

United States Department of Agriculture Natural Resources Conservation Service

Ecological Site Description

Site Type: Rangeland

Site Name: Sands (North) (PE 16-20)

Site ID: R072XA021KS

Major Land Resource Area: 72 – Central High Tableland

Due to the climatic gradient (effective precipitation, growing season, etc.) within MLRA - 72, the plant communities will differ between the northern and southern portions of this major land resource area. A transition zone within these two areas generally lies on either side of the Smokey Hill River drainage. Judgment will need to be used when determining which Ecological Site Description best fits field conditions within this transition zone.



Physiographic Features

This site occurs on nearly level to rolling topography associated with sand dunes. This site generates negligible to very low runoff. Inclusions of steep topography showing the characteristic “catstepped” slopes (a type of soil surface slippage caused by a combination of weak soil structure, hoof traffic of heavy herbivores, and gravity) should be very minimal on this site. Vehicular traffic is unhindered (by slope) on this site.

Landform: dune, interdune

Aspect: N/A

	<u>Minimum</u>	<u>Maximum</u>
Elevation (feet):	2500	5000
Slope (percent):	0	24
Water Table Depth (inches):	60	>80
Flooding:		
Frequency:	none	none
Duration:	none	none
Ponding:		
Depth (inches):	0	0
Frequency:	none	none
Duration:	none	none
Runoff Class:	negligible	low

Climatic Features

Annual precipitation ranges from 16 to 20 inches per year. Hourly winds are estimated to average about 10 miles per hour annually, ranging from 15-30 miles per hour during the spring to 5-15 miles per hour during late 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.

	<u>Minimum</u>	<u>Maximum</u>
Frost-free period (days):	141	155
Freeze-free period (days):	161	174
Mean Annual Precipitation (inches):	16	20

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

	Precip. Min.	Precip. Max	Temp. Min.	Temp. Max.
January	0.32	0.41	9.7	43.0
February	0.39	0.51	14.8	48.3
March	0.85	1.13	22.7	55.5
April	1.5	1.98	33.5	65.7
May	2.6	3.31	44.9	75.2
June	2.56	3.53	54.9	85.4
July	2.55	3.04	60.7	92.1
August	2.16	2.3	58.5	90.2
September	1.23	1.54	47.0	81.7
October	1.04	1.09	34.0	70.4
November	0.5	0.63	21.1	54.3
December	0.41	0.42	12.8	44.9

Climate Stations		Period	
Station ID	Location or Name	From	To
CO1121	Burlington, CO	1918	2001
CO9243	Wray, CO	1918	2001
KS3153	Goodland WSO, KS	1948	2001
NE4900	Lodgepole, NE	1948	2001
NE6065	North Platte WSO AP, NE	1948	2001

For local climate stations that may be more representative, refer to <http://www.hprcc.unl.edu> or <http://www.wcc.nrcs.usda.gov>.

Influencing Water Features

Wetland Description:	<u>System</u>	<u>Subsystem</u>	<u>Class</u>	<u>Sub-class</u>
None	None	None	None	None

Stream Type: None

Representative Soil Features

The soils of this site are moderately deep to very deep, very sandy and have thin, generally light colored surface layers. Organic matter content is generally low to moderately low in the surface layer. Sod formation is very weak or non-existent in these soils. These soils often have loose, single-grained soil structure in all layers beneath the surface layer. These soils are highly susceptible to wind erosion when the vegetative cover is opened. Roads, trails, pipeline, overgrazing, fire and all other disturbances can be the cause of severe wind erosion on this site.

The Historic Climax Plant Community (HCPC) should display slight to no evidence of rills. Water flow paths, if present, are broken, irregular in appearance or discontinuous with numerous debris dams or vegetative barriers. Moving sand is inherent to this site. Wind scoured areas may exist in areas. Pedestaled plants caused by wind erosion would be minor. The soil surface is stable and intact. Sub-surface soil layers are non-restrictive to water movement and root penetration. These soils can be susceptible to erosion hazards where vegetative cover is inadequate.

Major soil series correlated to this ecological site include: Colfer, Dailey sand, fine sand (0 to 3% slopes), Dailey (slopes > 3%), Duda, Dunday sand, fine sand (slopes < 3%), Dunday (slopes > 3%), Dwyer, Inavale (slopes > 3%), Likes, Osgood, Overlake, Scoville, Tivoli (0 to 24%), Valent (0 to 24%)

Other soil series that have been correlated to this site include: Valentine, Dalhart.

Parent Material Kind: eolian sands
Parent Material Origin: mixed
Surface Texture: sand, fine sand, loamy 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:	well	excessively
Permeability Class:	moderately rapid	rapid
Depth (inches):	20	80
Electrical Conductivity (mmhos/cm)*:	0	2
Sodium Absorption Ratio*:	0	0
Soil Reaction (1:1 Water)*:	5.6	8.4
Soil Reaction (0.1M CaCl₂)*:	N/A	N/A
Available Water Capacity (inches)*:	3.5	6.5
Calcium Carbonate Equivalent (percent)*:	0	5

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

Plant Communities

Ecological Dynamics of the Site:

The plant community for this site is dynamic due to the complex interaction of many ecological processes. The interpretive plant community for this site is the Historic Climax Plant Community (HCPC). The HCPC has been determined by the study of rangeland relic areas, areas protected from excessive disturbance, and areas under long term rotational grazing strategies. Because of soil texture, this site is more susceptible to erosion due to drought, overstocking, and continuous grazing compared to associated sites with the exception of Choppy Sands.

Drought cycles have an impact upon the vegetation of this site. The species composition changes with the duration and severity of drought. Initially, shallow rooted species (blue grama) will die out and the deeper-rooted species (prairie sandreed, sand bluestem) persist. Sustained drought can result in a reduction of deeper rooted species. Loss of plant cover and increased bare ground creates the

probability of wind erosion. Drought induced wind scouring coupled with disturbance (fire, continuous grazing, rodents, vehicle traffic) can lead to blow outs.

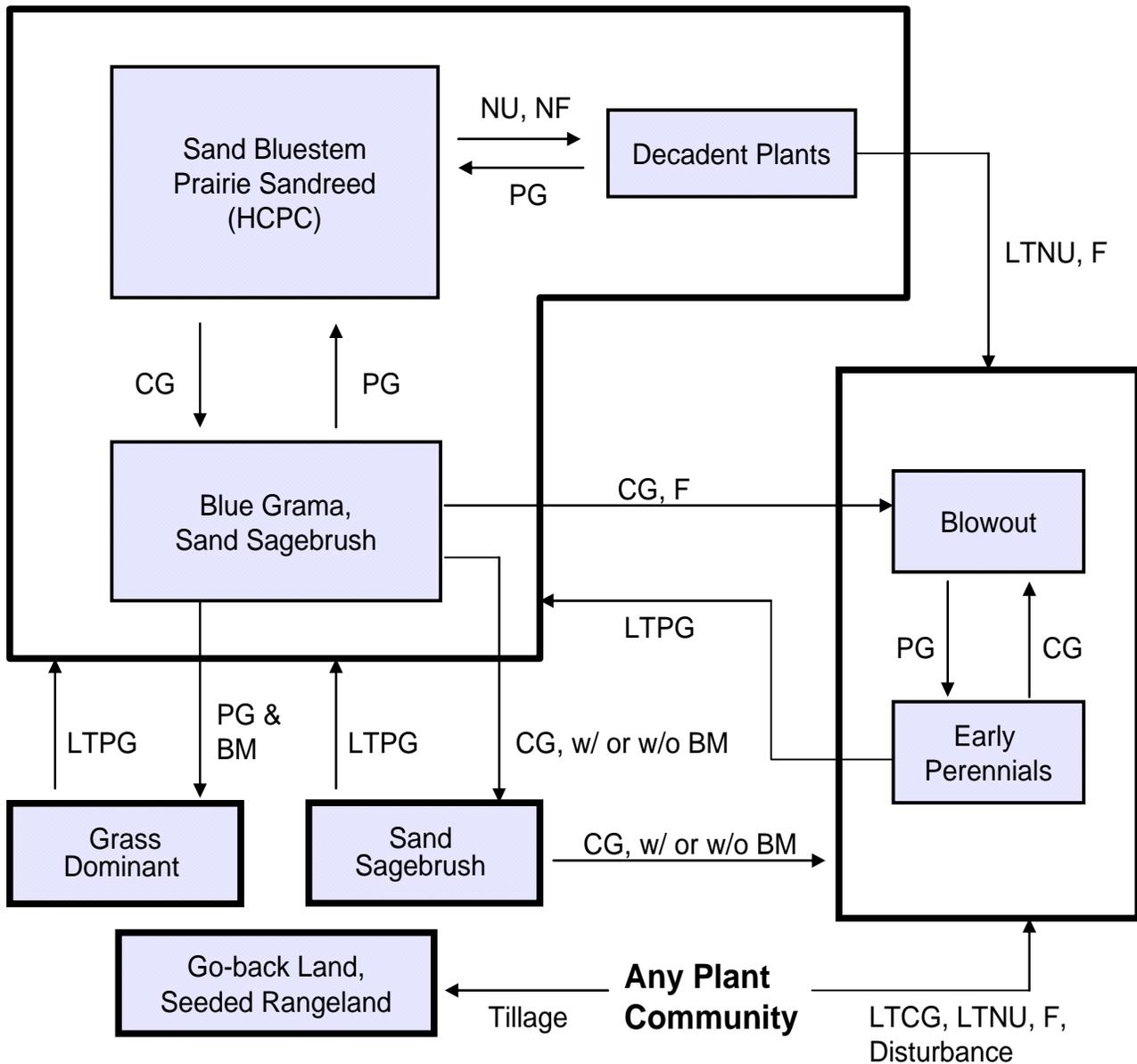
As a higher precipitation cycle returns, annuals like Texas croton, sunflower and early successional perennial plants such as blowout grass, lemon scurfpea, sandhill muhly, sand dropseed, and needleandthread that can better tolerate the movement of sand and drought conditions will establish. As these plants begin to stabilize the site, other perennial plants such as prairie sandreed, sand bluestem and blue grama reestablish.

It is believed that fires were infrequent, randomly distributed, and started by lightning at various times throughout the year when thunderstorms occurred. Pre-European inhabitants used fire as a management tool for attracting herds of large migratory herbivores (bison, elk, deer, and pronghorn).

Continuous grazing without adequate recovery opportunities following each grazing event during the growing season will initially cause blue grama and sand sagebrush to increase. Species such as sand bluestem, yellow indiagrass, switchgrass, prairie sandreed, western sandcherry, leadplant and palatable forbs will decrease in frequency and production. Brush management (spraying) will initially reduce sand sagebrush as well as other forbs and shrubs. Brush management followed by continuous grazing can eliminate remaining grass leaving established or reestablished sagebrush. Prescribed grazing that allows adequate recovery periods following brush management will result in a grass dominated plant community. Long term non-use, continuous grazing, fire, brush management or any type of physical disturbance can lead to serious erosion problems on these fragile soils.

The following diagram illustrates the common plant communities that can occur on the site and the transition pathways (arrows) among communities. Bold lines surrounding each plant community or communities represent ecological thresholds. The ecological processes are discussed in more detail in the plant community descriptions following the diagram.

Plant Communities and Transitional Pathways



BM - brush management, **CG** - continuous grazing without adequate recovery periods, **HCPC** - Historic Climax Plant Community, **LTCG** - long term continuous grazing, **LTNU** - long term non-use(>25 years), **LTPG** - long term prescribed grazing with adequate recovery periods (>20 years), **NF** - no fire, **NU** - non-use, **PG** - prescribed grazing with adequate recovery periods, **F** - fire

Plant Community Composition and Group Annual Production

			Sand Bluestem, Prairie Sandreed (HCPC)		
COMMON/GROUP NAME	SCIENTIFIC NAME	SYMBOL	Group	lbs./acre	% Comp
GRASSES & GRASS-LIKES			1	1470 - 1890	70 - 90
sand bluestem	Andropogon hallii	ANHA	1	420 - 630	20 - 30
little bluestem	Schizachyrium scoparium	SCSC	1	105 - 315	5 - 15
prairie sandreed	Calamovilfa longifolia	CALO	1	210 - 315	10 - 15
switchgrass	Panicum virgatum	PAV12	1	210 - 315	10 - 15
Indiangrass	Sorghastrum nutans	SONU2	1	105 - 315	5 - 15
indian ricegrass	Achnatherum hymenoides	ACHY	1	0 - 42	0 - 2
needleandthread	Hesperostipa comata ssp. comata	HECOC8	1	105 - 210	5 - 10
blue grama	Bouteloua gracilis	BOGR2	1	42 - 210	2 - 10
sand dropseed	Sporobolus cryptandrus	SPCR	1	21 - 63	1 - 3
composite dropseed	Sporobolus compositus var. compositus	SPCOC2	1	0 - 42	0 - 2
sand lovegrass	Eragrostis trichodes	ERTR3	1	0 - 105	0 - 5
sandhill muhly	Muhlenbergia pungens	MUPU2	1	0 - 42	0 - 2
sand paspalum	Paspalum setaceum	PASE5	1	21 - 42	1 - 2
hairy grama	Bouteloua hirsuta	BOH12	1	0 - 63	0 - 3
purple threeawn	Aristida purpurea	ARPU9	1	0 - 21	0 - 1
Scribner panicum	Dichanthelium oligosanthes var. scribnerianum	DIOLS	1	21 - 42	1 - 2
prairie junegrass	Koeleria macrantha	KOMA	1	21 - 42	1 - 2
western wheatgrass	Pascopyrum smithii	PASM	1	0 - 42	0 - 2
Great Plains flatsedge	Cyperus lupulinus	CYLU2	1	0 - 21	0 - 1
sun sedge	Carex inops ssp. Heliophila	CAINH2	1	0 - 63	0 - 3
sedge	Carex spp.	CAREX	1	0 - 105	0 - 5
other perennial grasses		2GP	1	0 - 105	0 - 5
FORBS			2	105 - 315	5 - 15
western ragweed	Ambrosia psilostachya	AMPS	2	21 - 42	1 - 2
evening-primrose	Oenothera spp.	OENOT	2	0 - 42	0 - 2
milkvetch	Astragalus	ASTRA	2	0 - 21	0 - 1
penstamon	Penstamon	PENST	2	0 - 42	0 - 2
annual buckwheat	Eriogonum annuum	ERAN4	2	0 - 21	0 - 1
bracted spiderwort	Tradescantia bracteata	TRBR	2	0 - 21	0 - 1
bush morningglory	Ipomoea leptophylla	IPLA	2	0 - 21	0 - 1
chickenthiel	Mentzelia oligosperma	MEOL	2	0 - 21	0 - 1
coneflower	Dracopis spp.	DRACO3	2	0 - 21	0 - 1
deathcamas	Zigadenus venenosus	ZIVE	2	0 - 21	0 - 1
dotted gayfeather	Liatris punctata	LIPU	2	0 - 21	0 - 1
hairy goldaster	Heterotheca villosa	HEVI4	2	0 - 21	0 - 1
heath aster	Symphotrichum ericoides var. ericoides	SYERE	2	0 - 21	0 - 1
lemon scurfpea	Psoraleidium lanceolatum	PSLA3	2	0 - 21	0 - 1
cudweed sagewort	Artemisia ludoviciana	ARLU	2	0 - 21	0 - 1
othake	Palafoxia sphacelata	PASP	2	0 - 21	0 - 1
Pacific peavine	Lathyrus polymorphus	LAPO2	2	0 - 21	0 - 1
prairie larkspur	Delphinium carolinianum ssp. virescens	DECAV2	2	0 - 21	0 - 1
purple prairie clover	Dalea purpurea	DAPU5	2	0 - 21	0 - 1
rush skeletonplant	Lygodesmia juncea	LYJU	2	0 - 21	0 - 1
sand lily	Leucocrinum montanum	LEMO4	2	0 - 21	0 - 1
scarlet globemallow	Sphaeralcea coccinea	SPCO	2	0 - 21	0 - 1
snowball sand verbena	Abronia fragrans	ABFR2	2	0 - 21	0 - 1
stiff sunflower	Helianthus pauciflorus	HEPA19	2	0 - 21	0 - 1
tenpetal blazingstar	Mentzelia decapetala	MEDE2	2	0 - 21	0 - 1
Texas croton	Croton texensis	CRTE4	2	0 - 21	0 - 1
other perennial forbs		2FP	2	0 - 105	0 - 5
SHRUBS			3	105 - 315	5 - 15
sand sagebrush	Artemisia filifolia	ARFI2	3	42 - 105	2 - 5
western sandcherry	Prunus pumila var. besseyi	PRPUB	3	42 - 147	2 - 7
leadplant	Amorpha canescens	AMCA6	3	21 - 105	1 - 5
brittle pricklypear	Opuntia fragilis	OPFR	3	0 - 21	0 - 1
plains pricklypear	Opuntia polyacantha	OPPO	3	0 - 21	0 - 1
prairie rose	Rosa arkansana	ROAR3	3	0 - 21	0 - 1
skunkbush sumac	Rhus trilobata	RHTR	3	0 - 21	0 - 1
small soapweed	Yucca glauca	YUGL	3	0 - 21	0 - 1
other shrubs		2SHRUB	3	0 - 105	0 - 5
Annual Production lbs/acre			LOW	RV*	HIGH
GRASSES & GRASS-LIKES			1300-	1680	-2300
FORBS			100-	210	-350
SHRUBS			100-	210	-350
TOTAL			1500-	2100	-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 Narratives

Sand Bluestem, Prairie Sandreed Plant Community

The Historic Climax Plant Community (HCPC) serves as the basis for all other interpretations. The potential vegetation of this site is a mixed grass prairie. This state is comprised of 70-90% grasses and grass-like plants, 5-15% forbs and 5-15% shrubs. Sand bluestem, prairie sandreed, and switchgrass are the primary species in this community. Secondary species include Indiangrass, little bluestem, needleandthread, blue grama, leadplant, and sand sagebrush. The community has a very diverse forb population.

Prescribed grazing that allows for adequate recovery periods after each grazing event and proper stocking will maintain this plant community. Spring grazing and summer

deferment will reduce the cool season component (needleandthread, sedges) of this plant community and increase the warm season component (sand bluestem, prairie sandreed, switchgrass, Indiangrass) and palatable shrubs (western sandcherry, leadplant). Spring deferment and summer grazing will increase the cool season component and decrease the warm season component of this plant community.

This plant community is diverse and productive. Management that allows for adequate recovery periods grazing event and proper stocking will maintain this plant community.

Total annual production ranges from 1500 to 3000 pounds of air-dried vegetation per acre per year and will average 2100 pounds.

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: KS7207

Growth curve name: Warm-season dominant, cool season sub-dominant; upland coarse textured soils



Photo by Jeff Nichols, NRCS, Nebraska, 2008

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	3	7	20	35	20	10	3	2	0	0

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

- Continuous grazing without adequate recovery periods will convert this plant community to the *Blue Grama, Sand Sagebrush Plant Community*.
- Prescribed grazing with adequate recovery periods will maintain the *Sand Bluestem, Prairie Sandreed (HCPC) Plant Community*.
- Non-use and/or no-fire will convert the HCPC to the *Decadent Plants Community*.

Blue Grama, Sand Sagebrush Plant Community

This plant community evolves with continuous grazing during the growing season. Sand bluestem, prairie sandreed, yellow Indiangrass, switchgrass, western sandcherry, and leadplant have decreased in frequency and production. Blue grama and sand sagebrush are the dominant species. Sand

dropseed, red threeawn, slimflower scurfpea, hairy goldaster, croton, western ragweed, stickleaf lupine, loco, and milkvetch have also increased.

Spring grazing and summer deferment will reduce the cool season component (needleandthread, western wheatgrass, Indian ricegrass and sedges) of this plant community and increase the warm season component. Spring deferment and summer grazing will increase the cool season component and decrease the warm season component (sand bluestem, prairie sandreed, switchgrass) of this plant community.

This plant community is relatively stable but at risk of crossing an ecological threshold. Tall grass species, palatable forbs, and key shrubs have been replaced by increased amounts of sand sagebrush and warm season mid and short grasses. Once this occurs it will require considerable time and expense to return this community to a more productive condition. If continuous grazing, fire or physical disturbance occurs, the reduction of bare ground cover may cause this plant community to shift toward a blowout condition. Nutrient cycle, water cycle, and energy flow are becoming impaired.

Total annual production ranges from 600 to 1600 pounds of air-dried vegetation per acre per year and will average 1000 pounds.

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: KS7207

Growth curve name: Warm-season dominant, cool season sub-dominant; upland coarse textured soils

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	3	7	20	35	20	10	3	2	0	0

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

- Continuous grazing with or without brush management, will cause this plant community to cross an ecological threshold and move toward the *Sand Sagebrush Plant Community*.
- Continuous grazing coupled with wild fire events removes cover, and depending on weather, can lead to a *Blowout* condition. Wind erosion is a concern.
- Prescribed grazing with adequate recovery periods between grazing events will move this plant community toward the *Sand Bluestem, Prairie Sandreed Plant Community (HCPC)*. To decrease sand sagebrush in a reasonable time frame, a more intensive type of grazing system will be needed.

Decadent Plants Community

This plant community occurs when grazing is removed for long periods of time in the absence of fire. Plant composition is similar to the HCPC; however, in time, individual species production and frequency will be lower. Much of the nutrients are tied up in excessive litter. The semiarid environment and the absence of animal traffic to break down litter slow nutrient cycling. Aboveground litter also limits sunlight from reaching plant crowns. Many plants, especially bunchgrasses die off. Thick litter and absence of grazing or fire reduce seed germination and establishment. This plant community will change rapidly with prescribed grazing which allows animal impact and adequate recovery periods between grazing events.

Production can vary from 200 to 1200 pounds of air dry vegetation per acre per year depending on weather conditions and the plants that are present.

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

- Prescribed grazing with adequate recovery periods will shift this plant community toward the *Sand Bluestem, Prairie Sandreed (HCPC) Plant Community*.
- Long term non-use and/or wildfire will cause plant decadence and/or mortality to increase and erosion (blowouts, wind scoured areas) will most likely occur as bare ground increases. Once this happens it will require increased energy input in terms of practice cost and management to bring back.

Sand Sagebrush Plant Community

This plant community is dominated almost entirely by sand sagebrush with few understory species present. Favorable species that remain are minor and are protected by the sagebrush. The plant community developed with continuous grazing that did not allow adequate recovery periods between grazing events. Brush management (spraying) accelerates this change even if it includes one growing season of deferment following spraying. Brush management initially reduces the sagebrush and eliminates or greatly reduces most if not all other forbs and shrubs.

Continuous grazing then reduce and can eliminate the remaining grass to a point where only reestablishing or establishing sagebrush remains. Further brush spraying at this point eliminates the sand sagebrush which is the only protection the sandy soil has. Species diversity has substantially decreased. Production varies with density and vigor of sand sagebrush. Litter distribution, nutrient cycling, carbon sequestration are not uniform. Litter levels are high and nutrients are cycling under sagebrush plants and are largely absent in the interspaces between plants. The water cycle is impaired. Dense shrub canopy and increased bare ground reduce effective precipitation/infiltration through evaporation. Energy flow is impaired. Cool season and broader leafed grasses, forbs, and shrubs have been replaced by sand sagebrush. Wind scouring can occur and can enlarge to form blowouts. Flow paths can become connected and runoff is possible during intense storms.

Total annual production ranges from 500 to 1300 pounds of air-dried vegetation per acre per year and will average 800 pounds.

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: KS7208

Growth curve name: Warm-season dominant; upland coarse textured soils

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	0	3	15	45	30	6	1	0	0	0

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

- Continuous grazing without adequate recovery periods can cause this plant community to develop into a *Blowout or Early Perennials Plant Community*. This transition will occur with or without brush management, and will actually be accelerated with brush management.
- Long term prescribed grazing with adequate recovery periods between grazing events will follow successional stages eventually leading to the *Sand Bluestem, Prairie Sandreed (HCPC) Plant Community*, assuming an adequate seed/vegetative source exists. More intensive management will be required to achieve this transition in a reasonable time frame.

Grass Dominant Plant Community

This plant community is created with brush management (spraying) and prescribed grazing. The brush management not only controls the sand sagebrush but removes most if not all of the other shrubs and forbs. The plant community is predominately grass. The species and production can vary considerably depending on what was present when the brush management was applied, how long

ago it was applied and how long and how the prescribed grazing was applied. Plant diversity is reduced since most of the forbs and shrubs have been eliminated by the brush control efforts. The community can vary from predominately blue grama to nearly pure stands of prairie sandreed. Secondary species can include needleandthread, sand dropseed, red threeawn, sixweeks fescue, and sandhill muhly. There is little plant diversity since most of the forbs and forbs have been eliminated by brush control efforts. Nutrient and water cycling is impaired due to lack of deep-rooted shrubs and forbs, and native nitrogen fixing legumes. Erosion can vary, depending on production/density of grasses.

Total annual production during an average year ranges from 500 to 2100 pounds of air dry vegetation per acre and will average 1200 pounds.

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: KS7207

Growth curve name: Warm-season dominant, cool season sub-dominant; upland coarse textured soils

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	3	7	20	35	20	10	3	2	0	0

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

- Long term prescribed grazing with adequate recovery periods between grazing events will follow successional stages eventually leading to the *Sand Bluestem, Prairie Sandreed Plant Community (HCPC)* or associated successional plant communities assuming an adequate seed/vegetative source exists. More intensive management will be required to achieve this transition in a reasonable time frame.

Blowout

Continuous heavy grazing, improper brush management, disturbance and/or wildfire will result in large areas of bare ground susceptible to wind erosion. Dunal systems will continue to enlarge. Prescribed grazing is the first management strategy that should be used to stabilize these areas and is most economical. Shaping, seeding and mulching in combination with prescribed grazing may also be used to stabilizing these systems. However, this approach involves a great deal of resources and expense.

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

- Prescribed grazing with adequate recovery periods will allow an *Early Perennials Plant Community* to establish.

Early Perennials Plant Community

Early perennial species such as blowout grass, lemon scurfpea and sandhill muhly and various annuals will start to reestablish. Erosion is a concern.

Total annual production ranges from 50 to 300 pounds of air-dried vegetation per acre per year.

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

- Continuous grazing without adequate recovery periods can cause this plant community to change to the *Blowout* condition.
- Long term prescribed grazing that allows adequate recovery periods following each grazing event will eventually move this plant community toward the *Sand Bluestem, Prairie Sandreed (HCPC) Plant Community* or an associated successional plant community, assuming an adequate seed/vegetative source is available. This transition may take greater than 20 years to achieve.

Go-back Land, Seeded Rangeland Plant Communities

Go-back Land

This plant community is created when the soil is tilled or farmed (sodbusted), and abandoned. All of the native plants are killed, soil organic matter/carbon reserves are reduced, soil structure is changed, and a plowpan or compacted layer can be formed decreasing water infiltration. Synthetic chemicals may remain as a residual from farming operations. In early successional stages, this site is not stable. Erosion is a concern. The site evolves through several plant communities.

Succession begins with early perennial species such as sandhill muhly, blowout grass, lemon scurfpea, and various annuals. Eventually other perennial warm and cool season species can establish. This successional process takes many years. The process is speeded up with prescribed grazing.

Seeded Rangeland

This plant community can vary considerably depending on how eroded the soil was, the species seeded, the stand that was established, how long ago the stand was established and the management of the stand since establishment. Prescribed grazing with adequate recovery periods will be needed to maintain productivity and desirable species.

There are several factors that make seeded rangeland a different grazing resource than native rangeland. Factors such as species selected, stand density, selected varieties and harvest efficiency all impact the production level and palatability. This results in uneven utilization when both seeded and native rangelands are in the same grazing unit. Therefore, the seeded rangeland should be managed as a separate grazing unit if possible.

Species diversity on seeded rangeland is often lower and native forb species generally take longer to re-establish.

Ecological Site Interpretations

Animal Community – Wildlife Interpretations (under development)

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

Common Name	Cattle	Sheep	Horses	Deer	Antelope	Bison	Elk
Grasses and Grass-likes							
blue grama	D P P D	D P P D	D P P D	D P P D	D P P D	D P P D	D P P D
purple threeawn	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
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 P U	N D D N	U D P U	N D D N	N D D N	U D P U	U D P U
needleandthread	U P D D	N D N D	U P D D	N D N D	N D N D	U P D D	U P D 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
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
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	U D U N	N U D N	U D U N	N U D N	N U D N	U D U N	U D U 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
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
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
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
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
western wheatgrass	U P D D	U P D D	U P D D	U P D D	U P D D	U P D D	U P D D
composite dropseed	U D U N	N U D N	U D U N	N U D N	N U D N	U D U N	U D U N
sand dropseed	U D U N	N U D N	U D U N	N U D N	N U D N	U D U N	U D U N
Great Plains flatsedge	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
sun sedge	U P D D	U P D D	U P D D	U P D D	U P D D	U P D D	U P D D
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
Forbs							
bracted 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
bush morningglory	U D P U	U D D U	U D P U	U D D U	U D D U	U D P U	U D D U
chickenthiel	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
deathcamas	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
dotted gayfeather	U U D U	U D P U	U U D U	U D P U	U D P U	U U D U	U U D 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
annual buckwheat	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
heath aster	U U D U	U U P U	U U D U	U U P U	U U P U	U U D U	U U P U
lemon 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
coneflower	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 U D U
cudweed sagewort	U U U U	U U D U	U U U U	U U D U	U U D U	U U U U	U U D U
othake	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
Pacific peavine	U D U U	U P P U	U D U U	U P P U	U P P U	U D U U	U D U U
prairie larkspur	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
purple prairie clover	U P P D	U P P U	U P P D	U P P U	U P P U	U P P D	U P P D
rush skeletonplant	U U U U	N N N N	U U U U	N N N N	N N N N	U U U U	U U U U
sand lily	U D U U	N U U N	U D U U	N U U N	N U U N	U D U U	N U U N
scarlet globemallow	U D D U	U P P U	U D D U	U P P U	U P P U	U D D U	U D D U
snowball sand verbena	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
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
western ragweed	U D U U	U D U U	U D U U	U D U U	U D U U	U D U U	U D U U
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
Shrubs							
prairie 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 P N D	D P N D	D P N D	D P N D	D P N D	D P N D	D P N D
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
plains pricklypear	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
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
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

Grazing by domestic livestock is one of the major income-producing industries in the area. Rangeland in this area may provide yearlong forage for cattle, sheep, or horses. During the dormant period, the forage for livestock use needs to be supplemented with protein because the quality does not meet minimum livestock requirements.

The following table lists suggested initial stocking rates for cattle under continuous grazing (year long grazing or growing season long grazing) under normal growing conditions however, *continuous grazing is not recommended*. 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 (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 the following stocking rate information along with animal preference data, particularly when grazers other than cattle are involved. Under more intensive grazing management, improved harvest efficiencies can result in an increased carrying capacity.

Plant Community	Production (lbs./acre)	*Stocking Rate (AUM/acre)
Sand Bluestem, Prairie Sandreed (HCPC)	2100	0.57
Blue Grama, Sand Sagebrush	1000	0.27
Sand Sagebrush	800	**
Grass Dominant	**	**
Decadent Plants	**	**

* Based on 912 lbs./acre (air-dry weight) per Animal Unit Month (AUM), and on 25% harvest efficiency (refer to USDA NRCS, National Range and Pasture Handbook).

** Highly variable; stocking rate needs to be determined on site.

Hydrology Functions

Water is the principal factor limiting forage production on this site. This site is dominated by soils in hydrologic group A. Infiltration is high and runoff potential for this site varies from moderate to low depending on ground cover. Areas where ground cover is less than 50% have the greatest potential to have reduced infiltration and higher runoff (refer to NRCS Section 4, National Engineering Handbook (NEH-4) for runoff quantities and hydrologic curves).

Recreational Uses

None noted.

Wood Products

No appreciable wood products are present on the site.

Other Products

None noted.

Supporting Information

Associated Sites

(072XA003KS) – Choppy Sands (North) (PE 16-20)

(072XA022KS) – Sandy (North) (PE 16-20)

Similar Sites

(072XA003KS) – Choppy Sands (North) (PE 16-20)

Inventory Data References

Information presented here has been derived from NRCS clipping data, numerous ocular estimates and other inventory data. Field observations from experienced range trained personnel were used extensively to develop this ecological site description. Specific data information is contained in individual landowner/user case files and other files located in county NRCS field offices.

Those involved in developing this site description include: Harvey Sprock, Rangeland Management Specialist, NRCS, Colorado; Carol Eakins, Rangeland Management Specialist, NRCS, Nebraska; Chuck Markley, Soil Scientist, NRCS, Nebraska; Jeff Nichols, Rangeland Management Specialist, NRCS, Nebraska; Mary Schrader, Resource Conservationist NRCS, Nebraska; Joan Gienger, District Conservationist, NRCS, Kansas; Ted Houser, District Conservationist, NRCS, Kansas; David Kraft, State Rangeland Management Specialist, NRCS, Kansas; Josh Saunders, Rangeland Management Specialist, NRCS, Colorado; Dana Larsen, State Rangeland Management Specialist, Nebraska; Herman Garcia, State Rangeland Management Specialist, Colorado.

State Correlation

This site has been correlated with Colorado, Kansas, and Nebraska.

Field Offices

Colorado: Akron, Burlington, Cheyenne Wells, Eads, Flagler, Holly, Holyoke, Julesburg, Sterling, Yuma, Wray

Kansas: Atwood, Colby, Goodland, Gove, Hoxie, Oakley, Oberlin, Sharon Springs, St. Francis

Nebraska: Benkelman, Chappell, Curtis, Grant, Hays, Imperial, Kimball, McCook, North Platte, Ogallala, Oshkosh, Sidney, Trenton

Other References

High Plains Regional Climate Center, University of Nebraska, 830728 Chase Hall, Lincoln, NE 68583-0728. (<http://hpcc.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. The PLANTS Database, Version 3.5 (<http://plants.usda.gov>). National Plant Data Center, Baton Rouge, LA 70874-4490 USA.

Site Description Approval

/s/ David Kraft

5/1/2008

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Date

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5/1/2008

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Date

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