

Ecological site R077CY037TX Very Shallow 16-21" 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): 077C–Southern High Plains, Southern Part

MLRA 77C is characterized by nearly level plains with numerous playa depressions, moderately sloping breaks along drainageways, and a steep escarpment along the eastern margin. From southwest to northeast, soils grade from coarse-textured to fine-textured. Soils are generally deep and occur in a thermic soil temperature regime and ustic soil moisture regime bordering on aridic. Current land use is dominantly cropland.

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 shallow soils on uplands. The reference vegetation includes mid and shortgrasses, forbs, and very few shrubs. Abusive grazing practices may lead to a decrease in palatable species and a shift in the plant community. Without fire or other brush management, woody species may increase.

Associated sites

R077CY023TX	<p>Draw 16-21" PZ</p> <p>Draw sites are on nearly level to very gently sloping floodplains and drainageways below the Very Shallow site. These very deep soils are adjacent to Very Shallow sites that are on higher landscape positions. The Draw sites collect runoff moisture from surrounding plains. Midgrasses and shortgrasses dominate these sites but have some tallgrasses as well.</p>
R077CY036TX	<p>Sandy Loam 16-21" PZ</p> <p>Sandy Loam sites are on nearly level to gently sloping plains. These moderately to very deep sites are adjacent to the Very Shallow site that's on similar or slightly lower landscape positions. Midgrasses and shortgrasses dominate on these sites.</p>
R077CY022TX	<p>Deep Hardland 16-21" PZ</p> <p>Deep Hardland sites are on nearly level to gently sloping plains. These moderately to very deep sites are adjacent to the Very Shallow site that's on similar or slightly lower landscape positions. Shortgrasses and Midgrasses dominate on these sites.</p>

Similar sites

R077AY013TX	<p>Very Shallow 16-22" PZ</p> <p>This shallow site is on uplands and has calcareous, gravelly soils and soils that are shallow to a petrocalcic horizon. The reference plant community consists of midgrasses, shortgrasses and forbs. Overall production is limited due to the shallow depth of the soils.</p>
R077DY049TX	<p>Very Shallow 12-17" PZ</p> <p>This shallow site is on uplands and has calcareous, gravelly soils and soils that are shallow to a petrocalcic horizon. The reference plant community consists of midgrasses, shortgrasses and forbs. Mean annual precipitation is lower (15 to 17 inches) and this site is less productive than the Very Shallow site in MLRA 77C.</p>
R077EY068TX	<p>Very Shallow 16-24" PZ</p> <p>This shallow site is on uplands and has calcareous, gravelly soils and soils that are shallow to a petrocalcic horizon. The reference plant community consists of midgrasses, shortgrasses and forbs. Overall production is limited due to the shallow depth of the soils.</p>

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) <i>Rhus trilobata</i> (2) <i>Dalea formosa</i>
Herbaceous	(1) <i>Schizachyrium scoparium</i> (2) <i>Bouteloua curtipendula</i>

Physiographic features

This site is on upland sites. It occurs on nearly level plains to steep slopes on escarpments, along relict drainageways, and summit positions of knolls and interfluves. Soils are shallow to moderately deep with caliche fragments throughout. The caliche beds in which the site occurs may be fairly soft or may be indurated. The site is generally located in the upper Ogallala formation and often occurs immediately above the hard caliche outcrops of the high plains escarpment; and in the erosional slopes just below.

Table 2. Representative physiographic features

Landforms	(1) Plateau > Plain (2) Plateau > Escarpment (3) Plateau > Valley side
Runoff class	Medium to very high
Flooding frequency	None
Ponding frequency	None

Elevation	2,600–4,000 ft
Slope	0–45%
Ponding depth	0 in
Water table depth	0 in
Aspect	W, NW, N, NE, E, SE, S, SW

Climatic features

Climate is semi-arid dry steppe. Summers are hot with winters being generally mild with numerous cold fronts that drop temperatures into the single digits for 24 to 48 hours. Temperature extremes are the rule rather than the exception. Humidity is generally low and evaporation high. Wind speeds are highest in the spring and are generally southwesterly. Canadian and Pacific cold fronts come through the region in fall, winter and spring with predictability and temperature changes can be rapid. Most of the precipitation comes in the form of rain and during the period from May through October. Snowfall averages around 15 inches but may be as little as 8 inches or as much as 36 inches. Rainfall in the growing season often comes as intense showers of relatively short duration. Long term droughts occur on the average of once every 20 years and may last as long as five to six years (during these drought years, moisture during the growing season is from 50 to 60 percent of the mean). Based on long term records, approximately 60 percent of the years are below the mean rainfall and approximately 40 percent are above the mean. May, June and July are the main growth months for perennial warm season grasses. Forbs make their growth somewhat earlier.

Table 3. Representative climatic features

Frost-free period (characteristic range)	155-188 days
Freeze-free period (characteristic range)	190-205 days
Precipitation total (characteristic range)	19-22 in
Frost-free period (actual range)	149-196 days
Freeze-free period (actual range)	185-210 days
Precipitation total (actual range)	18-23 in
Frost-free period (average)	172 days
Freeze-free period (average)	199 days
Precipitation total (average)	20 in

Climate stations used

- (1) CROSBYTON [USC00412121], Crosbyton, TX
- (2) CAMERON [USC00291332], Grady, NM
- (3) PANHANDLE [USC00416785], Panhandle, TX
- (4) BIG SPRING [USW00023041], Big Spring, TX
- (5) PORTALES [USC00297008], Portales, NM
- (6) DENVER CITY [USC00412408], Denver City, TX
- (7) SILVERTON [USC00418323], Silverton, TX
- (8) MORTON [USC00416074], Morton, TX
- (9) LAMESA 1 SSE [USC00415013], Lamesa, TX
- (10) LEVELLAND [USC00415183], Levelland, TX
- (11) HEREFORD [USC00414098], Hereford, TX
- (12) TULIA [USC00419175], Tulia, TX

Influencing water features

Water features are not an influencing factor in this site.

Wetland description

N/A

Soil features

The soils on this site are very shallow, well drained, calcareous, gravelly soils. They commonly have light colored, gravelly loam surfaces over thick beds of caliche. Caliche may be soft, or petrocalcic horizons (indurated caliche) may be present. These sites are shallow to a restrictive petrocalcic horizon that is between 8 and 20 inches and are moderately permeable above a very slowly permeable layer. Available water holding capacity is very low and the inherent fertility is low. Plant growth and production is restricted by shallow depth and the presence of calcium carbonates.

Major Soil Taxonomic Units correlated to this site include: Kimberson loam and gravelly loam, Sharvana loamy fine sand and fine sandy loam, Slaughter fine sandy loam, and loam, Stohman fine sandy loam, Yellowhouse gravelly clay loam.

Table 4. Representative soil features

Parent material	(1) Eolian deposits—metamorphic and sedimentary rock (2) Lacustrine deposits—limestone and sandstone (3) Residuum—limestone and shale
Surface texture	(1) Loamy fine sand (2) Fine sandy loam (3) Fine sandy loamGravelly, very gravelly loam (4) Fine sandy loamGravelly, very gravelly loamGravelly, very gravelly clay loam
Family particle size	(1) Loamy (2) Fine (3) Clayey
Drainage class	Well drained
Permeability class	Very slow to moderate
Depth to restrictive layer	8–40 in
Soil depth	10–40 in
Surface fragment cover <=3"	0–20%
Surface fragment cover >3"	0–5%
Available water capacity (0-40in)	1.3–3.4 in
Calcium carbonate equivalent (0-40in)	0–80%
Electrical conductivity (0-40in)	0–8 mmhos/cm
Sodium adsorption ratio (0-40in)	0–13
Soil reaction (1:1 water) (0-40in)	6.6–9
Subsurface fragment volume <=3" (0-40in)	0–70%
Subsurface fragment volume >3" (0-40in)	0–10%

Ecological dynamics

The Reference 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 limy nature of the soil further defines the species occupying the site. The plant community is more productive where less limy 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. Grasses such as hairy grama (*Bouteloua hirsuta*), blue grama (*Bouteloua gracilis*), New Mexico feathergrass (*Hesperostipa neomexicana*), and perennial three-awns (*Aristida* spp.) are also frequently present, with occasional sand bluestem (*Andropogon hallii*) and Indiangrass (*Sorghastrum nutans*). The more common shrubs are feather dalea (*Dalea formosa*), skunkbush sumac (*Rhus trilobata*), and juniper (*Juniper monosperma*). Broom snakeweed (*Gutierrezia sarothrae*) typically increases when grasses decline. However, broom snakeweed is a cyclic plant sensitive to fall moisture, once broom snakeweed dominates a site, it tends to be persistent. Small amounts of plains greasebush (*Glossopetalon planitierum*) may occur on areas along escarpment edges. Areas occur within the site where the shrubs may make up a large percent of the vegetation. Likewise, 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. Plants growing on shallow, limy soils tend not to be as palatable as when growing on deep, fertile soil. Nutrients are 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.

Fire plays a role in the ecology of the site. The general effects of fire are to promote grasslands and suppress woody shrubs. The shallow, limy soils on this site have much more influence on the plant community than does any external ecological influence. Sparse vegetation and lower production limited the heat generated by natural fire and may have limited the degree of damage to woody plants. This site takes longer to recover from a burn than some associated sites. Overgrazing causes the taller grasses to decline and shrubby species to increase. Bare ground and runoff will be increased. It is somewhat uncommon to find this site severely degraded due to grazing abuse, but it can occur.

The site is not very susceptible to wind erosion due to coarse fragments on the surface. Water erosion can occur with poor cover. Severe degradation causes a drought-like condition and it becomes very difficult to restore the plant community close to the reference community. This site has limited production potential and it quickly loses the ability to support sufficient cover to protect the soil resource when degraded.

If abusive grazing does occur for prolonged periods of time the most palatable plants will be severely pressured. As retrogression proceeds, this site will move towards a Midgrass/Shrub Community (2.1). Tallgrasses will decline and midgrass species will increase along with a dramatic increase in the shrub component. The plant community will be less diverse than the reference. In this phase, the ecological processes have changed somewhat, but the pathway back toward the reference plant community can be initiated through prescribed grazing and prescribed burning. Limited fine fuel may prevent effective suppression of the woody plants.

If abusive grazing occurs for long periods of time, along with periodic droughts, retrogression will move towards a Shrub/Shortgrass Community (3.1). In extreme cases, shrubs such as yucca, skunkbush and juniper along with a high percentage of broom snakeweed will dominate the site. Numerous bare areas with surface rock fragments will be exposed increasing the potential for excessive soil erosion from water. This plant community is so degraded that retrogression can not be reversed without extensive energy and management inputs. At this point, a major threshold has been crossed. Restoration of the Shrub/Shortgrass plant community will be difficult due the droughty and rocky nature of the site. Prescribed grazing (3–5 consecutive years of deferment during the growing season), brush management (chemical and/or mechanical) and range planting will be necessary. At this point, prescribed burning is not an option due to the lack of fine fuel and poor continuity.

NOTE: Rangeland Health Reference Worksheets have been posted for this site on the Texas NRCS website (www.tx.nrcs.usda.gov) in Section II of the eFOTG under (F) Ecological Site Descriptions.

PLANT COMMUNITIES AND TRANSITIONAL PATHWAYS (DIAGRAM)

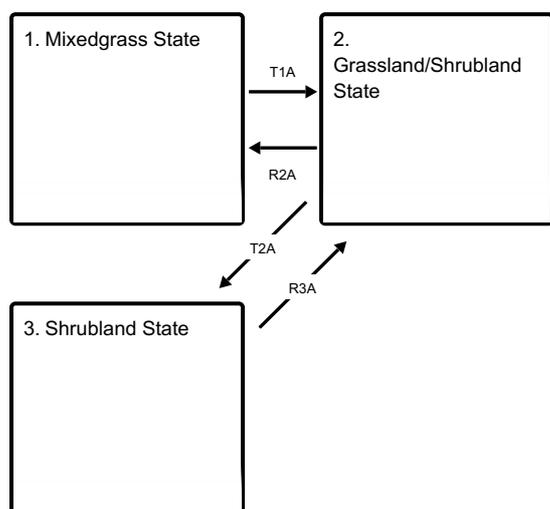
The following diagram suggests some pathways that the vegetation on this site might take. There may be other states not shown on the diagram. This information is intended to show what might happen in a given set of circumstances; it does not mean that this would happen the same way in every instance.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

Changes in the structure and composition of the plant community may be due to management and/or natural occurrences. At some point thresholds are crossed as indicated by the lined box on the State and Transition Diagram. This suggests that once changes have progressed to a certain point, the plant community has been altered to the extent that a return to the former state is not possible unless some form of energy is applied. These changes take place on all ecological sites. Some sites support communities that are more resistant to change than others. Also, some sites are more resilient and can 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/cacti 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 the desired result.

STATE AND TRANSITIONAL PATHWAYS (DIAGRAM)

State and transition model

Ecosystem states



T1A - Absence of disturbance and natural regeneration over time, may be coupled with excessive grazing pressure

R2A - Adequate rest from defoliation and removal of woody canopy, followed by reintroduction of historic disturbance regimes

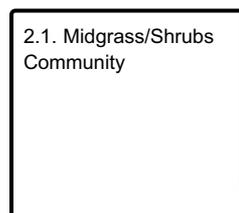
T2A - Absence of disturbance and natural regeneration over time, may be coupled with excessive grazing pressure

R3A - Adequate rest from defoliation and removal of woody canopy, followed by range planting

State 1 submodel, plant communities



State 2 submodel, plant communities



State 3 submodel, plant communities

3.1. Shrub/Shortgrass
Community

State 1 Mixedgrass State

The Mixedgrass Community is a mixture of tall, mid, and shortgrasses. Little bluestem and sideoats grama are the most common grasses. Diverse forb community with few scattered shrubs < 10 percent exists. Some areas with surface rock fragments are common to this site.

Dominant plant species

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

Community 1.1 Mixed Grass Community



Figure 8. 1.1 Mixed Grass Community

The interpretive or "reference" plant community for this site is the Mixedgrass Plant Community. It is difficult to precisely describe this plant 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. The site is generally dominated by little bluestem and sideoats grama with smaller amounts of shortgrasses. A moderate amount of forbs are usually present and are usually well distributed. This site can have as many as 25 different forb species. Major shrubs are feather dalea and yucca. Shrubs make up <10 percent of the production, but may be localized in occurrence. This community is very stable and shifts little from year to year. It is somewhat uncommon to find this site severely degraded due to grazing abuse, but it can occur.

Table 5. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	570	810	1050
Forb	40	85	130
Shrub/Vine	30	55	80
Microbiotic Crusts	10	15	20
Tree	0	5	10
Total	650	970	1290

Figure 10. Plant community growth curve (percent production by month). TX1041, Mixed Grass Community. Growth is predominantly tall/mid/shortgrasses from April to October with a peak growth May through July..

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 Grassland/Shrubland State

This plant community is a midgrass/shrub dominant with lesser amounts of tallgrasses. Little bluestem will be replaced with perennial three-awns. The tallgrasses found in depressions and other favorable niches on the site have been reduced and are only found in small amounts. Perennial forb diversity is still good with increasing amounts of annuals. Shrubs such as yucca, juniper, skunkbush and broom snakeweed will increase.

Dominant plant species

- yucca (*Yucca*), shrub
- threeawn (*Aristida*), grass

Community 2.1 Midgrass/Shrubs Community



Figure 11. 2.1 Midgrass/Shrubs Community

This plant community is a midgrass/shrub dominant with lesser amounts of tallgrasses. If heavy or even moderately heavy continuous grazing does occur for prolonged periods of time the most palatable plants will be severely pressured. Little bluestem will be replaced with perennial three-awns. The tallgrasses found in depressions and other favorable niches on the site have been reduced and are only found in small amounts. Perennial forb diversity is still good with increasing amounts of annuals. Shrubs such as yucca, juniper, skunkbush, and broom snakeweed will increase. The plant community will be less diverse than the reference community. In this phase, the ecological processes have changed somewhat, but the pathway back toward the reference community can be initiated through prescribed grazing, selective brush management and prescribed burning. Limited fine fuel may prevent effective

suppression of the woody plants.

Table 6. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	440	620	800
Forb	35	75	110
Shrub/Vine	30	50	70
Tree	0	0	0
Microbiotic Crusts	0	0	0
Total	505	745	980

Figure 13. Plant community growth curve (percent production by month). TX1023, Midgrass Dominant Community. Growth is predominantly mid and shortgrasses from April through October with a peak growth occurring from May through July..

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 3 Shrubland State

Broom snakeweed, perennial three-awn, low quality shortgrasses and annuals dominate. Large areas of bare ground with exposed rock fragments. Soil degradation is visible. Productivity and diversity is very low.

Dominant plant species

- broom snakeweed (*Gutierrezia sarothrae*), shrub
- juniper (*Juniperus*), shrub
- yucca (*Yucca*), shrub

Community 3.1 Shrub/Shortgrass Community



Figure 14. 3.1 Shrub/Shortgrass Community

Depending on the topsoil depth, this site may be dominated by broom snakeweed, juniper, yucca and low quality shortgrasses. Large areas of bare ground with exposed rock fragments will be common throughout the site. Excessive soil erosion will be evident with limited topsoil in areas. This plant community is so degraded that retrogression can not be reversed without extensive energy and management inputs. At this point, a major threshold has been crossed. Restoration of the Shrub/Shortgrass Community will be difficult due the droughty and rocky nature of the site combined with the loss of valuable topsoil. Prescribed grazing (3–5 consecutive years of

deferment during the growing season), brush management (chemical and/or mechanical) and range planting will be necessary. At this point, prescribed burning is not an option due to the lack of fine fuel and poor continuity.

Table 7. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	200	310	360
Shrub/Vine	250	260	275
Forb	28	35	40
Microbiotic Crusts	0	0	0
Tree	0	0	0
Total	478	605	675

Figure 16. Plant community growth curve (percent production by month). TX1042, Shrub/Shortgrass Community. Growth is predominantly shrubs and shortgrasses from April through October with peak growth from May through July..

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 no fires, heavy continuous grazing, and brush invasion, this plant community will transition to the Midgrass/Shrubs Community.

Restoration pathway R2A

State 2 to 1

With the implementation of various conservation practices such as Prescribed Grazing, Prescribed Burning, and Brush Management, the Midgrass/Shrubs Community can be shifted to the Mixed Grass Community.

Conservation practices

Brush Management
Prescribed Burning
Prescribed Grazing

Transition T2A

State 2 to 3

With continuous heavy grazing pressure, brush invasion, no brush management, and no fires, the Midgrass/Shrubs Community will transition to the Shrub/Shortgrass Community.

Restoration pathway R3A

State 3 to 2

Prescribed grazing (3–5 consecutive years of deferment during the growing season), brush management (chemical and/or mechanical) and range planting will be necessary. At this point, prescribed burning is not an option due to the lack of fine fuel and poor continuity.

Conservation practices

Brush Management

Prescribed Grazing
Range Planting

Additional community tables

Table 8. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Lb/Acre)	Foliar Cover (%)
Grass/Grasslike					
1	Tall/Midgrasses			330–600	
	sideoats grama	BOCU	<i>Bouteloua curtipendula</i>	200–400	–
	little bluestem	SCSC	<i>Schizachyrium scoparium</i>	200–400	–
2	Shortgrasses			130–265	
	blue grama	BOGR2	<i>Bouteloua gracilis</i>	50–200	–
	hairy grama	BOHI2	<i>Bouteloua hirsuta</i>	50–150	–
	sand dropseed	SPCR	<i>Sporobolus cryptandrus</i>	50–150	–
	slim tridens	TRMU	<i>Tridens muticus</i>	50–100	–
	black grama	BOER4	<i>Bouteloua eriopoda</i>	50–100	–
3	Midgrasses			55–105	
	New Mexico feathergrass	HENE5	<i>Hesperostipa neomexicana</i>	40–100	–
	Wright's threeawn	ARPUW	<i>Aristida purpurea var. wrightii</i>	30–50	–
4	Tallgrasses			55–80	
	sand bluestem	ANHA	<i>Andropogon hallii</i>	55–80	–
	Indiangrass	SONU2	<i>Sorghastrum nutans</i>	55–80	–
Forb					
5	Forbs			40–130	
	James' holdback	POJA5	<i>Pomaria jamesii</i>	20–50	–
	slimflower scurfpea	PSTE5	<i>Psoralidium tenuiflorum</i>	20–50	–
	stemmy four-nerve daisy	TESC2	<i>Tetrandeureis scaposa</i>	20–50	–
	Forb, annual	2FA	<i>Forb, annual</i>	0–50	–
	white sagebrush	ARLUM2	<i>Artemisia ludoviciana ssp. mexicana</i>	20–50	–
	yellow sundrops	CASE12	<i>Calylophus serrulatus</i>	20–50	–
	rose heath	CHER2	<i>Chaetopappa ericoides</i>	20–50	–
	blacksamson echinacea	ECAN2	<i>Echinacea angustifolia</i>	20–50	–
	longleaf buckwheat	ERLO5	<i>Eriogonum longifolium</i>	20–50	–
	spurge	EUPHO	<i>Euphorbia</i>	20–50	–
	Chalk Hill hymenopappus	HYTE2	<i>Hymenopappus tenuifolius</i>	20–50	–
	trailing krameria	KRLA	<i>Krameria lanceolata</i>	20–50	–
	Gordon's bladderpod	LEGO	<i>Lesquerella gordonii</i>	20–50	–
	dotted blazing star	LIPU	<i>Liatris punctata</i>	20–50	–
	hoary blackfoot	MECI	<i>Melampodium cinereum</i>	20–50	–
	plains blackfoot	MELE2	<i>Melampodium leucanthum</i>	20–50	–
	grassland blazingstar	MEST3	<i>Mentzelia strictissima</i>	20–50	–
	evening primrose	OENOT	<i>Oenothera</i>	20–50	–

	purple locoweed	OXLA3	<i>Oxytropis lambertii</i>	20–50	–
	yellow nailwort	PAVI4	<i>Paronychia virginica</i>	20–50	–
	Fendler's penstemon	PEFE	<i>Penstemon fendleri</i>	20–50	–
	white milkwort	POAL4	<i>Polygala alba</i>	10–30	–
	Texas croton	CRTE4	<i>Croton texensis</i>	5–30	–
	branched noseburn	TRRA5	<i>Tragia ramosa</i>	10–30	–
	shaggy dwarf morning-glory	EVNU	<i>Evolvulus nuttallianus</i>	10–20	–
Shrub/Vine					
6	Shrubs/Vines			30–80	
	yucca	YUCCA	<i>Yucca</i>	20–80	–
	featherplume	DAFO	<i>Dalea formosa</i>	20–50	–
	jointfir	EPHED	<i>Ephedra</i>	20–50	–
	broom snakeweed	GUSA2	<i>Gutierrezia sarothrae</i>	20–50	–
	catclaw mimosa	MIACB	<i>Mimosa aculeaticarpa var. biuncifera</i>	20–50	–
	plains pricklypear	OPPO	<i>Opuntia polyacantha</i>	20–50	–
	fragrant sumac	RHAR4	<i>Rhus aromatica</i>	20–50	–
Tree					
7	Trees			0–10	
	netleaf hackberry	CELAR	<i>Celtis laevigata var. reticulata</i>	0–10	–
	oneseed juniper	JUMO	<i>Juniperus monosperma</i>	0–10	–

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 skunkbush sumac, baby white aster, mountain mahogany, and plains greasewood. It is not a preferred grazing site for most domestic livestock.

Hydrological functions

This site often occurs above draws and along escarpments. Runoff from the site may enter major drainages.

Recreational uses

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

Wood products

None.

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

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

Other references

1. Archer S. 1994. Woody plant encroachment into southwestern grasslands and savannas: rates, patterns and proximate causes. In Ecological implications of livestock herbivory in the West, Ed M Vavra, W Laycock, R Pieper, pp13-68, Denver, CO: society for Range Management
2. Gould F. 1978. Common Texas Grasses: an illustrated guide. College Station, TX: Texas A & M Press.
3. Hatch, Brown and Ghandi, Vascular Plants of Texas (An Ecological Checklist)
4. Heischmidt RK, Stuth, Eds. 1991 Grazing Management: an ecological perspective. Portland OR: Timberline Press
5. North Rolling Plains RC&D, NRCS, and GLCI. 2006 edition. Common Rangeland Plants of the Texas Panhandle.
6. Scifres CJ, Hamilton WT. 1993. Prescribed burning for brushland management: the South Texas example. College Station, TX: Texas A & M Press.
7. Natural Resources Conservation Service - Range Site Descriptions
8. USDA-Natural Resources Conservation Service - Soil Surveys & Website soil database
9. Sosebee, Ron. Timing - the Key to Herbicidal Control of Broom Snakeweed, T-9-421, Department of Natural Resources, Texas Tech University, Lubbock, Texas.

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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
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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:** 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%.

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):** Moderate resistance to erosion.

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Loam; friable surface; 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 is a 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/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):** 500 to 900 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:** Yucca, Juniper and Broom snakeweed are potential invasive species for this site.

17. **Perennial plant reproductive capability:** All plant species are capable of reproduction except during periods of prolonged drought conditions, heavy natural herbivory and intense wildfires.
