

**UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
ECOLOGICAL SITE DESCRIPTION**

ECOLOGICAL SITE CHARACTERISTICS

Site Type: Rangeland

Site ID: R042XD008NM

Site Name: Loamy Sand

Precipitation or Climate Zone: 10-12 inches

Phase: _____

PHYSIOGRAPHIC FEATURES

Narrative:

This site occurs on gently sloping fan piedmonts. Occasionally low stabilized dunes may occur. Slopes range from 2 to 5 percent. Elevations range from approximately 4700 to 6000 feet.

Land Form:

1. Fan piedmonts

2.

3.

Aspect:

1. No influence on this site.

2.

3.

	Minimum	Maximum
Elevation (feet)	4700	6000
Slope (percent)	2	5
Water Table Depth (inches)		
	Minimum	Maximum
Flooding:		
Frequency	None	None
Duration		
	Minimum	Maximum
Ponding:		
Depth (inches)		
Frequency	None	None
Duration		

Runoff Class:

Very low to low

CLIMATIC FEATURES

Narrative:

Average precipitation for this site is approximately 12 to 14 inches. Variations of 5 inches are not uncommon. Approximately 75 percent of this occurs from May through October with most of the rainfall occurring from July to September. Most of the summer precipitation comes in the form of high intensity short duration thunderstorms. Although little precipitation does occur during the winter month, rain and snow of low intensity usually characterize the precipitation that does occur. Temperatures are mild. Freezing temperatures are common at night from December through April, however, temperatures during the day are frequently above 50 degrees F. Occasionally in December to February brief periods of 0 degree F. Temperatures may be expected. During June to August some days may exceed 100 degrees F.

The mean annual precipitation figures are derived from rain gauge data collected by the BLM (1971 to 1990), and NOAA weather maps utilizing prism model estimation techniques. There are no permanent weather stations within the boundaries of the Land Resource Unit.

	Minimum	Maximum
Frost-free period (days):	140	180
Freeze-free period (days):	145	185
Mean annual precipitation (inches):	12	14

Monthly moisture (inches) and temperature (⁰F) distribution:

	Precip. Min.	Precip. Max.	Temp. Min.	Temp. Max.
January				
February				
March				
April				
May				
June				
July				
August				
September				
October				
November				
December				

Climate Stations:

Station ID _____	Location _____	From: _____	To: _____	Period
Station ID _____	Location _____	From: _____	To: _____	Period
Station ID _____	Location _____	From: _____	To: _____	Period
Station ID _____	Location _____	From: _____	To: _____	Period

INFLUENCING WATER FEATURES

Narrative:

This site is not influenced by water from wetland or stream.

Wetland description:

System	Subsystem	Class
N/A		

If Riverine Wetland System enter Rosgen Stream Type:

N/A

REPRESENTATIVE SOIL FEATURES

Narrative:

The soils on this site are very deep, well drained and have moderate to moderately rapid permeability. They formed in eolian sands over alluvium. At least 20 inches or more of sandy material overlies an argillic horizon. There is a calcic horizon at a depth of about 3 feet. The surface texture is loamy fine sand. The underlying layers are sandy loam, fine sandy loam, and loam. Precipitation is readily absorbed and can be stored in the lower part of the root zone. These soils are subject to wind erosion and the formation of low dunes if adequate plant cover is not maintained.

Parent Material Kind: Eolian sands over alluvium

Parent Material Origin: Mixed for sands. Limestone for alluvium.

Surface Texture:

1. Loamy fine sand
2.
3.

Surface Texture Modifier:

1. None
2.
3.

Subsurface Texture Group: Loamy

Surface Fragments <=3" (% Cover): 0

Surface Fragments >3" (% Cover): 0

Subsurface Fragments <=3" (%Volume): 0

Subsurface Fragments <=3" (%Volume): 0

	Minimum Well Drained	Maximum
Drainage Class:	Moderate	Moderately rapid
Permeability Class:	60	80
Depth (inches):	0	2
Electrical Conductivity (mmhos/cm):	7.9	8.4
Sodium Absorption Ratio:	4	5
Soil Reaction (1:1 Water):	5	15
Soil Reaction (0.1M CaCl ₂):		
Available Water Capacity (inches):		
Calcium Carbonate Equivalent (percent):		

PLANT COMMUNITIES

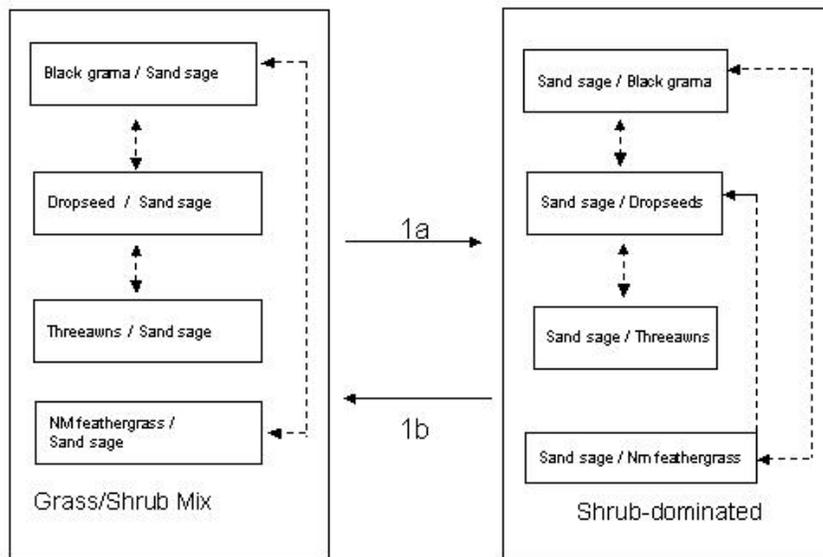
Ecological Dynamics of the Site:

Overview

The Loamy Sand site occurs as a distinct unit, often adjacent to loamy sites. Loamy sites however are located on lower (inset fan) landscape positions. The soils are very deep, well drained, with moderately- slow permeability, which formed in eolian sands over alluvium. The site is a grass/shrub mix. In the historic plant community, grasses account for the majority of production but shrubs are a conspicuous component of this site. Black grama is the dominant grass. Hairy grama, dropseeds and New Mexico feathergrass also occur in significant numbers. Globemallow species and croton are two of the most common forbs. Sand sagebrush is the dominant shrub. Southwest rabbitbrush and soaptree yucca are also prominent. Retrogression within the Grass/Shrub Mix state caused by drought, overgrazing or a combination of the two can shift grass dominance from black grama to dropseeds or threeawns. Increased winter precipitation and forage preference for black grama may result in a community dominated by New Mexico feathergrass. If retrogression continues due to overgrazing or drought, resource competition from shrubs with subsequent erosion, may contribute to shrub dominance.

Plant Communities and Transitional Pathways (diagram)

State-Transition model: MLRA 42, SD-4, Loamy Sand



1a-Overgrazing and or drought, decreased tillering and stolon production, increased erosion-sand movement, soil fertility loss, resource competition by shrubs

1b-Brush control, restore grass cover and reduce erosion, prescribed grazing

MLRA 42; SD-4; Loamy Sand

Grass / Shrub Mix



At left Black grama/Sand sagebrush

• At right grass cover moderate, organic matter and litter evident

• Stealth loamy fine sand, Fort Bliss Soil Survey, Otero Co.

Grass / Shrub Mix



• NM feathergrass-Sand sagebrush, with

• Grass cover moderate to high, few large gaps present

• Stealth loamy fine sand, Fort Bliss Soil Survey, Otero Co.

Shrub-Dominated State



• Sand sagebrush / Black grama with fair amount of dropseed and croton

• Sand sagebrush dominating, grass cover low, large gaps present

• Stealth loamy fine sand, Fort Bliss Soil Survey, Otero Co.



State Containing Historic Climax Plant Community

Grass/Shrub mix: The historic plant community is dominated by black grama. Hairy grama, dropseeds, and New Mexico feathergrass also occur in significant numbers. Globemallow and croton are common forbs on this site. Sand sagebrush, southwest rabbitbrush, and soaptree yucca are the principal shrubs. Black grama communities are dynamic and readily influenced by amount of grazing pressure and variation in climate. The year-round high palatability and nutrition of black grama make this species especially susceptible to grazing pressure, and its ability to respond to disturbance is in part based on climate. Black grama seed production is dependent on amount and timing of precipitation. Inadequate or uneven distribution of precipitation may prevent seed from maturing. Stolons are an important method of vegetative reproduction, however, two favorable growing seasons are required for stolons to form and become established.³ Stolons are sensitive to trampling and grazing. On overgrazed ranges the production of stolons is severely decreased. Tillering is thought to be the principal method of regeneration on rangeland that is continuously grazed. The amount of tillering that occurs is dependent on plant vigor during the previous year. Drought also has the direct effect of causing plant mortality. Basal area of black grama during extended periods of drought is reduced by about the same amount regardless of grazing intensity; recovery however is quicker on conservatively grazed sites². Dropseeds or threeawns typically increase and may become dominant in response to a reduction of black grama. New Mexico feathergrass may also become the dominant grass, usually in localized patches. It is not known if this increase in feathergrass is due to climate favoring cool season grasses¹, combined with year-round palatability of black grama, or if the increased density is in part due to some unknown difference in soil characteristics. Loss of grass cover and subsequent erosion may facilitate the increase in sand sagebrush. Sand sagebrush is well adapted to the sandy soils of this site. Prolific seed production and its ability to remain viable over time enable this species to take advantage of favorable climatic conditions and quickly occupy or re-occupy a site.¹ The light seed is easily dispersed by wind, it does not require scarification, and germinates rapidly. Domestic livestock rarely utilize sand sagebrush especially where other more palatable forage species are present.

Diagnosis: Black grama is the dominant grass species. Grass cover is fairly uniform and shrubs are evenly distributed throughout the site. There is little evidence of water erosion, water flow patterns, rills and gullies. Runoff class is low. Wind erosion is a natural part of this site and pedestalling and deposition may be evident in some areas. Litter movement occurs mainly by wind but is restricted by plant cover to small size and short distances, usually caught and concentrated around grasses and shrubs.

Ground Cover and Structure: presently being revised. _____

Plant Community Annual Production (by plant type): _____

Plant Type	Annual Production (lbs/ac)		
	Low	RV	High
Grass/Grasslike	480	850	1020
Forb	60	60	100
Tree/Shrub/Vine	60	90	80
Lichen			
Moss			
Microbiotic Crusts			

Plant Type – Tree/Shrub/Vine

Group Number	Scientific Plant Symbol	Common Name	Species Annual Production	Group Annual Production
10	ARFI2	Sand sagebrush	40-60	40-60
10	CHPU4	SW rabbitbrush	30-40	
11	YUEL	Soaptree yucca	10-15	10-15
11	KRLA2	Winterfat	5-8	
11	EPHED	Ephedra	3-5	
12	OPUNT	Pricklypear	3-5	3-5
12	GUSA2	Broom snakeweed	3-5	
13	2SHRUB	Other shrubs	8-10	8-10

Plant Type - Lichen

Group Number	Scientific Plant Symbol	Common Name	Species Annual Production	Group Annual Production

Plant Type - Moss

Group Number	Scientific Plant Symbol	Common Name	Species Annual Production	Group Annual Production

Plant Type - Microbiotic Crusts

Group Number	Scientific Plant Symbol	Common Name	Species Annual Production	Group Annual Production

Plant Growth Curves

Growth Curve ID 5807

Growth Curve Name: HCPC - Grass Shrub Mix State

Growth Curve Description: SD-4 Warm Season Grass/Shrub Mix.- Average rainfall year

Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
0	0	3	3	8	7	18	28	25	6	2	0

Additional States:

Shrub Dominated State This state is characterized by the dominance of sand sagebrush, decreased grass cover and increased erosion. The reduction in grass cover results in increased wind erosion. Resources are redistributed around remaining shrubs and grasses. The more extensive root system of sand sagebrush allows it to exploit concentrated resources below the shrub canopy as well as remaining resources beneath bare areas. Grazing or drought induced retrogression can cause a shift in grass dominance from black grama to dropseeds or threeawns. New Mexico feathergrass may attain dominance among grasses during periods of wet winters and dry summers where climate favors C₃ grass production.³ Forage preference for black grama may facilitate this change in grass composition.

Diagnosis: Sand sagebrush cover is high. Grass cover is sparse and patchy with increased amounts of bare ground. Black grama, threeawns, dropseeds, or New Mexico feathergrass may be the dominant grass. Croton increases in representation. Erosion is evident by pedestalling, deposition, and blowouts. Small low stabilized dunes may form around shrubs.

Transition to Shrub Dominated (1a): This site is highly susceptible to wind erosion if adequate plant cover is not maintained. Over grazing and or drought can cause a reduction in plant cover, reducing soil aggregate stability and increasing erosion potential. Black grama cover can be reduced by its inability to persist when covered by sand.² Characteristics of sand sagebrush such as, prolific seed production and the ability of the seed to remain viable over time enable it to take advantage of favorable climate and establish seedlings.

Key indicators of approach to transition:

- Reduction in grass cover and increase in size and frequency of bare patches.
- Increase in amount of sand sagebrush seedlings.
- Evidence of litter movement—indicating loss or redistribution of organic matter.
- Evidence of accelerated wind erosion such as; formation of pedestals, soil deposition, and blowout areas.

Transition back to Grass/Shrub mix (1b) Brush management is necessary to remove resource competition from shrubs and increase grass cover. Reestablishing cover will also provide organic matter, increase aggregate stability, and reduce erosion potential.⁴ Prescribed grazing will help ensure proper forage utilization and plant vigor, especially during times of drought. The degree of erosion and loss of soil resources may dictate whether or not the system is capable of recovery.

ECOLOGICAL SITE INTERPRETATIONS

Animal Community:

Wildlife species associated with this site include: antelope, coyote, badger, black-tailed jackrabbit, silky pocket mouse, Ord's kangaroo rat, horned lark, eastern and western meadowlark, black-throated sparrow, northern mockingbird, ash-throated flycatcher, common nighthawk, western kingbird, loggerhead shrike, striped whiptail lizard, southern prairie lizard, northern earless lizard, Mojave rattlesnake, prairie rattlesnake, and western diamondback. This site is usually slightly elevated above surrounding terrain, providing predators such as coyotes with natural observation points. The sandy soils are easily excavated by small mammals and reptiles for the construction of dens and burrows. The shrubs provide hiding, nesting, and thermal cover for small mammals, birds, and reptiles. Use of this site by antelope is diminished as shrub size increases due to increased vulnerability to predators. Black grama associated with this site provides excellent forage throughout the year for all classes of livestock and wildlife.

Hydrology Functions:

This site normally receives approximately 12-14 inches annual precipitation. Most summer rainfall occurs as brief sometimes-heavy thunderstorms. Soils are very deep, well drained and rated as being in hydrologic group B. Slopes range from 2-5 percent. Permeability is moderate to moderately rapid. Runoff is low to very low and the hazard of water erosion is slight to very slight. Available water capacity to a depth of 40 inches is Low.

Recreational Uses:

This site offers good potential for antelope and predator hunting, wildlife observation and photography.

Wood Products:

This site has no significant value for wood products

Other Products:

Grazing: This site is suitable for grazing by all kinds and classes of livestock during all seasons of the year. As the site deteriorates there will be an increase in bare ground leaving the exposed soil susceptible to accelerated wind erosion. This site responds best to a system of management that rotates the season of use.

Initial starting stocking rates will be determined with the landowner or decision-maker. They will be based on past use histories and type and condition of the vegetation. Calculations used to determine initial starting stocking rate will also be based on forage preference ratings.

Other Information:

Plant Preference by Animal Kind:

Animal Kind: Cattle

Animal Type: _____

Common Name	Scientific Name	Plant Part	Forage Preferences												
			J	F	M	A	M	J	J	A	S	O	N	D	
Black grama	Bouteloua eripoda	EP	D	D	P	P	P	P	P	P	P	P	P	P	D
Hairy grama	Bouteloua hirsuta	EP	D	D	P	P	P	P	P	P	P	P	P	P	D
Vine mesquite	Panicum obtusum	EP	D	D	P	P	P	P	P	P	P	P	P	P	D
Blue grama	Bouteloua gracilis	EP	D	D	P	P	P	P	P	P	P	P	P	P	D
Sand dropseed	Sporobolus cryptandrus	EP	D	D	P	P	P	D	D	D	D	D	D	D	D
Spike dropseed	Sporobolus contractus	EP	D	D	P	P	P	D	D	D	D	D	D	D	D
Mesa dropseed	Sporobolus flexuosus	EP	D	D	P	P	P	D	D	D	D	D	D	D	D
NM feathergrass	Hesperostipa neomexicana	EP	P	P	P	P	P	D	D	D	P	P	P	P	P
Plains bristlegrass	Setaria vulpiseta	EP	U	U	D	D	D	P	P	P	U	U	U	U	U
Cane bluestem	Bothriochloa barbinodis	EP	U	U	P	P	P	D	D	D	U	U	U	U	U
Threeawn	Aristida	EP	U	U	D	D	D	U	U	U	U	U	U	U	U
Croton	Croton	EP	D	D	D	D	D	D	D	D	D	D	D	D	D
Globemallow	Sphaeralcea	EP	D	D	D	D	D	D	D	D	D	D	D	D	D
Hopi tea greenthread	Thelesperma megapotamicum	EP	D	D	D	P	P	P	P	P	P	D	D	D	D
Perennial forbs		EP	D	D	D	D	D	P	P	P	P	P	P	P	D
Annual forbs		EP	D	D	P	P	P	P	P	P	D	D	D	D	D
Sand sagebrush	Artemisia filifolia	S&L	U	U	U	U	U	U	U	U	U	U	U	U	U
SW rabbitbrush	Chrysothamnus pulchellus	S&L	U	U	U	U	U	U	U	U	U	U	U	U	U
Soaptree yucca	Yucca elata	F&F/S	U	U	D	D	D	D	D	D	U	U	U	U	U
Winterfat	Krascheninnikovia lanata	S&L	P	P	D	D	D	D	D	D	D	D	D	D	P
Ephedra	Ephedra spp.	S&L	U	U	U	U	U	U	U	U	U	U	U	U	U
Pricklypear	Opuntia spp.	S, F/S	U	U	U	E	E	E	E	U	U	U	U	U	U
Broom snakeweed	Gutierrezia sarothrae	EP	U	U	U	U	U	U	U	U	U	U	U	U	U

SUPPORTING INFORMATION

Associated sites:

Site Name	Site ID	Site Narrative
Loamy	042XD001NM	The Loamy Sand site occurs as a distinct unit, often adjacent to Loamy sites

Similar sites:

Site Name	Site ID	Site Narrative

Inventory Data References (narrative):

Supporting information includes limited clipping data, soil survey investigations, aerial photographs, and personal observations.

Inventory Data References:

Data Source	# of Records	Sample Period	State	County
NM-Range-26	8	1999-2000	NM	Otero

State Correlation:

This site has been correlated with the following sites: _____

Type Locality:

State: New Mexico

County: Otero

Latitude: 32degrees, 24minutes, 45seconds N.

Longitude: 105degrees, 43minutes, 44seconds W.

Township: 22S.

Range: 10E.

Section: 9

Is the type locality sensitive? Yes No

General Legal Description: Approximately 2.5 miles north and 20.5 miles east of Oro Grande; 900 feet east and 400 feet south of the northwest corner of Section 9, Township 22S. Range 10E. USGS El Paso Draw topographic quadrangle.

Relationship to Other Established Classifications:

Data collection for this site was done in conjunction with the progressive soil surveys within the Southern Desertic Basins, Plains and Mountains, Major Land Resource Areas of New Mexico. This site has been mapped and correlated with soils in the following soil surveys. Fort Bliss and Otero County. Characteristic taxonomic units are:

Fort Bliss SSA:

70-Stealth loamy fine sand, 2 to 5 percent slopes

Other soils included are:

Other References:

1. Ludwig, J. A., E. Muldavin, and K.R. Blanche. 2000. Vegetation Change and Surface Erosion in Desert Grasslands of Otero Mesa, Southern New Mexico: 1982 to 1995. AM. Midl.Nat 144: 273-285.
2. Paulsen, H. A. and F. N. Ares. 1962. Grazing values and management of black grama and tobosa grasslands and associated shrub ranges of the southwest. USDA, Forest Service, Tech. Bull. 1270.
3. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (2002, September). Fire Effects Information System, [Online]. Available: <http://www.fs.fed.us/database/feis/> [accessed 9/23/02].
4. U.S. Department of Agriculture, Natural Resources Conservation Service. 2001. Soil Quality Information Sheet. Rangeland Soil Quality—Aggregate Stability, Organic Matter. Rangeland Sheets 3,6, [Online]. Available: <http://www.statlab.iastate.edu/survey/SQI/range.html>

Site Description Approval:

<u>{PRIVATE}Author</u>	<u>Date</u>	<u>Approval</u>	<u>Date</u>
David Trujillo & Dr. Brandon Bestelmeyer	9/10/00	George Chavez	2/20/03

Site Description Revision:

<u>{PRIVATE}Author</u>	<u>Date</u>	<u>Approval</u>	<u>Date</u>
------------------------	-------------	-----------------	-------------