

Ecological site R030XC321AZ
Sandy Loam Upland
10-13" p.z.
Fine

Last updated: 10/21/2024
Accessed: 08/18/2026

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): 030X–Mojave Basin and Range

This unit occurs within the Basin and Range Province and is characterized by broad basins, valleys, and old lakebeds. Widely spaced mountains trending north to south occur throughout the area. Isolated, short mountain ranges are separated by an aggraded desert plain. The mountains are fault blocks that have been tilted up. Long alluvial fans coalesce with dry lakebeds between some of the ranges.

LRU notes

AZ LRU 30-3 – Upper Mohave Desert Elevations range from 2800 to 4500 feet and precipitation averages 9 to 12 inches per year. Vegetation includes Joshua tree, blackbrush, creosotebush, ratany, bush muhly, big galleta, black grama, desert needlegrass, and Indian ricegrass. The soil temperature regime is thermic and the soil moisture regime is typic aridic.

Ecological site concept

This ecological site is located on gently sloping uplands. Soils are non-calcareous, moderately deep to deep. Textures range from sandy loam to gravelly loamy sand, and/or fine sandy loam.

Associated sites

R030XC305AZ	Coarse Sandy Loam 10-13" p.z.
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Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	(1) <i>Pleuraphis rigida</i> (2) <i>Bouteloua eriopoda</i>

Physiographic features

This ecological site is found in an upland position on shoulders, summits and sideslopes of fan terraces.

Table 2. Representative physiographic features

Landforms	(1) Terrace (2) Fan
Flooding frequency	None
Ponding frequency	None
Elevation	730 – 1,220 m
Slope	0 – 10 %
Aspect	Aspect is not a significant factor

Climatic features

The climate is arid and warm. Annual precipitation ranges from 10 to 13 inches. About 65 percent of the rainfall comes from October through May as gentle rain from Pacific storms which may last for a couple of days. The rest of the rainfall comes during the summer monsoon season from July through September as spotty, brief, intense thunderstorms. Snow rarely falls, and only remains on the ground a few hours at most. Annual air temperature ranges from 46 to 76 degrees F. The average frost-free period ranges from 121 to 231 days.

Table 3 Representative climatic features

Frost-free period (average)	230 days
Freeze-free period (average)	270 days
Precipitation total (average)	330 mm

Influencing water features

Soil features

The soil of this ecological site is deep to very deep with surface textures of sandy loam, gravelly sandy loam and gravelly loam. Subsoil textures are sandy clay loam, coarse sandy loam, gravelly sandy loam, gravelly sandy clay loam, very gravelly sandy loam, sandy loam, extremely gravelly sand, and gravelly loamy sand. The soil parent material is alluvium from granite and igneous rocks. Geologic formation varies. Soil available water capacity is moderate to high. The soil's erosion hazard from water is slight to moderate and from wind is slight. The soil is non-sodic, non-saline with pH of 7.4-8.0 (mildly to moderately alkaline). The soil moisture regime is typic aridic and temperature regime is thermic.

A typical soil profile is:

A-0 to 4 inches; gravelly loamy sand

BA-4 to 10 inches; gravelly sandy loam

2Bt1-10 to 26 inches; gravelly sandy clay

2Bt2-26 to 40 inches; gravelly sandy clay loam

3Bkn-40 to 60 inches; very gravelly sand

Soil taxonomic classifications include Fine, mixed, superactive, thermic Typic Haplargids; Fine-loamy, mixed, superactive, thermic Ustic

Haplargids; Fine-loamy, mixed, superactive, thermic Typic Haplargids; Fine, mixed, superactive, thermic Ustic Haplargids.

Soil mapping units correlated to this ecological site are 627125, Vekol family, Mohave County, AZ, Southern Part and 697057, 627090, 697165, Courtland family, Dutchflat, Whitehouse soils, Mohave County, AZ, Central Part.

Table 4. Representative soil features

Parent material	(1) Alluvium – granite
Surface texture	(1) Gravelly sandy loam (2) Gravelly loam (3) Sandy loam
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Moderately slow to moderate
Soil depth	150 cm
Surface fragment cover <=3"	20 – 50 %
Surface fragment cover >3"	Not specified
Available water capacity (0-101.6cm)	12.7 – 17.78 cm
Calcium carbonate equivalent (0-101.6cm)	0 – 10 %
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)	20 – 70 %
Subsurface fragment volume >3" (Depth not specified)	0 – 10 %

Ecological dynamics

Sandy Loam Upland, Fine, 10"-13" p.z., is a grass-shrubland ecological site. Shrubs are well-dispersed across the site. Annual forbs and grasses flourish following rainfall. Natural disturbances are rare. After introduction of non-native annuals (forbs and/or grasses), the shift in total productivity is shift increased seasonal herbaceous production following periods of rain. Continuous, yearlong, livestock grazing will remove the perennial grass dominance.

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					
1				50-84	
	big galleta	PLRI3	<i>Pleuraphis rigida</i>	50-84	–
2				17-34	
	black grama	BOER4	<i>Bouteloua eriopoda</i>	17-34	–
3				17-34	
	bush muhly	MUPO2	<i>Muhlenbergia porteri</i>	17-34	–
4				3-7	
	Parish's threeawn	ARPUP5	<i>Aristida purpurea var. parishii</i>	3-7	–
5				0-7	
	sand dropseed	SPCR	<i>Sporobolus cryptandrus</i>	0-7	–
6				3-17	
	spike dropseed	SPCO4	<i>Sporobolus contractus</i>	3-17	–
7				0-7	
	low woollygrass	DAPU7	<i>Dasyochloa pulchella</i>	0-7	–
8				3-17	
	Grass, perennial	2GP	<i>Grass, perennial</i>	3-17	–
9				3-17	
	Grass, annual	2GA	<i>Grass, annual</i>	3-17	–
Forb					
10				3-17	
	desert globemallow	SPAM2	<i>Sphaeralcea ambigua</i>	3-17	–
11				3-10	
	Forb, perennial	2FP	<i>Forb, perennial</i>	3-10	–

12				3-13	
	Forb, annual	2FA	<i>Forb, annual</i>	3-13	–
Shrub/Vine					
13				3-17	
	fourwing saltbush	ATCA2	<i>Atriplex canescens</i>	3-17	–
14				0-7	
	Eastern Mojave buckwheat	ERFAP	<i>Eriogonum fasciculatum var. polifolium</i>	0-7	–
15				3-10	
	Mexican bladdersage	SAME	<i>Salazaria mexicana</i>	3-10	–
16				3-17	
	rayless goldenhead	ACSP	<i>Acamptopappus sphaerocephalus</i>	3-17	–
17				3-7	
	Nevada jointfir	EPNE	<i>Ephedra nevadensis</i>	3-7	–
18				0-17	
	broom snakeweed	GUSA2	<i>Gutierrezia sarothrae</i>	0-17	–
19				3-10	
	burrobrush	HYSA	<i>Hymenoclea salsola</i>	3-10	–
20				3-17	
	littleleaf ratany	KRER	<i>Krameria erecta</i>	3-17	–
21				3-17	
	water jacket	LYAN	<i>Lycium andersonii</i>	3-17	–
22				3-10	
	banana yucca	YUBA	<i>Yucca baccata</i>	3-10	–
23				3-17	
	banana yucca	YUBA	<i>Yucca baccata</i>	3-17	–
24				0-3	
	beavertail pricklypear	OPBA2	<i>Opuntia basilaris</i>	0-3	–
25				3-10	
	branched pencil cholla	CYRA9	<i>Cylindropuntia ramosissima</i>	3-10	–
26				3-17	
	Shrub, other	2S	<i>Shrub, other</i>	3-17	–

Table 6. Community 2.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 7. Community 3.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Contributors

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Approval

Kendra Moseley, 10/21/2024

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	08/18/2026
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:
