

Ecological site R077EY064TX Sandy 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

This site occurs on deep sandy soils on rolling to hummocky topography. The reference vegetation consists of tallgrasses, forbs, and few shrubs. Historically, periodic fires kept woody species canopy low. Without fire or brush management, this woody canopy may increase across the site. Abusive grazing practices may cause the plant community to shift towards a midgrass dominated community.

Associated sites

R077EY053TX	Gravelly 16-24" PZ Gently sloping to steep hillslopes, very deep gravelly loams and gravelly sandy loam soils on adjacent positions. Up to 35% of the soil surface covered with gravels. Intermixed midgrasses and shortgrasses and forbs with occasional tallgrasses.
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.
R077EY066TX	Sandy Loam 16-24" PZ Nearly level to hummocky sandy loam soils on adjacent positions. Mainly midgrass species with some tallgrasses, forbs, and scattered shrubs

Similar sites

R077AY666TX	Sandy 16-22" PZ A similar site in MLRA 77A with soils formed in a slightly cooler mesic soil temperature regime.
R077EY063TX	Sand Hills 16-24" PZ A rolling to very steep topography with higher levels of shrub dominance and bare ground.

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) <i>Artemisia filifolia</i>
Herbaceous	(1) <i>Andropogon hallii</i> (2) <i>Panicum virgatum</i>

Physiographic features

Nearly level to slightly hilly deep loamy fine sands with slopes ranging from 1 to 20%. The site occupies an upland position and is excessively to somewhat excessively drained.

Table 2. Representative physiographic features

Landforms	(1) Plains > Hillslope (2) Plains > Alluvial fan (3) Plains > Dune (4) Plains > Colluvial apron
Runoff class	Negligible to very low
Flooding frequency	None
Ponding frequency	None
Elevation	2,000–4,500 ft
Slope	1–20%
Aspect	Aspect is not a significant factor

Table 3. Representative physiographic features (actual ranges)

Runoff class	Negligible to very low
Flooding frequency	None
Ponding frequency	None
Elevation	2,000–4,500 ft

Slope	0–45%
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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) SANFORD DAM [USC00418040], Fritch, TX
- (2) GUYMON MUNI AP [USW00003030], Guymon, OK
- (3) BEAVER [USC00340593], Beaver, OK
- (4) MEADE [USC00145171], Meade, KS
- (5) BOYS RANCH [USC00411000], Vega, TX
- (6) CLARENDON [USW00023072], Clarendon, TX
- (7) LIPSCOMB [USC00415247], Booker, TX
- (8) CHANNING 2 [USC00411649], Channing, TX
- (9) MIAMI [USC00415875], Miami, TX
- (10) COLDWATER [USC00141704], Coldwater, KS
- (11) REYDON 2SSE [USC00347579], Reydon, OK
- (12) GATE [USC00343489], Gate, OK
- (13) FOLLETT [USC00413225], Follett, TX
- (14) CANADIAN [USC00411412], Canadian, TX

Influencing water features

Non-stream characteristics: Sandy soils allow for rapid infiltration. In years with above average rainfall, some water may percolate beyond the root zone and recharge shallow aquifers. Maximum amounts of water are available to

plants. Small rainfall events may have a visible effect on vegetation.

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 deep sandy soils that are part of the lower Ogallala formation or wind-reworked lower Ogallala eolian deposits. They are low in fertility, have a low water storage capability, and have a high infiltration rate. They also exhibit very little runoff. They yield water to plants easily. They are subject to wind erosion without good cover.

Representative soil components for this site include: Likes, Mocane, and Vici.

Table 5. Representative soil features

Parent material	(1) Alluvium (2) Eolian sands
Surface texture	(1) Loamy fine sand (2) Loamy sand (3) Sand (4) Fine sand
Family particle size	(1) Sandy
Drainage class	Excessively drained to somewhat excessively drained
Permeability class	Moderately rapid to rapid
Soil depth	80 in
Surface fragment cover <=3"	0–6%
Surface fragment cover >3"	0–1%
Available water capacity (0-40in)	0.9–5.1 in
Calcium carbonate equivalent (0-40in)	0–10%
Electrical conductivity (0-40in)	0–2 mmhos/cm
Sodium adsorption ratio (0-40in)	0
Soil reaction (1:1 water) (0-40in)	5.1–8.4
Subsurface fragment volume <=3" (0-40in)	0–10%

Subsurface fragment volume >3" (0-40in)	0-1%
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Ecological dynamics

This site is dominated by warm-season tallgrass species in the reference plant community. The main species are sand bluestem (*Andropogon hallii*) and little bluestem (*Schizachyrium scoparium*) with smaller amounts of Indiangrass (*Sorghastrum nutans*) and switchgrass (*Panicum virgatum*). There are a smaller component of midgrasses present such as sideoats grama (*Bouteloua curtipendula*), sand lovegrass (*Eragrostis trichodes*), dropseeds (*Sporobolus* spp.), sand paspalum (*Paspalum setaceum*), and three-awns (*Aristida* spp.). Some cool-season grasses occur in small amounts such as Canada wildrye (*Elymus canadensis*) and needle and thread (*Heterostipa comata*). The more common forbs are prairie spiderwort (*Tradescantia occidentalis*), gaura (*Gaura suffulta*), Queen's delight (*Stillingia sylvatica*), western ragweed (*Ambrosia psilostachya*), camphorweed (*Heterotheca subaxillaris*), annual wild buckwheat (*Eriogonum annuum*), primrose (*Oenothera* spp.), and sand lilly (*Allium* spp.). Woody species are sand sagebrush (*Artemisia filifolia*), skunkbush (*Rhus trilobata*), sand plum (*Prunus gracilis*), and as the Ogallala fades out going east into the Red Rolling Plains, some sand shinoak (*Quercus incana*) may occur. 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 is applied. They respond to rest very well and if grazed moderately and rested periodically toward the mid to late growing season, they will generally persist. If the tallgrasses are pressured by heavy grazing then midgrasses such as dropseeds and sideoats grama will begin to make up the bulk of the grass production. Further abuse will see a great increase in western ragweed, camphorweed 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, red lovegrass (*Eragrostis secundiflora*), gummy lovegrass (*Eragrostis curtipedicellata*), sandbur (*Cenchrus spinifex*) and a significant canopy of sand sagebrush. The site is not particularly resistant to heavy grazing but exhibits amazing resilience. If even a small seed source of the tallgrasses remains and some old root crowns are still viable, then recovery is possible and even fairly rapid if the competitive plants are controlled. A good grazing management program with periodic weed and brush management can sustain this site in a high ecological condition. Nutrient cycling, the water cycle, watershed protection and biological function are dependent upon keeping a balance of tallgrasses, forbs and shrubs on the site.

Natural fire likely played an important role in the function of most plains sites, especially the tallgrass communities. Tallgrasses such as sand bluestem, little bluestem, switchgrass, 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 resprout 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.

STATE AND TRANSITIONAL PATHWAYS (DIAGRAM):

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.

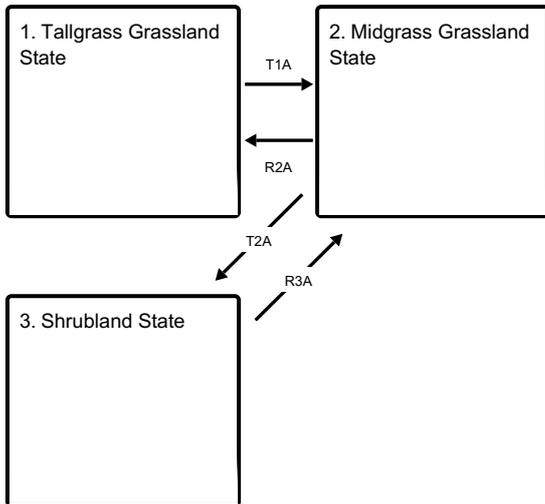
As a site changes in the structure and makeup of the plant community, the changes may be due to management, or to natural occurrences, or both. At some point in time thresholds may be crossed. This means that once plant community changes have progressed to a certain point, the balance of the community has been altered to the extent that a return to the former state is not possible, that is, not possible unless some form of outside 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. Also, some sites are more resilient, that is, they tend to heal or restore themselves more easily. Changes in management practices alone, such as prescribed grazing, will not be sufficient to restore former plant communities. An example of an outside energy input might be the implementation of prescribed chemical brush management to decrease the amount of woody shrubs and increase the amount of grasses and forbs. This shift in plant community balance could not be brought about with prescribed grazing alone. The amount of energy required to bring about a change in the plant community balance may vary a great deal

depending on the present plant community state and the desired community state.

The plant community balance of the Sandy ecological site is usually more fragile than short and midgrass sites. Sandy sites are more dependent upon plant community balance for the ecological aspects of the site to function properly. Tallgrass species are not as resistant to grazing as shortgrass and midgrass species. The Likes soil is more fragile since it is sandy and plant and soil disturbances can result from something as simple as ordinary hoof action. As a result, if ground cover is changed, by whatever means, to a poor or very poor state, wind erosion can, and usually does, occur.

State and transition model

Ecosystem states



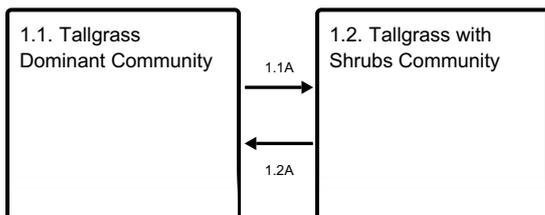
T1A - Absence of disturbance and excessive grazing pressure

R2A - Reintroduction of historic disturbance return intervals

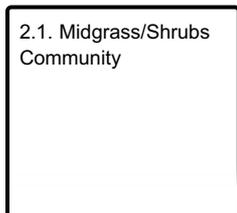
T2A - Absence of disturbance, natural regeneration over time, and prolonged excessive grazing pressure

R3A - Chemical/physical removal of woody canopy, coupled with adequate rest from defoliation

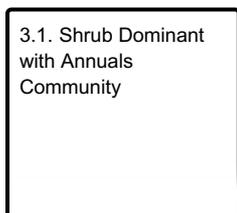
State 1 submodel, plant communities



State 2 submodel, plant communities



State 3 submodel, plant communities



State 1

Tallgrass Grassland State

The Tallgrass Dominant Community is a mixture of tallgrasses, forbs, a few woody shrubs and a few trees. The major grass species include sand bluestem, little bluestem, switchgrass, and Indiangrass. Scattered shrubs include sand sagebrush, skunkbush and an occasional sand plum. The Tallgrass with Shrubs Community is little bluestem dominant with scattered sand sagebrush and a moderate annual forb population. This site would be considered close to reference, although the diversity of tallgrasses is less.

Dominant plant species

- sand sagebrush (*Artemisia filifolia*), shrub
- sand bluestem (*Andropogon hallii*), grass
- switchgrass (*Panicum virgatum*), grass

Community 1.1

Tallgrass Dominant Community



Figure 8. 1.1 Tallgrass Dominant Community

The interpretive plant community for this site is the reference plant community. This community is a mixture of tallgrasses, forbs, a few woody shrubs and a few trees. This photo shows the major grass species as being sand bluestem, little bluestem, switchgrass, Indiangrass, Canada wildrye, and sideoats grama. It also depicts the occasional scattering of sand sagebrush, a few perennial forbs, and skunkbush as well as an occasional sand plum commonly found on this site.

Table 6. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	1340	2100	2800
Forb	160	200	300
Shrub/Vine	200	250	300
Tree	40	50	50
Microbiotic Crusts	0	0	0
Total	1740	2600	3450

Figure 10. Plant community growth curve (percent production by month). TX3998, Tallgrass with forbs and scattered woody plants.. "Tall grasses, forbs, few woody plants, and some trees are found at site."

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	2	6	9	21	24	14	6	11	4	2	1

Community 1.2 Tallgrass with Shrubs Community



Figure 11. 1.2 Tallgrass with Shrubs Community

This community is little bluestem dominant with scattered sand sagebrush and a moderate annual forb population. This site would be considered close to the reference community depicted in photo 1.1, although the diversity of tallgrasses is less than community 1.1. This aspect is also tallgrass dominant with a few shrubs, however, little bluestem is the dominant tallgrass in this aspect. There are small amounts of sand sagebrush scattered about the site. Production in this photo is similar to photo 1.1. The growth curve is about the same growth curve as plant community 1.1. Lack of fire can lead to a more sagebrush cover in this little bluestem dominant community.

Table 7. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	1340	2100	2800
Forb	160	200	300
Shrub/Vine	200	250	300
Tree	40	50	50
Microbiotic Crusts	0	0	0
Total	1740	2600	3450

Figure 13. Plant community growth curve (percent production by month). TX1512, HCPC - Warm Season Natives. "Historic Climax Plant Community with warm season natives, scattered forbs and woody species."

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	2	4	7	19	23	17	8	12	5	2	1

Pathway 1.1A Community 1.1 to 1.2



Tallgrass Dominant Community



Tallgrass with Shrubs Community

With Heavy Continuous Grazing pressure, the Tallgrass Dominant Community will shift to a Tallgrass with Shrubs Community.

Pathway 1.2A Community 1.2 to 1.1



Tallgrass with Shrubs
Community



Tallgrass Dominant
Community

With the use of the Prescribed Grazing conservation practice, the Tallgrass with Shrubs Community can be shifted back to the Tallgrass Dominant Community.

Conservation practices

Prescribed Grazing

State 2 Midgrass Grassland State

The Midgrass Grassland State is made up of midgrasses and annuals with a few shrubs. The main grasses are dropseeds and sand paspalum. A few tallgrasses remain. The shrubs are sand sagebrush and plains yucca. This site has much lower production than the reference state and is less stable.

Dominant plant species

- sand sagebrush (*Artemisia filifolia*), shrub
- dropseed (*Sporobolus*), grass
- crowngrass (*Paspalum*), grass

Community 2.1 Midgrass/Shrubs Community



Figure 14. 2.1 Midgrass/Shrubs Community

This plant community photo shows a plant community made up of midgrasses and annuals with a few shrubs. The main grasses are dropseeds and sand paspalum. A few tallgrasses remain. This community can be moved toward the reference state with brush management and rest along with careful grazing management that adheres to proper stocking rates. The shrubs are sand sagebrush and plains yucca. Brush management and deferment can change the plant community to a tallgrass dominant community within four to five years if growing seasons are favorable.

Table 8. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	800	1000	1500
Forb	250	300	350
Shrub/Vine	250	300	300
Tree	50	50	50
Microbiotic Crusts	0	0	0
Total	1350	1650	2200

Figure 16. Plant community growth curve (percent production by month). TX1517, Midgrass/Shrub Community. "Degraded site, lower production of midgrasses and increase of shrubs."

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	1	3	10	26	23	11	8	8	6	3	1

State 3 Shrubland State

This plant community for the Sandy (Deep Sand) ecological site is composed of shrub dominant community with annual grasses and forbs. This plant community is severely degraded. Very few perennial grasses remain. Annuals and sand sagebrush dominate. Production is low and so is diversity. Even in this state, a few old root crowns of perennial grasses remain. There may be sufficient seed source for recovery.

Dominant plant species

- sand sagebrush (*Artemisia filifolia*), shrub
- skunkbush sumac (*Rhus trilobata*), shrub
- leadplant (*Amorpha canescens*), shrub

Community 3.1 Shrub Dominant with Annuals Community



Figure 17. 3.1 Shrub Dominant with Annuals Community

This plant community for the Sandy ecological site is composed of shrub dominant community with annual grasses and forbs. This plant community is severely degraded. Very few perennial grasses remain. Annuals and sand sagebrush dominate. Production is low and so is diversity. Even in this state, a few old root crowns of perennial grasses remain. There may be sufficient seed source for recovery. In order to improve the quality and quantity of vegetation and restore diversity, brush management and deferral will be essential, along with some careful grazing management including several years of growing season rest. Considerable energy will have to be applied to restore this site to a more diverse and more ecologically balanced community. In most situations, there is a small seed source of tallgrasses remaining. The time for recovery varies, but may take up to 8 years to restore an

acceptable community of tallgrasses.

Table 9. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Shrub/Vine	300	350	450
Grass/Grasslike	200	300	400
Forb	250	250	260
Microbiotic Crusts	0	0	0
Tree	0	0	0
Total	750	900	1110

Figure 19. Plant community growth curve (percent production by month). TX1739, Shrub dominant with annuals and few perennials.. Shrub dominant that have annuals and very little perennial grass species..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	1	5	22	30	24	6	4	4	2	1	1

Transition T1A

State 1 to 2

With heavy continuous grazing and no fires, the Tallgrass Grassland State will transition to the Midgrass Grassland State.

Restoration pathway R2A

State 2 to 1

With the implementation of Prescribed Grazing and Brush Management conservation practices over a two to three year period, the Midgrass Grassland State can be restored back to the Tallgrass Grassland State.

Conservation practices

Brush Management
Prescribed Grazing

Transition T2A

State 2 to 3

With Heavy Continuous Grazing, No Fire, and No Brush Management, the Midgrass Grassland State will transition into the Shrubland State.

Restoration pathway R3A

State 3 to 2

With the implementation of various conservation practices such as Prescribed Grazing and Brush Management over a five to six year period, the Shrubland State can be restored back to the Midgrass Grassland State.

Conservation practices

Brush Management
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	Tallgrasses			900–1880	
	sand bluestem	ANHA	<i>Andropogon hallii</i>	400–1200	–
	little bluestem	SCSC	<i>Schizachyrium scoparium</i>	400–1200	–
2	Tall/midgrasses			235–500	
	sideoats grama	BOCU	<i>Bouteloua curtipendula</i>	75–200	–
	switchgrass	PAVI2	<i>Panicum virgatum</i>	75–200	–
	Indiangrass	SONU2	<i>Sorghastrum nutans</i>	75–200	–
3	Cool-Season grasses			115–240	
	Canada wildrye	ELCA4	<i>Elymus canadensis</i>	30–150	–
	needle and thread	HECO26	<i>Hesperostipa comata</i>	30–150	–
	Texas bluegrass	POAR	<i>Poa arachnifera</i>	30–150	–
4	Mid/Shortgrasses			90–180	
	purple threeawn	ARPU9	<i>Aristida purpurea</i>	0–40	–
	hairy grama	BOHI2	<i>Bouteloua hirsuta</i>	0–40	–
	sandbur	CENCH	<i>Cenchrus</i>	0–40	–
	fall witchgrass	DICO6	<i>Digitaria cognata</i>	0–40	–
	red lovegrass	ERSE	<i>Eragrostis secundiflora</i>	0–40	–
	sand lovegrass	ERTR3	<i>Eragrostis trichodes</i>	0–40	–
	thin paspalum	PASE5	<i>Paspalum setaceum</i>	0–40	–
	sand dropseed	SPCR	<i>Sporobolus cryptandrus</i>	0–40	–
Forb					
5	Forbs			160–300	
	Forb, annual	2FA	<i>Forb, annual</i>	0–75	–
	Cuman ragweed	AMPS	<i>Ambrosia psilostachya</i>	0–75	–
	whitemouth dayflower	COER	<i>Commelina erecta</i>	0–75	–
	golden prairie clover	DAAU	<i>Dalea aurea</i>	0–75	–
	eastern daisy fleabane	ERAN	<i>Erigeron annuus</i>	0–75	–
	kisses	GASU2	<i>Gaura suffulta</i>	0–75	–
	gilia	GILIA	<i>Gilia</i>	0–75	–
	Maximilian sunflower	HEMA2	<i>Helianthus maximiliani</i>	0–75	–
	camphorweed	HESU3	<i>Heterotheca subaxillaris</i>	0–75	–
	dotted blazing star	LIPU	<i>Liatris punctata</i>	0–75	–
	grassland blazingstar	MEST3	<i>Mentzelia strictissima</i>	0–75	–
	eastern sensitive plant	MIRU5	<i>Mimosa rupertiana</i>	0–75	–
	evening primrose	OENOT	<i>Oenothera</i>	0–75	–
	little combseed	PEPU	<i>Pectocarya pusilla</i>	0–75	–
	slimflower scurfpea	PSTE5	<i>Psoralidium tenuiflorum</i>	0–75	–
	azure blue sage	SAAZA	<i>Salvia azurea</i> var. <i>azurea</i>	0–75	–
	queen's-delight	STSY	<i>Stillingia sylvatica</i>	0–75	–
	prairie spiderwort	TROC	<i>Tradescantia occidentalis</i>	0–75	–
Shrub/Vine					

6	Shrubs			200–300	
	leadplant	AMCA6	<i>Amorpha canescens</i>	0–75	–
	sand sagebrush	ARFI2	<i>Artemisia filifolia</i>	0–75	–
	Oklahoma plum	PRGR	<i>Prunus gracilis</i>	0–75	–
	skunkbush sumac	RHTR	<i>Rhus trilobata</i>	0–75	–
Tree					
7	Trees			40–50	
	hackberry	CELT1	<i>Celtis</i>	0–50	–
	western soapberry	SASAD	<i>Sapindus saponaria var. drummondii</i>	0–50	–

Animal community

Native animals that occupy this site include bobwhite quail, white-tailed deer, turkey, lesser prairie chicken and various small mammals and grassland birds. The site provides cover and nesting habitat for turkeys, prairie chickens and quail. Deer frequent the site for screening cover and bedding sites. Many white-tailed deer fawns are observed in the tallgrass cover in the spring. Turkeys use this site frequently for nesting especially if it is in close proximity to creeks and/or bottomlands.

Hydrological functions

This site captures nearly 100 % of the water that falls on it. The sandy soil infiltrates water rapidly. There is negligible runoff. Some water will percolate past the root zone and find its way into shallow aquifers. This site and the Sandhills (Dune) site are primary recharge areas.

Recreational uses

Hunting, Camping, Hiking, Birdwatching, Photography, Horseback Riding.

Wood products

None.

Other products

None.

Other information

None.

Inventory data references

Based on long-term observation of well-managed ranges, range inventory data, and numerous historical accounts of vegetation present at time of settlement. Several years of clipping data and numerous old range inventories have been reviewed.

Other references

Natural Resources Conservation Service Range Site Descriptions
 USDA-Natural Resources Conservation Service Soil Surveys
 Rathjen, Frederick W., The Texas Panhandle Frontier, Rev. 1998, Univ. of Texas Press
 Hatch, Brown and Ghandi, Vascular Plants of Texas (An Ecological Checklist), Texas A&M Exp. Station, College Station, Texas

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Approval

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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.

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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:** Slight to moderate.
-
7. **Amount of litter movement (describe size and distance expected to travel):** Slight to moderate.
-
8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Not very resistant to surface erosion.
-
9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Fine sand single grained surface with very low 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 rapid permeability, runoff is slow and available water capacity is low.
-
11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):** None.
-
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: Warm-season tallgrasses >
- Sub-dominant: Warm-season midgrasses >
- Other: Cool-season grasses > Shrubs/Vines = Forbs > Trees
- 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.
-
14. **Average percent litter cover (%) and depth (in):** Litter is dominantly herbaceous.
-

15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** 1,700 to 3,500 pounds per acre.

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 sand shinoak can be invasive.

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.
