

United States Department of Agriculture Natural Resources Conservation Service

Ecological Site Description

Site Type: Rangeland

Site Name: Thin Claypan

Site ID: R063AY015SD

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



Physiographic Features

This site occurs on nearly level to gently undulating or rolling sedimentary uplands.

Landform: alluvial fan, alluvial flat, terrace, hill

Aspect: N/A

	<u>Minimum</u>	<u>Maximum</u>
Elevation (feet):	1600	2700
Slope (percent):	0	9
Water Table Depth (inches):	None	None
Flooding:		
Frequency:	None	None
Duration:	None	None
Ponding:		
Depth (inches):	None	None
Frequency:	None	None
Duration:	None	None
Runoff Class:	High	Very 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>
Frost-free period (days):	126	149
Freeze-free period (days):	149	165
Mean Annual Precipitation (inches):	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 common features of soils in this site are clay or silty clay textured subsoils and slopes of zero to nine percent. The soils in this site are moderately well to well drained and formed in residuum derived from shale. The silt loam to silty clay loam surface layer is one to three inches thick. The extremely hard clayey Btn horizon has round-topped or “bun shaped” columnar or prismatic structured subsoil. These Btn horizons are high in sodium. The soils have a very slow infiltration rate. Wet surface compaction can occur with heavy traffic. This site should show slight to no evidence of rills, wind scoured areas, or pedestalled plants. The soil surface is stable and intact.

These soils are mainly susceptible to water erosion. The hazard of water erosion increases on slopes greater than about four percent. Loss of 30 percent or more of the surface layer of the soils on this site can result in a shift in species composition and/or production.

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

Parent Material Kind: residuum
Parent Material Origin: shale
Surface Texture: silt loam, silty clay loam
Surface Texture Modifier: none
Subsurface Texture Group: clayey
Surface Fragments ≤3" (% Cover): 0
Surface Fragments >3" (%Cover): 0
Subsurface Fragments ≤3" (% Volume): 0
Subsurface Fragments >3" (% Volume): 0

	<u>Minimum</u>	<u>Maximum</u>
Drainage Class:	moderately well	well
Permeability Class:	very slow	very slow
Depth to Bedrock (inches):	20	60
Electrical Conductivity (mmhos/cm)*:	0	16
Sodium Absorption Ratio*:	0	25
Soil Reaction (1:1 Water)*:	5.6	9.0
Soil Reaction (0.1M CaCl₂)*:	NA	NA
Available Water Capacity (inches)*:	3	5
Calcium Carbonate Equivalent (percent)*:	0	15

*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.

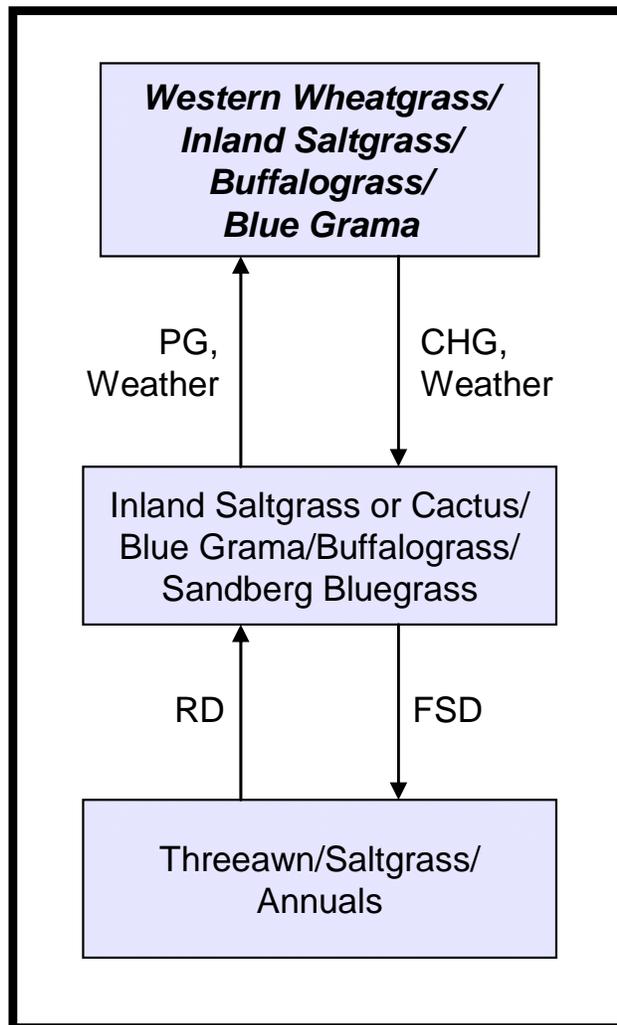
In association with this site are also areas of slick spots that usually have considerably more bare ground, and are typically dominated by cactus. Slick spots are bare ground areas that are affected by high sodium concentrations. The soil factors are the dominant influence and grazing management is not necessarily the primary influence of these areas. These areas can occur as a complex with this site, sometimes being difficult to differentiate between the two.

Interpretations are primarily based on the Western Wheatgrass/Inland Saltgrass/Buffalograss/Blue Grama 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 diagram illustrates the common plant communities and vegetation states commonly occurring on the site and the transition pathways between communities and states. The ecological processes will be discussed in more detail in the plant community descriptions following the diagram.

Plant Communities and Transitional Pathways



CHG – Continuous heavy grazing (heavy levels of grazing of a unit during most or all of the growing season); **FSD** – Frequent and severe defoliation; **PG** – Prescribed grazing (planned, controlled harvest of vegetation with grazing or browsing animals – see FOTG, Section IV, 528); **RD** – Removal of disturbance; **Weather** – Significantly below or above average precipitation.

Plant Community Composition and Group Annual Production

COMMON/GROUP NAME	SCIENTIFIC NAME	SYMBOL	Western Wheatgrass/Inland Saltgrass/ Buffalograss/Blue Grama		
			Group	lbs./acre	% Comp
GRASSES & GRASS-LIKES				880 - 990	80 - 90
WHEATGRASS			1	110 - 330	10 - 30
western wheatgrass	Pascopyrum smithii	PASM	1	110 - 330	10 - 30
SHORT WARM-SEASON GRASSES			2	165 - 330	15 - 30
blue grama	Bouteloua gracilis	BOGR2	2	55 - 275	5 - 25
inland saltgrass	Distichlis spicata	DISP	2	55 - 275	5 - 25
buffalograss	Bouteloua dactyloides	BODA2	2	55 - 220	5 - 20
COOL-SEASON GRASSES			3	55 - 220	5 - 20
green needlegrass	Nassella viridula	NAVI4	3	11 - 110	1 - 10
needleandthread	Hesperostipa comata ssp. comata	HECOC8	3	11 - 110	1 - 10
Sandberg bluegrass	Poa secunda	POSE	3	0 - 55	0 - 5
prairie junegrass	Koeleria macrantha	KOMA	3	11 - 55	1 - 5
OTHER NATIVE GRASSES			4	22 - 55	2 - 5
sideoats grama	Bouteloua curtipendula	BOCU	4	0 - 55	0 - 5
alkali sacaton	Sporobolus airoides	SPAI	4	0 - 55	0 - 5
tumblegrass	Schedonnardus paniculatus	SCPA	4	0 - 11	0 - 1
dropseed	Sporobolus spp.	SPORO	4	0 - 22	0 - 2
other grasses		2GRAM	4	11 - 55	1 - 5
GRASS-LIKES			5	11 - 55	1 - 5
needleleaf sedge	Carex duriuscula	CADU6	5	11 - 55	1 - 5
threadleaf sedge	Carex filifolia	CAFI	5	0 - 33	0 - 3
other grass-likes		2GL	5	0 - 33	0 - 3
FORBS			7	55 - 110	5 - 10
biscuitroot	Lomatium spp.	LOMAT	7	0 - 11	0 - 1
cudweed sagewort	Artemisia ludoviciana	ARLU	7	0 - 11	0 - 1
deathcamas	Zigadenus spp.	ZIGAD	7	0 - 11	0 - 1
mealy goosefoot	Chenopodium incanum	CHIN2	7	0 - 11	0 - 1
Nuttall's violet	Viola nuttallii	VINU2	7	0 - 11	0 - 1
plantain	Plantago spp.	PLANT	7	0 - 11	0 - 1
povertyweed	Iva axillaris	IVAX	7	0 - 11	0 - 1
rush skeletonweed	Lygodesmia juncea	LYJU	7	0 - 11	0 - 1
scarlet globemallow	Sphaeralcea coccinea	SPCO	7	0 - 11	0 - 1
slimflower scurfpea	Psoralidium tenuiflorum	PSTE5	7	11 - 22	1 - 2
spiny phlox	Phlox hoodii	PHHO	7	0 - 11	0 - 1
western dock	Rumex aquaticus	RUAQ	7	0 - 11	0 - 1
white prairie aster	Symphotrichum falcatum	SYFA	7	11 - 22	1 - 2
wild onion	Allium spp.	ALLIU	7	0 - 11	0 - 1
wild parsley	Musineon divaricatum	MUDI	7	0 - 11	0 - 1
woolly Indianwheat	Plantago patagonica	PLPA2	7	0 - 11	0 - 1
native forbs		2FN	7	0 - 22	0 - 2
SHRUBS			8	22 - 110	2 - 10
brittle cactus	Opuntia fragilis	OPFR	8	11 - 55	1 - 5
broom snakeweed	Gutierrezia sarothrae	GUSA2	8	0 - 22	0 - 2
fringed sagewort	Artemisia frigida	ARFR4	8	11 - 33	1 - 3
plains pricklypear	Opuntia polyacantha	OPPO	8	0 - 33	0 - 3
rubber rabbitbrush	Ericameria nauseosa	ERNA10	8	0 - 22	0 - 2
saltbush	Atriplex spp.	ATRIP	8	0 - 22	0 - 2
silver sagebrush	Artemisia cana	ARCA13	8	0 - 33	0 - 3
winterfat	Krascheninnikovia lanata	KRLA2	8	0 - 11	0 - 1
other shrubs		2SHRUB	8	0 - 22	0 - 2

Annual Production lbs./acre		LOW	RV	HIGH
GRASSES & GRASS-LIKES		530 -	952	-1370
FORBS		50 -	83	-115
SHRUBS		20 -	66	-115
TOTAL		600 -	1100	-1600

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	Western Wheatgrass/Inland Salt-grass/Bufalograss/Blue Grama			Inland Saltgrass or Cactus/Blue Grama/Bufalograss/Sandberg Bluegrass			Threeawn/Saltgrass/Annuals		
		Grp	lbs./acre	% Comp	Grp	lbs./acre	% Comp	Grp	lbs./acre	% Comp
GRASSES & GRASS-LIKES			880 - 990	80 - 90		520 - 680	65 - 85		300 - 450	50 - 75
WHEATGRASS		1	110 - 330	10 - 30	1	0 - 80	0 - 10	1	0 - 18	0 - 3
western wheatgrass	PASM	1	110 - 330	10 - 30	1	0 - 80	0 - 10	1	0 - 18	0 - 3
SHORT WARM-SEASON GRASSES		2	165 - 330	15 - 30	2	160 - 440	20 - 55	2	120 - 300	20 - 50
blue grama	BOGR2	2	55 - 275	5 - 25	2	80 - 240	10 - 30	2	6 - 42	1 - 7
inland saltgrass	DISP	2	55 - 275	5 - 25	2	40 - 280	5 - 35	2	30 - 120	5 - 20
bufalograss	BODA2	2	55 - 220	5 - 20	2	16 - 120	2 - 15	2	0 - 24	0 - 4
threeawn	ARIST				2	8 - 64	1 - 8	2	90 - 240	15 - 40
COOL-SEASON GRASSES		3	55 - 220	5 - 20	3	24 - 80	3 - 10	3	0 - 18	0 - 3
green needlegrass	NAV14	3	11 - 110	1 - 10	3	0 - 16	0 - 2			
needleandthread	HECOC8	3	11 - 110	1 - 10	3	0 - 24	0 - 3			
Sandberg bluegrass	POSE	3	0 - 55	0 - 5	3	16 - 80	2 - 10	3	0 - 18	0 - 3
prairie junegrass	KOMA	3	11 - 55	1 - 5	3	8 - 32	1 - 4	3	0 - 12	0 - 2
OTHER NATIVE GRASSES		4	22 - 55	2 - 5	4	0 - 24	0 - 3	4	0 - 18	0 - 3
sideoats grama	BOCU	4	0 - 55	0 - 5						
alkali sacaton	SPAI	4	0 - 55	0 - 5						
tumblegrass	SCPA	4	0 - 11	0 - 1	4	0 - 24	0 - 3	4	0 - 12	0 - 2
dropseed	SPORO	4	0 - 22	0 - 2	4	0 - 24	0 - 3	4	0 - 6	0 - 1
other grasses	ZGRAM	4	11 - 55	1 - 5	4	0 - 24	0 - 3	4	0 - 12	0 - 2
GRASS-LIKES		5	11 - 55	1 - 5	5	8 - 24	1 - 3	5	0 - 12	0 - 2
needleleaf sedge	CADU6	5	11 - 55	1 - 5	5	8 - 24	1 - 3	5	0 - 12	0 - 2
threadleaf sedge	CAFI	5	0 - 33	0 - 3	5	0 - 16	0 - 2			
other grass-likes	ZGL	5	0 - 33	0 - 3	5	0 - 16	0 - 2			
NON-NATIVE GRASSES		6			6	8 - 40	1 - 5	6	6 - 48	1 - 8
cheatgrass	BSTE				6	8 - 40	1 - 5	6	6 - 48	1 - 8
bluegrass	POA				6	0 - 24	0 - 3			
FORBS		7	55 - 110	5 - 10	7	40 - 80	5 - 10	7	60 - 210	10 - 35
biscuitroot	LOMAT	7	0 - 11	0 - 1						
cudweed sagewort	ARLU	7	0 - 11	0 - 1	7	0 - 8	0 - 1	7	6 - 18	1 - 3
curlycup gumweed	GRSQ				7	0 - 16	0 - 2	7	6 - 18	1 - 3
deathcamas	ZIGAD	7	0 - 11	0 - 1	7	0 - 8	0 - 1	7	0 - 6	0 - 1
fetid marigold	DYPA							7	12 - 120	2 - 20
mealy goosefoot	CHIN2	7	0 - 11	0 - 1	7	0 - 8	0 - 1	7	0 - 6	0 - 1
Nuttall's violet	VINU2	7	0 - 11	0 - 1						
plantain	PLANT	7	0 - 11	0 - 1	7	0 - 8	0 - 1			
povertyweed	IVAX	7	0 - 11	0 - 1	7	0 - 8	0 - 1	7	0 - 6	0 - 1
rush skeletonweed	LYJU	7	0 - 11	0 - 1	7	0 - 8	0 - 1			
scarlet globemallow	SPCO	7	0 - 11	0 - 1						
slimflower scurfpea	PSTE5	7	11 - 22	1 - 2	7	0 - 8	0 - 1			
spiny phlox	PHHO	7	0 - 11	0 - 1	7	0 - 8	0 - 1	7	0 - 6	0 - 1
sweetclover	MELIL				7	0 - 24	0 - 3	7	0 - 24	0 - 4
western dock	RUAQ	7	0 - 11	0 - 1						
western salsify	TRDU				7	0 - 8	0 - 1	7	0 - 6	0 - 1
white prairie aster	SYFA	7	11 - 22	1 - 2	7	8 - 16	1 - 2	7	0 - 6	0 - 1
wild onion	ALLIU	7	0 - 11	0 - 1						
wild parsley	MUDI	7	0 - 11	0 - 1						
woolly Indianwheat	PLPA2	7	0 - 11	0 - 1	7	8 - 16	1 - 2	7	6 - 12	1 - 2
native forbs	2FN	7	0 - 22	0 - 2	7	0 - 16	0 - 2	7	0 - 18	0 - 3
introduced forbs	2FI				7	0 - 24	0 - 3	7	12 - 120	2 - 20
SHRUBS		8	22 - 110	2 - 10	8	40 - 200	5 - 25	8	12 - 90	2 - 15
brittle cactus	OPFR	8	11 - 55	1 - 5	8	8 - 120	1 - 15	8	12 - 48	2 - 8
broom snakeweed	GUSA2	8	0 - 22	0 - 2	8	8 - 40	1 - 5	8	0 - 18	0 - 3
fringed sagewort	ARFR4	8	11 - 33	1 - 3	8	8 - 40	1 - 5	8	6 - 18	1 - 3
plains pricklypear	OPPO	8	0 - 33	0 - 3	8	8 - 64	1 - 8	8	0 - 24	0 - 4
rubber rabbitbrush	ERNA10	8	0 - 22	0 - 2	8	0 - 8	0 - 1			
saltbush	ATRIP	8	0 - 22	0 - 2						
silver sagebrush	ARCA13	8	0 - 33	0 - 3	8	0 - 8	0 - 1			
winterfat	KRLA2	8	0 - 11	0 - 1						
other shrubs	2SHRUB	8	0 - 22	0 - 2	8	0 - 24	0 - 3	8	0 - 12	0 - 2
Annual Production lbs./acre			LOW RV HIGH		LOW RV HIGH		LOW RV HIGH		LOW RV HIGH	
GRASSES & GRASS-LIKES			530 - 952 - 1370		330 - 620 - 910		235 - 414 - 590			
FORBS			50 - 83 - 115		35 - 60 - 85		55 - 135 - 215			
SHRUBS			20 - 66 - 115		35 - 120 - 205		10 - 51 - 95			
TOTAL			600 - 1100 - 1600		400 - 800 - 1200		300 - 600 - 900			

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.

Western Wheatgrass/Inland Saltgrass/Buffalograss/Blue Grama Plant Community

Interpretations are based primarily on the Western Wheatgrass/Inland Saltgrass/Buffalograss/Blue Grama Plant Community, which is considered to be climax. This site evolved with grazing by large herbivores and occasional prairie fires. This plant community can be found on areas having a history of proper grazing management, including adequate recovery periods between grazing events. The potential vegetation is about 80 percent grasses or grass-like plants, 10 percent forbs, and 10 percent shrubs. The wheatgrasses dominate the plant community, while inland saltgrass, blue grama, and buffalograss are also prevalent. Other grasses and grass-like plants occurring on the site include green needlegrass, needleandthread, Sandberg bluegrass, and sedges. Significant forbs include slimflower scurfpea, scarlet globemallow, cudweed sagewort, and white prairie aster. Shrubs occurring in this plant community include cactus, saltbush, and fringed sagewort.

This plant community is well adapted to the Northern Great Plains climatic conditions. Individual species can vary greatly in production depending on growing conditions (timing and amount of precipitation and temperature). Community dynamics, nutrient cycle, water cycle, and energy flow are functioning at the sites potential. Plant litter is properly distributed with some movement offsite and natural plant mortality is low. Low to moderate available water capacity coupled with high accumulations of sodium and slow permeability strongly influences the soil-water-plant relationships.

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

Growth curve number: SD6302

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

Growth curve description: Cool-season dominant, warm-season subdominant.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	3	10	23	34	15	6	5	4	0	0

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

- Continuous heavy grazing will convert the plant community to the *Inland Saltgrass or Cactus/Blue Grama/Buffalograss/Sandberg Bluegrass Community*. The mid-grasses will be replaced by blue grama, buffalograss, and saltgrass. Cactus becomes more prevalent. Continuous overgrazing will cause a considerable amount of bare ground during dry cycles and an increase in weeds during wet cycles.

Inland Saltgrass or Cactus/Blue Grama/Buffalograss/Sandberg Bluegrass Plant Community

This plant community can develop from the adverse effects of continuous heavy grazing and/or annual, spring seasonal grazing. Shortgrasses and cactus increase to dominate the site and annual production decreases dramatically. Lack of litter and short plant heights result in higher soil temperatures, poor water infiltration rates, and high evaporation, which gives blue grama a competitive advantage over cool-season mid-grasses. This plant community can occur throughout the pasture, on spot grazed areas, and around water sources where season-long grazing patterns occur. Inland saltgrass, blue grama, and cactus are the dominant species. Other grasses and grass-like occurring include buffalograss, Sandberg bluegrass, western wheatgrass, sedge, and annual grasses. Forbs such as cudweed sagewort and white prairie aster may also be present. Some nonnative species will begin to invade this plant community including western salsify, sweetclover, and cheatgrass. There is usually more than 25 percent bare ground.

This plant community is quite resilient. The thick sod and competitive advantage prevents other species from establishing. This plant community is less productive than the Western Wheatgrass/Inland Saltgrass/Buffalograss/Blue Grama Plant Community. Runoff increases and infiltration will decrease. Soil erosion will be minimal due to the sod forming habit of blue grama.

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

Growth curve number: SD6305

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

Growth curve description: Warm-season dominant.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	2	5	15	25	30	15	7	1	0	0

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

- Prescribed grazing and favorable climatic conditions, which allows for adequate plant recovery time, can shift this plant community back to the *Western Wheatgrass/Inland Saltgrass/Buffalograss/Blue Grama Plant Community*. Periods of nonuse or deferment may be a management option to reach the climax plant community.

Threeawn/Saltgrass/Annuals Plant Community

This community develops from frequent and severe defoliation, typically by black-tailed prairie dogs. These areas are usually small in size as they are not often chosen by prairie dogs for burrowing. The vegetation is highly variable, but often dominated by threeawn. Erosion is typically higher than usual.

The following growth curve is an estimate of the 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:

- Removal of disturbance should lead to the *Inland Saltgrass or Cactus/Blue Grama/Buffalograss/Sandberg Bluegrass Plant Community*.

Ecological Site Interpretations

Animal Community – Wildlife Interpretations

-- Under Development --

Western Wheatgrass/Inland Saltgrass/Buffalograss/Blue Grama Plant Community:

Inland Saltgrass or Cactus/Blue Grama/Buffalograss/Sandberg Bluegrass Plant Community:

Threeawn/Saltgrass/Annuals Plant Community:

Animal Preferences (Quarterly – 1,2,3,4[†])

Common Name	Cattle	Sheep	Horses	Deer	Antelope	Bison	Elk
Grasses & Grass-Likes							
alkali sacaton	U D D U	N U N N	U D D U	N U N N	N U N N	U D D U	U D D U
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
buffalograss	U U D U	N U D U	U U D U	N U D U	N U D U	U U D U	U U D U
dropseed	N U N N	N U N N	N U N N	N U N N	N U N N	N U N N	N U N N
foxtail barley	U D N N	N P N N	U D N N	N P N N	N P N N	U D N N	U D N N
green needlegrass	U P U D	N P N P	U P U D	N P N P	N P N P	U P U D	U P U D
inland saltgrass	N U U N	N N N N	N U U N	N N N N	N N N N	N U U N	N U U N
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
prairie junegrass	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
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
Sandberg bluegrass	N U N N	N D N N	N U N N	N D N N	N D N N	N U N N	N U N N
thickspike wheatgrass	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
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
tumblegrass	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
Forbs							
biscuitroot	U D U U	U D D U	U D U U	U D D U	U D D U	U D U U	U D D U
cutweed 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
deathcamas	T T T T	T T T T	T T T T	T T T T	T T T T	T T T T	T T T T
mealy goosefoot	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
Nuttall's violet	N U N N	N U N N	N U N N	N U N N	N U N N	N U N N	N U N N
plantain	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
povertyweed	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
rush skeletonweed	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
scarlet globemallow	U U D U	U D D U	U U D U	U D D U	U D D U	U U D U	U D D U
slimflower scurfpea	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
spiny phlox	U D U U	U P P U	U D U U	U P P U	U P P U	U D U U	U P P U
textile onion	U D U U	U D D U	U D U U	U D D U	U D D U	U D U U	U D D U
western dock	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
wild parsley	U D U U	U D D U	U D U U	U D D U	U D D U	U D U U	U D D U
woolly Indianwheat	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
Shrubs							
brittle cactus	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
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
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
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
rubber rabbitbrush	N N N N	D U U D	N N N N	D U U D	U D D U	N N N N	D U U U
saltbush	P D D P	P D D P	P D D P	P D D P	P D D P	P D D P	P D D P
silver sagebrush	D U U D	D U U D	D U U D	P D D P	P P P P	D U U D	D U U D
winterfat	P P P P	P P P P	P P P P	P P P P	P P P P	P P P P	P P P P

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

[†] 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)
Western Wheatgrass/Inland Saltgrass/Buffalograss/Blue Grama	1100	0.30
Inland Saltgrass or Cactus/Blue Grama/Buffalograss/Sandberg Bluegrass	800	0.22
Threeawn/Saltgrass/Annuals	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

No appreciable wood products are typically present on this site.

Other Products

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

Supporting Information

Associated Sites

Clayey (R063AY011SD), Claypan (R063AY013SD), Dense Clay (R063AY018SD)

Similar Sites

(063AY011SD) – Clayey [more green needlegrass; higher production]

(063AY013SD) – Claypan [more western wheatgrass and green needlegrass; higher production]

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.

<u>Data Source</u>	<u>Number of Records</u>	<u>Sample Period</u>	<u>State</u>	<u>County</u>
SCS-RANGE-417	1	1982	SD	Jackson

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