

Flooding is a serious problem because it can result in pollution in areas downstream from the landfill. If permeability is too rapid or if fractured bedrock, a fractured cemented pan, or the water table is close to the surface, the leachate can contaminate the water supply. Slope is a consideration because of the extra grading required to maintain roads in the steeper areas of the landfill. Also, leachate may flow along the surface of the soils in the steeper areas and cause difficult seepage problems.

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste. The ratings in the table also apply to the final cover for a landfill. They are based on the soil properties that affect workability, the ease of digging, and the ease of moving and spreading the material over the refuse daily during wet and dry periods. These properties include soil texture, depth to a water table, ponding, rock fragments, slope, depth to bedrock or a cemented pan, reaction, and content of salts, sodium, or lime.

Loamy or silty soils that are free of large stones and excess gravel are the best cover for a landfill. Clayey soils may be sticky and difficult to spread; sandy soils are subject to wind erosion.

Slope affects the ease of excavation and of moving the cover material. Also, it can influence runoff, erosion, and reclamation of the borrow area.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock, a cemented pan, or the water table to permit revegetation. The soil material used as the final cover for a landfill should be suitable for plants. It should not have excess sodium, salts, or lime and should not be too acid.

SANITARY FACILITIES--Continued
Woodson County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
001CA: Catoosa-----	90	Very limited Depth to bedrock	1.00	Very limited Depth to hard bedrock	1.00
		Restricted permeability	1.00		
001CB: Catoosa-----	60	Very limited Depth to bedrock	1.00	Very limited Depth to hard bedrock	1.00
		Restricted permeability	1.00	Slope	0.19
Rock Outcrop-----	30	Not rated		Not rated	
001CC: Collinsville-----	50	Very limited Depth to bedrock	1.00	Very limited Depth to hard bedrock	1.00
		Slope	0.04	Seepage	1.00
Bates-----	40	Very limited Depth to bedrock	1.00	Very limited Depth to soft bedrock	1.00
		Restricted permeability	0.50	Slope	0.67
				Seepage	0.50
001ZB: Zaar-----	100	Very limited Restricted permeability	1.00	Somewhat limited Slope	0.67
		Depth to saturated zone	1.00	Depth to saturated zone	0.00
031EP: Eram-----	50	Very limited Restricted permeability	1.00	Very limited Depth to soft bedrock	1.00
		Depth to bedrock	1.00	Slope	0.91
		Depth to saturated zone	1.00		
Apperson-----	35	Very limited Restricted permeability	1.00	Somewhat limited Depth to hard bedrock	0.96
		Depth to saturated zone	1.00	Slope	0.67
		Depth to bedrock	0.99		
031ES: Eram-----	60	Very limited Restricted permeability	1.00	Very limited Depth to soft bedrock	1.00
		Depth to bedrock	1.00	Slope	1.00
		Depth to saturated zone	1.00		
		Slope	0.37		
Shidler-----	25	Very limited Depth to bedrock	1.00	Very limited Depth to hard bedrock	1.00
				Slope	0.91
073AT: Aguents-----	100	Very limited Flooding	1.00	Very limited Flooding	1.00
073CA: Chase-----	90	Very limited Flooding	1.00	Very limited Flooding	1.00
		Restricted permeability	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00		
073CM: Clime-----	90	Very limited Restricted permeability	1.00	Very limited Depth to soft bedrock	1.00
		Depth to bedrock	1.00	Slope	0.67
073CS: Clime-----	60	Very limited Restricted permeability	1.00	Very limited Depth to soft bedrock	1.00
		Depth to bedrock	1.00	Slope	1.00
		Slope	0.84		
Sogn-----	20	Very limited		Very limited	

SANITARY FACILITIES--Continued
Woodson County, Kansas

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Map symbol and soil name	Pct of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
073DS: Dennis, eroded-----	100	Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	0.84	Slope	1.00
		Very limited Restricted permeability	1.00	Somewhat limited Slope	0.33
		Depth to saturated zone	1.00		
073IC: Ivan-----	85	Very limited Flooding Restricted permeability	1.00 0.50	Very limited Flooding Seepage	1.00 0.50
073IF: Ivan-----	90	Very limited Flooding Restricted permeability	1.00 0.50	Very limited Flooding Seepage	1.00 0.50
073KE: Kenoma, eroded-----	100	Very limited Restricted permeability	1.00	Somewhat limited Slope	0.33
073LA: Labette-----	90	Very limited Depth to bedrock	1.00	Very limited Depth to hard bedrock	1.00
		Restricted permeability	1.00	Slope	0.09
073LD: Labette-----	65	Very limited Depth to bedrock	1.00	Very limited Depth to hard bedrock	1.00
Dwight-----	30	Restricted permeability	1.00	Slope	0.00
		Very limited Restricted permeability	1.00	Somewhat limited Depth to hard bedrock	0.88
		Depth to bedrock	0.96	Slope	0.00
073MA: Martin-----	100	Very limited Restricted permeability Depth to saturated zone	1.00 1.00	Somewhat limited Slope	0.09
073NZ: Niotaze-----	75	Very limited Depth to bedrock	1.00	Very limited Depth to soft bedrock	1.00
		Depth to saturated zone	1.00	Slope	1.00
		Restricted permeability	1.00	Depth to saturated zone	0.00
		Slope	1.00		
Darnell-----	15	Very limited Depth to bedrock	1.00	Very limited Depth to soft bedrock	1.00
		Slope	1.00	Seepage Slope	1.00 1.00
073RE: Reading-----	90	Somewhat limited Restricted permeability Flooding	0.68 0.40	Somewhat limited Flooding Seepage	0.40 0.32
073ST: Steedman-----	85	Very limited Restricted permeability	1.00	Very limited Depth to soft bedrock	1.00
		Depth to bedrock	1.00	Slope	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	0.00
		Slope	0.00		
205BH: Bates-----	50	Very limited Depth to bedrock	1.00	Very limited Depth to soft bedrock	1.00
		Restricted permeability	1.00	Slope	0.67
Collinsville-----	35			Seepage	0.50
		Very limited		Very limited	

SANITARY FACILITIES--Continued
Woodson County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
205BO: Bates-----	45	Depth to bedrock	1.00	Depth to hard bedrock	1.00
				Seepage	1.00
				Slope	0.67
Collinsville-----	40	Very limited Depth to bedrock	1.00	Very limited Depth to soft bedrock	1.00
		Restricted permeability	1.00	Slope	0.91
				Seepage	0.50
205DW: Dennis-----	65	Very limited Depth to bedrock	1.00	Very limited Depth to hard bedrock	1.00
		Slope	0.96	Seepage	1.00
				Slope	1.00
Dwight-----	25	Very limited Restricted permeability	1.00	Somewhat limited Depth to saturated zone	0.25
		Depth to saturated zone	1.00	Slope	0.09
		Restricted permeability	1.00	Somewhat limited Slope	0.00
205EB: Eram-----	90	Very limited Restricted permeability	1.00	Very limited Depth to soft bedrock	1.00
		Depth to bedrock	1.00	Slope	0.00
		Depth to saturated zone	1.00		
205EC: Eram-----	90	Very limited Restricted permeability	1.00	Very limited Depth to soft bedrock	1.00
		Depth to bedrock	1.00	Slope	0.67
		Depth to saturated zone	1.00		
205LA: Lanton-----	90	Very limited Flooding	1.00	Very limited Flooding	1.00
		Restricted permeability	1.00		
		Depth to saturated zone	1.00		
205ND: Niotaze-----	50	Very limited Restricted permeability	1.00	Very limited Depth to soft bedrock	1.00
		Depth to bedrock	1.00	Slope	1.00
		Depth to saturated zone	1.00		
Darnell-----	35	Slope	1.00		
		Very limited Depth to bedrock	1.00	Very limited Depth to soft bedrock	1.00
		Slope	0.16	Slope	1.00
205SC: Shidler-----	70			Seepage	1.00
		Very limited Depth to bedrock	1.00	Very limited Depth to hard bedrock	1.00
				Slope	0.67
Catoosa-----	20	Very limited Depth to bedrock	1.00	Very limited Depth to hard bedrock	1.00
		Restricted permeability	1.00		
205SF: Steedman-----	90	Very limited Restricted permeability	1.00	Very limited Depth to soft bedrock	1.00
		Depth to bedrock	1.00	Slope	1.00
		Depth to saturated zone	1.00		
AED: Arents, Earthen Dam-	100	Slope	1.00		
		Not rated		Not rated	

SANITARY FACILITIES--Continued
Woodson County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
Bb: Bates-----	98	Very limited Depth to bedrock	1.00	Very limited Depth to soft bedrock	1.00
		Restricted permeability	1.00	Seepage	0.50
				Slope	0.09
Bc: Bates-----	97	Very limited Depth to bedrock	1.00	Very limited Depth to soft bedrock	1.00
		Restricted permeability	1.00	Slope	0.91
				Seepage	0.50
BOP: Borrow Pits-----	100	Not rated		Not rated	
Ca: Clareson-----	50	Very limited Depth to bedrock	1.00	Very limited Depth to hard bedrock	1.00
		Restricted permeability	1.00	Slope	0.67
		Content of large stones	0.22	Content of large stones	0.15
Sogn-----	35	Very limited Depth to bedrock	1.00	Very limited Depth to hard bedrock	1.00
				Slope	0.67
Cd: Cleora-----	98	Very limited Flooding	1.00	Very limited Flooding Seepage	1.00 1.00
Da: Darnell-----	55	Very limited Depth to bedrock	1.00	Very limited Depth to soft bedrock	1.00
		Slope	1.00	Slope	1.00
				Seepage	1.00
Niotaze-----	40	Very limited Depth to bedrock	1.00	Very limited Depth to soft bedrock	1.00
		Depth to saturated zone	1.00	Slope	1.00
		Slope	1.00	Depth to saturated zone	0.00
		Restricted permeability	1.00		
Dd: Dennis-----	98	Very limited Restricted permeability	1.00	Somewhat limited Slope	0.00
		Depth to saturated zone	1.00		
De: Dennis-----	98	Very limited Restricted permeability	1.00	Somewhat limited Slope	0.67
		Depth to saturated zone	1.00		
Df: Dennis, eroded-----	98	Very limited Restricted permeability	1.00	Somewhat limited Slope	0.00
		Depth to saturated zone	1.00		
Dg: Dennis, eroded-----	50	Very limited Restricted permeability	1.00	Somewhat limited Slope	0.67
		Depth to saturated zone	1.00		
Eram, eroded-----	30	Very limited Restricted permeability	1.00	Very limited Depth to soft bedrock	1.00
		Depth to bedrock	1.00	Slope	0.67
		Depth to saturated zone	1.00		
Dw: Dwight-----	98	Very limited		Somewhat limited	

SANITARY FACILITIES--Continued
Woodson County, Kansas

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Map symbol and soil name	Pct of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
Eb: Eram-----	98	Restricted permeability	1.00	Depth to soft bedrock	0.26
		Depth to bedrock	0.69		
		Very limited Restricted permeability	1.00	Very limited Depth to soft bedrock	1.00
		Depth to bedrock	1.00	Slope	0.09
Ec: Eram-----	98	Depth to saturated zone	1.00		
		Very limited Restricted permeability	1.00	Very limited Depth to soft bedrock	1.00
		Depth to bedrock	1.00	Slope	0.91
		Depth to saturated zone	1.00		
Ex: Eram-----	60	Very limited Restricted permeability	1.00	Very limited Depth to soft bedrock	1.00
		Depth to bedrock	1.00	Slope	1.00
		Depth to saturated zone	1.00		
		Slope	0.00		
Collinsville-----	20	Very limited Depth to bedrock	1.00	Very limited Depth to hard bedrock	1.00
		Slope	0.96	Seepage Slope	1.00
					1.00
GRP: Gravel Pits-----	100	Not rated		Not rated	
Ha: Hepler-----	97	Very limited Flooding	1.00	Very limited Flooding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Restricted permeability	1.00	Seepage	0.50
Ka: Kenoma-----	98	Very limited Restricted permeability	1.00	Somewhat limited Slope	0.00
		Depth to saturated zone	1.00		
Ko: Kenoma-----	50	Very limited Restricted permeability	1.00	Somewhat limited Slope	0.67
		Depth to saturated zone	1.00		
Olpe-----	30	Very limited Restricted permeability	1.00	Somewhat limited Slope	0.67
Kw: Kenoma, eroded-----	60	Very limited Restricted permeability	1.00	Somewhat limited Slope	0.00
		Depth to saturated zone	1.00		
Woodson, eroded-----	30	Very limited Restricted permeability	1.00	Somewhat limited Slope	0.00
		Depth to saturated zone	1.00		
La: Leanna, drained-----	90	Very limited Flooding	1.00	Very limited Flooding	1.00
		Restricted permeability	1.00		
		Depth to saturated zone	1.00		
Lb: Lula-----	98	Somewhat limited Restricted permeability	0.50	Somewhat limited Seepage	0.50
		Depth to bedrock	0.41	Depth to hard bedrock	0.02

SANITARY FACILITIES--Continued
Woodson County, Kansas

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Map symbol and soil name	Pct of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
Ld: Lula-----	45	Somewhat limited Restricted permeability Depth to bedrock	0.50 0.41	Somewhat limited Seepage Depth to hard bedrock	0.50 0.02
Dwight-----	30	Very limited Restricted permeability Depth to bedrock	1.00 0.69	Somewhat limited Depth to soft bedrock	0.26
Ma: Mason-----	98	Very limited Restricted permeability Flooding	1.00 0.40	Somewhat limited Seepage Flooding	0.50 0.40
Ns: Niotaze-----	50	Very limited Depth to bedrock Depth to saturated zone Restricted permeability Slope	1.00 1.00 1.00 1.00	Very limited Depth to soft bedrock Slope Depth to saturated zone	1.00 1.00 0.00
Stephenville-----	40	Very limited Depth to bedrock Restricted permeability Slope	1.00 0.50 0.16	Very limited Depth to soft bedrock Slope Seepage	1.00 1.00 0.50
Od: Olpe-----	98	Very limited Restricted permeability Slope	1.00 0.16	Very limited Slope	1.00
Og: Osage-----	97	Very limited Flooding Restricted permeability Ponding Depth to saturated zone	1.00 1.00 1.00 1.00	Very limited Ponding Flooding Depth to saturated zone	1.00 1.00 1.00
Os: Osage-----	97	Very limited Flooding Restricted permeability Ponding Depth to saturated zone	1.00 1.00 1.00 1.00	Very limited Ponding Flooding Depth to saturated zone	1.00 1.00 1.00
Rc: Ringo-----	99	Very limited Restricted permeability Depth to bedrock	1.00 0.78	Somewhat limited Slope Depth to soft bedrock	0.91 0.42
Rd: Ringo-----	50	Very limited Restricted permeability Depth to bedrock Slope	1.00 0.78 0.16	Very limited Slope Depth to soft bedrock	1.00 0.42
Sogn-----	30	Very limited Depth to bedrock Slope	1.00 0.16	Very limited Depth to hard bedrock Slope	1.00 1.00
Sa: Stephenville-----	98	Very limited Depth to bedrock Restricted permeability	1.00 0.50	Very limited Depth to soft bedrock Seepage Slope	1.00 0.50 0.09
Sd: Summit-----	98	Very limited		Somewhat limited	

SANITARY FACILITIES--Continued
Woodson County, Kansas

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Map symbol and soil name	Pct of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
Se: Summit-----	99	Restricted permeability	1.00	Depth to saturated zone	0.81
		Depth to saturated zone	1.00	Slope	0.09
		Very limited Restricted permeability	1.00	Somewhat limited Slope	0.91
		Depth to saturated zone	1.00	Depth to saturated zone	0.81
Va: Verdigris-----	97	Very limited Flooding Restricted permeability	1.00 0.50	Very limited Flooding Seepage	1.00 0.50
Vc: Verdigris-----	98	Very limited Flooding Restricted permeability	1.00 0.50	Very limited Flooding Seepage	1.00 0.50
W: Water-----	100	Not rated		Not rated	
Wa: Woodson-----	98	Very limited Restricted permeability Depth to saturated zone	1.00 1.00	Not limited	
Za: Zaar-----	85	Very limited Restricted permeability Depth to saturated zone	1.00 1.00	Somewhat limited Slope	0.09

SANITARY FACILITIES--Continued
Woodson County, Kansas

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Map symbol and soil name	Pct of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
001CA: Catoosa-----	90	Very limited Depth to bedrock Seepage Too clayey	1.00 1.00 0.50	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock Too clayey	1.00 0.50
001CB: Catoosa-----	60	Very limited Depth to bedrock Seepage Too clayey	1.00 1.00 0.50	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock Too clayey	1.00 0.50
Rock Outcrop-----	30	Not rated		Not rated		Not rated	
001CC: Collinsville-----	50	Very limited Depth to bedrock Seepage Slope	1.00 1.00 0.04	Very limited Depth to bedrock Slope	1.00 0.04	Very limited Depth to bedrock Seepage Slope	1.00 0.50 0.04
Bates-----	40	Very limited Depth to bedrock Too clayey	1.00 0.50	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock Too clayey	1.00 0.50
001ZB: Zaar-----	100	Very limited Depth to saturated zone Too clayey	1.00 1.00	Very limited Depth to saturated zone	1.00	Very limited Too clayey Hard to compact Depth to saturated zone	1.00 1.00 1.00
031EP: Eram-----	50	Very limited Depth to saturated zone Depth to bedrock Too clayey Seepage	1.00 1.00 1.00 1.00 1.00	Very limited Depth to saturated zone Depth to bedrock	1.00 1.00	Very limited Depth to bedrock Too clayey Depth to saturated zone Hard to compact	1.00 1.00 1.00 1.00
Apperson-----	35	Very limited Depth to saturated zone Depth to bedrock Too clayey Seepage	1.00 1.00 1.00 1.00	Very limited Depth to saturated zone Depth to bedrock	1.00 0.96	Very limited Too clayey Depth to saturated zone Hard to compact Depth to bedrock	1.00 1.00 1.00 0.96
031ES: Eram-----	60	Very limited Depth to saturated zone Depth to bedrock Too clayey Seepage Slope	1.00 1.00 1.00 1.00 1.00 0.37	Very limited Depth to saturated zone Depth to bedrock Slope	1.00 1.00 0.37	Very limited Depth to bedrock Too clayey Depth to saturated zone Hard to compact Slope	1.00 1.00 1.00 1.00 0.37
Shidler-----	25	Very limited Depth to bedrock Seepage Too clayey	1.00 1.00 0.50	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock Too clayey	1.00 0.50
073AT: Aguents-----	100	Very limited Flooding Seepage	1.00 1.00	Very limited Flooding	1.00	Not limited	
073CA: Chase-----	90	Very limited Flooding Too clayey Depth to saturated zone	1.00 0.50 0.44	Very limited Flooding	1.00	Somewhat limited Too clayey Depth to saturated zone	0.50 0.09
073CM: Clime-----	90	Very limited Depth to bedrock Too clayey	1.00 1.00	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock Too clayey Hard to compact	1.00 1.00 1.00
073CS: Clime-----	60	Very limited Depth to bedrock Too clayey Slope	1.00 1.00 0.84	Very limited Depth to bedrock Slope	1.00 0.84	Very limited Depth to bedrock Too clayey Hard to compact Slope	1.00 1.00 1.00 0.84
Sogn-----	20	Very limited Depth to bedrock Seepage Slope Too clayey	1.00 1.00 0.84 0.50	Very limited Depth to bedrock Slope	1.00 0.84	Very limited Depth to bedrock Slope Too clayey	1.00 0.84 0.50

SANITARY FACILITIES--Continued
Woodson County, Kansas

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Map symbol and soil name	Pct of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
073DS: Dennis, eroded-----	100	Very limited Depth to saturated zone Too clayey	1.00 1.00	Very limited Depth to saturated zone	1.00	Very limited Too clayey Depth to saturated zone Hard to compact	1.00 1.00 1.00
073IC: Ivan-----	85	Very limited Flooding	1.00	Very limited Flooding	1.00	Not limited	
073IF: Ivan-----	90	Very limited Flooding	1.00	Very limited Flooding	1.00	Not limited	
073KE: Kenoma, eroded-----	100	Very limited Too clayey	1.00	Not limited		Very limited Too clayey Hard to compact	1.00 1.00
073LA: Labette-----	90	Very limited Depth to bedrock Seepage Too clayey	1.00 1.00 0.50	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock Hard to compact Too clayey	1.00 1.00 0.50
073LD: Labette-----	65	Very limited Depth to bedrock Seepage Too clayey	1.00 1.00 0.50	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock Hard to compact Too clayey	1.00 1.00 0.50
Dwight-----	30	Very limited Depth to bedrock Too clayey Seepage	1.00 1.00 1.00	Somewhat limited Depth to bedrock	0.88	Very limited Too clayey Hard to compact Depth to bedrock	1.00 1.00 0.88
073MA: Martin-----	100	Very limited Depth to saturated zone Too clayey	1.00 1.00	Very limited Depth to saturated zone	1.00	Very limited Too clayey Hard to compact Depth to saturated zone	1.00 1.00 1.00
073NZ: Niotaze-----	75	Very limited Depth to saturated zone Depth to bedrock Too clayey Slope	1.00 1.00 1.00 1.00	Very limited Depth to bedrock Slope Depth to saturated zone	1.00 1.00 1.00	Very limited Depth to bedrock Too clayey Slope Hard to compact Depth to saturated zone	1.00 1.00 1.00 1.00
Darnell-----	15	Very limited Depth to bedrock Slope	1.00 1.00	Very limited Depth to bedrock Slope	1.00 1.00	Very limited Depth to bedrock Slope Seepage	1.00 1.00 0.50
073RE: Reading-----	90	Somewhat limited Too clayey Flooding	0.50 0.40	Somewhat limited Flooding	0.40	Somewhat limited Too clayey	0.50
073ST: Steedman-----	85	Very limited Depth to saturated zone Depth to bedrock Too clayey Slope	1.00 1.00 1.00 0.00	Very limited Depth to bedrock Depth to saturated zone Slope	1.00 1.00 0.00	Very limited Depth to bedrock Too clayey Hard to compact Depth to saturated zone Slope	1.00 1.00 1.00 0.00
205BH: Bates-----	50	Very limited Depth to bedrock Too clayey	1.00 0.50	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock Too clayey	1.00 0.50
Collinsville-----	35	Very limited Depth to bedrock Seepage	1.00 1.00	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock Seepage	1.00 0.50
205BO: Bates-----	45	Very limited Depth to bedrock Too clayey	1.00 0.50	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock Too clayey	1.00 0.50
Collinsville-----	40	Very limited Depth to bedrock Seepage Slope	1.00 1.00 0.96	Very limited Depth to bedrock Slope	1.00 0.96	Very limited Depth to bedrock Slope Seepage	1.00 0.96 0.50

SANITARY FACILITIES--Continued
Woodson County, Kansas

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Map symbol and soil name	Pct of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
205DW: Dennis-----	65	Very limited Too clayey Depth to saturated zone	1.00 1.00	Somewhat limited Depth to saturated zone	0.75	Very limited Too clayey Hard to compact Depth to saturated zone	1.00 1.00 0.86
Dwight-----	25	Very limited Too clayey	1.00	Not limited		Very limited Too clayey Hard to compact	1.00 1.00
205EB: Eram-----	90	Very limited Depth to saturated zone Depth to bedrock Too clayey	1.00 1.00 1.00	Very limited Depth to saturated zone Depth to bedrock	1.00 1.00	Very limited Depth to bedrock Too clayey Depth to saturated zone Hard to compact	1.00 1.00 1.00 1.00
205EC: Eram-----	90	Very limited Depth to saturated zone Depth to bedrock Too clayey	1.00 1.00 1.00 0.50	Very limited Depth to saturated zone Depth to bedrock	1.00 1.00	Very limited Depth to bedrock Depth to saturated zone Hard to compact Too clayey	1.00 1.00 1.00 0.50
205LA: Lanton-----	90	Very limited Flooding Depth to saturated zone Too clayey	1.00 1.00 0.50	Very limited Flooding Depth to saturated zone	1.00 1.00	Very limited Depth to saturated zone Too clayey	1.00 0.50
205ND: Niotaze-----	50	Very limited Depth to saturated zone Depth to bedrock Too clayey Slope	1.00 1.00 1.00 1.00 1.00	Very limited Depth to saturated zone Depth to bedrock Slope	1.00 1.00 1.00	Very limited Depth to bedrock Too clayey Depth to saturated zone Slope Hard to compact	1.00 1.00 1.00 1.00 1.00
Darnell-----	35	Very limited Depth to bedrock Slope	1.00 0.16	Very limited Depth to bedrock Slope	1.00 0.16	Very limited Depth to bedrock Seepage Slope	1.00 0.50 0.16
205SC: Shidler-----	70	Very limited Depth to bedrock Seepage	1.00 1.00	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock Too acid Seepage	1.00 1.00 1.00
Catoosa-----	20	Very limited Depth to bedrock Seepage Too clayey	1.00 1.00 0.50	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock Too clayey	1.00 0.50
205SF: Steedman-----	90	Very limited Depth to saturated zone Depth to bedrock Too clayey Slope	1.00 1.00 1.00 1.00 1.00	Very limited Depth to saturated zone Depth to bedrock Slope	1.00 1.00 1.00	Very limited Depth to bedrock Depth to saturated zone Too clayey Hard to compact Slope	1.00 1.00 1.00 1.00 1.00
AED: Arents, Earthen Dam-	100	Not rated		Not rated		Not rated	
Bb: Bates-----	98	Very limited Depth to bedrock Too clayey	1.00 0.50	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock Too clayey	1.00 0.50
Bc: Bates-----	97	Very limited Depth to bedrock Too clayey	1.00 0.50	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock Too clayey	1.00 0.50
BOP: Borrow Pits-----	100	Not rated		Not rated		Not rated	
Ca: Clareson-----	50	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock	1.00

SANITARY FACILITIES--Continued
Woodson County, Kansas

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Map symbol and soil name	Pct of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Sogn-----	35	Too clayey	1.00	Very limited Depth to bedrock	1.00	Too clayey	1.00
		Seepage	1.00			Hard to compact	1.00
		Content of large stones	0.22			Content of large stones	0.22
		Very limited Depth to bedrock	1.00			Very limited Depth to bedrock	1.00
Cd: Cleora-----	98	Seepage	1.00	Very limited Flooding Seepage	1.00	Too clayey	0.50
		Too clayey	0.50			Somewhat limited Seepage	0.50
Da: Darnell-----	55	Very limited		Very limited Slope Depth to bedrock	1.00		
		Slope	1.00			Very limited Depth to bedrock	1.00
		Depth to bedrock	1.00			Slope	1.00
Niotaze-----	40	Seepage	1.00	Very limited Slope Depth to bedrock	1.00	Seepage	0.50
		Very limited Depth to	1.00			Very limited Depth to bedrock	1.00
		saturated zone				Slope	1.00
		Slope	1.00			Too clayey	1.00
Dd: Dennis-----	98	Depth to bedrock	1.00	Depth to	1.00	Hard to compact	1.00
		saturated zone				Depth to	1.00
		Too clayey	1.00			saturated zone	1.00
De: Dennis-----	98	Very limited		Very limited Depth to	1.00	Hard to compact	1.00
		Depth to	1.00			Very limited Too clayey	1.00
		saturated zone	1.00			Depth to	1.00
Df: Dennis, eroded-----	98	Too clayey	1.00	Very limited Depth to	1.00	Hard to compact	1.00
		Very limited				Very limited Too clayey	1.00
		Depth to	1.00			Depth to	1.00
Dg: Dennis, eroded-----	50	saturated zone		Very limited Depth to	1.00	Hard to compact	1.00
		Too clayey	1.00			Very limited Too clayey	1.00
		Very limited				Depth to	1.00
Eram, eroded-----	30	Depth to	1.00	Very limited Depth to	1.00	Hard to compact	1.00
		saturated zone				Very limited Depth to bedrock	1.00
		Too clayey	1.00			Too clayey	1.00
Dw: Dwight-----	98	Depth to bedrock	1.00	Somewhat limited Depth to bedrock	0.26	Depth to	1.00
		Too clayey	1.00			Hard to compact	1.00
		Very limited				Depth to bedrock	0.26
Eb: Eram-----	98	Depth to	1.00	Very limited Depth to	1.00	Very limited Depth to bedrock	1.00
		saturated zone				Too clayey	1.00
		Depth to bedrock	1.00			Depth to	1.00
Ec: Eram-----	98	Too clayey	1.00	Very limited Depth to	1.00	saturated zone	1.00
		Very limited				Hard to compact	1.00
		Depth to	1.00			Very limited Depth to bedrock	1.00
		saturated zone		Very limited Depth to	1.00	Too clayey	1.00
		Depth to bedrock	1.00			Depth to	1.00
		Too clayey	1.00			saturated zone	1.00
		Very limited		Very limited Depth to	1.00	Hard to compact	1.00
		Depth to	1.00			Very limited Depth to bedrock	1.00
		saturated zone				Too clayey	1.00
		Depth to bedrock	1.00	Very limited Depth to	1.00	Depth to	1.00
		Too clayey	1.00			saturated zone	1.00
		Very limited				Hard to compact	1.00

SANITARY FACILITIES--Continued
Woodson County, Kansas

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Map symbol and soil name	Pct of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Ex: Eram-----	60	Very limited Depth to saturated zone Depth to bedrock Too clayey Slope	1.00 1.00 1.00 0.00	Very limited Depth to saturated zone Depth to bedrock Slope	1.00 1.00 0.00	Very limited Depth to bedrock Too clayey Depth to saturated zone Hard to compact Slope	1.00 1.00 1.00 0.00
Collinsville-----	20	Very limited Depth to bedrock Seepage Slope	1.00 1.00 0.96	Very limited Depth to bedrock Slope	1.00 0.96	Very limited Depth to bedrock Slope Seepage	1.00 0.96 0.50
GRP: Gravel Pits-----	100	Not rated		Not rated		Not rated	
Ha: Hepler-----	97	Very limited Flooding Depth to saturated zone Too clayey	1.00 1.00 0.50	Very limited Flooding Depth to saturated zone	1.00 1.00	Somewhat limited Depth to saturated zone Too clayey	0.86 0.50
Ka: Kenoma-----	98	Very limited Depth to saturated zone Too clayey	1.00 1.00	Very limited Depth to saturated zone	1.00	Very limited Too clayey Depth to saturated zone	1.00 1.00
Ko: Kenoma-----	50	Very limited Depth to saturated zone Too clayey	1.00 1.00	Very limited Depth to saturated zone	1.00	Very limited Too clayey Depth to saturated zone	1.00 1.00
Olpe-----	30	Somewhat limited Too clayey	0.50	Not limited		Very limited Gravel content Too clayey	1.00 0.50
Kw: Kenoma, eroded-----	60	Very limited Depth to saturated zone Too clayey	1.00 1.00	Very limited Depth to saturated zone	1.00	Very limited Too clayey Depth to saturated zone	1.00 1.00
Woodson, eroded-----	30	Very limited Depth to saturated zone Too clayey	1.00 1.00	Very limited Depth to saturated zone	1.00	Very limited Too clayey Depth to saturated zone Hard to compact	1.00 1.00 1.00
La: Leanna, drained-----	90	Very limited Flooding Depth to saturated zone Too clayey	1.00 1.00 1.00	Very limited Flooding Depth to saturated zone	1.00 1.00	Very limited Too clayey Depth to saturated zone Hard to compact	1.00 1.00 1.00
Lb: Lula-----	98	Very limited Depth to bedrock Seepage Too clayey	1.00 1.00 0.50	Somewhat limited Depth to bedrock	0.02	Somewhat limited Too clayey Depth to bedrock	0.50 0.02
Ld: Lula-----	45	Very limited Depth to bedrock Seepage Too clayey	1.00 1.00 0.50	Somewhat limited Depth to bedrock	0.02	Somewhat limited Too clayey Depth to bedrock	0.50 0.02
Dwight-----	30	Very limited Depth to bedrock Too clayey	1.00 1.00	Somewhat limited Depth to bedrock	0.26	Very limited Too clayey Hard to compact Depth to bedrock	1.00 1.00 0.26
Ma: Mason-----	98	Somewhat limited Too clayey Flooding	0.50 0.40	Somewhat limited Flooding	0.40	Somewhat limited Too clayey	0.50
Ns: Niotaze-----	50	Very limited Depth to saturated zone Depth to bedrock Too clayey Slope	1.00 1.00 1.00 1.00	Very limited Depth to bedrock Slope Depth to saturated zone	1.00 1.00 1.00	Very limited Depth to bedrock Too clayey Hard to compact Slope	1.00 1.00 1.00

SANITARY FACILITIES--Continued
Woodson County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Stephenville-----	40	Very limited Depth to bedrock Slope	1.00 0.16	Very limited Depth to bedrock Slope	1.00 0.16	Depth to saturated zone Very limited Depth to bedrock Slope	1.00 1.00 0.16
Od: Olpe-----	98	Somewhat limited Too clayey Slope	0.50 0.16	Somewhat limited Slope	0.16	Very limited Gravel content Too clayey Slope	1.00 0.50 0.16
Og: Osage-----	97	Very limited Flooding Depth to saturated zone Ponding Too clayey	1.00 1.00 1.00 1.00	Very limited Flooding Ponding Depth to saturated zone	1.00 1.00 1.00	Very limited Ponding Depth to saturated zone Too clayey Hard to compact	1.00 1.00 1.00 1.00 1.00
Os: Osage-----	97	Very limited Flooding Depth to saturated zone Ponding Too clayey	1.00 1.00 1.00 1.00	Very limited Flooding Ponding Depth to saturated zone	1.00 1.00 1.00	Very limited Ponding Too clayey Depth to saturated zone Hard to compact	1.00 1.00 1.00 1.00 1.00
Rc: Ringo-----	99	Very limited Depth to bedrock Too clayey	1.00 1.00	Somewhat limited Depth to bedrock	0.42	Very limited Too clayey Hard to compact Depth to bedrock	1.00 1.00 0.42
Rd: Ringo-----	50	Very limited Depth to bedrock Too clayey Slope	1.00 1.00 0.16	Somewhat limited Depth to bedrock Slope	0.42 0.16	Very limited Too clayey Hard to compact Depth to bedrock Slope	1.00 1.00 0.42 0.16
Sogn-----	30	Very limited Depth to bedrock Seepage Too clayey Slope	1.00 1.00 0.50 0.16	Very limited Depth to bedrock Slope	1.00 0.16	Very limited Depth to bedrock Too clayey Slope	1.00 0.50 0.16
Sa: Stephenville-----	98	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock	1.00
Sd: Summit-----	98	Very limited Too clayey Depth to saturated zone	1.00 0.86	Somewhat limited Depth to saturated zone	0.19	Very limited Too clayey Hard to compact Depth to saturated zone	1.00 1.00 0.47
Se: Summit-----	99	Very limited Too clayey Depth to saturated zone	1.00 0.86	Somewhat limited Depth to saturated zone	0.19	Very limited Too clayey Hard to compact Depth to saturated zone	1.00 1.00 0.47
Va: Verdigris-----	97	Very limited Flooding Too clayey	1.00 0.50	Very limited Flooding	1.00	Somewhat limited Too clayey	0.50
Vc: Verdigris-----	98	Very limited Flooding Too clayey	1.00 0.50	Very limited Flooding	1.00	Somewhat limited Too clayey	0.50
W: Water-----	100	Not rated		Not rated		Not rated	
Wa: Woodson-----	98	Very limited Depth to saturated zone Too clayey	1.00 1.00	Very limited Depth to saturated zone	1.00	Very limited Too clayey Depth to saturated zone Hard to compact	1.00 1.00 1.00
Za: Zaar-----	85	Very limited		Very limited		Very limited	

SANITARY FACILITIES--Continued
Woodson County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	1.00
		Too clayey	1.00			Depth to saturated zone	1.00
						Hard to compact	1.00

AGRICULTURAL WASTE MANAGEMENT Woodson County, Kansas

The nature of the soil is also important in the application of organic wastes and wastewater to land as fertilizers and irrigation; it is also important when the soil is used as a medium for treatment and disposal of these wastes. Favorable soil properties are required to prevent environmental damage.

The use of organic wastes and wastewater as production resources will result in energy conservation, prevent the waste of these important resources, and prevent problems associated with their disposal. Where disposal is the goal, and a maximum amount is disposed in a minimum area to hold costs to a minimum, risk of environmental damage is the principal constraint. Where the reuse goal is pursued, and a minimum amount is applied to a maximum area to obtain the greatest benefit, environmental damage is unlikely.

Interpretations developed for waste management may include ratings for (1) manure and food processing wastes; (2) municipal sewage sludge; (3) irrigation use of wastewater; or (4) treatment of wastewater by the slow rate process, overland flow process, or rapid infiltration process. If available, these should be located in this subsection.

Soil properties are important considerations in areas where soils are used as sites for the treatment and disposal of organic waste and wastewater. Selection of soils with properties that favor waste management can help to prevent environmental damage.

The Ag-Waste tables show the degree and kind of soil limitations affecting the treatment of agricultural waste, including municipal and food-processing wastewater and effluent from lagoons or storage ponds. Municipal wastewater is the waste stream from a municipality. It contains domestic waste and may contain industrial waste. It may have received primary or secondary treatment. It is rarely untreated sewage. Food-processing wastewater results from the preparation of fruits, vegetables, milk, cheese, and meats for public consumption. In places it is high in content of sodium and chloride. In the context of these tables, the effluent in lagoons and storage ponds is from facilities used to treat or store food-processing wastewater or domestic or animal waste. Domestic and food-processing wastewater is very dilute, and the effluent from the facilities that treat or store it commonly is very low in content of carbonaceous and nitrogenous material; the content of nitrogen commonly ranges from 10 to 30 milligrams per liter. The wastewater from animal waste treatment lagoons or storage ponds, however, has much higher concentrations of these materials, mainly because the manure has not been diluted as much as the domestic waste. The content of nitrogen in this wastewater generally ranges from 50 to 2,000 milligrams per liter. When wastewater is applied, checks should be made to ensure that nitrogen, phosphorus, heavy metals, and salts are not added in excessive amounts.

The ratings in the tables are for waste management systems that not only dispose of and treat organic waste or wastewater but also are beneficial to crops (application of manure and food-processing waste, application of sewage sludge, and disposal of wastewater by irrigation) and for waste management systems that are designed only for the purpose of wastewater disposal and treatment (overland flow of wastewater, rapid infiltration of wastewater, and slow rate treatment of wastewater).

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect agricultural waste management. Not limited indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. Slightly limited indicates that the soil has features that are generally favorable for the specified use. The limitations are minor and can be easily overcome. Good performance and low maintenance can be expected. Somewhat limited indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. Very limited indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.00 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Application of manure and food-processing waste not only disposes of waste material but also can improve crop production by increasing the supply of nutrients in the soils where the material is applied. Manure is the excrement of livestock and poultry, and food-processing waste is damaged fruit and vegetables and the peelings, stems, leaves, pits, and soil particles removed in food preparation. The manure and food-processing waste are either solid, slurry, or liquid. Their nitrogen content varies. A high content of nitrogen limits the application rate. Toxic or otherwise dangerous wastes, such as those mixed with the lye used in food processing, are not considered in the ratings.

The ratings are based on the soil properties that affect absorption, plant growth, microbial activity, erodibility, the rate at which the waste is applied, and the method by which the waste is applied. The properties that affect absorption include permeability, depth to a water table, ponding, the sodium adsorption ratio, depth to bedrock or a cemented pan, and available water capacity. The properties that affect plant growth and microbial activity include reaction, the sodium adsorption ratio, salinity, and bulk density. The wind erodibility group, the soil erodibility factor K, and slope are considered in estimating the likelihood that wind erosion or water erosion will transport the waste material from the application site. Stones, cobbles, a water table, ponding, and flooding can hinder the application of waste. Permanently frozen soils are unsuitable for waste treatment.

Application of sewage sludge not only disposes of waste material but also can improve crop production by increasing the supply of nutrients in the soils where the material is applied. In the context of this table, sewage sludge is the residual product of the treatment of municipal sewage. The solid component consists mainly of cell mass, primarily bacteria cells that developed during secondary treatment and have incorporated soluble organics into their own bodies. The sludge has small amounts of sand, silt, and other solid debris. The content of nitrogen varies. Some sludge has constituents that are toxic to plants or hazardous to the food chain, such as heavy metals and exotic organic compounds, and should be analyzed chemically prior to use.

AGRICULTURAL WASTE MANAGEMENT
Woodson County, Kansas

The content of water in the sludge ranges from about 98 percent to less than 40 percent. The sludge is considered liquid if it is more than about 90 percent water, slurry if it is about 50 to 90 percent water, and solid if it is less than about 50 percent water.

The ratings in the table are based on the soil properties that affect absorption, plant growth, microbial activity, erodibility, the rate at which the sludge is applied, and the method by which the sludge is applied. The properties that affect absorption, plant growth, and microbial activity include permeability, depth to a water table, ponding, the sodium adsorption ratio, depth to bedrock or a cemented pan, available water capacity, reaction, salinity, and bulk density. The wind erodibility group, the soil erodibility factor K, and slope are considered in estimating the likelihood that wind erosion or water erosion will transport the waste material from the application site. Stones, cobbles, a water table, ponding, and flooding can hinder the application of sludge. Permanently frozen soils are unsuitable for waste treatment.

Disposal of wastewater by irrigation not only disposes of municipal wastewater and wastewater from food-processing plants, lagoons, and storage ponds but also can improve crop production by increasing the amount of water available to crops. The ratings in the table are based on the soil properties that affect the design, construction, management, and performance of the irrigation system. The properties that affect design and management include the sodium adsorption ratio, depth to a water table, ponding, available water capacity, permeability, slope, and flooding. The properties that affect construction include stones, cobbles, depth to bedrock or a cemented pan, depth to a water table, and ponding.

The properties that affect performance include depth to bedrock or a cemented pan, bulk density, the sodium adsorption ratio, salinity, reaction, and the cation-exchange capacity, which is used to estimate the capacity of a soil to adsorb heavy metals. Permanently frozen soils are not suitable for disposal of wastewater by irrigation.

See the National Soil Handbook, September 1992, Part 620, for criteria used in rating soils for sanitary facilities and waste management.

AGRICULTURAL WASTE MANAGEMENT--Continued
Woodson County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.00 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Application of manure and food- processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
001CA: Catoosa-----	90	Somewhat limited Depth to bedrock Restricted permeability Droughty Too acid	0.74 0.30 0.07 0.03	Somewhat limited Depth to bedrock Restricted permeability Too acid Droughty	0.74 0.22 0.14 0.07	Somewhat limited Depth to bedrock Restricted permeability Too acid Droughty	0.74 0.22 0.14 0.07
001CB: Catoosa-----	60	Somewhat limited Depth to bedrock Restricted permeability Droughty Too acid	0.74 0.30 0.07 0.03	Somewhat limited Depth to bedrock Restricted permeability Too acid Droughty	0.74 0.22 0.14 0.07	Somewhat limited Depth to bedrock Restricted permeability Too acid Droughty Too steep for surface application	0.74 0.22 0.14 0.07 0.02
Rock Outcrop-----	30	Not rated		Not rated		Not rated	
001CC: Collinsville-----	50	Very limited Depth to bedrock Droughty Runoff limitation Too acid Slope	1.00 1.00 0.40 0.27 0.04	Very limited Droughty Depth to bedrock Too acid Slope Filtering capacity	1.00 1.00 0.85 0.04 0.00	Very limited Droughty Depth to bedrock Too steep for surface application Too acid Too steep for sprinkler application	1.00 1.00 1.00 0.85 0.22
Bates-----	40	Somewhat limited Depth to bedrock Droughty Too acid	0.29 0.10 0.02	Somewhat limited Depth to bedrock Droughty Too acid	0.29 0.10 0.07	Somewhat limited Too steep for surface application Depth to bedrock Droughty Too acid	0.31 0.29 0.10 0.07
001ZB: Zaar-----	100	Very limited Restricted permeability Depth to saturated zone Runoff limitation	1.00 1.00 1.00 0.40	Very limited Restricted permeability Depth to saturated zone	1.00 1.00 1.00	Very limited Restricted permeability Depth to saturated zone Too steep for surface application	1.00 1.00 1.00 0.31
031EP: Eram-----	50	Very limited Depth to saturated zone Restricted permeability Depth to bedrock Droughty Too acid	1.00 1.00 0.80 0.77 0.11	Very limited Depth to saturated zone Restricted permeability Depth to bedrock Droughty Too acid	1.00 1.00 0.80 0.77 0.42	Very limited Depth to saturated zone Restricted permeability Depth to bedrock Droughty Too steep for surface application	1.00 1.00 0.80 0.77 0.66
Apperson-----	35	Very limited Depth to saturated zone Restricted permeability Too acid	1.00 1.00 1.00 0.03	Very limited Depth to saturated zone Restricted permeability Too acid	1.00 1.00 1.00 0.14	Very limited Depth to saturated zone Restricted permeability Too steep for surface application Too acid	1.00 1.00 1.00 0.31 0.14
031ES: Eram-----	60	Very limited Depth to saturated zone Restricted permeability Depth to bedrock Droughty	1.00 1.00 0.80 0.77	Very limited Depth to saturated zone Restricted permeability Depth to bedrock Droughty	1.00 1.00 0.80 0.77	Very limited Depth to saturated zone Restricted permeability Too steep for surface application Depth to bedrock	1.00 1.00 1.00 0.80

AGRICULTURAL WASTE MANAGEMENT--Continued
Woodson County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.00 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Application of manure and food- processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Shidler-----	25	Slope Very limited Depth to bedrock Droughty Runoff limitation	0.37 1.00 1.00 0.40	Too acid Very limited Droughty Depth to bedrock	0.42 1.00 1.00	Droughty Very limited Droughty Depth to bedrock Too steep for surface application Too steep for sprinkler application	0.77 1.00 1.00 0.66 0.00
073AT: Aquents-----	100	Very limited Low adsorption Flooding	1.00 0.60	Very limited Flooding Low adsorption	1.00 1.00	Very limited Low adsorption Flooding	1.00 0.60
073CA: Chase-----	90	Very limited Restricted permeability Flooding Depth to saturated zone	1.00 0.60 0.43	Very limited Flooding Restricted permeability Depth to saturated zone	1.00 1.00 0.43	Very limited Restricted permeability Flooding Depth to saturated zone	1.00 0.60 0.43
073CM: Clime-----	90	Very limited Restricted permeability Droughty Depth to bedrock	1.00 0.50 0.20	Very limited Restricted permeability Droughty Depth to bedrock	1.00 0.50 0.20	Very limited Restricted permeability Droughty Too steep for surface application Depth to bedrock	1.00 0.50 0.31 0.20
073CS: Clime-----	60	Very limited Restricted permeability Slope Droughty Depth to bedrock	1.00 0.84 0.50 0.20	Very limited Restricted permeability Slope Droughty Depth to bedrock	1.00 0.84 0.50 0.20	Very limited Restricted permeability Too steep for surface application Too steep for sprinkler application Droughty Depth to bedrock	1.00 1.00 0.89 0.50 0.20
Sogn-----	20	Very limited Depth to bedrock Droughty Slope Runoff limitation	1.00 1.00 0.84 0.40	Very limited Droughty Depth to bedrock Slope	1.00 1.00 0.84	Very limited Droughty Depth to bedrock Too steep for surface application Too steep for sprinkler application	1.00 1.00 1.00 0.89
073DS: Dennis, eroded-----	100	Very limited Depth to saturated zone Restricted permeability Too acid	1.00 1.00 1.00 0.18	Very limited Depth to saturated zone Restricted permeability Too acid	1.00 1.00 1.00 0.67	Very limited Depth to saturated zone Restricted permeability Too acid Too steep for surface application	1.00 1.00 1.00 0.67 0.08
073IC: Ivan-----	85	Very limited Flooding	1.00	Very limited Flooding	1.00	Very limited Flooding	1.00
073IF: Ivan-----	90	Somewhat limited Flooding	0.60	Very limited Flooding	1.00	Somewhat limited Flooding	0.60
073KE: Kenoma, eroded-----	100	Very limited Restricted permeability Runoff limitation Too acid	1.00 0.40 0.02	Very limited Restricted permeability Too acid	1.00 0.07	Very limited Restricted permeability Too steep for surface application Too acid	1.00 0.08 0.07
073LA: Labette-----	90	Somewhat limited		Somewhat limited		Somewhat limited	

AGRICULTURAL WASTE MANAGEMENT--Continued
Woodson County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.00 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Application of manure and food- processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
073LD: Labette-----	65	Depth to bedrock	0.74	Depth to bedrock	0.74	Depth to bedrock	0.74
		Droughty	0.36	Droughty	0.36	Droughty	0.36
		Restricted	0.30	Restricted	0.22	Restricted	0.22
		permeability		permeability		permeability	
Dwight-----	30	Too acid	0.03	Too acid	0.14	Too acid	0.14
						Too steep for surface application	0.00
		Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to bedrock	0.74	Depth to bedrock	0.74	Depth to bedrock	0.74
073MA: Martin-----	100	Droughty	0.36	Droughty	0.36	Droughty	0.36
		Restricted	0.30	Restricted	0.22	Restricted	0.22
		permeability		permeability		permeability	
		Too acid	0.03	Too acid	0.14	Too acid	0.14
073NZ: Niotaze-----	75	Very limited		Very limited		Very limited	
		Restricted	1.00	Restricted	1.00	Restricted	1.00
		permeability		permeability		permeability	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Darnell-----	15	Too acid	0.03	Too acid	0.14	Too acid	0.14
						Too steep for surface application	0.00
		Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
073RE: Reading-----	90	Slope	1.00	Slope	1.00	Too steep for surface application	1.00
		Depth to bedrock	0.71	Too acid	0.85	Too steep for sprinkler application	1.00
		Droughty	0.55	Depth to bedrock	0.71	Too acid	0.85
		Restricted	0.30	Droughty	0.55	Depth to bedrock	0.71
073ST: Steedman-----	85	permeability		permeability		permeability	
		Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Droughty	1.00	Droughty	1.00
		Droughty	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
205BH: Bates-----	50	Slope	1.00	Slope	1.00	Too steep for surface application	1.00
		Too acid	0.27	Too acid	0.85	Too steep for sprinkler application	1.00
		Filtering capacity	0.00	Filtering capacity	0.00	Too acid	0.85
		Somewhat limited		Somewhat limited		Somewhat limited	
073BH: Bates-----	50	Too acid	0.03	Flooding	0.40	Too acid	0.14
				Too acid	0.14		
		Very limited		Very limited		Very limited	
		Restricted	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
073BH: Bates-----	50	permeability		Restricted	1.00	Restricted	1.00
		Depth to saturated zone	1.00	permeability		permeability	
		Droughty	0.82	Too acid	0.85	Too steep for surface application	1.00
						Too acid	0.85
073BH: Bates-----	50	Depth to bedrock	0.46	Droughty	0.82	Droughty	0.82
		Too acid	0.27	Depth to bedrock	0.46		
		Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to bedrock	0.71	Depth to bedrock	0.71	Depth to bedrock	0.71
073BH: Bates-----	50	Restricted	0.30	Restricted	0.22	Too steep for surface application	0.31
		permeability		permeability			

AGRICULTURAL WASTE MANAGEMENT--Continued
Woodson County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.00 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Collinsville-----	35	Droughty	0.17	Droughty	0.17	Restricted permeability	0.22
		Too acid	0.01	Too acid	0.03	Droughty	0.17
		Very limited		Very limited		Too acid	0.03
		Depth to bedrock	1.00	Depth to bedrock	1.00	Very limited	
		Droughty	1.00	Droughty	1.00	Droughty	1.00
205BO: Bates-----	45	Runoff limitation	0.40	Depth to bedrock	0.55	Depth to bedrock	1.00
		Too acid	0.14	Too acid	0.00	Too acid	0.55
		Filtering capacity	0.00	Filtering capacity		Too steep for surface application	0.31
						Filtering capacity	0.00
		Somewhat limited		Somewhat limited		Filtering capacity	
Collinsville-----	40	Depth to bedrock	0.84	Depth to bedrock	0.84	Depth to bedrock	0.84
		Droughty	0.52	Droughty	0.52	Too steep for surface application	0.66
		Restricted permeability	0.30	Restricted permeability	0.22	Droughty	0.52
		Too acid	0.03	Too acid	0.14	Restricted permeability	0.22
						Too acid	0.14
205DW: Dennis-----	65	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Droughty	1.00	Droughty	1.00
		Droughty	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Slope	0.96	Slope	0.96	Too steep for surface application	1.00
		Runoff limitation	0.40	Too acid	0.55	Too steep for sprinkler application	0.97
Dwight-----	25	Too acid	0.14	Filtering capacity	0.00	Too acid	0.55
		Very limited		Very limited		Very limited	
		Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Too acid	0.18	Too acid	0.67	Too acid	0.67
205EB: Eram-----	90	Too steep for surface application	0.00	Too steep for surface application	0.00	Too steep for surface application	0.00
		Very limited		Very limited		Very limited	
		Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
		Runoff limitation	0.40	Runoff limitation	0.42	Runoff limitation	0.42
		Too acid	0.11	Too acid	0.42	Too acid	0.42
205EC: Eram-----	90	Salinity	0.01	Salinity	0.01	Salinity	0.01
		Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
		Depth to bedrock	0.29	Depth to bedrock	0.29	Depth to bedrock	0.29
205LA: Lanton-----	90	Droughty	0.27	Droughty	0.27	Droughty	0.27
		Too acid	0.03	Too acid	0.14	Too acid	0.14
		Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
205LA: Lanton-----	90	Depth to bedrock	0.90	Depth to bedrock	0.90	Depth to bedrock	0.90
		Droughty	0.86	Droughty	0.86	Droughty	0.86
		Too acid	0.03	Too acid	0.14	Too steep for surface application	0.31
		Very limited		Very limited		Very limited	
205LA: Lanton-----	90	Restricted permeability	1.00	Flooding	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Restricted permeability	1.00

AGRICULTURAL WASTE MANAGEMENT--Continued
Woodson County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.00 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
205ND: Niotaze-----	50	Flooding	0.60	Restricted permeability	1.00	Flooding	0.60
		Too acid	0.03	Too acid	0.14	Too acid	0.14
		Very limited	1.00	Very limited	1.00	Very limited	1.00
		Restricted permeability	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Restricted permeability	1.00	Restricted permeability	1.00
Darnell-----	35	Slope	1.00	Slope	1.00	Too steep for surface application	1.00
		Cobble content	0.68	Cobble content	0.68	Too steep for sprinkler application	1.00
		Droughty	0.26	Too acid	0.67	Cobble content	0.68
		Very limited	1.00	Very limited	1.00	Very limited	1.00
		Depth to bedrock	1.00	Droughty	1.00	Droughty	1.00
205SC: Shidler-----	70	Droughty	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Runoff limitation	0.40	Too acid	0.42	Too steep for surface application	1.00
		Slope	0.16	Slope	0.16	Too acid	0.42
		Too acid	0.11			Too steep for sprinkler application	0.39
Catoosa-----	20	Too acid	0.01	Somewhat limited	0.80	Somewhat limited	0.03
		Somewhat limited	0.80	Depth to bedrock	0.22	Depth to bedrock	0.80
		Restricted permeability	0.30	Restricted permeability	0.18	Restricted permeability	0.22
205SF: Steedman-----	90	Droughty	0.18	Droughty	0.18	Droughty	0.18
		Very limited	1.00	Very limited	1.00	Very limited	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
		Slope	1.00	Slope	1.00	Too steep for surface application	1.00
AED: Arents, Earthen Dam-	100	Droughty	0.68	Droughty	0.68	Too steep for sprinkler application	1.00
		Depth to bedrock	0.29	Too acid	0.42	Droughty	0.68
		Not rated		Not rated		Not rated	
Bb: Bates-----	98	Somewhat limited		Somewhat limited		Somewhat limited	
		Restricted permeability	0.30	Restricted permeability	0.22	Restricted permeability	0.22
		Depth to bedrock	0.20	Depth to bedrock	0.20	Depth to bedrock	0.20
		Too acid	0.03	Too acid	0.14	Too acid	0.14
Bc: Bates-----	97	Too steep for surface application				Too steep for surface application	0.00
		Somewhat limited		Somewhat limited		Somewhat limited	
		Restricted permeability	0.30	Restricted permeability	0.22	Too steep for surface application	0.66
		Depth to bedrock	0.20	Depth to bedrock	0.20	Restricted permeability	0.22
		Too acid	0.03	Too acid	0.14	Depth to bedrock	0.20
						Too acid	0.14
						Too steep for sprinkler application	0.00

AGRICULTURAL WASTE MANAGEMENT--Continued
Woodson County, Kansas

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Map symbol and soil name	Pct of map unit	Application of manure and food- processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
BOP: Borrow Pits-----	100	Not rated		Not rated		Not rated	
Ca: Clareson-----	50	Somewhat limited Droughty Depth to bedrock Restricted permeability	0.97 0.84 0.30	Somewhat limited Droughty Depth to bedrock Restricted permeability	0.97 0.84 0.22	Somewhat limited Droughty Depth to bedrock Too steep for surface application Restricted permeability	0.97 0.84 0.31 0.22
Sogn-----	35	Very limited Depth to bedrock Droughty Runoff limitation	1.00 1.00 0.40	Very limited Droughty Depth to bedrock	1.00 1.00	Very limited Droughty Depth to bedrock Too steep for surface application	1.00 1.00 0.31
Cd: Cleora-----	98	Somewhat limited Flooding Too acid Filtering capacity	0.60 0.11 0.00	Very limited Flooding Too acid Filtering capacity	1.00 0.42 0.00	Somewhat limited Flooding Too acid Filtering capacity	0.60 0.42 0.00
Da: Darnell-----	55	Very limited Slope Depth to bedrock Droughty Too acid Filtering capacity	1.00 1.00 1.00 0.02 0.00	Very limited Droughty Depth to bedrock Slope Too acid Filtering capacity	1.00 1.00 1.00 0.07 0.00	Very limited Droughty Depth to bedrock Too steep for surface application Too steep for sprinkler application Too acid	1.00 1.00 1.00 1.00 0.07
Niotaze-----	40	Very limited Slope Depth to saturated zone Depth to bedrock Droughty Restricted permeability	1.00 1.00 0.90 0.79 0.30	Very limited Slope Depth to saturated zone Depth to bedrock Too acid Droughty	1.00 1.00 0.90 0.85 0.79	Very limited Too steep for surface application Too steep for sprinkler application Depth to saturated zone Depth to bedrock Too acid	1.00 1.00 1.00 0.90 0.85
Dd: Dennis-----	98	Very limited Depth to saturated zone Restricted permeability Too acid	1.00 1.00 1.00 0.18	Very limited Depth to saturated zone Restricted permeability Too acid	1.00 1.00 1.00 0.67	Very limited Depth to saturated zone Restricted permeability Too acid	1.00 1.00 1.00 0.67
De: Dennis-----	98	Very limited Depth to saturated zone Restricted permeability Too acid	1.00 1.00 1.00 0.18	Very limited Depth to saturated zone Restricted permeability Too acid	1.00 1.00 1.00 0.67	Very limited Depth to saturated zone Restricted permeability Too acid Too steep for surface application	1.00 1.00 1.00 0.67 0.31
Df: Dennis, eroded-----	98	Very limited Depth to saturated zone Restricted permeability Too acid	1.00 1.00 1.00 0.18	Very limited Depth to saturated zone Restricted permeability Too acid	1.00 1.00 1.00 0.67	Very limited Depth to saturated zone Restricted permeability Too acid	1.00 1.00 1.00 0.67
Dg: Dennis, eroded-----	50	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00

AGRICULTURAL WASTE MANAGEMENT--Continued
Woodson County, Kansas

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Map symbol and soil name	Pct of map unit	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Eram, eroded-----	30	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
		Too acid	0.18	Too acid	0.67	Too acid	0.67
						Too steep for surface application	0.31
		Very limited		Very limited		Very limited	
Dw: Dwight-----	98	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
		Droughty	0.37	Too acid	0.55	Too acid	0.55
		Depth to bedrock	0.35	Droughty	0.37	Droughty	0.37
Eb: Eram-----	98	Too acid	0.14	Depth to bedrock	0.35	Depth to bedrock	0.35
		Very limited		Very limited		Very limited	
		Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
		Runoff limitation	0.40	Sodium content	0.08	Sodium content	0.08
Ec: Eram-----	98	Sodium content	0.08	Too acid	0.07	Too acid	0.07
		Too acid	0.02				
		Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Ex: Eram-----	60	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
		Depth to bedrock	0.35	Too acid	0.42	Too acid	0.42
		Droughty	0.31	Depth to bedrock	0.35	Depth to bedrock	0.35
		Too acid	0.11	Droughty	0.31	Droughty	0.31
Collinsville-----	20	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
		Droughty	0.61	Droughty	0.61	Too steep for surface application	1.00
GRP: Gravel Pits-----	100	Depth to bedrock	0.61	Depth to bedrock	0.61	Depth to bedrock	0.61
		Too acid	0.11	Too acid	0.42	Droughty	0.61
		Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Droughty	1.00	Droughty	1.00
Ha: Hepler-----	97	Droughty	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Slope	0.96	Slope	0.96	Too steep for surface application	1.00
		Runoff limitation	0.40	Too acid	0.14	Too steep for sprinkler application	0.97
		Too acid	0.03	Filtering capacity	0.00	Too acid	0.14
Ha: Hepler-----	97	Not rated		Not rated		Not rated	
		Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Flooding	1.00	Depth to saturated zone	1.00
		Flooding	0.60	Depth to saturated zone	1.00	Flooding	0.60
GRP: Gravel Pits-----	100	Restricted permeability	0.30	Too acid	0.42	Too acid	0.42
		Too acid	0.11	Restricted permeability	0.22	Restricted permeability	0.22

AGRICULTURAL WASTE MANAGEMENT--Continued
Woodson County, Kansas

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Map symbol and soil name	Pct of map unit	Application of manure and food- processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Ka: Kenoma-----	98	Very limited Depth to saturated zone Restricted permeability Runoff limitation Too acid	1.00 1.00 0.40 0.11	Very limited Depth to saturated zone Restricted permeability Too acid	1.00 1.00 0.42	Very limited Depth to saturated zone Restricted permeability Too acid	1.00 1.00 0.42
Ko: Kenoma-----	50	Very limited Depth to saturated zone Restricted permeability Runoff limitation Too acid	1.00 1.00 0.40 0.11	Very limited Depth to saturated zone Restricted permeability Too acid	1.00 1.00 0.42	Very limited Depth to saturated zone Restricted permeability Too acid Too steep for surface application	1.00 1.00 0.42 0.31
Olpe-----	30	Very limited Restricted permeability Droughty Too acid	1.00 0.74 0.03	Very limited Restricted permeability Droughty Too acid	1.00 0.74 0.14	Very limited Restricted permeability Droughty Too steep for surface application Too acid	1.00 0.74 0.31 0.14
Kw: Kenoma, eroded-----	60	Very limited Depth to saturated zone Restricted permeability Runoff limitation Too acid	1.00 1.00 0.40 0.11	Very limited Depth to saturated zone Restricted permeability Too acid	1.00 1.00 0.42	Very limited Depth to saturated zone Restricted permeability Too acid	1.00 1.00 0.42
Woodson, eroded-----	30	Very limited Restricted permeability Depth to saturated zone Runoff limitation Too acid	1.00 1.00 0.40 0.11	Very limited Depth to saturated zone Restricted permeability Too acid	1.00 1.00 0.42	Very limited Depth to saturated zone Restricted permeability Too acid	1.00 1.00 0.42
La: Leanna, drained-----	90	Very limited Restricted permeability Depth to saturated zone Flooding Runoff limitation Too acid	1.00 1.00 0.60 0.40 0.18	Very limited Flooding Depth to saturated zone Restricted permeability Too acid	1.00 1.00 1.00 0.67	Very limited Depth to saturated zone Restricted permeability Too acid Flooding	1.00 1.00 0.67 0.60
Lb: Lula-----	98	Somewhat limited Too acid	0.03	Somewhat limited Too acid	0.14	Somewhat limited Too acid	0.14
Ld: Lula-----	45	Somewhat limited Too acid	0.03	Somewhat limited Too acid	0.14	Somewhat limited Too acid	0.14
Dwight-----	30	Very limited Restricted permeability Runoff limitation Sodium content Too acid	1.00 1.00 0.40 0.08 0.02	Very limited Restricted permeability Sodium content Too acid	1.00 1.00 0.08 0.07	Very limited Restricted permeability Sodium content Too acid	1.00 1.00 0.08 0.07
Ma: Mason-----	98	Somewhat limited Restricted permeability Too acid	0.30 0.11	Somewhat limited Too acid Flooding Restricted permeability	0.42 0.40 0.22	Somewhat limited Too acid Restricted permeability	0.42 0.22
Ns: Niotaze-----	50	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Depth to saturated zone Too steep for surface application	1.00 1.00

AGRICULTURAL WASTE MANAGEMENT--Continued
Woodson County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.00 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Stephenville-----	40	Depth to bedrock	0.90	Depth to bedrock	0.90	Too steep for sprinkler application	1.00
		Droughty	0.79	Too acid	0.85	Depth to bedrock	0.90
		Restricted permeability	0.30	Droughty	0.79	Too acid	0.85
		Somewhat limited Droughty	0.64	Somewhat limited Droughty	0.64	Very limited Too steep for surface application	1.00
Od: Olpe-----	98	Depth to bedrock	0.35	Too acid	0.42	Droughty	0.64
		Slope	0.16	Depth to bedrock	0.35	Too acid	0.42
		Too acid	0.11	Slope	0.16	Too steep for sprinkler application	0.39
		Filtering capacity	0.00	Filtering capacity	0.00	Depth to bedrock	0.35
Og: Osage-----	97	Very limited Restricted permeability	1.00	Very limited Restricted permeability	1.00	Very limited Restricted permeability	1.00
		Droughty	0.74	Droughty	0.74	Too steep for surface application	1.00
		Slope	0.16	Slope	0.16	Droughty	0.74
		Too acid	0.03	Too acid	0.14	Too steep for sprinkler application	0.39
Os: Osage-----	97	Very limited Pondering	1.00	Very limited Pondering	1.00	Very limited Pondering	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Restricted permeability	1.00	Flooding	1.00	Restricted permeability	1.00
		Flooding	0.60	Restricted permeability	1.00	Flooding	0.60
Og: Osage-----	97	Runoff limitation	0.40	Too acid	0.42	Too acid	0.42
		Very limited Pondering	1.00	Very limited Pondering	1.00	Very limited Pondering	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Restricted permeability	1.00	Flooding	1.00	Restricted permeability	1.00
Rc: Ringo-----	99	Flooding	0.60	Restricted permeability	1.00	Flooding	0.60
		Runoff limitation	0.40	Too acid	0.42	Too acid	0.42
		Very limited Restricted permeability	1.00	Very limited Restricted permeability	1.00	Very limited Restricted permeability	1.00
		Runoff limitation	0.40			Too steep for surface application	0.66
Rd: Ringo-----	50	Very limited Restricted permeability	1.00	Very limited Restricted permeability	1.00	Too steep for sprinkler application	0.00
		Runoff limitation	0.40	Slope	0.16	Very limited Restricted permeability	1.00
		Slope	0.16			Too steep for surface application	1.00
						Too steep for sprinkler application	0.39
Sogn-----	30	Very limited Depth to bedrock	1.00	Very limited Droughty	1.00	Very limited Droughty	1.00
		Droughty	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Runoff limitation	0.40	Slope	0.16	Too steep for surface application	1.00
		Slope	0.16			Too steep for sprinkler application	0.39

AGRICULTURAL WASTE MANAGEMENT--Continued
Woodson County, Kansas

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Map symbol and soil name	Pct of map unit	Application of manure and food- processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Sa: Stephenville-----	98	Somewhat limited Droughty Depth to bedrock Too acid Filtering capacity	0.64 0.35 0.11 0.00	Somewhat limited Droughty Too acid Depth to bedrock Filtering capacity	0.64 0.42 0.35 0.00	Somewhat limited Droughty Too acid Depth to bedrock Filtering capacity Too steep for surface application	0.64 0.42 0.35 0.00
Sd: Summit-----	98	Very limited Restricted permeability Depth to saturated zone	1.00 0.86	Very limited Restricted permeability Depth to saturated zone	1.00 0.86	Very limited Restricted permeability Depth to saturated zone Too steep for surface application	1.00 0.86 0.00
Se: Summit-----	99	Very limited Restricted permeability Depth to saturated zone	1.00 0.86	Very limited Restricted permeability Depth to saturated zone	1.00 0.86	Very limited Restricted permeability Depth to saturated zone Too steep for surface application Too steep for sprinkler application	1.00 0.86 0.66 0.00
Va: Verdigris-----	97	Somewhat limited Flooding	0.60	Very limited Flooding	1.00	Somewhat limited Flooding	0.60
Vc: Verdigris-----	98	Very limited Flooding	1.00	Very limited Flooding	1.00	Very limited Flooding	1.00
W: Water-----	100	Not rated		Not rated		Not rated	
Wa: Woodson-----	98	Very limited Restricted permeability Depth to saturated zone Runoff limitation Too acid	1.00 1.00 0.40 0.11	Very limited Depth to saturated zone Restricted permeability Too acid	1.00 1.00 0.42	Very limited Depth to saturated zone Restricted permeability Too acid	1.00 1.00 0.42
Za: Zaar-----	85	Very limited Restricted permeability Depth to saturated zone Runoff limitation	1.00 1.00 0.40	Very limited Restricted permeability Depth to saturated zone	1.00 1.00	Very limited Restricted permeability Depth to saturated zone Too steep for surface application	1.00 1.00 0.00

WIN-PST SPISP II
SOIL SENSITIVITY TO PESTICIDE LOSS RATING REPORT

Soils Data Table: SOIL_KS Sort Order: MUSYM

Woodson County, Kansas: KS207

							SPISP II Ratings		
							Leaching	Solution	Adsorbed
MUSYM/SEQ#	COMPONENT/TEXTURE/MU%	HYD	KFACT	SURFACE DEPTH	% OM	(SLP)	Runoff (SSRP)	Runoff (SARP)	
001CA 1	CATOOSA SIL 90%	B	0.37	11"	2.0%	I	I	I	
001CB 1	CATOOSA SIL 58%	B	0.37	11"	2.0%	I	I	I	
001CB 2	ROCK OUTCROP 29%	D	0.00	0"	0.0%	V	H	L	
001CC 1	COLLINSVILLE FSL 50%	D	0.20	7"	2.0%	V	H	H	
001CC 2	BATES L 41%	B	0.32	8"	2.0%	I	I	I	
001ZB 1	ZAAR SIC 100%	D	0.28	18"	3.0%	H (w)	H	H	
031EP 1	ERAM SICL 50%	C	0.37	8"	2.0%	H (w)	H	H	
031EP 2	APPERSON SICL 35%	C	0.37	9"	2.0%	H (w)	H	H	
031ES 1	ERAM SICL 60%	C	0.37	8"	2.0%	H (w)	H	H	
031ES 2	SHIDLER SICL 25%	D	0.32	12"	3.0%	V	H	H	
073AT 1	AQUENTS VAR 100%		0.00	60"	0.0%	?	?	?	
073CA 1	CHASE SICL 90%	C	0.37	14"	3.0%	H (w)	H	H	
073CM 1	CLIME SIC 90%	C	0.28	11"	2.5%	L	H	H	
073CS 1	CLIME SIC 65%	C	0.28	11"	2.5%	L	H	H (s)	
073CS 2	SOGN SICL 20%	D	0.32	7"	2.0%	V	H	H (s)	
073DS 1	DENNIS SICL 100%	C	0.37	6"	1.3%	H (w)	H	H	
073IC 1	IVAN SIL 85%	B	0.32	27"	3.0%	L	I	I	
073IF 1	IVAN SIL 90%	B	0.32	38"	3.0%	L	I	I	
073KE 1	KENOMA SICL 100%	D	0.37	4"	3.5%	V	H	H	
073LA 1	LABETTE SICL 90%	C	0.37	9"	3.0%	L	H	H	
073LD 1	LABETTE SICL 65%	C	0.37	9"	3.0%	L	H	H	
073LD 2	DWIGHT SIL 30%	D	0.43	4"	3.0%	V	H	H	
073MA 1	MARTIN SICL 100%	C	0.37	11"	3.0%	L	H	H	
073NZ 1	NIOTAZE L 75%	C	0.37	9"	2.0%	H (w)	H	H (s)	
073NZ 2	DARNELL FSL 15%	C	0.24	6"	0.7%	I	H	H (s)	
073RE 1	READING SIL 90%	B	0.32	13"	3.0%	I	I	I	
073ST 1	STEEDMAN ST-L 85%	C	0.24	8"	1.8%	H (w)	H	H	
205BH 1	BATES L 50%	B	0.32	15"	2.5%	I	I	I	

WIN-PST SPISP II
SOIL SENSITIVITY TO PESTICIDE LOSS RATING REPORT

Soils Data Table: SOIL_KS Sort Order: MUSYM

Woodson County, Kansas: KS207

205BH 2	COLLINSVILLE L 35%	D	0.32	6"	2.0% V	H	H
205BO 1	BATES L 45%	B	0.32	11"	2.5% I	I	I
205BO 2	COLLINSVILLE L 40%	D	0.32	6"	2.0% V	H	H (s)
205DW 1	DENNIS SIL 75%	C	0.43	10"	2.0% H (w)	H	H
205EB 1	ERAM SIL 90%	C	0.43	9"	2.0% H (w)	H	H
205EC 1	ERAM SIL 90%	C	0.43	9"	2.0% H (w)	H	H
205LA 1	LANTON SIL 90%	C	0.37	7"	3.0% H (w)	H	H
205ND 1	NIOTAZE CB-FSL 50%	C	0.20	9"	2.0% H (w)	H	H (s)
205ND 2	DARNELL FSL 35%	C	0.24	6"	0.7% I	H	H
205SC 1	SHIDLER SICL 70%	D	0.32	10"	3.0% V	H	H
205SC 2	CATOOSA SIL 15%	B	0.37	10"	2.0% I	I	I
205SF 1	STEEDMAN ST-SIL 90%	C	0.28	8"	1.8% H (w)	H	H (s)
AED 1	ARENTS, EARTHEN DAM 100%		0.00	0"	0.0% ?	?	?
Bb 1	BATES L 98%	B	0.32	16"	2.5% I	I	I
Bc 1	BATES L 97%	B	0.32	16"	2.5% I	I	I
BOP 1	BORROW PITS 100%		0.00	0"	0.0% ?	?	?
Ca 1	CLARESON SICL 55%	C	0.32	9"	2.5% L	H	H
Ca 2	SOGN SICL 35%	D	0.32	9"	2.0% V	H	H
Cd 1	CLEORA FSL 90%	B	0.20	18"	2.0% I	I	I
Da 1	DARNELL FSL 55%	C	0.24	4"	0.7% I	H	H (s)
Da 2	NIOTAZE L 40%	C	0.37	9"	2.0% H (w)	H	H (s)
Dd 1	DENNIS SIL 98%	C	0.43	10"	2.0% H (w)	H	H
De 1	DENNIS SIL 98%	C	0.43	10"	2.0% H (w)	H	H
Df 1	DENNIS SICL 98%	C	0.37	7"	1.5% H (w)	H	H
Dg 1	DENNIS SICL 50%	C	0.37	7"	0.8% H (w)	H	H
Dg 2	ERAM SICL 30%	C	0.37	7"	2.0% H (w)	H	H
Dw 1	DWIGHT SIL 98%	D	0.43	4"	3.0% V	H	H
Eb 1	ERAM SICL 98%	C	0.37	10"	2.0% H (w)	H	H
Ec 1	ERAM SICL 98%	C	0.37	10"	2.0% H (w)	H	H
Ex 1	ERAM SICL 65%	C	0.37	10"	2.0% H (w)	H	H

WIN-PST SPISP II
SOIL SENSITIVITY TO PESTICIDE LOSS RATING REPORT

Soils Data Table: SOIL_KS Sort Order: MUSYM

Woodson County, Kansas: KS207

GRP 1	GRAVEL PITS 100%		0.00	0"	0.0% ?	?	?
Ha 1	HEPLER SIL 85%	C	0.37	30"	1.5% H (w)	H	H
Ka 1	KENOMA SIL 98%	D	0.43	11"	3.0% H (w)	H	H
Ko 1	KENOMA SIL 50%	D	0.43	11"	3.0% H (w)	H	H
Ko 2	OLPE SIL 30%	C	0.43	6"	1.5% L	H	H
Kw 1	KENOMA SICL 60%	D	0.37	7"	3.0% H (w)	H	H
La 1	LEANNA SIL 90%	D	0.32	16"	2.5% H (w)	H	H
Lb 1	LULA SIL 90%	B	0.37	9"	2.0% I	I	I
Ld 1	LULA SIL 45%	B	0.37	9"	2.0% I	I	I
Ld 2	DWIGHT SIL 30%	D	0.43	4"	3.0% V	H	H
Ma 1	MASON SIL 95%	B	0.37	12"	2.0% I	I	I
Ns 1	NIOTAZE L 50%	C	0.37	9"	2.0% H (w)	H	H (s)
Ns 2	STEPHENVILLE FSL 40%	B	0.24	14"	1.3% I	I	I
Od 1	OLPE SIL 85%	C	0.43	6"	1.5% L	H	H
Og 1	OSAGE SIC 97%	D	0.28	18"	2.5% H (w)	H	H
Os 1	OSAGE SICL 97%	D	0.37	18"	2.5% H (w)	H	H
Rc 1	RINGO SICL 90%	D	0.37	8"	3.0% V	H	H
Rd 1	RINGO SICL 50%	D	0.37	8"	3.0% V	H	H
Rd 2	SOGN SICL 30%	D	0.32	9"	2.0% V	H	H
Sa 1	STEPHENVILLE FSL 90%	B	0.24	14"	1.3% I	I	I
Sd 1	SUMMIT SICL 98%	C	0.37	12"	3.0% H (w)	H	H
Se 1	SUMMIT SICL 99%	C	0.37	12"	3.0% H (w)	H	H
Va 1	VERDIGRIS SIL 85%	B	0.32	6"	3.0% I	I	I
Vc 1	VERDIGRIS SIL 90%	B	0.32	25"	3.0% L	I	I
W 1	WATER 100%		0.00	0"	0.0% ?	?	?
Wa 1	WOODSON SIL 90%	D	0.43	8"	2.5% H (w)	H	H
Za 1	ZAAR SIC 85%	D	0.28	10"	3.0% H (w)	H	H

(.\REPORTS\SOILS.TXT generated on 12/12/01 at 12:11:15)

H -- High
I -- Intermediate
L -- Low
V -- Very Low

Conditions that affect ratings:

- m -- There are macropores in the surface horizon deeper than 24"
- w -- The high water table comes within 24" of the surface during the growing season
- s -- The field slope is greater than 15%

SPISP II S-Ratings:

- SLP -- Soil Leaching Potential
- SSRP -- Soil Solution Runoff Potential
- SARP -- Soil Adsorbed Runoff Potential

In this section, hydric soils are defined and described and the hydric soils in the survey area are listed. The three essential characteristics of wetlands are hydrophytic vegetation, hydric soils, and wetland hydrology (Cowardin and others, 1979; U.S. Army Corps of Engineers, 1987; National Research Council, 1995; Tiner, 1985). Criteria for each of the characteristics must be met for areas to be identified as wetlands. Undrained hydric soils that have natural vegetation should support a dominant population of ecological wetland plant species. Hydric soils that have been converted to other uses should be capable of being restored to wetlands.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). These soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 1995). These criteria are used to identify a phase of a soil series that normally is associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (USDA, 1999) and "Keys to Soil Taxonomy" (USDA, 1998) and in the "Soil Survey Manual" (USDA, 1993).

If soils are wet enough for a long enough period to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils in this survey area are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and others, 1996).

Hydric soils are identified by examining and describing the soil to a depth of about 20 inches. This depth may be greater if determination of an appropriate indicator so requires. It is always recommended that soils be excavated and described to the depth necessary for an understanding of the redoximorphic processes. Then, using the completed soil descriptions, soil scientists can compare the soil features required by each indicator and specify which indicators have been matched with the conditions observed in the soil. The soil can be identified as a hydric soil if at least one of the approved indicators is present.

Map units in the Hydric Soil Interpretations table meet the definition of hydric soils and, in addition, have at least one of the hydric soil indicators. This list can help in planning land uses; however, onsite investigation is recommended to determine the hydric soils on a specific site (National Research Council, 1995; Hurt and others, 1996).

Map units that are made up of hydric soils may have small areas, or inclusions, of nonhydric soils in the higher positions on the landform, and map units made up of nonhydric soils may have inclusions of hydric soils in the lower positions on the landform.

These map units, in general, do not meet the definition of hydric soils because they do not have one of the hydric soil indicators. A portion of these map units, however, may include hydric soils. Onsite investigation is recommended to determine whether hydric soils occur and the location of the included hydric soils.

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Map symbol and map unit name	Component	Hydric	Local landform	Hydric soils criteria			
				Hydric criteria code	Meets saturation criteria	Meets flooding criteria	Meets ponding criteria
001CA: CATOOSA SILT LOAM, 0 TO 2 PERCENT SLOPES	CATOOSA	No	ridge	---	---	---	---
	KENOMA	No	divide, paleoterrace	---	---	---	---
	ZAAR	No	hillslope	---	---	---	---
001CB: CATOOSA-ROCK OUTCROP COMPLEX, 1 TO 8 PERCENT SLOPES	CATOOSA	No	hillslope	---	---	---	---
	ROCK OUTCROP ERAM	Unranked No	hillslope	---	---	---	---
001CC: COLLINSVILLE-BATES COMPLEX, 2 TO 15 PERCENT SLOPES	COLLINSVILLE	No	hillslope	---	---	---	---
	BATES	No	hillslope	---	---	---	---
	CATOOSA	No	hillslope	---	---	---	---
	DENNIS	No	hillslope	---	---	---	---
001ZB: ZAAR SILTY CLAY, 3 TO 7 PERCENT SLOPES	ERAM	No	hillslope	---	---	---	---
	ZAAR	No	hillslope	---	---	---	---
031EP: ERAM-APPERSON SILTY CLAY LOAMS, 4 TO 7 PERCENT SLOPES	ERAM	No	hillslope	---	---	---	---
	APPERSON	No	hillslope	---	---	---	---
	CLARESON	No	ridge	---	---	---	---
	ROCK OUTCROP SHIDLER	---	hillslope	---	---	---	---
031ES: ERAM-SHIDLER SILTY CLAY LOAMS, 4 TO 15 PERCENT SLOPES	SHIDLER	No	rim	---	---	---	---
	ERAM	No	hillslope	---	---	---	---
	SHIDLER OLPE	No	hillslope	---	---	---	---
073AT: AQUENTS, FREQUENTLY FLOODED	AQUENTS	No	flood plain	---	---	---	---
073CA: CHASE SILTY CLAY LOAM, OCCASIONALLY FLOODED	CHASE	No	flood plain	---	---	---	---
	IVAN	No	flood plain	---	---	---	---
073CM: CLIME SILTY CLAY, 3 TO 7 PERCENT SLOPES	READING	No	stream terrace	---	---	---	---
	CLIME	No	hillslope	---	---	---	---
073CS: CLIME-SOGN COMPLEX, 5 TO 20 PERCENT SLOPES	MARTIN	No	hillslope	---	---	---	---
	CLIME	No	ridge	---	---	---	---
	SOGN	No	ridge	---	---	---	---
	DWIGHT	No	divide, hillslope	---	---	---	---
073DS: DENNIS SILTY CLAY LOAM, 2 TO 6 PERCENT SLOPES, ERODED	LABETTE	No	hillslope	---	---	---	---
	MARTIN	No	hillslope	---	---	---	---
	ROCK OUTCROP	---	---	---	---	---	---
073IC: IVAN SILT LOAM, CHANNELED	DENNIS	No	hillslope	---	---	---	---
	IVAN	No	channel, flood plain	---	---	---	---
	CHASE	No	flood plain	---	---	---	---
	DENNIS	No	hillslope	---	---	---	---
073IF: IVAN SILT LOAM, OCCASIONALLY FLOODED	OSAGE	Yes	flood plain	2B3	YES	NO	NO
	MARTIN	No	hillslope	---	---	---	---
	IVAN	No	flood plain	---	---	---	---
073KE: KENOMA SILTY CLAY LOAM, 2 TO 5 PERCENT SLOPES, ERODED	CHASE	No	flood plain	---	---	---	---
	KENOMA	No	hillslope	---	---	---	---
073LA: LABETTE SILTY CLAY LOAM, 1 TO 4 PERCENT SLOPES	LABETTE	No	hillslope	---	---	---	---
	SOGN	No	hillslope	---	---	---	---

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Map symbol and map unit name	Component	Hydric	Local landform	Hydric soils criteria			
				Hydric criteria code	Meets saturation criteria	Meets flooding criteria	Meets ponding criteria
073LD: LABETTE-DWIGHT COMPLEX, 0 TO 3 PERCENT SLOPES	LABETTE	No	hillslope	---	---	---	---
	DWIGHT ZAAR	No No	hillslope hillslope	---	---	---	---
073MA: MARTIN SILTY CLAY LOAM, 1 TO 4 PERCENT SLOPES	MARTIN	No	hillslope	---	---	---	---
073NZ: NIOTAZE-DARNELL COMPLEX, 6 TO 35 PERCENT SLOPES	NIOTAZE	No	hillslope	---	---	---	---
	DARNELL ROCK OUTCROP	No ---	hillslope ---	---	---	---	---
073RE: READING SILT LOAM, 0 TO 2 PERCENT SLOPES, RARELY FLOODED	READING	No	stream terrace	---	---	---	---
	CHASE READING	No No	flood plain stream terrace	---	---	---	---
073ST: STEEDMAN STONY LOAM, 3 TO 12 PERCENT SLOPES	STEEDMAN	No	hillslope	---	---	---	---
	ROCK OUTCROP DARNELL	---	---	---	---	---	---
205BH: BATES-COLLINSVILLE LOAMS, 3 TO 7 PERCENT SLOPES	BATES	No	ridge	---	---	---	---
	COLLINSVILLE DENNIS ERAM	No No No	hillslope hillslope hillslope	---	---	---	---
205BO: BATES-COLLINSVILLE LOAMS, 7 TO 20 PERCENT SLOPES	BATES	No	ridge	---	---	---	---
	COLLINSVILLE DENNIS ERAM	No No No	hillslope hillslope hillslope	---	---	---	---
205DW: DENNIS-DWIGHT SILT LOAMS, 1 TO 5 PERCENT SLOPES	DENNIS	No	hillslope	---	---	---	---
	DWIGHT	No	hillslope, paleoterrace	---	---	---	---
205EB: ERAM SILT LOAM, 1 TO 3 PERCENT SLOPES	BATES	No	ridge	---	---	---	---
	ERAM	No	hillslope	---	---	---	---
205EC: ERAM SILT LOAM, 3 TO 7 PERCENT SLOPES	BATES RINGO	No No	ridge hillslope	---	---	---	---
	ERAM	No	hillslope	---	---	---	---
205LA: LANTON SILT LOAM, OCCASIONALLY FLOODED	BATES RINGO	No No	hillslope hillslope	---	---	---	---
	LANTON	No	flood plain	---	---	---	---
205ND: NIOTAZE-DARNELL COMPLEX, 4 TO 30 PERCENT SLOPES	MASON OSAGE	No Yes	stream terrace flood plain	---	---	---	---
	NIOTAZE	No	hillslope	---	---	---	---
205SC: SHIDLER-CATOOSA COMPLEX, 1 TO 8 PERCENT SLOPES	DARNELL STEPHENVILLE ROCK OUTCROP	No No ---	hillslope hillslope ---	---	---	---	---
	SHIDLER	No	ridge	---	---	---	---
205SF: STEEDMAN GRAVELLY SILT LOAM, 4 TO 25 PERCENT SLOPES, STONY	CATOOSA RINGO APPERSON GIRARD	No No No Yes	ridge hillslope hillslope flood plain	---	---	---	---
	STEEDMAN	No	hillslope	---	---	---	---
	BATES COLLINSVILLE	No No	ridge hillslope	---	---	---	---

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Map symbol and map unit name	Component	Hydric	Local landform	Hydric soils criteria			
				Hydric criteria code	Meets saturation criteria	Meets flooding criteria	Meets ponding criteria
AED: ARENTS, EARTHEN DAM	ARENTS, EARTHEN DAM	Unranked	---	---	---	---	---
Bb: BATES LOAM, 1 TO 4 PERCENT SLOPES	BATES	No	hillslope	---	---	---	---
	DENNIS	No	hillslope	---	---	---	---
	ERAM	No	hillslope	---	---	---	---
Bc: BATES LOAM, 4 TO 7 PERCENT SLOPES	BATES	No	hillslope	---	---	---	---
	COLLINSVILLE	No	hillslope	---	---	---	---
	DENNIS	No	hillslope	---	---	---	---
	ERAM	No	hillslope	---	---	---	---
BOP: BORROW PITS	BORROW PITS	Unranked	---	---	---	---	---
Ca: CLARESON-SOIGN COMPLEX, 1 TO 8 PERCENT SLOPES	CLARESON	No	hillslope	---	---	---	---
	SOIGN	No	hillslope	---	---	---	---
	LULA	No	hillslope	---	---	---	---
Cd: CLEORA FINE SANDY LOAM, OCCASIONALLY FLOODED	MASON	No	stream terrace	---	---	---	---
	VERDIGRIS	No	flood plain	---	---	---	---
	CLEORA	No	flood plain	---	---	---	---
Da: DARNELL-NIOTAZE COMPLEX, 24 TO 45 PERCENT SLOPES	DARNELL	No	hillslope	---	---	---	---
	NIOTAZE	No	hillslope	---	---	---	---
	STEPHENVILLE	No	hillslope	---	---	---	---
Dd: DENNIS SILT LOAM, 1 TO 3 PERCENT SLOPES	DENNIS	No	hillslope	---	---	---	---
	ERAM	No	hillslope	---	---	---	---
	KENOMA	No	hillslope, paleoterrace	---	---	---	---
De: DENNIS SILT LOAM, 3 TO 6 PERCENT SLOPES	DENNIS	No	hillslope	---	---	---	---
	BATES	No	hillslope	---	---	---	---
	ERAM	No	hillslope	---	---	---	---
Df: DENNIS SILTY CLAY LOAM, 1 TO 3 PERCENT SLOPES, ERODED	DENNIS	No	hillslope	---	---	---	---
	BATES	No	hillslope	---	---	---	---
	ERAM	No	hillslope	---	---	---	---
Dg: DENNIS AND ERAM SOILS, 3 TO 7 PERCENT SLOPES, ERODED	DENNIS	No	hillslope	---	---	---	---
	ERAM	No	hillslope	---	---	---	---
	BATES	No	hillslope	---	---	---	---
Dw: DWIGHT SILT LOAM, 0 TO 2 PERCENT SLOPES	DWIGHT	No	divide, hillslope	---	---	---	---
	KENOMA	No	hillslope, paleoterrace	---	---	---	---
	WOODSON	No	divide, paleoterrace	---	---	---	---
Eb: ERAM SILTY CLAY LOAM, 1 TO 4 PERCENT SLOPES	ERAM	No	hillslope	---	---	---	---
	BATES	No	hillslope	---	---	---	---
	DENNIS	No	hillslope	---	---	---	---
Ec: ERAM SILTY CLAY LOAM, 4 TO 7 PERCENT SLOPES	ERAM	No	hillslope	---	---	---	---
	BATES	No	hillslope	---	---	---	---
	DENNIS	No	hillslope	---	---	---	---
Ex: ERAM-COLLINSVILLE COMPLEX, 4 TO 25 PERCENT SLOPES	ERAM	No	hillslope	---	---	---	---
	COLLINSVILLE	No	hillslope	---	---	---	---
	BATES	No	hillslope	---	---	---	---
	DENNIS	No	hillslope	---	---	---	---
GRP: GRAVEL PITS AND QUARRIES	GRAVEL PITS	Unranked	---	---	---	---	---

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Map symbol and map unit name	Component	Hydric	Local landform	Hydric soils criteria			
				Hydric criteria code	Meets saturation criteria	Meets flooding criteria	Meets ponding criteria
Ha: HEPLER SILT LOAM, OCCASIONALLY FLOODED	HEPLER	No	flood plain	---	---	---	---
	LEANNA	No	flood plain	---	---	---	---
	OSAGE	Yes	flood plain	2B3	YES	NO	NO
	VERDIGRIS	No	flood plain	---	---	---	---
Ka: KENOMA SILT LOAM, 1 TO 2 PERCENT SLOPES	KENOMA	No	hillslope, paleoterrace	---	---	---	---
	DENNIS	No	hillslope	---	---	---	---
	WOODSON	No	divide, paleoterrace	---	---	---	---
Ko: KENOMA-OLPE COMPLEX, 2 TO 7 PERCENT SLOPES	KENOMA	No	hillslope, paleoterrace	---	---	---	---
	OLPE	No	hillslope, paleoterrace	---	---	---	---
	DENNIS	No	hillslope	---	---	---	---
	ERAM	No	hillslope	---	---	---	---
Kw: KENOMA AND WOODSON SOILS, 1 TO 3 PERCENT SLOPES, ERODED	KENOMA	No	hillslope, paleoterrace	---	---	---	---
	WOODSON	No	divide, paleoterrace	---	---	---	---
	DENNIS	No	hillslope	---	---	---	---
	DWIGHT	No	divide, hillslope	---	---	---	---
La: LEANNA SILT LOAM, OCCASIONALLY FLOODED	LEANNA	No	flood plain	---	---	---	---
	HEPLER	No	flood plain	---	---	---	---
Lb: LULA SILT LOAM, 0 TO 2 PERCENT SLOPES	OSAGE	Yes	flood plain	2B3	YES	NO	NO
	LULA	No	hillslope	---	---	---	---
	CLARESON	No	hillslope	---	---	---	---
	KENOMA	No	hillslope, paleoterrace	---	---	---	---
Ld: LULA-DWIGHT COMPLEX, 0 TO 2 PERCENT SLOPES	LULA	No	hillslope	---	---	---	---
	DWIGHT	No	divide, hillslope	---	---	---	---
	KENOMA	No	hillslope, paleoterrace	---	---	---	---
	CLARESON	No	hillslope	---	---	---	---
Ma: MASON SILT LOAM, RARELY FLOODED	MASON	No	stream terrace	---	---	---	---
	HEPLER	No	flood plain	---	---	---	---
Ns: NIOTAZE-STEPHENVILLE COMPLEX, 4 TO 25 PERCENT SLOPES	VERDIGRIS	No	flood plain	---	---	---	---
	NIOTAZE	No	hillslope	---	---	---	---
	STEPHENVILLE	No	hillslope	---	---	---	---
	DARNELL	No	hillslope	---	---	---	---
Od: OLPE SOILS, 4 TO 15 PERCENT SLOPES	OLPE	No	hillslope, paleoterrace	---	---	---	---
	KENOMA	No	hillslope, paleoterrace	---	---	---	---
	LULA	No	hillslope	---	---	---	---
Og: OSAGE SILTY CLAY, OCCASIONALLY FLOODED	OSAGE	Yes	flood plain	2B3	YES	NO	NO
	LEANNA	No	flood plain	---	---	---	---
	OSAGE	Yes	flood plain	2B3	YES	NO	NO
Os: OSAGE SILTY CLAY LOAM, OCCASIONALLY FLOODED	VERDIGRIS	No	flood plain	---	---	---	---
	OSAGE	Yes	flood plain	2B3	YES	NO	NO
	LEANNA	No	flood plain	---	---	---	---
Rc: RINGO SILTY CLAY LOAM, 4 TO 7 PERCENT SLOPES	OSAGE	Yes	flood plain	2B3	YES	NO	NO
	VERDIGRIS	No	flood plain	---	---	---	---
	RINGO	No	hillslope	---	---	---	---
	SUMMIT	No	hillslope	---	---	---	---

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Map symbol and map unit name	Component	Hydric	Local landform	Hydric soils criteria			
				Hydric criteria code	Meets saturation criteria	Meets flooding criteria	Meets ponding criteria
Rd: RINGO-SOGN COMPLEX, 4 TO 15 PERCENT SLOPES	RINGO	No	hillslope	---	---	---	---
	SOGN	No	hillslope	---	---	---	---
	CLARESON	No	hillslope	---	---	---	---
Sa: STEPHENVILLE FINE SANDY LOAM, 1 TO 4 PERCENT SLOPES	STEPHENVILLE	No	hillslope	---	---	---	---
	DARNELL	No	hillslope	---	---	---	---
	NIOTAZE	No	hillslope	---	---	---	---
Sd: SUMMIT SILTY CLAY LOAM, 1 TO 4 PERCENT SLOPES	SUMMIT	No	hillslope	---	---	---	---
	RINGO	No	hillslope	---	---	---	---
	WOODSON	No	divide, paleoterrace	---	---	---	---
Se: SUMMIT SILTY CLAY LOAM, 4 TO 7 PERCENT SLOPES	SUMMIT	No	hillslope	---	---	---	---
	RINGO	No	hillslope	---	---	---	---
Va: VERDIGRIS SILT LOAM, OCCASIONALLY FLOODED	VERDIGRIS	No	flood plain	---	---	---	---
	HEPLER	No	flood plain	---	---	---	---
	MASON	No	stream terrace	---	---	---	---
	OSAGE	Yes	flood plain	2B3	YES	NO	NO
Vc: VERDIGRIS SOILS, CHANNELED	VERDIGRIS	No	flood plain	---	---	---	---
	HEPLER	No	flood plain	---	---	---	---
	LEANNA	No	flood plain	---	---	---	---
W: WATER	WATER	Yes	---	4,3	NO	YES	YES
Wa: WOODSON SILT LOAM, 0 TO 2 PERCENT SLOPES	WOODSON	No	divide, paleoterrace	---	---	---	---
	KENOMA	No	hillslope, paleoterrace	---	---	---	---
	SUMMIT	No	hillslope	---	---	---	---
	ZAAR	No	hillslope	---	---	---	---
Za: ZAAR SILTY CLAY, 1 TO 4 PERCENT SLOPES	ERAM	No	hillslope	---	---	---	---
	WOODSON	No	paleoterrace, ridge	---	---	---	---

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All mapunits are displayed regardless of hydric status and are listed in alpha-numeric order by mapunit symbol. The "Hydric Soils Criteria" columns indicate the conditions that caused the mapunit component to be classified as "Hydric" or "Non-Hydric". These criteria are defined in "Hydric Soils of the United States" (USDA Miscellaneous Publication No. 1491, June, 1991). See the "Criteria for Hydric Soils" endnote to determine the meaning of these columns. Spot symbols are footnoted at the end of the table.

Map symbol and map unit name	Component	Hydric	Local landform	Hydric soils criteria			
				Hydric criteria code	Meets saturation criteria	Meets flooding criteria	Meets ponding criteria

FOOTNOTE: There may be small areas of included soils or miscellaneous areas that are significant to use and management of the soil; yet are too small to delineate on the soil map at the map's original scale. These may be designated as spot symbols and are defined in the published Soil Survey Report or the USDA-NRCS Technical Guide, Part II.

Areas mapped as water or any map unit that contains one of the following conventional symbols is considered a hydric soil map unit: marshes or swamps; wet spots; depressions; streams, lakes and ponds.

1. All Histosols except Folists, or
2. Soils in Aquic suborders, great groups, or subgroups, Albolls suborder, Aquisalids, Pachic subgroups, or Cumulic subgroups that are:
 - a. Somewhat poorly drained with a water table equal to 0.0 foot (ft) from the surface during the growing season, or
 - b. poorly drained or very poorly drained and have either:
 - (1) water table equal to 0.0 ft during the growing season if textures are coarse sand, sand, or fine sand in all layers within 20 inches (in), or for other soils
 - (2) water table at less than or equal to 0.5 ft from the surface during the growing season if permeability is equal to or greater than 6.0 in/hour (h) in all layers within 20 in, or
 - (3) water table at less than or equal to 1.0 ft from the surface during the growing season if permeability is less than 6.0 in/h in any layer within 20 in, or
3. Soils that are frequently ponded for long duration or very long duration during the growing season, or
4. Soils that are frequently flooded for long duration or very long duration during the growing season.