USDA Natural Resources
Conservation Service

Ecological site R080BY159TX
Sandy Loam 26-33" 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.

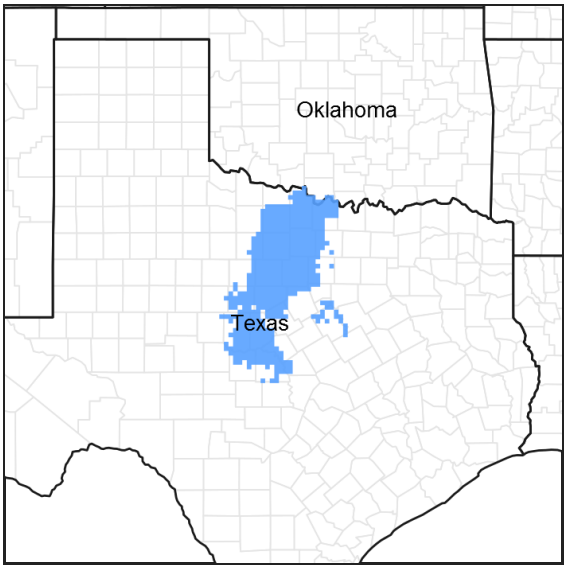


Figure 1. Mapped extent

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): 080B–Texas North-Central Prairies

MLRA 80B consists of gently rolling, dissected plains with very steep hillsides and sideslopes and narrow flood plains associated with small streams. Loamy and clayey soils range from very shallow to deep and developed in sandstones, shales, and limestones of Pennsylvanian age.

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 sandy loam soils on uplands. The reference vegetation consists of native perennial tall and midgrasses with a variety of forbs and few scattered trees. Without periodic fire or other brush management, woody species may increase and dominate the site.

Associated sites

R080BY151TX	**Loamy Bottomland 26-33" PZ** Adjacent position in downslope position which receives overflow water from adjacent sites.
R080BY152TX	**Loamy 26-33" PZ** Adjacent site in similar landscape position with shallower soils.
R080BY153TX	**Loamy Sand 26-33" PZ** Adjacent site in similar landscape position with deeper and sandier soils.
R080BY157TX	**Sandstone Hill 26-33" PZ** Adjacent site in upslope position.

Similar sites

R080BY153TX	**Loamy Sand 26-33" PZ** Similar species and production, greater forb and shrub component, deeper and sandier soils, and more susceptible to wind erosion.
R080BY157TX	**Sandstone Hill 26-33" PZ** Shallower soils over sandstone
R080BY164TX	**Tight Sandy Loam 26-33" PZ** Sandy loam soils with clay subsoils

Table 1. Dominant plant species

Tree	(1) *Quercus stellata*
Shrub	Not specified
Herbaceous	(1) *Schizachyrium scoparium*

Physiographic features

This site occurs on linear to convex dip slopes and ridges as well as on treads and risers of stream terraces in the Texas North-Central Prairies. This site is characteristically a water distributing site. Slopes are typically less than 8 percent.

Table 2. Representative physiographic features

Landforms	(1) Hills > Dip slope (2) Alluvial plain > Stream terrace (3) Hills > Ridge
Runoff class	Low to medium
Elevation	750–2,400 ft
Slope	1–8%
Aspect	Aspect is not a significant factor

Climatic features

The climate is subtropical subhumid and is characterized by hot humid summers 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. The average first frost generally occurs about November 5 and the last freeze of the season usually occurs about March 19. The average frost free period ranges from 215 days in the northern counties, to 240 days in the south.

The average relative humidity in mid-afternoon is about 60 percent in the summer months. Humidity is higher at night, and the average at dawn is about 80 percent. The sun shines 75 percent of the time possible during the summer and 50 percent in winter. The prevailing wind direction is from the southwest and highest windspeeds occur during the spring months.

Approximately 75% of annual rainfall occurs between April 1 and October 31. Rainfall during the months of April through September typically occurs during thunderstorms which tend to be intense and brief, resulting in large amounts of rain in a short time. The wettest months of the year are May, June, September, and October. The driest months during the growing season are July and August. The winter months of November, December, January, and February are the driest months overall.

Average annual precipitation for the entire MLRA is approximately 28 inches. There is a noticeable difference in the average annual precipitation in the northern counties in comparison to the southern and western counties of this Major Land Resource Area. Jack, Clay, Young, and Palo Pinto Counties all have an average annual precipitation of more than 31 inches. Stephens, Eastland, McCulloch, and San Saba Counties all have an average annual precipitation of less than 28 inches.

Winters tend to be mild, with occasional periods of very cold temperatures which can be accompanied by strong northerly winds and freezing precipitation. Snow is infrequent and significant accumulations are rare. These periods of very cold weather are generally short-lived. Summers tend to be hot and dry. Drought conditions are common during most summers. Air temperatures of more than 95oF are common from mid-June through September. In the northern counties nearest to the Red River, temperatures are generally slightly cooler during winter months and slightly warmer during summer months than in the other counties in the North Central Prairie.

Table 3. Representative climatic features

Frost-free period (characteristic range)	184-200 days
Freeze-free period (characteristic range)	211-225 days
Precipitation total (characteristic range)	30-32 in
Frost-free period (actual range)	183-204 days
Freeze-free period (actual range)	210-226 days
Precipitation total (actual range)	29-33 in
Frost-free period (average)	193 days
Freeze-free period (average)	217 days
Precipitation total (average)	31 in

Climate stations used

- (1) SAN SABA 7NW [USC00417994], Richland Springs, TX
- (2) BROWNWOOD 2ENE [USC00411138], Early, TX
- (3) EASTLAND [USC00412715], Eastland, TX
- (4) MINERAL WELLS AP [USW00093985], Millsap, TX
- (5) BRECKENRIDGE [USC00411042], Breckenridge, TX
- (6) GRAHAM [USC00413668], Graham, TX
- (7) JACKSBORO [USC00414517], Jacksboro, TX

Influencing water features

These areas may receive some water via runoff from adjacent sites. They also may shed some water to lower landscapes. However, the presence of good ground cover and deep rooted grasses can help facilitate infiltration of water into the soil. These sites are not associated with wetlands.

Wetland description

NA

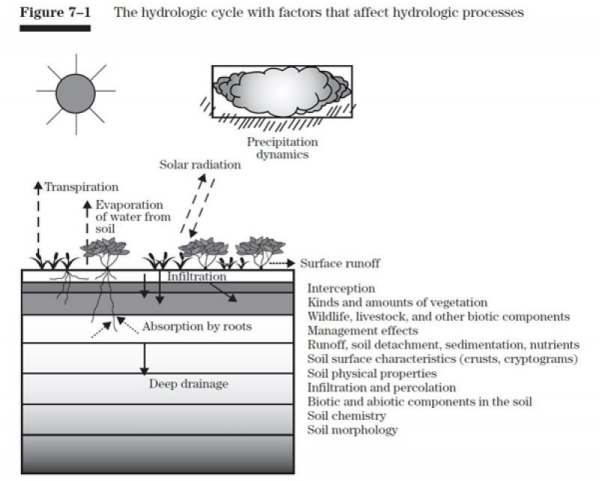


Figure 8.

Soil features

Representative soil components for this ecological site include: Apalo, Bastrop, Bonti, Minwells, Newcastle, Rochelle, Vashti

The site is characterized by moderately deep to very deep loamy well drained soils.

Table 4. Representative soil features

Parent material	(1) Alluvium–sandstone (2) Residuum–sandstone (3) Alluvium–claystone (4) Residuum–claystone
Surface texture	(1) Fine sandy loam (2) Very fine sandy loam (3) Loam
Drainage class	Moderately well drained to well drained
Permeability class	Very slow to slow
Soil depth	20 in
Surface fragment cover <=3"	0–2%
Surface fragment cover >3"	0–2%
Available water capacity (0-40in)	4–10 in
Calcium carbonate equivalent (0-40in)	0–25%
Electrical conductivity (0-40in)	0–2 mmhos/cm
Sodium adsorption ratio (0-40in)	0
Soil reaction (1:1 water) (0-40in)	5.1–7.8
Subsurface fragment volume <=3" (Depth not specified)	0–60%
Subsurface fragment volume >3" (Depth not specified)	0–5%

Ecological dynamics

The reference plant community for the Sandy Loam ecological site is a tallgrass/midgrass oak savanna. Evidence of the historic vegetation can be found in the journals and records of explorers, military expeditions, and boundary survey teams.

Climate is a major factor influencing vegetation on the site. Long-term droughts lasting multiple years or growing seasons are infrequent, but when they do occur, they can have a negative impact on the vegetation. If abusive grazing occurs during or immediately following the drought period, the results can be devastating. The effects of erratic seasonal moisture and short-term dry spells lasting a few months are not as severe as those caused by long-term droughts. However, the lower the ecological status of the site, the greater the negative impact will be during drought periods regardless of duration.

Fire was an important part of the ecosystem. Most ecosystems in the North Central Prairie developed in a 4 to 6 year regime of recurring fires. Many of these fires resulted from lightning strikes during thunderstorms. Native Americans frequently set fires to manipulate the movement of bison and other animals as well as a defensive or offensive technique when dealing with their enemies. These historic fires were usually severe because of the amount of grass fuel available to carry the fire. The intensity of fires kept shrubs and sapling trees suppressed and allowed grasses and forbs to flourish. Tallgrass species are fire tolerant and are enhanced by periodic burning. Forbs usually increase for a year or two following these fires before the grasses become dominant again.

Lack of fire allows herbaceous vegetation to become senescent and may eventually lead to the loss of the most desirable species. Seedlings of non-native brush species and invasive weeds may encroach on the site from adjacent sites.

Prior to settlement, this site was subject to periodic grazing and browsing by vast herds of bison, wild cattle, wild horses, and deer. At times these grazing and browsing episodes were intense and severe, but periods of heavy use were followed by long periods of non-use as the herds migrated to fresh grazing areas before returning to previously grazed areas. The grazed areas had an opportunity to rest, regrow, regain vigor, and reproduce prior to the next grazing event. Intervals between grazing periods were frequently influenced by the amount of time that had elapsed since the last fire on the area.

As the region was settled, fire was reduced or eliminated and grasslands were fenced off to control movement and facilitate grazing by domestic livestock. As a result of abusive grazing or lack of grazing and/or the elimination of fire, in association with extreme climatic events, the tallgrass plant community has been eliminated or severely reduced on most Sandy Loam sites.

Further deterioration leads to the loss of the perennial warm-season midgrass and forb plant community and an increase in short grasses, annuals, and bare ground. This provides the opportunity for less desirable woody species such as mesquite and pricklypear to encroach from adjacent sites. As the amount of bare ground increases, so does the potential for wind erosion.

Selective individual removal of undesirable trees and shrubs is relatively easy and more practical when brush plants initially appear on the site. The increase of brush can be fairly rapid and the plants per acre will soon become too numerous for individual control to be feasible. Once woody plants become mature or develop into dense stands, control is expensive, uneconomical, impractical, and difficult to achieve. Brush management is most successful using a systems approach. Initial treatment by mechanical methods can be followed by using approved herbicides, and using prescribed fire as a maintenance technique. Prescribed grazing with a reasonable stocking rate can sustain the grass species composition and production at a near reference level.

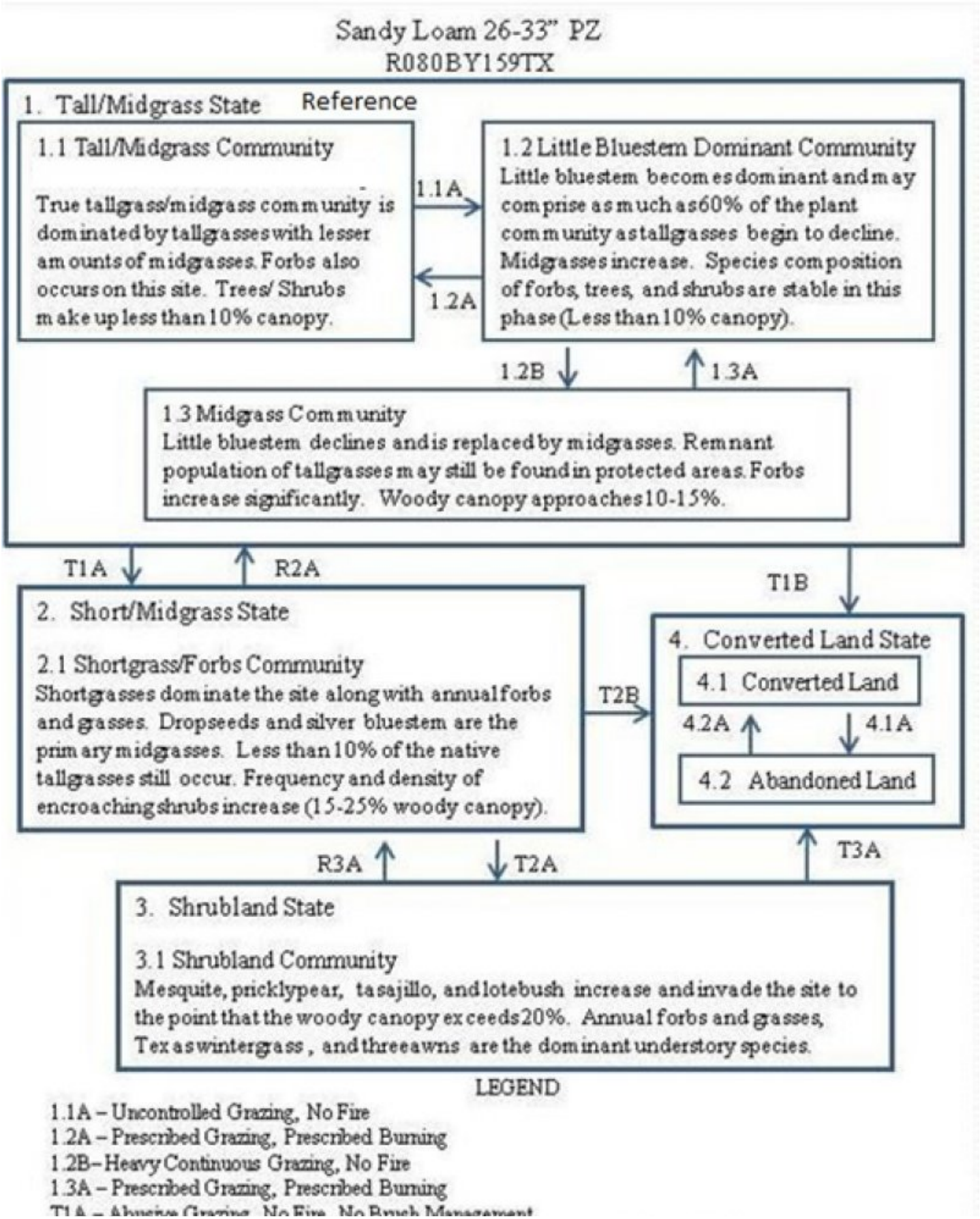
Changes in plant communities and vegetation states on the Sandy loam site are result of the combined influences of natural events (rainfall, temperature, droughts, etc.) and the accompanying management systems implemented on the area (prescribed fire, grazing management, and brush management).

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.

State and Transitional Pathways:

The State and Transition Diagram which follows provides information on some of the most typical pathways that the vegetation on this site can follow as the result of natural events, management inputs, and application of conservation treatments. There may be other plant communities that can exist on this site under certain conditions. Consultation with local experts and professionals is recommended prior to application of practices or management strategies in order to ensure that specific objectives will be met.

State and transition model



R2A – Prescribed Grazing, Prescribed Burning, Brush Management, Range Planting
T2A – Abusive Grazing, No Fire, No Brush Management
R3A – Prescribed Grazing, Prescribed Burning, Brush Management, Range Planting
T1B –Range, Pasture or Tree Planting, Crop Cultivation
T2B – Brush Management, Range, Pasture or Tree Planting, Crop Cultivation
T3A – Land Clearing, Range, Pasture, or Tree Planting, Crop Cultivation
4.1A – Abusive Grazing, No Fire, No Brush Management, Idle Land, No Pasture/Cropland/or Orchard Mgmt
4.2A – Prescribed Grazing, Prescribed Burning, Pasture/Cropland/Orchard Management, Range, Pasture, or Tree Planting, Crop Cultivation

State 1
Tall/Midgrass State - Reference

The reference plant community for the Sandy Loam ecological site is a Tallgrass/Midgrass Savanna Community. Historically, the plant community consisted primarily of tallgrasses with a significant component of midgrasses, an abundance of forbs, and individual trees and shrubs or oak mottes distributed throughout the landscape. Little bluestem is the dominant grass with a significant amount of other tallgrasses. Midgrasses and a wide variety of forbs are also a significant component of the plant community. Trees and shrubs are also scattered across the landscape. Annual production ranges from 2800 to 6000 pounds per acre. In the Little Bluestem Dominant Community, little bluestem totally dominates the site as other tallgrasses decrease and their presence is significantly reduced. Little bluestem becomes very dominant and may comprise as much as 60% of the total plant community in this phase. Sideoats grama also tends to increase somewhat in this initial stage of retrogression. Species composition of forbs, shrubs, and trees generally remains static in this phase. Annual production ranges from 2400 to 5200 pounds per acre. In the Midgrass Community, tallgrasses such as Indiangrass, big bluestem, and switchgrass are almost completely eliminated from the site, but remnant populations and widely scattered individual plants remain in protected areas. They are often unnoticed because they are grazed very short, are in low vigor, and are not prominent on the site. Little bluestem and sideoats grama begin to decrease in abundance and production. Western ragweed, broomweed, and annual forbs begin to replace more desirable perennial forbs. Mesquite, pricklypear, tasajillo, juniper, and greenbriar begin to increase in density or invade from adjacent sites. Annual production ranges from 2000 to 3600 pounds per acre.

Dominant plant species

- post oak (*Quercus stellata*), tree
- little bluestem (*Schizachyrium scoparium*), grass

Community 1.1
Tallgrass/Midgrass Community

Figure 9. 1.1 Tallgrass/Midgrass Community

The reference plant community for the Sandy Loam ecological site is a tallgrass/midgrass savanna. The Sandy Loam site in this MLRA is a transitional site between the Sandy Loam sites that occur in the midgrass prairies to the west and those that are found in the tallgrass/oak savannas to the east. Historically, the plant community

consisted primarily of tallgrasses with a significant component of midgrasses, an abundance of forbs, and individual trees and shrubs or oak mottes distributed throughout the landscape. Little bluestem is the dominant grass with a significant amount of other tallgrasses including Indiangrass and big bluestem, and lesser amounts of switchgrass. Midgrasses such as sideoats grama, Arizona cottontop, silver bluestem, Texas wintergrass, sand lovegrass, vine mesquite and dropseeds are also a significant component of the plant community. A wide variety of forbs occupy this plant community. The most common forbs are heath aster, Engelmann daisy, gayfeather, prairie clover, bundleflower, daleas, evening primrose, sagewort, and American basketflower. Post oak, blackjack oak, hackberry, and elm trees are distributed throughout the site. Shrubs such as skunkbush sumac, plum, bumelia, pricklyash, and catclaw acacia are also scattered across the landscape. Annual production ranges from 2800 to 6000 pounds per acre.

Table 5. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	2200	3500	4800
Forb	300	450	600
Tree	250	350	450
Shrub/Vine	50	100	150
Total	**2800**	**4400**	**6000**

Figure 11. Plant community growth curve (percent production by month). TX3014, Tall and mid-grass Savannah, 10 % canopy. Tall and mid grass savannah with some forbs and woody species..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2	2	2	10	20	24	10	5	10	10	3	2

Community 1.2
Little Bluestem Dominant Community

Figure 12. 1.2 Little Bluestem Dominant Community

The initial stage of retrogression occurs as a result of disturbances such as extended drought, frequent short-term heavy grazing, etc. Indiangrass, big bluestem, switchgrass, purpletop, and sand lovegrass begin to decline and their presence is significantly reduced. Little bluestem becomes very dominant and may comprise as much as 60% of the total plant community in this phase. Sideoats grama also tends to increase somewhat in this initial stage of retrogression. Species composition of forbs, shrubs, and trees generally remains static in this phase. Annual production ranges from 2400 to 5200 pounds per acre.

Table 6. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	1800	2900	4000
Forb	300	450	600
Tree	250	350	450
Shrub/Vine	50	100	150
Total	**2400**	**3800**	**5200**

Figure 14. Plant community growth curve (percent production by month). TX3014, Tall and mid-grass Savannah, 10 % canopy. Tall and mid grass savannah with some forbs and woody species..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2	2	2	10	20	24	10	5	10	10	3	2

Community 1.3
Midgrass Community

Figure 15. 1.3 Midgrass Community

Severe disturbances such as heavy continuous grazing, persistent drought conditions, or combinations of heavy continuous grazing, extreme climatic conditions, and other factors, cause the plant community to change dramatically. Tallgrasses such as Indiangrass, big bluestem, and switchgrass are almost completely eliminated from the site, but remnant populations and widely scattered individual plants remain in protected areas. They are often unnoticed because they are grazed very short, are in low vigor, and are not prominent on the site. Little bluestem and sideoats grama begin to decrease in abundance and production. Silver bluestem, Texas wintergrass, dropseeds, and threeawns become dominant. Western ragweed, broomweed, and annual forbs begin to replace more desirable perennial forbs. Mesquite, pricklypear, tasajillo, juniper, and greenbriar begin to increase in density or invade from adjacent sites. Annual production ranges from 2000 to 3600 pounds per acre.

Table 7. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	1200	1500	2000
Forb	400	600	800
Tree	300	400	500
Shrub/Vine	100	200	300
Total	**2000**	**2700**	**3600**

Figure 17. Plant community growth curve (percent production by month). TX3020, Midgrass Savannah, 10% canopy. Midgrass savannah with 10

percent canopy cover. Continuous overgrazing led to the decline of tall grasses and the rise of the midgrass species..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2	2	2	10	20	24	10	5	10	10	3	2

Pathway 1.2A
Community 1.1 to 1.2

Tallgrass/Midgrass Community

Little Bluestem Dominant Community

With uncontrolled grazing and no fires, the Tall/Midgrass Community will shift to the Little Bluestem Dominant Community.

Pathway 1.2A
Community 1.2 to 1.1

Little Bluestem Dominant Community

Tallgrass/Midgrass Community

With the implementation of Prescribed Grazing and Prescribed Burning conservation practices, the Little Bluestem Dominant Community can be shifted back to the Tall/Midgrass Community.

Conservation practices

Prescribed Burning
Prescribed Grazing

Pathway 1.2B
Community 1.2 to 1.3

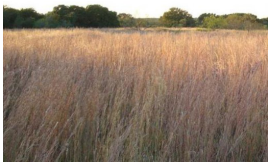
Little Bluestem Dominant Community

Midgrass Community

The shift from the Little Bluestem Dominant Community to the Midgrass Community occurs due to Heavy Continuous Grazing and no fires.

Pathway 1.3A
Community 1.3 to 1.2

Midgrass Community



Little Bluestem Dominant Community

With the use of Prescribed Grazing and Prescribed Burning conservation practices, the Midgrass Community can be reverted to the Little Bluestem Dominant Community.

Conservation practices

Prescribed Burning
Prescribed Grazing

State 2
Short/Midgrass State

The Shortgrass/Forbs Community is dominated by shortgrasses and midgrasses such as buffalograss, curlymesquite, threeawns, silver bluestem, dropseeds, and tumble windmillgrass. Western ragweed and broomweed are the dominant forbs. Tallgrass species and many of the more desirable midgrass species no longer exist in sufficient amounts to allow the site to recover through management alone. Annual production ranges from 1000 to 2000 pounds per acre.

Dominant plant species

- post oak (*Quercus stellata*), tree
- buffalograss (*Bouteloua dactyloides*), grass
- silver beardgrass (*Bothriochloa laguroides*), grass

Community 2.1
Shortgrass/Forbs Community

Figure 18. 2.1 Shortgrass/Forbs Community

Continued deterioration of the plant community due to abusive grazing and/or other destructive disturbances eventually results in a plant community dominated by shortgrasses and midgrasses such as buffalograss, curlymesquite, threeawns, silver bluestem, dropseeds, and tumble windmillgrass. Western ragweed and broomweed are the dominant forbs. Bare ground can become significant in the most deteriorated state. Tallgrass species and many of the more desirable midgrass species no longer exist in sufficient amounts to allow the site to recover through management alone. Annual production ranges from 1000 to 2000 pounds per acre.

Table 8. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Forb	200	400	600
Grass/Grasslike	300	400	500
Tree	300	400	500
Shrub/Vine	200	300	400
Total	**1000**	**1500**	**2000**

Figure 20. Plant community growth curve (percent production by month). TX3030, Mid/Shortgrass with Mesquite - Buffalograss . Mid and Short Grass with Mesquite; Buffalograss, Texas Wintergrass, and Meadow Dropseed..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
5	5	5	15	15	15	5	5	10	10	5	5

State 3
Shrubland State

In the Shrubland Community, annual forbs and grasses increase, while brush species such as mesquite, lotebush, pricklypear, and tasajillo become well established and therefore eventually developing a canopy of more than 20% on the site. It should also be noted that for areas never having any brush work, yet have been overgrazed and not burned, develop a different composition of brush than ones having brush control. These areas usually have post oaks, and low growing shrubs such as skunkbush, greenbriars, catclaws and elbowbush. Annual production ranges from 1000 to 2000 pounds per acre.

Dominant plant species

- post oak (*Quercus stellata*), tree
- Ashe's juniper (*Juniperus ashei*), tree
- honey mesquite (*Prosopis glandulosa var. glandulosa*), shrub
- lotebush (*Ziziphus obtusifolia*), shrub

Community 3.1
Shrubland Community

Figure 21. 3.1 Shrubland Community

Annual forbs and grasses increase, while brush species such as mesquite, lotebush, pricklypear, and tasajillo become well established and therefore eventually developing a canopy of more than 20% on the site. It should also be noted that for areas never having any brush work, yet have been overgrazed and not burned, develop a different composition of brush than ones having brush control. These areas usually have post oaks, and low growing shrubs such as skunkbush, greenbriars, catclaws and elbowbush. Annual production ranges from 1000 to 2000 pounds per acre.

Table 9. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Forb	200	400	600
Shrub/Vine	350	450	600
Tree	300	400	550
Grass/Grasslike	150	250	350
Total	**1000**	**1500**	**2100**

Figure 23. Plant community growth curve (percent production by month). TX3030, Mid/Shortgrass with Mesquite - Buffalograss . Mid and Short Grass with Mesquite; Buffalograss, Texas Wintergrass, and Meadow Dropseed..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
5	5	5	15	15	15	5	5	10	10	5	5

State 4
Converted Land State

Hundreds of thousands of acres have been plowed up and converted to cropland, pastureland, or hayland. This community is known as the Converted Land Community. Wheat is the primary annual crop. Bermudagrass is the primary introduced pasture species used in this area. Abandoned croplands and reseeded areas tend to revert back to a more natural state through the process of secondary succession. This is a very slow process that takes decades or centuries to evolve, dependent on the status of the area at the time it is abandoned. The first plants to establish are “pioneer plants” (annual forbs and grasses followed by early successional shortgrasses and midgrasses). This community is known as the Abandoned Land Community.

Dominant plant species

- Bermudagrass (*Cynodon dactylon*), grass

Community 4.1
Converted Land Community

Figure 24. 4.1 Converted Land Community

The Sandy Loam site is one of the most frequently converted sites because of its deep soils, favorable soil/water/plant relationship, and relatively level terrain. Hundreds of thousands of acres have been plowed up and converted to cropland, pastureland, or hayland. Bermudagrass is the primary introduced species used in this area. The Sandy Loam site can be an extremely productive forage producing site with the application of optimum amounts of fertilizer. Refer to Forage Suitability Group Descriptions for specific recommendations, production potentials, species adaptation, etc. In some localized areas, several hundred acres of pecan and peach orchards have been established on the sandy loam soils related to this site. In the highest state of production following

conversion, the trees, shrubs and forbs have been severely reduced or eliminated from the site. The more woodies and forbs that occur on a converted site, the lower the overall production would be. The annual production figures below reflect this change. Annual production can range from 3000 to 7000 pounds per acre.

Table 10. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	2600	4700	6800
Forb	300	250	200
Shrub/Vine	100	50	0
Total	**3000**	**5000**	**7000**

Figure 26. Plant community growth curve (percent production by month). TX3037, Converted Land Community. Planted to monocultures of introduced species, or monocultures or mixtures of commercially available native tallgrasses. .

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	3	5	14	23	20	5	4	12	8	3	2

Community 4.2
Abandoned Land Community

Figure 27. 4.2 Abandoned Land Community

Abandoned croplands and reseeded areas tend to revert back to a more natural state through the process of secondary succession. This is a very slow process that takes decades or centuries dependent on the status of the area at the time it is abandoned. The first plants to establish are annual forbs and grasses followed by early successional shortgrasses and midgrasses. If managed properly, some of these abandoned areas may eventually begin to approximate the diversity and complexity of the native Sandy Loam ecosystem. Midgrasses, perennial forbs, and tallgrasses may begin to establish if the area is carefully managed. However, it is highly unlikely that abandoned lands can ever return to climax vegetation within a reasonable period of time. Annual production ranges from 800 to 1400 pounds per acre.

Table 11. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Forb	400	500	600
Grass/Grasslike	300	400	500
Tree	100	200	300
Total	**800**	**1100**	**1400**

Figure 29. Plant community growth curve (percent production by month). TX3038, Abandoned Land Community. Abandoned croplands, pasturelands and seeded areas..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3	4	8	16	18	12	4	4	10	12	6	3

Pathway 4.1A
Community 4.1 to 4.2

Converted Land Community **Abandoned Land Community**

With abusive grazing, no fires, no brush management, idled land, no pasture/range/orchard/cropland management, the Converted Land Community will shift to the Abandoned Land Community.

Pathway 4.2A
Community 4.2 to 4.1

Abandoned Land Community **Converted Land Community**

With the implementation of various conservation practices such as Prescribed Grazing, Prescribed Burning, Pasture/Crop Management, Seedbed Preparation, and Range/Pasture Planting, the Abandoned Land Community can be shifted back to the Converted Land Community.

Conservation practices

Brush Management
Conservation Crop Rotation
Prescribed Burning
Forage and Biomass Planting
Prescribed Grazing
Range Planting
Nutrient Management
Integrated Pest Management (IPM)

Transition T1A
State 1 to 2

With abusive grazing, no fires and no brush management, the Tall/Midgrass State will transition into the Short/Midgrass State.

Transition T1B
State 1 to 4

With Range, Pasture or Tree Planting and Crop Cultivation, the Tall/Midgrass State can transition into the Converted Land State.

Restoration pathway R2A
State 2 to 1

The Short/Midgrass State can be restored to the Tall/Midgrass State with the use of various conservation practices including but not limited to Prescribed Grazing, Prescribed Burning, Brush Management, and Range Planting.

Conservation practices

Brush Management
Prescribed Burning
Prescribed Grazing
Range Planting

Transition T2A
State 2 to 3

With the continuation of abusive grazing pressure, no fires and no brush management practices, the Short/Midgrass State will transition into the Shrubland State.

Transition T2B
State 2 to 4

With Brush Management, Range, Pasture or Tree Planting and Crop Cultivation, the Short/Midgrass State can transition into the Converted Land State.

Restoration pathway R3A
State 3 to 2

With Prescribed Grazing, Prescribed Burning, Brush Management, Seedbed Preparation, and Range Planting, the Shrubland State can be restored to the Short/Midgrass State.

Conservation practices

Brush Management
Prescribed Burning
Prescribed Grazing
Range Planting

Transition T3A
State 3 to 4

With Brush Management, Seedbed Preparation, Range Planting, Pasture Planting, and Crop Cultivation, the Shrubland State can transition into the Converted Land State.

Additional community tables

Table 12. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Lb/Acre)	Foliar Cover (%)
Grass/Grasslike					
1	**Tallgrass**			500–2000	
	little bluestem	SCSC	*Schizachyrium scoparium*	500–2000	–
2	**Tallgrasses**			100–1050	
	big bluestem	ANGE	*Andropogon gerardii*	0–1000	

	big bluestem	ANGE	*Andropogon gerardii*	0–1000	–
	Indiangrass	SONU2	*Sorghastrum nutans*	0–1000	–
	purpletop tridens	TRFL2	*Tridens flavus*	0–900	–
	switchgrass	PAVI2	*Panicum virgatum*	0–300	–
3	**Midgrasses**			600–1000	
	sideoats grama	BOCU	*Bouteloua curtipendula*	300–1000	–
	Texas wintergrass	NALE3	*Nassella leucotricha*	200–900	–
	vine mesquite	PAOB	*Panicum obtusum*	0–600	–
	sand lovegrass	ERTR3	*Eragrostis trichodes*	0–600	–
	silver beardgrass	BOLAT	*Bothriochloa laguroides ssp. torreyana*	200–600	–
	Arizona cottontop	DICA8	*Digitaria californica*	0–600	–
	Canada wildrye	ELCA4	*Elymus canadensis*	0–600	–
	plains lovegrass	ERIN	*Eragrostis intermedia*	0–300	–
	marsh bristlegrass	SEPA10	*Setaria parviflora*	0–300	–
	composite dropseed	SPCOC2	*Sporobolus compositus var. compositus*	0–300	–
	Drummond's dropseed	SPCOD3	*Sporobolus compositus var. drummondii*	0–300	–
	sand dropseed	SPCR	*Sporobolus cryptandrus*	100–300	–
	thin paspalum	PASE5	*Paspalum setaceum*	0–100	–
4	**Mid/Shortgrasses**			100–750	
	buffalograss	BODA2	*Bouteloua dactyloides*	150–600	–
	blue grama	BOGR2	*Bouteloua gracilis*	0–600	–
	hairy grama	BOHIH	*Bouteloua hirsuta var. hirsuta*	0–300	–
	curly-mesquite	HIBE	*Hilaria belangeri*	0–300	–
	fall witchgrass	DICO6	*Digitaria cognata*	0–200	–
	Scribner's rosette grass	DIOLS	*Dichanthelium oligosanthes var. scribnerianum*	0–200	–
	purple threeawn	ARPU9	*Aristida purpurea*	0–150	–
	Wright's threeawn	ARPUW	*Aristida purpurea var. wrightii*	0–150	–
	hooded windmill grass	CHCU2	*Chloris cucullata*	0–100	–
	tumble windmill grass	CHVE2	*Chloris verticillata*	0–100	–
Forb					
5	**Forbs**			300–600	
	white heath aster	SYERE	*Symphyotrichum ericoides var. ericoides*	0–300	–
	Cuman ragweed	AMPS	*Ambrosia psilostachya*	0–300	–
	white sagebrush	ARLUM2	*Artemisia ludoviciana ssp. mexicana*	0–300	–
	prairie clover	DALEA	*Dalea*	0–300	–
	Engelmann's daisy	ENPE4	*Engelmannia peristenia*	0–300	–
	Maximilian sunflower	HEMA2	*Helianthus maximiliani*	0–300	–
	trailing krameria	KRLA	*Krameria lanceolata*	0–200	–
	purple prairie clover	DAPU5	*Dalea purpurea*	0–200	–
	Illinois bundleflower	DEIL	*Desmanthus illinoensis*	0–200	–
	American star-thistle	CEAM2	*Centaurea americana*	0–200	–
	partridge pea	CHFA2	*Chamaecrista fasciculata*	0–200	–

	partridge pea	CHFA2	*Chamaecrista fasciculata*	0–200	
	pony beebalm	MOPE	*Monarda pectinata*	0–200	–
	yellow puff	NELU2	*Neptunia lutea*	0–200	–
	beardtongue	PENST	*Penstemon*	0–200	–
	pitcher sage	SAAZG	*Salvia azurea var. grandiflora*	0–200	–
	amberique-bean	STHE9	*Strophostyles helvola*	0–200	–
	Texas Indian mallow	ABFR3	*Abutilon fruticosum*	0–100	–
	blue-eyed grass	SISYR	*Sisyrinchium*	0–100	–
	groundcherry	PHYSA	*Physalis*	0–100	–
	white milkwort	POAL4	*Polygala alba*	0–100	–
	evening primrose	OENOT	*Oenothera*	0–100	–
	prairie spiderwort	TROC	*Tradescantia occidentalis*	0–100	–
	Texas vervain	VEHA	*Verbena halei*	0–100	–
	whitemouth dayflower	COER	*Commelina erecta*	0–100	–
	purple poppymallow	CAIN2	*Callirhoe involucrata*	0–100	–
	yellow sundrops	CASE12	*Calylophus serrulatus*	0–100	–
	beeblossom	GAURA	*Gaura*	0–100	–
	curlycup gumweed	GRSQ	*Grindelia squarrosa*	0–100	–
	lespedeza	LESPE	*Lespedeza*	0–100	–
	Texas skeletonplant	LYTE	*Lygodesmia texana*	0–100	–
Shrub/Vine					
6	**Shrubs/Vines**			50–150	
	catclaw acacia	ACGRG3	*Acacia greggii var. greggii*	0–150	–
	plum	PRUNU	*Prunus*	0–150	–
	skunkbush sumac	RHTR	*Rhus trilobata*	0–150	–
	gum bully	SILA20	*Sideroxylon lanuginosum*	0–150	–
	greenbrier	SMILA2	*Smilax*	0–100	–
	pricklyash	ZANTH	*Zanthoxylum*	0–100	–
	Christmas cactus	CYLE8	*Cylindropuntia leptocaulis*	0–50	–
	pricklypear	OPUNT	*Opuntia*	0–50	–
Tree					
7	**Trees**			250–450	
	sugarberry	CELAL	*Celtis laevigata var. laevigata*	0–450	–
	netleaf hackberry	CELAR	*Celtis laevigata var. reticulata*	0–450	–
	green ash	FRPE	*Fraxinus pennsylvanica*	0–450	–
	Texas live oak	QUFU	*Quercus fusiformis*	0–450	–
	blackjack oak	QUMA3	*Quercus marilandica*	0–450	–
	post oak	QUST	*Quercus stellata*	150–450	–
	winged elm	ULAL	*Ulmus alata*	0–450	–
	American elm	ULAM	*Ulmus americana*	0–450	–
	slippery elm	ULRU	*Ulmus rubra*	0–450	–
	honey mesquite	PRGL2	*Prosopis glandulosa*	0–200	–

Animal community

Historically, the Sandy Loam site was inhabited permanently and intermittently by a wide variety of mammals, reptiles, and birds. Several historical references and journals written in the 18th and 19th century by explorers, survey parties, and military expeditions refer to herds of bison, wild cattle, wild horses, deer, and antelope roaming freely across the North Central Prairie and adjacent regions.

Currently, the site is utilized by deer, wild turkey, quail, dove, numerous species of birds, and a variety of small fur-bearing mammals. Animal species and populations fluctuate as the vegetation cycles through temporary phases and different ecological stages.

Hydrological functions

When herbaceous vegetation and ground cover are maintained in a healthy and vigorous status, water infiltration into the soil profile is increased significantly, resulting in very little runoff. A thick, healthy grass cover also results in improved water quality because it serves as a filter or trap to reduce sediments and pollutants before the water flows offsite.

Recreational uses

These scenic areas offer outdoor activities including photography, bird watching, hiking, camping, horseback riding, and off-road vehicle use. Hunting quail, dove, deer, and turkey can be a lucrative enterprise on properly managed areas because the Sandy Loam site and adjacent sites provide good habitat for a variety of wildlife species.

Wood products

Post oak and other hardwood trees that occur on this site can be used for firewood, fence posts, and crafts.

Other products

None.

Other information

None.

Inventory data references

Vegetation data for this site was obtained from existing Range Site Descriptions, SCS-RANGE -417 Production and Composition Records for Native Grazing Lands, and on-site inventories by the author and local experts including ranchers, natural resource specialists from federal and state agencies, and personnel from cooperating agencies and organizations. A total of 3 SCS-RANGE-417’s containing data collected from 3 counties during the period 12/30/1981 to 12/12/1986 were reviewed for this site.

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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)	Lem Creswell, Zone RMS, NRCS, Weatherford, Texas
Contact for lead author	817-596-2865
Date	10/28/2007
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:** Water flow patterns are noticeable only in areas close to intermittent creeks that occur within the site. Deposition or erosion is uncommon for normal rainfall but may occur during intense rainfall events.

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3. **Number and height of erosional pedestals or terracettes:** Uncommon.

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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 10% bare ground randomly distributed throughout.

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5. **Number of gullies and erosion associated with gullies:** Some gullies may be present on side drains into perennial and intermittent streams. Gullies should be vegetated and stable.

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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):** Under normal rainfall, little litter movement should be expected. However, litter of all sizes may move long distances due to obstructions.

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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 under HCPC is resistant to erosion. Stability class range is expected to be 5-6.

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** 0-8 inches thick that has brown fine sandy loam with weak fine subangular blocky structure. SOM is approximately 1-6%. See soil survey.

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** The savanna of warm-season tallgrasses and midgrasses and forbs having 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):** 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 tallgrasses >>

    Sub-dominant: Warm-season midgrasses > Forbs >

    Other: Cool-season grasses > Trees > Shrubs/Vines > Warm-season shortgrasses

    Additional:

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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 very slight.

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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):** 2800 to 6000 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, tasajillo, lotebush, bermudagrass, johnsongrass, King Ranch bluestem, annual broomweed.

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17. **Perennial plant reproductive capability:** All perennial plants should be capable of reproducing, except during periods of prolonged drought conditions, heavy herbivory, and wildfires.
