

## United States Department of Agriculture Natural Resources Conservation Service

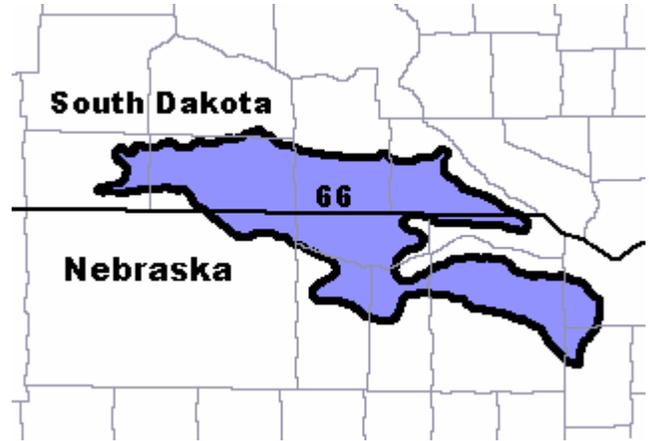
### Ecological Site Description

**Site Type:** Rangeland

**Site Name:** Choppy Sands

**Site ID:** R066XY056NE

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



### Physiographic Features

**Landform:** Dune  
 N/A

**Aspect:**

	<u>Minimum</u>	<u>Maximum</u>
<b>Elevation (feet):</b>	1900	3000
<b>Slope (percent):</b>	24	60
<b>Water Table Depth (inches):</b>	None	None
<b>Flooding:</b>		
<b>Frequency:</b>	None	None
<b>Duration:</b>	None	None
<b>Ponding:</b>		
<b>Depth (inches):</b>	None	None
<b>Frequency:</b>	None	None
<b>Duration:</b>	None	None
<b>Runoff Class:</b>	Low	Low

### 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, Nebraska (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 annually, ranging from about 11 miles per hour during the spring to about 9 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 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. Green up of cool-season plants may occur in September and October when adequate soil moisture is present.

	<b>Minimum</b>	<b>Maximum</b>
<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

Climate Stations		Period	
Station ID	Location or Name	From	To
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**

No significant water features influence this site.

**Representative Soil Features**

The features common to all soils in this site are the sandy textured surface soils and slopes of 24 to 60 percent. The soils in this site are excessively drained and formed in eolian sand. The surface layer is 2 to 10 inches thick. The texture of the subsurface is fine sand. Runoff as evidenced by patterns of rills, gullies, or other water flow is typically low, in spite of the very steep slopes, due to the very high intake rate of these soils. Some pedestalling of plants occurs, but it is not very evident on casual observation and occurs on less than 5 percent of the plants.

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: eolian deposits  
Parent Material Origin: mixed  
Surface Texture: fine sand  
Surface Texture Modifier: none  
Subsurface Texture Group: sandy  
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:	excessively	excessively
Permeability Class:	rapid	rapid
Depth (inches):	>80	>80
Electrical Conductivity (mmhos/cm):	0	0
Sodium Absorption Ratio:	0	0
Soil Reaction (1:1 Water):	5.1	7.3
Soil Reaction (0.1M CaCl <sub>2</sub> ):	NA	NA
Available Water Capacity (inches):	3	3
Calcium Carbonate Equivalent (percent):	0	0

## Plant Communities

### Ecological Dynamics of the Site:

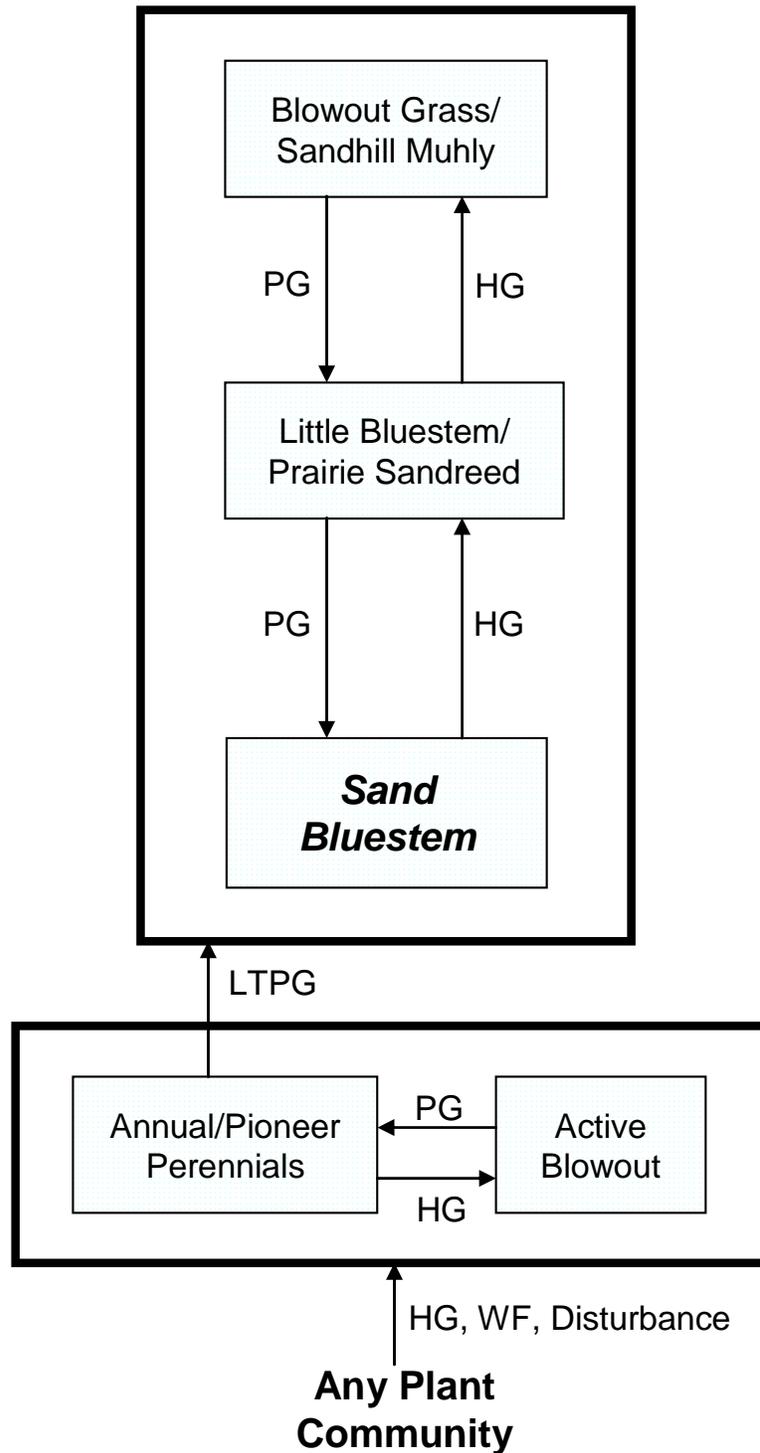
Historically, large areas of blowing sand resulted in the active movement of the sand dunes. Evaporation from the soil surface was extremely high due to the large areas of bare ground, lack of litter and sparse plant populations. The transpiration rate of these sparse plant populations was also high due to the harsh soil environment. Occasional wild fires, severe grazing by transient bison herds, and drought contributed to the lack of stability of the sand dunes. This lack of stability caused the dunes to go back and forth through multiple stages of plant succession over the course of time. Early perennial plants such as sandhill muhly, blowout grass, and blowout penstemon were common due to their ability to tolerate the movement of the sand and droughty conditions. As these plants began to colonize and stabilize the sand movement, other perennials such as prairie sandreed, sand bluestem, hairy grama, lemon scurfpea, and rose slowly became evident on the site. Annual plants such as sandbur, Texas croton, and annual sunflower eventually colonized the areas between the perennials.

As this site deteriorates, sand dropseed, needleandthread, hairy grama, and prairie sandreed will increase. Species such as sand bluestem and switchgrass will decrease in frequency and production. The site is resilient and well adapted to the Northern Great Plains climatic conditions. The diversity in plant species allows for high drought resistance.

Interpretations are primarily based on the Bluestem/Prairie Sandreed 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. Subclimax 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 will be discussed in more detail in the plant community descriptions following the diagram.

### Plant Communities and Transitional Pathways



**HG** – Heavy grazing; **LTPG** – Long-term prescribed grazing;  
**PG** – Prescribed grazing; **WF** – Wildfire.

Plant Community Composition and Group Annual Production

COMMON/GROUP NAME	SCIENTIFIC NAME	SYMBOL	Sand Bluestem			
			Group	lbs./acre	% Comp	
<b>GRASSES &amp; GRASS-LIKES</b>				1920 - 2280	80 - 95	
sand bluestem	Andropogon hallii	ANHA	1	480 - 960	20 - 40	
prairie sandreed	Calamovilfa longifolia	CALO	2	360 - 600	15 - 25	
little bluestem	Schizachyrium scoparium	SCSC	3	360 - 600	15 - 25	
<b>NEEDLEGRASS</b>			4	120 - 240	5 - 10	
needleandthread	Hesperostipa comata ssp. comata	HECOC8	4	120 - 240	5 - 10	
porcupine grass	Hesperostipa spartea	HESP11	4	0 - 240	0 - 10	
<b>GRAMA</b>			5	24 - 120	1 - 5	
hairy grama	Bouteloua hirsuta	BOHI2	5	24 - 120	1 - 5	
blue grama	Bouteloua gracilis	BOGR2	5	0 - 120	0 - 5	
<b>OTHER WARM-SEASON</b>			6	360 - 720	15 - 30	
switchgrass	Panicum virgatum	PAVI2	6	240 - 480	10 - 20	
Indiangrass	Sorghastrum nutans	SONU2	6	120 - 240	5 - 10	
sand dropseed	Sporobolus cryptandrus	SPCR	6	0 - 120	0 - 5	
sand paspalum	Paspalum setaceum	PASE5	6	0 - 72	0 - 3	
sand lovegrass	Eragrostis trichodes	ERTR3	6	120 - 480	5 - 20	
sandhill muhly	Muhlenbergia pungens	MUPU2	6	0 - 120	0 - 5	
blowout grass	Redfieldia flexuosa	REFL	6	0 - 120	0 - 5	
<b>NATIVE GRASS/GRASS-LIKES</b>			7	48 - 192	2 - 8	
prairie junegrass	Koeleria macrantha	KOMA	7	0 - 120	0 - 5	
Scribner panicum	Dichanthelium oligosanthes var. scribnerianum	DIOLS	7	0 - 120	0 - 5	
Wilcox panicum	Dichanthelium wilcoxianum	DIWI5	7	0 - 120	0 - 5	
sedge	Carex spp.	CAREX	7	0 - 120	0 - 5	
other perennial grasses		2GP	7	0 - 48	0 - 2	
<b>FORBS</b>			8	120 - 240	5 - 10	
gayfeather	Liatris spp.	LIATR	8	0 - 48	0 - 2	
green sagewort	Artemisia dracunculus	ARDR4	8	0 - 24	0 - 1	
hairy goldaster	Heterotheca villosa	HEVI4	8	0 - 24	0 - 1	
penstemon	Penstemon spp.	PENST	8	0 - 24	0 - 1	
scurfpea	Psoralegium spp.	PSORA2	8	0 - 24	0 - 1	
stiff sunflower	Helianthus pauciflorus	HEPA19	8	0 - 48	0 - 2	
western ragweed	Ambrosia psilostachya	AMPS	8	0 - 48	0 - 2	
other perennial forbs		2FP	8	0 - 48	0 - 2	
other annual forbs		2FA	8	0 - 48	0 - 2	
<b>SHRUBS</b>			9	24 - 240	1 - 10	
leadplant	Amorpha canescens	AMCA6	9	0 - 120	0 - 5	
poison ivy	Toxicodendron rydbergii	TORY	9	0 - 120	0 - 5	
rose	Rosa spp.	ROSA5	9	0 - 120	0 - 5	
small soapweed	Yucca glauca	YUGL	9	0 - 120	0 - 5	
western sandcherry	Prunus pumila var. besseyi	PRPUB	9	0 - 120	0 - 5	
wild plum	Prunus americana	PRAM	9	0 - 120	0 - 5	
other shrubs		2SHRUB	9	0 - 72	0 - 3	
<b>Annual Production lbs./acre</b>				LOW	RV	HIGH
<b>GRASSES &amp; GRASS-LIKES</b>				1665 -	2088	-2500
<b>FORBS</b>				115 -	180	-250
<b>SHRUBS</b>				20 -	132	-250
<b>TOTAL</b>				1800 -	2400	-3000

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	Sand Bluestem			Little Bluestem/Prairie Sandreed			Blowout Grass/Sandhill Muhly		
		Grp	lbs./acre	% Comp	Grp	lbs./acre	% Comp	Grp	lbs./acre	% Comp
<b>GRASSES &amp; GRASS-LIKES</b>			1920 - 2280	80 - 95		1280 - 1520	80 - 95		180 - 480	30 - 80
sand bluestem	ANHA	1	480 - 960	20 - 40	1	80 - 240	5 - 15	1	0 - 60	0 - 10
prairie sandreed	CALO	2	360 - 600	15 - 25	2	320 - 560	20 - 35	2	0 - 60	0 - 10
little bluestem	SCSC	3	360 - 600	15 - 25	3	320 - 560	20 - 35	3	0 - 30	0 - 5
<b>NEEDLEGRASS</b>		4	120 - 240	5 - 10	4	16 - 160	1 - 10	4		
needleandthread	HECOC8	4	120 - 240	5 - 10	4	16 - 160	1 - 10			
porcupine grass	HESP11	4	0 - 240	0 - 10	4	0 - 32	0 - 2			
<b>GRAMA</b>		5	24 - 120	1 - 5	5	16 - 160	1 - 10	5	0 - 12	0 - 2
hairy grama	BOHI2	5	24 - 120	1 - 5	5	16 - 160	1 - 10	5	0 - 12	0 - 2
blue grama	BOGR2	5	0 - 120	0 - 5	5	0 - 80	0 - 5			
<b>OTHER WARM-SEASON</b>		6	360 - 720	15 - 30	6	80 - 320	5 - 20	6	180 - 480	30 - 80
switchgrass	PAVI2	6	240 - 480	10 - 20	6	0 - 160	0 - 10			
Indiangrass	SONU2	6	120 - 240	5 - 10	6	0 - 80	0 - 5			
sand dropseed	SPCR	6	0 - 120	0 - 5	6	0 - 128	0 - 8	6	0 - 30	0 - 5
sand paspalum	PASE5	6	0 - 72	0 - 3	6	0 - 32	0 - 2			
sand lovegrass	ERTR3	6	120 - 480	5 - 20	6	0 - 80	0 - 5			
sandhill muhly	MUPU2	6	0 - 120	0 - 5	6	0 - 80	0 - 5	6	30 - 240	5 - 40
blowout grass	REFL	6	0 - 120	0 - 5	6	0 - 80	0 - 5	6	180 - 420	30 - 70
<b>NATIVE GRASS/GRASS-LIKES</b>		7	48 - 192	2 - 8	7	32 - 128	2 - 8	7		
prairie junegrass	KOMA	7	0 - 120	0 - 5	7	0 - 80	0 - 5			
Scribner panicum	DIOLS	7	0 - 120	0 - 5	7	0 - 32	0 - 2			
Wilcox panicum	DIWI5	7	0 - 120	0 - 5	7	0 - 48	0 - 3			
sedge	CAREX	7	0 - 120	0 - 5	7	0 - 80	0 - 5			
other perennial grasses	2GP	7	0 - 48	0 - 2	7	0 - 32	0 - 2			
<b>FORBS</b>		8	120 - 240	5 - 10	8	80 - 160	5 - 10	8	6 - 60	1 - 10
annual sunflower	HEAN3							8	0 - 30	0 - 5
gayfeather	LIATR	8	0 - 48	0 - 2	8	0 - 16	0 - 1			
green sagewort	ARDR4	8	0 - 24	0 - 1	8	0 - 32	0 - 2	8	0 - 18	0 - 3
hairy goldaster	HEVI4	8	0 - 24	0 - 1	8	0 - 16	0 - 1			
penstemon	PENST	8	0 - 24	0 - 1	8	0 - 16	0 - 1			
scurfpea	PSORA2	8	0 - 24	0 - 1	8	0 - 16	0 - 1	8	0 - 12	0 - 2
stiff sunflower	HEPA19	8	0 - 48	0 - 2	8	0 - 16	0 - 1			
western ragweed	AMPS	8	0 - 48	0 - 2	8	0 - 48	0 - 3	8	0 - 12	0 - 2
other perennial forbs	2FP	8	0 - 48	0 - 2	8	0 - 16	0 - 1	8	0 - 18	0 - 3
other annual forbs	2FA	8	0 - 48	0 - 2	8	0 - 32	0 - 2	8	0 - 30	0 - 5
<b>SHRUBS</b>		9	24 - 240	1 - 10	9	16 - 160	1 - 10	9	120 - 300	20 - 50
leadplant	AMCA6	9	0 - 120	0 - 5	9	0 - 32	0 - 2			
poison ivy	TORY	9	0 - 120	0 - 5						
rose	ROSA5	9	0 - 120	0 - 5	9	0 - 80	0 - 5	9	0 - 6	0 - 1
small soapweed	YUGL	9	0 - 120	0 - 5	9	0 - 80	0 - 5	9	120 - 300	20 - 50
western sandcherry	PRPUB	9	0 - 120	0 - 5	9	0 - 32	0 - 2			
wild plum	PRAM	9	0 - 120	0 - 5	9	0 - 16	0 - 1			
other shrubs	2SHRUB	9	0 - 72	0 - 3	9	0 - 48	0 - 3	9	0 - 30	0 - 5
<b>Annual Production lbs./acre</b>			LOW RV HIGH			LOW RV HIGH			LOW RV HIGH	
<b>GRASSES &amp; GRASS-LIKES</b>			1665 · 2088 - 2500			1110 · 1392 - 1670			335 · 357 - 410	
<b>FORBS</b>			115 · 180 - 250			75 · 120 - 165			0 · 33 - 65	
<b>SHRUBS</b>			20 · 132 - 250			15 · 88 - 165			115 · 210 - 325	
<b>TOTAL</b>			1800 · 2400 - 3000			1200 · 1600 - 2000			450 · 600 - 800	

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 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, 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.

#### Sand Bluestem Plant Community

Interpretations are primarily based on the Sand Bluestem Plant Community (this is also considered climax). This site evolved with grazing by large herbivores and is well suited for grazing by domestic livestock. This plant community can be found on areas that are properly managed with grazing and/or prescribed burning, and sometimes on areas receiving occasional short periods of rest.

This plant community consists chiefly of tall and mid warm-season grasses. Principal dominants are sand bluestem, prairie sandreed, and little bluestem. Grasses of secondary importance are needleandthread, switchgrass, sand dropseed, and hairy or blue grama. Sedges occur in the understory. Forbs and shrubs such as gayfeather, stiff sunflower, leadplant, rose, and sandcherry are significant. This plant community is about 80 percent grasses, 10 percent forbs, and 10 percent shrubs by weight.

This plant community is resilient and well adapted to the Northern Great Plains climatic conditions. The diversity in plant species allows for high drought tolerance. This is a healthy and sustainable plant community (site/soil stability, watershed function, and biologic integrity).

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

Growth curve number: NE6637

Growth curve name: Eroded Tableland, 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	5	8	15	24	23	15	5	5	0	0

Transitional pathways and/or community pathways leading to other plant communities are as follows:

- Heavy grazing and/or improper rest periods will convert this plant community to the *Little Bluestem/Prairie Sandreed Plant Community*. Continuous heavy grazing tends to accelerate this movement.

#### Little Bluestem/Prairie Sandreed Plant Community

This plant community develops under traditional grazing systems (such as continuous summer grazing). The potential vegetation is about 80 percent grasses or grass-like plants, 10 percent forbs and 10 percent shrubs. It is made up of primarily warm season grasses with prairie sandreed and little bluestem being dominant. Other grasses include sand bluestem, hairy grama, needleandthread, and sand lovegrass. The dominant/significant forbs include green sagewort, dotted gayfeather, scurfpea, stiff sunflower, penstemon, hairy goldaster, gilia, and

western ragweed. Shrubs present include rose, small soapweed, poison ivy, and fragile cactus. Compared to the Sand Bluestem Plant Community, sand bluestem decreases and little bluestem and grama increase. Leadplant, western sandcherry, and chokecherry decrease. Bare ground increases as tall, warm-season grasses decrease.

This plant community is resistant to change. Any short-term disturbance will not result in a shift to another plant community due to the species diversity. Soil erosion is low unless plant cover is reduced through fire, hail or heavy grazing. The water cycle is functioning. Runoff can occur during high rainfall events, resulting in soil erosion in concentrated flow areas.

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

Growth curve number: NE6637

Growth curve name: Eroded Tableland, 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	5	8	15	24	23	15	5	5	0	0

Transitional pathways and/or community pathways leading to other plant communities are as follows:

- With repeated heavy summer grazing, this plant community will move towards the *Blowout Grass/Sandhill Muhly Plant Community*. The risks involved may include a decrease in forage production, plant diversity, ground cover, and an increase in annual grasses and forbs.
- With prescribed grazing, this plant community will move rapidly toward the *Sand Bluestem Plant Community* with a notable increase in warm-season grasses, perennial forbs and palatable shrubs. Continuous winter use will also move this plant community towards the *Sand Bluestem Plant Community*, and small soapweed will be reduced. Risks involved with winter use are trailing along slopes, soil erosion of south facing slopes when livestock seek protection from prevailing northwesterly winds, and poor distribution resulting in heavy use on associated bottom lands.

### **Blowout Grass/Sandhill Muhly Plant Community**

This plant community develops under continuous heavy grazing. Large amounts of bare ground are evident. Plants are sparse with primary species being blowout grass and sandhill muhly. The potential vegetation is about 55 percent grasses or grass-like plants, 10 percent forbs, and 35 percent shrubs. Sand bluestem may be present on deposition sites adjacent to active blowouts. The dominant forbs include lemon scurfspea, annual sunflower, western ragweed, and green sagewort. Small soapweed is the only shrub that routinely occurs on this plant community. This plant community is not resistant to change. Any short-term disturbance could result in a shift to an active blowout.

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

Growth curve number: NE6637

Growth curve name: Eroded Tableland, 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	5	8	15	24	23	15	5	5	0	0

Transitional pathways and/or community pathways leading to other plant communities are as follows:

- Under continuous heavy grazing, this area will become an active blowout. In years of high rainfall, annual forbs may provide enough cover to minimize soil erosion.
- With prescribed grazing, this plant community will move toward the *Little Bluestem/Prairie Sandreed Plant Community*. Initially, small increases in sand dropseed and prairie sandreed will be evident. Careful management is required to protect this plant community from excessive soil erosion until the vigor of individual plants improve and plant density increases.

**Annual/Pioneer Perennial Plant Community**

As succession progresses, sandhill muhly, blowout grass, and sand bluestem begin to colonize. Sandbur, lemon scurfpea, Texas croton, and annual sunflower begin to come in with prairie sandreed, hairy grama, and rose slowly becoming evident on this plant community.

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

Growth curve number: NE6636

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

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

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	5	10	20	25	20	10	5	5	0	0

Transitional pathways and/or community pathways leading to other plant communities are as follows:

- With continued disturbance (such as heavy grazing) and/or wildfire, this plant community will move towards the *Active Blowout Plant Community*.
- Under long-term prescribed grazing (10+ years), including adequate rest periods, succession will progress leading to the *Sand Bluestem Plant Community*. The slope, aspect, size and relative abundance of perennial plants will influence the rate that change will occur.

**Active Blowout Plant Community**

This condition can be reached from any other plant community. Large areas of blowing sand result in movement and possible enlargement of the blowout. Evaporation is extremely high, and transpiration of the few existing plants is also high due to bare ground, lack of litter, and low plant density. This plant community is in a low successional stage due to steep slopes and poor soil development. Sandhill muhly and blowout grass are present due to their drought tolerance.

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

Growth curve number: NE6638

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

Growth curve description: Warm-season dominant.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	3	7	15	20	30	15	5	5	0	0

Transitional pathways and/or community pathways leading to other plant communities are as follows:

- With prescribed grazing and concentrated short-term animal impact (such as feeding hay on the blowout), this plant community will move to *the Annual/Pioneer Perennial Plant Community*. Establishment of vegetation may be accelerated by broadcast seeding of a temporary cover crop prior to removal of animal impact.

## **Ecological Site Interpretations**

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

-- Under Development --

**Sand Bluestem Plant Community:**

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

**Blowout Grass/Sandhill Muhly Plant Community:**

**Annual/Pioneer Perennial Plant Community:**

**Active Blowout Plant Community:**

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

Common Name	Cattle	Sheep	Horses	Deer	Antelope	Bison	Elk
<b>Grasses &amp; Grass-likes</b>							
blowout grass	U U D U	N N N N	U U D U	N N N N	N N N N	U U D U	U U 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
hairy 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
Indiangrass	U D P D	U D U U	U D P D	U D U U	U D U U	U D P D	U D P D
little bluestem	U D D U	N D N N	U D D U	N D N N	N D N N	U D D U	U D D U
needleandthread	U D U D	N D N U	U D U D	N D N U	N D N U	U D U D	U D U D
porcupine grass	U P U D	N D N U	U P U D	N D N U	N D N U	U P U D	U P U D
prairie 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
sand bluestem	U D P D	U D U U	U D P D	U D U U	U D U U	U D P D	U D P D
sand 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
sand lovegrass	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
sand paspalum	N U U N	N U N N	N U U N	N U N N	N U N N	N U U N	N U U N
sandhill muhly	N U N N	N N N N	N U N N	N N N N	N N N N	D U U D	N U N N
Scribner panicum	U U D U	N U N N	U U D U	N U N N	N U N N	U U D U	U U D U
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
switchgrass	U D D U	U D U U	U D D U	N N N N	N N N N	U D D U	U D D U
Wilcox panicum	U U U U	N U N N	U U U U	N U N N	N U N N	U U U U	U U U U
<b>Forbs</b>							
gayfeather	U U D U	U P P U	U U D U	U P P U	U P P U	U U D U	U P P U
green sagewort	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
hairy goldaster	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
penstemon	U U U U	U P P U	U U U U	U P P U	U P P U	U U U U	U P P U
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
stiff sunflower	U D P U	U D P U	U D P U	U D P U	U D P U	U D P U	U D P U
western ragweed	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
<b>Shrubs</b>							
leadplant	U P D U	U P D U	U P D U	U P D U	U P D U	U P D U	U P D U
poison ivy	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
rose	U D D U	U D D U	U D D U	U D D U	U D D U	U D D U	U D D U
small soapweed	D N N D	D U U D	D N N D	D U U D	D U U D	D N N D	D U U D
western sandcherry	D P P D	D U U D	D P P D	P U D P	D U U D	D P P D	P U U P
wild plum	D U U D	D U U D	D U U D	P 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

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

### Animal Community – Grazing Interpretations

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

Plant Community	Average Annual Production (lbs./acre, air-dry)	Stocking Rate* (AUM/acre)
Sand Bluestem	2400	0.66
Little Bluestem/Prairie Sandreed	1600	0.44
Blowout Grass/Sandhill Muhly	600	**

\*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).

\*\*Highly variable; stocking rate needs to be determined onsite.

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. Valentine soils on this site are in Hydrologic Soil Group A (low runoff and high infiltration even when thoroughly wetted). Water transmission through Group A soils is normally greater than 0.30 inches per hour. Runoff is expected to occur only during intense storms (refer to Section 4, NRCS National Engineering Handbook for runoff quantities and hydrologic curves).

For the interpretive plant community, rills and gullies should not typically be present. Water flow patterns should be barely distinguishable if at all present. Pedestals are only slightly present in association with bunchgrasses such as little bluestem. Litter typically falls in place, and signs of movement are not common. Chemical and physical crusts are rare to non-existent. Cryptogamic crusts are present but only cover one to two percent of the soil surface. Overall, this site has the appearance of being very stable and productive.

### 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

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

## Supporting Information

### Associated Sites

(066XY055NE) – Sands 22-25" P.Z.

(066XY054NE) – Sandy 22-25" P.Z.

(066XY046NE) – Subirrigated

(066XY062NE) – Shallow to Gravel

## Similar Sites

- (066XY055NE) – Sands 22-25" P.Z.  
[slope not as steep; higher production; blowout grass absent; fewer shrubs]
- (066XY054NE) – Sandy 22-25" P.Z.  
[slope not as steep; higher production; prairie sandreed dominant]

## 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, NRCS; Stan Boltz, Range Management Specialist, NRCS; Anna Ferguson, Soil Conservationist, NRCS; Roger Hammer, Soil Scientist, NRCS; Dana Larsen, Range Management Specialist, NRCS; Dave Schmidt, Rangeland Management Specialist, NRCS; and Kim Stine, Rangeland Management Specialist, NRCS.

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

## 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://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, 2002. National Soil Survey Handbook, title 430-VI. (<http://soils.usda.gov/technical/handbook/>)

## Site Description Approval

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

\_\_\_\_\_  
Date

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

\_\_\_\_\_  
Date