

United States Department of Agriculture Natural Resources Conservation Service

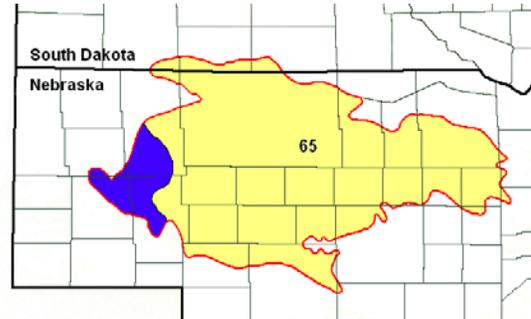
Ecological Site Description

Site Type: Rangeland

Site Name: Choppy Sands 14-17" P.Z.

Site ID: R065XY013NE

Major Land Resource Area:
65 – Nebraska Sand Hills



Physiographic Features

Landform: Dune

Aspect: N/A

	<u>Minimum</u>	<u>Maximum</u>
Elevation (feet):	3500	4000
Slope (percent):	24	60
Water Table Depth (inches):	None	None
Flooding:		
Frequency:	None	None
Duration:	None	None
Ponding:		
Depth (inches):	None	None
Frequency:	None	None
Duration:	None	None
Runoff Class:	Low	Low

Climatic Features

The mean average annual precipitation varies from 14-17 inches, but has varied from 12 to 20 inches in the driest to wettest season. Approximately 70 percent of the annual precipitation occurs during the growing season of mid-April to late September. The average annual snowfall varies from about 34 inches to about 42 inches. The wind velocity is high throughout the year, averaging 10 to 12 miles per hour. Maximum wind velocities generally occur in the spring.

The average length of the growing season is 138 days, but the growing season has varied from 114 to 168 days. The average date of first frost in the fall is September 25, and the last frost in the spring is about May 8. July is the hottest month and January is the coldest. It is not uncommon for the temperature to reach 100 °F during the summer. Summer humidity is low and evaporation is high. The winters are characterized with frequent northerly winds, producing severe cold with temperatures dropping to as low as -30 °F.

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.

	<u>Minimum</u>	<u>Maximum</u>
Frost-free period (days):	131	145
Freeze-free period (days):	153	165
Mean Annual Precipitation (inches):	17	22

Monthly Precipitation (inches) and Temperature (F):

	Precip. Min.	Precip. Max	Temp. Min.	Temp. Max.
January	0.33	0.47	9.6	37.8
February	0.39	0.46	14.7	43.7
March	0.86	0.97	21.7	50.0
April	1.51	1.52	32.0	60.7
May	2.87	3.31	42.8	70.9
June	2.94	3.09	51.8	81.7
July	2.05	2.54	57.2	88.9
August	1.07	1.93	55.2	87.0
September	1.16	1.60	44.7	77.5
October	0.87	0.94	32.7	65.5
November	0.51	0.61	20.8	49.5
December	0.31	0.50	12.9	40.3

Climate Stations		Period	
Station ID	Location or Name	From	To
NE7665	Scottsbluff WSO AP	1948	1997
NE2000	Crescent Lake Natl WLR	1948	1997

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

Influencing Water Features

Wetland Description:	System	Subsystem	Class	Sub-class
None	None	None	None	None

Stream Type: None
 (Rosgen System)

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 9 inches thick. The texture of the subsurface ranges from fine sand to sand. Runoff as evidenced by patterns of rill, gully or other water flow is typically low, in spite of the very steep slopes, due to the very high intake rate of these soils. Cryptobiotic crusts are present, but their function is not well understood. Some pedestalling of plants occurs, but it is not very evident on casual observation and occurs on less than 5% of the plants.

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

Major soil series correlated to this ecological site include: Valent.

Other soil series that have been correlated to this site include: none.

Site Type: Rangeland
 MLRA: 65 – Nebraska Sand Hills
Parent Material Kind: eolian deposits

**Choppy Sands 14-17” P.Z.
 R065XY013NE**

Parent Material Origin: mixed
Surface Texture: fine sand, 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):	6.6	7.8
Soil Reaction (0.1M CaCl₂):	NA	NA
Available Water Capacity (inches):	3	3
Calcium Carbonate Equivalent (percent):	0	0

Plant Communities

Ecological Dynamics of the Site:

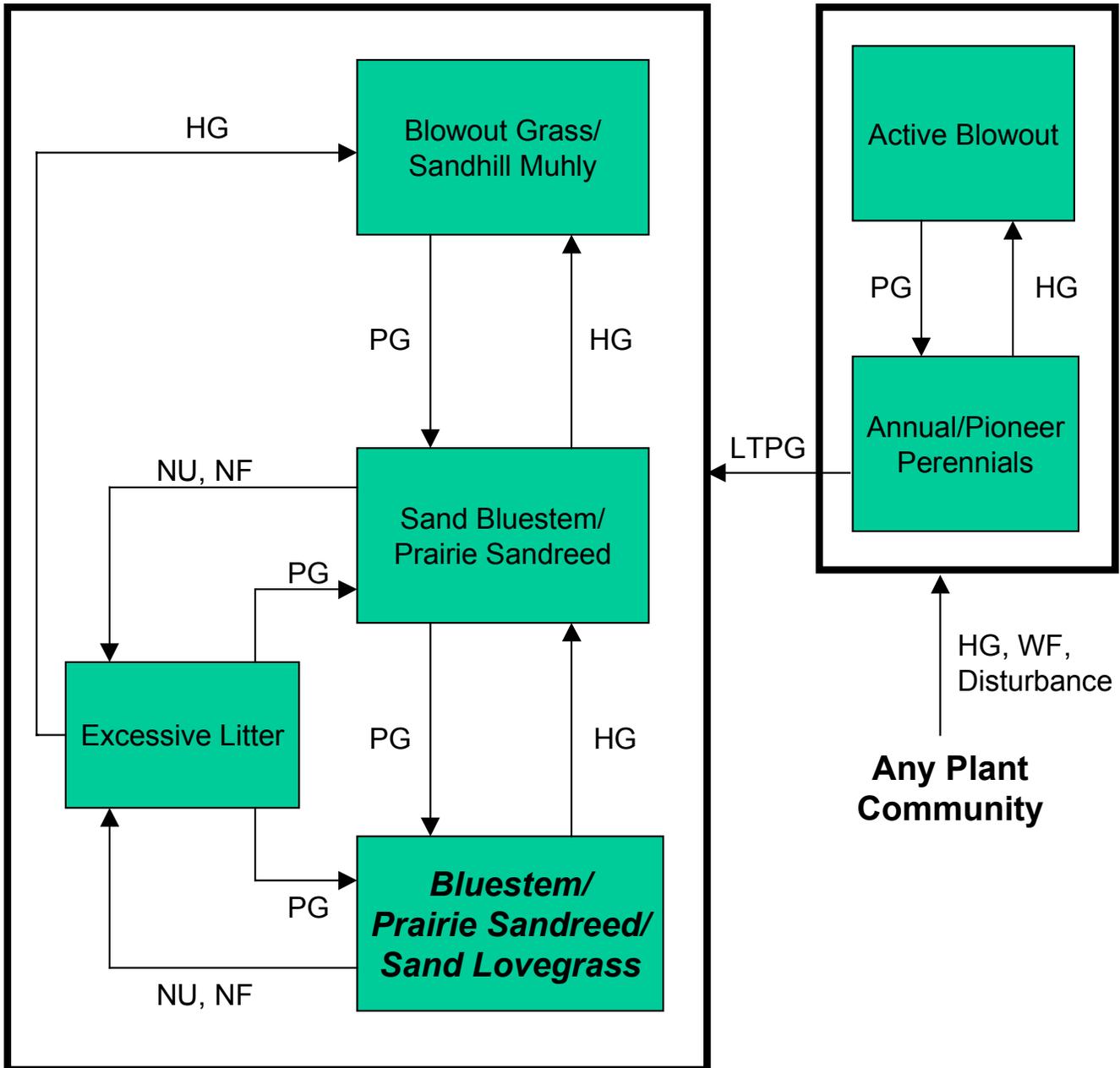
Historically, large areas of blowing sand resulted in the active movement of the sand dunes. Evaporation from the soil surface was extremely high due to the large areas of bare ground, lack of litter and sparse plant populations. The transpiration rate of these sparse plant populations was also high 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, sandhill muhly, needleandthread and hairy grama will increase. Species such as sand bluestem, prairie sandreed 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/Sand Lovegrass 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 (diagram)



HG - heavy grazing; **LTPG** - long term prescribed grazing; **NF** - no fire;
NU - non use; **PG** - prescribed grazing; **WF** - wildfire

Plant Community Composition and Group Annual Production

COMMON/GROUP NAME	SYMBOL	Bluestem/Prairie Sandreed/ Sand Lovegrass			Sand Bluestem/ Prairie Sandreed			Blowout Grass/Sandhill Muhly			Excessive Litter		
		Grp	lbs./acre	% Comp	Grp	lbs./acre	% Comp	Grp	lbs./acre	% Comp	Grp	lbs./acre	% Comp
GRASSES & GRASS-LIKES			1190 - 1330	85 - 95		880 - 1045	80 - 95		270 - 510	45 - 85		960 - 1140	80 - 95
sand bluestem	ANHA	1	280 - 490	20 - 35		165 - 275	15 - 25	1	60 - 120	10 - 20	1	180 - 300	15 - 25
prairie sandreed	CALO	2	280 - 490	20 - 35		165 - 275	15 - 25	2	60 - 120	10 - 20	2	240 - 360	20 - 30
needleandthread	HECOC8	3	70 - 210	5 - 15		55 - 165	5 - 15	3	0 - 60	0 - 10	3	120 - 240	10 - 20
sandhill muhly	MUPU2	4	0 - 70	0 - 5		11 - 110	1 - 10	4	120 - 180	20 - 30	4	0 - 120	0 - 10
WARM-SEASON GRASSES		5	28 - 140	2 - 10	5	22 - 165	2 - 15	5			5	24 - 180	2 - 15
hairy grama	BOHI2	5	0 - 70	0 - 5	5	0 - 110	0 - 10	5	6 - 60	1 - 10	5	0 - 60	0 - 5
switchgrass	PAVI2	5	0 - 70	0 - 5	5	0 - 33	0 - 3	5	0 - 6	0 - 1	5	0 - 60	0 - 5
sand dropseed	SPCR	5	0 - 70	0 - 5	5	0 - 55	0 - 5	5	6 - 30	1 - 5	5	12 - 60	1 - 5
sand lovegrass	ERTR3	5	14 - 140	1 - 10	5	0 - 55	0 - 5	5	0 - 12	0 - 2	5	0 - 120	0 - 10
blowout grass	REFL	5	0 - 70	0 - 5	5	0 - 110	0 - 10	5	12 - 150	2 - 25	5	0 - 120	0 - 10
NATIVE GRASS/GRASS-LIKES		6	14 - 112	1 - 8	6	11 - 110	1 - 10	6			6	12 - 120	1 - 10
Indian ricegrass	ACHY	6	0 - 28	0 - 2	6	0 - 22	0 - 2	6	0 - 6	0 - 1	6	0 - 24	0 - 2
prairie junegrass	KOMA	6	0 - 70	0 - 5	6	0 - 55	0 - 5	6	0 - 30	0 - 5	6	0 - 120	0 - 10
sedge	CAREX	6	14 - 70	1 - 5	6	11 - 55	1 - 5	6	12 - 30	2 - 5	6	12 - 60	1 - 5
other perennial grasses	ZGP	6	0 - 28	0 - 2	6	0 - 55	0 - 5	6	0 - 30	0 - 5	6	0 - 24	0 - 2
NON-NATIVE GRASSES		7			7			7			7	0 - 24	0 - 2
cheatgrass	BRTE										7	0 - 24	0 - 2
FORBS		8	70 - 140	5 - 10	8	55 - 110	5 - 10	8	30 - 90	5 - 15	8	60 - 180	5 - 15
annual sunflower	HEAN3	8	0 - 14	0 - 1	8	0 - 55	0 - 5	8	30 - 60	5 - 10	8	0 - 60	0 - 5
common evening-primrose	OEBI	8	0 - 14	0 - 1							8	0 - 12	0 - 1
gayfeather	LIATR	8	0 - 14	0 - 1	8	0 - 11	0 - 1				8	0 - 12	0 - 1
green safflower	ARDR4	8	0 - 14	0 - 1	8	0 - 11	0 - 1	8	0 - 12	0 - 2	8	0 - 12	0 - 1
Rocky Mountain beeplant	CLSE				8	0 - 11	0 - 1				8	0 - 12	0 - 1
rush skeletonweed	LYJU	8	0 - 14	0 - 1	8	0 - 11	0 - 1				8	0 - 12	0 - 1
scurfpea	PSORA2	8	0 - 14	0 - 1	8	0 - 11	0 - 1				8	0 - 12	0 - 1
spiderwort	TRADE	8	0 - 14	0 - 1	8	0 - 11	0 - 1	8	0 - 6	0 - 1	8	0 - 24	0 - 2
stiff sunflower	HEPA19	8	0 - 14	0 - 1	8	0 - 11	0 - 1				8	0 - 12	0 - 1
tenpetal blazingstar	MEDE2	8	0 - 14	0 - 1	8	0 - 11	0 - 1	8	0 - 12	0 - 2	8	0 - 12	0 - 1
Texas croton	CRTE4	8	0 - 14	0 - 1	8	0 - 11	0 - 1				8	0 - 12	0 - 1
thistle	CIRSI	8	0 - 14	0 - 1	8	0 - 11	0 - 1	8	0 - 12	0 - 2	8	0 - 12	0 - 1
verbena	VERBE	8	0 - 14	0 - 1	8	0 - 11	0 - 1				8	0 - 12	0 - 1
western ragweed	AMPS	8	0 - 28	0 - 2	8	0 - 33	0 - 3	8	0 - 12	0 - 2	8	0 - 24	0 - 2
other perennial forbs	ZFP	8	0 - 28	0 - 2	8	0 - 22	0 - 2	8	0 - 30	0 - 5	8	0 - 24	0 - 2
other annual forbs	ZFA	8	0 - 14	0 - 1	8	0 - 22	0 - 2	8	0 - 30	0 - 5	8	0 - 12	0 - 1
SHRUBS		9	14 - 140	1 - 10	9	11 - 110	1 - 10	9	60 - 240	10 - 40	9	12 - 120	1 - 10
rose	ROSA5	9	0 - 28	0 - 2	9	0 - 22	0 - 2	9	0 - 12	0 - 2	9	0 - 24	0 - 2
sand sagebrush	ARFI2	9	0 - 70	0 - 5	9	0 - 55	0 - 5	9	0 - 90	0 - 15	9	0 - 60	0 - 5
small soapweed	YUGL	9	0 - 70	0 - 5	9	0 - 110	0 - 10	9	60 - 180	10 - 30	9	0 - 60	0 - 5
brittle cactus	OPFR	9	0 - 14	0 - 1	9	0 - 11	0 - 1	9	0 - 6	0 - 1	9	0 - 12	0 - 1
western sandcherry	PRPUB	9	0 - 14	0 - 1	9	0 - 11	0 - 1				9	0 - 12	0 - 1
other shrubs	ZSHRUB	9	0 - 14	0 - 1	9	0 - 22	0 - 2	9	0 - 120	0 - 20	9	0 - 12	0 - 1
Annual Production lbs./acre			LOW RV HIGH		LOW RV HIGH		LOW RV HIGH		LOW RV HIGH		LOW RV HIGH		LOW RV HIGH
GRASSES & GRASS-LIKES			725 - 1218 - 1710		545 - 957 - 1370		320 - 390 - 455		635 - 1014 - 1390				
FORBS			65 - 105 - 145		50 - 83 - 115		25 - 60 - 95		55 - 120 - 185				
SHRUBS			10 - 77 - 145		5 - 61 - 115		55 - 150 - 250		10 - 66 - 125				
TOTAL			800 - 1400 - 2000		600 - 1100 - 1600		400 - 600 - 800		700 - 1200 - 1700				

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 = Relative 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”. According to the USDA NRCS National Range and Pasture Handbook, Desired Plant Communities (DPC’s) will be determined by the decision makers and will meet minimum quality criteria established by the NRCS. The main purpose for including any description of a plant community here is to capture the current knowledge and experience at the time of this revision.

Bluestem/Prairie Sandreed/Sand Lovegrass Plant Community

Interpretations are primarily based on the Bluestem/Prairie Sandreed/Sand Lovegrass 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 and cool season grasses. Principle dominants are sand bluestem, prairie sandreed, and needleandthread. Grasses of secondary importance are little bluestem, switchgrass, sand dropseed, and hairy grama. Sedges occur in the understory. Forbs and shrubs such as stiff sunflower, rose, sand sagebrush, small soapweed and western sandcherry are significant. This plant community is about 85 percent grasses, 10 percent forbs, and 5 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: NE6534

Growth curve name: Nebraska/South Dakota Sandhills, Native Grasslands

Growth curve description: Warm-season dominant, cool-season subdominant, mid & tall grasses.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	5	5	15	25	30	10	7	3	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 *Sand Bluestem/Prairie Sandreed Plant Community*. Continuous heavy grazing tends to accelerate this movement.
- Non-use and no fire will convert this plant community to the *Excessive Litter Plant Community*.

Sand Bluestem/Prairie Sandreed Plant Community

This plant community develops under traditional grazing systems (such as continuous summer grazing). It is made up of primarily warm season grasses with prairie sandreed being dominant. The potential vegetation is about 80% grasses or grass-like plants, 10% forbs, and 10% shrubs. Other grasses include sand bluestem, hairy grama, needleandthread, and sand lovegrass. The dominant forbs include dotted gayfeather, scurfpea, spiderwort, penstemon, gilia and western ragweed. Shrubs on this plant community include rose, small soapweed and fragile cactus. Compared to the Bluestem/Prairie Sandreed/Sand Lovegrass Plant Community, sand bluestem and sand lovegrass decreases, and hairy grama and sandhill muhly increase. Bare ground increases as tall, warm season grasses decrease.

This plant community is somewhat 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: NE6534

Growth curve name: Nebraska/South Dakota Sandhills, Native Grasslands

Growth curve description: Warm-season dominant, cool-season subdominant, mid & tall grasses.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	5	5	15	25	30	10	7	3	0	0

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

- Under continuous 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 non-use and no fire, this plant community will move toward the *Excessive Litter Plant Community*. Ground cover increases as a result of higher amounts of litter, but plant cover decreases as wolf plants become prevalent. Increased ground cover reduces soil erosion and runoff, but the site is at risk to wildfire due to large amounts of fuel and low plant cover.
- With prescribed grazing, this plant community will move rapidly toward the *Bluestem/Prairie Sandreed/Sand Lovegrass 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 *Bluestem/Prairie Sandreed/Sand Lovegrass 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. Sand bluestem may be present on deposition sites adjacent to active blowouts. The potential vegetation is about 60% grasses or grass-like plants, 15% forbs, and 25% shrubs. The dominant forbs include lemon scurfpea, 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: NE6539

Growth curve name: Nebraska/South Dakota Sandhills, Native Grasslands, Disturbed

Growth curve description: Warm-season and cool-season co-dominant, short, mid and tall grasses.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	5	15	20	20	20	10	7	3	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 *Sand 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.

Excessive Litter Plant Community

This plant community developed under many years of no grazing or fire to disturb the vegetation. Plant litter accumulates rapidly as this community first develops. Eventually litter levels become high enough that plants are crowded out and bare ground areas develop. Annual forbs and grasses commonly fill these bare ground areas. Typically bunchgrasses develop dead centers and rhizomatous grasses form small colonies because of a lack of tiller stimulation. The potential vegetation is about 75% grasses or grass-like plants, 15% forbs, and 10% shrubs. The plant community consists of primarily warm season grasses with sand bluestem, sand lovegrass, and prairie sandreed being dominant. Other grasses include needleandthread, hairy grama, and blowout grass. The dominant forbs include annual sunflower, penstemon, gilia, and western ragweed. Shrubs on this plant community include cactus and yucca. With the exception of needleandthread, cool season grasses and sedges are slightly reduced in number when compared to the Sand Bluestem/Prairie Sandreed/Sand Lovegrass Plant Community. Sand bluestem has increased. With continued exclusion of grazing and wildfire, this plant community will continue to lose plant diversity. The plant community is at risk to wildfire due to large amounts of fuel and low plant density.

This plant community is not resistant to change. Any short-term disturbance could result in a shift to another plant community due to a decrease in species diversity and plant cover. Soil erosion is low when ground cover is high, then increases as litter disappears. The water cycle is functioning.

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: NE6536

Growth curve name: Nebraska/South Dakota Sandhills, Native Grasslands, Non-Use

Growth curve description: Warm-season dominant, cool-season subdominant, excessive litter.

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

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

- Under continuous heavy grazing, this plant community will move towards the *Blowout Grass/Sandhill Muhly Plant Community*. Hoof action and grazing will reduce the amount of litter, reducing ground cover. Resulting areas of bare ground are subject to wind and water erosion. The risks involved are excessive soil erosion, an increase in annual grasses and forbs, and a decrease in species diversity.

- With prescribed grazing, this plant community will move toward the *Bluestem/Prairie Sandreed/Sand Lovegrass Plant Community* with a notable increase in warm season grasses, perennial forbs and desirable shrubs. Depending on the length of time non-use occurred and the composition of the plant species prior to removal of use and/or fire, these practices will move this plant community to the *Bluestem/Prairie Sandreed/Sand Lovegrass Plant Community* or the *Sand Bluestem/Prairie Sandreed Plant Community*. Careful management is required to protect this plant community from excessive soil erosion until the vigor of individual grasses improves 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: NE6537

Growth curve name: Nebraska/South Dakota Sandhills, Annual/Pioneer Perennial

Growth curve description: Short cool season grasses, and cool season annual forbs.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	5	10	20	30	20	5	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 *Bluestem/Prairie Sandreed/Sand Lovegrass 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. The 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: NE6538

Growth curve name: Nebraska/South Dakota Sandhills, Active Blowout

Growth curve description: Areas of open, blowing sand and pioneer species.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	0	0	10	35	30	20	5	0	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

Bluestem/Prairie Sandreed/Sand Lovegrass Plant Community:

Sand Bluestem/Prairie Sandreed Plant Community:

Blowout Grass/Sandhill Muhly Plant Community:

Excessive Litter Plant Community:

Active Blowout Plant Community:

Annual/Pioneer Perennial Plant Community:

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

Common Name	Cattle	Sheep	Horses	Deer	Antelope	Bison	Elk
annual sunflower	U U D U	U D U U	U U D U	U D U U	U D U U	U U D U	U D U U
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
brittle cactus	N N N N	N N N N	N N N N	N N N N	N N N N	N N N N	N N N N
common 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
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 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
Indian ricegrass	D P U D	N P N D	D P U D	N P N D	N P N D	D P U D	D P U D
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
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
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
rush skeletonweed	U U U U	N N N N	U U U U	N N N N	N N N N	U U U U	N N N N
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 sagebrush	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 N U
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
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
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
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
spiderwort	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
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
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
tenpetal blazingstar	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
Texas croton	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
thistle	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
verbena	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
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
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

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

[†] Quarters: 1 – Jan., Feb., Mar.; 2 – Apr., May, Jun.; 3 – Jul., Aug., Sep.; 4 – Oct., Nov., Dec.

Animal Community – Grazing Interpretations

The following table lists suggested stocking rates for cattle under continuous season-long grazing under normal growing conditions. These are conservative estimates that should be used only as guidelines in the initial stages of the conservation planning process. Often, the current plant composition does not entirely match any particular plant community (as described in this ecological site description). Because of this, a field visit is recommended, in all cases, to document plant composition and production. More precise carrying capacity estimates should eventually be calculated using this information along with animal preference data, 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	Production (lbs./acre)	Carrying Capacity* (AUM/acre)
Bluestem/Prairie Sandreed/Sand Lovegrass	1400	0.44
Sand Bluestem/Prairie Sandreed	1100	0.35
Blowout Grass/Sandhill Muhly	600	0.19
Excessive Litter	1200	0.38
Annual/Pioneer Perennial	-	-
Active Blowout	-	-

* Continuous season-long grazing by cattle under average growing conditions.
 If distribution problems occur, stocking rates must be reduced to maintain plant health and vigor.

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. Normal rainfall is limited to 14-17 inches per year. Valent 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 the most intense storms (refer to Section 4, NRCS National Engineering Handbook for runoff quantities & 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 1-2% of the soil surface. Overall this site has the appearance of being stable and productive.

Recreational Uses

This site provides hunting opportunities for upland game species. The wide variety of plants which bloom from spring until fall have an esthetic value that appeals to visitors.

Wood Products

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

- (065XY012NE) – Sands 14-17" P.Z.
- (065XY011NE) – Sandy 14-17" P.Z.
- (065XY024NE) – Subirrigated

Similar Sites

- (065XY012NE) – Sands 14-17" P.Z.
 [slope not as steep; higher production; blowout grass absent; fewer shrubs]
- (065XY011NE) – Sandy 14-17" P.Z.
 [slope not as steep; higher production; prairie sandreed dominant]

