USDA Natural Resources
Conservation Service

Ecological site R035XB278AZ
Loamy Upland 6-10" p.z. Saline, Gypsic

Last updated: 5/20/2025
Accessed: 05/21/2025

General information

Provisional. A provisional ecological site description has undergone quality control and quality assurance review. It contains a working state and transition model and enough information to identify the ecological site.

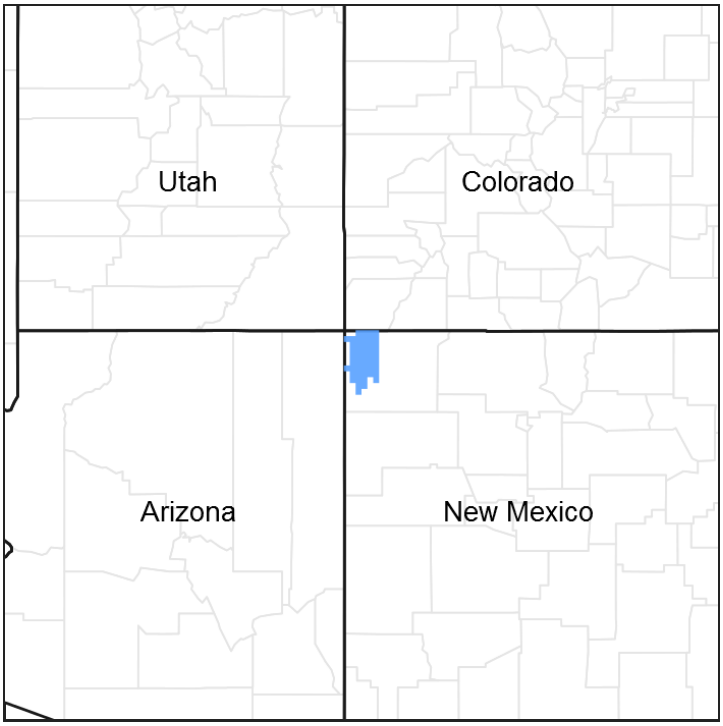


Figure 1. Mapped extent

Areas shown in blue indicate the maximum mapped extent of this ecological site. Other ecological sites likely occur within the highlighted areas. It is also possible for this ecological site to occur outside of highlighted areas if detailed soil survey has not been completed or recently updated.

MLRA notes

Major Land Resource Area (MLRA): 035X–Colorado Plateau

AZ CRA 35.2 - Colorado Plateau Shrub – Grasslands

Elevations range from 3500-5500 feet and precipitation averages 6 to 10 inches per year. Vegetation includes shadscale, fourwing saltbush, Mormon tea, blackbrush, Indian ricegrass, galleta, blue grama, and black grama. The soil temperature regime is mesic and the soil moisture regime is typic 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

The soils on this site are moderately deep (20-40"), very deep (60+") and well drained. They are formed in alluvium and residuum derived from siltstone and sandstone. Surface textures include very fine sandy loam. These soils contain subsurface horizons with secondary accumulations of gypsum. EC ranges from 4 to 16 mmhos/cm; SAR ranges from 0 to 30.
This site occurs on fan remnants and toeslopes of undulating plateaus. Slopes range from 1 to 5 percent.

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) *Atriplex cuneata* (2) *Atriplex elegans var. fasciculata*
Herbaceous	(1) *Achnatherum hymenoides* (2) *Sporobolus airoides*

Physiographic features

This site occurs on fan remnants and toeslopes of undulating plateaus.

This is an upland site. It does not benefit from run-in moisture nor does it sustain excessive loss from runoff. It occurs on all exposures.

Table 2. Representative physiographic features

Landforms	(1) Fan remnant (2) Plateau
Flooding frequency	None to very rare
Ponding frequency	None to rare
Elevation	1,524–1,707 m
Slope	1–5%
Aspect	Aspect is not a significant factor

Climatic features

The climate of the land resource unit is arid with warm summers and cool winters. This is one of the driest land resource units on the Colorado Plateau with an average annual precipitation ranging from 6 to 10 inches per year. It is also very erratic, often varying substantially from year to year. 40 to 50 percent of the precipitation is received from October through early May. This precipitation comes as gentle rain or snow from frontal storms coming out of the Pacific Ocean. Snow is common from November through February. Generally no more than an inch or two of snow accumulates and usually melts within a day or two. The remaining precipitation, approximately 50 to 60 percent, is received from July through September as spotty, unreliable and sometimes violent thunderstorms. The moisture for this precipitation originates in the Gulf of Mexico (and the Pacific Ocean in the fall) and flows into the area on the north end of the Mexican monsoon. Late May through late June is generally a dry period. The mean annual temperature ranges from 53 to 56 degrees Fahrenheit (F). The frost-free period (air temperature > 32 degrees F) ranges from 135 to 160 days (@ 50 percent probability). Strong winds are common, especially in the spring.

Table 3. Representative climatic features

Frost-free period (average)	160 days
Freeze-free period (average)	184 days
Precipitation total (average)	254 mm

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 moisture from landforms above and contribute runoff to landforms below.

Soil features

Soil Depth
The soils on this site are moderately deep (20-40"), very deep (60+") and well drained. They are formed in alluvium and residuum derived from siltstone and sandstone.
Surface texture and surface depth
Surface textures include very fine sandy loam.
Subsurface Textures
Subsurface textures include fine sandy loam, loam and silt loam.
Other Soil Features
Hazard of erosion by water is slight and by wind is severe. There is secondary gypsum at 15-30 inches.

Typical taxonomic units include:

SSA 717 Shiprock NM - MU's 245 Tsebitai and 250 Nataani part.

Table 4. Representative soil features

Parent material	(1) Alluvium–sandstone and siltstone
Surface texture	(1) Very fine sandy loam
Family particle size	(1) Loamy
Drainage class	Moderately well drained to well drained
Permeability class	Moderately slow to moderate
Soil depth	51–152 cm
Surface fragment cover <=3"	0–5%
Available water capacity (0-101.6cm)	6.35–25.4 cm
Calcium carbonate equivalent (0-101.6cm)	5–15%
Electrical conductivity (0-101.6cm)	4–16 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	0–30
Soil reaction (1:1 water) (0-101.6cm)	7.4–8.4

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 grazing, fire, or drought.

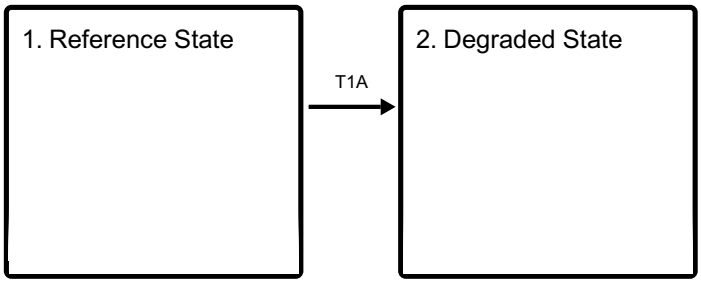
Production data provided in this site description is standardized to air-dry weight at the end of the summer growing season. The plant communities described in this site description are based on near normal rainfall years.

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

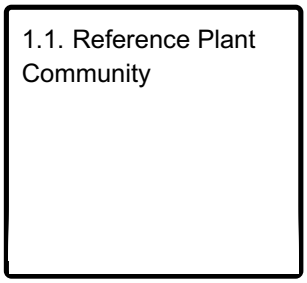
community described in this site description. To determine Similarity Index, compare the production (air-dry weight) of each species to that shown in the plant community description. For each species, count no more than the maximum amount shown for the species, and for each group, count no more than the maximum shown for the group. Divide the resulting total by the total normal year production shown in the plant community description. If 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 1
Reference State

This state represents the most ecologically stable conditions in terms of resistance to erosion. Moreover, this state has the highest potential for productivity and plant diversity.

Community 1.1
Reference Plant Community

This site has a plant community up primarily of grasses and low growing shrubs. Forbs are present in monor amounts. In the original plant community there is a mixture of both cool and warm season grasses. The salinity and sodicity of the soil determines the shrub species that grow in this site. Plant species most likely to invade or increase on this site when it deteriorates are Russian thistle and other annual weeds. Indian ricegrass tends to increase. Continuous grazing during the winter and spring periods will decrease the cool season grasses, which are replaced by warm season, lower forage value grasses and

shrubs.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	291	347	415
Shrub/Vine	101	135	179
Forb	6	17	34
Total	**398**	**499**	**628**

Figure 5. Plant community growth curve (percent production by month). AZ3521, 35.2 6-10" p.z. all sites. Growth begins in the spring and continues through the summer. Most growth in this CRA occurs in the spring using stored winter moisture..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	1	9	20	27	14	10	11	5	3	0	0

Figure 6. Plant community growth curve (percent production by month). AZ5201, 35.2 6-10" p.z. galleta. Growth begins in spring, most growth occurs during summer rains..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	5	10	20	10	15	35	5	0	0	0

Figure 7. Plant community growth curve (percent production by month). AZ5202, Indian ricegrass, 35.2 6-10" p.z.. Growth begins in spring, most growth occurs in May, goes dormant during summer heat..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	10	15	40	20	0	0	10	5	0	0

Figure 8. Plant community growth curve (percent production by month). AZ5203, 35.2 6-10" p.z. alkali sacaton. Growth begins in the spring, most growth occurs in the summer, goes dormant in the fall..

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

State 2
Degraded State

Plant species most likely to invade or increase on this site when it deteriorates are Russian thistle and other annual weeds. Indian ricegrass tends to increase. Continuous grazing during the winter and spring periods will decrease the cool season grasses, which are replaced by warm season, lower forage value grasses and shrubs.

Dominant plant species

- prickly Russian thistle (*Salsola tragus*), other herbaceous

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. Plant species most likely to invade or increase on this site when it deteriorates are Russian thistle and other annual weeds. Indian ricegrass tends to increase. Continuous grazing during the winter and spring periods will decrease the cool season grasses, which are replaced by warm season, lower forage value grasses and shrubs.

Additional community tables

Table 6. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
Shrub/Vine					
0				101–146	
	valley saltbush	ATCU	*Atriplex cuneata*	50–76	–
	wheelscale saltbush	ATELF	*Atriplex elegans var. fasciculata*	6–26	–
	shadscale saltbush	ATCO	*Atriplex confertifolia*	0–26	–
	bud sagebrush	PIDE4	*Picrothamnus desertorum*	0–20	–
	winterfat	KRLA2	*Krascheninnikovia lanata*	0–16	–
	Shrub (>.5m)	2SHRUB	*Shrub (>.5m)*	0–10	–
	fourwing saltbush	ATCA2	*Atriplex canescens*	0–6	–
Grass/Grasslike					
0				303–347	
	Indian ricegrass	ACHY	*Achnatherum hymenoides*	127–151	–
	alkali sacaton	SPAI	*Sporobolus airoides*	76–101	–
	James' galleta	PLJA	*Pleuraphis jamesii*	26–50	–
	Grass, perennial	2GP	*Grass, perennial*	0–26	–
	sand dropseed	SPCR	*Sporobolus cryptandrus*	16–26	–
	squirreltail	ELELE	*Elymus elymoides ssp. elymoides*	16–26	–
Forb					
0				6–22	
	Forb, perennial	2FP	*Forb, perennial*	6–16	–
	Forb, annual	2FA	*Forb, annual*	0–10	–

Animal community

This site is suitable for grazing by all classes of livestock most seasons of the year. Grazing systems adapt well to this site and should be used. When vegetation deteriorates this site is susceptible to erosion.
Wildlife species are transient on this site from adjacent areas.

Recreational uses

The topography of this site and the grassy aspect gives good aesthetic appeal.
The winters are cold and spring time is usually windy. The summers are mild with typical southwest thunderstorms.
The main activities are seasonal and include photography, wildlife observation and hiking.

Type locality

Location 1: San Juan County, NM	
Township/Range/Section	T27N R18W S2
General legal description	Table Mesa quad - about 1 mile north of Table Mesa - Navajo Reservation NM.

Contributors

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Approval

Kendra Moseley, 5/20/2025

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	05/21/2025
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):

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

    Dominant:

    Sub-dominant:

    Other:

    Additional:

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

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

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

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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:**

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17. **Perennial plant reproductive capability:**
