

Ecological site R030XC313AZ
Limy Upland
10-13" p.z.
Deep

Last updated: 10/21/2024
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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.

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. Skeletal soils are calcareous, moderately deep to deep.

Associated sites

R030XC311AZ	Limy Upland 10-13" p.z. Limy Upland, 10 to 13
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Similar sites

R030XC318AZ	Sandy Loam Upland 10-13" p.z. Limy, Skeletal Sandy Loam Upland, Limy, Skeletal, 10 to 13
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Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) <i>Larrea tridentata</i> (2) <i>Lycium andersonii</i>

Herbaceous	(1) <i>Pleuraphis rigida</i>
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Physiographic features

This ecological site is found in an upland position on summits and backslopes of fan terraces and alluvial fans. The soil of this ecological site is very calcareous.

Table 2. Representative physiographic features

Landforms	(1) Alluvial fan (2) Fan (3) Terrace
Flooding frequency	None
Ponding frequency	None
Elevation	880 – 1,010 m
Slope	0 – 20 %
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. Surface textures of the soil are gravelly sandy loam, gravelly fine sandy loam, very gravelly fine sandy loam and very cobbly loamy fine sand. Subsoil textures are gravelly sandy loam, very gravelly sandy loam, gravelly fine sandy loam, fine sandy loam, very gravelly loamy fine sand, very gravelly sand, loamy fine sand and very gravelly loamy coarse

sand. The soil's parent material is mixed igneous and metamorphic alluvium and colluvium. The soil's erosion hazard by water is very low to low and by wind is slight to moderate. The soil is non-saline, non-sodic with pH range of 7.8-8.6 (mildly to strongly alkaline). The soil moisture regime is typic aridic and temperature regime is thermic.

Calcium carbonate is found throughout the soil profile.

A typical soil profile is:

0 to 2 inches; very gravelly fine sandy loam

2 to 18 inches; calcareous very gravelly loam

18 to 32 inches; calcareous very gravelly sandy loam

32 to 48 inches; gypsiferous very gravelly sandy loam

48 to 60 inches; gypsiferous extremely gravelly loamy sand

Taxonomic classifications of soils correlated to this ecological site include Loamy-skeletal, gypsic, thermic Typic Gypsiorthids and Loamy-skeletal, mixed, superactive, thermic Typic Haplocambids.

Soil mapping units correlated to this ecological site include 697026 and 697027, Detrital soil, Mohave County, AZ, Central Part SSA and 623001, Mokaac and Akinville soils, Shivwits Area, AZ, SSA.

Table 4. Representative soil features

Surface texture	(1) Gravelly sandy loam (2) Gravelly fine sandy loam (3) Very gravelly fine sandy loam
Family particle size	(1) Loamy
Drainage class	Somewhat excessively drained to excessively drained
Permeability class	Moderate to rapid
Soil depth	150 cm
Surface fragment cover <=3"	50 – 60 %
Surface fragment cover >3"	10 – 20 %
Available water capacity (0-101.6cm)	7.62 – 13.97 cm
Calcium carbonate equivalent (0-101.6cm)	10 – 40 %
Electrical conductivity (0-101.6cm)	Not specified

Soil reaction (1:1 water) (0-101.6cm)	7.4 – 8.4
Subsurface fragment volume <=3" (Depth not specified)	50 – 60 %
Subsurface fragment volume >3" (Depth not specified)	10 – 20 %

Ecological dynamics

Limy Upland, Deep, 10"-13" p.z., is a shrub dominated ecological site. Perennial grasses and forbs are scattered. 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. Dominant shrubs are creosote and rayless goldenhead. Assorted half-shrubs are widely scattered.

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				3-17	
	bush muhly	MUPO2	<i>Muhlenbergia porteri</i>	3-17	–
3				0-7	
	low woollygrass	DAPU7	<i>Dasyochloa pulchella</i>	0-7	–
4				3-17	
	sand dropseed	SPCR	<i>Sporobolus cryptandrus</i>	0-17	–
	mesa dropseed	SPFL2	<i>Sporobolus flexuosus</i>	0-17	–
5				3-17	
	Indian ricegrass	ACHY	<i>Achnatherum hymenoides</i>	3-17	–
6				3-10	
	threeawn	ARIST	<i>Aristida</i>	3-10	–
7				0-7	
	Grass, perennial	2GP	<i>Grass, perennial</i>	0-7	–
8				3-7	
	Grass, annual	2GA	<i>Grass, annual</i>	3-7	–
Forb					
9				3-17	
	desert globemallow	SPAM2	<i>Sphaeralcea ambigua</i>	3-17	–
	desert globemallow	SPAM2	<i>Sphaeralcea ambigua</i>	3-17	–
10				0-7	
	Forb, perennial	2FP	<i>Forb, perennial</i>	0-3	–

	desert marigold	BAMU	<i>Baileya multiradiata</i>	0-3	–
	desert trumpet	ERIN4	<i>Eriogonum inflatum</i>	0-3	–
	Gordon's bladderpod	LEGO	<i>Lesquerella gordonii</i>	0-3	–
11				0-7	
	Forb, annual	2FA	<i>Forb, annual</i>	0-7	–
Shrub/Vine					
12				34-67	
	creosote bush	LATR2	<i>Larrea tridentata</i>	34-67	–
13				3-17	
	rayless goldenhead	ACSP	<i>Acamptopappus sphaerocephalus</i>	3-17	–
14				17-34	
	water jacket	LYAN	<i>Lycium andersonii</i>	17-34	–
15				0-17	
	littleleaf ratany	KRER	<i>Krameria erecta</i>	0-17	–
	white ratany	KRGR	<i>Krameria grayi</i>	0-17	–
16				3-17	
	Nevada jointfir	EPNE	<i>Ephedra nevadensis</i>	3-17	–
17				3-10	
	pricklypear	OPUNT	<i>Opuntia</i>	3-10	–
18				3-10	
	pricklypear	OPUNT	<i>Opuntia</i>	3-10	–
19				3-17	
	Shrub, other	2S	<i>Shrub, other</i>	0-6	–
	burrobush	AMDU2	<i>Ambrosia dumosa</i>	0-6	–
	kingcup cactus	ECTR	<i>Echinocereus triglochidiatus</i>	0-6	–
	spiny hopsage	GRSP	<i>Grayia spinosa</i>	0-6	–
	broom snakeweed	GUSA2	<i>Gutierrezia sarothrae</i>	0-6	–
	burrobrush	HYSA	<i>Hymenoclea salsola</i>	0-6	–
	winterfat	KRLA2	<i>Krascheninnikovia lanata</i>	0-6	–
	banana yucca	YUBA	<i>Yucca baccata</i>	0-6	–

Table 6. Community 2.1 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	08/20/2026
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:
