USDA Natural Resources Conservation Service

Ecological site R086BY003TX
Clay Loam

Last updated: 9/21/2023
Accessed: 05/11/2025

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.

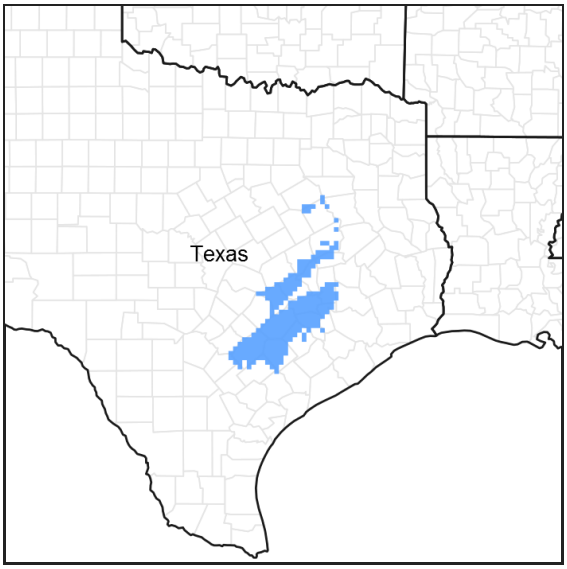


Figure 1. Mapped extent

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): 086B–Texas Blackland Prairie, Southern Part

MLRA 86B, the Southern Part of the Texas Blackland Prairie is located in east-central Texas. It makes up about 2,925 square miles (7,585 square kilometers). The towns of Brenham, Caldwell, La Grange, Schulenberg, Hallettsville, and Navasota are in the eastern part while Lincoln, Benchley, and Normangee are in the western part. The area supports tall and mid-grass prairies, but improved pasture, croplands, and urban development account for the majority of the acreage.

Classification relationships

USDA-Natural Resources Conservation Service, 2006.
-Major Land Resource Area (MLRA) 86B

Ecological site concept

The Clay Loam ecological site is characterized by their shallow to very deep soils with clay loam textures.

Associated sites

R086BY006TX	**Loamy Bottomland** The Clay Loam site is usually adjacent to the Loamy Bottomland Site. Occupies large flats and provides runoff water to the Loamy Bottomland Site.
R086BY007TX	**Clayey Bottomland** The Clay Loam site is usually adjacent to the Clayey Bottomland Site. Occupies large flats and provides runoff water to the Clayey Bottomland Site.
R086BY001TX	**Chalky Ridge** The Chalky Ridge site is often upslope from the Clay Loam site. It differs from the Clay Loam site by having shallow soils and low soil fertility.
R086BY002TX	**Claypan Prairie** The Claypan Prairie site is often adjacent to the Clay Loam site. It differs from the Clay Loam site by having a fine sandy loam soil surface layer.

Similar sites

R086AY006TX	**Northern Clay Loam** Similar site but different MLRA.
R086AY007TX	**Southern Clay Loam** Similar site but different MLRA.

Table 1. Dominant plant species

Tree	(1) *Quercus stellata* (2) *Ulmus alata*
Shrub	(1) *Symphoricarpos orbiculatus* (2) *Smilax rotundifolia*
Herbaceous	(1) *Schizachyrium scoparium* (2) *Sorghastrum nutans*

Physiographic features

This site includes nearly level to gently sloping to rolling upland topography.

Table 2. Representative physiographic features

Landforms	(1) Plains > Terrace (2) Plains > Ridge
Runoff class	Low to high
Flooding frequency	None
Ponding frequency	None
Elevation	100–800 ft
Slope	0–12%
Aspect	Aspect is not a significant factor

Climatic features

The climate for MLRA 86B is humid subtropical and is characterized by hot summers, especially in July and August, and relatively mild winters. Tropical maritime air controls the climate during spring, summer and fall. In winter and early spring, frequent surges of Polar Canadian air cause sudden drops in temperatures and add considerable variety to the daily weather. When these cold air masses stagnate and are overrun by moist air from the south, several days of cold, cloudy, and rainy weather follow. Generally, these occasional cold spells are of short duration with rapid clearing following cold frontal passages. The summer months have little variation in day-to-day weather except for occasional thunderstorms that dissipate the afternoon heat. The moderate temperatures in spring and fall are characterized by long periods of sunny skies, mild days, and cool nights. Rainfall during the spring and summer

months generally falls during thunderstorms, and fairly large amounts of rain may fall in a short time. High intensity rains of short duration are likely to produce rapid runoff almost anytime during the year. The amount of rain that falls varies considerably from month-to-month and from year-to-year.

Table 3. Representative climatic features

Frost-free period (average)	254 days
Freeze-free period (average)	280 days
Precipitation total (average)	42 in

Climate stations used

- (1) LEXINGTON [USC00415193], Lexington, TX
- (2) BRENHAM [USC00411048], Brenham, TX
- (3) HALLETTSVILLE 2 N [USC00413873], Hallettsville, TX
- (4) FLATONIA 4SE [USC00413183], Moulton, TX
- (5) WASHINGTON SP [USC00419491], Navasota, TX

Influencing water features

The plant community of this site is not influenced by a stream.

Wetland description

Wetlands are not associated with this site.

Soil features

These upland soils are deep and dark brown to grayish brown in the surface. They are fertile and able to store large amounts of water to make this a productive site. Air, water, and plant roots move through these soils easily.

Soils correlated to this site include: Benchley, Brenham, Carbengle, Cuero, Flatonia, Klump, Knolle, Krum, Lamar, Luckenbach, Schulenburg, Sunev, and Zulch.

Table 4. Representative soil features

Parent material	(1) Residuum–mudstone
Surface texture	(1) Clay loam (2) Loam (3) Sandy clay loam
Family particle size	(1) Loamy
Drainage class	Moderately well drained to well drained
Permeability class	Very slow to moderately slow
Soil depth	24–80 in
Surface fragment cover <=3"	0%
Surface fragment cover >3"	0–1%
Available water capacity (0-40in)	3–7 in
Calcium carbonate equivalent (0-40in)	0–50%
Electrical conductivity (0-40in)	0–2 mmhos/cm

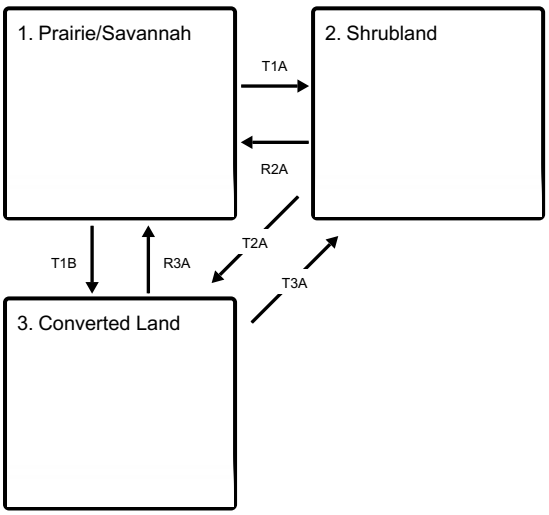
Sodium adsorption ratio (0-40in)	0–4
Soil reaction (1:1 water) (0-40in)	5.6–8.4
Subsurface fragment volume <=3" (Depth not specified)	0–7%
Subsurface fragment volume >3" (Depth not specified)	0–3%

Ecological dynamics

This tallgrass prairie site evolved and was maintained by the grazing and herding effects of native large ungulates, by rodents and rabbits, by insects and disease, and by the occurrence of periodic fire. Extreme climatic fluctuations over time may also have been important in the maintenance of the reference plant community. Continuous overgrazing by confined domestic livestock and the suppression of fire degrades the plant community. Heavy continuous grazing will remove big bluestem (*Andropogon gerardii*), Indiangrass (*Sorghastrum nutans*), little bluestem (*Schizachyrium scoparium*), switchgrass (*Panicum virgatum*), and preferred forbs such as Engelmann's daisy (*Engelmannia peristenia*), Maximilian sunflower (Helianthus maximilliani), Illinois bundleflower (*Desmanthus illinoensis*), and compass plant (Silphium spp.) over time. These plants will be replaced by less productive perennial and annual grasses and forbs including silver bluestem (*Bothriochloa saccharoides*), Texas wintergrass (*Nassella leucotricha*), windmillgrass (Chloris spp.), white tridens (*Tridens albescens*), annual broomweed (*Amphiachyris dracunculoides*), and snow on the prairie (*Euphorbia bicolor*). With continued continuous grazing and the absence of periodic fire, a community dominated by woody species including post oak (*Quercus stellata*), mesquite (*Prosopis glandulosa*), winged elm (*Ulmus alata*), netleaf hackberry (*Celtis laevigata*), and eastern red cedar (*Juniperus virginiana*) will replace the grassland.

State and transition model

Ecosystem states



T1A - No fire, no brush management, improper grazing management, drought

T1B - Brush management, crop cultivation, pasture planting, nutrient management, pest management

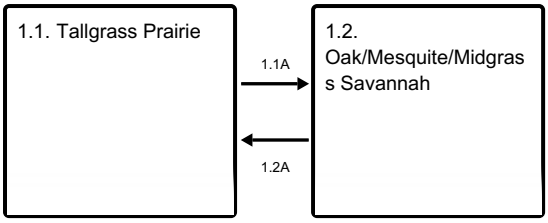
R2A - Fire, brush management, proper grazing, range planting

T2A - Brush management, crop cultivation, pasture planting, nutrient management, pest management

R3A - Fire, brush management, proper grazing, range planting

T3A - No fire, no brush management, heavy continuous grazing, no pest management

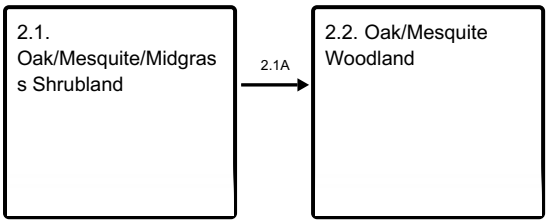
State 1 submodel, plant communities



1.1A - No fire, no brush management, improper grazing management, drought

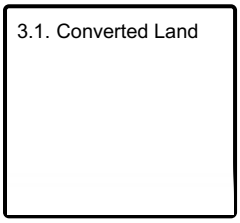
1.2A - Fire, brush management, proper grazing

State 2 submodel, plant communities



2.1A - No fire, no brush management, improper grazing management, drought

State 3 submodel, plant communities



State 1
Prairie/Savannah

Two communities exist in the Prairie/Savannah State: the 1.1 Tallgrass Prairie Community and the 1.2 Oak/Mesquite/Midgrass Savannah Community. Community 1.1 is characterized by tallgrasses dominating the understory, with woody cover less than 10 percent. Community 1.2 is characterized by a decrease in tallgrasses and an increase in midgrasses and forbs. Woody cover increases to 10 to 20 percent.

Community 1.1
Tallgrass Prairie

The characteristic plant community of this site is the reference plant community. This site is a true prairie with a few large post oak, elm, and hackberry trees along the draws and in occasional mottes. Little bluestem dominates the plant community, making up 40 to 50 percent of the total annual yield. Indiangrass and big bluestem make up another 30 percent. Numerous other grasses occur in the potential plant community but less frequently and in smaller amounts. Texas wintergrass and Canada wildrye (Elymus Canadensis) are perennial cool season plants that occur on the site. A variety of forbs, including Illinois bundleflower, Maximilian sunflower, Engelmann’s daisy, and black Sampson (*Echinacea angustifolia*) occur in this community. Grazing prescriptions that permit acceptable grazing periods and allow adequate rest periods along with prescribed fire every three to five years are important in the maintenance of the reference plant community and the prairie landscape structure. Continuous overgrazing, or over-rest, and the absence of fire tend to favor a vegetative shift towards woody species such as post oak, mesquite, elm, hackberry, and cedar. Without corrective measures, this shift will continue to a shrub-dominated community.

Table 5. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	2700	4275	5850
Forb	150	250	350
Tree	50	75	150
Shrub/Vine	50	75	150
Total	**2950**	**4675**	**6500**

Table 6. Ground cover

Tree foliar cover	0-10%
Shrub/vine/liana foliar cover	0-10%
Grass/grasslike foliar cover	30-60%
Forb foliar cover	5-10%
Non-vascular plants	0%
Biological crusts	0%
Litter	10-20%
Surface fragments >0.25" and <=3"	0%
Surface fragments >3"	0%
Bedrock	0%
Water	0%
Bare ground	10-20%

Table 7. Soil surface cover

Tree basal cover	0-10%
Shrub/vine/liana basal cover	0-5%
Grass/grasslike basal cover	10-30%
Forb basal cover	1-3%
Non-vascular plants	0%
Biological crusts	0%
Litter	20-30%
Surface fragments >0.25" and <=3"	0%
Surface fragments >3"	0%
Bedrock	0%
Water	0%
Bare ground	10-20%

Table 8. Canopy structure (% cover)

Height Above Ground (Ft)	Tree	Shrub/Vine	Grass/ Grasslike	Forb
<0.5	–	–	–	0-5%
>0.5 <= 1	–	–	5-10%	0-5%
>1 <= 2	–	–	10-20%	0-5%
>2 <= 4.5	–	–	20-40%	5-10%
>4.5 <= 13	–	0-10%	0-5%	0-5%
>13 <= 40	0-10%	–	–	–
>40 <= 80	–	–	–	–
>80 <= 120	–	–	–	–
>120	–	–	–	–

Community 1.2
Oak/Mesquite/Midgrass Savannah

The Oak/Mesquite/Midgrass Savannah Community develops in the absence of fire or mechanical or chemical brush management treatments. It is usually the result of yearly continuous grazing. Oaks and mesquite are the dominant woody plants on the site but eastern red cedar, prickly ash (*Zanthoxylum clava-herculis*), cedar elm, bumelia (*Sideroxylon lanuginosum*), coralberry (*Symphoricarpos orbiculatus*), and netleaf hackberry may also occur. Remnants of little bluestem and Indiangrass may still occur, but the herbaceous component of the community becomes dominated by lesser producing grasses and forbs. Silver bluestem, windmillgrass, white tridens, fall witchgrass (*Digitaria cognata*), threeawn (Aristida sp.), Texas wintergrass, prickly pear (Opuntia sp.), tasajillo (Opuntia leptocaulis), western ragweed (*Ambrosia psilostachya*), croton (Croton sp.), annual broomweed, and snow on the prairie are common occupants. Woody canopy is from 10 to 20 percent, therefore prescribed burning on a three to five year interval in conjunction with prescribed grazing is a viable option for returning this community to a tallgrass prairie that may resemble the reference plant community. If this site continues to be heavily grazed and no prescribed burning is taking place, this community will transition into the Shrubland State.

Table 9. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	1200	1800	2400
Shrub/Vine	450	675	900
Forb	300	450	600
Tree	150	225	300
Total	**2100**	**3150**	**4200**

Pathway 1.1A
Community 1.1 to 1.2

The Tallgrass Prairie Community will shift to the Oak/Mesquite/Midgrass Savannah Plant Community when there is continued growing-season stress on reference grass species. These stresses include improper grazing management that creates insufficient critical growing-season deferment, excess intensity of defoliation, repeated, long-term growing-season defoliation, long-term drought, and/or other repeated critical growing-season stress. Increaser species (midgrasses and woody species) are generally endemic species released by disturbance. Woody species canopy exceeding 10 percent and a species shift from tallgrass to midgrass composition indicate a transition. The driver for the shift is heavy grazing, no fire, no brush management, and/or abandonment.

Pathway 1.2A
Community 1.2 to 1.1

The Oak/Mesquite/Midgrass Savannah Community will return to the Tallgrass Prairie Community under grazing

management that provides sufficient critical growing season deferment in combination with proper grazing intensity as long as the seedbank or seed source is still present. Favorable moisture conditions will facilitate or accelerate this transition. The understory component may return to dominance by tallgrasses in the absence of fire or brush control. However, reduction of the woody component to reference conditions of 10 percent or less canopy cover will require inputs of fire or brush control.

State 2
Shrubland

Two communities exist in the Shrubland State: the 2.1 Mesquite/Midgrass Shrubland Community and the 2.2 Oak/Mesquite Woodland Community. Community 2.1 is characterized by an increase in shade-tolerant grass and an overstory canopy from 20 to 40 percent. Community 2.2 is characterized by a cool-season grasses, especially Texas wintergrass, and a greater than 40 percent canopy cover.

Community 2.1
Oak/Mesquite/Midgrass Shrubland

The Oak/Mesquite/Midgrass Shrubland Community develops in the absence of fire or mechanical or chemical brush management treatments. It is usually the result of abandonment following cropping or yearly continuous grazing. Mesquite is the dominant woody plant on the site but eastern red cedar, prickly ash, cedar elm, bumelia, coralberry, and netleaf hackberry may also occur. Remnants of little bluestem and Indiangrass may still occur, but the herbaceous component of the community becomes dominated by lesser producing grasses and forbs. Silver bluestem, windmillgrass, white tridens, fall witchgrass (*Digitaria cognata*), threeawn (Aristida sp.), Texas wintergrass, prickly pear (Opuntia sp.), tasajillo (Opuntia leptocaulis), western ragweed (*Ambrosia psilostachya*), croton (Croton sp.), annual broomweed, and snow on the prairie are common occupants. There is also an increase in shade-tolerant species as woody canopy are approaching 40 percent. Chemical or mechanical brush control must be applied to move the transitional community back towards the reference plant community as prescribed grazing and prescribed burning cannot shift the community alone. If this site continues to be heavily continuously grazed, this community will transition into the Oak/Mesquite Woodland Community.

Table 10. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	900	1300	1800
Shrub/Vine	400	600	800
Tree	375	550	750
Forb	200	325	450
Total	**1875**	**2775**	**3800**

Community 2.2
Oak/Mesquite Woodland

This plant community is dominated by woody species including post oak, mesquite, hackberry, and eastern red cedar. Canopy cover exceeds 40 percent. Understory shrubs and vines include coral berry, greenbriar (Smilax sp.), grape (Vitis sp.), and prickly pear (Opuntia sp.). Herbaceous composition and production is directly related to canopy cover. Texas wintergrass, purpletop tridens (*Tridens flavus*), silver bluestem, threeawn, sedges (Carex sp.), croton, and annual broomweed commonly occur. If the site is not abandoned cropland, chemical brush control along with prescribed grazing and prescribed burning is a viable treatment option for moving this community back towards the reference plant community. Mechanical brush control and seeding is usually the most viable treatment option when the objective is to return this state to a community that resembles the reference plant community.

Table 11. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	650	925	1300
Tree	600	900	1200
Shrub/Vine	350	525	700
Forb	100	200	300
Total	**1700**	**2550**	**3500**

Table 12. Ground cover

Tree foliar cover	40-60%
Shrub/vine/liana foliar cover	20-40%
Grass/grasslike foliar cover	10-20%
Forb foliar cover	15-30%
Non-vascular plants	0%
Biological crusts	0%
Litter	5-10%
Surface fragments >0.25" and <=3"	0%
Surface fragments >3"	0%
Bedrock	0%
Water	0%
Bare ground	20-40%

Table 13. Soil surface cover

Tree basal cover	20-40%
Shrub/vine/liana basal cover	10-20%
Grass/grasslike basal cover	5-10%
Forb basal cover	5-10%
Non-vascular plants	0%
Biological crusts	0%
Litter	5-10%
Surface fragments >0.25" and <=3"	0%
Surface fragments >3"	0%
Bedrock	0%
Water	0%
Bare ground	20-40%

Table 14. Canopy structure (% cover)

Height Above Ground (Ft)	Tree	Shrub/Vine	Grass/ Grasslike	Forb
<0.5	–	–	5-10%	5-10%
>0.5 <= 1	–	–	–	–
>1 <= 2	–	–	5-10%	10-20%
>2 <= 4.5	–	–	5-10%	–
>4.5 <= 13	–	15-25%	–	–
>13 <= 40	40-80%	–	–	–
>40 <= 80	–	–	–	–
>80 <= 120	–	–	–	–
>120	–	–	–	–

Pathway 2.1A
Community 2.1 to 2.2

The Oak/Mesquite/Midgrass Shrubland Community will transition to the Oak/Mesquite Woodland Community with continued heavy grazing, no fire, no brush management and/or abandonment. Indicators of the transition include an increased species composition of cool-season grasses and trees becoming more mature.

State 3
Converted Land

The Converted Land State contains one community, the 3.1 Converted Land Community. The state is characterized by the land manager farming crops or planted grasses.

Community 3.1
Converted Land

Conversion of the tallgrass prairie to cropland (primarily cotton, corn, and grain sorghum) began in the middle 1800's and continued into the early 1900's. Much of the prairie is in cropland today and includes additional crops of small grains (for grain and livestock grazing), soybeans, and rice. While restoration of this site to a semblance of the tallgrass prairie is possible with seeding, prescribed grazing, and prescribed burning - complete restoration of the reference plant community in a reasonable time is unlikely. If cropping is abandoned, this site is usually planted to introduced grasses and forbs and managed as pastureland. Following crop production or brush control, this site is often planted to native or introduced grasses and legumes for livestock grazing or hay production. Typical species planted include improved Bermudagrass (Cynodon spp.) varieties, dallisgrass (Paspalum dilatam), switchgrass, kleingrass (*Panicum coloratum*), old-world bluestem (Bothriochloa spp.) varieties, and various legume species. Many of the introduced species (Bermudagrass, dallisgrass, old-world bluestem) are invasive - moving by wind, water, and animals. Once established, they are extremely difficult to remove and will hinder the re-establishment of native species. The establishment and maintenance of these species requires cultivation, fertilization, weed control, and prescribed grazing management. Without the yearly application of these cultural practices, this vegetative state will move towards the Shrubland State.

Transition T1A
State 1 to 2

The Prairie/Savannah State will transition to the Shrubland State when continued heavy grazing pressure, no fire, no brush management, and/or field abandonment continues. The transition is evident when woody species canopy cover exceeds 20 percent and grasses shift composition to more shade-tolerant species.

Transition T1B
State 1 to 3

The transition to the Converted State occurs when the site is plowed for planting crops or pasture. The driver for the transition is the land manager's decision to farm the site.

Restoration pathway R2A
State 2 to 1

Restoration of the Shrubland State to the Prairie/Savannah State requires substantial energy input. Mechanical or herbicidal brush control treatments can be used to remove woody species. A long-term prescribed fire program may sufficiently reduce brush density, particularly if the woody component is dominated by species that are not re-sprouters. However, fire may not be sufficient to remove mature trees. Brush control in combination with prescribed fire, proper grazing management, and favorable growing conditions may be the most economical means of creating and maintaining the desired plant community. If remnant populations of tallgrasses, midgrasses, and desirable forbs are not present at sufficient levels, range planting will be necessary to restore the reference plant community.

Transition T2A
State 2 to 3

The transition to the Converted State occurs when the site is plowed for planting crops or pasture. The driver for the transition is the land manager's decision to farm the site.

Restoration pathway R3A
State 3 to 1

The restoration to State 1 can occur when the land manager ceases agronomic practices. Range planting of native species found in the reference community will be required to bring back a similar community as the State 1 plant composition. The extent of previous soil disturbances will determine how much seedbed preparation will be needed, as well as the ability to be restored. Proper grazing and brush management will be required to ensure success.

Transition T3A
State 3 to 2

The Converted Land State will transition to the Shrubland State by heavy continuous grazing, no fire, no brush management and/or abandonment. Woody species that encroach will eventually grow into the overstory and begin to shade out grasses.

Additional community tables

Table 15. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Lb/Acre)	Foliar Cover (%)
Grass/Grasslike					
1	**Warm season perennial tall grass**			1100–2300	
	little bluestem	SCSC	*Schizachyrium scoparium*	1200–2300	–
2	**Warm season perennial tall grass**			800–1800	
	big bluestem	ANGE	*Andropogon gerardii*	800–1800	–
	switchgrass	PAVI2	*Panicum virgatum*	800–1800	–
	Indiangrass	SONU2	*Sorghastrum nutans*	800–1800	–
	eastern gamagrass	TRDA3	*Tripsacum dactyloides*	800–1800	–
3	**Warm season perennial mid grasses**			550–1200	
	sideoats grama	BOCU	*Bouteloua curtipendula*	550–1200	–
	silver beardgrass	BOLAT	*Bothriochloa laguroides ssp. torreyana*	550–1200	–
	fall witchgrass	DICO6	*Digitaria cognata*	550–1200	–

	Texas cupgrass	ERSE5	*Eriochloa sericea*	550–1200	–
	Florida paspalum	PAFL4	*Paspalum floridanum*	550–1200	–
	Hall's panicgrass	PAHA	*Panicum hallii*	550–1200	–
	vine mesquite	PAOB	*Panicum obtusum*	550–1200	–
	brownseed paspalum	PAPL3	*Paspalum plicatulum*	550–1200	–
	marsh bristlegrass	SEPA10	*Setaria parviflora*	550–1200	–
	composite dropseed	SPCOC2	*Sporobolus compositus var. compositus*	550–1200	–
	white tridens	TRAL2	*Tridens albescens*	550–1200	–
	pink fluffgrass	TRCO2	*Tridens congestus*	550–1200	–
	longspike tridens	TRST2	*Tridens strictus*	550–1200	–
4	**Cool season perennial grasses**			250–550	
	Canada wildrye	ELCA4	*Elymus canadensis*	250–550	–
	Texas wintergrass	NALE3	*Nassella leucotricha*	250–550	–
Forb					
5	**Warm season perennial forb**			150–350	
	Cuman ragweed	AMPS	*Ambrosia psilostachya*	150–350	–
	groovestem Indian plantain	ARPL4	*Arnoglossum plantagineum*	150–350	–
	white prairie clover	DACAC	*Dalea candida var. candida*	150–350	–
	compact prairie clover	DACO2	*Dalea compacta*	150–350	–
	purple prairie clover	DAPU5	*Dalea purpurea*	150–350	–
	Illinois bundleflower	DEIL	*Desmanthus illinoensis*	150–350	–
	blacksamson echinacea	ECAN2	*Echinacea angustifolia*	150–350	–
	Engelmann's daisy	ENPE4	*Engelmannia peristenia*	150–350	–
	button eryngo	ERYU	*Eryngium yuccifolium*	150–350	–
	Maximilian sunflower	HEMA2	*Helianthus maximiliani*	150–350	–
	coastal indigo	INMI	*Indigofera miniata*	150–350	–
	manystem ratany	KRRA	*Krameria ramosissima*	150–350	–
	pinkscale blazing star	LIEL	*Liatris elegans*	150–350	–
	Nuttall's sensitive-briar	MINU6	*Mimosa nuttallii*	150–350	–
	yellow puff	NELU2	*Neptunia lutea*	150–350	–
	whitest evening primrose	OEAL	*Oenothera albicaulis*	150–350	–
	Nuttall's prairie parsley	PONU4	*Polytaenia nuttallii*	150–350	–
	prairie snoutbean	RHLA5	*Rhynchosia latifolia*	150–350	–
	fringeleaf wild petunia	RUHU	*Ruellia humilis*	150–350	–
Shrub/Vine					
6	**Shrubs/Vines**			50–150	
	winged sumac	RHCO	*Rhus copallinum*	50–150	–
	saw greenbrier	SMBO2	*Smilax bona-nox*	50–150	–
	coralberry	SYOR	*Symphoricarpos orbiculatus*	50–150	–
Tree					
7	**Trees**			50–150	
	netleaf hackberry	CELAR	*Celtis laevigata var. reticulata*	50–150	–
	post oak	QUST	*Quercus stellata*	50–150	–

	live oak	QUVI	*Quercus virginiana*	50–150	–
	gum bully	SILA20	*Sideroxylon lanuginosum*	50–150	–
	winged elm	ULAL	*Ulmus alata*	50–150	–

Table 16. Community 3.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Lb/Acre)	Foliar Cover (%)
Grass/Grasslike					
1	**Cool season annual grasses**			6000–8000	
	common oat	AVSA	*Avena sativa*	6000–8000	–
	Italian ryegrass	LOPEM2	*Lolium perenne ssp. multiflorum*	6000–8000	–
	common wheat	TRAE	*Triticum aestivum*	6000–8000	–
2	**Pastureland species**			3000–10000	
	switchgrass	PAVI2	*Panicum virgatum*	5000–10000	–
	Bermudagrass	CYDA	*Cynodon dactylon*	4000–8000	–
	kleingrass	PACO2	*Panicum coloratum*	4000–8000	–
	yellow bluestem	BOIS	*Bothriochloa ischaemum*	3000–7000	–

Animal community

As a historic tall grass prairie, this site was occupied by bison, antelope, deer, prairie chicken, quail, turkey, and dove. This site was also used by many species of grassland songbirds, coyotes, and wolves. This site now provides forage for livestock and is still used by quail, turkey, dove, migratory and resident grassland birds, and coyotes. Deer use the site when woody species occur in sufficient densities and proper structure to provide adequate cover.

Hydrological functions

Peak rainfall periods occur in May and June from frontal passage thunderstorms and in September and October from tropical systems, as well as frontal passage thunderstorms. Rainfall amounts may be high (three to five inches per event) and events may be intense. The site is subject to erosion where adequate herbaceous cover is not maintained and on heavy use areas such as roads and livestock trails. Extended periods (60 days) of little to no rainfall during the growing season are common.

Recreational uses

This site may be used for hunting, hiking, bird watching, biking, and horseback riding.

Wood products

In the woodland state, this site produces fire wood from oaks and posts from eastern red cedar.

Other products

Fruit from dewberry, grapes, and plums may be available on this site.

Inventory data references

These site descriptions were developed as part a Provisional Ecological Site project using historic soil survey manuscripts, available site descriptions, and low intensity field traverse sampling. Future work to validate the information is needed. This will include field activities to collect low, medium, and high-intensity sampling, soil correlations, and analysis of that data. A final field review, peer review, quality control, and quality assurance review of the will be needed to produce the final document.

Other references

Diggs, G.M., B.L. Lipscomb, and R.J. O'Kennon. 1999. Illustrated Flora of North Central Texas Botanical Research Institute of Texas and Austin College, Fort Worth, TX.

Hatch, S.L, K.N. Gandhi, and L.E. Brown. 1990. Checklist of the vascular plants of Texas. Texas Agricultural Experiment Station, College Station, TX.

Contributors

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Approval

Bryan Christensen, 9/21/2023

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	05/23/2005
Approved by	Bryan Christensen
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

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

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2. **Presence of water flow patterns:** Some water flow patterns are normal for this site due to landscape position and slopes.

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3. **Number and height of erosional pedestals or terracettes:** Pedestals or terracettes are uncommon for this site when occupied by the HCPC.

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4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Expect no more than 20 percent bare ground distributed in small patches.

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5. **Number of gullies and erosion associated with gullies:** No gullies should be present. Drainageways should be

stable and covered with vegetation.

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

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7. **Amount of litter movement (describe size and distance expected to travel):** This site has slowly permeable soils. On sloping sites, small to medium-size litter will move short distances with intense storms.

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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):** Soil surface is resistant to erosion. Stability class range is 5 to 6.

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Soil surface is less than 13 inches thick with colors frm dark brown clay loam to very dark gray clay loam and generally medium subangular blocky structure. SOM is 1 to 3 percent.

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** The savannah of trees, shrubs, vines, grasses, and forbs with adequate litter and little bare ground provides for maximum infiltration and little runoff under normal rainfall events.

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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):** No evidence of compaction.

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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 tallgrasses >>

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

    Other: Trees > Shrubs/Vines

    Additional:

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** There should be little mortality or decadence for any functional groups.

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14. **Average percent litter cover (%) and depth (in):**

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** 2,950 for below average moisture years to 6,500 for above average moisture years.

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:** Potential invasive species include yellow bluestems, common Bermudagrass, bahiagrass, mesquite, elm, huisache, post oak, eastern red cedar, and McCartney rose.

17. **Perennial plant reproductive capability:** All perennial plants should be capable of reproducing, except for prolonged drought conditions, heavy natural herbivory or intense wildfires.