

## United States Department of Agriculture Natural Resources Conservation Service

### Ecological Site Description

**Site Type:** Rangeland

**Site Name:** Shallow Porous Clay

**Site ID:** R063AY025SD

**Major Land Resource Area (MLRA):** 63A –  
Northern Rolling Pierre Shale Plains



### Physiographic Features

This site typically occurs on gently to steeply sloping uplands.

**Landform:** hill, ridge

**Aspect:** N/A

	<u>Minimum</u>	<u>Maximum</u>
<b>Elevation (feet):</b>	1600	2700
<b>Slope (percent):</b>	6	60
<b>Water Table Depth (inches):</b>	None	None
<b>Flooding:</b>		
<b>Frequency:</b>	None	None
<b>Duration:</b>	None	None
<b>Ponding:</b>		
<b>Depth (inches):</b>	None	None
<b>Frequency:</b>	None	None
<b>Duration:</b>	None	None
<b>Runoff Class:</b>	Medium	High

### Climatic Features

MLRA 63A is considered to have a continental climate – cold winters and hot summers, low humidity, light rainfall, and much sunshine. Extremes in temperature may also abound. The climate is the result of this MLRA's location near the geographic center of North America. There are few natural barriers on the Northern Great Plains and air masses move freely across the plains and account for rapid changes in temperature.

Annual precipitation ranges from 16 to 20 inches per year. The average annual temperature is about 47°F. January is the coldest month with average temperatures ranging from about 11°F (Pollock, South Dakota (SD)), to about 22°F (Cedar Butte, SD). July is the warmest month with temperatures averaging from about 72°F (Pollock, SD), to about 76°F (Cedar Butte, SD). The range of normal average monthly temperatures between the coldest and warmest months is about 58°F. This large annual range attests to the continental nature of this area's climate. Hourly winds are estimated to average about 11 miles per hour annually, ranging from about 13 miles per hour during the spring to

about 10 miles per hour during the summer. Daytime winds are generally stronger than nighttime and occasional strong storms may bring brief periods of high winds with gusts to more than 50 miles per hour.

Growth of cool-season plants begins in early to mid-March, slowing or ceasing in late June. Warm-season plants begin growth about mid-May and continue to early or mid-September. Green up of cool-season plants may occur in September and October when adequate soil moisture is present.

	<u>Minimum</u>	<u>Maximum</u>
<b>Frost-free period (days):</b>	126	149
<b>Freeze-free period (days):</b>	149	165
<b>Mean Annual Precipitation (inches):</b>	16	20

**Average Monthly Precipitation (inches) and Temperature (°F):**

	Precip. Min.	Precip. Max	Temp. Min.	Temp. Max.
January	0.40	0.41	-0.9	34.0
February	0.44	0.49	5.8	39.2
March	0.87	1.36	17.3	49.0
April	1.77	2.18	31.3	61.2
May	2.82	3.29	43.3	72.2
June	2.96	3.45	53.2	82.5
July	2.04	2.84	58.5	90.8
August	1.57	2.38	56.5	90.3
September	1.13	1.53	45.4	79.2
October	1.02	1.38	33.4	65.7
November	0.48	0.63	19.3	48.2
December	0.23	0.35	5.7	37.2

Climate Stations		Period	
Station ID	Location or Name	From	To
SD1539	Cedar Butte	1951	2004
SD1972	Cottonwood 3 E	1909	2004
SD6712	Pollock	1948	2004
SD6790	Presho 7 NW	1975	2004

For local climate stations that may be more representative, refer to <http://www.wcc.nrcs.usda.gov>.

## Riparian and Wetland Features

No riparian areas or wetland features are directly associated with this site.

## Representative Soil Features

The soils in this site are well drained and formed in residuum derived from shale. The surface layer is two to eight inches thick. The parent material which occurs at 10 to 20 inches is loose shale which does not restrict plant roots. This site typically develops on neutral to acid shale. The soils have a moderate infiltration rate. This site may show slight to moderate evidence of rills and wind scoured areas. Water flow paths are broken, irregular in appearance, or discontinuous with numerous debris dams or vegetative barriers.

These soils are mainly susceptible to water erosion. The hazard of water erosion increases on slopes greater than about 10 percent. Low available water capacity strongly influences the soil-water-plant relationship.

Access Web Soil Survey (<http://websoilsurvey.nrcs.usda.gov/app/>) for specific local soils information.

**Parent Material Kind:** residuum  
**Parent Material Origin:** shale, acid  
**Surface Texture:** clay  
**Surface Texture Modifier:** none  
**Subsurface Texture Group:** clayey  
**Surface Fragments ≤3” (% Cover):** 0-25  
**Surface Fragments >3” (%Cover):** 0  
**Subsurface Fragments ≤3” (% Volume):** 15-60  
**Subsurface Fragments >3” (% Volume):** 0

	<u>Minimum</u>	<u>Maximum</u>
<b>Drainage Class</b>	well	well
<b>Permeability Class:</b>	moderate	moderate
<b>Depth to Bedrock (inches):</b>	10	20
<b>Electrical Conductivity (mmhos/cm)*:</b>	0	2
<b>Sodium Absorption Ratio*:</b>	0	1
<b>Soil Reaction (1:1 Water)*:</b>	4.0	6.0
<b>Soil Reaction (0.1M CaCl<sub>2</sub>)*:</b>	NA	NA
<b>Available Water Capacity (inches)*:</b>	2	3
<b>Calcium Carbonate Equivalent (percent)*:</b>	0	0

\*These attributes represent 0-40 inches in depth or to the first restrictive layer.

## Plant Communities

### Ecological Dynamics of the Site:

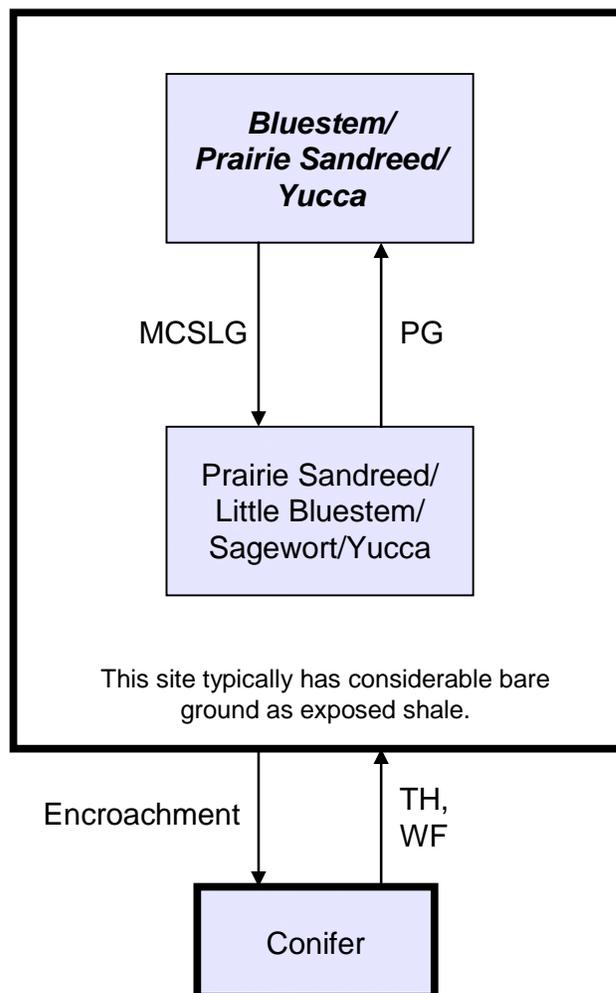
This site developed under Northern Great Plains climatic conditions, light to severe grazing by bison and other large herbivores, sporadic natural or man-caused wildfire (often of light intensities), and other biotic and abiotic factors that typically influence soil/site development. Changes will occur in the plant communities due to short-term weather variations, impacts of native and/or exotic plant and animal species, and management actions. While the following plant community descriptions describe more typical transitions between communities that will occur, severe disturbances, such as periods of well below average precipitation, can cause significant shifts in plant communities and/or species composition.

As this site deteriorates, species such as sedges, forbs, and blue grama will increase. Perennial grasses such as little bluestem, big bluestem, and rhizomatous wheatgrass will decrease in frequency and production. Dunes may form due to lack of ground cover. The various plant communities on this site are often all contained within a dune like area under the same grazing management. Soil erosion and dune formation greatly influence the existing plant communities. Depositional areas tend to be dominated by prairie sandreed and bluestem, while the areas from which soil is transported tend to be characterized by sedge, rush, and bare ground. However, the amount of deposition and transport can alter the plant communities. The historic and recent grazing impacts will also influence the plant composition. Prairie sandreed is an important plant to this site. Prairie sandreed has large rhizomes that help hold and bind the soil. As the prairie sandreed decreases along with bluestem and wheatgrass, the hazard for wind erosion increases. Areas can become bare dune like areas. Where this site occurs adjacent to eastern redcedar woodlands, encroachment may occur.

Interpretations are primarily based on the Bluestem/Sun Sedge Plant Community. It has been determined by study of rangeland relic areas, areas protected from excessive disturbance, and areas under long-term rotational grazing regimes. Trends in plant community dynamics ranging from heavily grazed to lightly grazed areas, seasonal use pastures, and historical accounts also have been used. Plant communities, states, transitional pathways, and thresholds have been determined through similar studies and experience.

The following is a diagram that illustrates the common plant communities that can occur on the site and the transition pathways between communities. The ecological processes are discussed in more detail in the plant community descriptions following the diagram.

### Plant Communities and Transitional Pathways



**Encroachment** – Encroachment of trees from adjacent sites; **MCSLG** – Moderate, continuous season-long grazing; **PG** – Prescribed grazing (proper stocking rates with adequate recovery periods during the growing season); **TH** – Timber harvest; **WF** – Wildfire, including crown fires.

Plant Community Composition and Group Annual Production

COMMON/GROUP NAME	SCIENTIFIC NAME	SYMBOL	Bluestem/Prairie Sandreed/Yucca		
			Group	lbs./acre	% Comp
<b>GRASSES &amp; GRASS-LIKES</b>				1050 - 1260	75 - 90
<b>TALL WARM-SEASON GRASSES</b>			1	210 - 490	15 - 35
big bluestem	Andropogon gerardii	ANGE	1	210 - 420	15 - 30
prairie sandreed	Calamovilfa longifolia	CALO	1	70 - 280	5 - 20
<b>MID WARM-SEASON GRASSES</b>			2	140 - 350	10 - 25
little bluestem	Schizachyrium scoparium	SCSC	2	70 - 210	5 - 15
sideoats grama	Bouteloua curtipendula	BOCU	2	70 - 210	5 - 15
plains muhly	Muhlenbergia cuspidata	MUCU3	2	0 - 140	0 - 10
<b>COOL-SEASON BUNCHGRASSES</b>			3	28 - 140	2 - 10
porcupine grass	Hesperostipa spartea	HESP11	3	14 - 140	1 - 10
needleandthread	Hesperostipa comata ssp. comata	HECOC8	3	14 - 140	1 - 10
<b>OTHER NATIVE GRASSES</b>			4	14 - 70	1 - 5
western wheatgrass	Pascopyrum smithii	PASM	4	0 - 70	0 - 5
blue grama	Bouteloua gracilis	BOGR2	4	0 - 42	0 - 3
threeawn	Aristida spp.	ARIST	4	0 - 42	0 - 3
other grasses		2GRAM	4	0 - 42	0 - 3
<b>GRASS-LIKES</b>			5	14 - 112	1 - 8
sun sedge	Carex inops ssp. heliophila	CAINH2	5	14 - 112	1 - 8
threadleaf sedge	Carex filifolia	CAFI	5	0 - 42	0 - 3
needleleaf sedge	Carex duriuscula	CADU6	5	0 - 42	0 - 3
Dudley's rush	Juncus dudleyi	JUDU2	5	0 - 28	0 - 2
other grass-likes		2GL	5	0 - 28	0 - 2
<b>FORBS</b>			7	140 - 280	10 - 20
American licorice	Glycyrrhiza lepidota	GLLE3	7	0 - 28	0 - 2
American vetch	Vicia americana	VIAM	7	0 - 14	0 - 1
catclaw sensitive briar	Mimosa nuttallii	MINU6	7	14 - 28	1 - 2
cudweed sagewort	Artemisia ludoviciana	ARLU	7	14 - 42	1 - 3
dotted gayfeather	Liatris punctata	LIPU	7	14 - 28	1 - 2
eriogonum	Eriogonum spp.	ERIOG	7	0 - 28	0 - 2
fleabane	Erigeron spp.	ERIGE2	7	0 - 14	0 - 1
milkvetch	Astragalus spp.	ASTRA	7	0 - 28	0 - 2
prairie coneflower	Ratibida columnifera	RACO3	7	14 - 28	1 - 2
purple coneflower	Echinacea angustifolia	ECAN2	7	14 - 42	1 - 3
purple prairie clover	Dalea purpurea	DAPU5	7	14 - 28	1 - 2
scarlet gaura	Gaura coccinea	GACO5	7	0 - 14	0 - 1
stemless hymenoxys	Tetraneuris acaulis var. acaulis	TEACA2	7	0 - 14	0 - 1
stiff goldenrod	Oligoneuron rigidum	OLRI	7	14 - 28	1 - 2
stiff sunflower	Helianthus pauciflorus	HEPA19	7	14 - 42	1 - 3
wavyleaf thistle	Cirsium undulatum	CIUN	7	0 - 28	0 - 2
western yarrow	Achillea millefolium var. occidentalis	ACMIO	7	0 - 14	0 - 1
white prairie aster	Symphotrichum falcatum	SYFA	7	14 - 28	1 - 2
white prairie clover	Dalea candida	DACA7	7	14 - 28	1 - 2
native forbs		2FN	7	14 - 70	1 - 5
<b>SHRUBS</b>			8	14 - 112	1 - 8
broom snakeweed	Gutierrezia sarothrae	GUSA2	8	0 - 14	0 - 1
dwarf false indigo	Amorpha nana	AMNA	8	0 - 28	0 - 2
fringed sagewort	Artemisia frigida	ARFR4	8	0 - 28	0 - 2
leadplant	Amorpha canescens	AMCA6	8	14 - 42	1 - 3
plains pricklypear	Opuntia polyacantha	OPPO	8	0 - 28	0 - 2
rose	Rosa spp.	ROSA5	8	0 - 28	0 - 2
skunkbush sumac	Rhus trilobata	RHTR	8	0 - 14	0 - 1
yucca	Yucca glauca	YUGL	8	14 - 42	1 - 3
other shrubs		2SHRUB	8	0 - 28	0 - 2
<b>TREES</b>			9	0 - 28	0 - 2
eastern redcedar	Juniperus virginiana	JUVI	9	0 - 28	0 - 2
Rocky Mountain juniper	Juniperus scopulorum	JUSC2	9	0 - 28	0 - 2
other trees		2TREE	9	0 - 28	0 - 2

Annual Production lbs./acre		LOW	RV	HIGH
<b>GRASSES &amp; GRASS-LIKES</b>		865 -	1113 -	1325
<b>FORBS</b>		125 -	210 -	320
<b>SHRUBS</b>		10 -	63 -	125
<b>TREES</b>		0 -	14 -	30
<b>TOTAL</b>		1000 -	1400 -	1800

This list of plants and their relative proportions are based on near normal years. Fluctuations in species composition and relative production may change from year to year dependent upon precipitation or other climatic factors. RV = Representative value.

Plant Community Composition and Group Annual Production

COMMON/GROUP NAME	SYMBOL	Bluestem/Prairie Sandreed/Yucca			Prairie Sandreed/Little Bluestem/Sagewort/Yucca			Conifer		
		Grp	lbs./acre	% Comp	Grp	lbs./acre	% Comp	Grp	lbs./acre	% Comp
<b>GRASSES &amp; GRASS-LIKES</b>			1050 - 1260	75 - 90		750 - 950	75 - 95		270 - 390	45 - 65
<b>TALL WARM-SEASON GRASSES</b>		1	210 - 490	15 - 35	1	150 - 300	15 - 30	1	0 - 30	0 - 5
big bluestem	ANGE	1	210 - 420	15 - 30	1	10 - 80	1 - 8	1	0 - 30	0 - 5
prairie sandreed	CALO	1	70 - 280	5 - 20	1	100 - 300	10 - 30	1	0 - 30	0 - 5
<b>MID WARM-SEASON GRASSES</b>		2	140 - 350	10 - 25	2	150 - 300	15 - 30	2	30 - 60	5 - 10
little bluestem	SCSC	2	70 - 210	5 - 15	2	100 - 250	10 - 25	2	12 - 60	2 - 10
sideoats grama	BOCU	2	70 - 210	5 - 15	2	20 - 100	2 - 10	2	6 - 30	1 - 5
plains muhly	MUCU3	2	0 - 140	0 - 10	2	0 - 50	0 - 5	2	0 - 18	0 - 3
<b>COOL-SEASON BUNCHGRASSES</b>		3	28 - 140	2 - 10	3	20 - 100	2 - 10	3	6 - 48	1 - 8
porcupine grass	HESP11	3	14 - 140	1 - 10	3	10 - 100	1 - 10	3	6 - 48	1 - 8
needleandthread	HECOC8	3	14 - 140	1 - 10	3	10 - 100	1 - 10	3	6 - 48	1 - 8
<b>OTHER NATIVE GRASSES</b>		4	14 - 70	1 - 5	4	50 - 120	5 - 12	4	6 - 42	1 - 7
western wheatgrass	PASM	4	0 - 70	0 - 5	4	10 - 100	1 - 10	4	0 - 30	0 - 5
blue grama	BOGR2	4	0 - 42	0 - 3	4	0 - 50	0 - 5	4	0 - 18	0 - 3
threeawn	ARIST	4	0 - 42	0 - 3	4	0 - 50	0 - 5	4	0 - 30	0 - 5
other grasses	2GRAM	4	0 - 42	0 - 3	4	0 - 50	0 - 5	4	0 - 30	0 - 5
<b>GRASS-LIKES</b>		5	14 - 112	1 - 8	5	50 - 120	5 - 12	5	60 - 150	10 - 25
sun sedge	CAINH2	5	14 - 112	1 - 8	5	20 - 100	2 - 10	5	30 - 90	5 - 15
threadleaf sedge	CAFI	5	0 - 42	0 - 3	5	0 - 40	0 - 4	5	12 - 48	2 - 8
needleleaf sedge	CADU6	5	0 - 42	0 - 3	5	0 - 40	0 - 4	5	12 - 48	2 - 8
Dudley's rush	JUDU2	5	0 - 28	0 - 2	5	0 - 60	0 - 6	5	12 - 60	2 - 10
other grass-likes	2GL	5	0 - 28	0 - 2	5	0 - 30	0 - 3	5	0 - 30	0 - 5
<b>NON-NATIVE GRASSES</b>		6			6	0 - 50	0 - 5	6	6 - 60	1 - 10
bluegrass	POA				6	0 - 50	0 - 5	6	6 - 60	1 - 10
cheatgrass	BRTE				6	0 - 50	0 - 5	6	6 - 60	1 - 10
<b>FORBS</b>		7	140 - 280	10 - 20	7	50 - 150	5 - 15	7	60 - 120	10 - 20
American licorice	GLLE3	7	0 - 28	0 - 2	7	0 - 10	0 - 1	7	0 - 12	0 - 2
American vetch	VIAM	7	0 - 14	0 - 1	7	0 - 10	0 - 1	7	0 - 12	0 - 2
catclaw sensitive briar	MINU6	7	14 - 28	1 - 2	7	0 - 10	0 - 1	7	0 - 6	0 - 1
cudweed sagewort	ARLU	7	14 - 42	1 - 3	7	10 - 50	1 - 5	7	6 - 18	1 - 3
dotted gayfeather	LIPU	7	14 - 28	1 - 2	7	10 - 20	1 - 2	7	6 - 18	1 - 3
erigonum	ERIOG	7	0 - 28	0 - 2	7	0 - 30	0 - 3	7	0 - 18	0 - 3
fleabane	ERIGE2	7	0 - 14	0 - 1	7	0 - 10	0 - 1	7	6 - 24	1 - 4
milkvetch	ASTRA	7	0 - 28	0 - 2	7	0 - 20	0 - 2	7	0 - 12	0 - 2
prairie coneflower	RACO3	7	14 - 28	1 - 2	7	10 - 20	1 - 2	7	6 - 18	1 - 3
purple coneflower	ECAN2	7	14 - 42	1 - 3	7	0 - 10	0 - 1	7	0 - 12	0 - 2
purple prairie clover	DAPU5	7	14 - 28	1 - 2	7	10 - 20	1 - 2	7	6 - 18	1 - 3
scarlet gaura	GACO5	7	0 - 14	0 - 1				7	0 - 6	0 - 1
stemless hymenoxys	TEACA2	7	0 - 14	0 - 1	7	0 - 10	0 - 1	7	0 - 6	0 - 1
stiff goldenrod	OLRI	7	14 - 28	1 - 2	7	10 - 30	1 - 3	7	6 - 30	1 - 5
stiff sunflower	HEPA19	7	14 - 42	1 - 3	7	0 - 10	0 - 1	7	0 - 6	0 - 1
wavyleaf thistle	CIUN	7	0 - 28	0 - 2	7	0 - 10	0 - 1	7	6 - 18	1 - 3
western yarrow	ACMIO	7	0 - 14	0 - 1	7	0 - 20	0 - 2	7	6 - 24	1 - 4
white prairie aster	SYFA	7	14 - 28	1 - 2	7	10 - 20	1 - 2	7	6 - 30	1 - 5
white prairie clover	DACA7	7	14 - 28	1 - 2	7	0 - 10	0 - 1	7	6 - 12	1 - 2
native forbs	2FN	7	14 - 70	1 - 5	7	0 - 50	0 - 5	7	6 - 48	1 - 8
introduced forbs	2FI				7	0 - 30	0 - 3	7	0 - 48	0 - 8
<b>SHRUBS</b>		8	14 - 112	1 - 8	8	20 - 100	2 - 10	8	12 - 90	2 - 15
broom snakeweed	GUSA2	8	0 - 14	0 - 1	8	0 - 20	0 - 2	8	0 - 18	0 - 3
dwarf false indigo	AMNA	8	0 - 28	0 - 2	8	0 - 10	0 - 1	8	0 - 6	0 - 1
fringed sagewort	ARFR4	8	14 - 42	1 - 3	8	10 - 50	1 - 5	8	6 - 30	1 - 5
leadplant	AMCA6	8	14 - 42	1 - 3	8	0 - 10	0 - 1	8	0 - 12	0 - 2
plains pricklypear	OPPO	8	0 - 28	0 - 2	8	0 - 30	0 - 3	8	0 - 12	0 - 2
rose	ROSA5	8	0 - 28	0 - 2	8	0 - 20	0 - 2	8	6 - 18	1 - 3
skunkbush sumac	RHTR	8	0 - 14	0 - 1	8	0 - 10	0 - 1	8	0 - 18	0 - 3
yucca	YUGL	8	14 - 42	1 - 3	8	10 - 80	1 - 8	8	6 - 30	1 - 5
other shrubs	2SHRUB	8	0 - 28	0 - 2	8	0 - 20	0 - 2	8	0 - 30	0 - 5
<b>TREES</b>		9	0 - 28	0 - 2	9	0 - 20	0 - 2	9	30 - 120	5 - 20
eastern redcedar	JUVI	9	0 - 28	0 - 2	9	0 - 20	0 - 2	9	30 - 120	5 - 20
other trees	2TREE	9	0 - 28	0 - 2	9	0 - 20	0 - 2	9	0 - 30	0 - 5
<b>Annual Production lbs./acre</b>			LOW RV HIGH		LOW RV HIGH		LOW RV HIGH		LOW RV HIGH	
<b>GRASSES &amp; GRASS-LIKES</b>			865 - 1113 - 1325		540 - 830 - 1100		310 - 384 - 645			
<b>FORBS</b>			125 - 210 - 320		45 - 100 - 165		55 - 90 - 130			
<b>SHRUBS</b>			10 - 63 - 125		15 - 60 - 110		10 - 51 - 95			
<b>TREES</b>			0 - 14 - 30		0 - 10 - 25		25 - 75 - 130			
<b>TOTAL</b>			1000 - 1400 - 1800		600 - 1000 - 1400		400 - 600 - 1000			

This list of plants and their relative proportions are based on near normal years. Fluctuations in species composition and relative production may change from year to year dependent upon precipitation or other climatic factors. RV = Representative value. Refer to PLANTS database for scientific names and codes: <http://plants.usda.gov>

### Plant Community and Vegetation State Narratives

Following are the narratives for each of the described plant communities. These plant communities may not represent every possibility, but they are the most prevalent and recurring plant communities. The plant composition tables shown above have been developed from the best available knowledge at the time of this revision. As more data is collected, some of these plant communities may be revised or removed, and new ones may be added. None of these plant communities should necessarily be thought of as “Desired Plant Communities (DPC).” According to the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) National Range and Pasture Handbook, DPCs will be determined by the decision-makers and will meet minimum quality criteria established by the NRCS. The main purpose for including any description of a plant community here is to capture the current knowledge and experience at the time of this revision.

#### Bluestem/Prairie Sandreed/Yucca Plant Community

The plant community upon which interpretations are primarily based is the Bluestem/Prairie Sandreed/Yucca Plant Community (this is also considered climax). Potential vegetation is about 70-80 percent grasses or grass-like plants, and 10-20 percent forbs, and 0-10 percent woody plants. A mix of warm- and cool-season midgrasses dominates. Major grass or grass-like species include prairie sandreed, sun sedge, western wheatgrass, big bluestem, and little bluestem. Other grasses occurring include threadleaf sedge, blue grama, and sideoats grama. Forbs occurring in this plant community are dotted gayfeather, purple coneflower, cudweed sagewort, and stiff sunflower. Lead plant, yucca, and eastern redcedar are the common woody species in this plant community.

This plant community is stable and well adapted to the Northern Great Plains climatic conditions. The diversity in plant species allows for high drought resistance. This is a sustainable plant community (site/soil stability, watershed function, and biologic integrity). Occasionally this plant community will have areas influenced by natural geologic erosion and will exhibit considerable bare ground.

The following growth curve shows the estimated monthly percentages of total annual growth of the dominant species expected during an average year:

Growth curve number: SD6304

Growth curve name: Pierre Shale Plains, warm-season dominant, cool-season subdominant.

Growth curve description: Warm-season dominant, cool-season subdominant.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	3	7	18	25	25	15	7	1	0	0

Transitions or pathways leading to other plant communities are as follows:

- Moderate, continuous season-long grazing will convert the plant community to the *Prairie Sandreed/Little Bluestem/Sagewort/Yucca Plant Community*.
- Encroachment of eastern redcedar or Rocky Mountain juniper will shift this plant community to the *Conifer Plant Community*.

#### Prairie Sandreed/Little Bluestem/Sagewort/Yucca Plant Community

This plant community develops under moderate, season-long grazing by livestock. Vegetation is about 70-85 percent grasses and grass-like plants, 5-15 percent forbs, and 2-12 percent woody plants. Dominant grasses include prairie sandreed, little bluestem, sun sedge, and needlegrasses. Grasses and grass-likes of secondary importance include sideoats grama and sedge. Forbs commonly found in this plant community include sagewort, goldenrod, white prairie aster, dotted

gayfeather, and prairie coneflower. Yucca, plains pricklypear, and broom snakeweed are commonly found. Lead plant and eastern redcedar may also occur in this plant community.

When compared to the Bluestem/Prairie Sandreed/Yucca Plant Community, prairie sandreed, little bluestem, and sedges have increased. Big bluestem, sideoats grama, and plains muhly have decreased. Cheatgrass has invaded the plant community. Bare ground has also increased.

This plant community is unstable and subject to wind erosion. The biotic integrity of this plant community is usually intact. However, it can be at risk depending on how far a shift has occurred in plant composition toward blue grama and cheatgrass. The watershed is usually functioning. However, it can become at risk when cheatgrass and bare ground increases.

The following growth curve shows the estimated monthly percentages of total annual growth of the dominant species expected during an average year:

Growth curve number: SD6304

Growth curve name: Pierre Shale Plains, warm-season dominant, cool-season subdominant.

Growth curve description: Warm-season dominant, cool-season subdominant.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	3	7	18	25	25	15	7	1	0	0

Transitions or pathways leading to other plant communities are as follows:

- Prescribed grazing will result in a plant community very similar to the *Bluestem/Prairie Sandreed/Yucca Plant Community*.
- Encroachment of eastern redcedar or Rocky Mountain juniper will shift this plant community to the *Conifer Plant Community*.

### Conifer Plant Community

This plant community is the result of encroachment or lack of fire to control the juniper species. Eastern redcedar and/or Rocky Mountain juniper dominate the plant community. Understory vegetation is about 50-75 percent grasses and grass-like plants, 5-20 percent forbs, and 5-30 percent woody plants. The dominant grasses and grass-likes include little bluestem and sedges. Significant forbs include prairie coneflower, purple prairie clover, and goldenrod. Leadplant and yucca have decreased, but are still present.

Considerable bare ground may be present under the tree canopy. Where severe erosion has created clay dunes, they may be dominated by prairie sandreed. This community has lost some of its value for grazing wildlife and livestock. This plant community is susceptible to excessive erosion and excessive runoff due to the bare ground.

The following growth curve shows the estimated monthly percentages of total annual growth of the dominant species expected during an average year:

Growth curve number: SD6311

Growth curve name: Pierre Shale Plains, heavy conifer canopy.

Growth curve description: Mature eastern redcedar overstory.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	3	7	11	24	27	12	5	4	3	2	1

Transitions or pathways leading to other plant communities are as follows:

- Timber harvest and/or wildfire may shift this plant community back to a plant community resembling the *Bluestem/Prairie Sandreed/Yucca Plant Community*. The woody overstory will persist until removed by fire.

## **Ecological Site Interpretations**

### **Animal Community – Wildlife Interpretations**

-- Under Development --

**Bluestem/Prairie Sandreed/Yucca Plant Community:**

**Prairie Sandreed/Little Bluestem/Sagewort/Yucca Plant Community:**

**Conifer Plant Community:**

### Animal Preferences (Quarterly – 1,2,3,4<sup>†</sup>)

Common Name	Cattle	Sheep	Horses	Deer	Antelope	Bison	Elk
<b>Grasses and Grass-likes</b>							
big bluestem	U D P D	U D U U	U D P D	U D U U	U D U U	U D P D	U D P D
blue grama	U D P U	D P P D	U D P U	D P P D	D P P D	U D P U	U D P U
Dudley's rush	N N N N	N N N N	N N N N	N N N N	N N N N	N N N N	N N N N
little bluestem	U D D U	N D N N	U D D U	N D N N	N D N N	U D D U	U D D U
needleandthread	U D U D	N D N U	U D U D	N D N U	N D N U	U D U D	U D U D
needleleaf sedge	U D U D	U P N D	U D U D	U D U D	U D U D	U D U D	U D U D
plains muhly	U U D U	U U D U	U U D U	N N N N	N N N N	U U D U	U U D U
porcupine grass	U P U D	N D N U	U P U D	N D N U	N D N U	U P U D	U P U D
prairie sandreed	U D D U	U D U U	U D D U	U U D U	U U D U	U D D U	U D D U
sideoats grama	U D P U	U P D U	U D P U	U P D U	U P D U	U D P U	U D P U
sun sedge	U D U D	U P N D	U D U D	U D U D	U D U D	U D U D	U D U D
threadleaf sedge	U D U D	U P N D	U D U D	U D U D	U D U D	U D U D	U D U D
threeawn	N N N N	N N N N	N N N N	N N N N	N N N N	N N N N	N N N N
western wheatgrass	U P D U	N D N N	U P D U	N D N N	N D N N	U P D U	U P D U
<b>Forbs</b>							
American licorice	U U D U	N U U N	U U D U	N U U N	N U U N	U U D U	N U U N
American vetch	U D P U	U P P U	U D P U	U P P U	U P P U	U D P U	U P P U
catclaw sensitive briar	U D P U	U P P U	U D P U	U P P U	U P P U	U D P U	U P P U
cudweed sagewort	U U U U	U U D U	U U U U	U U D U	U U D U	U U U U	U U D U
dotted gayfeather	U U D U	U P P U	U U D U	U P P U	U P P U	U U D U	U P P U
eriogonum	U U D U	U U U U	U U D U	U U U U	U U U U	U U D U	U U U U
fleabane	U U U U	N U U N	U U U U	N U U N	N U U N	U U U U	N U U N
milkvetch	U U U U	U D U U	U U U U	U D U U	U D U U	U U U U	U D U U
prairie coneflower	U U D U	U P P U	U U D U	U P P U	U P P U	U U D U	U P P U
purple coneflower	U U D U	U P P U	U U D U	U P P U	U P P U	U U D U	U P P U
purple prairie clover	U D P U	U P P U	U D P U	U P P U	U P P U	U D P U	U P P U
scarlet gaura	U U U U	N U U N	U U U U	N U U N	N U U N	U U U U	N U U N
stemless hymenoxys	U U U U	N U U N	U U U U	N U U N	N U U N	U U U U	N U U N
stiff goldenrod	U U U U	N N U N	U U U U	N N U N	N N U N	U U U U	N N U N
stiff sunflower	U D P U	U D P U	U D P U	U D P U	U D P U	U D P U	U D P U
wavyleaf thistle	U U U U	N N N N	U U U U	N N N N	N N N N	U U U U	N N N N
western yarrow	U U U U	N U U N	U U U U	N U U N	N U U N	U U U U	N U U N
white prairie aster	U U D U	N N N N	U U D U	N N N N	N N N N	U U D U	N N N N
white prairie clover	U D P U	U P P U	U D P U	U P P U	U P P U	U D P U	U P P U
<b>Shrubs and Trees</b>							
broom snakeweed	N N N N	U U U U	N N N N	U U U U	U U U U	N N N N	U U U U
dwarf false indigo	U P D U	U P D U	U P D U	U P D U	U P D U	U P D U	U P D U
fringed sagewort	U U U U	U U U U	U U U U	U D D U	U P P D	U U U U	U U U D
leadplant	U P D U	U P D U	U P D U	U P D U	U P D U	U P D U	U P D U
plains pricklypear	N N N N	N N N N	N N N N	N N N N	N N N N	N N N N	N N N N
rose	U D D U	U D D U	U D D U	U D D U	U D D U	U D D U	U D D U
skunkbush sumac	D U U D	D U U D	D U U D	D U U D	D U U D	D U U D	D U U D
yucca	D N N D	D U U D	D N N D	D U U D	D U U D	D N N D	D U U D
eastern redcedar	U N N U	U N N U	U N N U	D U U D	U N N U	U N N U	U N N U
Rocky Mountain juniper	U N N U	U N N U	U N N U	D U U D	U N N U	U N N U	U N N U

N = not used; U = undesirable; D = desirable; P = preferred; T = toxic

<sup>†</sup> Quarters: 1 – Jan., Feb., Mar.; 2 – Apr., May, Jun.; 3 – Jul., Aug., Sep.; 4 – Oct., Nov., Dec.

## Animal Community – Grazing Interpretations

The following table lists annual, suggested initial stocking rates with average growing conditions. These are conservative estimates that should be used only as guidelines in the initial stages of conservation planning. Often, the current plant composition does not entirely match any particular plant community (as described in this ecological site description). Because of this, a resource inventory is necessary to document plant composition and production. More accurate carrying capacity estimates should eventually be calculated using the following stocking rate information along with animal preference data and actual stocking records, particularly when grazers other than cattle are involved. With consultation of the land manager, more intensive grazing management may result in improved harvest efficiencies and increased carrying capacity.

Plant Community	Average Annual Production (lbs./acre, air-dry)	Stocking Rate* (AUM/acre)
Bluestem/Prairie Sandreed/Yucca	1400	0.38
Prairie Sandreed/Little Bluestem/Sagewort/Yucca	1000	0.27
Conifer	600	0.16

\*Based on 912 lbs./acre (air-dry weight) per Animal Unit Month (AUM), and on 25 percent harvest efficiency (refer to USDA NRCS, National Range and Pasture Handbook).

Grazing by domestic livestock is one of the major income producing industries in the area. Rangeland in this area may provide yearlong forage. During the dormant period, the forage for livestock will likely be lacking protein to meet livestock requirements, and added protein will allow ruminants to better utilize the energy stored in grazed plant materials. A forage quality test (either directly or through fecal sampling) should be used to determine the level of supplementation needed.

## Hydrology Functions

Water is the principal factor limiting forage production on this site. This site is dominated by soils in hydrologic group D. Infiltration and runoff potential for this site varies from moderate to high depending on soil hydrologic group, slope and ground cover. In many cases, areas with greater than 75 percent ground cover have the greatest potential for high infiltration and lower runoff. An example of an exception would be where shortgrasses form a strong sod and dominate the site. Areas where ground cover is less than 50 percent have the greatest potential to have reduced infiltration and higher runoff (refer to Section 4, NRCS National Engineering Handbook for runoff quantities and hydrologic curves).

## Recreational Uses

This site provides hunting, hiking, photography, bird watching, and other opportunities. The wide varieties of plants that bloom from spring until fall have an esthetic value that appeals to visitors.

## Wood Products

Timber harvest of eastern redcedar may occur on localized areas of this site.

## Other Products

Seed harvest of native plant species can provide additional income on this site.

## Supporting Information

### Associated Sites

(R063AY011SD) – Clayey (R063AY012SD) – Thin Upland  
(R063AY010SD) – Loamy (R063AY018SD) – Dense Clay

### Similar Sites

(R063AY011SD) – Clayey [Less sideoats grama; higher production]  
(R063AY024SD) – Shallow [More needleandthread; less green needlegrass]  
(R063AY017SD) – Shallow Clay [cool-season dominant; slightly more productive]

### Inventory Data References

Information presented here has been derived from NRCS clipping data and other inventory data. Field observations from range trained personnel were also used. Those involved in developing this site include: April Boltjes, Range Management Specialist (RMS), NRCS; Stan Boltz, RMS, NRCS; Kent Cooley, Soil Scientist, NRCS; Rick Peterson, RMS, NRCS; and L. Michael Stirling, RMS, NRCS. No SCS-RANGE-417 clipping data collection forms have been recorded for this site.

### State Correlation

MLRA 63A lies entirely within SD, so no cross-state correlation has occurred.

### Field Offices/Counties

Dupree, SD	Ziebach	McIntosh, SD	Corson	Pierre, SD	Hughes/Stanley
Faith, SD	Meade	Mound City, SD	Campbell	Selby, SD	Walworth
Gettysburg, SD	Potter	Murdo, SD	Jones	Timber Lake, SD	Dewey
Kadoka, SD	Jackson	Onida, SD	Sully	Wall, SD	East Pennington
Kennebec, SD	Lyman	Philip, SD	Haakon	White River, SD	Mellette

### Relationship to Other Established Classifications

Level IV Ecoregions of the Conterminous United States: 43c – River Breaks and 43f – Subhumid Pierre Shale Plains.

### Other References

High Plains Regional Climate Center, University of Nebraska, 830728 Chase Hall, Lincoln, NE 68583-0728. (<http://www.hprcc.unl.edu/>)

USDA, NRCS. National Water and Climate Center, 101 SW Main, Suite 1600, Portland, OR 97204-3224. (<http://www.wcc.nrcs.usda.gov/>)

USDA, NRCS. National Range and Pasture Handbook, September 1997

USDA, NRCS. National Soil Information System, Information Technology Center, 2150 Centre Avenue, Building A, Fort Collins, CO 80526. (<http://nasis.nrcs.usda.gov/>)

USDA, NRCS. 2001. The PLANTS Database, Version 3.1 (<http://plants.usda.gov/>). National Plant Data Center, Baton Rouge, LA 70874-4490 USA

USDA, NRCS, Various Published Soil Surveys

### Site Description Approval

\_\_\_\_\_  
SD, State Range Management Specialist

\_\_\_\_\_  
Date