

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

ECOLOGICAL SITE CHARACTERISTICS

Site Type: Rangeland

Site ID: R042XD005NM

Site Name: Clay Loam Upland

Precipitation or Climate Zone: 12-14 inches

Phase: _____

PHYSIOGRAPHIC FEATURES

Narrative:

This site occurs on gently to moderately sloping alluvial fans. Slopes range from 2 to 5 percent, but average less than 5 percent. Elevations range from 4700 to 6000 feet above sea level.

Land Form:

1. Alluvial fans

2.

3.

Aspect:

1. N/A

2.

3.

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

Runoff Class:

Medium

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 deep to very deep. The surface layer is silt loam. The underlying layers are loam, silt loam, silty clay loam or clay loam. The soils are well drained and have a moderately slow permeability. Available water holding capacity to a depth of 40 inches is moderate. The site usually receives some extra water from higher, surrounding terrain. If unprotected by adequate vegetative cover soils become susceptible to water erosion.

Parent Material Kind: Calcareous alluvium

Parent Material Origin: Limestone

Surface Texture:

1. Silt loam
2.
3.

Surface Texture Modifier:

1.
2.

Subsurface Texture Group: Loamy

Surface Fragments <=3" (% Cover): 0-2

Surface Fragments >3" (% Cover): 0

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

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

	Minimum Well drained	Maximum Well drained
Drainage Class:	Moderately slow	Moderately slow
Permeability Class:	60	>60
Depth (inches):	0	2
Electrical Conductivity (mmhos/cm):	7.9	8.4
Sodium Absorption Ratio:		
Soil Reaction (1:1 Water):		
Soil Reaction (0.1M CaCl ₂):	7	8
Available Water Capacity (inches):	0	15
Calcium Carbonate Equivalent (percent):		

PLANT COMMUNITIES

Ecological Dynamics of the Site:

Overview

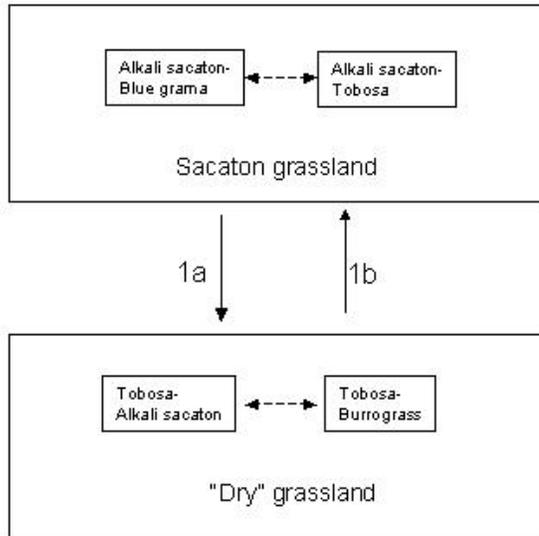
The Clay Loam Upland site is associated with the Limestone Hills ecological site. The Clay loam Upland site is positioned down slope from the Limestone hills site from which it receives run-on water. This site can also occur adjacent to the Gravelly, Shallow Sandy, and Limy ecological sites.

The aspect of the site is that of open grassland sparsely dotted with shrubs. Warm season perennial grasses dominate this community. Alkali sacaton and blue grama are the dominant plants both in aspect and composition. Forb production and composition fluctuate from year to year. Some of the more common forbs include grassland croton, bladderpod and desert holly. Characteristic shrubs include soaptree yucca, winterfat, four-wing saltbush and prickly pear. This site is resistant to state change and shrub invasion due to the extra run-on water it receives. If the hydrology is altered and the extra run-on water is diverted, the site dries and more drought tolerant species eventually dominate. As the site dries plant community dominance shifts from alkali sacaton to one dominated by tobosa or tobosa and burrograss. Drought and overgrazing can expedite this state change by reducing grass cover and organic matter and increasing the amount of bare ground.

Plant Communities and Transitional Pathways (diagram)



State-Transition model, MLRA 42, SD-4, Clay loam upland



1a. Diversion of overland flow, decreased organic matter, soil surface sealing and reduced infiltration

1b. Restore hydrologic function, restore cover & increase organic matter and infiltration

MLRA 42; SD-4; Clay Loam Upland

Grassland State



- Alkali sacaton - Blue grama community with few scattered yucca elata
- Grass cover very high
- Double silt loam, Fort Bliss Soil Survey, Otero Co.

Grassland State



- Alkali sacaton - Blue grama community grazed
- Grass cover very high, excellent production
- Double silt loam, Fort Bliss Soil Survey, Otero Co.

Grassland State



- Alkali sacaton-Blue grama during drought, many dead plants evident
- Grass cover moderate, bare patches evident, physical soil crusts
- Double silt loam, Fort Bliss Soil Survey, Otero Co.

Dry-grassland State



- Tobosa-Alkali sacaton community just downslope of road
- Cover moderate, large connected bare patches evident, physical soil crusts forming, ongoing erosion, biological crusts prevalent
- Double silt loam, Fort Bliss Soil Survey, Otero Co.

State Containing Historic Climax Plant Community

Grassland: The historic community for this site is characterized by a dominance of alkali sacaton. Blue grama is secondary and is evenly dispersed throughout the community. A fair amount of tobosa appears in patches scattered across the site. Other common grass species include sand muhly, ear muhly and burrograss. Forb composition varies seasonally and yearly, but bladderpod and croton are two of the more consistent forbs. Shrubs are only a minor component, and occur as widely spaced individuals. Soap tree yucca is the most common shrub on this site; others include winterfat, four-wing saltbush, prickly pear and cholla. Grazing induced retrogression can cause an increase in tobosa and a decrease in alkali sacaton and more palatable species such as blue grama and vine mesquite. Drought or heavy continuous use on alkali sacaton will cause it to thin out and form clumps or tussocks with bare areas in between, thereby decreasing cover and increasing the amount of bare ground. This site however, is resistant to change if the hydrology remains intact and recovers rapidly during years of adequate precipitation.

Diagnosis: Alkali sacaton and blue grama are the dominant species. Grass cover is uniformly distributed with few large bare areas. There is little evidence of active rills and no gully formation if plant cover remains intact. Litter movement associated with overland flow is limited to smaller size class litter and short distances. Shrubs are a minor component of the site.

Plant Type	Annual Production (lbs/ac)		
	Low	RV	High
Grass/Grasslike	920	1330	1700
Forb	65	56	82
Tree/Shrub/Vine	15	14	18
Lichen			
Moss			
Microbiotic Crusts			

Plant Community Composition and Group Annual Production:

Plant Type - Grass/Grasslike

Group Number	Scientific Plant Symbol	Common Name	Species Annual Production	Group Annual Production
1	SPAI	Alkali sacaton	560-700	560-700
2	BOGR2	Blue grama	210-350	210-350
3	PLUM3	Tobosa	112-210	112-210
4	MUAR2	vine mesquite	30-60	42-70
4	MUAR2	Sand muhly	30-60	
4	MUAR	Ear muhly	30-60	
4	SCBR2	Burrograss	30-60	

Plant Type - Forb

Group Number	Scientific Plant Symbol	Common Name	Species Annual Production	Group Annual Production
5	CROTO	Croton spp.	15-20	15-20
5	LESQU	Bladderpod	15-20	
6	ACNA2	Desert holly	3-8	3-8
6	LEMO2	Mountain pepperweed	3-8	
7	2FP	Perennial forbs	10-14	10-14
8	2FA	Annual forbs	10-14	10-14

Plant Type – Tree/Shrub/Vine

Group Number	Scientific Plant Symbol	Common Name	Species Annual Production	Group Annual Production
9	YUEL	Soaptree yucca	5-8	5-8
10	KRLA2	Winterfat	2-3	2-3
10	ATCA2	Foruwing saltbush	2-3	
11	OPUNT	Pricklypear	2-3	2-3
11	OPSP2	Cholla	2-3	

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 5805

Growth Curve Name: HCPC Grassland State

Growth Curve Description: SD-4 Warm Season Grassland - 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:

Dry Grassland State This state is characterized by a change in hydrology. Historic vegetation is supported by run-on water from higher adjacent sites. When a road, trail, or other natural or man-made disturbances cause an obstruction or diversion of natural flow patterns the hydrology is altered. Without the run-on water the site dries. Alkali sacaton and blue grama decrease and tobosa and burrograss increase. Alkali sacaton cover is no longer uniformly distributed, the plants clump up forming tussocks with interconnected bare areas between plants. Physical crusts form in the bare areas when soil particles dislodged by erosion plug the pores in the soil, reducing infiltration. These physical crusts discourage grass seedling establishment and provide pathways for the redistribution of surface litter and organic matter. The decline of alkali sacaton and blue grama may be accelerated by decreased infiltration, drought or overgrazing.

Diagnosis: Tobosa is the dominant grass. Alkali sacaton cover is reduced and if it continues to decline becomes patchy. Burrograss cover increases and may become co-dominant with tobosa. Large connected bare patches are evident. Production is reduced compared with the sacaton grassland state.

Transition to Dry Grassland (1a):

Key indicators of approach to transition:

- Reduction in alkali sacaton and blue grama cover and increase in size and frequency of bare patches.
- Increase in tobosa and or burrograss cover.
- The formation of roads, gullies or other features (on or off site) that disrupts natural overland flow on site.
- Formation of physical crusts—indicating loss of organic matter and decrease in soil aggregate stability and reduced infiltration.¹
- Evidence of litter movement—indicating loss or redistribution of organic matter.

Transition back to Sacaton Grassland (1b) Restoring natural hydrologic processes is necessary to reverse the transition back to the Sacaton Grassland State. Prescribed grazing will help to restore cover, increase organic matter, and infiltration.

ECOLOGICAL SITE INTERPRETATIONS

Animal Community:

The open grassland aspect of this site attracts pronghorn antelope. Mule deer occasionally use the site in conjunction with adjacent sites. This site also supports black-tailed jackrabbits, meadowlark, mourning dove, and scaled quail and provides nesting, hiding and thermal cover for a variety of small rodents, birds and reptiles and their associated predators.

Hydrology Functions:

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

Recreational Uses:

This site offers good potential for antelope and predator hunting, wildlife observation and photography. Scenic beauty of this site will especially appeal to those who value wide open prairie grasslands.

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. Currently the majority of the livestock use on this site is with mother cows in cow-calf operations. Historic use has been sheep and cattle. As the site deteriorates there will be an increase in bare ground leaving the exposed soil susceptible to wind and water erosion. This site responds best to a system of management that rotates the season of use. This site is suitable for artificial revegetation depending on slope and amount of extra run-on water.

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	
Alkali sacaton	Sporobolus airoides	EP	U	U	D	D	D	D	D	D	D	U	U	U	U
Blue grama	Bouteloua gracilis	EP	D	D	P	P	P	P	P	P	P	P	P	P	D
Tobosa	Pleuraphis mutica	EP	U	U	D	D	D	D	D	D	D	U	U	U	U
Burrograss	Scleropogon brevifolius	EP	U	U	U	U	U	U	U	U	U	U	U	U	U
Sand muhly	Muhlenbergia arenicola	EP	D	D	P	P	P	P	P	P	P	P	P	P	D
Ear muhly	Muhlenbergia arenacea	EP	U	U	D	D	D	D	D	D	D	U	U	U	U
Croton	Croton	EP	D	D	D	D	D	D	D	D	D	D	D	D	D
Bladderpod	Lesquerella	EP	D	D	D	D	D	D	D	D	D	D	D	D	D
Desert holly (dwarf desert peony)	Acourtia nana	EP	U	U	U	U	U	U	U	U	U	U	U	U	U
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
Winterfat	Krascheninnikovia lanata	S&L	P	P	D	D	D	D	D	D	D	D	D	D	P
Foruwing saltbush	Atriplex canescens	S&L	P	P	D	D	D	D	D	D	D	D	D	D	P
Soaptree yucca	Yucca elata	F&F/S	U	U	D	D	D	D	D	D	U	U	U	U	U
Pricklypear	Opuntia spp.	F, F/S	U	U	U	E	E	E	E	E	U	U	U	U	U
Cholla	Opuntia spinosior	F, F/S	U	U	U	E	E	E	E	E	U	U	U	U	U

SUPPORTING INFORMATION

Associated sites:

Site Name	Site ID	Site Narrative
Limestone Hills Gravelly Shallow Sandy Limy	042XE001NM 042XD007NM 042XD006NM 042XD004NM	The Clay loam Upland site is positioned down slope from the Limestone hills site from which it receives extra run-on water. This site can also occur adjacent to the Gravelly, Shallow Sandy, and Limy ecological 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	11	1999-2000	NM	Otero

State Correlation:

This site has been correlated with the following sites: _____

Type Locality:

State: NM

County: Otero

Latitude: 32 degrees 28 minutes 47.8 seconds N.

Longitude: 105 degrees 44 minutes 45.78 seconds W.

Township: 21S.

Range: 12E.

Section: 17

Is the type locality sensitive? Yes No

General Legal Description: Otero County, New Mexico; approximately 6.8 miles north

and 19.8 miles east of Oro Grande; 2300 ft. S. and 1050 ft. E. of the NW corner of section17, T.21S., R.12E. USGS El Paso Draw, NM 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:

69-Double silt loam, 2 to 5 percent slopes

Other soils included are:

Other References:

1. U.S. Department of Agriculture, Natural Resources Conservation Service. 2001. Soil Quality Information Sheet. Rangeland Soil Quality—Organic Matter, Aggregate Stability, Infiltration. Rangeland Sheets 6,3,5 [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>
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