

Ecological site R040XC319AZ

Sandy Upland

3"-7" p.z.

Accessed: 09/14/2026

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.

MLRA notes

Major Land Resource Area (MLRA): 040X–Sonoran Basin and Range

AZ 40.3 – Colorado Sonoran Desert Elevations range from 300 to 1200 feet and precipitation averages 3 to 7 inches per year. Vegetation includes creosotebush, white bursage, brittlebush, Mormon tea, teddybear cholla, elephant tree, smoke tree, ocotillo, and big galleta. The soil temperature regime is hyperthermic and the soil moisture regime is typic aridic. This unit occurs within the Basin and Range Physiographic Province and is characterized by numerous mountain ranges that rise abruptly from broad, plain-like valleys and basins. Igneous and metamorphic rock classes dominate the mountain ranges and sediments filling the basins represent combinations of fluvial, lacustrine, colluvial and alluvial deposits.

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) <i>Ambrosia dumosa</i> (2) <i>Larrea tridentata</i> var. <i>tridentata</i>
Herbaceous	(1) <i>Pleuraphis rigida</i> (2) <i>Muhlenbergia porteri</i>

Physiographic features

This range site occurs on recently blown sand dunes, mesas and alluvial fans. The Rositas soils receive no runoff from the surrounding areas, and it does not suffer from excessive loss from runoff. The Vint soils benefit greatly from run-in moisture from surrounding areas, however, they do not suffer from excessive runoff.

Table 2. Representative physiographic features

Landforms	(1) Dune (2) Mesa (3) Alluvial fan
Elevation	20 – 310 m
Slope	0 – 20 %

Aspect	Aspect is not a significant factor
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Climatic features

Precipitation in this common resource area ranges from 3-7 inches yearly. Despite historical averages in rainfall amounts, as one moves from east to west in this resource area rains become more unpredictable and variable with Coefficients of Variation of annual rainfall equal to 44% at Gila Bend and 65% at Mohawk. Winter-Summer rainfall ratios are 40-60%. Summer rains fall July-September, originate in the Gulf of Mexico and are convective, usually brief intense thunderstorms. Summer thunderstorms usually form over the mountains in the afternoon and spread to the valleys and plains in the evening. The intensity of this precipitation is moderate to heavy, but rarely lasts more than half an hour. Many times these storms produce little more than gusty winds and light showers. Cool season moisture tends to be frontal, originate in the Pacific and Gulf of California and falls in widespread storms with long duration and low intensity. Snow is very rare and falls normally only in the higher mountains.

Mean temperatures for the hottest month (Jul) is 93 F; the coldest month (Jan) is 53 F. Extreme temperatures of 125 F and 10 F have been recorded. Long periods with little or no effective moisture occur frequently.

The winter-spring precipitation is the most dependable on the site. Perennial grasses, though classed as warm season growers, grow actively year-round when moisture is available. Shrubs and trees generally respond to seasonal moisture. The two rainy periods bring about their respective production of either winter or summer annual grasses and forbs.

Table 3 Representative climatic features

Frost-free period (average)	360 days
Freeze-free period (average)	0 days
Precipitation total (average)	180 mm

Influencing water features

Soil features

Soils that are grouped together on this site are deep to bedrock or other plant root restricting layers. The surface soil textures range in depth of 8-12 inches, with textures from sand to loamy fine sand. The underlying layers have moderately rapid or rapid permeability, but can absorb and hold all the moisture climate supplies. Soluble salt accumulations are low and pH ranges from 7.9-8.4. With good vegetative cover, infiltration rates are high. The soil blowing hazard is severe and plant-soil moisture relationships are fair. Percent coarse fragments average less than 15% of the total soil volume. Soils mapped on this site include: in SSA-645 Aguila-Carefree area MU Carrizo-14; SSA-649 Yuma-Wellton area MU Vint-32; SSA-653 Gila Bend-Ajo area MU Rositas LFS-57; SSA-656 Colorado River Indian Reservation MU's Rositas-29 & Torripsamments-4.

Table 4. Representative soil features

Surface texture	(1) Sand (2) Loamy sand (3) Loamy fine sand
Family particle size	(1) Sandy
Drainage class	Well drained

Permeability class	Very rapid
Soil depth	150 cm
Surface fragment cover <=3"	0 – 20 %
Surface fragment cover >3"	Not specified
Available water capacity (0-101.6cm)	9.14 – 12.19 cm
Calcium carbonate equivalent (0-101.6cm)	Not specified
Electrical conductivity (0-101.6cm)	Not specified
Sodium adsorption ratio (0-101.6cm)	Not specified
Soil reaction (1:1 water) (0-101.6cm)	7.4 – 8.4
Subsurface fragment volume <=3" (Depth not specified)	Not specified
Subsurface fragment volume >3" (Depth not specified)	Not specified

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

Additional community tables

Table 5. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
Grass/Grasslike					
0	Dominant Perennial Grass			370-437	
	big galleta	PLRI3	<i>Pleuraphis rigida</i>	370-437	–
1	Misc. Perennial Grasses			34-67	
	California threeawn	ARCA9	<i>Aristida californica</i>	16-33	–
	threeawn	ARIST	<i>Aristida</i>	16-33	–
	bush muhly	MUPO2	<i>Muhlenbergia porteri</i>	16-33	–
	desert panicgrass	PAUR	<i>Panicum urvilleanum</i>	16-33	–
	sand dropseed	SPCR	<i>Sporobolus cryptandrus</i>	16-33	–
	mesa dropseed	SPFL2	<i>Sporobolus flexuosus</i>	16-33	–
2	Annual Grasses			7-20	
	sixweeks threeawn	ARAD	<i>Aristida adscensionis</i>	3-10	–
	needle grama	BOAR	<i>Bouteloua aristidoides</i>	3-10	–
	sixweeks grama	BOBA2	<i>Bouteloua barbata</i>	3-10	–
	purple fleabane	ERPU3	<i>Erigeron purpuratus</i>	3-10	–
	littleseed muhly	MUMI	<i>Muhlenbergia microsperma</i>	3-10	–
	Bigelow's bluegrass	POBI	<i>Poa bigelovii</i>	3-10	–
	sixweeks fescue	VUOC	<i>Vulpia octoflora</i>	3-10	–
Forb					
3	Misc. Forbs			7-34	
	desert sand verbena	ABVI	<i>Abronia villosa</i>	0-1	–
	onyxflower	ACCO3	<i>Achyronychia cooperi</i>	0-1	–
	common fiddleneck	AMMEI2	<i>Amsinckia menziesii</i> var. <i>intermedia</i>	0-1	–
	bristly fiddleneck	AMTE3	<i>Amsinckia tessellata</i>	0-1	–
	New Mexico silverbush	ARNE2	<i>Argythamnia neomexicana</i>	0-1	–
	Cedros milkvetch	ASIN6	<i>Astragalus insularis</i>	0-1	–
	desert marigold	BAMU	<i>Baileya multiradiata</i>	0-1	–
	spiderling	BOERH2	<i>Boerhavia</i>	0-1	–
	Booth's suncup	CABOB	<i>Camissonia boothii</i> ssp. <i>boothii</i>	0-1	–
	brittle spineflower	CHBR	<i>Chorizanthe brevicornu</i>	0-1	–
	Esteve's pincushion	CHST	<i>Chaenactis stevioides</i>	0-1	–
	Panamint cryptantha	CRAN4	<i>Cryptantha angustifolia</i>	0-1	–
	redroot cryptantha	CRMI	<i>Cryptantha micrantha</i>	0-1	–
	wingnut cryptantha	CRPT	<i>Cryptantha pterocarya</i>	0-1	–

	soft prairie clover	DAMO2	<i>Dalea mollissima</i>	0-1	–
	California shieldpod	DICA7	<i>Dithyrea californica</i>	0-1	–
	miniature woollystar	ERDI2	<i>Eriastrum diffusum</i>	0-1	–
	desert trumpet	ERIN4	<i>Eriogonum inflatum</i>	0-1	–
	kidneyleaf buckwheat	ERRE3	<i>Eriogonum reniforme</i>	0-1	–
	Thomas' buckwheat	ERTH	<i>Eriogonum thomasi</i>	0-1	–
	little deserttrumpet	ERTR8	<i>Eriogonum trichopes</i>	0-1	–
	California poppy	ESCAM	<i>Eschscholzia californica ssp. mexicana</i>	0-1	–
	spurge	EUPHO	<i>Euphorbia</i>	0-1	–
	desert lily	HEUN2	<i>Hesperocallis undulata</i>	0-1	–
	Great Basin langloisia	LASE3	<i>Langloisia setosissima</i>	0-1	–
	shaggyfruit pepperweed	LELA	<i>Lepidium lasiocarpum</i>	0-1	–
	Bigelow's linanthus	LIBI2	<i>Linanthus bigelovii</i>	0-1	–
	foothill deervetch	LOHU2	<i>Lotus humistratus</i>	0-1	–
	strigose bird's-foot trefoil	LOSTT	<i>Lotus strigosus var. tomentellus</i>	0-1	–
	bajada lupine	LUCO	<i>Lupinus concinnus</i>	0-1	–
	California desertdandelion	MACA6	<i>Malacothrix californica</i>	0-1	–
	yellowcomet	MEAF2	<i>Mentzelia affinis</i>	0-1	–
	whitestem blazingstar	MEAL6	<i>Mentzelia albicaulis</i>	0-1	–
	cottonheads	NEDE	<i>Nemacaulis denudata</i>	0-1	–
	glandular threadplant	NEGL	<i>Nemacladus glanduliferus</i>	0-1	–
	birdcage evening primrose	OEDE2	<i>Oenothera deltoidea</i>	0-1	–
	desert evening primrose	OEPR	<i>Oenothera primiveris</i>	0-1	–
	giant Spanish needle	PAARG	<i>Palafoxia arida var. gigantea</i>	0-1	–
	chuckwalla combseed	PEHE	<i>Pectocarya heterocarpa</i>	0-1	–
	broadfruit combseed	PEPL	<i>Pectocarya platycarpa</i>	0-1	–
	desert Indianwheat	PLOV	<i>Plantago ovata</i>	0-1	–
	desert unicorn-plant	PRAL4	<i>Proboscidea althaeifolia</i>	0-1	–
	New Mexico plumeseed	RANE	<i>Rafinesquia neomexicana</i>	0-1	–
	desert globemallow	SPAM2	<i>Sphaeralcea ambigua</i>	0-1	–
	Coulter's globemallow	SPCO2	<i>Sphaeralcea coulteri</i>	0-1	–
	small wirelettuce	STEX	<i>Stephanomeria exigua</i>	0-1	–
	longbeak streptanthella	STLO4	<i>Streptanthella longirostris</i>	0-1	–

Shrub/Vine

4	Dominant Shrub			101-135	
	burrobush	AMDU2	<i>Ambrosia dumosa</i>	101-135	–
5	Misc. Shrubs			34-67	
	triangle bur ragweed	AMDE4	<i>Ambrosia deltoidea</i>	3-7	–
	California croton	CRCAS	<i>Croton californicus</i>	3-7	–
	longleaf jointfir	EPTR	<i>Ephedra trifurca</i>	3-7	–
	ocotillo	FOSP2	<i>Fouquieria splendens</i>	3-7	–
	littleleaf ratany	KRER	<i>Krameria erecta</i>	3-7	–
	white ratany	KRGR	<i>Krameria grayi</i>	3-7	–
	creosote bush	LATRT	<i>Larrea tridentata var. tridentata</i>	3-7	–
	honey mesquite	PRGL2	<i>Prosopis glandulosa</i>	3-7	–
	dyebush	PSEM	<i>Psoralemmus emoryi</i>	3-7	–

	lotebush	ZIOBO	<i>Ziziphus obtusifolia</i> var. <i>obtusifolia</i>	3-7	–
6	Succulents			7-13	
	buckhorn cholla	CYACA2	<i>Cylindropuntia acanthocarpa</i> var. <i>acanthocarpa</i>	1-3	–
	Wiggins' cholla	CYEC3	<i>Cylindropuntia echinocarpa</i>	1-3	–
	branched pencil cholla	CYRA9	<i>Cylindropuntia ramosissima</i>	1-3	–
	Engelmann's hedgehog cactus	ECEN	<i>Echinocereus engelmannii</i>	1-3	–
	California barrel cactus	FECYC	<i>Ferocactus cylindraceus</i> var. <i>cylindraceus</i>	1-3	–

Animal community

This site produces year-round forage and is easily traversed by all classes of cattle. As these soils are very susceptible to wind and water erosion, management that maintains the plant cover is most important. Fencing and water development may be important in achieving grazing control. This site has good diversity in the potential plant community, however, grasses dominate the general aspect. The site is primarily transitory for large mammals. Burrowing rodents are numerous and raptors, the predatory mammals, use the site frequently as a feeding area. Free water is totally lacking on the site.

Recreational uses

This site occurs as level, hummocky or low dune uplands, along drainageways and throughout the desert plains. In years with average or better winter precipitation, forbs such as sand verbena and dune primrose lend much color to the site and provide good contrast to the grassy appearance. This is perhaps the most showy site in the desert when good winter moisture is received. Very few days in the fall, winter or spring are too uncomfortable to enjoy outdoor activities. In Jun-Aug, however, the afternoon heat restricts activity. Horseback riding, wildlife observation, hunting, hiking and photography are the main activities suited for this site.

Type locality

Location 1: La Paz County, AZ	
Township/Range/Section	T8N R17W S23
General legal description	Nine Mile Allotment, Cactus Plain S23, R17W, T8N - La Paz county Nine Mile Allotment, La Rosa Plain, S34, R19W, T7N - La Paz county Sentinel Allotment S16, R10W, T7S - Maricopa county.

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	
Approved by	
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:
