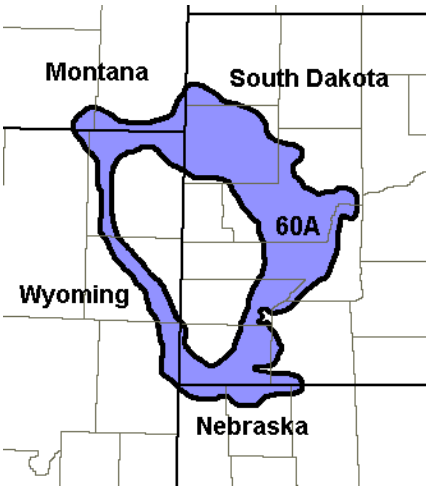
United States Department of Agriculture
Natural Resources Conservation Service

Ecological Site Description



Site Type: Rangeland

Site Name: Saline Lowland

Site ID: R060AY007SD

Major Land Resource Area: 60A – Pierre Shale Plains

Physiographic Features

This site normally occurs on nearly level to gently sloping uplands and river valleys.

Landform: alluvial fan, flood plain **Aspect:** N/A

	Minimum	Maximum
Elevation (feet):	2500	4300
Slope (percent):	0	6
Water Table Depth (inches):	0	36
Flooding:		
Frequency:	Rare	Frequent
Duration:	Very Brief	Brief
Ponding:		
Depth (inches):	0	0
Frequency:	None	None
Duration:	None	None
Runoff Class:	Medium	Very high

Climatic features

The climate in this MLRA is typical of the drier portions of the Northern Great Plains where sagebrush steppes to the west yield to grassland steppes to the east. Annual precipitation ranges from 13 to 18 inches per year, with most occurring during the growing season. Temperatures show a wide range between summer and winter and between daily maximums and minimums, due to the high elevation and dry air, which permits rapid incoming and outgoing radiation. Cold air outbreaks from Canada in winter move rapidly from northwest to southeast and account for extreme minimum temperatures. Chinook winds may occur in winter and bring rapid rises in temperature. Extreme storms may occur during the winter, but most severely affect ranch operations during late winter and spring. The normal average annual temperature is about 46° F. January is the coldest month with average temperatures ranging from about 19° F (Moorcroft CAA, WY) to about 22° F (Belle Fourche, SD). July is the warmest month with temperatures averaging from about 70° F (Moorcroft CAA, WY) to about 72° F (Belle Fourche, SD). The range of normal average monthly temperatures between the coldest and warmest months is about 51° F. 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 can continue to early or mid September. Green up of cool season plants may occur in September and October when adequate soil moisture is present.

	Minimum	Maximum
Frost-free period (days):	122	129
Freeze-free period (days):	145	152
Mean Annual Precipitation (inches):	13	18

Average Monthly Precipitation (inches) and Temperature (ºF):

	Precip. Min.	Precip. Max	Temp. Min.	Temp. Max.
January	0.32	0.43	7.1	34.1
February	0.44	0.57	12.6	40.1
March	0.65	0.94	19.7	46.5
April	1.43	1.72	29.4	60.2
May	2.45	3.19	39.7	70.6
June	2.34	3.38	48.5	80.1
July	1.60	2.78	54.8	88.0
August	1.24	1.76	53.1	87.7
September	1.01	1.50	42.3	77.0
October	0.90	1.11	31.4	64.9
November	0.40	0.61	19.8	47.5
December	0.40	0.48	10.2	38.0

Climate Stations		Period	
Station ID	**Location or Name**	**From**	**To**
SD0236	Ardmore 2 N	1948	1999
SD0559	Belle Fourche	1948	1999
SD1124	Buffalo Gap	1951	1999
WY6395	Moorcroft CAA	1948	1998
WY9207	Upton 13 SW	1949	1998

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

Influencing Water Features

Wetland Description:	**System**	**Subsystem**	**Class**	**Sub-class**
Cowardin, et. al., 1979	Palustrine	N/A	Emergent Wetland	Persistent

Representative Soil Features

The soils of this site are deep and very deep poorly drained soils formed in alluvium overlying clay shale, soft sandstone or stratified alluvium. Layers of the soil most influential to the plant community vary from 3 to 6 inches thick. These soils have slow to very slow permeability and are moderately to strongly saline. Higher soluble salt concentrations may be found in the subsoil. The surface soil will be highly variable and vary from 2 to 8 inches in thickness. The surface texture is silty clay or silty clay loam. A fluctuating water table occurs in these areas and ranges from 0 to 3 feet. The water table is within reach of plants during most of the growing season. These areas are subject to occasional overflow. This site should show slight to moderate evidence of rills, wind scoured areas and/or pedestalled plants. Water flow paths are somewhat continuous, but irregular in appearance with few debris dams or vegetative barriers.

More information can be found in the various soil survey reports. Contact the local USDA Service Center for soil survey reports that include more detail specific to your location.

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

	Minimum	Maximum
Drainage Class:	poorly	somewhat poorly
Permeability Class:	very slow	slow
Depth (inches):	40	80
Electrical Conductivity (mmhos/cm)*:	4	16
Sodium Absorption Ratio*:	5	13
Soil Reaction (1:1 Water)*:	6.6	9.0
Soil Reaction (0.1M CaCl2)*:	NA	NA
Available Water Capacity (inches)*:	1	6.2
Calcium Carbonate Equivalent (percent)*:	0	10

* - These attributes represent from 0-40 inches or to the first restrictive layer.

Plant Communities

Ecological Dynamics of the Site:

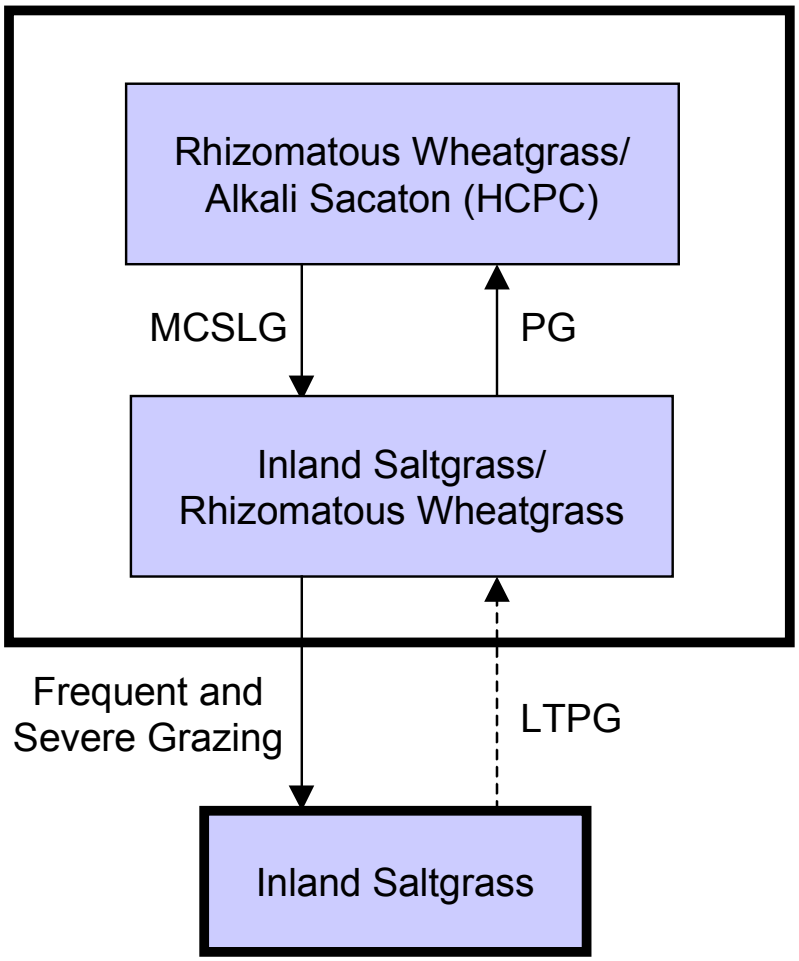
This site developed under Northern Great Plains climatic conditions, natural influences of large herbivores, occasional fire, and other biotic and abiotic factors that typically influence soil/site development. Changes will occur in the plant communities due to short-term weather variations, impacts 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. Shrubs such as greasewood and rubber rabbitbrush will occur in higher amounts on the western portions of where this site occurs.

As this site deteriorates, species such as inland saltgrass and foxtail barley (and greasewood in the western portions of the MLRA) increase, and annual species may invade the site. Grasses such as alkali sacaton, rhizomatous wheatgrasses, and Nuttall's alkaligrass will decrease in frequency and production. The high salt content of the soils greatly influences the plant species present. Plant vigor can vary on a year-to-year basis in relation to current precipitation amounts, which influences the translocation of salts in the soil profile. Typically only salt tolerant plants are found on this site.

The plant community upon which interpretations are primarily based is the Historic Climax Plant Community (HCPC). The HCPC has been determined by studying 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



Frequent and Severe Grazing - frequent and severe utilization of the cool-season mid grasses during the growing season; **HCPC** - Historic Climax Plant Community; **LTPG** - long-term prescribed grazing; **MCSLG** - moderate, continuous season-long grazing; **PG** - prescribed grazing (proper stocking rates with adequate recovery periods during the growing season).

Plant Community Composition and Group Annual Production

			Rhizomatous Wheatgrass/ Alkali Sacaton (HCPC)		
COMMON/GROUP NAME	**SCIENTIFIC NAME**	**SYMBOL**	**Group**	**lbs./acre**	**% Comp**
GRASSES & GRASS-LIKES				*1300 - 1800*	*65 - 90*
RHIZOMATOUS WHEATGRASSES			**1**	**400 - 800**	**20 - 40**
western wheatgrass	Pascopyrum smithii	PASM	1	400 - 800	20 - 40
thickspike wheatgrass	Elymus lanceolatus ssp. lanceolatus	ELLAL	1	400 - 800	20 - 40
Montana wheatgrass	Elymus albicans	ELAL7	1	100 - 200	5 - 10
CORDGRASS			**2**	**200 - 600**	**10 - 30**
alkali cordgrass	Spartina gracilis	SPGR	2	200 - 600	10 - 30
prairie cordgrass	Spartina pectinata	SPPE	2	200 - 600	10 - 30
SACATON			**3**	**200 - 500**	**10 - 25**
alkali sacaton	Sporobolus airoides	SPAI	3	200 - 500	10 - 25
OTHER GRASSES AND GRASS-LIKES			**4**	**200 - 400**	**10 - 20**
alkali bluegrass	Poa juncifolia	POJU	4	40 - 100	2 - 5
Nuttall's alkaligrass	Puccinellia nuttalliana	PUNU2	4	200 - 400	10 - 20
slender wheatgrass	Elymus trachycaulus ssp. trachycaulus	ELTRT	4	0 - 100	0 - 5
bottlebrush squirreltail	Elymus elymoides	ELEL5	4	0 - 100	0 - 5
inland saltgrass	Distichlis spicata	DISP	4	100 - 300	5 - 15
sedge	Carex spp.	CAREX	4	20 - 100	1 - 5
rush	Juncus spp.	JUNCU	4	0 - 100	0 - 5
spikerush	Eleocharis spp.	ELEOC	4	0 - 100	0 - 5
bulrush	Schoenoplectus spp.	SCHOE6	4	0 - 100	0 - 5
foxtail barley	Hordeum jubatum	HOJU	4	0 - 100	0 - 5
FORBS			*6*	*100 - 200*	*5 - 10*
American licorice	Glycyrrhiza lepidota	GLLE3	6	0 - 100	0 - 5
annual marshelder	Iva annua	IVAN2	6	0 - 100	0 - 5
aster	Aster spp.	ASTER	6	0 - 100	0 - 5
giant sumpweed	Iva xanthifolia	IVXA	6	0 - 100	0 - 5
povertyweed	Iva axillaris	IVAX	6	0 - 100	0 - 5
Pursh seepweed	Suaeda calceoliformis	SUCA2	6	0 - 100	0 - 5
red saltwort	Salicornia rubra	SARU	6	0 - 100	0 - 5
SHRUBS			*7*	*100 - 400*	*5 - 20*
black greasewood	Sarcobatus vermiculatus	SAVE4	7	0 - 200	0 - 10
fourwing saltbush	Atriplex canescens	ATCA2	7	0 - 200	0 - 10
Gardner's saltbush	Atriplex gardneri	ATGA	7	0 - 200	0 - 10
rubber rabbitbrush	Ericameria nauseosa	ERNA10	7	0 - 100	0 - 5
other shrubs		2SHRUB	7	0 - 100	0 - 5
TREES			*8*	*0 - 100*	*0 - 5*
plains cottonwood	Populus deltoides ssp. monilifera	PODEM	8	0 - 100	0 - 5

Annual Production lbs./acre	LOW	RV	HIGH
GRASSES & GRASS-LIKES	1310 -	1550	- 1865
FORBS	95 -	150	- 205
SHRUBS	95 -	250	- 425
TREES	0 -	50	- 105
TOTAL	1500 -	2000	- 2600

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

		Rhizomatous Wheatgrass/ Alkali Sacaton (HCPC)			Inland Saltgrass/ Rhizomatous Wheatgrass			Inland Saltgrass		
COMMON/GROUP NAME	**SYMBOL**	**Grp**	**lbs./acre**	**% Comp**	**Grp**	**lbs./acre**	**% Comp**	**Grp**	**lbs./acre**	**% Comp**
GRASSES & GRASS-LIKES			*1300 - 1800*	*65 - 90*		*660 - 880*	*60 - 80*		*540 - 720*	*60 - 80*
RHIZOMATOUS WHEATGRASSES		**1**	**400 - 800**	**20 - 40**	**1**	**165 - 330**	**15 - 30**	**1**	**0 - 90**	**0 - 10**
western wheatgrass	PASM	1	400 - 800	20 - 40	1	165 - 330	15 - 30	1	0 - 90	0 - 10
thickspike wheatgrass	ELLAL	1	400 - 800	20 - 40	1	165 - 330	15 - 30			
Montana wheatgrass	ELAL7	1	100 - 200	5 - 10	1	22 - 88	2 - 8			
CORDGRASS		**2**	**200 - 600**	**10 - 30**	**2**	**55 - 165**	**5 - 15**	**2**		
alkali cordgrass	SPGR	2	200 - 600	10 - 30	2	55 - 165	5 - 15			
prairie cordgrass	SPPE	2	200 - 600	10 - 30	2	55 - 165	5 - 15			
SACATON		**3**	**200 - 500**	**10 - 25**	**3**	**0 - 55**	**0 - 5**	**3**		
alkali sacaton	SPAI	3	200 - 500	10 - 25	3	0 - 55	0 - 5			
OTHER GRASSES & GRASS-LIKES		**4**	**200 - 400**	**10 - 20**	**4**	**275 - 440**	**25 - 40**	**4**	**360 - 630**	**40 - 70**
alkali bluegrass	POJU	4	40 - 100	2 - 5	4	33 - 88	3 - 8	4	45 - 90	5 - 10
Nuttall's alkaligrass	PUNU2	4	200 - 400	10 - 20						
slender wheatgrass	ELTRT	4	0 - 100	0 - 5						
bottlebrush squirreltail	ELEL5	4	0 - 100	0 - 5	4	0 - 55	0 - 5	4	0 - 45	0 - 5
inland saltgrass	DISP	4	100 - 300	5 - 15	4	220 - 330	20 - 30	4	270 - 450	30 - 50
sedge	CAREX	4	20 - 100	1 - 5	4	11 - 55	1 - 5	4	9 - 45	1 - 5
rush	JUNCU	4	0 - 100	0 - 5	4	0 - 88	0 - 8	4	18 - 90	2 - 10
spikerush	ELEOC	4	0 - 100	0 - 5	4	0 - 33	0 - 3			
bulrush	SCHOE6	4	0 - 100	0 - 5	4	0 - 55	0 - 5	4	0 - 45	0 - 5
foxtail barley	HOJU	4	0 - 100	0 - 5	4	55 - 110	5 - 10	4	90 - 180	10 - 20
NON-NATIVE GRASSES		**5**			**5**	**0 - 55**	**0 - 5**	**5**	**18 - 72**	**2 - 8**
cheatgrass	BRTE				5	0 - 55	0 - 5	5	18 - 72	2 - 8
FORBS		*6*	*100 - 200*	*5 - 10*	*6*	*110 - 220*	*10 - 20*	*6*	*90 - 180*	*10 - 20*
American licorice	GLLE3	6	0 - 100	0 - 5	6	0 - 55	0 - 5	6	0 - 27	0 - 3
annual marshelder	IVAN2	6	0 - 100	0 - 5	6	0 - 77	0 - 7	6	0 - 72	0 - 8
aster	ASTER	6	0 - 100	0 - 5	6	0 - 55	0 - 5	6	0 - 36	0 - 4
cocklebur	XANTH2				6	0 - 44	0 - 4	6	0 - 45	0 - 5
giant sumpweed	IVXA	6	0 - 100	0 - 5	6	0 - 88	0 - 8	6	0 - 45	0 - 5
povertyweed	IVAX	6	0 - 100	0 - 5	6	0 - 77	0 - 7	6	0 - 72	0 - 8
Pursh seepweed	SUCA2	6	0 - 100	0 - 5	6	0 - 77	0 - 7	6	0 - 90	0 - 10
red saltwort	SARU	6	0 - 100	0 - 5	6	22 - 88	2 - 8	6	27 - 90	3 - 10
Russian thistle	SALSO				6	0 - 33	0 - 3	6	0 - 45	0 - 5
other perennial forbs	2FP				6	0 - 55	0 - 5	6	0 - 27	0 - 3
other annual forbs	2FA				6	0 - 55	0 - 5	6	0 - 27	0 - 3
SHRUBS		*7*	*100 - 400*	*5 - 20*	*7*	*55 - 220*	*5 - 20*	*7*	*45 - 180*	*5 - 20*
black greasewood	SAVE4	7	0 - 200	0 - 10	7	0 - 165	0 - 15	7	0 - 135	0 - 15
fourwing saltbush	ATCA2	7	0 - 200	0 - 10	7	0 - 22	0 - 2			
Gardner's saltbush	ATGA	7	0 - 200	0 - 10	7	0 - 22	0 - 2			
rubber rabbitbrush	ERNA10	7	0 - 100	0 - 5	7	0 - 110	0 - 10	7	0 - 90	0 - 10
other shrubs	2SHRUB	7	0 - 100	0 - 5	7	0 - 55	0 - 5	7	0 - 45	0 - 5
TREES		*8*	*0 - 100*	*0 - 5*	*8*	*0 - 33*	*0 - 3*	*8*	*0 - 18*	*0 - 2*
plains cottonwood	PODEM	8	0 - 100	0 - 5	8	0 - 33	0 - 3	8	0 - 18	0 - 2

Annual Production lbs./acre	LOW RV HIGH	LOW RV HIGH	LOW RV HIGH
GRASSES & GRASS-LIKES	1310 - 1550 - 1865	445 - 781 - 1115	375 - 644 - 910
FORBS	95 - 150 - 205	105 - 165 - 225	85 - 135 - 185
SHRUBS	95 - 250 - 425	50 - 138 - 225	40 - 113 - 185
TREES	0 - 50 - 105	0 - 17 - 35	0 - 9 - 20
TOTAL	1500 - 2000 - 2600	600 - 1100 - 1600	500 - 900 - 1300

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 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 repeatable plant communities. The plant composition tables shown above have been developed from the best available knowledge at the time of this revision. As more information is collected, some of these plant community descriptions may be revised or removed, and new ones added. None of these plant communities should necessarily be thought of as "Desired Plant Communities". According to the USDA NRCS National Range and Pasture Handbook, Desired Plant Communities (DPC's) 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.

Rhizomatous Wheatgrass/Alkali Sacaton Plant Community

The plant community upon which interpretations are primarily based is the Rhizomatous Wheatgrass/Alkali Sacaton Plant Community. This is also considered the Historic Climax Plant Community (HCPC). Potential vegetation is about 65-90% grasses or grass-like plants, 5-10% forbs, 5-20% shrubs and 0-5% trees. Saline tolerant grasses dominate the plant community. Major grasses include rhizomatous wheatgrasses, alkali sacaton, Nuttall's alkaligrass, alkali and/or prairie cordgrass and inland saltgrass. Woody plants are greasewood, fourwing saltbush, rubber rabbitbrush, plains cottonwood, and Gardner's saltbush. Shrubs such as greasewood and rubber rabbitbrush will occur in higher amounts on the western portions of where this site occurs.

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 off-site and natural plant mortality is low. The diversity in plant species allows for high drought tolerance.

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: SD6007
Growth curve name: Pierre Shale Plains, cool-season dominant, warm-season sub-dominant.
Growth curve description: Cool-season dominant, warm-season sub-dominant, lowland.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	5	13	20	25	18	11	5	3	0	0

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

- Moderate, continuous season-long grazing will convert this plant community to the *Inland Saltgrass/Rhizomatous Wheatgrass Plant Community*.

Inland Saltgrass/Rhizomatous Wheatgrass Plant Community

This plant community occurs as a result of moderate, continuous season-long grazing. Grasses comprise about 60-80%, forbs 10-20%, shrubs 5-20% and trees 0-3%. Dominant grasses include inland saltgrass, western wheatgrass and alkali and/or prairie cordgrass. Other secondary grasses and grass-like plants include blue grama and sedges. Forbs such asters and saltwort may occur, and non-native forbs such as cocklebur may invade this plant community. When compared to the HCPC, saltgrass has increased. Alkali sacaton, alkaligrass and woody vegetation has been greatly diminished.

In the western portions of the MLRA, greasewood and rubber rabbitbrush may increase and result in a slightly different plant community. The grasses and forbs will be similar in composition; however, a significant component of shrubs (mainly greasewood) will also occur on this plant community.

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: SD6008
Growth curve name: Pierre Shale Plains, lowland cool-season/warm-season co-dominant.
Growth curve description: Cool-season, warm-season co-dominant, lowland.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	4	11	19	23	20	12	6	5	0	0

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

- Prescribed grazing will convert this plant community to the *Rhizomatous Wheatgrass/Alkali Sacaton Plant Community*.
- Frequent and severe grazing will convert this plant community to the *Inland Saltgrass Plant Community*.

Inland Saltgrass Plant Community

This plant community is the result of long-term improper grazing use. Inland saltgrass dominates this plant community. Other grasses and grass-likes that occur include alkali bluegrass, foxtail barley and sedges. Forbs common in this plant community are Pursh seepweed, red saltwort and povertyweed. Bare ground has increased, and production has decreased.

The soils of this plant community are not well protected. The biotic integrity is compromised by introduced species, loss of the dominant climax species and bare ground. Excessive runoff may occur.

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: SD6009
Growth curve name: Pierre Shale Plains, warm-season dominant, cool-season sub-dominant.
Growth curve description: Warm-season dominant, cool-season sub-dominant, lowland.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	3	10	16	22	23	14	7	5	0	0

Transitional pathways leading to other plant communities are as follows:

- Long-term prescribed grazing may eventually lead this plant community to the *Inland Saltgrass/Rhizomatous Wheatgrass Plant Community*.

Ecological Site Interpretations

Animal Community – Wildlife Interpretations

-- Under Development --

Rhizomatous Wheatgrass/Alkali Sacaton Plant Community:

Inland Saltgrass/Rhizomatous Wheatgrass Plant Community:

Inland Saltgrass Plant Community:

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

Common Name	Cattle	Sheep	Horses	Deer	Antelope	Bison	Elk
Grasses & Grass-likes							
alkali bluegrass	U D U D	D P U D	U D U D	U P N D	U P N D	U D U D	U D U D
alkali cordgrass	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
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
bottlebrush squirreltail	U D U U	N D U N	U D U U	N D U N	N D U N	U D U U	U D U U
bulrush	U U U U	N N N N	U U U U	N N N N	N N N N	U U U U	U U U U
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
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
Montana 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
Nuttall's alkaligrass	U P D D	P P P P	U P D D	P P P P	P P P P	U P D D	U P D D
prairie cordgrass	U D D U	N N N N	U D D U	N N N N	N N N N	U D D U	U D D U
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
sedge	U P U D	U P U D	U D U D	U D U D	U D U D	U D U D	U D U D
slender wheatgrass	U P U U	U D U U	U P U U	N D U N	N D U N	U P U U	U P U U
spikerush	U U U U	U U U U	U U U U	U U U U	U U U U	U U U U	U U U U
thickspike wheatgrass	U D D U	U D U U	U D D U	N D N N	N D N N	U D D U	U D D U
western wheatgrass	U P D D	U D U U	U P D U	N D N N	N D N N	U P D U	U P D U
Forbs							
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
annual marshelder	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 N U N
aster	U U D U	U U D U	U U D U	U U D U	U U D U	U U D U	U U D U
giant sumpweed	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 N 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
Pursh seepweed	U U U U	U U U U	U U U U	U U U U	U U U U	U U U U	U U U U
red saltwort	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
Shrubs							
black greasewood	U D D U	T T T T	U D D U	D U U D	D U U D	U D D U	D U U U
fourwing 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
Gardner's 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
rubber rabbitbrush	N N N N	D U U D	N N N N	D U U D	U P P U	N N N N	D U U U
Trees							
plains cottonwood	D U U D	D U U D	D U U D	D U D D	D U U D	D U U D	D U U D

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)
Rhizomatous Wheatgrass/Alkali Sacaton (HCPC)	2000	0.60-0.65
Inland Saltgrass/Rhizomatous Wheatgrass	1100	0.30-0.35
Inland Saltgrass	900	0.25-0.30

* Based on 790 lbs./acre (air-dry weight) per Animal Unit Month (AUM), and on 25% 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 ranges from low to very low. Runoff potential for this site varies from moderate to high depending on slope and ground cover. In many cases, areas with greater than 75% ground cover have the greatest potential for high infiltration and lower runoff. An example of an exception would be where short grasses form a strong sod and dominate the site. Normally areas where ground cover is less than 50% 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 opportunities for upland game species. The wide variety of plants which bloom from spring until fall have an esthetic value that appeals to visitors.

Wood Products

Other Products

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

Supporting Information

Associated Sites

(060AY018SD) – Dense Clay
(060AY036SD) – Saline Subirrigated
(060AY026SD) – Saline Upland
(060AY015SD) – Thin Claypan

Similar Sites

(060AY036SD) – Saline Subirrigated
(060AY026SD) – Saline Upland

Inventory Data References

Information presented here has been derived from NRCS clipping data and other inventory data. Field observations from range trained personnel was also used. Those involved in developing this site description include: Stan Boltz, Range Management Specialist, NRCS; Jill Epley, Range Management Specialist, NRCS; Cheryl Nielsen, Range Management Specialist, NRCS; Rick Peterson, Range Management Specialist, NRCS; Mike Stirling, Range Management Specialist, NRCS.

Data Source	Number of Records	Sample Period	State	County
SCS-RANGE-417				
Ocular estimates				

State Correlation

This site has been correlated between Montana, Nebraska, South Dakota & Wyoming in MLRA 60A.

Field Offices

Belle Fourche, SD	Custer, SD	Hot Springs, SD	Pine Ridge, SD	Sundance, WY
Broadus, MT	Ekalaka, MT	Lusk, WY	Rapid City, SD	Wall, SD
Buffalo, SD	Faith, SD	Martin, SD	Rushville, NE	
Chadron, NE	Gillette, WY	Newcastle, WY	Sturgis, SD	

Relationship to Other Established Classifications

Level IV Ecoregions of the Conterminous United States: 43e – Sagebrush Steppe, 43g – Semiarid Pierre Shale Plains, and 43k – Dense Clay Prairie.

Other References

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

USDA, NRCS. National Water and Climate Center, 101 SW Main, Suite 1600, Portland, OR 97204-3224. (http://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, 2002. National Soil Survey Handbook, title 430-VI. (http://soils.usda.gov/procedures/handbook/main.htm)

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

MT, State Range Management Specialist	Date	NE, State Range Management Specialist	Date
SD, State Range Management Specialist	Date	WY, State Range Management Specialist	Date