USDA Natural Resources
Conservation Service

Ecological site R077AY013TX
Very Shallow 16-22" PZ

Last updated: 9/11/2023
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.

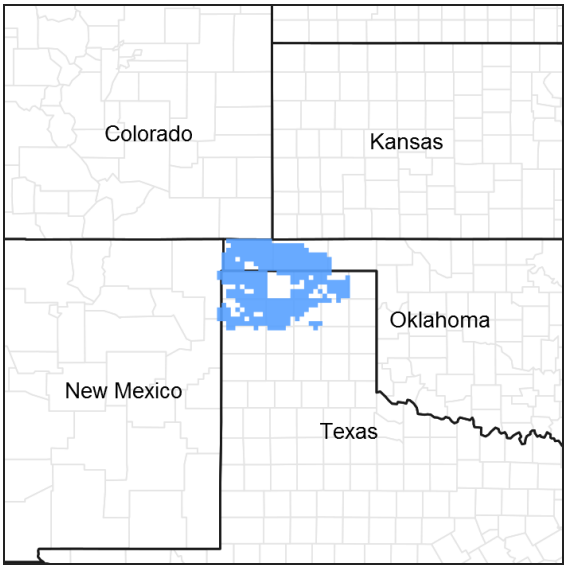


Figure 1. Mapped extent

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.

MLRA notes

Major Land Resource Area (MLRA): 077A–Southern High Plains, Northern Part

MLRA 77A is characterized by nearly level plains with playa depressions and sloping breaks along rivers and creeks. Soils are generally deep, fine-textured, and occur in a mesic soil temperature regime.

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

These sites occur over very shallow and shallow calcareous soils over a petrocalcic horizon. They support a reference plant community of midgrasses, shortgrasses, and forbs. Overall production is limited due to the depth of the soils.

Associated sites

R077EY062TX	**Breaks 16-24" PZ** Moderately steep to steep, shallow, calcareous loamy soils formed in caliche colluvium with intermixed with rock outcrops on lower landscapes. Surface rocks and cobbles of caliche with interspersed bare ground. A sparse mixture of grasses, forbs, shrubs, and a few trees that varies greatly within the site according to exposure and the amount of soil material.
R077AY006TX	**Limy Upland 16-22" PZ** Gently sloping to moderately sloping loamy soils with highly calcareous subsoils on adjacent positions. Short and mid-grass dominate and with few tall grasses, perennial and annual forbs, and few woody species present.
R077EY057TX	**Limy Upland 16-24" PZ** Very gently to strongly sloping deep or very deep highly calcareous loamy soils formed in caliche residuum or colluvium on lower landscapes. Mid- and shortgrasses with forbs and few woody plants.

Similar sites

R077EY068TX	**Very Shallow 16-24" PZ** A similar site in MLRA 77E with soils formed from caliche residuum or colluvium in a slightly warmer thermic soil temperature regime.

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) *Yucca glauca*
Herbaceous	(1) *Schizachyrium scoparium* (2) *Bouteloua curtipendula*

Physiographic features

This site is classified as an upland. It occurs along ridge tops, and above major escarpments. Slopes are nearly level to gently sloping. Soils are very shallow or shallow over petrocalcic horizons with carbonate nodules throughout. The hardness of the petrocalcic horizons varies from moderately cemented to indurated. The site is located on where the uppermost portions of the Ogallala formation are thinly covered with eolian materials. Most often this site occurs in areas just above where the hard petrocalcic outcrops ("caprock") of the High Plains escarpment gives way to the steep erosional slopes just below. It also occurs on the interior of the High Plains where eolian covers have eroded, exposing the shallow soils formed over petrocalcic horizons.

Table 2. Representative physiographic features

Landforms	(1) Plains > Interfluve (2) Plains > Escarpment (3) Plains > Plain
Runoff class	High to very high
Flooding frequency	None
Ponding frequency	None
Elevation	762–1,372 m
Slope	0–5%
Aspect	Aspect is not a significant factor

Table 3. Representative physiographic features (actual ranges)

Runoff class	High to very high
Flooding frequency	None
Ponding frequency	None

Elevation	701–1,521 m
Slope	0–5%

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, and short-term droughts are common. Humidity is generally low and evaporation high. 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 15 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 19 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 inches and 23 inches. Growing season averages 180 days. Average first frost is around October 17, and the last freeze of the season occurs around April 21.

Table 4. Representative climatic features

Frost-free period (characteristic range)	143-156 days
Freeze-free period (characteristic range)	175-190 days
Precipitation total (characteristic range)	457-533 mm
Frost-free period (actual range)	138-163 days
Freeze-free period (actual range)	169-194 days
Precipitation total (actual range)	457-559 mm
Frost-free period (average)	150 days
Freeze-free period (average)	182 days
Precipitation total (average)	483 mm

Climate stations used

- (1) LIBERAL [USC00144695], Liberal, KS
- (2) DUMAS [USC00412617], Dumas, TX
- (3) SPEARMAN [USC00418523], Spearman, TX
- (4) BOISE CITY 2 E [USC00340908], Boise City, OK
- (5) STRATFORD [USC00418692], Stratford, TX
- (6) GOODWELL 2 E [USW00003055], Goodwell, OK
- (7) HUGOTON [USC00143855], Hugoton, KS
- (8) PERRYTON [USC00416950], Perryton, TX
- (9) ELKHART [USC00142432], Elkhart, KS

Influencing water features

There are no non-stream or stream characteristics for this site. No perennial streams are associated with this site. It has no surface water features.

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.

The soils on this site are very shallow or shallow, well drained, calcareous, gravelly soils. They have gravelly loam surfaces over petrocalcic horizons. Petrocalcic hardness varies from moderately cemented to indurated. Permeability of the upper soil materials is moderate. Petrocalcic horizons are impermeable. Available water holding capacity is very low and the inherent fertility is low. Plant growth and production is restricted by shallow depth.

Representative soil components for this site include: Plack.

Table 5. Representative soil features

Parent material	(1) Eolian deposits
Surface texture	(1) Loam (2) Clay loam
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Very slow to moderate
Depth to restrictive layer	10–51 cm
Soil depth	10–51 cm
Surface fragment cover <=3"	3–7%
Surface fragment cover >3"	0–1%
Available water capacity (0-101.6cm)	2.03–7.37 cm
Calcium carbonate equivalent (0-101.6cm)	5–70%
Electrical conductivity (0-101.6cm)	0–2 mmhos/cm
Soil reaction (1:1 water) (0-101.6cm)	7.9–9
Subsurface fragment volume <=3" (0-50.8cm)	1–20%
Subsurface fragment volume >3" (0-50.8cm)	0–5%

Ecological dynamics

The assumed historic natural plant community is a mixture of grasses, forbs and low growing shrubs. Vegetation is generally sparse. Soil depth limits plant density. Areas of bare ground are common. The limey nature of the soil further defines the species occupying the site. The plant community is more productive where less limey conditions

occur. Production is low and palatability of forage is less than sites with deeper soil resources. Tall, mid and shortgrass species are found on the site along with several species of forbs and shrubs. Little bluestem (*Schizachyrium scoparium*) and sideoats grama (*Bouteloua curtipendula*) are often the most common grasses; however, other grasses such as hairy grama (*Bouteloua hirsuta*), blue grama (*Bouteloua gracilis*), New Mexico stipa (*Hesperostipa neomexicana*), and perennial three-awn (Aristida species) are also frequently present, with occasional plants of sand bluestem (Andropogon hallIi) and Indiangrass (*Sorghastrum nutans*). The more common shrubs are feather dalea (*Dalea formosa*), skunkbush sumac (*Rhus aromatica*), and juniper (Juniperus species). Small amouts of mountain mahogany (*Cercocarpus montanus*) and plains greasebush (Glossopetalon planitierum) may occur on areas along escarpment edges. Areas occur within the site where the shrubs may be quite visible and make up a fairly large percent of the total biomass and there are areas where grasses dominate. Forbs are generally fairly well dispersed throughout the entire site. This site is not a preferred grazing area for most domestic livestock. The plants that grow on shallow, limy soil tend not to be palatable compared to the same plants growing on deep, fertile soil. Nutrients are probably tied up by the large amounts of lime present, and are not available to plants. This site is seldom as heavily grazed as associated upland sites. The site is frequently utilized by browsing species such as mule deer and the largely forb consuming pronghorn.

Natural fire played a role in the ecology of the site as is true for practically all high plains sites. The general effects of fire were to promote a grassland state and keep woody shrubs suppressed. However, the shallow limy soils on this site have much more influence on the plant community than does any external ecological influence. The sparse vegetation and lower production probably limited the heat generated by natural fire and therefore may have limited the degree of damage to woody plants. In general, when burned periodically the tallgrasses tend to benefit and shrubs are suppressed for a few years time. It does take this site longer to recover from a burn than some associated sites. If the site is abused by overgrazing, the general trend is for the taller grasses to decline and shrubby species to increase. Broom snakeweed will almost certainly increase if the grasses decline. Increased bare ground will result and runoff will be increased. It is somewhat uncommon to find this site severely degraded due to grazing abuse, but it can occur. Although the site is not terribly subject to wind erosion due to coarse fragments on the surface, water erosion can occur with poor cover. A general droughty condition will prevail and it will be very difficult to restore a plant community close to the historic climax once severe degradation has taken place. This site has limited production potential and if degraded, it quickly loses the ability to support sufficient cover to protect the soil resource.

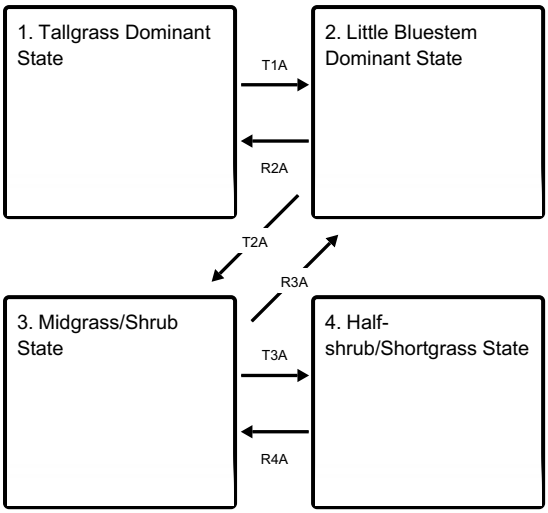
PLANT COMMUNITIES AND TRANSITIONAL PATHWAYS (DIAGRAM)

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 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, no natural fire combined with heavy grazing pressure will usually see a decrease in the amount of tall grasses and an increase in shrubs. This may take considerable time to come about or it may happen within just a few years. If this shift has not gone too far, then re-introduction of fire by prescribed burning and properly applied grazing practices can restore the community to the tallgrass dominance. Prolonged (many consecutive years) of abusive grazing with no rest, and no control of shrubs can cause the site to degrade to a shrub dominant with only a few shortgrasses present. The site in that degraded state can probably not be restored with management alone. Normally, the low productivity of the site and the fact that it is generally not extensive in total area precludes practices such as reseeding and brush management.

State and transition model

Ecosystem states



T1A - Absence of disturbance coupled with excessive grazing pressure

R2A - Adequate rest from defoliation coupled reintroduction of historic disturbance regimes

T2A - Absence of disturbance and natural regeneration over time, may be coupled with excessive grazing pressure

R3A - Adequate rest from defoliation coupled with brush management

T3A - Absence of disturbance and natural regeneration over time, may be coupled with excessive grazing pressure

R4A - Adequate rest from defoliation coupled with brush management and the reintroduction of fire

State 1 submodel, plant communities

1.1. Tallgrass Dominant Community

State 2 submodel, plant communities

2.1. Little Bluestem Dominant Community

State 3 submodel, plant communities

3.1. Midgrass/Shrub Community

State 4 submodel, plant communities

4.1. Half-shrub/Shortgrass Community

State 1
Tallgrass Dominant State

The Tallgrass Dominant State is a mixture of tall, mid and shortgrasses with little bluestem and sideoats grama dominance. There is also a small shrub component of less than ten percent canopy.

Dominant plant species

- little bluestem (*Schizachyrium scoparium*), grass
- sideoats grama (*Bouteloua curtipendula*), grass

Community 1.1
Tallgrass Dominant Community

Figure 8. 1.1 Tallgrass Dominant Community

The interpretive plant community for this site is this "reference" plant community. This community is dominated by little bluestem with a smaller component of shortgrasses. It is difficult to describe a definite community as the amount of actual soil material over parent material is variable. The depth of soil influences the species more than any other factor. The tallgrasses such as sand bluestem and Indiangrass usually occur in crevices or fissures in the rock. A moderate amount of forbs such as plains actinea and echinacea are usually present and are usually well distributed. Shrubs such as feather dalea and yucca make up around 5-10 % of the production, but may be localized in occurrence. This community is very stable and shifts little from year to year.

Table 6. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	583	841	1076
Forb	39	90	135
Shrub/Vine	28	67	84
Microbiotic Crusts	11	17	22
Tree	–	3	6
Total	**661**	**1018**	**1323**

Figure 10. Plant community growth curve (percent production by month). TX0517, Little bluestem dominant with shortgrasses. Little bluestem dominant with smaller components of shortgrasses, shrubs, and forbs..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	2	4	7	18	22	18	9	12	5	2	1

State 2

Little Bluestem Dominant State

Tall and midgrasses dominate the plant community with little bluestem maintaining dominance. Lack of soil development. Shrubs still reaches less than 10 percent woody canopy.

Dominant plant species

- little bluestem (*Schizachyrium scoparium*), grass

Community 2.1
Little Bluestem Dominant Community

Figure 11. 2.1 Little Bluestem Dominant Community

This plant community has less soil development and is a tall/midgrass community with few shrubs. Decrease in plant density compared to community 1.1 is due to lack of soil development due to slope. Main grass is little bluestem with New Mexico stipa and Wright threeawn. Shrubs are few but include feather dalea, juniper and skunkbush.

Table 7. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	448	723	947
Forb	45	78	101
Shrub/Vine	34	39	50
Microbiotic Crusts	–	6	6
Tree	–	–	–
Total	**527**	**846**	**1104**

Figure 13. Plant community growth curve (percent production by month). TX0517, Little bluestem dominant with shortgrasses. Little bluestem dominant with smaller components of shortgrasses, shrubs, and forbs..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	2	4	7	18	22	18	9	12	5	2	1

State 3
Midgrass/Shrub State

This state is a midgrass dominant with an increase in broom snakeweed. This community still has a tallgrass presence.

Dominant plant species

- broom snakeweed (*Gutierrezia sarothrae*), shrub
- blue grama (*Bouteloua gracilis*), grass
- black grama (*Bouteloua eriopoda*), grass

Community 3.1
Midgrass/Shrub Community

Figure 14. 3.1 Midgrass/Shrub Community

This plant community is a midgrass dominant with some lesser amounts of shrubs. Sideoats grama and Wright threeawn are the dominant grasses. There is still a small tallgrass presence. Forb variety is good. Some increase in broom snakeweed is evident. Feather dalea and skunkbush are present in localized areas.

Table 8. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	448	644	813
Forb	34	84	112
Shrub/Vine	28	45	73
Microbiotic Crusts	–	1	1
Tree	–	–	–
Total	**510**	**774**	**999**

Figure 16. Plant community growth curve (percent production by month). TX0518, Midgrass/shrubs with average production. Average production of midgrasses and shrubs..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	1	3	5	20	25	17	8	15	4	1	1

State 4
Half-shrub/Shortgrass State

This state is a plant community mixture of half shrubs and shortgrasses with broom snakeweed dominance. There is a low diversity of plant species as well as low productivity. There is visible soil degradation at this point.

Dominant plant species

- broom snakeweed (*Gutierrezia sarothrae*), shrub

Community 4.1
Half-shrub/Shortgrass Community

Figure 17. 4.1 Half-shrub/Shortgrass Community

Broom snakeweed and shortgrasses dominate this site. Past grazing management has been inappropriate. This site is dominated by broom snakeweed with low vigor blue grama and perennial three-awn being the main grasses. Few forbs are present. Other shrubs include occasional yucca and catclaw mimosa. Production is low and so is diversity. This state is an example of a degraded site, with erosion damage. Even though there will be fluctuations of broom snakeweed densities over time due to climatic events, the seed source of higher seral plants are absent. Intervention, using herbicides and proper grazing management, can restore the vigor of blue grama and other remnant grasses.

Table 9. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	202	258	370
Shrub/Vine	252	252	280
Forb	28	39	39
Microbiotic Crusts	–	–	–
Tree	–	–	–
Total	**482**	**549**	**689**

Figure 19. Plant community growth curve (percent production by month). TX0516, Broom snakeweed dominant with shortgrasses. Shrub/Shortgrasses in low production..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	1	3	8	16	25	5	5	10	16	8	3

Transition T1A
State 1 to 2

With abusive grazing and no fires on the Tallgrass Dominant Community (1.1), this community can transition to the Little bluestem Dominant Community (2.1).

Restoration pathway R2A
State 2 to 1

With the implementation of conservation practices such as Prescribed Grazing and Prescribed Burning, the Little bluestem Dominant Community (2.1) can be restored back to the Tallgrass Dominant Community (1.1).

Conservation practices

Prescribed Burning

Prescribed Grazing

Transition T2A
State 2 to 3

With abusive grazing and no fires, the Little bluestem Dominant Community will transition itself to the Midgrass/Shrubs Community.

Restoration pathway R3A
State 3 to 2

With Prescribed Grazing and Prescribed Burning conservation practices, the Midgrass/Shrubs State can be reverted back to the Little bluestem Dominant State.

Conservation practices

Prescribed Burning
Prescribed Grazing

Transition T3A
State 3 to 4

With abusive grazing, no fires, and no brush management practices, the Midgrass/Shrub State will transition to the Half-shrub/Shortgrass State.

Restoration pathway R4A
State 4 to 3

With the implementation of various conservation practices such as Prescribed Grazing, Brush Management, and Prescribed Burning, the Half-shrub/Shortgrass State can be reverted back to the Midgrass/Shrubs Community.

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 (Kg/Hectare)	Foliar Cover (%)
Grass/Grasslike					
1	**Tall/Midgrasses**			336–616	
	sideoats grama	BOCU	*Bouteloua curtipendula*	0–616	–
	little bluestem	SCSC	*Schizachyrium scoparium*	0–616	–
2	**Midgrasses**			135–269	
	black grama	BOER4	*Bouteloua eriopoda*	0–67	–
	blue grama	BOGR2	*Bouteloua gracilis*	0–67	–
	hairy grama	BOHI2	*Bouteloua hirsuta*	0–67	–
	sand dropseed	SPCR	*Sporobolus cryptandrus*	0–67	–
	slim tridens	TRMU	*Tridens muticus*	0–67	–
3	**Midgrass/Cool-season**			56–106	

	purple threeawn	ARPU9	*Aristida purpurea*	0–106	–
	New Mexico feathergrass	HENE5	*Hesperostipa neomexicana*	0–106	–
4	**Tallgrasses**			56–84	
	sand bluestem	ANHA	*Andropogon hallii*	0–84	–
	Indiangrass	SONU2	*Sorghastrum nutans*	0–84	–
Forb					
5	**Forbs**			39–135	
	Forb, annual	2FA	*Forb, annual*	0–34	–
	white sagebrush	ARLU	*Artemisia ludoviciana*	0–34	–
	yellow sundrops	CASE12	*Calylophus serrulatus*	0–34	–
	rose heath	CHER2	*Chaetopappa ericoides*	0–34	–
	Texas croton	CRTE4	*Croton texensis*	0–34	–
	blacksamson echinacea	ECAN2	*Echinacea angustifolia*	0–34	–
	longleaf buckwheat	ERLO5	*Eriogonum longifolium*	0–34	–
	warty spurge	EUSP	*Euphorbia spathulata*	0–34	–
	shaggy dwarf morning-glory	EVNU	*Evolvulus nuttallianus*	0–34	–
	collegeflower	HYFL	*Hymenopappus flavescens*	0–34	–
	trailing krameria	KRLA	*Krameria lanceolata*	0–34	–
	Gordon's bladderpod	LEGO	*Lesquerella gordonii*	0–34	–
	dotted blazing star	LIPU	*Liatris punctata*	0–34	–
	hoary blackfoot	MECI	*Melampodium cinereum*	0–34	–
	plains blackfoot	MELE2	*Melampodium leucanthum*	0–34	–
	grassland blazingstar	MEST3	*Mentzelia strictissima*	0–34	–
	Spach's evening primrose	OESP	*Oenothera spachiana*	0–34	–
	purple locoweed	OXLA3	*Oxytropis lambertii*	0–34	–
	yellow nailwort	PAVI4	*Paronychia virginica*	0–34	–
	Fendler's penstemon	PEFE	*Penstemon fendleri*	0–34	–
	James' holdback	POJA5	*Pomaria jamesii*	0–34	–
	curlytop knotweed	POLA4	*Polygonum lapathifolium*	0–34	–
	slimflower scurfpea	PSTE5	*Psoralidium tenuiflorum*	0–34	–
	stemmy four-nerve daisy	TESC2	*Tetraneuris scaposa*	0–34	–
	branched noseburn	TRRA5	*Tragia ramosa*	0–34	–
Shrub/Vine					
6	**Shrubs/Vines**			28–90	
	alderleaf mountain mahogany	CEMO2	*Cercocarpus montanus*	0–22	–
	featherplume	DAFO	*Dalea formosa*	0–22	–
	jointfir	EPHED	*Ephedra*	0–22	–
	broom snakeweed	GUSA2	*Gutierrezia sarothrae*	0–22	–
	sensitive plant	MIMOS	*Mimosa*	0–22	–
	plains pricklypear	OPPO	*Opuntia polyacantha*	0–22	–
	skunkbush sumac	RHTR	*Rhus trilobata*	0–22	–
	yucca	YUCCA	*Yucca*	0–22	–
Tree					

7	**Trees**			0–6	
	hackberry	CELTI	*Celtis*	0–6	–
	oneseed juniper	JUMO	*Juniperus monosperma*	0–6	–

Animal community

Native animals that occupy this site include scaled quail, pronghorn antelope, coyote, jackrabbit, swift fox, Texas horned lizard, and mule deer. It is an open grassland site therefore species that require lots of cover may not be present. Several palatable browse species commonly occur, such as sumac, mountain mahogany and plains greasebush. It is not a preferred grazing site for most domestic livestock.

Plant preference by animal kind:
This rating system provides general guidance as to animal preference for plant species. It also indicates possible competition between kinds of herbivores for various plants. Grazing preference changes from time to time, especially between seasons, and between animal kinds and classes. Grazing preference does not necessarily reflect the ecological status of the plant within the plant community.

Preferred (P) – Percentage of plant in animal diet is greater than it occurs on the land
Desirable (D) – Percentage of plant in animal diet is similar to the percentage composition on the land
Undesirable (U) – Percentage of plant in animal diet is less than it occurs on the land
Not Consumed (N) – Plant would not be eaten under normal conditions. It is only consumed when other forages not available.
Toxic (T) – Rare occurrence in diet and, if consumed in any tangible amounts results in death or severe illness in animal

Hydrological functions

This site often occurs above draws and along escarpments. Runoff from the site may enter major drainages. It is possible that some recharge water may enter through cracks and fissures in the indurated caliche substrate.

Recreational uses

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

Wood products

No wood products are found on this site.

Other products

At some locations, caliche is mined and used for road base. These are open pit mines and are usually fairly small.

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

Vavra, Martin, William A. Laycock, and Rex D. Pieper, ed. Ecological Implications of Livestock Herbivory in the West. Denver: Society for Range Management, 1994.
Rathjen, Frederick W., The Texas Panhandle Frontier, Rev. 1998, Univ. of Texas Press
Gould's Grasses of Texas, Ecological Checklist of Vascular Plants of Texas (Texas A&M)

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Approval

Bryan Christensen, 9/11/2023

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.

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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:** Due to percent slopes, rills will be common.

2. **Presence of water flow patterns:** Due to percent slopes, water flow patterns will be common.

3. **Number and height of erosional pedestals or terracettes:** Due to percent slopes, pedestals/terracettes will be common.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** 25-30% mineral soil, low percentage due to rock fragments scattered throughout the soil profile.

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):** Moderately resistant to erosion.

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Loam, friable, low SOM.

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Low vegetative cover and percent slopes makes this site susceptible to erosion. This site has moderately permeable soil, runoff is medium and available water holding capacity is very 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 midgrasses = warm-season tallgrasses

    Sub-dominant: Warm-season shortgrasses = Cool-season grasses

Other: Shrubs

Additional:

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Minimum mortality and decadence.

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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):** 500 - 900 lbs/ac

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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:** Yucca, Juniper and Broom snakeweed

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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.
