

# United States Department of Agriculture Natural Resources Conservation Service

## Ecological Site Description

**Site Type:** Rangeland

**Site Name:** Closed Depression

**Site ID:** R066XY065NE

**Major Land Resource Area (MLRA):**  
66 – Dakota - Nebraska (NE) Eroded Tableland

### Physiographic Features

This site occurs on depressional areas of uplands which are closed (without natural drainage). This site receives run-in water from areas higher on the landscape.



**Landform:** Alluvial flat

**Aspect:** N/A

**Elevation (feet):**

Minimum

Maximum

1,900

3,000

**Slope (percent):**

0

1

**Water Table Depth (inches):**

18

36

**Flooding:**

**Frequency:**

None

None

**Duration:**

None

None

**Ponding:**

**Depth (inches):**

0

36

**Frequency:**

Frequent

Frequent

**Duration:**

Long

Very long

**Runoff Class:**

Negligible

Negligible

### Climatic Features

MLRA 66 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 the winds move freely across the plains and account for rapid changes in temperature.

Annual precipitation ranges from 18 to 25 inches per year. The normal average annual temperature is about 48°F. January is the coldest month with average temperatures ranging from about 19°F (Bonesteel, South Dakota (SD)), to about 23°F (Ainsworth, NE). July is the warmest month with temperatures averaging from about 73°F (Harrington, SD), to about 75°F (Gregory, SD). The range of normal average monthly temperatures between the coldest and warmest months is about 54°F. This large annual range attests to the continental nature of this area's climate. Hourly winds average about 10 miles per hour (mph) annually, ranging from about 11 mph during the spring to about 9 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 native cool-season plants begins mid- to late March and continues to late June. Native warm-season plants begin growth in early May and continue to late August. 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>	127	154
<b>Freeze-free period (days):</b>	144	173
<b>Mean Annual Precipitation (inches):</b>	18	25

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

	Precip. Min.	Precip. Max	Temp. Min.	Temp. Max.
January	0.28	0.42	8.2	33.6
February	0.48	0.69	13.5	38.9
March	0.92	1.58	21.3	46.9
April	1.94	3.03	31.7	61.2
May	3.08	4.20	42.8	72.5
June	3.10	3.74	52.6	82.2
July	2.86	3.25	58.5	88.3
August	2.33	2.68	56.2	86.8
September	1.54	2.71	45.9	77.3
October	1.03	1.79	33.7	65.0
November	0.55	0.94	20.8	47.6
December	0.32	0.45	11.2	37.1

<b>Climate Stations</b>		<b>Period</b>	
<b>Station ID</b>	<b>Location or Name</b>	<b>From</b>	<b>To</b>
NE0050	Ainsworth	1948	2003
SD0778	Bonesteel	1956	2003
NE1365	Butte	1948	2003
SD3574	Harrington	1960	2003
NE8760	Valentine WSO AP	1948	2003

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

**Influencing Water Features**

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

**Representative Soil Features**

The features common to soils of this site are the poorly drained soils with silty clay textured surface layers underlain by a very clayey subsoil layer. This layer restricts internal drainage and has a slow to very slow infiltration rate. Water perches on this layer and may even pond over the soil surface following large precipitation events and/or run-in events during spring thaw. The soils crack when dry and heavy traffic can cause surface compaction when wet. This site should show no evidence of rills, wind scoured areas, or pedestalled plants. Water flow paths are typically nonexistent, or if present, appear broken, irregular in appearance, or discontinuous with numerous debris dams or vegetative barriers. The soil surface is stable and intact.

More information can be found in the various soil survey reports. Contact the local United States Department of Agriculture (USDA) Service Center for soil survey reports that include more detail specific to your location.

**Parent Material Kind:** alluvium  
**Parent Material Origin:**  
**Surface Texture:** silty clay  
**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>
<b>Drainage Class:</b>	very poorly	poorly
<b>Permeability Class:</b>	very slow	rapid
<b>Depth (inches):</b>	>80	>80
<b>Electrical Conductivity (mmhos/cm)*:</b>	0	2
<b>Sodium Absorption Ratio*:</b>	0	5
<b>Soil Reaction (1:1 Water)*:</b>	7.4	9.0
<b>Soil Reaction (0.1M CaCl2)*:</b>	NA	NA
<b>Available Water Capacity (inches)*:</b>	4	4
<b>Calcium Carbonate Equivalent (percent)*:</b>	0	10

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

## Plant Communities

### Ecological Dynamics of the Site

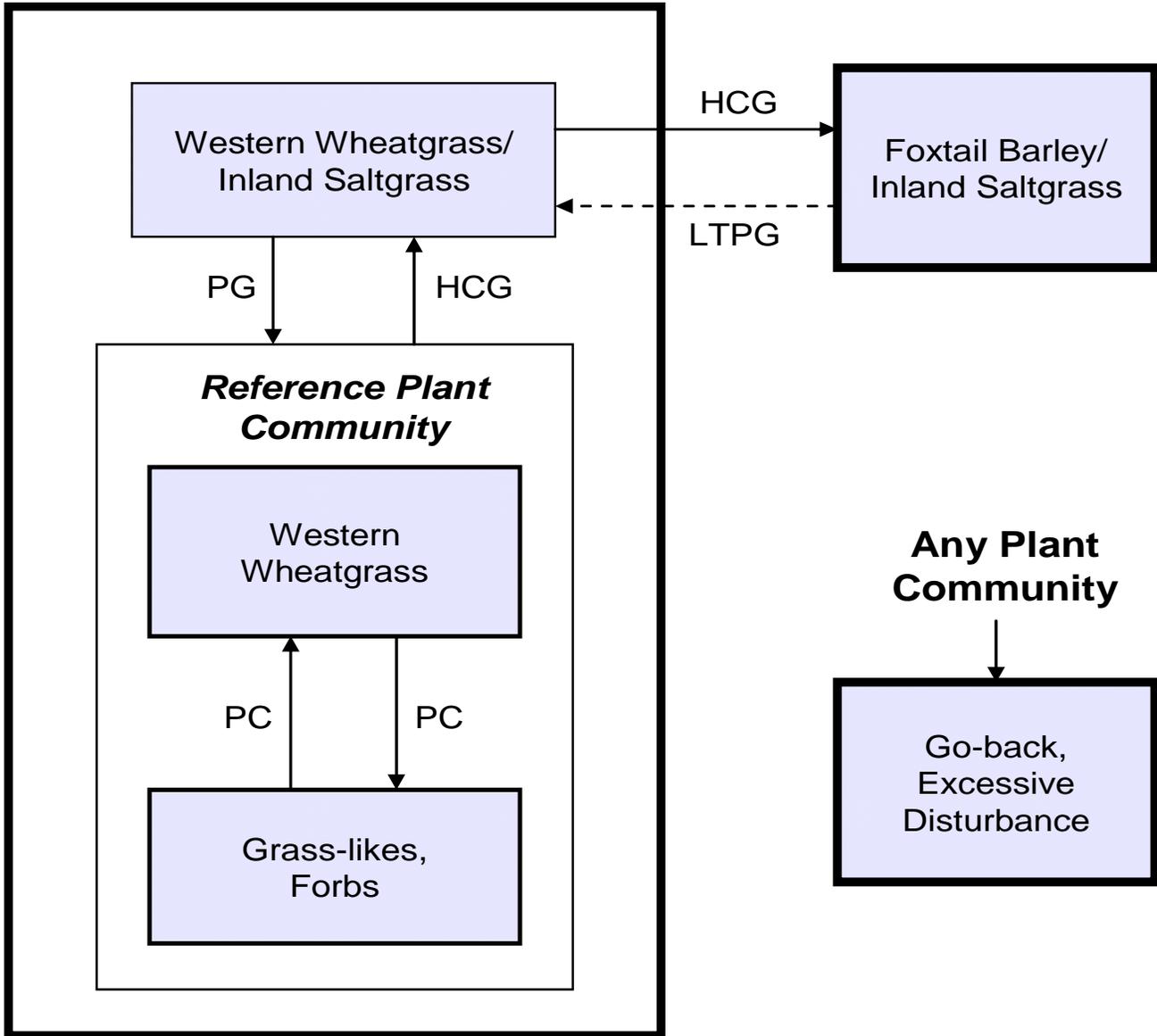
This site developed under Northern Great Plains climatic conditions, natural influences of large herbivores, occasional fire, and other biotic and abiotic factors that typically influence soil/site development. Changes will occur in the plant communities due to short-term weather variations, impacts 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.

This site is very sensitive to precipitation fluctuations from year to year. With above average precipitation, the site becomes very wet, leading to a much different plant community than what would be present with average to below average precipitation. In dry years, plant density becomes very low. The two plant communities influenced strongly by precipitation alone (Western Wheatgrass; and Grass-likes, Forbs) make up the natural fluctuation of what could be considered the historic climax plant community.

The plant community upon which interpretations are primarily based is the Reference Plant Community. The Reference 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.

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; **PC** – Precipitation cycles; **PG** – Prescribed grazing.

**Plant Community Composition and Group Annual Production**

			Reference Plant Community		
COMMON/GROUP NAME	SCIENTIFIC NAME	SYMBOL	Group	lbs./acre	% Comp
<b>GRASSES &amp; GRASS-LIKES</b>				1400 - 3325	40 - 95
<b>WHEATGRASSES</b>			<b>1</b>	<b>700 - 2975</b>	<b>20 - 85</b>
western wheatgrass	Pascopyrum smithii	PASM	1	700 - 2975	20 - 85
slender wheatgrass	Elymus trachycaulus	ELTR7	1	0 - 175	0 - 5
<b>COOL-SEASON BUNCHGRASSES</b>			<b>2</b>	<b>175 - 1400</b>	<b>5 - 40</b>
foxtail barley	Hordeum jubatum	HOJU	2	70 - 1225	2 - 35
Nuttall's alkaligrass	Puccinellia nuttalliana	PUNU2	2	70 - 525	2 - 15
<b>SHORT WARM-SEASON GRASSES</b>			<b>3</b>	<b>35 - 350</b>	<b>1 - 10</b>
inland saltgrass	Distichlis spicata	DISP	3	35 - 350	1 - 10
buffalograss	Bouteloua dactyloides	BODA2	3	0 - 175	0 - 5
<b>OTHER NATIVE GRASSES</b>			<b>4</b>	<b>70 - 350</b>	<b>2 - 10</b>
fowl bluegrass	Poa palustris	POPA2	4	35 - 175	1 - 5
plains bluegrass	Poa arida	POAR3	4	35 - 175	1 - 5
other grasses		2GRAM	4	0 - 350	0 - 10
<b>GRASS-LIKES</b>			<b>5</b>	<b>350 - 1575</b>	<b>10 - 45</b>
common spikerush	Eleocharis palustris	ELPA3	5	175 - 1400	5 - 40
needle spikerush	Eleocharis acicularis	ELAC	5	35 - 525	1 - 15
sedge	Carex spp.	CAREX	5	70 - 350	2 - 10
rush	Juncus spp.	JUNCU	5	0 - 175	0 - 5
other grass-likes		2GL	5	0 - 350	0 - 10
<b>FORBS</b>			<b>7</b>	<b>175 - 2100</b>	<b>5 - 60</b>
American licorice	Glycyrrhiza lepidota	GLLE3	7	0 - 175	0 - 5
bushy knotweed	Polygonum ramosissimum	PORA3	7	0 - 175	0 - 5
cinquefoil	Potentilla spp.	POTEN	7	0 - 175	0 - 5
creeping woodsorrel	Oxalis corniculata	OXCO	7	0 - 105	0 - 3
curlytop knotweed	Polygonum lapathifolium	POLA4	7	0 - 525	0 - 15
evening-primrose	Oenothera spp.	OENOT	7	0 - 175	0 - 5
Indianhemp	Apocynum cannabinum	APCA	7	0 - 175	0 - 5
lambquarters	Chenopodium album	CHAL7	7	0 - 350	0 - 10
mealy goosefoot	Chenopodium incanum	CHIN2	7	0 - 175	0 - 5
mint	Mentha spp.	MENTH	7	0 - 175	0 - 5
New England aster	Symphyotrichum novae-angliae	SYNO2	7	0 - 350	0 - 10
pale dock	Rumex altissimus	RUAL4	7	0 - 525	0 - 15
Pennsylvania smartweed	Polygonum pensylvanicum	POPE2	7	0 - 525	0 - 15
plains coreopsis	Coreopsis tinctoria	COTI3	7	0 - 175	0 - 5
plantain	Plantago spp.	PLANT	7	0 - 175	0 - 5
povertyweed	Iva axillaris	IVAX	7	0 - 175	0 - 5
Pursh seepweed	Suaeda calceoliformis	SUCA2	7	0 - 350	0 - 10
smooth horsetail	Equisetum laevigatum	EQLA	7	0 - 105	0 - 3
tall fringed bluebells	Mertensia ciliata	MECI3	7	0 - 105	0 - 3
western dock	Rumex aquaticus	RUAQ	7	0 - 350	0 - 10
native forbs		2FN	7	0 - 700	0 - 20

Annual Production lbs./acre	LOW	RV	HIGH
<b>GRASSES &amp; GRASS-LIKES</b>	1845 -	2363	3050
<b>FORBS</b>	155 -	1138	1450
<b>TOTAL</b>	2000 -	3500	4500

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	Reference Plant Community			Western Wheatgrass/ Inland Saltgrass			Foxtail Barley/Inland Saltgrass		
		Grp	lbs./acre	% Comp	Grp	lbs./acre	% Comp	Grp	lbs./acre	% Comp
<b>GRASSES &amp; GRASS-LIKES</b>			1400 - 3325	40 - 95		1430 - 2090	65 - 95		900 - 1140	75 - 95
<b>WHEATGRASSES</b>		1	700 - 2975	20 - 85	1	330 - 880	15 - 40	1	0 - 60	0 - 5
western wheatgrass	PASM	1	700 - 2975	20 - 85	1	330 - 880	15 - 40	1	0 - 60	0 - 5
slender wheatgrass	ELTR7	1	0 - 175	0 - 5						
<b>COOL-SEASON BUNCHGRASSES</b>		2	175 - 1400	5 - 40	2	110 - 440	5 - 20	2	240 - 600	20 - 50
foxtail barley	HOJU	2	70 - 1225	2 - 35	2	66 - 330	3 - 15	2	240 - 600	20 - 50
Nuttall's alkaligrass	PUNU2	2	70 - 525	2 - 15	2	22 - 220	1 - 10	2	0 - 36	0 - 3
<b>SHORT WARM-SEASON GRASSES</b>		3	35 - 350	1 - 10	3	220 - 880	10 - 40	3	120 - 480	10 - 40
inland saltgrass	DISP	3	35 - 350	1 - 10	3	220 - 880	10 - 40	3	120 - 480	10 - 40
buffalograss	BODA2	3	0 - 175	0 - 5	3	0 - 66	0 - 3			
<b>OTHER NATIVE GRASSES</b>		4	70 - 350	2 - 10	4	0 - 110	0 - 5	4	0 - 60	0 - 5
fowl bluegrass	POPA2	4	35 - 175	1 - 5	4	0 - 66	0 - 3			
plains bluegrass	POAR3	4	35 - 175	1 - 5	4	0 - 66	0 - 3			
other grasses	2GRAM	4	0 - 350	0 - 10	4	0 - 110	0 - 5	4	0 - 60	0 - 5
<b>GRASS-LIKES</b>		5	350 - 1575	10 - 45	5	110 - 550	5 - 25	5	60 - 240	5 - 20
common spikerush	ELPA3	5	175 - 1400	5 - 40	5	44 - 330	2 - 15	5	24 - 180	2 - 15
needle spikerush	ELAC	5	35 - 525	1 - 15	5	0 - 110	0 - 5	5	0 - 60	0 - 5
sedge	CAREX	5	70 - 350	2 - 10	5	0 - 176	0 - 8	5	0 - 60	0 - 5
rush	JUNCU	5	0 - 175	0 - 5	5	0 - 110	0 - 5	5	0 - 36	0 - 3
other grass-likes	2GL	5	0 - 350	0 - 10	5	0 - 110	0 - 5	5	0 - 36	0 - 3
<b>NON-NATIVE GRASSES</b>		6			6	22 - 220	1 - 10	6	12 - 96	1 - 8
bluegrass	POA				6	0 - 220	0 - 10	6	0 - 60	0 - 5
cheatgrass	BRTE				6	22 - 110	1 - 5	6	12 - 60	1 - 5
<b>FORBS</b>		7	175 - 2100	5 - 60	7	110 - 770	5 - 35	7	60 - 300	5 - 25
American licorice	GLLE3	7	0 - 175	0 - 5	7	0 - 66	0 - 3			
bushy knotweed	PORA3	7	0 - 175	0 - 5	7	0 - 110	0 - 5	7	0 - 36	0 - 3
cinquefoil	POTEN	7	0 - 175	0 - 5	7	0 - 22	0 - 1			
cocklebur	XANTH2				7	0 - 110	0 - 5	7	0 - 60	0 - 5
creeping woodsorrel	OXCO	7	0 - 105	0 - 3	7	0 - 110	0 - 5	7	0 - 36	0 - 3
curly dock	RUCR				7	0 - 66	0 - 3	7	0 - 120	0 - 10
curlycup gumweed	GRSQ				7	0 - 66	0 - 3	7	0 - 60	0 - 5
curlytop knotweed	POLA4	7	0 - 525	0 - 15	7	0 - 220	0 - 10	7	0 - 36	0 - 3
evening-primrose	OENOT	7	0 - 175	0 - 5	7	0 - 66	0 - 3			
Indianhemp	APCA	7	0 - 175	0 - 5	7	0 - 66	0 - 3			
lambquarters	CHAL7	7	0 - 350	0 - 10	7	0 - 220	0 - 10	7	0 - 180	0 - 15
mealy goosefoot	CHIN2	7	0 - 175	0 - 5	7	0 - 66	0 - 3	7	0 - 24	0 - 2
mint	MENTH	7	0 - 175	0 - 5						
New England aster	SYNO2	7	0 - 350	0 - 10	7	0 - 66	0 - 3			
pale dock	RUAL4	7	0 - 525	0 - 15	7	0 - 66	0 - 3			
Pennsylvania smartweed	POPE2	7	0 - 525	0 - 15	7	0 - 220	0 - 10	7	0 - 36	0 - 3
plains coreopsis	COTI3	7	0 - 175	0 - 5						
plantain	PLANT	7	0 - 175	0 - 5	7	0 - 110	0 - 5	7	0 - 36	0 - 3
povertyweed	IVAX	7	0 - 175	0 - 5	7	0 - 110	0 - 5	7	0 - 36	0 - 3
Pursh seepweed	SUCA2	7	0 - 350	0 - 10	7	0 - 110	0 - 5	7	0 - 12	0 - 1
smooth horsetail	EQLA	7	0 - 105	0 - 3	7	0 - 66	0 - 3	7	0 - 36	0 - 3
tall fringed bluebells	MECI3	7	0 - 105	0 - 3						
western dock	RUAQ	7	0 - 350	0 - 10	7	0 - 66	0 - 3			
native forbs	2FN	7	0 - 700	0 - 20	7	0 - 110	0 - 5	7	0 - 60	0 - 5
introduced forbs	2FI				7	0 - 220	0 - 10	7	0 - 120	0 - 10
<b>Annual Production lbs./acre</b>			LOW RV HIGH		LOW RV HIGH		LOW RV HIGH		LOW RV HIGH	
<b>GRASSES &amp; GRASS-LIKES</b>			1845 - 2363 - 3050		1400 - 1760 - 1875		745 - 1020 - 1455			
<b>FORBS</b>			155 - 1138 - 1450		100 - 440 - 925		55 - 180 - 345			
<b>TOTAL</b>			2000 - 3500 - 4500		1500 - 2200 - 2800		800 - 1200 - 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. 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 data are 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 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.

### Reference Plant Community

Interpretations are based primarily on the Western Wheatgrass and Grass-likes, Forb Plant Communities, which are also considered to be reference. This plant community evolved with grazing by large herbivores and occasional fire, and can be maintained with prescribed grazing, prescribed burning, or areas receiving occasional short periods of rest or deferment.

**Western Wheatgrass Plant Community:** Following several years of relatively normal to above average precipitation, the plant community stabilizes and becomes dominated with perennial grasses such as western wheatgrass. Other grasses and grass-likes present include Nuttall’s alkaligrass, sedge, rush, slender wheatgrass. The occurrence of forbs will be considerably lower, including some species such as American licorice, curlycup knotweed, Pennsylvania smartweed, Pursh seepweed, and western dock. The plant community is made up of about 80-90 percent grasses and grass-likes and about 10-20 percent forbs. The total annual production (air-dry weight) of this plant community is typically about 3,500 lbs./acre.

**Grass-likes, Forbs Plant Community:** This plant community often occurs after a period of higher precipitation that follows an extended dry cycle. Grasses and grass-likes commonly occurring include sedge, spikerush, rush, foxtail barley, western wheatgrass, and bluegrasses. The forbs commonly found include western dock, mint, Pursh seepweed, lambsquarters, knotweed, evening-primrose, buttercup, and New England aster. The plant community is made up of about 5-10 percent grasses, 30-40 percent grass-likes, and about 50-60 percent forbs. The total annual production (air-dry weight) is about 2,200 lbs./acre.

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: NE6634

Growth curve name: Eroded Tableland, cool-season dominant.

Growth curve description: Cool-season dominant.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	5	15	28	30	10	2	5	5	0	0

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

- Precipitation cycles will shift this community between the Western Wheatgrass and Grass-likes, *Forbs Plant Communities*. After several years of normal to above average precipitation, the plant community stabilizes and perennial grasses/western wheatgrass will dominate the site with few grass-likes and forbs; and in the instance of higher precipitation received after extended years of drought, there will be an increase in the grass-likes and forbs components.

- Heavy continuous grazing will shift this community to the *Western Wheatgrass/Inland Saltgrass Plant Community*.

### Western Wheatgrass/Inland Saltgrass Plant Community

This plant community is the result of heavy continuous grazing. Repeated defoliation depletes stored carbohydrates, resulting in weakening and eventual death of the most palatable grasses. Reduced plant vigor and lack of litter result in higher soil temperatures, poor water infiltration rates, high evapotranspiration and increased percolation of the high water table. This increases salt concentrations on the surface. Inland saltgrass and other salt tolerant species gain a competitive advantage over less tolerant species.

Inland saltgrass drastically increases and competes with western wheatgrass as the dominant species with the balance being a few species of cool-season grasses and grass-likes including Nuttall's alkaligrass, plains bluegrass, common spikerush, needle Spikerush, and other sedges and rushes. Early cool-season grasses including foxtail barley, fowl bluegrass, and Kentucky bluegrass begin to invade. Forbs that will invade are curly dock and cocklebur. Common forbs to the site include lambsquarters, Pennsylvania smartweed, curlytop knotweed, plantain, and povertyweed.

This plant community is relatively stable and well adapted to increased salinity. Plant vigor, litter, frequency and production have decreased. The biological integrity, water, and nutrient cycles of this plant community are becoming impaired. This plant community is less productive than the Reference 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: NE6634

Growth curve name: Eroded Tableland, cool-season dominant.

Growth curve description: Cool-season dominant.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	5	15	28	30	10	2	5	5	0	0

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

- Heavy continuous grazing will shift this community to the *Foxtail Barley/Inland Saltgrass Plant Community*.
- With prescribed grazing and above average precipitation, this plant community will move towards the *Wheatgrass Plant Community*.

### Foxtail Barley/Inland Saltgrass Plant Community

This plant community developed with heavy continuous grazing where adequate recovery periods between grazing events were not allowed. Patches of inland saltgrass sod are typical, and foxtail barley and fowl bluegrass are well distributed throughout the community. Nuttall's alkaligrass and western wheatgrass have been greatly reduced in production and vigor, and may persist in remnant amounts. This plant community is resistant to change due to the grazing tolerance of inland saltgrass and increased surface salts. A significant amount of production and diversity has been lost when compared to the Reference Plant Community. Loss of key cool-season grasses and increased bare ground have negatively impacted energy flow and nutrient cycling. Water infiltration is reduced significantly due to the massive shallow root system "root pan", characteristic of inland saltgrass, and increased bare ground.

It will take a long time to bring this plant community back to the Reference Plant Community with management alone. Renovation (mechanical and/or chemical inputs) is not recommended due to high salt content of the soil and saltgrass persistence.

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: NE6634

Growth curve name: Eroded Tableland, cool-season dominant.

Growth curve description: Cool-season dominant.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	5	15	28	30	10	2	5	5	0	0

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

- Long-term prescribed grazing that includes changing season of use and allowing adequate recovery periods between grazing events will lead this plant community back to the *Western Wheatgrass/Grass-likes/Forbs Plant Community (Reference Plant Community)*.

### Go-back, Excessive Disturbance

The **Go-back land** state can be reached whenever severe mechanical disturbance occurs (e.g., tilled and abandoned land, either past or present). During the early successional stages, the species that mainly dominate are annual grasses and forbs, later being replaced by both native and introduced perennials. The vegetation on this site varies greatly, sometimes being dominated by threeawn, bluegrass, smooth brome, annual brome, crested wheatgrass, buffalograss, broom snakeweed, sweetclover, and nonnative thistles. Other plants that commonly occur on the site include western wheatgrass, deathcamas, prickly lettuce, marehail, kochia, foxtail, and sunflowers. Bare ground is prevalent due to the loss of organic matter and lower overall soil health.

**Excessive disturbance** can be reached when long duration flooding events and/or excessive defoliation occurs. This can result from heavy livestock or wildlife concentration, enduring wet cycles, and cropping abandonment (go-back land). The dominant vegetation includes pioneer annual grasses, forbs, invaders, and early successional biennial and perennial species. Grasses may include foxtail barley, which may become dominant along with fowl bluegrass, Nuttall's alkaligrass, and western wheatgrass. The dominant forbs include curly dock, curlycup gumweed, kochia, and other early successional salt tolerant species. Plant species from adjacent ecological sites may become minor components of this plant community. The community is susceptible to nonnative species due to severe soil disturbances and relatively high percent of bare ground. This plant community is resistant to change, as long as soil disturbance or severe vegetation defoliation persists, thus holding back secondary plant succession. Secondary succession is highly variable, depending upon availability and diversity of a viable seed bank of higher successional species within the existing plant community and neighboring plant communities.

## **Ecological Site Interpretations**

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

-- Under Development --

**Western Wheatgrass/Grass-likes, Forbs (Reference) Plant Community:**

**Western Wheatgrass/Inland Saltgrass Plant Community:**

**Foxtail Barley/Inland Saltgrass 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>							
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
common spikerush	N U D U	N U U N	N U D U	N U U N	N U U N	N U D U	N U D U
fowl bluegrass	N U U N	N U U N	N U U N	N U U N	N U U N	N U U N	N U U 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
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
needle spikerush	N U D U	N U U N	N U D U	N U U N	N U U N	N U D U	N U 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
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
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
bushy knotweed	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
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
creeping woodsorrel	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
curlytop knotweed	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
evening-primrose	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
Indianhemp	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
lambsquarters	U U D U	N D U N	U U D U	N D U N	N D U N	U U D U	N D U N
mealy goosefoot	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
mint	N N U N	N U U N	N N U N	N U U N	N U U N	N N U N	N N U N
New England aster	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
pale dock	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
Pennsylvania smartweed	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
plains coreopsis	N N U N	N U U N	N N U N	N U U N	N U U N	N N U N	N N U N
plantain	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
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
smooth horsetail	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
tall fringed bluebells	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
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

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 D. Infiltration is very slow to slow and runoff potential is very high depending on 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).

Rills, gullies, and water flow patterns are not present. Pedestals are only slightly present. Litter falls in place and signs of movement are not common. Chemical and physical crusts are rare and not significant for hydrologic considerations. Cryptogamic crusts may be present but are not significant for hydrologic considerations. Overall, this site has the appearance of being stable and productive except areas of white crust (salts) may be present.

## 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 present on the site.

## Other Products

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

## Supporting Information

### Associated Sites

(R066XY058NE) – Loamy 22-25" P.Z.

(R063BY011SD) – Clayey

### Similar Sites

(R063BY007SD) – Saline Lowland [similar species and production, less western wheatgrass, more prairie cordgrass, and a water table]

(R063BY021SD) – Clayey Overflow [similar species, Clayey Overflow occurs along drainages, higher component of shrubs, fewer forbs, no water table]

## 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: Wayne Bachman, Soil Scientist (SS), NRCS; Stan Boltz, Range Management Specialist (RMS), NRCS; Anna Ferguson, Soil Conservationist, NRCS; Roger Hammer, SS, NRCS; Dana Larsen, RMS, NRCS; Dave Schmidt, RMS, NRCS; and Kim Stine, RMS, NRCS.

## State Correlation

This site has been correlated with NE and SD in MLRA 66.

### Field Offices Counties

Ainsworth, NE	Brown, Keya Paha & Rock
Bloomfield, NE	Knox
Burke, SD	Gregory
Martin, SD	Bennett & Shannon
Neligh, NE	Antelope

### Field Offices Counties

O'Neill, NE	Holt
Spencer, NE	Boyd
Valentine, NE	Cherry
White River, SD	Mellette, Todd
Winner, SD	Tripp

## Relationship to Other Established Classifications

Level IV Ecoregions of the Conterminous United States: 43i – Keya Paha Tablelands.

## 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://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/technical/handbook/>)

## Site Description Approval

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

\_\_\_\_\_  
Date

\_\_\_\_\_  
NE, State Range Management Specialist

\_\_\_\_\_  
Date