

United States Department of Agriculture Natural Resources Conservation Service Ecological Site Description

Section I: Ecological Site Characteristics Ecological Site Identification and Concept

Site stage: Provisional

Provisional: an ESD at the provisional status represents the lowest tier of documentation that is releasable to the public. It contains a grouping of soil units that respond similarly to ecological processes. The ESD contains 1) enough information to distinguish it from similar and associated ecological sites and 2) a draft state and transition model capturing the ecological processes and vegetative states and community phases as they are currently conceptualized. The provisional ESD has undergone both quality control and quality assurance protocols. It is expected that the provisional ESD will continue refinement towards an approved status.

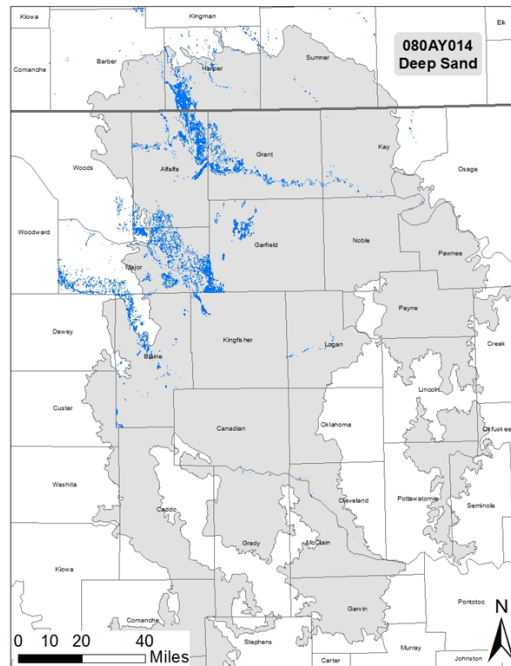
Site name: Deep Sand

Prunus angustifolia - *Rhus aromatica* / *Andropogon hallii* - *Schizachyrium scoparium*
(/ Chickasaw plum - FRAGRANT SUMAC / Sand bluestem - Little bluestem)

Site type: Rangeland

Site ID: R080AY014OK

Major land resource area (MLRA): 080A-Central Rolling Red Prairies



080AY014

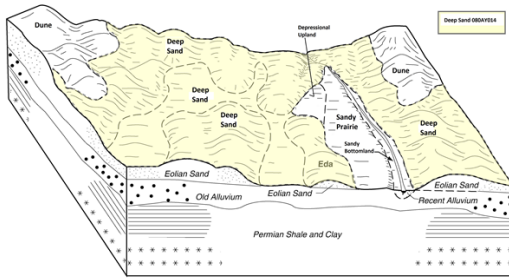
MLRA 80A is characterized by dark red Permian rocks that are exposed on gently sloping plains. These plains are dissected by rivers that flow from northwest to southeast. Major rivers of this MLRA include the Chickaskia and Bluff rivers in KS, the Salt Fork, Cimarron, North and South Canadian, Washita, Cache, Red River in OK, and branches of the Wichita River in TX. Soils are generally well drained, loamy or clayey deposits overlying Permian sandstones or shales.

Ecological Site Concept

This site occurs on very deep sandy soils with relatively low water holding capacity and rolling to hummocky relief. The reference plant community is dominated by warm season perennial mid and tall grasses with subdominant perennial forbs and legume species. This plant community evolved through periods of grazing, fire, and drought. Therefore, many of the species that occur are somewhat tolerant to these disturbances. Woody species canopy cover is generally the least in the reference plant community and generally increases as "time since fire" increases. Productivity on this site may vary greatly from year to year depending on precipitation patterns. In the absence of fire and proper grazing management, this plant community may transition to an alternative plant community.

Physiographic Features

These sites occur on gently rolling to low dune deposits on terraces in the Central Rolling Red Prairies MLRA 80A.



Physiographic Image.—080AY014

- Landform: (1) Dune
 (2) Terrace
 (3) Sand sheet

	<u>Minimum</u>	<u>Maximum</u>
Elevation (feet):	700	1200
Slope (percent):	2	12
Water table depth (inches):	60	
Flooding		
Frequency:	None	None
Ponding		
Depth (inches):	0	0
Frequency:	None	None
Runoff class:	Negligible	Very low
Aspect:	No Influence on this site	

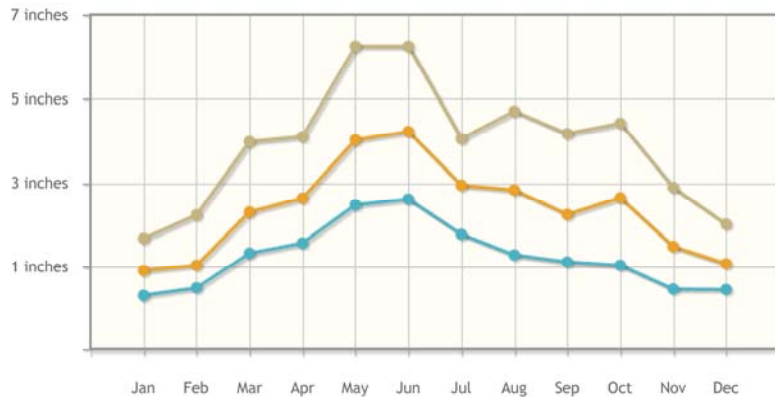
Climatic Features

The climate is characterized by moist, cool, springs; hot, often dry summers; mild autumns; and mild to cold winters. Variation in timing and amounts of precipitation from year to year is quite common. Drought cycles range from three to five years duration with occasionally longer periods occurring at unpredictable intervals. Above normal rainfall cycles are usually just as random, but shorter in duration.

	<u>Averaged</u>
Frost-free period (days):	196
Freeze-free period (days):	208
Mean annual precipitation (inches):	35.59

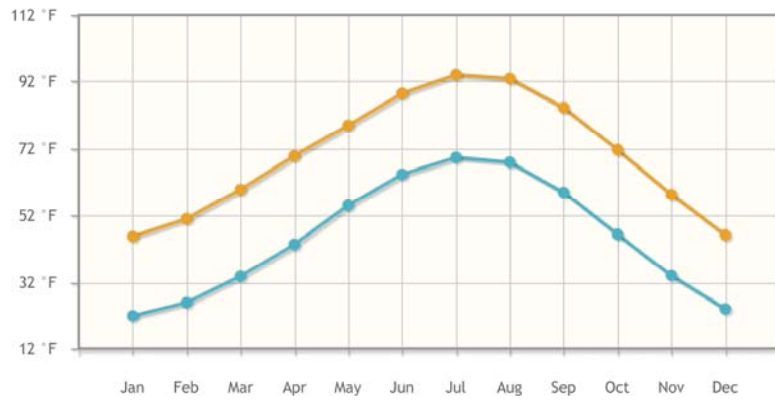
Monthly Precipitation (Inches):

	<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>
High	1.67	2.23	3.98	4.10	6.26	6.26	4.05	4.71	4.17	4.42	2.89	2.01
Medium	0.90	1.03	2.30	2.63	4.02	4.22	2.94	2.83	2.24	2.64	1.48	1.07
Low	0.30	0.48	1.32	1.56	2.47	2.61	1.77	1.28	1.11	1.03	0.45	0.44



Monthly Temperature (°F):

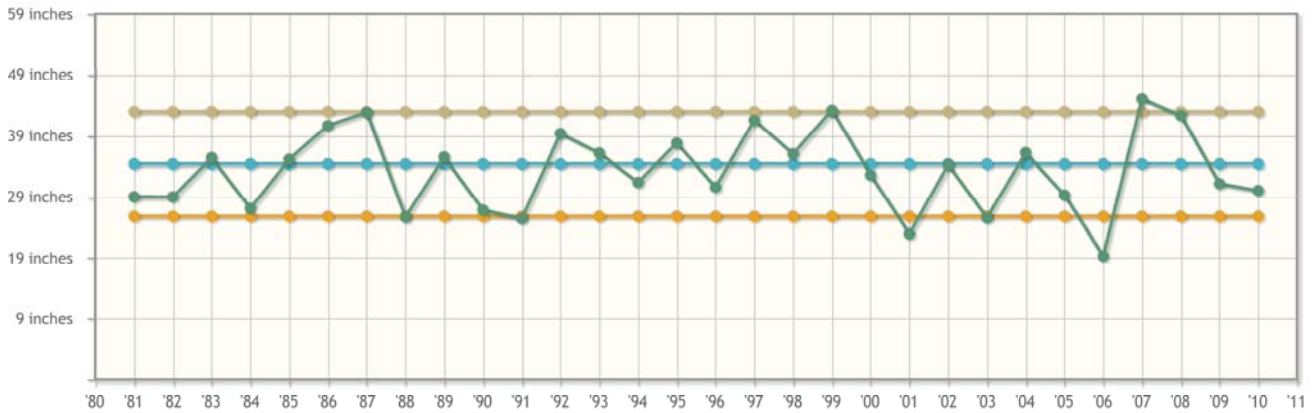
	<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>
High	46.4	51.6	60.4	70.4	79.5	89.0	94.5	93.4	84.8	72.2	58.9	46.8
Low	22.5	26.5	34.4	44.0	55.6	64.9	69.9	68.5	59.5	47.0	34.6	24.6



30 Year Annual Rainfall (inches):

<u>1981 N</u>	<u>1982 N</u>	<u>1983 N</u>	<u>1984 N</u>	<u>1985 N</u>	<u>1986 N</u>	<u>1987 N</u>	<u>1988 D</u>	<u>1989 N</u>	<u>1990 N</u>	<u>1991 D</u>	<u>1992 N</u>	<u>1993 N</u>	<u>1994 N</u>	<u>1995 N</u>
29	28.98	35.39	27.09	35.1	40.67	42.85	25.67	35.49	26.82	25.41	39.35	36.14	31.38	37.77
<u>1996 N</u>	<u>1997 N</u>	<u>1998 N</u>	<u>1999 H</u>	<u>2000 N</u>	<u>2001 D</u>	<u>2002 N</u>	<u>2003 D</u>	<u>2004 N</u>	<u>2005 N</u>	<u>2006 D</u>	<u>2007 H</u>	<u>2008 N</u>	<u>2009 N</u>	<u>2010 N</u>
30.58	41.57	36	43.19	32.57	22.92	34.27	25.54	36.21	29.28	19.31	45.08	42.34	31.16	30.02

D-Drought N-Normal H-Heavy



Climate stations: (1) CHEROKEE 4W [USC00341724], Alfalfa County OK 73728. Period of record 1981-2010

(2) ENID [USC00342912], Garfield County OK 73701. Period of record 1981-2010

(3) JEFFERSON [USC00344573], Grant County OK 73759. Period of record 1981-2010

- (4) OKEENE [USC00346629], Blaine County OK 73763. Period of record 1981-2010
 (5) ANTHONY [USW00013980], Harper County KS 67003. Period of record 1981-2010

Influencing Water Features

There are no influencing water features on this upland site.

Representative Soil Features

Soils are mapped separately for each county within the MLRA. Mapunits are representations of the major soil series component(s) and named accordingly. Each Mapunit is spatially represented on a digital soils map as polygons of different shapes and sizes. Within these Mapunits, there are often minor soil series components included. These minor components are soils that occur within a Mapunit polygon but are of small extent (15% or less of the Mapunit area). However, it is difficult to separate these minor soils spatially due to the scale of soil mapping.

Ecological sites are correlated at the component level of the soil survey. Therefore, a single Mapunit may contain multiple Ecological Sites just as it may contain multiple soil components. This is important to understand when investigating soils and Ecological Sites. A soil survey Mapunit may be correlated to a single Ecological Site based on the major component; however, there may be inclusion areas of additional Ecological Sites which are correlated to the minor components of that particular soil Mapunit.

Representative soils for this site are:
 Eda Loamy Fine Sand & Aline Fine Sand

The soils associated with this ecological site consist of very deep, somewhat excessive drained, rapidly permeable soils that formed in material weathered from sandy eolian deposits. Due to the coarse texture of these soils, water storage capacity is low, but moisture that is present is usually readily available to plants. Available moisture, coupled with the soil's deep sandy profile, encourages deep rooted grasses and various species of woody vegetation. Due to the soils low water holding capacity, there can be a great deal of variation in species and amounts of vegetation depending on variation in rainfall patterns.

Both of these soil series were formerly part of the Pratt soil series which at one point was mapped with a very large geographical extent. As the county soil surveys in this MLRA were updated, these particular soils were re-correlated to the current series. However, there are instances in Kansas where the Pratt series is currently mapped in MLRA 80A.

Note: There may be inclusions of other soils that because of mapping scale are not divided out. These may include some areas of the Tivoli series (Sand Hills 078CY107TX) or Goodnight series (Dune 080AY022OK) and the Lovedale/Waynoka/Wisby series (Sandy Prairie 080AY073OK).

Parent materials

Kind: Eolian sands

Origin: Sandstone

Surface texture: (1) Loamy fine sand
 (2) Fine sand

Subsurface texture group: Sandy

	<u>Minimum</u>	<u>Maximum</u>
<i>Surface fragments <=3" (% cover):</i>	0	0
<i>Surface fragments >3" (% cover):</i>	0	0
<i>Subsurface fragments <=3" (% volume):</i>	0	1
<i>Subsurface fragments >3" (% volume):</i>	0	0
<i>Drainage class:</i> Somewhat excessively drained to excessively drained		
<i>Permeability class:</i> Rapid		

	<u>Minimum</u>	<u>Maximum</u>
<i>Depth (inches):</i>	60	
<i>Available water capacity (inches):</i>	3.00	4.50
<i>Electrical conductivity (mmhos/cm):</i>	0	0
<i>Sodium adsorption ratio:</i>	0	0
<i>Calcium carbonate equivalent (percent):</i>	0	1
<i>Soil reaction (1:1 water):</i>	6.5	7.3

Plant Communities

Ecological Dynamics of the Site

The information in this ecological site description (ESD), including the state-and-transition model (STM), was developed using archeological and historical data, professional experience, and scientific studies. The information is representative of a complex set of plant communities. Not all scenarios or plants are included. Key indicator plants, animals, and ecological processes are described to inform land management

decisions.

The reference plant community is the interpretive plant community for this site. This plant community is dominated by warm season, perennial tall and midgrasses. These grass species are intermixed and well distributed over the site. Some plants are strongly rhizomatous and often form colonies six to ten feet across. Production is quite variable from year to year. This site can be very droughty when rainfall is below normal. Conversely, deep rooted tallgrasses respond well and vegetative production can be quite high during periods of normal or above normal growing conditions. However, when deeper rooted tallgrasses are replaced by shallower rooted species, herbage production on the site may be reduced.

This ecological site evolved under disturbances from periodic grazing, fluctuating growing conditions, and fire. Historically, large herds of migratory bison traveled across the Great Plains region, often following naturally occurring fires in order to graze the palatable and nutritious regrowth. The reference state for this ecological site represents the historical variability between plant communities. This variability was affected by several different ecological drivers including time since fire, time since grazing, and changes in precipitation patterns.

With the European settlement of the Great Plains, some of these disturbances were removed from the ecosystem while other disturbances were introduced. With settlement came fire suppression. So without these fires, woody species were able to grow unrestricted and become more dominant in some of the resulting plant communities. Fences were also introduced at this time and allowed domestic cattle to be confined to smaller areas for long periods of time. These fences, coupled with the lack of proper grazing management, led to a decline of some more palatable tallgrasses and forb species. As the site deteriorates from abusive grazing, absence of fire, or both, other plant communities may result. These communities include a midgrass/shortgrass community and a shrub dominant community.

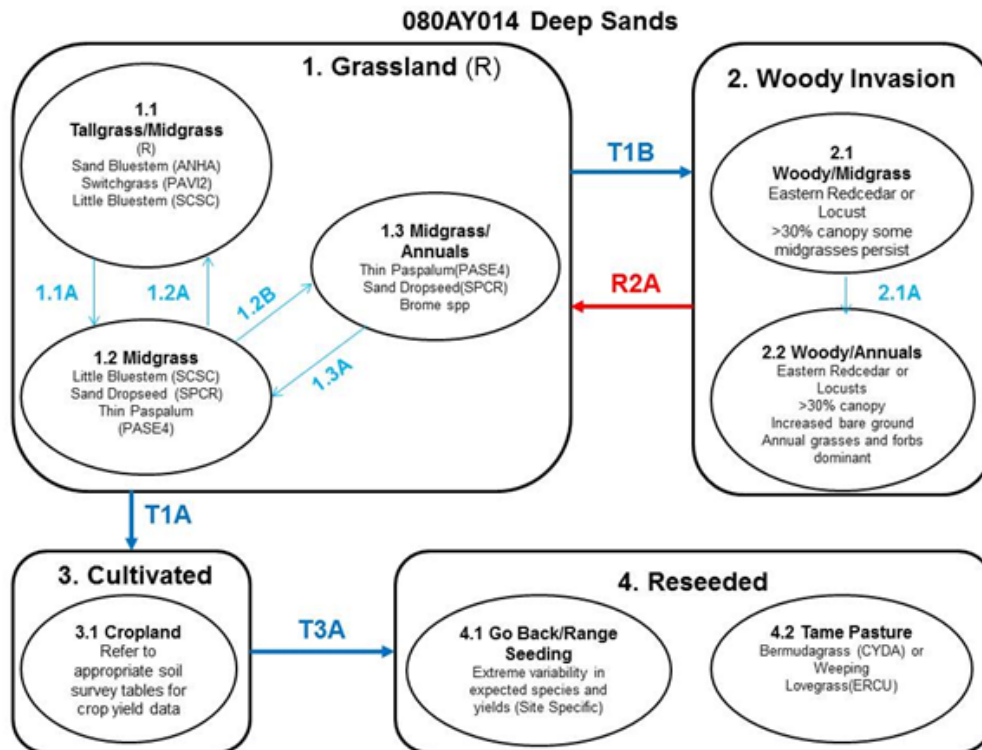
Mechanized agriculture also had a profound impact on the ecology of some of these sites. Although the coarse textured soils are not ideal for crop production, many areas were broke out for farming purposes during the first half of the twentieth century. This cultivation permanently changed the soil structure, biota, and hydrology on these Deep Sand Sites. These farmed areas became prone to wind erosion and many of them were eventually planted back to native or introduced perennial vegetation.

A state-and-transition model diagram for the Deep Sand ecological site is shown after this narrative. The descriptions of each state, transition, community phase, and community pathway follow the model. The model is based on expert evaluation of available experimental research, field observations, professional consensus, and interpretations. It is likely to change as knowledge increases.

Plant community response differs across the MLRA because of the naturally occurring variability in weather, soils, and aspect. The reference community phase is not necessarily the management goal. Other vegetative states may be desired plant communities if range health assessments are in the moderate category and above. The biological processes on this site are complex. Representative values are therefore presented in a land management context. The species lists are representative. They are not botanical descriptions of all species occurring, or potentially occurring, on this site. They are not intended to cover every situation or the full range of conditions, species, and responses for the site.

Percent species composition by weight, percent canopy cover, and other metrics may be described. Most observers find it easier to visualize or estimate percent canopy for woody species (trees and shrubs) than to visualize or estimate production by weight. Because of the influence of shade and interception of rainfall, canopy cover can drive the transitions between communities and states. Species composition by air-dry weight is used for describing the herbaceous community and the community as a whole. Woody species are included in species composition for the site.

State-and-Transition Diagram



080AY014 S7T Model

Legend

Legend

- T1A: Tillage and Seeding
- T1B: Cedar encroachment, Fire Exclusion
- T3A: Grass planting or abandonment
- R2A: Prescribed Fire, Prescribed Grazing, Brush Management
- 1.1A: Long-term Abusive Grazing and/or Long-term Drought
- 1.2A: Prescribed Grazing with favorable precipitation
- 1.2B: Long-term Abusive Grazing and/or Long-term Drought
- 1.3A: Prescribed Grazing with deferment and favorable precipitation
- 2.1A: Exclusion of Fire, Heavy Continuous Grazing

080AY014 Legend

State 1: Grassland

The plant communities within the Grassland state represent the historical variability of this site. This ecological state is dominated by fire tolerant, herbaceous plant species. The plant communities within this state have been exposed to periodic fires or an alternative form of brush control.

Community Phase 1.1: Tallgrass/Midgrass



Alin Soils reference community



Aline Soils



Community shift 1.1 to 1.2



Reference Ground Cover

The reference plant community is dominated by native warm season grasses. The tallgrass species include Sand Bluestem (*Andropogon hallii*), Switchgrass (*Panicum virgatum*), Indiangrass (*Sorghastrum nutans*), and Giant Sandreed (*Calamoviifa gigantea*). The dominant midgrass is Little Bluestem (*Schizachyrium scoparium*). Other midgrasses are Sand Dropseed (*Sporobolus cryptandrus*), Sideoats Grama (*Bouteloua curtipendula*), Thin Paspalum (*Paspalum setaceum*), and Sand Lovegrass (*Eragrostis trichodes*). Forbs on the site include Queen's Delight (*Stillingia sylvatica*), prairie clovers (*Dalea* spp.), roundhead lespedeza (*Lespedeza capitata*), Sunflowers (*Helianthus* spp.), Engelmann's Daisy (*Engelmannia peristenia*), and Half-shrub Sundrops (*Calylophus serrulatus*). Typically, shrubs such as Leadplant (*Amorpha canescens*), Jersey Tea (*Ceanothus herbaceus*), Soapweed Yucca (*Yucca glauca*), Fragrant Sumac (*Rhus aromatic*), and Sand plum (*Prunus angustifolia*) occur on the site. It is not unusual to find Sand Sagebrush (*Artemisia filifolia*) on these sites that are located along the western side of the MLRA. Annuals that commonly occur following soil disturbances and drought include Partridge Pea (*Chamaecrista fasciculatae*), Fourpoint Evening-primrose (*Oenothera rhombipetala*), Annual Buckwheat (*Eriogonum annuum*), and Camphorweed (*Heterotheca subaxillaris*).

This plant community requires periodic disturbances through fire and grazing in order to persist. Fire helps to maintain the woody species in a low stature, control their spread, and stimulate herbaceous regrowth; while grazing impacts are important to stimulate plant growth, nutrient cycling, and maintain ecological function.

Many species present in this community are quite suitable for livestock grazing, while others provide excellent wildlife habitat for certain species. However, without proper management, this plant community may shift to an alternative community phase. Proper grazing management strategies should include site specific stocking rates, periodic growing season rest, and a contingency plan for drought situations. Implementation of a prescribed burning program is also required to maintain this plant community. A fire return interval of three to five years should be adequate, depending on specific producer objectives. Alternative chemical brush management strategies may be substituted, however, this will often result in negative effects on the diversity of the herbaceous plant community.

The following species cover, structure, and production tables have been developed using collected data and professional knowledge. As with anything in nature, there is a large amount of variability from year to year even within a relatively stable plant community. This is true for both vegetative production as well as foliar cover produced by a plant species. The following figures are to be viewed only as a representation of the estimated potential for a given species. As more data is collected and measurement methods are refined some values may be updated through future revisions.

Community Phase Pathway 1.1

If the site is subjected to abusive grazing for multiple growing seasons and the more palatable tallgrass species are not allowed adequate recovery, the plant community will begin to transition to a Midgrass dominated plant community(1.2). This community shift may also occur as

a result of long term drought as the Midgrass and Shortgrass species are better adapted to dry climates. This pathway is not a one-way street and it is important to remember that this community shift occurred often, historically, and represents the variability within this Reference State.

Tallgrass/Midgrass Plant Species Composition

Grass/Grasslike				<u>Annual Production</u> (pounds per acre)		<u>Foliar cover</u> (percent)		
<u>Group</u>	<u>Group name</u>	<u>Common name</u>	<u>Symbol</u>	<u>Scientific name</u>	<u>Low</u>	<u>High</u>	<u>Low</u>	<u>High</u>
1	Tallgrasses				1200	2500		
		Grass, native	2GN		0	125		
		sand bluestem	ANHA	Andropogon hallii	400	900		
		giant sandreed	CAGI3	Calamovilfa gigantea	50	125		
		switchgrass	PAVI2	Panicum virgatum	120	250		
		Indiangrass	SONU2	Sorghastrum nutans	50	125		
		purpletop tridens	TRFL2	Tridens flavus	50	125		
2	-Cool Season Grasses and Sedges				250	525		
		Grass, native	2GN		0	100		
		sedge	CAREX	Carex	50	110		
		Heller's rosette grass	DIOL	Dichanthelium oligoanthos	60	140		
		Canada wildrye	ELCA4	Elymus canadensis	60	140		
		western wheatgrass	PASM	Pascopyrum smithii	20	60		
		Texas bluegrass	POAR	Poa arachnifera	50	110		
3	-Midgrass/Shortgrass				375	750		
		Grass, native	2GN		0	40		
		blue threeawn	ARPU9	Aristida purpurea	0	10		
		sideoats grama	BOCU	Bouteloua curtipendula	50	110		
		blue grama	BOGR2	Bouteloua gracilis	0	15		
		hairy grama	BOHI2	Bouteloua hirsuta	0	15		
		silver beardgrass	BOLA2	Bothriochloa laevis	0	10		
		tumble windmillgrass	CHVE2	Chloris verticillata	0	10		
		Carolina crabgrass	DICO6	Digitaria cognata	10	30		
		gummy lovegrass	ERCU	Eragrostis curtipedunculata	10	30		
		red lovegrass	ERSE	Eragrostis secundiflora	10	30		
		purple lovegrass	ERSP	Eragrostis spectabilis	10	30		
		sand lovegrass	ERTR3	Eragrostis trichodes	10	30		
		witchgrass	PACA6	Panicum capillare	10	30		
		fringeleaf paspalum	PASE5	Paspalum setaceum	30	80		
		tumblegrass	SCPA	Schedonnardus paniculatus	0	10		
		little bluestem	SCSC	Schizachyrium scoparium	100	250		
		composite dropseed	SPCO16	Sporobolus compositus	15	40		
		sand dropseed	SPCR	Sporobolus cryptandrus	30	80		
4	-Annual Grasses				18	40		
		threeawn	ARIST	Aristida	0	2		
		sandbur	CENCH	Cenchrus	0	15		
		little barley	HOPU	Hordeum pusillum	0	6		
		sixweeks fescue	VUOC	Vulpia octoflora	0	15		

Forb				<u>Annual Production</u> (pounds per acre)		<u>Foliar cover</u> (percent)		
<u>Group</u>	<u>Group name</u>	<u>Common name</u>	<u>Symbol</u>	<u>Scientific name</u>	<u>Low</u>	<u>High</u>	<u>Low</u>	<u>High</u>
5	-Forbs/Legumes				400	800		
		Forb, native	2FN		0	30		
		common broomweed	AMDR	Amphichrysis dracunculoides	0	5		
		western ragweed	AMPS	Ambrosia psilostachya	5	20		
		tarragon	ARDR4	Artemisia dracunculoides	0	10		
		louisiana sagewort	ARLU	Artemisia ludoviciana	5	20		
		crested pricklypoppy	ARPO2	Argemone polyanthemoides	0	5		
		milkweed	ASCLE	Asclepias	5	20		
		milkvetch	ASTRA	Astragalus	0	5		
		soft greeneyes	BEPU2	Berlandiera pumila	0	10		
		purple poppymallow	CAIN2	Callirhoe involucrata	0	10		
		halfshrub sundrop	CASE12	Calypophus serrulatus	5	20		
		partridge pea	CHFA2	Chamaecrista fasciculata	0	10		
		spotted sandmat	CHMA15	Chamaesyce maculata	0	5		
		yellowspine thistle	CIOC2	Cirsium ochrocentrum	0	10		
		wavyleaf thistle	CIUN	Cirsium undulatum	0	10		
		Texas bullnettle	CNTE	Cnidioscolus texanus	0	10		
		dayflower	COMME	Commelina	10	30		
		golden tickseed	COTI3	Coreopsis tinctoria	0	10		
		Hooker's scratchdaisy	CRHO7	Croptilon hookerianum	0	10		
		croton	CROTO	Croton	0	10		
		Missouri gourd	CUFO	Cucurbita foetidissima	0	5		

prairie clover	DALEA	Dalea	5	15
Illinois Bundleflower	DEIL	Desmanthus illinoensis	5	15
ticktrefoil	DESMO	Desmodium	0	15
Palmer's spectaclepod	DICA31	Dimorphocarpa candidans	0	5
Engelmann's daisy	ENPE4	Engelmannia peristenia	10	30
annual buckwheat	ERAN4	Eriogonum annuum	0	10
spurge	EUPHO	Euphorbia	0	5
shaggy dwarf morning-glory	EVNU	Evolvulus nuttallianus	0	10
plains snakecotton	FRFL	Froelichia floridana	0	5
firewheel	GAPU	Gaillardia pulchella	0	10
beeblossom	GAURA	Gaura	10	30
gumweed	GRIND	Grindelia	0	5
hoary false goldenaster	HECA8	Heterotheca canescens	10	30
sunflower	HELIA3	Helianthus	25	60
camphorweed	HESU3	Heterotheca subaxillaris	0	10
hairy false goldenaster	HEVI4	Heterotheca villosa	10	30
Indian rushpea	HOGL2	Hoffmannseggia glauca	0	15
coastal indigo	INMI	Indigofera miniata	5	15
bush morningglory	IPLA	Ipomoea leptophylla	10	30
roundhead lespedeza	LECA8	Lespedeza capitata	5	20
Gordon's bladderpod	LEGO	Lesquerella gordonii	0	5
slender lespedeza	LEVI7	Lespedeza virginica	0	15
blazing star	LIPU	Liatris punctata	0	10
rush skeletonplant	LYJU	Lygodesmia juncea	0	10
tenpetal blazingstar	MEDE2	Mentzelia decapetala	0	10
narrowleaf four o'clock	MILI3	Mirabilis linearis	0	10
Nuttall's sensitive-briar	MINU6	Mimosa nuttallii	5	15
beebalm	MONAR	Monarda	0	10
evening-primrose	OENOT	Oenothera	0	10
common yellow oxalis	OXST	Oxalis stricta	0	5
palmleaf Indian breadroot	PEDI9	Pediomelum digitatum	5	15
groundcherry	PHYSA	Physalis	0	10
woolly plantain	PLPA2	Plantago patagonica	0	5
scurfpea	PSTE5	Psoraleidium tenuiflorum	5	15
blackeyed Susan	RUHI2	Rudbeckia hirta	0	10
azure blue sage	SAAZ	Salvia azurea	10	30
skullcap	SCUTE	Scutellaria	0	10
Riddell's ragwort	SERI2	Senecio riddellii	10	30
nightshade	SOLAN	Solanum	0	10
goldenrod	SOLID	Solidago	5	50
silky sophora	SONU	Sophora nuttalliana	0	10
scarlet globemallow	SPCO	Sphaeralcea coccinea	0	10
sidebeak penicillflower	STBI2	Stylosanthes biflora	0	5
amberique-bean	STHE9	Strophostyles helvola	0	5
smooth jewelflower	STHY	Streptanthus hyacinthoides	0	5
queens delight	STSY	Stillingia sylvatica	25	60
aster	SYMPH4	Symphyotrichum	5	20
goats rue	TEVI	Tephrosia virginiana	10	40
prairie spiderwort	TROC	Tradescantia occidentalis	0	10
nettleleaf noseburn	TRUR2	Traqia urticifolia	0	10

Shrub/Vine

Group	Group name	Common name	Symbol	Scientific name	Annual Production (pounds per acre)		Foliar cover (percent)	
					Low	High	Low	High
6	-Shrub				200	400		
		Subshrub, deciduous	2SSD		0	20		
		leadplant	AMCA6	Amorpha canescens	0	20		
		sand sagebrush	ARFI2	Artemisia filifolia	0	40		
		Jersey tea	CEHE	Ceanothus herbaceus	0	20		
		bigroot	OPMA2	Opuntia macrorhiza	0	5		
		Chickasaw plum	PRAN3	Prunus angustifolia	120	240		
		fragrant sumac	RHAR4	Rhus aromatica	40	80		
		sumac	RHUS	Rhus	0	20		
		soapweed yucca	YUGL	Yucca glauca	0	20		

Tree

Group	Group name	Common name	Symbol	Scientific name	Annual Production (pounds per acre)		Foliar cover (percent)	
					Low	High	Low	High
7	-Tree				25	50		
		Tree, deciduous	2TD		0	50		
		hackberry	CELA	Celtis laevigata	0	50		

Annual Production by Plant Type

Plant type	Low	Annual Production (lbs/ac)	
		Representative value	High

Grass/Grasslike	1875	2850	3750
Forb	400	600	800
Shrub/Vine	200	320	400
Tree	25	30	50
Total	2500	3800	5000

Structure and Cover

Soil Surface Cover

<u>Cover type</u>	<u>Minimum</u>	<u>Maximum</u>
Basal cover, grasses/grasslikes	10%	20%
Basal cover, forbs	5%	15%
Litter	50%	75%

* Decomposition classes: N=No or little integration with the soil surface. I=Partial to nearly full integration with the soil surface.

** >4" diameter at 4.5' above ground and >6' height. If diameter or height is smaller, use applicable downed wood type. For pinyon and juniper, use 1.0' above ground.

*** Hard=Tree is dead with most or all of bark intact. Soft=Most of bark has sloughed off.

Ground Cover

<u>Vegetative cover</u>	<u>Minimum</u>	<u>Maximum</u>
Grasses/grasslikes	40%	60%
Forbs	20%	40%
Shrubs/vines	0%	10%

<u>Nonvegetative cover</u>	<u>Minimum</u>	<u>Maximum</u>
Bare ground	5%	15%

Structure of Canopy Cover

<u>Height above ground</u>	<u>Grasses/grasslikes</u>		<u>Forbs</u>		<u>Shrubs/vines</u>		<u>Trees</u>	
	<u>Minimum</u>	<u>Maximum</u>	<u>Minimum</u>	<u>Maximum</u>	<u>Minimum</u>	<u>Maximum</u>	<u>Minimum</u>	<u>Maximum</u>
<=0.5 foot	60%	60%	10%	40%	--	--	--	--
>0.5 to <1 foot	65%	75%	25%	35%	--	--	--	--
>1 to <=2 feet	55%	75%	5%	25%	0%	10%	--	--
>2 to <4.5 feet	5%	25%	0%	5%	0%	10%	--	--
>4.5 to <=13 feet	--	--	--	--	--	--	--	--
>13 to <40 feet	--	--	--	--	--	--	--	--
<40 to >=80 feet	--	--	--	--	--	--	--	--
>80 to <120 feet	--	--	--	--	--	--	--	--
>=120 feet	--	--	--	--	--	--	--	--

Plant Growth Curve

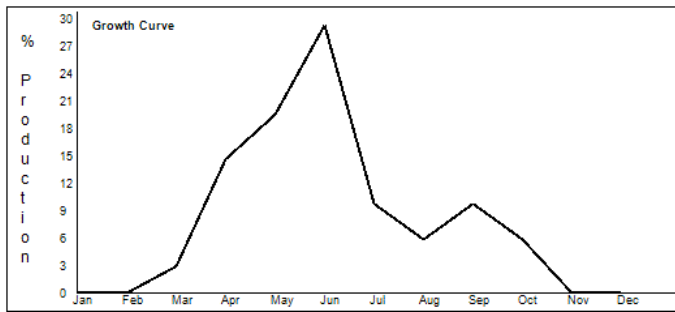
Growth curve number: OK0002

Growth curve name: Native Warm Season - North Oklahoma

Growth curve description: This is the estimated growth curve for the northern half of Oklahoma where mean annual air temperatures are less than 60 degrees F. Plant growth can vary from year to year depending on air temperature and timing and amount of precipitation. These figures are merely a representative example for warm season native plants in the geographic area.

Percent Production by Month

<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>
0	0	3	15	20	30	10	6	10	6	0	0



Community Phase 1.2: Midgrass



Community 1.2 Midgrass



Midgrass community

The dominant plants within this plant community are midgrasses including Little Bluestem, Sand Dropseed, Tall Dropseed, Thin Paspalum, Purpletop (*Tridens flavus*), Sand Lovegrass (*Eragrostis trichodes*), and Texas Bluegrass (*Poa arachnifera*). Tallgrasses have decreased in abundance, with the exception of Giant Sandreed, but may still be found throughout the site. Shortgrasses such as Blue Grama (*Bouteloua gracilis*), Hairy Grama (*Bouteloua hirsute*), Fall Witchgrass (*Digitaria cognate*), and Red Lovegrass (*Eragrostis secundiflora*) may comprise 10 to 15 percent of the vegetation. In this community phase, the more palatable perennial forbs have decreased in abundance and have been replaced by forbs that are less desirable by cattle. Forbs that may increase in abundance under heavy grazing pressure include Sagewort (*Artemisia ludoviciana*), Annual Buckwheat, Camphorweed, and Western Ragweed (*Ambrosia psilostachya*). Shrubs such as Fragrant Sumac and Sand Plum may comprise up to 10 percent of the vegetation (canopy cover).

Community Phase Pathway 1.2A

With adequate rest from grazing pressure and favorable growing conditions, this plant community may be able to return to the reference plant community (1.1).

Community Phase Pathway 1.2B

If grazing pressure is heavy enough to exceed the carrying capacity of the plant community, the remaining palatable grasses and forbs will begin to decline. These species will be replaced by annual brome species, camphorweed, and annual buckwheat. As this community shift occurs, the feasibility of implementing prescribed fire will diminish and woody species will increase within the plant community.

Community Phase 1.3: Midgrass/Annuals



Community 1.3 increased bare ground



1.3 Ground Cover

This plant community usually exists on areas that have been subjected to many years of long term abusive grazing by cattle. The dominant grasses are Windmillgrass (*Chloris verticillata*), Fall Witchgrass, Sand Dropseed, Thin Paspalum, and often Annual Brome species (*Bromus* spp.). Common forbs are Camphorweed, Western Ragweed, Sagewort, Beebalm (*Monarda* spp.), Annual Buckwheat, Fourpoint Evening-primrose, and Florida Snakecotton (*Froelichia floridana*). Shrubs, primarily Chickasaw plum and Fragrant sumac may comprise 20 to 30 percent of the vegetation canopy cover. On some sites, Eastern Redcedar (*Juniperus virginiana*) has begun to encroach since the use of prescribed fire is limited within this plant community because of low fuel loads.

Community Phase Pathway 1.3A

With the implementation of a prescribed grazing system that involves periodic growing season rest (deferment), and the reintroduction of fire, this plant community may shift back to the reference plant community (1.2). It is important to remember that adequate precipitation during these rest periods is required in order to allow the plants to recover, regain vigor and produce fuel loads necessary to control the encroaching woody species.

Transition T1A

Some of these sites have been plowed for farming purposes over the last century. Once the site is cultivated, it transitions to an alternative state (3). The soils structure, organic matter, and biota have been altered and will no longer function the same as the soils in the reference state.

Transition T1B

Without fire in the ecosystem, woody species may grow and reproduce unchecked. These species may be endemic (sand plum) or species introduced to the site by animals (eastern redcedar) or plantings (black locust/honey locust). These woody species have the ability to grow deep roots and locate resources within the soil that herbaceous species may not have access to. This gives them a competitive edge for resources and allows them to expand across the landscape. As this woody encroachment occurs, the site may transition to state 2 where the woody species begin to dominate the ecological functions of the plant community.

State 2: Woody Invasion

This state of the Deep Sand site has crossed a threshold. It is no longer a simple matter of implementing prescribed grazing and maintenance-type prescribed burning to move this plant community back towards the reference state. Once the community has eastern redcedar and other woody tree species establish, no amount of proper grazing will remove them. Grazing with cattle has little effect on the increase of woody plants: only fire or mechanical removal. The only exception is when browsers such as goats are used when these species are small to remove them from the rangeland.

Community Phase 2.1: Woody/Midgrass



Community phase 2.1. Eda Soils. Major County, OK



Community Phase 2.1. Eda Soils. Major County, OK

The plant community is now dominated by shrubs consisting primarily of Chickasaw plum, Fragrant Sumac, Smooth Sumac, and in some locations, Sand Sagebrush. In isolated areas, trees including Eastern Redcedar, Black Locust (*Robinia pseudoacacia*), and Honeylocust (*Gleditsia triacanthos*) have invaded and have become established to a point beyond simple control. Sand plum typically forms large mottes or circular thickets during this state. Shrubs and trees usually account for greater than 30 percent of total canopy cover. Grass production on the site is significantly reduced. Major grasses are generally Sand Dropseed, Sand Lovegrass, Red Lovegrass, and Thin Paspalum. Perennial forbs common to this state include Tenpetal Blazingstar (*Mentzelia decapetala*), Annual Buckwheat, Sagewort, Camphorweed, and Western Ragweed.

Community Phase Pathway 2.1A

Without fire or brush management, the 2.1 community will shift to the woody/annuals plant community (2.2). The influence grazing has on this site is the management of the fine fuel needed for burning. Over time, the herbaceous component of this community will decline in vigor, growth, and reproductive capability. The shading from the overstory of the woody plants are also beginning to impact the production of the herbaceous plants. These plants will be replaced by opportunistic annual species such as Bromes, Annual Buckwheat, and Camphorweed.

Community Phase 2.2: Woody/Annuals



Community phase 2.2. Eda soils. Garfield County, O

Management history has led to this plant community becoming dominated by woody species and annual herbaceous plants. Heavy grazing pressure has led to the decline in perennial forage species. Due to this increase in bare ground, opportunistic annuals such as Cheatgrass (*Bromus tectorum*), Japanese Brome (*Bromus japonicas*), and Rescuegrass (*Bromus catharticus*) are the primary grass species. Annual Buckwheat, Camphorweed, and Annual Broomweed are the highest producing forb species present. Due to the sparse vegetation and lack of fuel continuity, it may be very difficult to implement prescribed burning on this plant community. The juniper is exceeding 50 percent canopy

and is shading out the warm season herbaceous plants. Nearly all the soil moisture is now for the exclusive use of the juniper and associated woody species. This community provides little value for livestock and wildlife except for thermal cover.

Restoration Pathway R2A

A carefully planned program will restore the Woody state to a close resemblance to a grassland state. Because the 2.2 community will be difficult to prescribe burn (but susceptible to wildfires) some brush management intervention will be needed. Brush management either mechanical, chemical or an integration of both, will allow sunlight energy and soil moisture to be used by tall grasses rather than invasive brush. Constructive grazing management will be required for this plant community to be restored to the grassland state (1). Unless the site has a history of being cropped, there will be sufficient grasses to recover but it may take several years. In some instances, the remaining native perennial seed stock may not be sufficient to repopulate the plant community. A field inventory along with monitoring will be needed to evaluate recovery.

State 3: Cultivated

Within this ecological state, the site has been cultivated and worked up for farming. The soil structure, soil health, hydrology, and plant community has been significantly altered.

Community Phase 3.1: Cropland



Aline soils in crop production. Alfalfa County, OK



Devol loamy fine sands in crop production. Kingfisher County, OK

This plant community can vary from site to site depending on the production system. Most of these sites in crop production are planted to small grains. Refer to Ag extension publication, web soil survey, or soil survey manuscripts for site specific crop yield data.

Transition T3A

Once cultivation of this site is stopped, the Cultivated State will transition to the Reseeded State.

State 4: Re-Seeded

This ecological state is the result of reseeding herbaceous plant species or abandonment following a period of cultivation. The plant communities within this state are highly variable in both species composition and production. Under carefully planned management strategies, this state may be restored to a plant community that appears similar to the reference state (1). However, the species composition, ecological function, and soil health may never be restored to reference conditions. Therefore, careful consideration should be taken when evaluating a site that may have been broken out for cultivation in the past.

Community Phase 4.1: Go Back/Range Seeding



Range Seeding(Left) Cropland(Right), Eda Soils. Major County, OK

This plant community is the result of abandonment or range seeding after cultivation. The pioneer species of a “go back” plant community might include Purpletop (*Tridens flavus*), Broomsedge Bluestem (*Andropogon virginicus*), Giant Ragweed (*Ambrosia trifida*), and often times Johnsongrass (*Sorghum halepense*). There is often a large amount of variability within both species composition and production within this community. Some sites may be seeded to a diverse mixture of native grasses, forbs, and legumes, while other sites were seeded with very few species or simply abandoned. It is important to remember that without periodic fire or other brush management, the site may be invaded by woody species, regardless of the establishment methods of herbaceous plants.

Community Phase 4.2: Tame Pasture



Deep Sand Bermudagrass. Eda Soils. Garfield County, OK

When this site is taken out of crop production, it is often planted to an introduced perennial grass. The most common species are Bermudagrass (*Cynodon dactylon*) and Weeping Lovegrass (*Eragrostis curvula*). Many of these sites are used for grazing, cut for hay, or both. The productivity of these perennial grasses is greatly dependent upon nutrient inputs (fertilizer). Nutrient management is key to the establishment and management of these introduced species. Additionally, the addition of nutrients may help to expedite the buildup of soil microorganisms and potentially soil organic matter. For more information about suitable pasture species, planting specifications, and yield data, refer to ag extension publications, web soil survey, and forage suitability group descriptions(if available).

Section II: Ecological Site Interpretations

Animal Community

This site is suited for the production of domestic livestock and provides habitat for native wildlife and certain species of exotic wildlife. Cow-calf operations are the primary livestock enterprise although stocker cattle are also grazed. Sustainable stocking rates have declined drastically over the past 100 years because of deterioration of the historic plant community. Initial starting stocking rates should be determined with the landowner or decision maker based on the merits of the existing plants for the desired animals.

Many species will utilize the Deep Sand site for at least a portion of their habitat needs but rely on a more extensive landscape to meet all their needs. Some animals may only utilize one plant community of the Deep Sand site to fulfill their habitat needs.

Smaller mammals include many kinds of rodents, jackrabbit, cottontail rabbit, raccoon, skunks, opossum, and armadillo. Mammalian predators include coyote, fox, and bobcat. Many species of snakes and lizards are native to the site.

Many species of birds are found on this site including game birds, songbirds, and birds of prey. Major game birds that are economically important are Rio Grande turkey, bobwhite quail, and mourning dove. Turkey prefers plant communities with substantial amounts of shrubs and trees interspersed with grassland. Quail prefer plant communities with a combination of low shrubs, bunch grass, bare ground, and low

successional forbs. The different species of songbirds vary in their habitat preferences. In general, habitat that provides a diversity of grasses, forbs, shrubs, vines and trees, and a complex of grassland, savannah, shrubland, and woodland will support a variety and abundance of songbirds. Birds of prey are important to keep the numbers of rodents, rabbits, and snakes in balance. The different plant communities of the site will sustain different species of raptors.

The following rating system provides general guidance regarding animal preference for plant species. It also indicates possible competition between kinds of herbivores for various plants. Grazing preference changes with time, by grazing experience (especially between seasons), and between animal kinds and classes. Thus, there is a large amount of variability regarding grazing preferences within a single species of foraging animal. Just because a plant species is not listed as desirable or preferred, does not mean that the specific forager will not use the species given certain circumstances.

It is important to remember that grazing preference does not necessarily reflect the ecological status of the plant within the plant community. For wildlife, plant preferences for food are rated. Refer to habitat guides for a more complete description of a species habitat needs.

Note: This species list is not inclusive, nor is it specific for this Ecological Site. It has been compiled from a large list of plants common to this particular MLRA and is subject to updates when new information is received. Refer to the specific ESD plant community section for a list of site specific plant species.

Plant Preference by Animal Kind

Animal kind: Cow/Calf & Stocker cattle

Common name	Scientific name	Plant part	J	E	M	A	M	J	J	A	S	Q	N	D
western ragweed	Ambrosia psilostachya	Entire plant			X	X	X					X	X	
big bluestem	Andropogon gerardii	Leaves	D	D	D	P	P	P	P	P	P	P	D	D
sand bluestem	Andropogon hallii	Leaves	D	D	D	P	P	P	P	P	P	P	D	D
threeawn	Aristida	Leaves			E	E	E							
louisiana sagewort	Artemisia ludoviciana	Entire plant			X	X								
aster	Aster	Entire plant			X	X	X	X	X					
sideoats grama	Bouteloua curtipendula	Leaves	D	D	D	P	P	P	P	P	P	P	D	D
blue grama	Bouteloua gracilis	Leaves				D	D	D	D	D	D	D		
hairy grama	Bouteloua hirsuta	Leaves				D	D	D	D	D	D	D		
silver beardgrass	Bothriochloa laguroides	Leaves				X	X	X						
buffalograss	Buchloe dactyloides	Leaves				D	D	D	D	D	D	D	D	
halfshrub sundrop	Calylophus serrulatus	Leaves			D	D	D	D	D	D	D			
hackberry	Celtis laevigata	Leaves				D	D	D	D					
tumble windmillgrass	Chloris verticillata	Leaves	U	U	U	U	U	U	U	U	U	U	U	U
dayflower	Commelina	Leaves					D	D	D					
prairie clover	Dalea	Entire plant				D	D	X	X	X	X	X		
Illinois Bundleflower	Desmanthus illinoensis	Leaves			P	P	P	P	P	D	D	D		
ticktrefoil	Desmodium	Leaves			P	P	P	P	P	D	D	D		
Carolina crabgrass	Digitaria cognata	Leaves	D	D	D	D	D	D	D	D	D	D	D	D
wildrye	Elymus	Leaves	D	D	P	P	P	P	D	D	P	P	D	D
Engelmann's daisy	Engelmannia peristenia	Leaves			P	P	P	P	D					
lovegrass	Eragrostis	Leaves			D	D	D	D	D	D	D	D		
sunflower	Helianthus	Leaves				D	D	D						
coastal indigo	Indigofera miniata	Entire plant				P	P	D	D	D				
trailing ratany	Krameria lanceolata	Leaves				D	D	D	D	D				
lespedeza	Lespedeza	Leaves			P	P	P	P	P	D	D	D		
Nuttall's sensitive-briar	Mimosa nuttallii	Leaves			D	D	D	D	D	D	D	D		
Texas wintergrass	Nassella leucotricha	Leaves	D	D	D	D	D					D	D	D
vine mesquite	Panicum obtusum	Leaves	D	D	D	P	P	P	D	D	D	D	D	D
fringeleaf paspalum	Paspalum setaceum	Leaves	U	U	U	U	U	U	U	U	U	U	U	U
switchgrass	Panicum virgatum	Leaves	D	D	D	P	P	P	P	P	P	P	D	D
beardtongue	Penstemon	Leaves				P	P	D	D	D				
Texas bluegrass	Poa arachnifera	Leaves	D	D	D	D	D	D	D	D	D	D	D	D
coneflower	Rudbeckia	Leaves				D	D	D						
azure blue sage	Salvia azurea	Leaves				D	D	D						
little bluestem	Schizachyrium scoparium	Leaves	D	D	P	P	P	D	D	D	D	D	D	D
gum bully	Sideroxylon lanuginosum	Leaves				D	D	D	D					
compassplant	Silphium laciniatum	Leaves				P	P	P	P					
greenbrier	Smilax	Leaves			U	U	U	U						
Indiangrass	Sorghastrum nutans	Leaves	D	D	D	P	P	P	P	P	P	P	D	D
dropseed	Sporobolus	Leaves	X	X	X	X	D	D	D	X	X	X	X	X
eastern gamagrass	Tripsacum dactyloides	Leaves	P	P	P	P	P	P	P	P	P	P	P	P

Animal kind: White-tail deer deer

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J</u>	<u>F</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>
copperleaf	Acalypha	Entire plant						D	D	D	D			
ragweed	Ambrosia	Leaves					D	D	D					

Animal kind: White-tail Deer deer

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J</u>	<u>F</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>
field sagewort	Artemisia campestris	Leaves				D	D	D	D					
milkweed	Asclepias	Entire plant				D	D	D						

Animal kind: White-tail deer deer

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J</u>	<u>F</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>
beggarticks	Bidens	Entire plant						D	D	D	D			
purple poppymallow	Callirhoe involucrata	Leaves				D	D	D	D					

Animal kind: White-tail Deer deer

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J</u>	<u>F</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>
hackberry	Celtis	Entire plant					D	D	D	D	D	D		

Animal kind: White-tail deer deer

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J</u>	<u>F</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>
Carolina coralbead	Cocculus carolinus	Leaves				D	D	D	D					
croton	Croton	Entire plant						D	D	D	D			

Animal kind: White-tail Deer deer

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J</u>	<u>F</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>
Illinois Bundleflower	Desmanthus illinoensis	Entire plant				D	D	D	D	D	D	D		
ticktrefoil	Desmodium	Entire plant				D	D	D	D					
snow on the mountain	Euphorbia marginata	Entire plant				D	D	D						
beeblossom	Gaura	Entire plant			P	P	P	D	D	D	D			
sunflower	Helianthus	Entire plant				P	P	D	D	D	D			
coastal indigo	Indigofera miniata	Entire plant				P	P	D	D	D	D			
trailing ratany	Krameria lanceolata	Entire plant						P	P	P	P	D	D	
blazing star	Liatris	Entire plant				D	D	D	D	D	D	D	D	

Animal kind: White-tail deer deer

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J</u>	<u>F</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>
woodsorrel	Oxalis	Entire plant						D	D	D	D			

Animal kind: White-tail Deer deer

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J</u>	<u>F</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>
beardtongue	Penstemon	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D

Animal kind: White-tail deer deer

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J</u>	<u>F</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>
American plum	Prunus americana	Fruits/Seeds						D	D	D	D			
Chickasaw plum	Prunus angustifolia	Fruits/Seeds						D	D	D	D			

Animal kind: White-tail Deer deer

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J</u>	<u>F</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>
scurfpea	Psoraleidum	Entire plant						P	P	P	P	D	D	

Animal kind: White-tail deer deer

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J</u>	<u>F</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>
oak	Quercus	Fruits/Seeds									D	D	D	D
oak	Quercus	Leaves				D	D	D	D					

Animal kind: White-tail Deer deer

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J</u>	<u>F</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>
fragrant sumac	Rhus aromatica	Entire plant				D	D	D	D	D	D	D		
Flameleaf sumac	Rhus copallinum	Entire plant				D	D	D						
coneflower	Rudbeckia	Entire plant				P	P	P	P	P	P	P		
gum bully	Sideroxylon lanuginosum	Entire plant				P	P	P	P	P	P	P	P	

Animal kind: White-tail deer deer

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J</u>	<u>F</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>
greenbriar	Smilax bona-nox	Entire plant									D	D	D	D
greenbriar	Smilax bona-nox	Leaves									D	D	D	D

Animal kind: White-tail Deer deer

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J</u>	<u>F</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>
greenbriar	Smilax	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
false gaura	Stenosiphon linifolius	Entire plant						P	P	P	P	D	D	
queens delight	Stillingia sylvatica	Entire plant				D	D	D	P	P	P	D	D	D
white heath aster	Symphyotrichum ericoides	Entire plant				D	D	D	D	D	D	D		

Animal kind: White-tail deer deer

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J</u>	<u>F</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>
buckbrush	Symphoricarpos orbiculatus	Fruits/Seeds								D	D	D	D	
buckbrush	Symphoricarpos orbiculatus	Leaves						D	D	D	D			
poison ivy	Toxicodendron radicans	Leaves			D	D	D	D	D	D	D	D	D	D
vervain	Verbena	Leaves			D	D	D	D						
crownbeard	Verbesina	Leaves			D	D	D	D						
grape	Vitis	Leaves			D	D	D	D						

Animal kind: Production Goats goats

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J</u>	<u>F</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>
western ragweed	Ambrosia psilostachya	Leaves				D	D	D	D	D	D	D		
sand bluestem	Andropogon hallii	Leaves	X	X	X	X	X	X	X	X	X	X	X	X
louisiana sagewort	Artemisia ludoviciana	Leaves			D	D	D	D	D	D	D	D		
milkweed	Asclepias	Leaves			U	U	U							
sideoats grama	Bouteloua curtipendula	Leaves	U	U	U	U	U	U	U	U	U	U	U	U
hairy grama	Bouteloua hirsuta	Leaves	U	U	U	U	U	U	U	U	U	U	U	U
silver beardgrass	Bothriochloa laguroides	Leaves	U	U	U	U	U	U	U	U	U	U	U	U
buffalograss	Buchloe dactyloides	Leaves	U	U	U	U	U	U	U	U	U	U	U	U
pecan	Carya illinoensis	Leaves	U	U	U	U	U	U	U	U	U	U	U	U
halfshrub sundrop	Calyophus serrulatus	Leaves				D	D	D	D	D	D	D		
hackberry	Celtis laevigata	Leaves				P	P	P	P	P	P	P	P	
tumble windmillgrass	Chloris verticillata	Leaves	U	U	U	U	U	U	U	U	U	U	U	U
dayflower	Commelina	Leaves	U	U	U	U	U	U	U	U	U	U	U	U
croton	Croton	Leaves				U	U	U						
prairie clover	Dalea	Leaves	U	U	U	P	P	P	P	P	P	P	D	D
Illinois Bundleflower	Desmanthus illinoensis	Leaves	U	U	U	P	P	P	P	P	P	P	D	D
ticktrefoil	Desmodium	Leaves	U	U	U	P	P	P	P	P	P	P	D	D
Carolina crabgrass	Digitaria cognata	Leaves	U	U	U	U	U	U	U	U	U	U	U	U
purple coneflower	Echinacea	Leaves	P	P	P	P	P	D	D	U	U	U	U	P
wildrye	Elymus	Leaves	U	U	U	U	U	U	U	U	U	U	U	U
Engelmann's daisy	Engelmannia peristenia	Leaves	P	P	P	P	P	D	D	U	U	U	U	P
lovegrass	Eragrostis	Leaves	U	U	U	U	U	U	U	U	U	U	U	U
buckwheat	Eriogonum	Leaves	U	U	U	U	U	U	U	U	U	U	U	U
snow on the mountain	Euphorbia marginata	Leaves				U	U	U						
sunflower	Helianthus	Leaves	U	U	P	P	P	D	D	D	D	U	U	U
false goldenaster	Heterotheca	Leaves	U	U	U	U	U	U	U	U	U	U	U	U
little barley	Hordeum pusillum	Leaves	U	U	U	U	U	U	U	U	U	U	U	U
coastal indigo	Indigofera miniata	Leaves	U	U	U	P	P	D	D	D	D	U	U	U
eastern redcedar	Juniperus virginiana	Leaves	U	U	U	U	U	U	U	U	U	U	U	U
trailing ratany	Krameria lanceolata	Leaves	U	U	U	P	P	D	D	D	D	U	U	U
lespedeza	Lespedeza	Leaves	U	U	U	U	U	P	P	P	P	D	D	U
blazing star	Liatris punctata	Leaves				U	U	U	U	U	U	U	U	
Nuttall's sensitive-briar	Mimosa nuttallii	Leaves				D	D	D	D	D	D	D	D	
beebalm	Monarda	Leaves	U	U	U	U	U	U	U	U	U	U	U	U
Texas wintergrass	Nassella leucotricha	Leaves	U	U	U	U	U	U	U	U	U	U	U	U
yellow neptune	Neptunia lutea	Leaves				D	D	D	D	D	D	D	D	
vine mesquite	Panicum obtusum	Leaves	U	U	U	U	U	U	U	U	U	U	U	U
switchgrass	Panicum virgatum	Leaves	U	U	U	U	U	U	U	U	U	U	U	U
beardtongue	Penstemon	Leaves				P	P	P	U	U	U			

plantain	Plantago	Leaves	U	P	P	P	P	U	U	U	U	U	U	U
Texas bluegrass	Poa arachnifera	Leaves	U	U	U	U	U	U	U	U	U	U	U	U
plum	Prunus	Leaves			P	P	P	P	P	P	P	P	P	
scurfpea	Psoralegium	Leaves				D	D	D	D	D	D	D	D	
fragrant sumac	Rhus aromatica	Leaves				D	D	D	D	D	D	D	D	
Flameleaf sumac	Rhus copallinum	Leaves				D	D	D	U	U	U	U		
azure blue sage	Salvia azurea	Leaves	U	U	U	U	U	U	U	U	U	U	U	U
wingleaf soapberry	Sapindus saponaria	Leaves	U	U	U	U	U	U	U	U	U	U	U	U
little bluestem	Schizachyrium scoparium	Leaves	U	U	U	U	U	U	U	U	U	U	U	U
gum bully	Sideroxylon lanuginosum	Leaves				P	P	P	P	P	P	P	P	
compassplant	Silphium laciniatum	Leaves			U	U	U	U	U	U	U	U		
greenbrier	Smilax	Leaves	U	U	D	P	P	P	D	D	D	D	D	D
Indiangrass	Sorghastrum nutans	Leaves	U	U	U	U	U	U	U	U	U	U	U	U
dropseed	Sporobolus	Leaves	U	U	U	U	U	U	U	U	U	U	U	U
queens delight	Stillingia sylvatica	Leaves	U	U	U	U	U	U	U	U	U	U	U	U
white heath aster	Symphyotrichum ericoides	Leaves	U	U	P	P	P	P	P	P	P	P	U	U
eastern gamagrass	Tripsacum dactyloides	Leaves	U	U	U	U	U	U	U	U	U	U	U	U
tridens	Tridens	Leaves	U	U	U	U	U	U	U	U	U	U	U	U
vervain	Verbena	Leaves	U	U	U	U	U	U	U	U	U	U	U	U

Animal kind: Quail & Dove quail

Common name	Scientific name	Plant part	J	E	M	A	M	J	J	A	S	Q	N	D
western ragweed	Ambrosia psilostachya	Fruits/Seeds	P	P	P	P	D	D	D	P	P	P	P	P
louisiana sagewort	Artemisia ludoviciana	Fruits/Seeds	P	P	P	P	D	D	D	P	P	P	P	P
sideoats grama	Bouteloua curtipendula	Fruits/Seeds	U	U	D	D	D	D	U	U	D	D	D	U
halfshrub sundrop	Calylophus serrulatus	Fruits/Seeds	U	U	U	U	U	U	U	D	D	D	D	D
American star thistle	Centaurea americana	Fruits/Seeds	U	U	U	U	P	P	P	P	P	P	P	U
hackberry	Celtis	Fruits/Seeds				P	P	P	P	P	P	P	P	
dayflower	Commelina	Flowers	U	U	U	U	D	D	D	D	D	D	D	U
prairie clover	Dalea	Fruits/Seeds	P	P	P	D	D	D	P	P	P	P	P	P
Illinois Bundleflower	Desmanthus illinoensis	Fruits/Seeds	P	P	P	P	P	P	P	P	P	P	P	P
ticktrefoil	Desmodium	Fruits/Seeds	P	P	P	P	P	P	P	P	P	P	P	P
purple coneflower	Echinacea	Fruits/Seeds	U	U	U	U	P	P	P	P	P	P	P	U
wildrye	Elymus	Fruits/Seeds	P	P	P	P	P	P	U	U	X	U	D	P
Engelmann's daisy	Engelmannia peristeria	Fruits/Seeds	P	P	P	P	P	P	P	P	P	P	P	P
buckwheat	Eriogonum	Fruits/Seeds	U	U	U	U	D	D	D	D	D	D	D	U
beeblossom	Gaura	Fruits/Seeds	D	D	D	D	D	D	D	D	D	D	D	D
sunflower	Helianthus	Fruits/Seeds	P	P	P	P	P	P	P	P	P	P	P	P
coastal indigo	Indigofera miniata	Fruits/Seeds	D	D	D	D	D	D	P	P	P	P	P	P
eastern redcedar	Juniperus virginiana	Fruits/Seeds	U	U	U	U	U	U	U	U	U	U	U	U
trailing ratany	Krameria lanceolata	Fruits/Seeds	D	D	D	D	D	D	P	P	P	P	P	P
lespedeza	Lespedeza	Fruits/Seeds	P	P	P	P	P	P	P	P	P	P	P	P
Nuttall's sensitive-briar	Mimosa nuttallii	Fruits/Seeds				P	P	P	P	P	P	P	P	
yellow neptune	Neptunia lutea	Flowers	D	D	D	D	D	D	D	D	D	D	D	D
switchgrass	Panicum virgatum	Fruits/Seeds	U	U	D	D	D	D	U	U	U	D	D	U
beardtongue	Penstemon	Flowers				P	P	P	U	U	U	U		
plantain	Plantago	Fruits/Seeds	U	P	P	P	P	U	U	U	U	U	U	U
scurfpea	Psoralegium	Fruits/Seeds	D	D	D	D	D	D	D	D	D	D	D	D
fragrant sumac	Rhus aromatica	Fruits/Seeds				D	D	D	D	D	D	D		
Flameleaf sumac	Rhus copallinum	Fruits/Seeds				D	D	D	U	U	U	U		
azure blue sage	Salvia azurea	Fruits/Seeds	U	U	U	U	D	D	D	D	D	D	D	U
gum bully	Sideroxylon lanuginosum	Fruits/Seeds				P	P	P	P	P	P	P	P	
Indiangrass	Sorghastrum nutans	Fruits/Seeds	U	U	D	D	D	D	U	U	D	D	D	U
false gaura	Stenosiphon linifolius	Fruits/Seeds	U	U	U	U	D	D	D	D	D	D	D	U
queens delight	Stillingia sylvatica	Fruits/Seeds	D	D	D	D	U	U	U	U	D	D	D	D

Animal kind: Wild Turkey turkey

Common name	Scientific name	Plant part	J	E	M	A	M	J	J	A	S	Q	N	D
common yarrow	Achillea millefolium	Fruits/Seeds	D	D	D	D	D	D	D	D	D	D	D	D
western ragweed	Ambrosia psilostachya	Fruits/Seeds	D	D	D	D	D	D	D	P	P	P	P	P
big bluestem	Andropogon gerardii	Fruits/Seeds	D	D	D	D	D	D	D	D	D	D	D	D
sideoats grama	Bouteloua curtipendula	Fruits/Seeds	D	D	D	D	D	D	D	D	D	D	D	D
Roughleaf dogwood	Cornus drummondii	Fruits/Seeds								P	P	P	P	

Illinois Bundleflower	Desmanthus illinoensis	Fruits/Seeds	D	D	D	D	D	D	D	P	P	P	P	P
ticktrefoil	Desmodium	Fruits/Seeds	D	D	D	D	D	D	D	P	P	P	P	P
wildrye	Elymus	Fruits/Seeds	D	D	D	D	D	D	D	D	D	D	D	D
sunflower	Helianthus	Fruits/Seeds	P	P	P	D	D	D	D	P	P	P	P	P
lespedeza	Lespedeza	Fruits/Seeds	D	D	D	D	D	D	D	P	P	P	P	P
oxeye daisy	Leucanthemum vulgare	Fruits/Seeds	D	D	D	D	D	D	D	D	D	D	D	D
common yellow oxalis	Oxalis stricta	Fruits/Seeds	D	D	D	D	D	D	D	D	D	D	D	D
beaked panicgrass	Panicum anceps	Fruits/Seeds	D	D	D	D	D	D	P	P	P	P	P	D
witchgrass	Panicum capillare	Fruits/Seeds	D	D	D	D	D	D	D	D	D	D	D	D
Florida paspalum	Paspalum floridanum	Fruits/Seeds	D	D	D	D	D	D	P	P	P	P	P	D
vine mesquite	Panicum obtusum	Fruits/Seeds	D	D	D	D	D	D	D	D	D	D	D	D
switchgrass	Panicum virgatum	Fruits/Seeds	D	D	D	D	D	D	D	D	D	D	D	D
Texas bluegrass	Poa arachnifera	Fruits/Seeds	D	D	D	P	P	D	D	D	P	P	P	D
plum	Prunus	Fruits/Seeds							P	P	P	P		
sumac	Rhus	Fruits/Seeds	E	E	E	U	U	U	U	U	U	E	E	E
rose	Rosa	Fruits/Seeds	D	D	D	D	D	D	D	D	P	P	P	P
blackberry	Rubus	Fruits/Seeds						P	P	P	P	P		
little bluestem	Schizachyrium scoparium	Fruits/Seeds	D	D	D	D	D	D	D	D	D	D	D	D
Indiangrass	Sorghastrum nutans	Fruits/Seeds	D	D	D	D	D	D	D	D	D	D	D	D
dropseed	Sporobolus	Fruits/Seeds	D	D	D	D	D	D	D	D	D	D	D	D
trailing wildbean	Strophostyles helvula	Fruits/Seeds	D	D	D	D	D	D	D	P	P	P	P	P
eastern gamagrass	Tripsacum dactyloides	Fruits/Seeds	P	P	P	D	D	D	D	P	P	P	P	P

Legend: P=Preferred; D=Desirable; U=Undesirable; N=Not consumed; E=Emergency; T=Toxic; X=Used, but degree of utilization unknown

Hydrology Functions

Due to the coarse textured, rapidly permeable soils of this site, changes in hydrologic function are not as abrupt between state changes when compared to other sites. As the site transitions to the Woody state, canopy interception of rainfall by woody species may decrease the amount of water allowed to infiltrate the soil profile and thus decrease available water for other species. Additionally, when this site is cultivated, alteration of the soil structure may have a negative impact on rainfall percolation into the soil profile.

Recreational Uses

Recreational Uses: This site is well known for its quail & dove hunting. A multitude of mammals and birds frequent this site, so it is a great area to observe and study Oklahoma animal and plant life. This site is used for many common recreational activities such as hiking, camping, bird watching, hunting and horseback riding.

Other Products

Many people will harvest Sand plum and Blackberry fruit for use in jams and other goods.

Supporting Information

Associated Sites

<u>Site name</u>	<u>Site ID</u>	<u>Site narrative</u>
Deep Sand Savannah	R080AY018OK	Older sands. More acidic soils support Oak trees and tall/midgrass savannahs. Derby Soils.
Dune	R080AY022OK	Coarse sandy soils on steeper dunes. Lower clay content, less production and higher amounts of bare ground. Goodnight FS or Tivoli Soils.
Sandy Prairie	R080AY073OK	Loamy sands on rolling topography. More productive than Deep Sand site. Lovedale, Waynoka, and Slaughterville soils.
Depressional Upland PE 44-64	R080AY098OK	Depressional areas within hummocky landscape. Areas of clay and silt deposition. Allows for ponding and supports more hydrophytic vegetation. Carwile soils.
Sand Hills	R078CY107TX	Coarse sandy soils on steeper dunes. Lower clay content, less production and higher amounts of bare ground. Occurs in MLRA 78C. Jester or Tivoli Soils.

Similar Sites

<u>Site name</u>	<u>Site ID</u>	<u>Site narrative</u>
Rolling Sands	R078CY014OK	Similar topography and soils occurring in MLRA 78C. Less production and higher amounts of Sand Sagebrush.
Shinnery Oak Grassland	R078CY017OK	Similar topography. Older, more acidic sands. Support growth of Sand Sagebrush and Shinnery Oak.

State Correlation

This site has been correlated with the following states: KS OK

Inventory Data References

Inventory Data References:

Information presented has been derived from NRCS clipping data, research from Oklahoma State University, field observations and measurements by trained range personnel. Most of the clipping data was gathered by a team consisting of a range conservationist and a soil scientist and was site/soil specific. Yields were taken at the end of the growing season and, as near as possible, were obtained from areas that were un-grazed that year. Clipping data repository is in the NRCS State Office in Stillwater, OK.

Data from NRI collections and field sampling was also used in the development of this ESD.

This latest version was part of a progressive update project completed by the Stillwater, OK Soil Survey office in collaboration with staff from Oklahoma NRCS Ecological Sciences section.

Other Inventory Data References

<u>Data source</u>	<u>Number of records</u>	<u>Sample period</u>	<u>State</u>	<u>County</u>
NRI Data	3	2005	Kansas	Harper
Field	2	2014	Oklahoma	Alfalfa
NRI Data	2	2004	Oklahoma	Alfalfa
NRI Data	2	2011-2012	Oklahoma	Alfalfa
Field	2	2014	Oklahoma	Grant
NRI Data	2	2006	Oklahoma	Grant
Clipping Data OK551	3	1957	Oklahoma	Major
NRI Data	1	2004	Oklahoma	Major

Hierarchical Classification Relationships

This MLRA overlaps other land classifications systems including Level IV EPA Ecoregions 27o "Crosstimbers Transition", 27d "Prairie Tableland", 27i "Broken Red Plains", and 27l "Pleistocene Sand Dunes".

This particular ecological site may be part of alternative vegetation descriptions including:

Landfire: Central Mixedgrass Prairie/Western Great Plains Sand Prairie

Grasslands of OK(Harlan): Mixed Prairie Grasslands

FGDC code: V.A.5.N.a. *Andropogon hallii* - *Calamovilfa gigantea*

Other References

Bestelmeyer, B. T., Brown, J. R., Havstad, K. M., Alexander, R., Chavez, G., & Herrick, J. E. (2003). Development and use of state-and-transition models for rangelands. *Journal of Range Management*, 114-126.

Fuhlendorf, S. D., Engle, D. M., Kerby, J. A. Y., & Hamilton, R. (2009). Pyric herbivory: rewilding landscapes through the recoupling of fire and grazing. *Conservation Biology*, 23(3), 588-598.

Harlan, J. R. (1957). *Grasslands of Oklahoma*.

National Soil Information System (NASIS). Accessed 2013

Shantz, H. L. (1923). The natural vegetation of the Great Plains region. *Annals of the Association of American Geographers*, 13(2), 81-107.

Shiflet, T. N. (1994). *Rangeland cover types of the United States (Vol. 152)*. Denver, CO, USA: Society for Range Management.

Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. Available online at <http://websoilsurvey.nrcs.usda.gov/>. Accessed [5/5/2014].

USDA NRCS Plants Database. Online.

USDA-SCS Oklahoma Range Site Descriptions(1960s)

USDA-SCS. Soil Survey of Alfalfa County, Oklahoma. 1975

USDA-SCS. Soil Survey of Grant County, Oklahoma. 1985

USDA-SCS. Soil Survey of Major County, Oklahoma. 1968

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Quality Assurance

Provisional Status Verified in Legacy System

Reference Sheet

Author(s)/participant(s): Mark Moseley, Jack Eckroat, Kay Anderson, Harry Fritzler, Steve Glasgow (edits by C. Walden and Brandon Reavis 2014)

Contact for lead author: 100 USDA Suite 206 Stillwater, OK 74074

Date: 4/1/2005 **MLRA:** 080A **Ecological Site:** Deep Sand R080AY014OK This *must* be verified based on soils and climate (see Ecological Site Description). Current plant community cannot be used to identify the ecological site.

Composition (indicators 10 and 12) based on: X Annual Production, Foliar Cover, Biomass

Indicators. For each indicator, describe the potential for the site. Where possible, (1) use numbers, (2) include expected range of values for above- and below-average years for **each** community and natural disturbance regimes within the reference state, when appropriate and (3) cite data. Continue descriptions on separate sheet.

1. **Number and extent of rills:** There are none on this site due to high infiltration rates.

2. **Presence of water flow patterns:** There are none on this site due to high infiltration rates.

3. **Number and height of erosional pedestals or terracettes:** There should not be any evidence of erosional pedestals or terracettes on this site.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, standing dead, lichen, moss, plant canopy are not bare ground):** There is some variability, but it should average 5-15% bare ground on this site. Bare areas are small and not connected.

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

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

7. **Amount of litter movement (describe size and distance expected to travel):** Very little movement due to water because of high infiltration. Twelve inches maximum, and following heavy rains on steeper slopes.

- 8. Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):**
Surface soil is stabilized (Stability Score 5 – 6). Stability scores based on a minimum of 6 samples tested.
-
- 9. Soil surface structure and SOM content (include type and strength of structure, and A-horizon color and thickness):** A horizon: 0 to 16 inches; brown loamy fine sand, weak medium sub angular blocky structure. E/Bt horizon: 16 to 29 inches, reddish yellow sand, prismatic structure.
-
- 10. Effect on plant community composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Permeability is rapid and uniform. Runoff is very low. Reference plant community composition and distribution is intact. (Tallgrass/Midgrass dominated)
-
- 11. Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):** There is no compaction layer due to sandy soils.
-
- 12. Functional/Structural Groups (list in order of descending dominance by above-ground weight using symbols: >>, >, = to indicate much greater than, greater than, and equal to) with dominants and sub-dominants and "others" on separate lines:**
Dominant: Tallgrasses = Midgrasses
Sub-dominant: Cool Season grasses, Forbs
Other: Shortgrasses, Shrubs, Annual grasses
Additional:
-
- 13. Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):**
There is some plant mortality and decadence on the perennial grasses, especially in the absence of fire and herbivory, or extended drought. Less than 10%.
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- 14. Average percent litter cover (%) and depth (inches):** : Litter should cover at least 60% of the area between plants with accumulations of ~1/2 inch deep.
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- 15. Expected annual production (this is TOTAL above-ground production, not just forage production):** Normal production is 2500-5000 pounds per year.
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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 indicator, we are describing what is NOT expected in the reference state for the ecological site:** Invasives might include: Eastern edcedar, Black Locust, Honey Locust, and non-natives.
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- 17. Perennial plant reproductive capability:** All plants capable of reproducing at least every 3 years. Both seedheads and vegetative rhizomes/tillers should be evaluated.
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Reference Sheet Approval

Approval

Brandon Reavis, State RMS Oklahoma

Date

2/27/2015