

Ecological site R087AY009TX Wet Sandy Draw

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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.

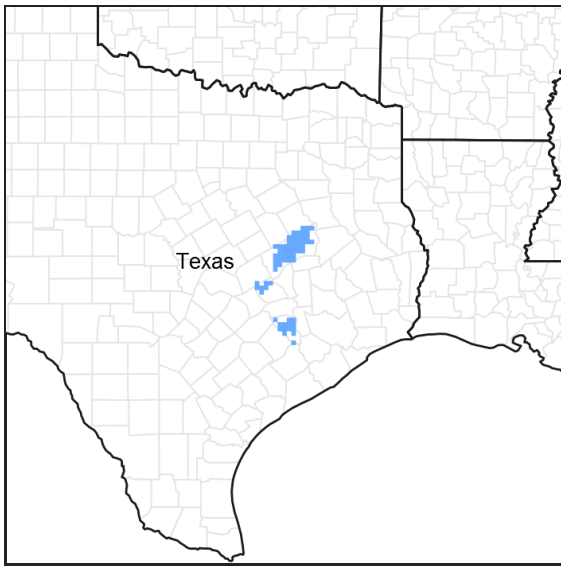


Figure 1. Mapped extent

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): 087A–Texas Claypan Area, Southern Part

This area is entirely in south-central Texas. It makes up about 10,535 square miles (27,295 square kilometers). The towns of Bastrop, Bryan, Centerville, College Station, Ennis, Fairfield, Franklin, Giddings, Gonzales, Groesbeck, La Grange, Madisonville, and Rockdale are in this MLRA. Interstate 45 crosses the northern part of the area, and Interstate 10 crosses the southern part. A number of State Parks are located throughout this area. The parks are commonly associated with reservoirs.

Classification relationships

USDA-Natural Resources Conservation Service, 2006.
-Major Land Resource Area (MLRA) 87A

Ecological site concept

The Wet Sandy Draw exists on sandy upland depressions and the head of drainageways. The poorly drained sandy soils create a unique and productive plant community.

Associated sites

R087AY008TX	Very Deep Sand Very Deep Sand
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Similar sites

R087AY010TX	Sandy Bottomland Sandy Bottomland
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Table 1. Dominant plant species

Tree	(1) <i>Quercus phellos</i> (2) <i>Quercus nigra</i>
Shrub	(1) <i>Morella cerifera</i> (2) <i>Baccharis halimifolia</i>
Herbaceous	(1) <i>Panicum hemitomon</i> (2) <i>Phanopyrum gymnocarpon</i>

Physiographic features

This site occurs as a nearly level to moderately sloping concave prairie that occupies foot slopes and heads of drains. A water table is near the surface throughout most of year, except during prolonged droughty conditions. The soils can pond water for very brief to brief durations during wet periods.

Table 2. Representative physiographic features

Landforms	(1) Plains > Drainageway (2) Plains > Depression
Runoff class	Negligible
Flooding frequency	None
Ponding duration	Very brief (4 to 48 hours) to brief (2 to 7 days)
Ponding frequency	None to rare
Elevation	91–198 m
Slope	0–2%
Ponding depth	0–15 cm
Water table depth	23–203 cm
Aspect	Aspect is not a significant factor

Climatic features

The climate for MLRA 87A is humid subtropical and is characterized by hot summers, especially in July and August, and relatively mild winters. The summer months have little variation in day-to-day weather except for occasional thunderstorms that dissipate the afternoon heat. The moderate temperatures in spring and fall are characterized by long periods of mild days and cool nights. The average annual precipitation in this area is 41 inches. Most of the rainfall occurs in spring and fall. The freeze-free period averages about 276 days and the frost-free period 241 days.

Table 3. Representative climatic features

Frost-free period (average)	241 days
Freeze-free period (average)	276 days
Precipitation total (average)	1,041 mm

Climate stations used

- (1) BARDWELL DAM [USC00410518], Ennis, TX
- (2) ELGIN [USC00412820], Elgin, TX
- (3) FRANKLIN [USC00413321], Franklin, TX
- (4) BELLVILLE 6NNE [USC00410655], Bellville, TX
- (5) LA GRANGE [USC00414903], La Grange, TX
- (6) MADISONVILLE [USC00415477], Madisonville, TX
- (7) SMITHVILLE [USC00418415], Smithville, TX
- (8) CROCKETT [USC00412114], Crockett, TX
- (9) FAIRFIELD 3W [USC00413047], Fairfield, TX
- (10) GONZALES 1N [USC00413622], Gonzales, TX
- (11) SOMERVILLE DAM [USC00418446], Somerville, TX
- (12) COLLEGE STN [USW00003904], College Station, TX

Influencing water features

This is a wet site receiving water from runoff and seepage of adjacent sandy sites. It often has a perched water table at or near the surface for much of the year.

Wetland description

This site is considered hydric, but onsite delineations are needed to verify wetlands status.

Soil features

The soils of this site are very deep, poorly drained, rapidly permeable soils formed in sandy sediments. Because of the seepage from the adjoining slopes, water seeps to the surface for some time following rains. The soil is saturated or nearly saturated most of the year because of the seepage. Soil correlated to this site include: Cadelake, Melhomes, and Sealy.

Table 4. Representative soil features

Parent material	(1) Colluvium–sandstone
Surface texture	(1) Fine sandy loam
Family particle size	(1) Sandy
Drainage class	Poorly drained
Permeability class	Rapid
Soil depth	203 cm
Surface fragment cover <=3"	0%
Surface fragment cover >3"	0%
Available water capacity (0-101.6cm)	7.62–10.16 cm
Calcium carbonate equivalent (0-101.6cm)	0%
Electrical conductivity (0-101.6cm)	0–2 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	0
Soil reaction (1:1 water) (0-101.6cm)	3.5–6
Subsurface fragment volume <=3" (Depth not specified)	0–1%

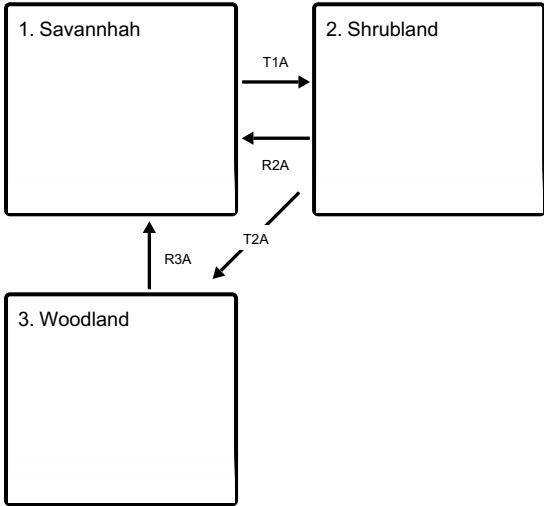
Subsurface fragment volume >3" (Depth not specified)	0%
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Ecological dynamics

This site resembles a wet prairie or savannah occupied by a predominance of hydrophytic plants. The dominant herbaceous species include maidencane (*Panicum hemitomon*), velvet dichanthelium (*Dichanthelium scoparium*), plumegrass (*Erianthus* spp.), southern wildrice (*Zizaniopsis miliacea*), Vasey's grass (*Paspalum urvillei*), rice cutgrass (*Leersia oryzoides*), common rush (*Juncus effusus*), and bulrush (*Scirpus* spp.). Little bluestem (*Schizachyrium scoparium*), Indiangrass (*Sorghastrum nutans*), switchgrass (*Panicum virgatum*), broomsedge bluestem (*Andropogon virginicus*), and bushy bluestem (*Andropogon glomeratus*) occur on the higher slopes. Smartweed (*Polygonum* spp.), swamp sunflower (*Helenium autumnale*), and swamp rosemallow (*Hibiscus moscheutos*) are common forbs. Woody species such as black willow (*Salix nigra*), willow oak (*Quercus phellos*), water oak (*Quercus nigra*), eastern baccharis (*Baccharis halimifolia*), yaupon (*Ilex vomitoria*), and wax myrtle (*Morella cerifera*) may also occur on the site. The savannah structure of this site was probably influenced by the herding and grazing effects of bison and cattle. Wildfires occurring during extreme drought may also have played a role in the maintenance of the savannah landscape.

State and transition model

Ecosystem states

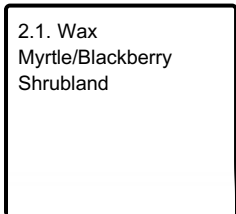


- T1A** - Abandonment, no fire, and/or no grazing management
- R2A** - Prescribed grazing, fire, and/or brush management
- T2A** - Abandonment, no fire, and/or no grazing management
- R3A** - Extensive brush management and/or herbicide applications

State 1 submodel, plant communities



State 2 submodel, plant communities



State 3 submodel, plant communities

3.1. Wax Myrtle/Oak
Woodland

State 1 Savannah

One community exists in the Savannah State, the Tallgrass/Wax Myrtle Community. The site is dominated by warm season perennial grasses and has a presence of 5 to 10 percent woody species intermixed.

Community 1.1 Tallgrass/Wax Myrtle Savannah



This reference plant community resembles a wet prairie or wet meadow and is dominated by warm season perennial grasses including maidencane, rice cutgrass, plumegrass, and common rush. Wax myrtle, possumhaw (*Ilex decidua*), and blackberry (*Rubus* spp.) are woody shrubs and vines that commonly occur throughout the site. Water oak, willow oak, and black willow provide a 5 to 10 percent canopy and occupy locations influenced by wetness. Water oak occurs on the higher/dryer upslopes while black willow occurs on the lower/wetter position of the site. Willow oak is intermediate between the two. Fire may play a part in the maintenance of the savannah landscape in years of prolonged drought. This site has the potential to produce heavy fine fuel loads but is usually too wet to have fine fuel moisture conditions conducive for burning. Since this site has such favorable moisture regimes, especially during the summer, grazing and browsing by bison, deer, and cattle probably had more influence on the maintenance of the savannah landscape. Due to the wetness of the site, mechanical brush management is rarely a treatment option for this site. The inability to selectively apply broadcast herbicide normally precludes this treatment option, although individual plant treatment with herbicides may be a viable option. Abandonment of the site allows a transitional shift in vegetation towards a shrub-dominated community that, over time, results in a tree/shrub state. The maintenance of the reference plant community seems to require the presence of grazing and browsing animals and periodic fire when conditions permit.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	5380	7173	8967
Shrub/Vine	673	897	1121
Tree	336	448	560
Forb	336	448	560
Total	6725	8966	11208

State 2 Shrubland

One community exists in the Shrubland State, the Wax Myrtle/Blackberry Shrubland Community. The state is defined by woody canopy cover from 20 to 40 percent. Herbaceous production is limited compared to the Savannah State (1).

Community 2.1 Wax Myrtle/Blackberry Shrubland



This is a transitional community moving from the Savannah State (1) to Woodland State (3). It occurs when the site is abandoned and no grazing, burning, or brush management is applied over time. Wax myrtle, blackberry, yaupon, and baccharis increase in density and canopy coverage (20 to 40 percent) and begin to hinder herbaceous production. Saplings of water oak, willow oak, black willow, and water elm (*Planera aquatica*) appear. The invasive Chinese tallow (*Sapium sebiferum*) will invade the site. If abandonment continues and no brush management or burning occurs, shrubs and vines continue to increase in density and canopy coverage is greater than 40 percent, which represents a transition to the Woodland State. Saplings begin to become trees and the resulting shading severely reduces the herbaceous production of the site where grazing and fire are no longer treatment options for recovery of the site.

Table 6. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Shrub/Vine	1345	2018	2690
Forb	1009	1681	2018
Grass/Grasslike	673	1009	1345
Tree	336	504	673
Total	3363	5212	6726

State 3 Woodland

One community exists in the Woodland State, the Cottonwood/Elm Community. The site is defined by woody canopy cover over 40 percent. The site has reduced herbaceous production compared to the Savannah and Shrubland States.

Community 3.1 Wax Myrtle/Oak Woodland



This is a steady state community that occurs following long periods, greater than 20 years, of little or no management (grazing, burning, or brush control). Water oak, willow oak, black willow, wax myrtle, and yaupon become the dominant plants in the community and severely limit herbaceous production through shading. The herbaceous community will be dominated by sedges (*Carex* spp.), rushes (*Juncus* spp.), and shade tolerant forbs. Available treatment options to move this community back to the Savannah State are limited to tree dozing during drought periods or individual plant treatments with herbicides. Neither of these treatments may be economically feasible.

Table 7. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Shrub/Vine	2152	2869	3587
Tree	1614	2152	2690
Forb	1076	1435	1793
Grass/Grasslike	538	717	897
Total	5380	7173	8967

**Transition T1A
State 1 to 2**

The driver for this transition is abandonment, lack of fire, and/or lack of prescribed grazing. Woody species are allowed to continue to grow until reaching over the threshold of 20 percent. This signifies the transition to the Shrubland State.

**Restoration pathway R2A
State 2 to 1**

Prescribed grazing, periodic fire, and brush management are practices that will restore the site back to the reference state. The key to successful restoration is controlling the growth of woody species throughout the site.

**Transition T2A
State 2 to 3**

The driver for the transition to the Woodland State is further abandonment, lack of fire, and lack of prescribed grazing. The woody species have grown to a canopy cover greater than 40 percent, which signifies this transition.

**Restoration pathway R3A
State 3 to 1**

The driver for restoration from the Woodland State to the Savannah State is management of woody species. Extensive brush management is required to open up the overstory canopy and allow for more herbaceous growth.

Additional community tables

Table 8. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
Grass/Grasslike					
1	Grasses			2690–4483	
	velvet panicum	DISC3	<i>Dichantherium scoparium</i>	2690–4483	–
	maidencane	PAHE2	<i>Panicum hemitomom</i>	2690–4483	–
2	Grasses			1076–1793	
	rice cutgrass	LEOR	<i>Leersia oryzoides</i>	1076–1793	–
	giant cutgrass	ZIMI	<i>Zizaniopsis miliacea</i>	1076–1793	–
3	Tall/midgrasses			807–1345	
	field paspalum	PALA10	<i>Paspalum laeve</i>	807–1345	–
	Vasey's grass	PAUR2	<i>Paspalum urvillei</i>	807–1345	–
	savannah-panicgrass	PHGY2	<i>Phanopyrum gymnocarpon</i>	807–1345	–
	tall horned beaksedge	RHMA6	<i>Rhynchospora macrostachya</i>	807–1345	–
	sortbeard plumegrass	SABRC3	<i>Saccharum brevibarbe var. contortum</i>	807–1345	–
4	tallgrasses			538–897	
	bushy bluestem	ANGL2	<i>Andropogon glomeratus</i>	538–897	–
	switchgrass	PAVI2	<i>Panicum virgatum</i>	538–897	–
	little bluestem	SCSC	<i>Schizachyrium scoparium</i>	538–897	–
	Indiangrass	SONU2	<i>Sorghastrum nutans</i>	538–897	–
5	Grasses			269–448	
	common carpetgrass	AXFI	<i>Axonopus fissifolius</i>	269–448	–
	common rush	JUEF	<i>Juncus effusus</i>	269–448	–
	softstem bulrush	SCTA2	<i>Schoenoplectus tabernaemontani</i>	269–448	–
Forb					
6	forbs			168–280	
	swamp smartweed	POHY2	<i>Polygonum hydropiperoides</i>	168–280	–
	Pennsylvania smartweed	POPE2	<i>Polygonum pensylvanicum</i>	168–280	–
7	forbs			101–168	
	swamp sunflower	HEAN2	<i>Helianthus angustifolius</i>	101–168	–
	crimson-eyed rosemallow	HIMO	<i>Hibiscus moscheutos</i>	101–168	–
	ovate false fiddleleaf	HYOV	<i>Hydrolea ovata</i>	101–168	–
	floating marshpennywort	HYRA	<i>Hydrocotyle ranunculoides</i>	101–168	–
	seedbox	LUAL2	<i>Ludwigia alternifolia</i>	101–168	–
	pickerelweed	POCO14	<i>Pontederia cordata</i>	101–168	–
	grassy arrowhead	SAGR	<i>Sagittaria graminea</i>	101–168	–
8	forbs			67–112	
	swamp milkweed	ASIN	<i>Asclepias incarnata</i>	67–112	–
	tenangle pipewort	ERDE5	<i>Eriocaulon decangulare</i>	67–112	–
	giant goldenrod	SOGI	<i>Solidago gigantea</i>	67–112	–

	Baldwin's ironweed	VEBA	<i>vernonia baldwinii</i>	67-112	-
	rough cocklebur	XAST	<i>Xanthium strumarium</i>	67-112	-
	Baldwin's yelloweyed grass	XYBA	<i>Xyris baldwiniana</i>	67-112	-
Shrub/Vine					
9	shrubs/vines			673-1121	
	eastern baccharis	BAHA	<i>Baccharis halimifolia</i>	673-1121	-
	possumhaw	ILDE	<i>Ilex decidua</i>	673-1121	-
	yaupon	ILVO	<i>Ilex vomitoria</i>	673-1121	-
	wax myrtle	MOCE2	<i>Morella cerifera</i>	673-1121	-
	Oklahoma blackberry	RUOK	<i>Rubus oklahomus</i>	673-1121	-
Tree					
10	trees			336-560	
	water oak	QUNI	<i>Quercus nigra</i>	336-560	-
	willow oak	QUPH	<i>Quercus phellos</i>	336-560	-
	black willow	SANI	<i>Salix nigra</i>	336-560	-

Animal community

The favorable moisture regimes of this site provide conditions that keep plants green and growing during dry summer months and periods of drought. The site is attractive to domestic livestock as well as many species of wildlife including white-tailed deer, bobcat, raccoon, raptors, rodents, song birds, and feral hogs. Animal species use may change as the plant community changes on this site. Livestock have a higher preference for the site in a Savannah State where white-tailed deer and feral hogs may prefer the site in a Shrubland or Woodland State. Management should be applied to the site to produce the habitat for the species of concern.

Hydrological functions

This site is a collection area for seep water coming from the sandy uplands that always surround it. Ponding may occur for periods throughout the year.

Recreational uses

This site may be used for wildlife viewing or hunting.

Wood products

In the Woodland State, willow oak and water oak could provide timber products for firewood, cross ties, hardwood flooring, and lumber. The wetness of the site in addition to the presence of the deep sandy upland soils that typically surround this site make logging and access to the site by log trucks difficult.

Other products

Fruit from blackberries and grapes may be harvested on this site.

Inventory data references

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

Other references

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Contributors

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Approval

Bryan Christensen, 9/21/2023

Rangeland health reference sheet

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

Author(s)/participant(s)	Mike Stellbauer, David Polk, and Bill Deauman
Contact for lead author	Mike Stellbauer, Zone RMS, NRCS, Bryan, Texas

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

Indicators

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

2. **Presence of water flow patterns:** Water flow patterns are not uncommon. Deposition or erosion is uncommon for normal rainfall, but may occur during intense rainfall events.

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

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

5. **Number of gullies and erosion associated with gullies:** Gullies are uncommon for this site.

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

7. **Amount of litter movement (describe size and distance expected to travel):** Under normal rainfall, little litter movement should be expected.

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

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Soil surface structure is 0 to 15 inches thick with colors from dark grayish brown fine sandy loam to black loamy fine sand and subangular blocky structure. SOM is approximately 1 to 6 percent.

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

11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be**

mistaken for compaction on this site): None.

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

Dominant: Warm-season tallgrasses > Cool-season midgrasses >>

Sub-dominant:

Other: Trees > Shrubs/Vines > Forbs

Additional:

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

14. **Average percent litter cover (%) and depth (in):** Small to large woody litter is common on this site.
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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** 6,000 pounds per acre for below average moisture years to 10,000 pounds per acre for above average moisture years.
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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:** Potential invasive species include wax myrtle, blackberry, black willow, baccharis, willow oak, water oak, and Chinese tallow.
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17. **Perennial plant reproductive capability:** All perennial plants should be capable of reproducing, except for periods of prolonged drought conditions, heavy natural herbivory or intense wildfires.
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