

Ecological site R077EY066TX Sandy Loam 16-24" PZ

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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.

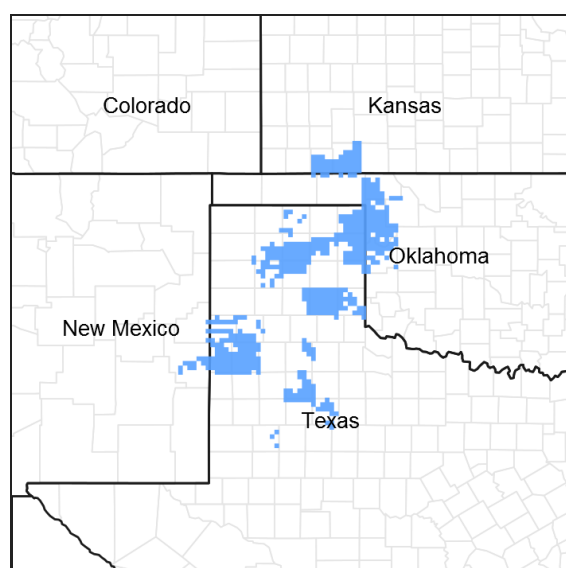


Figure 1. Mapped extent

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.

MLRA notes

Major Land Resource Area (MLRA): 077E–Southern High Plains, Breaks

MLRA 77E occurs along moderately sloping breaks and steep escarpments associated with dissecting river systems and erosional margins of the Southern High Plains. Soil temperature regime is thermic and soil moisture regime is ustic bordering on arid. Loamy and sandy soils are generally well drained, range from shallow to deep, and developed in Ogallala Formation sediments.

Classification relationships

This ecological site is correlated to soil components at the Major Land Resource Area (MLRA) level which is further described in USDA Ag Handbook 296.

Ecological site concept

The sites occur on deep sandy loam soils on uplands. The reference vegetation consists of native midgrass species with some tallgrasses, forbs, and scattered shrubs. Sand sagebrush, a common shrub, may increase in canopy cover without periodic fire or brush management. Continued abusive grazing practices may lead to a decrease in palatable plant species and an altered plant community.

Associated sites

R077EY061TX	Mixedland Slopes 16-24" PZ Very gently to moderately steeply sloping, very deep coarse-loamy soils on adjacent hillslopes. Tallgrasses and midgrasses dominate with forbs, and few shrub species.
R077EY063TX	Sand Hills 16-24" PZ Very sandy soils on adjacent undulating to steep dune topography with a mixture of tall and midgrasses, forbs, and few shrub species and bare ground.
R077EY064TX	Sandy 16-24" PZ Undulating to rolling loamy sand soils on adjacent positions. Dominantly tallgrasses, forbs, and few shrubs.

Similar sites

R077AY012TX	Sandy Loam 16-22" PZ A similar site in MLRA 77A with soils formed in a slightly cooler mesic soil temperature regime.
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Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) <i>Artemisia filifolia</i>
Herbaceous	(1) <i>Schizachyrium scoparium</i> (2) <i>Bouteloua curtipendula</i>

Physiographic features

This site occurs as a level to sloping uplands. Slopes vary from less than 1 percent to as much as 8 percent.

Table 2. Representative physiographic features

Landforms	(1) Plains > Hillslope (2) Plains > Stream terrace (3) Plains > Sand sheet (4) Plains > Dune
Runoff class	Negligible to medium
Flooding frequency	None
Ponding frequency	None
Elevation	2,000–4,500 ft
Slope	0–8%
Aspect	Aspect is not a significant factor

Table 3. Representative physiographic features (actual ranges)

Runoff class	Negligible to medium
Flooding frequency	None
Ponding frequency	None
Elevation	2,000–4,500 ft
Slope	0–8%

Climatic features

Climate is a cold semi-arid steppe (Koppen-Geiger classification BSk). Summers are hot and winters are cold. Temperature extremes are common. Humidity is generally low, evaporation is high, and short-term droughts are common. Average annual wind speed is 12 mph with highest winds in early spring. The prevailing wind direction is

south. Summertime brings strong high pressure systems that build into heat domes with highs in the upper 90 to mid-100 degree F range. Evaporation in summer is high and open pan evaporation exceeds 6 feet per year. Early autumn temperatures are mild, with Canadian and Pacific cold fronts bringing cold air in mid-autumn throughout winter. Arctic air can settle in and dominate for several weeks during winter with very cold air in place for 2 to 3 weeks at a time.

Most of the precipitation comes in the form of rain from May through September. Rainfall events often occur as intense showers of relatively short duration. Snowfall average is about 17 inches but is also variable from 8 to 36 inches annually. Long term droughts are likely to occur every 15 to 20 years and may last 4 to 5 years. Mean precipitation is around 21 inches but varies significantly from year to year. Rainfall amounts over the last 100 years have varied from as little as 9 inches to as much as 37 inches. The probability is about 70% that precipitation will fall between 14 to 24 inches. Growing season averages 190 days. Average first frost is around October 22, and the last freeze of the season occurs around April 15.

Table 4. Representative climatic features

Frost-free period (characteristic range)	146-164 days
Freeze-free period (characteristic range)	184-194 days
Precipitation total (characteristic range)	20-24 in
Frost-free period (actual range)	144-176 days
Freeze-free period (actual range)	180-198 days
Precipitation total (actual range)	19-26 in
Frost-free period (average)	156 days
Freeze-free period (average)	189 days
Precipitation total (average)	22 in

Climate stations used

- (1) GATE [USC00343489], Gate, OK
- (2) FOLLETT [USC00413225], Follett, TX
- (3) CANADIAN [USC00411412], Canadian, TX
- (4) SANFORD DAM [USC00418040], Fritch, TX
- (5) GUYMON MUNI AP [USW00003030], Guymon, OK
- (6) BEAVER [USC00340593], Beaver, OK
- (7) MEADE [USC00145171], Meade, KS
- (8) BOYS RANCH [USC00411000], Vega, TX
- (9) CLARENDON [USW00023072], Clarendon, TX
- (10) LIPSCOMB [USC00415247], Booker, TX
- (11) CHANNING 2 [USC00411649], Channing, TX
- (12) MIAMI [USC00415875], Miami, TX
- (13) COLDWATER [USC00141704], Coldwater, KS
- (14) REYDON 2SSE [USC00347579], Reydon, OK

Influencing water features

Non-stream characteristics: Sandy loam soils allow for moderately rapid infiltration. Runoff is negligible to moderate. With poor cover, minor gullies may form from water concentration. Plant available water in the soil is moderately high.

Wetland description

Soils in this ecological site are not part of wetland ecosystems.

Soil features

Soils are mapped for each county within the MLRA. Mapunits are representations of the major soil series component(s) and named accordingly. Each Mapunit is spatially represented on a digital soils map as polygons of different shapes and sizes. Within these Mapunits, there are often minor soil series components included. These minor components are soils that occur within a Mapunit polygon but are of small extent (15% or less of the Mapunit area). However, it is difficult to separate these minor soils spatially due to the scale of soil mapping.

Ecological sites are correlated at the component level of the soil survey. Therefore, a single Mapunit may contain multiple Ecological Sites just as it may contain multiple soil components. This is important to understand when investigating soils and Ecological Sites. A soil survey Mapunit may be correlated to a single Ecological Site based on the major component; however, there may be inclusions of areas of additional Ecological Sites which are correlated to the minor components of that particular soil Mapunit.

These are very deep sandy loam soils that are part of the Ogallala geologic formation or reworked eolian deposits from the same formation. Slopes vary from approximately 0 to 8 %. They are moderate in fertility, have a medium level of water storage capability, have a moderate or moderately rapid infiltration rate, and exhibit negligible to moderate runoff depending on vegetative cover and slope. They yield water to plants readily. They are subject to wind erosion without good cover. If cover is poor and runoff is excessive, significant water erosion can also occur. Plant roots easily penetrate the soil.

Representative soil components for this site include: Abbie fine sandy loam, Ady fine sandy loam, and Lipscomb. Some older surveys may also include Devol, Grandfield, and Springer series.

Table 5. Representative soil features

Parent material	(1) Alluvium (2) Eolian deposits
Surface texture	(1) Fine sandy loam (2) Sandy loam
Family particle size	(1) Coarse-loamy (2) Fine-loamy
Drainage class	Well drained
Permeability class	Moderate to moderately rapid
Soil depth	80 in
Surface fragment cover <=3"	0–2%
Surface fragment cover >3"	0%
Available water capacity (0-40in)	3.5–7.5 in
Calcium carbonate equivalent (0-40in)	0–12%
Electrical conductivity (0-40in)	0–2 mmhos/cm
Sodium adsorption ratio (0-40in)	0–3
Soil reaction (1:1 water) (0-40in)	6.1–8.4
Subsurface fragment volume <=3" (0-40in)	0–3%
Subsurface fragment volume >3" (0-40in)	0–1%

Ecological dynamics

The information contained in the State and Transition Diagram (STD) and the Ecological Site Description was developed using archeological and historical data, professional experience, and scientific studies. The information presented is representative of a very complex set of plant communities. Not all scenarios or plants are included. Key indicator plants, animals and ecological processes are described to inform land management decisions.

This site is dominated by warm-season midgrass species with a lesser amount of tallgrasses and shortgrasses. The main species in the reference community are little bluestem (*Schizachyrium scoparium*) and sideoats grama (*Bouteloua curtipendula*). Smaller amounts of Indiangrass (*Sorghastrum nutans*) and sand bluestem (*Andropogon hallii*) occur and in areas where "tight" pockets occur, blue grama (*Bouteloua gracilis*) is frequent. It is really a mixed-grass site. There are several species of forbs present in relatively small amounts. The productive capacity of the site is moderately high if good management is applied. The tallgrasses are fairly sensitive to overgrazing and will begin to decrease if continuous heavy grazing occurs for very long. The little bluestem and sideoats grama are fairly resistant to grazing pressure but will decline if continuous heavy grazing persists. The main woody shrubs are sand sagebrush (*Artemisia filifolia*) and yucca (*Yucca* spp.). These shrubs are generally scattered in reference conditions but are more frequent under grazing pressure. Long-term abuse will see a great increase in western ragweed (*Ambrosia psilostachya*), camphorweed (*Heterotheca subaxillaris*), goldaster (*Heterotheca canescens*), and annuals. At the same time, woody species especially sand sagebrush will also increase. In a degraded state typical vegetation will be annuals, ragweed, three-awn (*Aristida* spp.), low vigor blue grama, buffalograss (*Bouteloua dactyloides*), gummy lovegrass (*Eragrostis curtipedicellata*), and a significant amount of sand sagebrush and/or yucca. This site can be taken from mid and tallgrass to shortgrass by heavy continuous grazing over a period of perhaps twenty to twenty-five years. Once this degraded state is reached, management alone will likely not be able to restore the former plant community. Nutrient cycling, the water cycle, watershed protection and biological function are dependent upon keeping a balance of mid and tall grasses, forbs and shrubs on the site.

Natural fire likely played an important role in the function of most plains sites, especially the mid and tallgrass prairies. Tallgrasses such as sand bluestem, little bluestem, and Indiangrass were dependent upon fire to stimulate them and remove old growth that would accumulate on the soil surface. Fire also kept shrubs from getting too thick. Fire helped to keep a balance between the grasses, forbs and shrubs. Wildlife habitat was improved by opening up canopies and stimulating forb growth. The deep rooted species that grow on the site are not easily damaged by fire. Shrubs usually re-sprout but are suppressed for a time allowing grasses to dominate. If periodic fire does not occur, then the woody plants will slowly increase and with grazing pressure can begin to dominate the site. Since fire is not always available to be applied, then practices such as brush management may need to be used from time to time to help keep the community in balance.

Grazing by large herbivores helped to maintain plains grasslands. Large herds of bison moved about over the plains and grazed heavily where their numbers were concentrated. The movements of these animals were such that they might not return to the grazed area for many months which allowed for sufficient recovery of the grasses. Forbs are more moisture dependent than grasses as to their population within the community but can increase due to heavy grazing. When well managed, this site is productive and the grasses found growing here are nutritious and palatable. This site is preferred by pronghorn and scaled quail. A variety of small mammals can generally be found also. It is mainly an open grassland site therefore cover plants are lacking for white-tailed deer and bob-white quail.

As a site changes in the structure and makeup of the plant community, the changes may be due to management or due to natural occurrences or both. At some point in time thresholds are crossed. This means that once changes have progressed to some certain point, the balance of the community has been altered to the extent that a return to the former state is not possible. That is, not possible unless some form of energy is applied to make it happen. These changes take place on all ecological sites, but some sites support communities that are more resistant to change than other sites. Also, some sites are more resilient, that is, they tend to be able to heal or restore themselves more easily. Usually, changes in management practices alone, such as grazing techniques, will not be sufficient to restore former plant communities. An example of energy input might be the implementation of chemical brush management to decrease the amount of woody shrubs and increase the amount of grasses and forbs. This shift in community balance could not be brought about with grazing alone. The amount of energy required to bring about a change in plant community balance may vary a great deal depending on the present state and upon the desired result.

As it relates to this site, the plant community balance is fairly stable and it is not as fragile as some of the tallgrass sites are. This balance is necessary for the community to function properly. Tallgrasses are not as resistant to grazing as short and midgrass species. A fairly long period of abuse is necessary to drive this site to the shortgrass,

annual, and shrub dominated community.

But when this does occur, restoration to a more productive plant community will require considerable energy input including introduction of a seed source for the more productive grasses. This site is quite productive and favored by livestock when well managed. It is fairly diverse and has a good compliment of forbs that many species of wildlife prefer.

State and Transition Diagram:

A State and Transition Diagram for the Sandy Loam (R077EY066TX) site is depicted below. Thorough descriptions of each state, transition, and pathway follow the model. Experts base this model on available experimental research, field observations, professional consensus, and interpretations. It is likely to change as knowledge increases.

Plant communities will differ across the MLRA because of the natural variability in weather, soils, and aspect. The Reference Plant Community is not necessarily the management goal; other vegetative states may be desired plant communities as long as the Range Health assessments are in the moderate and above category.

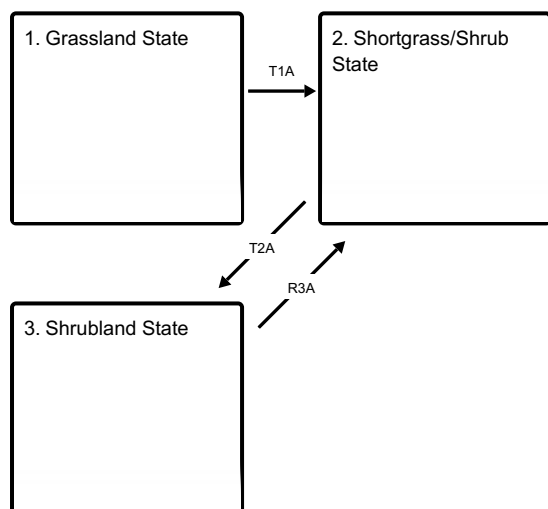
The biological processes on this site are complex. Therefore, representative values are presented in a land management context. The species lists are representative and are not botanical descriptions of all species occurring, or potentially occurring, on this site. They are not intended to cover every situation or the full range of conditions, species, and responses for the site.

Composition by dry weight and percent canopy cover are provided to describing the functional groups. Most observers find it easier to visualize or estimate percent canopy for woody species (trees and shrubs).

The following diagram suggests some pathways that the vegetation on this site might take. There may be other states not shown on the diagram. This information is intended to show what might happen in a given set of circumstances. It does not mean that this would happen the same way in every instance. Local professional guidance should always be sought before pursuing a treatment scenario.

State and transition model

Ecosystem states

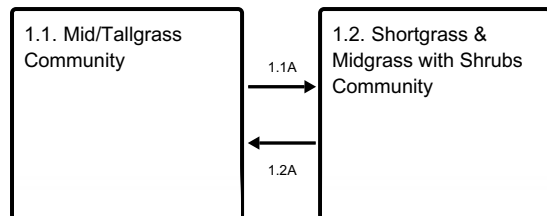


T1A - Absence of disturbance and excessive grazing pressure

T2A - Absence of disturbance, natural regeneration over time, and prolonged excessive grazing pressure

R3A - Removal of woody canopy, coupled with adequate rest from defoliation

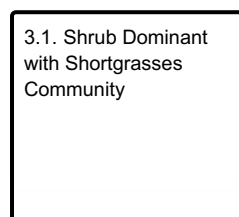
State 1 submodel, plant communities



State 2 submodel, plant communities



State 3 submodel, plant communities



State 1 Grassland State

The Midgrass/Tallgrass Community is a mixture of mid and tallgrasses with several shortgrass species present. It has a variety of forbs, and a few woody shrubs. The major grass species are little bluestem, sideoats grama, Indiangrass, and sand bluestem. The Shortgrass/Midgrass with Shrubs Community is composed of midgrasses with some shortgrasses and sparse yucca and sand sagebrush. Sideoats grama is the dominant grass species.

Dominant plant species

- sand sagebrush (*Artemisia filifolia*), shrub
- little bluestem (*Schizachyrium scoparium*), grass
- sideoats grama (*Bouteloua curtipendula*), grass

Community 1.1 Mid/Tallgrass Community



Figure 8. 1.1 Mid/Tallgrass Community

The reference plant community is a mixture of mid and tallgrasses with several shortgrass species present. It has a

variety of forbs, and a few woody shrubs. The major grass species are little bluestem, sideoats grama, Indiangrass, and sand bluestem. Blue grama is scattered throughout the community generally occupying “tighter” spots. There are some perennial forbs present and a few shrubs, namely sand sagebrush and yucca.

Table 6. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	1000	1500	2200
Forb	50	150	200
Shrub/Vine	50	70	80
Tree	0	0	0
Microbiotic Crusts	0	0	0
Total	1100	1720	2480

Figure 10. Plant community growth curve (percent production by month). TX1513, Warm season tall and midgrasses. "It is a mixture of mid and tall grasses with several short grass species present. It has a variety of forbs, and a few woody shrubs. The major grass species are little bluestem, sideoats grama, Indiangrass, and sand bluestem. "

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	2	6	9	22	25	12	6	11	4	2	1

Community 1.2
Shortgrass & Midgrass with Shrubs Community



Figure 11. 1.2 Shortgrass & Midgrass with Shrubs Community

This plant community is composed of midgrasses with some shortgrasses and sparse yucca and sand sagebrush. Sideoats grama is the dominant grass species. This site is in transition and could be moved toward the reference community with proper grazing and brush management. No threshold has been crossed. Total annual production is slightly less than plant community 1.1.

Table 7. Annual production by plant type

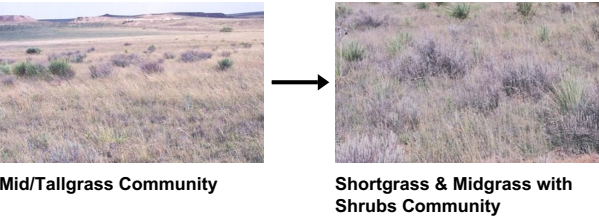
Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	850	1350	2000
Forb	50	150	200
Shrub/Vine	75	95	110
Microbiotic Crusts	10	15	15
Tree	0	0	0
Total	985	1610	2325

Figure 13. Plant community growth curve (percent production by month). TX1742, Warm season mid and shortgrasses with shrubs. Production is slightly less than historic climax plant community. Midgrasses and some shortgrasses with sparse yucca and sand sagebrush..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	1	3	15	25	22	10	8	10	4	1	1

Pathway 1.1A

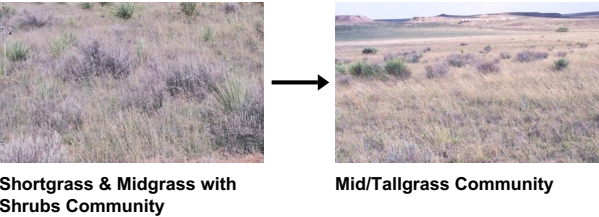
Community 1.1 to 1.2



With the combination of heavy continuous grazing and no fires, the Mid/Tallgrass Community will shift to the Short/Midgrass with Shrubs Community.

Pathway 1.2A

Community 1.2 to 1.1



With the implementation of various conservation practices such as Prescribed Grazing and Brush Management, the Short/Midgrass with Shrubs Community will shift back to the Mid/Tallgrass Community.

Conservation practices

Brush Management
Prescribed Grazing

State 2

Shortgrass/Shrub State

The Shortgrass/Shrub State is dominantly short and midgrasses with a few scattered shrubs and annual forbs. The community is less productive than the reference plant community. Main species are buffalograss, blue grama and silver bluestem. There are also sand sage present at the site.

Dominant plant species

- silver bluestem (*Bothriochloa saccharoides*), grass
- blue grama (*Bouteloua gracilis*), grass
- buffalograss (*Bouteloua dactyloides*), grass

Community 2.1

Shortgrass & Midgrass with Scattered Shrubs Community



Figure 14. 2.1 Short/Midgrass with Scattered Shrubs Community

The plant community is dominantly short and midgrasses with a few scattered shrubs and annual forbs. The community is less productive than the reference plant community. Main species are buffalograss, blue grama and silver bluestem. There are also sand sage present at the site. Heavy grazing shifted this plant community into shortgrass dominance. This site has crossed a threshold and will require some energy input such as prescribed grazing, brush management, and prescribed burning to transition the community to a grassland state.

Table 8. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	700	1000	1400
Forb	100	150	200
Shrub/Vine	10	20	25
Microbiotic Crusts	0	5	5
Tree	0	0	0
Total	810	1175	1630

Figure 16. Plant community growth curve (percent production by month). TX1741, Shortgrass with few midgrasses. Shortgrass with few midgrasses and scattered shrubs..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	1	3	15	25	22	10	8	10	4	1	1

State 3

Shrubland State

The Shrubland State is a severely degraded plant community where a definite threshold has been crossed. No tall or midgrasses remain. Shortgrasses such as buffalograss dominates and shrubs such as sand sagebrush have increased. Years of heavy continuous grazing has completely changed the plant community. There does not appear to be any seed source present to enable the more productive perennial grasses and forbs to return.

Dominant plant species

- sand sagebrush (*Artemisia filifolia*), shrub

- buffalograss (*Bouteloua dactyloides*), grass

Community 3.1

Shrub Dominant with Shortgrasses Community



Figure 17. 3.1 Shrub dominant with Shortgrasses Community

Severely degraded plant community where a definite threshold has been crossed. No tall or midgrasses remain. Shortgrasses such as buffalograss dominates and shrubs such as sand sagebrush have increased. Years of heavy continuous grazing has completely changed the plant community. Natural processes such as the nutrient & hydrologic cycles are not functioning compared to the reference state. Restoration of a more productive community will require energy input such as prescribed grazing, brush management, and prescribed burning. There does not appear to be any seed source present to enable the more productive perennial grasses and forbs to return. Production is only a fraction of what could be expected in the reference community.

Table 9. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Shrub/Vine	300	350	400
Grass/Grasslike	250	350	400
Forb	25	50	80
Microbiotic Crusts	0	1	1
Tree	0	1	1
Total	575	752	882

Figure 19. Plant community growth curve (percent production by month). TX1746, Shrub dominant shortgrass. "Warm season, lower production, shrub dominant, shortgrasses."

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	5	25	34	24	6	2	3	1	0	0

Transition T1A

State 1 to 2

The Grassland State can transition to the Shortgrass/Shrub State due to heavy continuous grazing, no brush management, and no fires.

Transition T2A

State 2 to 3

With the continuation of heavy grazing pressure, no brush management, and no fires, the Shortgrass/Shrub State

will transition to the Shrubland State.

Restoration pathway R3A State 3 to 2

With Prescribed Grazing, Brush Management, and Prescribed Burning conservation practices applied, the Shrubland State can be restored back to the Shortgrass/Shrub State.

Conservation practices

Brush Management
Prescribed Burning
Prescribed Grazing

Additional community tables

Table 10. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Lb/Acre)	Foliar Cover (%)
Grass/Grasslike					
1	Tall/Midgrasses			750–900	
	sideoats grama	BOCU	<i>Bouteloua curtipendula</i>	300–500	–
	little bluestem	SCSC	<i>Schizachyrium scoparium</i>	300–500	–
2	Tallgrasses			230–300	
	sand bluestem	ANHA	<i>Andropogon hallii</i>	100–200	–
	Indiangrass	SONU2	<i>Sorghastrum nutans</i>	100–200	–
3	Cool-season grasses			50–70	
	Canada wildrye	ELCA4	<i>Elymus canadensis</i>	20–50	–
	needle and thread	HECO26	<i>Hesperostipa comata</i>	20–50	–
4	Shortgrasses			250–310	
	purple threeawn	ARPU9	<i>Aristida purpurea</i>	0–75	–
	buffalograss	BODA2	<i>Bouteloua dactyloides</i>	0–75	–
	blue grama	BOGR2	<i>Bouteloua gracilis</i>	0–75	–
	hairy grama	BOHI2	<i>Bouteloua hirsuta</i>	0–75	–
	silver beardgrass	BOLAT	<i>Bothriochloa laguroides</i> ssp. <i>torreyana</i>	0–75	–
	hooded windmill grass	CHCU2	<i>Chloris cucullata</i>	0–75	–
	tumble windmill grass	CHVE2	<i>Chloris verticillata</i>	0–75	–
	fall witchgrass	DICO6	<i>Digitaria cognata</i>	0–75	–
	gummy lovegrass	ERCU	<i>Eragrostis curtipedicellata</i>	0–75	–
	vine mesquite	PAOB	<i>Panicum obtusum</i>	0–75	–
	sand dropseed	SPCR	<i>Sporobolus cryptandrus</i>	0–75	–
Forb					
5	Forbs			150–200	
	Forb, annual	2FA	<i>Forb, annual</i>	0–50	–
	Cuman ragweed	AMPS	<i>Ambrosia psilostachya</i>	0–50	–
	white sagebrush	ARLU	<i>Artemisia ludoviciana</i>	0–50	–
	lyreleaf greeneyes	BELY	<i>Berlandiera lyrata</i>	0–50	–

	yellow sundrops	CASE12	<i>Calylophus serrulatus</i>	0–50	–
	Engelmann's daisy	ENGEL	<i>Engelmannia</i>	0–50	–
	eastern daisy fleabane	ERAN	<i>Erigeron annuus</i>	0–50	–
	kisses	GASU2	<i>Gaura suffulta</i>	0–50	–
	stiffleaf false goldenaster	HEST3	<i>Heterotheca stenophylla</i>	0–50	–
	camphorweed	HESU3	<i>Heterotheca subaxillaris</i>	0–50	–
	Indian rushpea	HOGL2	<i>Hoffmannseggia glauca</i>	0–50	–
	dotted blazing star	LIPU	<i>Liatris punctata</i>	0–50	–
	grassland blazingstar	MEST3	<i>Mentzelia strictissima</i>	0–50	–
	eastern sensitive plant	MIRU5	<i>Mimosa rupertiana</i>	0–50	–
	evening primrose	OENOT	<i>Oenothera</i>	0–50	–
	little combseed	PEPU	<i>Pectocarya pusilla</i>	0–50	–
	slimflower scurfpea	PSTE5	<i>Psoralidium tenuiflorum</i>	0–50	–
	azure blue sage	SAAZA	<i>Salvia azurea</i> var. <i>azurea</i>	0–50	–
	scarlet globemallow	SPCO	<i>Sphaeralcea coccinea</i>	0–50	–
	stiff greenthread	THFI	<i>Thelesperma filifolium</i>	0–50	–
Shrub/Vine					
6	Shrubs			60–80	
	sand sagebrush	ARFI2	<i>Artemisia filifolia</i>	0–20	–
	Oklahoma plum	PRGR	<i>Prunus gracilis</i>	0–20	–
	skunkbush sumac	RHTR	<i>Rhus trilobata</i>	0–20	–
	yucca	YUCCA	<i>Yucca</i>	0–20	–

Animal community

Native animals that occupy this site include scaled quail, pronghorn, lesser prairie chicken and various small mammals and grassland birds. The site lacks woody cover for deer and turkey.

Hydrological functions

This site captures nearly most of the water that falls on it, provided the vegetation is in good condition. The sandy loam soil infiltrates water fairly rapidly. There is not significant runoff if cover is good. With poor cover, runoff is significant and small gullies can develop.

Recreational uses

Hunting, Camping, Hiking, Bird watching, Photography, Horseback Riding.

Wood products

None.

Other products

None.

Other information

None.

Inventory data references

NRCS FOTG – Section II of the FOTG Range Site Descriptions and numerous historical accounts of vegetative conditions at the time of early settlement in the area were used in the development of this site description. Vegetative inventories were made at several site locations for support documentation.

Inventory Data References: (documents)

NRCS FOTG – Section II - Range Site Descriptions

NRCS – NRI 417 data

NRCS Clipping Data summaries over a 20 year period

Other references

J.R. Bell, USDA-NRCS Rangeland Management Specialist (retired)

Natural Resources Conservation Service - Range Site Descriptions

USDA-Natural Resources Conservation Service - Soil Surveys & Website soil database

Rathjen, Frederick W., The Texas Panhandle Frontier, Rev. 1998, Univ. of Texas Press

Hatch, Brown and Ghandi, Vascular Plants of Texas (An Ecological Checklist)

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Bryan Christensen, 9/12/2023

Acknowledgments

Site Development and Testing Plan

Future work, as described in a Project Plan, to validate the information in this Provisional Ecological Site Description is needed. This will include field activities to collect low, medium and high intensity sampling, soil correlations, and analysis of that data. Annual field reviews should be done by soil scientists and vegetation specialists. A final field review, peer review, quality control, and quality assurance reviews of the ESD will be needed to produce the final document.

Annual reviews of the Project Plan are to be conducted by the Ecological Site Technical Team.

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)	Stan Bradbury, Zone RMS, NRCS, Lubbock, Texas
Contact for lead author	806-791-0581
Date	09/04/2007
Approved by	Bryan Christensen
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** None to slight.

2. **Presence of water flow patterns:** None to slight.

3. **Number and height of erosional pedestals or terracettes:** None to slight.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** 20-25% bare ground.

5. **Number of gullies and erosion associated with gullies:** None to slight.

6. **Extent of wind scoured, blowouts and/or depositional areas:** None to slight.

7. **Amount of litter movement (describe size and distance expected to travel):** None to slight.

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Resistant to surface erosion.

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Fine sandy loam; friable surface and medium SOM.

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Basal cover and density with small interspaces should make rainfall impact minimal. This site has moderate permeability, runoff is slow and available water holding capacity is high.

11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):** None.

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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: Warm-season midgrasses > Cool-season midgrasses > Warm-season shortgrasses >

Other: Shrubs/Vines > Forbs

Additional:

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Grasses due to their growth habit will exhibit some mortality and decadence, though minimal.
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14. **Average percent litter cover (%) and depth (in):** Litter is dominantly herbaceous.
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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** 1,100 to 2,500 pounds per acre.
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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:** Sand sagebrush and yucca can be invasive.
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17. **Perennial plant reproductive capability:** All plant species should be capable of reproduction except during periods of prolonged drought conditions, heavy natural herbivory or intense wildfires.
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