USDA Natural Resources Conservation Service

Ecological site R078BY072TX
Clay Loam 19-26" PZ

Last updated: 9/15/2023
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.

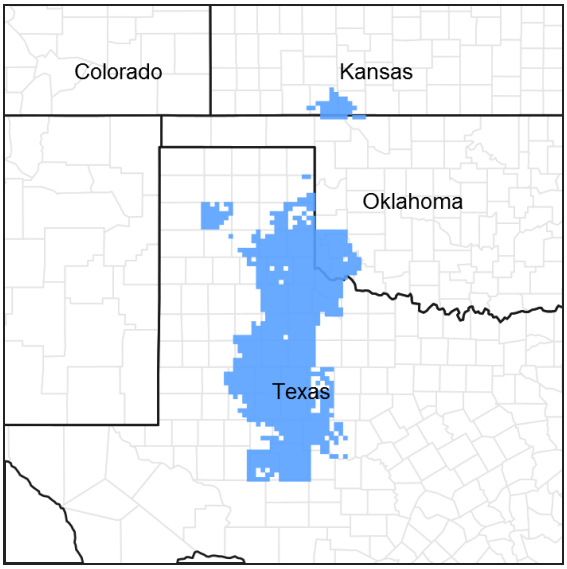


Figure 1. Mapped extent

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): 078B–Central Rolling Red Plains, Western Part

MLRA 78B is characterized by strongly dissected, rolling plains with prominent ridges and valleys and rolling to steep irregular topography. Loamy soils are generally well drained, range from shallow to deep, and developed in sediments of Triassic and Permian age.

LRU notes

NA

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 deep clay loam soils on uplands. The reference vegetation consists of shortgrasses with some midgrasses and forbs and scattered shrubs. Abusive grazing practices can lead to a shift in the plant

community. Without fire or other brush management, woody species may increase across the site.

Associated sites

R078BY071TX	**Clay Flat 19-26" PZ** Deep clay soils on uplands. Higher clay content than Clay Loam site.
R078BY079TX	**Loamy 19-26" PZ** Deep loamy soils on uplands.
R078BY090TX	**Shallow Clay 19-26" PZ** Shallow clay soils on uplands.

Similar sites

R078CY096TX	**Clay Loam 23-30" PZ** Clay Loam site in 78C

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	(1) *Bouteloua gracilis* (2) *Bouteloua dactyloides*

Physiographic features

This site occurs on nearly level to gently sloping upland plains, upland terraces, and broad divides, and sometimes as broad upland valleys. Slopes range from almost level to as much as 5 %, with the average slopes being from 1 to 2 %.

Table 2. Representative physiographic features

Landforms	(1) Plains > Ridge (2) Plains > Terrace (3) Plains > Hillslope
Runoff class	Low to high
Flooding frequency	None
Ponding frequency	None
Elevation	366–914 m
Slope	0–5%
Water table depth	191 cm
Aspect	Aspect is not a significant factor

Climatic features

The climate of the western rolling plains is dry, sub-humid with hot summers and mild winters. Temperatures often reach 100 degrees F for several consecutive days during summer. Cold spells with temperatures less than 20 degrees F only last short periods of time. The soil is not frozen below the 3-inch depth for more than 2 to 3 days. Humidity is low during the winter and early spring months. Sometimes relative humidity is high enough to make summer days seem uncomfortable. Most of the precipitation comes in the form of rain and that in the spring and early summer principally. May is the wettest month followed by June. July and August are dryer and much hotter. Rainfall often comes as intense showers of relatively short duration. Rainfall rate per hour is often high and runoff is significant. Infiltration is diminished due to lack of opportunity time. The growing season begins in April and ends with the first killing frost in November. There is little snowfall with the average being about 10 inches. Rainfall averages about 22 inches.

There is a 70% chance that yearly precipitation will fall between 16 and 24 inches. About 55% of the time, the yearly rainfall is below the mean. Dry spells during the growing season are common and long-term droughts occur in cycles of about 20 years. Native vegetation is principally warm season.

Table 3. Representative climatic features

Frost-free period (characteristic range)	189-194 days
Freeze-free period (characteristic range)	204-222 days
Precipitation total (characteristic range)	584-610 mm
Frost-free period (actual range)	184-201 days
Freeze-free period (actual range)	202-223 days
Precipitation total (actual range)	559-635 mm
Frost-free period (average)	192 days
Freeze-free period (average)	213 days
Precipitation total (average)	584 mm

Climate stations used

- (1) WELLINGTON [USC00419565], Wellington, TX
- (2) PADUCAH [USC00416740], Paducah, TX
- (3) JAYTON [USC00414570], Jayton, TX
- (4) SNYDER [USC00418433], Snyder, TX
- (5) ROBERT LEE [USC00417669], Robert Lee, TX

Influencing water features

The site has slow runoff due to slope, but some runoff does occur when vegetative cover is poor. Infiltration is moderately slow and is decreased even more by inadequate standing cover and plant residues. No streams or surface water are associated with the site.

Wetland description

NA

Soil features

The soils are deep, well drained, neutral to mildly alkaline loams, silty clay loams, and clay loams on nearly level to gently sloping upland terrain. They are generally dark in color and have clay enriched subsoils. Generally, they have a calcic horizon at approximately 38 to 50 inches. Permeability is slow to moderately slow and available water holding capacity is high. They are inherently fertile and are moderately high yielding, but release water to plants somewhat sparingly due to high clay content. They will crust readily with bare surfaces and will yield a good deal of runoff if vegetative cover is inadequate. These soils are very productive. These soils are taxonomically classified as Argiustolls and Paleustolls.

Taxonomic units that typify this site include: Abilene clay loam, Wichita clay loam, and Sagerton clay loam.

Table 4. Representative soil features

Parent material	(1) Alluvium–shale and siltstone
Surface texture	(1) Clay loam (2) Loam (3) Sandy clay loam

Family particle size	(1) Clayey
Drainage class	Moderately well drained to well drained
Permeability class	Very slow to moderate
Soil depth	51–203 cm
Surface fragment cover <=3"	0%
Surface fragment cover >3"	0%
Available water capacity (0-101.6cm)	8.38–20.32 cm
Calcium carbonate equivalent (0-101.6cm)	0–15%
Electrical conductivity (0-101.6cm)	0–4 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	0–12
Soil reaction (1:1 water) (0-101.6cm)	6.6–8.7
Subsurface fragment volume <=3" (Depth not specified)	0–7%
Subsurface fragment volume >3" (Depth not specified)	0–1%

Ecological dynamics

The reference plant community for the site is primarily shortgrasses with a few midgrasses, a few forbs and few shrubs. It is a Rolling Red Plains grassland site. Blue grama (*Bouteloua gracilis*) and buffalograss (*Bouteloua dactyloides*) are the most commonly occurring species. Smaller amounts of vine mesquite (*Panicum obtusum*), common curlymesquite (*Hilaria belangeri*), sideoats grama (*Bouteloua curtipendula*), tobosa (*Pleuraphis mutica*), and Arizona cottontop (*Digitaria californica*) occur as well. Shrubs are few in the reference community. They consist of prickly pear (Opuntia spp.), tasajillo (*Cylindropuntia leptocaulis*), lotebush (*Ziziphus obtusifolia*), wolfberry (*Lycium berlandieri*) and scattered mesquite (*Prosopis glandulosa*). Mesquite are more confined to areas along drainages and tend to be single-stemmed plants.

Tobosa and common curlymesquite occur more in the southern counties of the Major Land Resource Area (MLRA), as does Texas wintergrass (*Nassella leucotricha*). Mesquite has increased on virtually all of the clay loam sites over the past 100 to 150 years. Where there is a seed source close by, juniper (Juniperus spp.) will invade the site. In certain areas, juniper has become a significant problem species along with mesquite. The production potential of the site is moderate and it is a preferred site for grazing of domestic livestock. Pre-settlement grazers included pronghorn, bison and elk. The shortgrasses are palatable and nutritious and the site provides year round grazing. Generally speaking, the soils on this site are perhaps the most fertile of any in the MLRA. The most limiting soil factor is the tenacity with which soil water is held by the fine textured soil particles. The soils store maximum amounts of water but yield it to plants somewhat sparingly. In very dry periods, the soils can appear rather droughty. When good rainfall is received, the site produces well.

Fire has played a role in the ecology of the site as is true for most of the rolling red plains grasslands. The main effect of fire on this site was to hold woody shrubs and cactus in check. The shorter grass species such as blue grama and buffalograss are considered fire neutral as far as their response to fire. Climate and soils are the most important and limiting factors affecting grass vegetation on the site. Fire stimulated forb growth if the timing was right and the fires of pre-settlement days were probably more severe due to more fuel being available which could have been more damaging to woody plants. Fire usually creates more diversity in this site for a year or two post-burn. Then the grasses tend to crowd out the forbs and diversity decreases. Forbs also need spring moisture which is perhaps the major factor in creating diversity in the plant community. Prescribed fire is sometimes used as a tool to promote diversity, mainly for wildlife. Fire will usually not produce much mortality in woody plants, especially mesquite. After mesquite control with herbicides, fire can sometimes be used effectively to suppress re-growth. Small juniper can sometimes be killed by fire. Fuel loads are often the most limiting factor for the effective use of

prescribed fire on this site. In general, the use of fire on shortgrass communities just does not result in the same positive effects that burning has in tall/midgrass communities.

Since this site is much preferred as a grazing resource, it has a tendency to be abused perhaps more than some other associated sites. With abusive grazing practices, the vigorous blue grama and buffalograss will become lower in vigor and secondary successional species such as sand dropseed (*Sporobolus cryptandrus*), and silver bluestem (*Bothriochloa laguroides*) will begin to increase. Tobosa will often increase on this site if long term abuse continues. Tobosa tends to be found more in the southern portion of the MLRA. The blue grama and buffalograss are tough, resistant species and these species are tolerant of some fairly heavy grazing for long periods, but at some point, a threshold is crossed and the ground cover is opened up resulting in bare places where weedy species can establish. Western ragweed (*Ambrosia psilostachya*), crotons (Croton spp.), and cool-season annuals will quickly invade if the principal species are in a weakened condition. Mesquite will usually increase on this site but it is slowed by good management.

The greatest contributor to the increase of mesquite is the domestic cow. The seed is consumed by animals after the seed pods ripen in late summer and when passed through the digestive system and excreted in the manure, the seed finds an excellent seedbed complete with moisture and nutrients. Some wildlife species rely heavily on mesquite beans and juniper berries for food and contribute to the spread of these species. It is possible for mesquite beans to lay dormant in the soil for many years and then germinate when ideal conditions occur. Grazing management probably has minimal effect on the proliferation of mesquite, but a good cover of perennial grasses likely minimizes the seed to soil contact the mesquite needs to establish. Selective individual removal of mesquite and/or juniper is easy and economical when a few plants begin to show up on the site, but the increase may be fairly rapid and the number of woody plants per acre will soon become too numerous for individual control to be feasible. Prescribed grazing with a reasonable stocking rate can sustain the grass species composition and production at a near reference level. This site is generally quite tolerant of grazing due to the short grass species that dominate. Generally, with long-term moderately heavy grazing pressure, the blue grama will tend to loose its semi-bunch grass appearance and become sod bound resembling buffalograss at a glance. The site can exist in this lower vigor stable state indefinitely if grazing abuse is not severe. The clay loam site can be abused to the point that the perennial warm-season grasses thin out and lower successional grasses along with annual forbs begin to dominate. This process of degradation usually takes many years and is further exacerbated by summer droughts and above average winter moisture.

Long-term droughts that occur only three to four times in a century can effect some change in historic plant communities, when coupled with abusive grazing. Short-term droughts are common and usually do not have a lasting effect in changing stable plant communities, although production will be affected. With a seed source and invasion, a heavy mesquite canopy often becomes established which shades the ground sufficiently so as to favor cool season annual species. Once a state of mesquite and cool-season annuals is reached, recovery to a good perennial grass cover is unlikely without major input with brush management and reseeding. In summary, the change in states of vegetation depend on the type of grazing management applied over many years, and the rate of invasion and establishment of woody species. While the ecological site crosses the threshold to a lower ecological condition, the effects of seasonal moisture and short-term dry spells become more distinct. Plant communities that consist of warm-season perennial grasses such as blue grama and the associated species of historic climax are able to persist and withstand climatic extremes with only minor shifts in the overall plant community.

Over the years, some sites have changed to a more mixed grass and shrub community, more wildlife species have come to utilize it for habitat. Woody plants provide cover for white-tailed deer and bob-white quail. These wildlife species have both increased along with the brushy plants due to the cover that these plants provide. According to most wildlife biologists, both species prefer a lower successional plant community than the reference community. More forbs are needed to meet these species food requirements and woody plants for browse are important for deer. It is often the objective of many land owners to strike a balance in plant community so that these wildlife species can exist along with domestic livestock. This can be accomplished by a carefully thought out grazing and brush management program. It must be realized that managing at a lower successional level may meet some wildlife species requirements very well, but may not be nearly as productive for grazing purposes, and may not be as capable of satisfying functions such as nutrient cycling, hydrologic protection, plant community stability or soil protection. A proper balance can be achieved with careful planning that considers all resources.

Hydrologically, the site contributes runoff to the various draws, creeks, and streams that are common in the MLRA. If the perennial grass cover is maintained in good vigor, then maximum infiltration occurs and runoff is reduced.

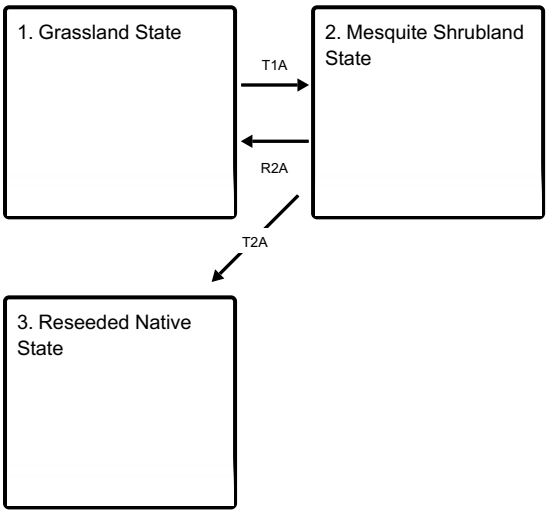
More water getting into the ground means a healthier, more productive plant community. If infiltration is minimal, then the effect is an artificially shallow soil with plant roots retreating to near the soil surface. More perennial grass cover means less runoff may result but the runoff that does occur is less laden with sediment. Overall watershed protection is enhanced by a healthy grassland community, as is nutrient cycling.

State and Transitional Pathways (Diagram) Narrative:
The following diagram suggests some pathways that the vegetation on this site might take in response to various treatment or natural stimuli over time. There may be other states that are not shown on this diagram. This information is to show that changes in plant community do occur due to management and natural factors; and can be changed by implementing certain practices. The plant communities described are commonly observed on this site. Before making plans for plant community manipulation for specific purposes, consult local professionals.

As a site changes in plant community makeup, the changes may be due many factors. Change may occur slowly or in some cases, fairly rapidly. As vegetative changes occur, certain thresholds are crossed. This means that once a certain point is reached during the transition of one community to another, a return to the first state may not be possible without the input of some form of energy. This often means intervention with practices that are not part of natural processes. An example might be the application of herbicide to control some woody species in order to reduce its population and encourage more grass and forb growth. Merely adjusting grazing practices would probably not accomplish any significant change in plant community once certain thresholds are crossed. The amount of energy required to effect change in community would depend on the present vegetative state and the desired change.

State and transition model

Ecosystem states

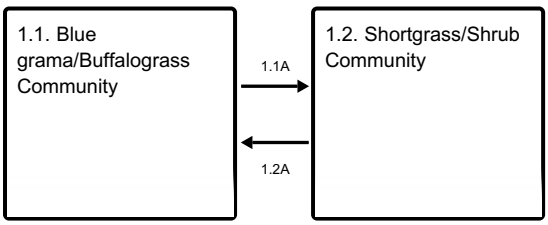


T1A - Absence of disturbance and natural regeneration over time, may be coupled with excessive grazing pressure

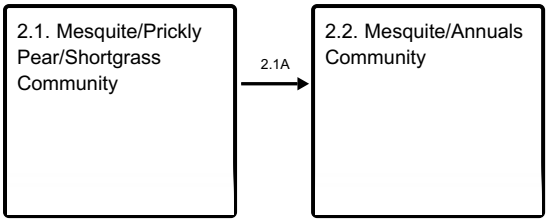
R2A - Removal of woody canopy, adequate rest from defoliation and reintroduction of historic disturbance return intervals

T2A - Extensive soil disturbance followed by rangeland seeding

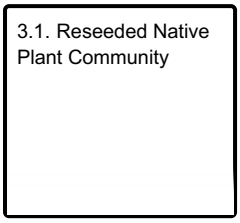
State 1 submodel, plant communities



State 2 submodel, plant communities



State 3 submodel, plant communities



State 1
Grassland State

The Grassland state demonstrates the historical variability of the site. The major grasses include: Blue grama, buffalograss, vine mesquite, and small amounts of Hall’s panicum (*Panicum hallii*) and silver bluestem (*Bothriochloa laguroides*). Mesquite may increase to a canopy of 20 % or more if no brush management is applied.

Dominant plant species

- blue grama (*Bouteloua gracilis*), grass
- buffalograss (*Bouteloua dactyloides*), grass
- Hall's panicgrass (*Panicum hallii*), grass

Community 1.1
Blue grama/Buffalograss Community

Figure 8. 1.1 Blue grama/Buffalograss Community with invading mesquite

This is the reference plant community for the Clay Loam site. The major grasses include: Blue grama, buffalograss, vine mesquite, and small amounts of Hall’s panicum (*Panicum hallii*) and silver bluestem (*Bothriochloa laguroides*). The production is good for the sites capabilities and the community is functioning well hydrologically. This site will require some periodic brush management to maintain plant community integrity. Mesquite may increase to a canopy of 20 % or more if no brush management is applied.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	1009	1569	1737
Forb	56	84	140
Shrub/Vine	34	67	135
Tree	6	17	22
Total	**1105**	**1737**	**2034**

Figure 10. Plant community growth curve (percent production by month). TX2015, Shortgrass/Mesquite community. Growth curve shows increase plant growth due to increase of woody species..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	2	3	10	25	30	9	4	10	4	2	1

Community 1.2
Shortgrass/Shrub Community

Figure 11. Community Phase 1.2

In this plant community, mesquite has increased to 15-18% woody canopy. The cover of shortgrasses has decreased and some bare ground is evident. Invasion of annual weedy species will begin. Production is low and vigor is poor. This site can be shifted toward the reference community with brush management, growing season rest, light stocking and possibly periodic control of annual weedy species.

Table 6. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	560	841	1121
Shrub/Vine	196	224	280
Forb	112	196	213
Tree	6	11	17
Total	**874**	**1272**	**1631**

Figure 13. Plant community growth curve (percent production by month). TX2016, Shortgrass with Annual Forbs. Shortgrass/Annual forbs with increase of woody plants..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	1	6	20	28	20	5	3	8	5	3	1

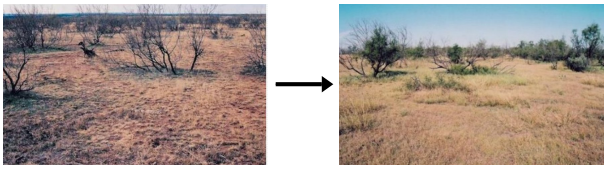
Pathway 1.1A
Community 1.1 to 1.2

Blue grama/Buffalograss Community

Shortgrass/Shrub Community

Abusive grazing practices along with the absence of fire or other brush management may lead to a community shift towards 1.2.

Pathway 1.2A
Community 1.2 to 1.1



Shortgrass/Shrub Community

Blue grama/Buffalograss Community

Through a program of prescribed grazing including some deferment and prescribed fire and/or brush management, the site may be shifted back to community 1.1. This may take many years (8-10).

State 2
Mesquite Shrubland State

In this Shortgrass/Shrub State, mesquite has increased to 15-18% woody canopy. The cover of shortgrasses has decreased and some bare ground is evident. Invasion of annual weedy species will begin. Production is low and vigor is poor.

Dominant plant species

- mesquite (*Prosopis*), shrub
- pricklypear (*Opuntia*), shrub
- buffalograss (*Bouteloua dactyloides*), grass

Community 2.1
Mesquite/Prickly Pear/Shortgrass Community

Figure 14. 2.1 Mesquite/Prickly Pear/Shortgrass Community

This plant community consists of an overstory of large mesquite with considerable presence of prickly pear. Some low vigor shortgrass species remain but production is low. This community is the result of long-term overgrazing and

invasion of pear. Brush management and possibly prescribed fire can move the site in the direction of historic climax but first, enough cover of grass must be grown to provide fuel for a burn to be successful. Herbicide application and careful grazing may be the most successful treatment initially.

Table 7. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	560	785	897
Shrub/Vine	336	364	392
Forb	112	168	224
Tree	–	6	6
Total	**1008**	**1323**	**1519**

Figure 16. Plant community growth curve (percent production by month). TX2025, mesquite/prickly pear/shortgrass community. mesquite/pricklypear/shortgrass.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	2	4	10	27	27	10	3	9	4	2	1

Community 2.2
Mesquite/Annuals Community

This plant community consists of mesquite, some prickly pear and mainly cool-season annual grasses such as Japanese brome (*Bromus arvensis*), little barley (*Hordeum pusillum*), and rescuegrass (*Bromus catharticus*). Very few perennial warm-season grasses can be found. The shading effect of the mesquite favors the cool-season annuals which use any early moisture and hinder the growth of any warm-season species. This state may not be stable, but can persist for long periods of time. To change this community in the direction of warm-season perennial grasses the mesquite will have to be controlled. Some heavy early spring grazing might put some pressure on the cool-season grasses. Mid and late summer rest for several years might see the return of some perennial grasses. However, the most expedient approach to changing this community would be mechanical brush management and reseeding to native grasses and forbs.

Table 8. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	448	560	673
Shrub/Vine	426	448	560
Forb	84	101	135
Lichen	17	17	22
Total	**975**	**1126**	**1390**

Figure 18. Plant community growth curve (percent production by month). TX2026, Mesquite/Cool Season annual grasses. Mesquite and cool season annual grasses..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3	4	12	17	20	15	3	3	8	4	6	5

Pathway 2.1A
Community 2.1 to 2.2

If abusive grazing practices persist, along with the exclusion of fire/brush management, the site may shift towards community 2.2.

State 3
Reseeded Native State

This state is the result of land clearing and range planting.

Community 3.1
Reseeded Native Plant Community

Reseeded rangeland with native shortgrasses and forbs.

Transition T1A
State 1 to 2

With abusive grazing, no fires and no brush management over a fifteen year period, the Grassland State will transition into the Mesquite Shrubland State.

Restoration pathway R2A
State 2 to 1

With the implementation of various conservation practices such as Prescribed Grazing including some deferment, Prescribed Burning, and Brush Management over an eight to ten year period, the Mesquite/Shrubland may be able to be restored to the Grassland State.

Conservation practices

Brush Management
Prescribed Burning
Prescribed Grazing

Transition T2A
State 2 to 3

In some cases, the degraded site may be cleared of brush and reseeded to native species.

Additional community tables

Table 9. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
Grass/Grasslike					
0	**Shortgrasses**			930–1401	
1	**Warm-season Grasses**			336–560	
	sideoats grama	BOCU	*Bouteloua curtipendula*	0–140	–
	silver beardgrass	BOLAT	*Bothriochloa laguroides ssp. torreyana*	0–140	–
	tumble windmill grass	CHVE2	*Chloris verticillata*	0–140	–
	Arizona cottontop	DICA8	*Digitaria californica*	0–140	–
	gummy lovegrass	ERCU	*Eragrostis curtipedicellata*	0–140	–
	curly-mesquite	HIBE	*Hilaria belangeri*	0–140	–
	sand muhly	MUAR2	*Muhlenbergia arenicola*	0–140	–
	Hall's panicgrass	PAHA	*Panicum hallii*	0–140	–
	vine mesquite	PAOB	*Panicum obtusum*	0–140	–
	tobosagrass	PLMU3	*Pleuraphis mutica*	0–140	–

	[illegible]	[illegible]	[illegible]	[illegible]	
	sand dropseed	SPCR	*Sporobolus cryptandrus*	0–140	–
2	**Cool-season Grasses**			112–168	
	little barley	HOPU	*Hordeum pusillum*	0–56	–
	Texas wintergrass	NALE3	*Nassella leucotricha*	0–56	–
	western wheatgrass	PASM	*Pascopyrum smithii*	0–56	–
Forb					
3	**Forbs**			84–168	
	Cuman ragweed	AMPS	*Ambrosia psilostachya*	0–39	–
	lyreleaf greeneyes	BELY	*Berlandiera lyrata*	0–39	–
	rose heath	CHER2	*Chaetopappa ericoides*	0–39	–
	Engelmann's daisy	ENPE4	*Engelmannia peristenia*	0–39	–
	scarlet beeblossom	GACO5	*Gaura coccinea*	0–39	–
	Dakota mock vervain	GLBI2	*Glandularia bipinnatifida*	0–39	–
	dotted blazing star	LIPU	*Liatris punctata*	0–39	–
	pony beebalm	MOPE	*Monarda pectinata*	0–39	–
	slimflower scurfpea	PSTE5	*Psoralidium tenuiflorum*	0–39	–
	upright prairie coneflower	RACO3	*Ratibida columnifera*	0–39	–
	silverleaf nightshade	SOEL	*Solanum elaeagnifolium*	0–39	–
	scarlet globemallow	SPCO	*Sphaeralcea coccinea*	0–39	–
	stiff greenthread	THFI	*Thelesperma filifolium*	0–39	–
Shrub/Vine					
4	**Shrubs**			90–140	
	candle cholla	CYKL	*Cylindropuntia kleiniae*	0–34	–
	Torrey's jointfir	EPTO	*Ephedra torreyana*	0–34	–
	Berlandier's wolfberry	LYBE	*Lycium berlandieri*	0–34	–
	pricklypear	OPUNT	*Opuntia*	0–34	–
	honey mesquite	PRGL2	*Prosopis glandulosa*	0–34	–
	lotebush	ZIOB	*Ziziphus obtusifolia*	0–34	–
Tree					
5	**Trees**			0–11	
	hackberry	CELTI	*Celtis*	0–11	–

Animal community

The main species of wildlife that occupy the site are white tailed deer, bobwhite quail, mourning dove, grassland bird species, Rio Grande turkey, cottontail rabbit, jack rabbit, small mammals, coyote, roadrunner, Texas horned lizard and other species that prefer a grassland-shrub community. The type of wildlife occupying the site depends much on the particular vegetative state. Bobwhite quail and white tailed deer will require some shrubby cover in order to thrive. However, it is possible to have so much brush present that most wildlife species will not prefer the site. A balanced community containing some brushy plants along with a good variety of forbs and grasses will generally be the best overall wildlife habitat. Feral hogs prefer a lot of brush for daytime cover and utilize the site frequently.

Hydrological functions

This site yields runoff to lower lying drainages. With good perennial grass cover, runoff is minimized, infiltration is

enhanced and watershed protection is adequate. With poor cover infiltration is decreased, and runoff is increased along with sedimentation. Evaporation is increased and the water cycle does not function well. Without perennial warm-season grass cover, nutrient cycle function is impaired and site integrity is compromised.

Recreational uses

Camping, hunting, horseback riding, hiking, photography and bird watching.

Wood products

Mesquite is sometimes used as a specialty wood product.

Other products

None.

Other information

None.

Inventory data references

The information in this document is based on observation of range sites over many years and knowledge of where well managed rangelands are found. It is also based on the review of data such as NRCS 417 data, old range inventories going back many years, and from range site descriptions prepared by NRCS specialists. Many historical accounts of pre-settlement times have been reviewed.

Other references

Personal discussions with Dr. Ronald Sosebee, Texas Tech University, Dept. of Range, Wildlife and Fisheries; and with Dr. Robert Wright, Biol. Dept. WTAM Univ. Canyon.
J.R. Bell, RMS, NRCS, Amarillo, Texas (retired)
Natural Resources Conservation Service - Range Site Descriptions
USDA-Natural Resources Conservation Service - Soil Surveys & Website soil database
Rathjen, Frederick W., The Texas Panhandle Frontier, Rev. 1998, Univ. of Texas Press
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Approval

Bryan Christensen, 9/15/2023

Acknowledgments

Site Development and Testing Plan:

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

control, and quality assurance reviews of the ESD will be needed to produce the final document.

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

Rangeland health reference sheet

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

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

Indicators

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

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

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

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4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** 25-30% bare ground.

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

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

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

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

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Loam to clay loam; friable surface; high SOM.

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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 moderately permeable soils; runoff is slow to medium; and available water holding capacity is high.

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

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12. **Functional/Structural Groups (list in order of descending dominance by above-ground annual-production or live foliar cover using symbols: >>, >, = to indicate much greater than, greater than, and equal to):**

    Dominant: Warm-season shortgrasses >>

    Sub-dominant: Warm-season midgrasses > Cool-season midgrasses >

    Other: Forbs > Shrubs/Vines > Trees

    Additional:

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Plant community will have minimal 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):** 1,000 to 1,800 pounds per acre.

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16. **Potential invasive (including noxious) species (native and non-native). List species which BOTH characterize degraded states and have the potential to become a dominant or co-dominant species on the ecological site if their future establishment and growth is not actively controlled by management interventions. Species that become dominant for only one to several years (e.g., short-term response to drought or wildfire) are not invasive plants. Note that unlike other indicators, we are describing what is NOT expected in the reference state for the ecological site:** Mesquite, pricklypear, lotebush and tasajillo can be invasive.

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