

Ecological site R035XC330AZ Sandy Terrace 10-14" p.z. Stony

Last updated: 5/19/2025
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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.

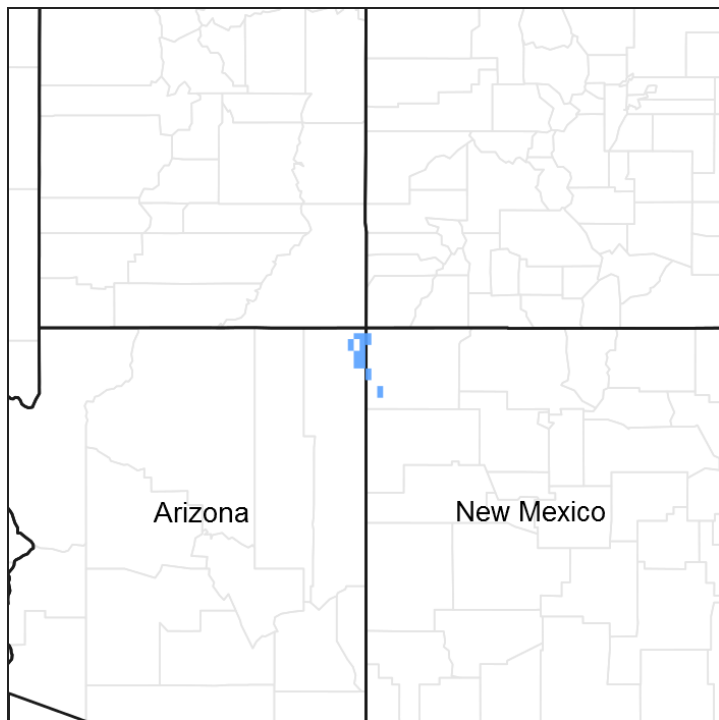


Figure 1. Mapped extent

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): 035X–Colorado Plateau

AZ CRA 35.3 – Colorado Plateau Sagebrush – Grasslands

Elevations range from 4500 to 6000 feet and precipitation averages 10 to 14 inches. Vegetation includes Wyoming big sagebrush, Utah juniper, Colorado pinyon - cliffrose, Mormon tea, fourwing saltbush, blackbrush Indian ricegrass, needle and thread, western wheatgrass Galleta, black grama, blue grama, and sand dropseed. The soil temperature regime is mesic and the soil moisture regime is ustic aridic. This unit occurs within the Colorado Plateau Physiographic Province and is characterized by a sequence of flat to gently dipping sedimentary rocks eroded into plateaus, valleys and deep canyons. Sedimentary rock classes dominate the plateau with volcanic fields occurring for the most part near its margin.

Ecological site concept

This site occurs on lower stream terraces. Soils are very deep. Surface texture is very cobbly sandy loam. Subsoil textures are very gravelly loamy coarse sand, cobbly fine sandy loam, cobbly coarse sand and very stony coarse sand.

Table 1. Dominant plant species

Tree	(1) <i>Juniperus osteosperma</i> (2) <i>Pinus edulis</i>
Shrub	(1) <i>Artemisia tridentata</i> var. <i>wyomingensis</i> (2) <i>Ericameria nauseosa</i> ssp. <i>nauseosa</i> var. <i>bigelovii</i>
Herbaceous	(1) <i>Achnatherum hymenoides</i> (2) <i>Bouteloua gracilis</i>

Physiographic features

This site occurs in an upland position on low stream terraces of valley floors. It neither benefits from run-in, nor suffers from excessive runoff unless denuded of its vegetation.

Table 2. Representative physiographic features

Landforms	(1) Stream terrace (2) Valley floor
Flooding duration	Extremely brief (0.1 to 4 hours) to very brief (4 to 48 hours)
Flooding frequency	None to rare
Ponding duration	Very brief (4 to 48 hours)
Ponding frequency	None to rare
Elevation	5,000–6,400 ft
Slope	2–5%
Aspect	Aspect is not a significant factor

Climatic features

Winter summer moisture ratios range from 70:30 to 60:40. Late spring is usually the driest period, and early fall moisture can be sporadic. Summer rains fall from June through September; moisture originates in the Gulf of Mexico and creates convective, usually brief, intense thunderstorms. Cool season moisture from October through May tends to be frontal; it originates in the Pacific and the Gulf of California and falls in widespread storms with longer duration and lower intensity. Precipitation generally comes as snow from December through February. Accumulations above 12 inches are not common but can occur. Snow usually lasts for 3-4 days, but can persist much longer. Summer daytime temperatures are commonly 95 - 100 F and on occasion exceed 105 F. Winter air temperatures can regularly go below 10 F and have been recorded below - 20 F.

Table 3. Representative climatic features

Frost-free period (average)	168 days
Freeze-free period (average)	193 days
Precipitation total (average)	14 in

Influencing water features

This is an upland site, and is not associated with water features or wetlands. During heavy rain events, this site may receive run-on and throughflow moisture from landforms above and contribute runoff and throughflow to landforms below.

Soil features

Soils are very deep. Surface texture is very cobbly sandy loam. Subsoil textures are very gravelly loamy coarse sand, cobbly fine sandy loam, cobbly coarse sand and very stony coarse sand. Parent material is alluvium derived from quartz diorite and sandstone. Geologic formation is alluvium from tertiary diorite and sandstone. Available water capacity is very low. Water erosion potential is slight. Wind erosion potential is moderate. Soils are non-saline, non-sodic. pH range is 7.4-8.4. Soils moisture regime is ustic aridic; temperature regime is mesic.

Typical taxonomic unit on this site:

SSA 717 Shiprock Area AZ/NM MU 315 Shoegame.

Table 4. Representative soil features

Parent material	(1) Alluvium–quartz-diorite
Surface texture	(1) Very cobbly sandy loam

Family particle size	(1) Sandy
Drainage class	Somewhat excessively drained to excessively drained
Permeability class	Moderately rapid to rapid
Soil depth	60 in
Surface fragment cover <=3"	10–15%
Surface fragment cover >3"	20–30%
Available water capacity (0-40in)	0–2.5 in
Calcium carbonate equivalent (0-40in)	5–10%
Electrical conductivity (0-40in)	0–2 mmhos/cm
Sodium adsorption ratio (0-40in)	0–5
Soil reaction (1:1 water) (0-40in)	7.4–8.4
Subsurface fragment volume <=3" (Depth not specified)	5–10%
Subsurface fragment volume >3" (Depth not specified)	20–35%

Ecological dynamics

The plant communities found on an ecological site are naturally variable. Composition and production will vary with yearly conditions, location, aspect, and the natural variability of the soils. The Historical Climax Plant Community represents the natural potential plant communities found on relict or relatively undisturbed sites. Other plant communities described here represent plant communities that are known to occur when the site is disturbed by factors such as fire, grazing, or drought.

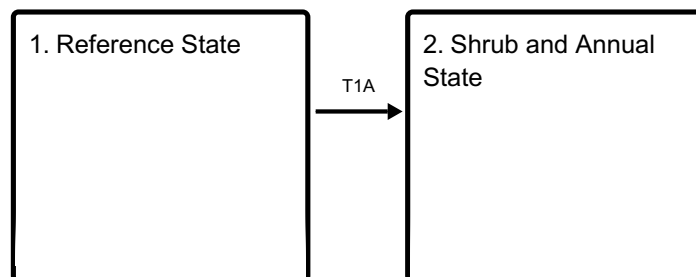
Production data provided in this site description is standardized to air dry weight at the end of the summer growing season. The plant communities described in this site description are based on near normal rainfall years.

NRCS uses a Similarity Index to compare existing plant communities to the plant communities described here. Similarity index is determined by comparing the production and composition of a plant community to the production and composition of a plant community described in this site description. To determine Similarity index, compare the production (air dry weight) of each species to that shown in the plant community description. For each species, count no more than the maximum amount shown for the species, and for each group, count no more than the maximum amount shown for each

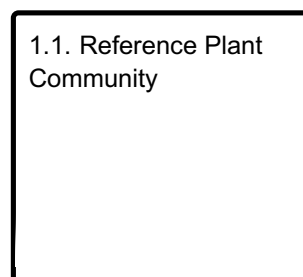
group. Divide the resulting total by the total normal year production shown in the plant community description. If the rainfall has been significantly above or below normal, use the total production shown for above or below normal years. If field data is not collected at the end of the summer growing season, then the field data must be corrected to the end of the year production before comparing it to the site description. The growth curve can be used as a guide for estimating production at the end of the summer growing season.

State and transition model

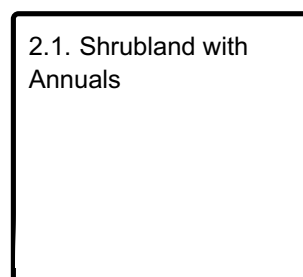
Ecosystem states



State 1 submodel, plant communities



State 2 submodel, plant communities



State 1 Reference State

A grassland community along low stream terraces of valley floors. Soils are very deep, well drained. Major grasses include Indian ricegrass, blue grama, galleta, and sand dropseed. Shrubs are widely scattered with some trees in some areas.

Community 1.1 Reference Plant Community

This range site is a grassland community on stream terraces with a cobbly and stoney soil surface. Shrubs are present with scattered trees (Utah juniper, Colorado pinyon) in some

areas. Major grasses species include Indian ricegrass, blue grama, galleta and sand dropseed. With severe disturbance, Fendler threeawn, broom snakeweed, Wyoming big sagebrush and Bigelow rubber rabbitbrush will increase; cheatgrass and Russian thistle will also invade.

Table 5. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	240	370	580
Shrub/Vine	60	90	140
Tree	30	40	60
Forb	10	20	20
Total	340	520	800

Table 6. Ground cover

Tree foliar cover	0-2%
Shrub/vine/liana foliar cover	1-5%
Grass/grasslike foliar cover	10-20%
Forb foliar cover	0-2%
Non-vascular plants	0%
Biological crusts	0%
Litter	0%
Surface fragments >0.25" and <=3"	0%
Surface fragments >3"	0%
Bedrock	0%
Water	0%
Bare ground	0%

Table 7. Canopy structure (% cover)

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

Figure 5. Plant community growth curve (percent production by month). AZ3503, 35.3 10-14" p.z. galleta. Growth begins in spring, most growth occurs during summer and early fall rainy season. Plants will green up again in the fall..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	0	5	20	15	20	30	10	0	0

Figure 6. Plant community growth curve (percent production by month). AZ3505, 35.3 10-14" p.z. Indian ricegrass. Growth begins in spring, with semi-dormancy occurring during July through August. Plants will green up again in the fall..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	10	20	25	20	5	5	10	5	0	0

Figure 7. Plant community growth curve (percent production by month). AZ3508, 35.3 10-14" p.z. Wyoming big sagebrush. Most growth occurs in spring and early summer. Stem elongation and seed set occur in the fall..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	5	15	30	20	10	10	10	0	0

Figure 8. Plant community growth curve (percent production by month). AZ3531, 35.3 10-14" p.z. all sites. Growth begins in the spring and continues through the summer..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	1	3	17	18	10	19	20	10	1	1	0

Figure 9. Plant community growth curve (percent production by month). AZ3567, 35.3 10-14" p.z. blue grama. Growth occurs mostly during the summer rainy season..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	0	5	5	30	55	5	0	0	0

State 2

Shrub and Annual State

The aspect of this site is a shrub dominated plant community with broom snakeweed, rubber rabbitbrush, and Wyoming big sagebrush. Dominant grasses include threeawns and warm season grasses including blue grama and dropseeds.

Community 2.1

Shrubland with Annuals

This plant community is comprised mostly shrubs, including broom snakeweed, Bigelow sagebrush, Wyoming big sagebrush and rubber rabbitbrush. Perennial cool season grasses are reduced with an increase of threeawn and other warm season grasses. Other plants that increase with disturbance are introduced annuals including cheatgrass and Russian thistle.

Transition T1A

State 1 to 2

Season-long grazing providing little rest and recovery for preferred grazed plants during critical growing periods, coupled with high utilization. This is coupled or preceded by prolonged drought and the establishment of introduced annuals.

Additional community tables

Table 8. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Lb/Acre)	Foliar Cover (%)
Tree					
0				30–50	
	Utah juniper	JUOS	<i>Juniperus osteosperma</i>	20–50	—
	twoneedle pinyon	PIED	<i>Pinus edulis</i>	6–13	—
Shrub/Vine					
0				50–80	
	blue grama	BOGR2	<i>Bouteloua gracilis</i>	17–34	—
	James' galleta	PLJA	<i>Pleuraphis jamesii</i>	17–34	—

	sand dropseed	SPCR	<i>Sporobolus cryptandrus</i>	17–34	–
	Wyoming big sagebrush	ARTRW8	<i>Artemisia tridentata</i> ssp. <i>wyomingensis</i>	5–26	–
	rubber rabbitbrush	ERNAB2	<i>Ericameria nauseosa</i> ssp. <i>nauseosa</i> var. <i>bigelovii</i>	5–26	–
	broom snakeweed	GUSA2	<i>Gutierrezia sarothrae</i>	5–26	–
2				20	
	Shrub (>.5m)	2SHRUB	<i>Shrub (>.5m)</i>	0–26	–
	fourwing saltbush	ATCA2	<i>Atriplex canescens</i>	0–11	–
	arctic alpine forget-me-not	ERNAC	<i>Eritrichium nanum</i> var. <i>chamissonis</i>	0–11	–
	plains pricklypear	OPPO	<i>Opuntia polyacantha</i>	0–11	–
	narrowleaf yucca	YUAN2	<i>Yucca angustissima</i>	0–5	–
	mormon tea	EPVI	<i>Ephedra viridis</i>	0–5	–
	alkali sacaton	SPAI	<i>Sporobolus airoides</i>	0–3	–
Grass/Grasslike					
0				300–340	
	Indian ricegrass	ACHY	<i>Achnatherum hymenoides</i>	53–105	–
	James' galleta	PLJA	<i>Pleuraphis jamesii</i>	26–53	–
	sand dropseed	SPCR	<i>Sporobolus cryptandrus</i>	26–53	–
	blue grama	BOGR2	<i>Bouteloua gracilis</i>	26–53	–
	squirreltail	ELELE	<i>Elymus elymoides</i> ssp. <i>elymoides</i>	5–26	–
	Fendler's threeawn	ARPUF	<i>Aristida purpurea</i> var. <i>fendleriana</i>	5–26	–
	Fendler's sandwort	ARFE3	<i>Arenaria fendleri</i>	3–17	–
	squirreltail	ELELE	<i>Elymus elymoides</i> ssp. <i>elymoides</i>	3–17	–
1				40–50	
	Grass, perennial	2GP	<i>Grass, perennial</i>	0–26	–
	needle and thread	HECOC8	<i>Hesperostipa comata</i> ssp. <i>comata</i>	0–16	–
	muttongrass	POFE	<i>Poa fendleriana</i>	0–11	–
	spike dropseed	SPCO4	<i>Sporobolus contractus</i>	0–11	–

	needle and thread	HECOC8	<i>Hesperostipa comata</i> ssp. <i>comata</i>	0–10	–
	alkali sacaton	SPAI	<i>Sporobolus airoides</i>	0–5	–
Forb					
0				0–30	
	Forb, perennial	2FP	<i>Forb, perennial</i>	5–16	–
	Forb, annual	2FA	<i>Forb, annual</i>	5–11	–
	muttongrass	POFE	<i>Poa fendleriana</i>	0–7	–
	spike dropseed	SPCO4	<i>Sporobolus contractus</i>	0–7	–

Animal community

This site is suitable for yearlong grazing by either cows and calves or stocker cattle but is not easily traversed because of the Cobbles and Boulders. Prescribed grazing systems can benefit this site by allowing rest periods for the cool season species. Soils on this site have high wind erosion hazard, particularly on overgrazed areas, roads, cattle trails and concentration areas.

This site offers a fair diversity in the vegetative complex for wildlife. In higher condition classes the site is most suitable to grassland wildlife species. As retrogression occurs the woody species increase and wildlife species utilizing the site may change.

Wildlife includes ground squirrel, lizards, cottontail rabbit, snakes, blacktail jackrabbit and mule deer.

Recreational uses

This site is typified by Cobbly cover and sandstone breaks, usually on stream terraces or near sandstone outcropping.

It has shrubby grasslands on areas with weathered sandstone outcrops. Winters are cold, however, moderate spring, fall and summer temperatures are attractive to recreational users. Site lends itself to activities such as hunting, horseback riding, photography, hiking, rock collecting, and wildlife observation.

Type locality

Location 1: Apache County, AZ	
Township/Range/Section	T40N R31E S18
General legal description	Beclabito quad - 3 mi NW of Beclabito along Shoegame Wash, Navajo Indian Reservation, Arizona

Contributors

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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)	
Contact for lead author	
Date	12/17/2025
Approved by	Kendra Moseley
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. Number and extent of rills:

2. Presence of water flow patterns:

3. Number and height of erosional pedestals or terracettes:

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

5. Number of gullies and erosion associated with gullies:

6. **Extent of wind scoured, blowouts and/or depositional areas:**

7. **Amount of litter movement (describe size and distance expected to travel):**

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

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):**

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:**

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

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:

Sub-dominant:

Other:

Additional:

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):**

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

15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):**

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:**

17. **Perennial plant reproductive capability:**
