

Ecological site R077BY035NM

High Sandy Loam

Accessed: 05/18/2024

General information

Provisional. A provisional ecological site description has undergone quality control and quality assurance review. It contains a working state and transition model and enough information to identify the ecological site.

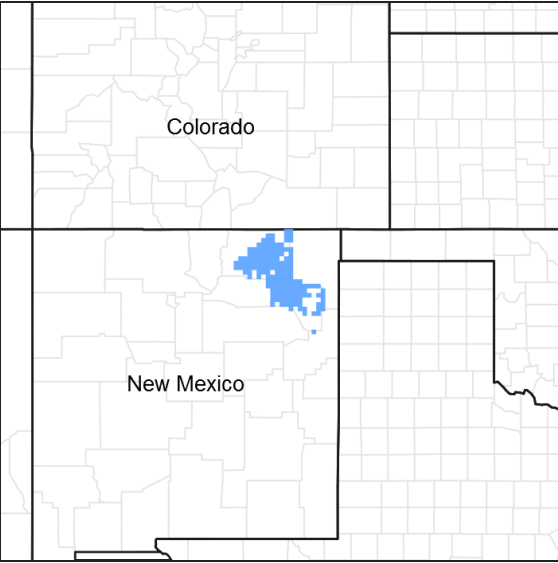


Figure 1. Mapped extent

Areas shown in blue indicate the maximum mapped extent of this ecological site. Other ecological sites likely occur within the highlighted areas. It is also possible for this ecological site to occur outside of highlighted areas if detailed soil survey has not been completed or recently updated.

Classification relationships

Characteristic Soils Are:

- Dalhart Dallam
- Otero

Other Soils included are:

- Campus Kim
- Rickmore Tapia

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

This site occurs on level to undulating areas of the sub-resource area at elevations ranging from 4,700 to 6,000 feet above sea level. Slopes are 0 to 5 percent. The exposure varies and is not significant.

Table 2. Representative physiographic features

Landforms	(1) Plain (2) Alluvial flat
Elevation	1,433–1,829 m
Slope	0–5%
Aspect	Aspect is not a significant factor

Climatic features

The climate of this area can be classified as “semi-arid continental”.

Precipitation averages from about 15 to 16 inches annually with approximately 75 percent of this yearly moisture falling during the period of May through October. Most summer rainfall is associated with usually brief afternoon and evening thundershowers, which occasionally produce heavy rain over a small area, and sometimes bring a little hail. Winters are generally dry, with only one or two days a month when as much as one-tenth inch of moisture falls. However, winter average 20 inches of snow, although most snowfalls are light with an occasional storm producing up to six inches. Following these storms, snow may lie on the ground for several days and occasionally moderate to strong winds accompanying these storms result in blizzard conditions and heavy drifting. Although the precipitation patterns favor the production of warm-season plants, sufficient moisture is received in the late winter and the spring to support cool-season plants. Approximately 25 percent of the annual precipitation is received during April and May. May is generally the wettest month followed by July and then August.

Temperatures show the seasonal changes and large annual and diurnal ranges characteristic of such a climate. Summers are generally mild. The high daily temperature reading exceed 90 degrees F about one-third of the time, and readings of 100 degrees F occur about once a year. Rapid cooling after sundown results in minimum temperatures below 60 degrees F on most nights, even in midsummer. Winter shade temperatures usually rise to the mid-40's and an average of only 15 days fail to see temperatures rise above the freezing mark most of the time from early November through March; below zero readings occur on an average of only three times a year.

The freeze-free season ranges from 168 days to 171 days between April 28th to October 16th. Both temperatures and annual precipitation favor warm-season plants. About 40 percent of the annual precipitation is received during the season where temperatures will benefit cool-season plants and only 10 percent falls during the dormant season.

While open to winter invasions of arctic air over the Great Plains, this area is far enough south and west to miss many of these outbreaks. Mountains to the north and west intercept much of the precipitation from the Pacific northwest storms coming through this area during the winter. An average hourly wind velocity for the year is 15 miles per hour. Somewhat higher winds prevail during the spring months, but velocities exceeding 24 mile per hour are experienced only 10 percent of the usual year. Stronger winds blow chiefly from a westerly or southwesterly direction during the spring. Relative humidity is moderately low.

Climate data was obtained from <http://www.wrcc.sage.dri.edu/summary/climsmnm.html> web site using 50% probability for freeze-free and frost-free seasons using 28.5 degrees F and 32.5 degrees F respectively.

Table 3. Representative climatic features

Frost-free period (average)	191 days
Freeze-free period (average)	220 days
Precipitation total (average)	406 mm

Influencing water features

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

Soil features

The soils of this site are deep and well drained. The surface layer is fine sandy loam about 6 to 14 inches thick. The

subsoil is medium and moderately fine textured. These soils have a moderate to moderately rapid permeability and moderate available water-holding capacity. Effective rooting depth is 20 inches or more. The air-water-plant relationship is favorable for plant growth. The ability of these soils to absorb moisture quickly makes them more responsive to light or erratic rainfall than adjacent sites having heavier textured surface layers

Table 4. Representative soil features

Surface texture	(1) Fine sandy loam (2) Sandy loam
Family particle size	(1) Loamy
Drainage class	Well drained to somewhat excessively drained
Permeability class	Slow to moderately rapid
Soil depth	152–183 cm
Surface fragment cover <=3"	0%
Surface fragment cover >3"	0%
Available water capacity (0-101.6cm)	15.24–22.86 cm
Electrical conductivity (0-101.6cm)	0–4 mmhos/cm
Soil reaction (1:1 water) (0-101.6cm)	6.6–8.4
Subsurface fragment volume <=3" (Depth not specified)	2–28%
Subsurface fragment volume >3" (Depth not specified)	0–12%

Ecological dynamics

State and transition model

Ecosystem states

1. Historic Climax Plant Community

State 1 submodel, plant communities

1.1. Historic Climax Plant Community

State 1 Historic Climax Plant Community

Community 1.1 Historic Climax Plant Community

This site is a grassland dominated by warm-season short and mid-grasses. Cool-season grasses and forbs make

up an important component of the plant community. Woody species are a minor component. Other grasses that could appear on this site include: sand muhly, buffalograss, silver bluestem, sand bluestem, switchgrass, sand paspalum and Indiangrass. Other forbs include: scrufpea, prairie clover, western ragweed, New Mexico thistle, woolly Indianwheat and whorl-leaf milkweed.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	791	1233	1675
Forb	76	119	161
Shrub/Vine	38	59	81
Total	905	1411	1917

Table 6. Ground cover

Tree foliar cover	0%
Shrub/vine/liana foliar cover	3-5%
Grass/grasslike foliar cover	30-35%
Forb foliar cover	1-5%
Non-vascular plants	0%
Biological crusts	0%
Litter	20-25%
Surface fragments >0.25" and <=3"	0%
Surface fragments >3"	0%
Bedrock	0%
Water	0%
Bare ground	0%

Figure 5. Plant community growth curve (percent production by month).
NM4735, R077BY035NM High Sandy Loam Reference State. R077BY035NM
High Sandy Loam Reference State.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	2	3	3	5	5	25	30	15	8	4	0

Additional community tables

Table 7. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
Grass/Grasslike					
1	Blue and Hairy Grama			297–371	
	blue grama	BOGR2	<i>Bouteloua gracilis</i>	297–371	–
	hairy grama	BOHI2	<i>Bouteloua hirsuta</i>	297–371	–
2	Sideoats Grama			223–297	
	sideoats grama	BOCU	<i>Bouteloua curtipendula</i>	223–297	–
3	Little Bluestem			149–223	
	little bluestem	SCSC	<i>Schizachyrium scoparium</i>	149–223	–
4	NM feathergrass and Needleandthread			149–223	
	needle and thread	HECO26	<i>Hesperostipa comata</i>	149–223	–
	New Mexico feathergrass	HENE5	<i>Hesperostipa neomexicana</i>	149–223	–
5	Sand dropseed			74–149	
	sand dropseed	SPCR	<i>Sporobolus cryptandrus</i>	74–149	–
6	red lovegrass and tumble lovegrass			74–149	
	red lovegrass	ERSE	<i>Eragrostis secundiflora</i>	74–149	–
	tumble lovegrass	ERSE2	<i>Eragrostis sessilispica</i>	74–149	–
7	Galleta			45–74	
	James' galleta	PLJA	<i>Pleuraphis jamesii</i>	45–74	–
8	Threeawn spp.			45–74	
	threeawn	ARIST	<i>Aristida</i>	45–74	–
9	Other grasses			45–74	
	Graminoid (grass or grass-like)	2GRAM	<i>Graminoid (grass or grass-like)</i>	45–74	–
Forb					
10	Sunflower Buckwheat globemallow sensitive briar			45–74	
	buckwheat	ERIOG	<i>Eriogonum</i>	45–74	–
	sunflower	HELIA3	<i>Helianthus</i>	45–74	–
	Nuttall's sensitive-briar	MINU6	<i>Mimosa nuttallii</i>	45–74	–
	globemallow	SPHAE	<i>Sphaeralcea</i>	45–74	–
Shrub/Vine					
11	Sand sage soapweed yucca winterfat groundsel spp.			45–74	
	sand sagebrush	ARFI2	<i>Artemisia filifolia</i>	45–74	–
	winterfat	KRLA2	<i>Krascheninnikovia lanata</i>	45–74	–
	ragwort	SENEC	<i>Senecio</i>	45–74	–
	soapweed yucca	YUGL	<i>Yucca glauca</i>	45–74	–

Animal community

No Data.

Hydrological functions

The runoff curve numbers are determined by field investigations using hydrologic cover conditions and hydrologic soil groups.

Soil Series----Hydrologic Group

Campus----- B

Dalhart----- B

Dallam----- B

Kim----- B

Otero----- B

Rickmore----- C

Tapia----- B

Recreational uses

This site provides limited recreation potential, limited largely by the lack of live water and shade. Camping, picnicking and hiking are poor to fair. Photography of flowering plants and wildlife is fair to good. Hunting for upland game birds and rabbits is fair. Hunting for antelope is fair to good. The aesthetic appeal of this site is enhanced by the "wide open spaces" typical of the area.

Wood products

This site has no significant potential for wood production.

Other products

Grazing:

This site can be grazed during any season of the year by all classes of livestock generally without regard to age. Approximately 90 percent of the total annual yield is from species that furnish forage for grazing animals. The variety of species on this site provides good forage and nutrition for grazing animals during most seasons of the year. Supplemental protein is needed during the winter. Emergency feed may be required during periods of long snow cover. Continuous grazing or grazing continually during the period from April through October by cattle will cause the plant community to deteriorate. Species such as sideoats grama, little bluestem, New Mexico feathergrass, needleandthread and winterfat will diminish. A close turf of blue grama and buffalograss often characterizes the site under continuous grazing pressure. A system of deferred grazing, which varies the season of rest and grazing in a pasture during successive years, is needed to improve or maintain a healthy plant community. Different seasons of rest are needed for different species. Winter rest will benefit winterfat. Spring and early summer rest (April-July) will allow New Mexico feathergrass and needleandthread to grow and reproduce.

Summer rest (July-September) will allow all warm-season plants to grow, improve vigor and produce seed. Fall rest is beneficial to both warm and cool-season species, allowing warmseason plants to complete their growth cycle. Grazing during the period from December through March may be beneficial to cool-season plants.

Other information

Guide to Suggested Initial Stocking Rate Acres per Animal Unit Month

Similarity Index---- Ac/AUM

100 - 76----- 2.0 – 4.4

75 – 51----- 2.7 – 8.4

50 – 26----- 4.0 – 14.0

25 – 0----- 14.0+

Inventory data references

Data collection for this site was done in conjunction with the progressive soil surveys within the Southern High Plains 77 Major Land Resource Area of New Mexico. This site has been mapped and correlated with soils in the following soil surveys: Union, Harding Colfax.

Type locality

Location 1: Colfax County, NM
Location 2: Harding County, NM
Location 3: Union County, NM

Other references

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Contributors

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Rangeland health reference sheet

Interpreting Indicators of Rangeland Health is a qualitative assessment protocol used to determine ecosystem condition based on benchmark characteristics described in the Reference Sheet. A suite of 17 (or more) indicators are typically considered in an assessment. The ecological site(s) representative of an assessment location must be known prior to applying the protocol and must be verified based on soils and climate. Current plant community cannot be used to identify the ecological site.

Author(s)/participant(s)	
Contact for lead author	
Date	
Approved by	
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. Number and extent of rills:

2. Presence of water flow patterns:

3. Number and height of erosional pedestals or terracettes:

4. Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):

5. Number of gullies and erosion associated with gullies:

6. **Extent of wind scoured, blowouts and/or depositional areas:**
-
7. **Amount of litter movement (describe size and distance expected to travel):**
-
8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):**
-
9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):**
-
10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:**
-
11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):**
-
12. **Functional/Structural Groups (list in order of descending dominance by above-ground annual-production or live foliar cover using symbols: >>, >, = to indicate much greater than, greater than, and equal to):**
- Dominant:
- Sub-dominant:
- Other:
- Additional:
-
13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):**
-
14. **Average percent litter cover (%) and depth (in):**
-
15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):**
-
16. **Potential invasive (including noxious) species (native and non-native). List species which BOTH characterize degraded states and have the potential to become a dominant or co-dominant species on the ecological site if their future establishment and growth is not actively controlled by management interventions. Species that become dominant for only one to several years (e.g., short-term response to drought or wildfire) are not invasive plants. Note that unlike other indicators, we are describing what is NOT expected in the reference state**

for the ecological site:

17. **Perennial plant reproductive capability:**
