

# United States Department of Agriculture Natural Resources Conservation Service

## Ecological Site Description

**Site Type:** Rangeland

**Site Name:** Saline Lowland

**Site ID:** R058DY007SD

**Major Land Resource Area (MLRA):** 58D – Northern Rolling High Plains, Eastern Part



### Physiographic Features

This site occurs on nearly level to gently sloping drainages.

**Landform:** swale, flood plain

**Aspect:** N/A

	<u>Minimum</u>	<u>Maximum</u>
<b>Elevation (feet):</b>	2,300	4,000
<b>Slope (percent):</b>	0	3
<b>Water Table Depth (inches):</b>	24	36
<b>Flooding:</b>		
<b>Frequency:</b>	Occasional	Occasional
<b>Duration:</b>	Very brief	Brief
<b>Ponding:</b>		
<b>Depth (inches):</b>	None	None
<b>Frequency:</b>	None	None
<b>Duration:</b>	None	None
<b>Runoff Class:</b>	Low	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 to the east. Annual precipitation ranges from 14 to 16 inches. Most of the rainfall occurs as frontal storms early in the growing season. Some high intensity, convective thunderstorms occur in the summer. Precipitation in winter occurs as snow. 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. Outbreaks of cold air from Canada in winter move rapidly from northwest to southeast and account for extreme minimum temperatures. 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 44°F. January is the coldest month with average temperatures ranging from about 12°F (Marmarth, North Dakota (ND)), to about 20°F (Baker, Montana (MT)). July is the warmest month with temperatures averaging from about 70°F (Marmarth, ND), to about 76°F (Baker, MT). The range of normal average monthly temperatures between the coldest and warmest months is about 55°F.

Hourly winds are estimated to average about 11 miles per hour (mph) annually, ranging from about 13 mph during the spring to about 10 mph 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 mph.

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. Greenup 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>	110	123
<b>Freeze-free period (days):</b>	130	140
<b>Mean Annual Precipitation (inches):</b>	14	16

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

	Precip. Min.	Precip. Max	Temp. Min.	Temp. Max.
January	0.39	0.46	-0.8	31.0
February	0.34	0.54	5.7	34.4
March	0.73	0.82	15.7	43.8
April	1.23	1.73	29.1	60.4
May	2.29	2.71	39.6	67.7
June	2.79	3.00	49.3	76.7
July	1.91	2.10	54.5	90.7
August	1.35	1.46	50.2	88.2
September	1.16	1.25	40.1	76.5
October	0.85	1.07	28.9	59.5
November	0.43	0.57	15.9	44.6
December	0.31	0.50	6.1	33.7

Climate Stations		Period	
Station ID	Location or Name	From	To
MT0412	Baker	1948	2005
SD1294	Camp Crook	1896	2006
SD3560	Harding 3 SE	1951	2006
ND5575	Marmarth	1950	2006
SD7062	Redig 11 NE	1948	2006

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

**Influencing Water Features**

No significant water features influence this site.

**Representative Soil Features**

The soils of this site are deep and poorly drained and formed in alluvium. These soils have very slow to moderately slow permeability and are moderately to strongly saline. Higher soluble salt concentrations may be found in the subsoil. The surface soil varies from three to five inches in thickness. The surface texture is loam or fine sandy loam. A fluctuating water table occurs in these areas and ranges from one to three feet. The water table is within reach of plants during most of the growing season. These areas are subject to occasional overflow. This site could show slight to moderate evidence of rills and/or pedestalled plants. Water flow paths are somewhat continuous, but

irregular in appearance with few debris dams or vegetative barriers.

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

**Parent Material Kind:** alluvium

**Parent Material Origin:**

**Surface Texture:** fine sandy loam, loam

**Surface Texture Modifier:** none

**Subsurface Texture Group:** loamy

**Surface Fragments ≤3" (% Cover):** 0-5

**Surface Fragments >3" (%Cover):** 0

**Subsurface Fragments ≤3" (% Volume):** 0-5

**Subsurface Fragments >3" (% Volume):** 0

	<u>Minimum</u>	<u>Maximum</u>
<b>Drainage Class:</b>	poorly	poorly
<b>Permeability Class:</b>	very slow	moderately slow
<b>Depth to Bedrock (inches):</b>	80	80
<b>Electrical Conductivity (mmhos/cm)*:</b>	8	32
<b>Sodium Absorption Ratio*:</b>	0	5
<b>Soil Reaction (1:1 Water)*:</b>	5.1	9
<b>Soil Reaction (0.1M CaCl<sub>2</sub>)*:</b>	NA	NA
<b>Available Water Capacity (inches)*:</b>	4	5
<b>Calcium Carbonate Equivalent (percent)*:</b>	0	25

\*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.

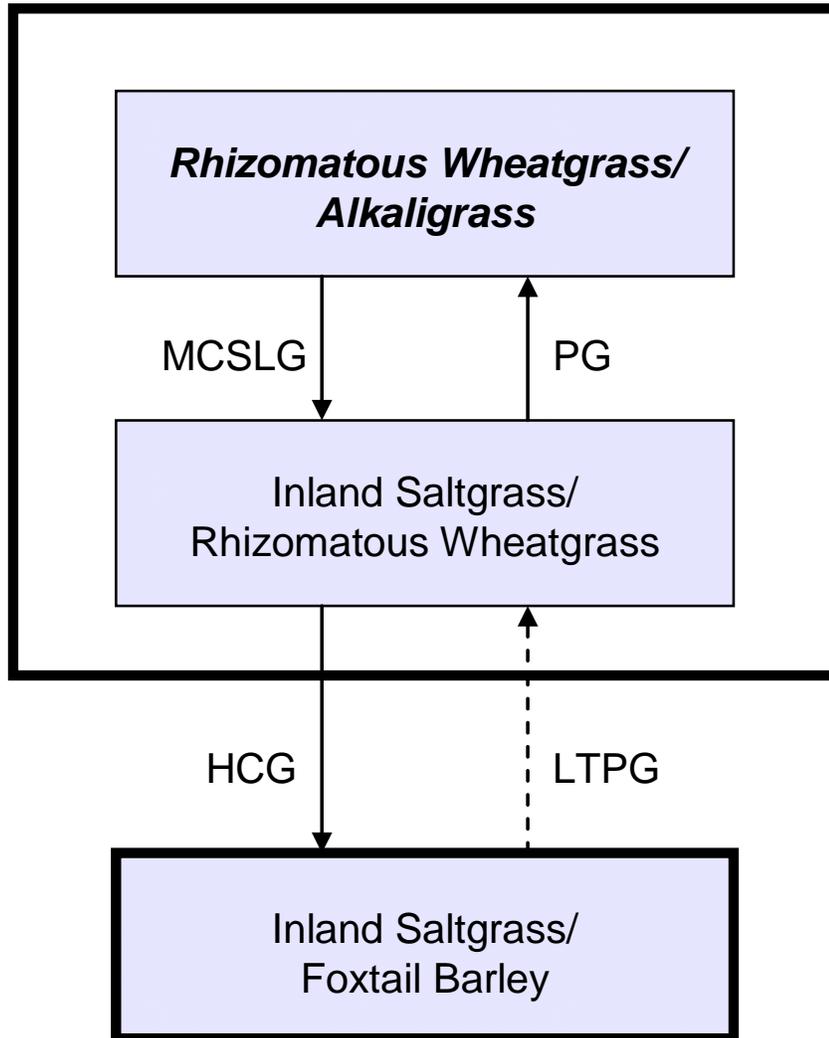
The plant community upon which interpretations are primarily based is the Rhizomatous Wheatgrass/Alkaligrass Plant Community. This plant community has been determined by studying rangeland relic areas, areas protected from excessive disturbance, and areas under long-term rotational grazing regimes. Trends 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.

As this site deteriorates, species such as inland saltgrass and foxtail barley 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 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



**HCG** – Heavy, continuous grazing; **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**

COMMON/GROUP NAME	SCIENTIFIC NAME	SYMBOL	Rhizomatous Wheatgrass/ Nuttall's Alkaligrass		
			Group	lbs./acre	% Comp
<b>GRASSES &amp; GRASS-LIKES</b>				2000 - 2250	80 - 90
<b>WHEATGRASSES</b>			1	500 - 1000	20 - 40
western wheatgrass	Pascopyrum smithii	PASM	1	375 - 875	15 - 35
thickspike wheatgrass	Elymus lanceolatus ssp. lanceolatus	ELLAL	1	125 - 375	5 - 15
Montana wheatgrass	Elymus albicans	ELAL7	1	0 - 250	0 - 10
slender wheatgrass	Elymus trachycaulus	ELTR7	1	0 - 125	0 - 5
<b>COOL-SEASON BUNCHGRASSES</b>			2	250 - 625	10 - 25
Nuttall's alkaligrass	Puccinellia nuttalliana	PUNU2	2	250 - 500	10 - 20
plains bluegrass	Poa arida	POAR3	2	0 - 125	0 - 5
foxtail barley	Hordeum jubatum	HOJU	2	25 - 125	1 - 5
bottlebrush squirreltail	Elymus elymoides	ELEL5	2	0 - 75	0 - 3
other perennial grasses		2GP	2	0 - 125	0 - 5
<b>WARM-SEASON GRASSES</b>			3	125 - 500	5 - 20
alkali sacaton	Sporobolus airoides	SPAI	3	125 - 375	5 - 15
alkali cordgrass	Spartina gracilis	SPGR	3	0 - 375	0 - 15
prairie cordgrass	Spartina pectinata	SPPE	3	0 - 375	0 - 15
other perennial grasses		2GP	3	0 - 125	0 - 5
<b>SHORT WARM-SEASON GRASSES</b>			4	125 - 250	5 - 10
inland saltgrass	Distichlis spicata	DISP	4	125 - 250	5 - 10
mat muhly	Muhlenbergia richardsonis	MURI	4	0 - 75	0 - 3
alkali muhly	Muhlenbergia asperifolia	MUAS	4	0 - 75	0 - 3
<b>GRASS-LIKES</b>			5	0 - 75	0 - 3
rush	Juncus spp.	JUNCU	5	0 - 75	0 - 3
sedge	Carex spp.	CAREX	5	0 - 75	0 - 3
other grass-likes		2GL	5	0 - 75	0 - 3
<b>FORBS</b>			7	25 - 125	1 - 5
alkali plantain	Plantago eriopoda	PLER	7	0 - 50	0 - 2
bighead pygmyweed	Evax prolifera	EVPR	7	0 - 25	0 - 1
cinquefoil	Potentilla spp.	POTEN	7	0 - 25	0 - 1
povertyweed	Iva axillaris	IVAX	7	25 - 75	1 - 3
red saltwort	Salicornia rubra	SARU	7	0 - 25	0 - 1
saltbush	Atriplex spp.	ATRIP	7	0 - 25	0 - 1
seepweed	Suaeda spp.	SUAED	7	0 - 50	0 - 2
western dock	Rumex aquaticus	RUAQ	7	0 - 50	0 - 2
native forbs		2FN	7	0 - 125	0 - 5
<b>SHRUBS</b>			8	125 - 375	5 - 15
black greasewood	Sarcobatus vermiculatus	SAVE4	8	0 - 200	0 - 8
fourwing saltbush	Atriplex canescens	ATCA2	8	25 - 125	1 - 5
Gardner's saltbush	Atriplex gardneri	ATGA	8	25 - 125	1 - 5
rubber rabbitbrush	Ericameria nauseosa	ERNA10	8	0 - 125	0 - 5
other shrubs		2SHRUB	8	0 - 125	0 - 5

Annual Production lbs./acre	LOW	RV	HIGH
<b>GRASSES &amp; GRASS-LIKES</b>	1270	2175	2915
<b>FORBS</b>	20	75	140
<b>SHRUBS</b>	110	250	445
<b>TOTAL</b>	1400	2500	3500

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	Rhizomatous Wheatgrass/ Alkaligrass			Inland Saltgrass/ Rhizomatous Wheatgrass			Inland Saltgrass/Foxtail Barley		
		Grp	lbs./acre	% Comp	Grp	lbs./acre	% Comp	Grp	lbs./acre	% Comp
<b>GRASSES &amp; GRASS-LIKES</b>			2000 - 2250	80 - 90		1280 - 1440	80 - 90		880 - 990	80 - 90
<b>WHEATGRASSES</b>		1	500 - 1000	20 - 40	1	240 - 400	15 - 25	1	0 - 55	0 - 5
western wheatgrass	PASM	1	375 - 875	15 - 35	1	160 - 320	10 - 20	1	0 - 55	0 - 5
thickspike wheatgrass	ELLAL	1	125 - 375	5 - 15	1	16 - 160	1 - 10	1	0 - 33	0 - 3
Montana wheatgrass	ELAL7	1	0 - 250	0 - 10	1	0 - 64	0 - 4			
slender wheatgrass	ELTR7	1	0 - 125	0 - 5	1	0 - 32	0 - 2			
<b>COOL-SEASON BUNCHGRASSES</b>		2	250 - 625	10 - 25	2	160 - 400	10 - 25	2	165 - 330	15 - 30
Nuttall's alkaligrass	PUNU2	2	250 - 500	10 - 20	2	0 - 112	0 - 7			
plains bluegrass	POAR3	2	0 - 125	0 - 5	2	0 - 32	0 - 2			
foxtail barley	HOJU	2	25 - 125	1 - 5	2	80 - 240	5 - 15	2	165 - 330	15 - 30
bottlebrush squirreltail	ELEL5	2	0 - 75	0 - 3	2	0 - 32	0 - 2			
other perennial grasses	2GP	2	0 - 125	0 - 5	2	0 - 80	0 - 5	2	0 - 55	0 - 5
<b>WARM-SEASON GRASSES</b>		3	125 - 500	5 - 20	3	0 - 80	0 - 5	3		
alkali sacaton	SPAI	3	125 - 375	5 - 15	3	0 - 80	0 - 5			
alkali cordgrass	SPGR	3	0 - 375	0 - 15	3	0 - 80	0 - 5			
prairie cordgrass	SPPE	3	0 - 375	0 - 15	3	0 - 80	0 - 5			
other perennial grasses	2GP	3	0 - 125	0 - 5	3	0 - 32	0 - 2			
<b>SHORT WARM-SEASON GRASSES</b>		4	125 - 250	5 - 10	4	160 - 400	10 - 25	4	275 - 550	25 - 50
inland saltgrass	DISP	4	125 - 250	5 - 10	4	160 - 320	10 - 20	4	275 - 495	25 - 45
mat muhly	MURI	4	0 - 75	0 - 3	4	0 - 80	0 - 5	4	0 - 55	0 - 5
alkali muhly	MUAS	4	0 - 75	0 - 3	4	0 - 80	0 - 5	4	0 - 55	0 - 5
<b>GRASS-LIKES</b>		5	0 - 75	0 - 3	5	0 - 80	0 - 5	5	0 - 55	0 - 5
rush	JUNCU	5	0 - 75	0 - 3	5	0 - 80	0 - 5	5	0 - 55	0 - 5
sedge	CAREX	5	0 - 75	0 - 3	5	0 - 80	0 - 5	5	0 - 55	0 - 5
other grass-likes	2GL	5	0 - 75	0 - 3	5	0 - 80	0 - 5	5	0 - 55	0 - 5
<b>NON-NATIVE GRASSES</b>		6			6	0 - 80	0 - 5	6	0 - 33	0 - 3
bluegrass	POA				6	0 - 80	0 - 5	6	0 - 33	0 - 3
cheatgrass	BRTE				6	0 - 80	0 - 5	6	0 - 33	0 - 3
<b>FORBS</b>		7	25 - 125	1 - 5	7	80 - 160	5 - 10	7	55 - 165	5 - 15
alkali plantain	PLER	7	0 - 50	0 - 2	7	0 - 48	0 - 3	7	0 - 33	0 - 3
bighead pygmycudweed	EVPR	7	0 - 25	0 - 1	7	0 - 16	0 - 1	7	0 - 11	0 - 1
cinquefoil	POTEN	7	0 - 25	0 - 1						
povertyweed	IVAX	7	25 - 75	1 - 3	7	16 - 48	1 - 3	7	11 - 33	1 - 3
red saltwort	SARU	7	0 - 25	0 - 1	7	0 - 32	0 - 2	7	0 - 22	0 - 2
saltbush	ATRIP	7	0 - 25	0 - 1	7	0 - 16	0 - 1	7	0 - 11	0 - 1
seepweed	SUAED	7	0 - 50	0 - 2	7	0 - 48	0 - 3	7	0 - 44	0 - 4
western dock	RUAQ	7	0 - 50	0 - 2						
native forbs	2FN	7	0 - 125	0 - 5	7	0 - 80	0 - 5	7	0 - 55	0 - 5
introduced forbs	2FI				7	0 - 80	0 - 5	7	33 - 132	3 - 12
<b>SHRUBS</b>		8	125 - 375	5 - 15	8	80 - 160	5 - 10	8	0 - 55	0 - 5
black greasewood	SAVE4	8	0 - 200	0 - 8	8	0 - 32	0 - 2			
fourwing saltbush	ATCA2	8	25 - 125	1 - 5	8	0 - 32	0 - 2			
Gardner's saltbush	ATGA	8	25 - 125	1 - 5	8	0 - 32	0 - 2			
rubber rabbitbrush	ERNA10	8	0 - 125	0 - 5	8	0 - 112	0 - 7	8	0 - 55	0 - 5
other shrubs	2SHRUB	8	0 - 125	0 - 5	8	0 - 48	0 - 3	8	0 - 22	0 - 2
<b>Annual Production lbs./acre</b>			LOW RV HIGH			LOW RV HIGH			LOW RV HIGH	
<b>GRASSES &amp; GRASS-LIKES</b>			1270 - 2175 - 2915			950 - 1360 - 1840			650 - 963 - 1355	
<b>FORBS</b>			20 - 75 - 140			75 - 120 - 180			50 - 110 - 185	
<b>SHRUBS</b>			110 - 250 - 445			75 - 120 - 180			0 - 28 - 60	
<b>TOTAL</b>			1400 2500 - 3500			1100 - 1600 - 2200			700 - 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. 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 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” (DPC). According to the 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.

### Rhizomatous Wheatgrass/Alkaligrass Plant Community

The interpretive plant community for this site is the Rhizomatous Wheatgrass/Alkaligrass Plant Community. This is also considered to be climax. Potential vegetation is about 80 to 90 percent grasses or grass-like plants, 1 to 5 percent forbs, and 5 to 15 percent shrubs. Saline tolerant grasses dominate the plant community. Major grasses include rhizomatous wheatgrasses, alkali sacaton, Nuttall’s alkaligrass, and alkali and/or prairie cordgrass. Other grasses or grass-like species occurring on the site include inland saltgrass, thickspike wheatgrass, plains bluegrass, foxtail barley, and sedges. Significant forbs include povertyweed, alkali plantain, and seepweed. The significant shrubs that occur include black greasewood, fourwing saltbush, Gardner’s saltbush, and rubber rabbitbrush.

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. 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: SD5807

Growth curve name: Northern Rolling High Plains, cool-season dominant, warm-season subdominant

Growth curve description: Cool-season dominant, warm-season subdominant, 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 80 to 90 percent, forbs 5 to 10 percent, and shrubs 5 to 10 percent. Dominant grasses include inland saltgrass, western wheatgrass, foxtail barley, and thickspike wheatgrass. Other grasses and grass-like plants include Nuttall’s alkaligrass, alkali sacaton, alkali and/or prairie cordgrass, and sedge. Forbs include povertyweed, alkali plantain, seepweed and saltwort, while nonnative forbs such as cocklebur may invade. When compared to the Rhizomatous Wheatgrass/Alkaligrass Plant Community, saltgrass has increased, while Nuttall’s alkaligrass, alkali sacaton, and alkaligrass and/or prairie cordgrass have been greatly diminished.

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: SD5808

Growth curve name: Northern Rolling High Plains, lowland cool-season/warm-season codominant.

Growth curve description: Cool-season, warm-season codominant, 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/Alkaligrass Plant Community*.
- Heavy continuous grazing will convert this plant community to the *Inland Saltgrass/Foxtail Barley Plant Community*.

### **Inland Saltgrass/Foxtail Barley Plant Community**

This plant community is the result of heavy continuous grazing over a long period of time. Inland saltgrass and foxtail barley dominate this plant community. Other grasses and grass-likes that occur include mat muhly, alkali muhly, western wheatgrass, and sedges. Forbs common in this plant community are 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: SD5809

Growth curve name: Northern Rolling High Plains, warm-season dominant, cool-season subdominant

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

The MLRA 58D lies within the drier portion of Northern mixed-grass prairie ecosystem where sagebrush steppes to the west yield to grassland steppes to the east. Prior to European settlement, this area consisted of diverse grass/shrub land habitats interspersed with varying densities of depressional, in-stream wetlands, and woody riparian corridors. These habitats provided critical life cycle components for many of its users. Many species of grassland birds, small mammals, reptiles, amphibians, and herds of roaming bison, elk, and pronghorn were among the inhabitants adapted to this semi-arid region. Roaming herbivores, as well as, several small mammal and insect species, were the primary consumers linking the grassland resources to predators such as the wolf, mountain lion, and grizzly bear, as well as, smaller carnivores such as the coyote, bobcat, fox, and raptors. The black-tailed prairie dog was once abundant; however, the species remains a keystone species within its range. The black-footed ferret, burrowing owl, ferruginous hawk, mountain plover, and swift fox were associated with prairie dog complexes.

Historically, the Northern mixed-grass prairie was a disturbance-driven ecosystem with fire, herbivory, and climate functioning as the primary disturbance factors either singly or in combination. Following European settlement, livestock grazing, cropland conversion, elimination of fire, energy development, and other anthropogenic factors influenced species composition and abundance. Introduced and invasive species further impacted plant and animal communities. The bison was a historical keystone species but have been extirpated as a free-ranging herbivore. The loss of the bison, reduction of prairie dog colonies, and loss of fire as ecological drivers greatly influenced the character of the remaining native plant communities and altered wildlife habitats. Human development has reduced habitat quality for area-sensitive species.

Within MLRA 58D, the Saline Lowland Ecological Site (ES) provides upland/wetland complex cover with an associated shrub/forb component. It is typically part of an expansive grassland landscape that included combinations of Shallow Loamy, Shallow Clayey, Thin Loamy, Thin Claypan, Sandy, Sandy Claypan, Loamy, Loamy Terrace, Sandy Terrace, and Clayey ESs.

The Saline Lowland ES has remained relatively intact. This site may have sufficient hydrology to support hydrophytic vegetation and wildlife species associated with saturated saline soil conditions. Due to high salinity concentrations, both plant and wildlife species diversity is limited.

**Rhizomatous Wheatgrass/Alkaligrass, Inland Saltgrass/Rhizomatous Wheatgrass, and Inland Saltgrass/Foxtail Barley:** The predominance of saline tolerant hydrophytic vegetation, including shrubs, does not favor any particular wildlife group. However, the site may receive limited shorebird use. This plant community provides habitat for limited invertebrate populations. Herptile use is either extremely limited or nonexistent. Raptors such as northern harrier, short-eared owl, Swainson's hawk, and American kestrel will use this site. Prey populations are limited to small mammals such as water shrew and meadow vole and invertebrates.

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

Common Name	Cattle	Sheep	Horses	Deer	Antelope	Bison	Elk
<b>Grasses and Grass-like</b>							
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 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
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
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
mat muhly	N U U N	U U D U	N U U N	U U U U	U U U U	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
plains bluegrass	U D U D	N D N U	U D U D	U P N D	U P N D	U D U D	U D U 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 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
slender wheatgrass	U P U U	N D U N	U P U U	N D U N	N D U N	U P U U	U P U U
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
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>							
alkali plantain	U D U U	N U U N	U D U U	N U U N	N U U N	U D U U	N U U N
bighead pygmyweed	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
cinquefoil	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
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
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
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
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
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
<b>Shrubs</b>							
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 D D U	N N N N	D U U 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

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 B or 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 exception

would be where shortgrasses form a strong sod and dominate the site. Normally, 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 opportunities for upland game species. The wide varieties of plants which 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

Loamy Overflow (R058DY020SD), Claypan (R058DY013SD), Wet Meadow (R058DY004SD)

### Similar Sites

(R058DY020SD) – Loamy Overflow [big bluestem dominant; less salts; no water table]

## Inventory Data References

Information presented here has been derived from NRCS clipping data and other inventory data. Field observations and experience were also used. Those involved in developing this site description include: Ryan Beer, Range Management Specialist (RMS), NRCS; Chuck Berdan, Biologist (BIO), Bureau of Land Management (BLM); Stan Boltz, RMS, NRCS; Dave Dewald, Wildlife BIO, NRCS; Jody Forman, RMS, NRCS; Dennis Froemke, RMS, NRCS; Tom Juntti, BIO, United States Forest Service (USFS); Cheryl Nielsen, RMS, NRCS; Jeff Printz, RMS, NRCS; Mike Stirling, RMS, NRCS; Dan Svingen, BIO, USFS; Darrell Vanderbusch, Soil Scientist, NRCS; Cindy Zachmeier, BIO, NRCS; and Tim Zachmeier, BIO, BLM.

<u>Data Source</u>	<u>Number of Records</u>	<u>Sample Period</u>	<u>State</u>	<u>County</u>
SCS-RANGE-417	3	1981 – 1982	SD	Harding

## State Correlation

This site has been correlated between MT, ND, and South Dakota (SD) in MLRA 58D.

## Field Offices

Baker, MT (Fallon County)

Belle Fourche, SD (Butte County)

Bowman, ND (Bowman and Slope Counties)

Buffalo, SD (Harding County)

Ekalaka, MT (Carter County)

## Relationship to Other Established Classifications

Level IV Ecoregions of the Conterminous United States: 43e – Sagebrush Steppe.

## 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

\_\_\_\_\_  
MT, State Range Management Specialist

\_\_\_\_\_  
Date

\_\_\_\_\_  
ND, State Range Management Specialist

\_\_\_\_\_  
Date

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

\_\_\_\_\_  
Date