USDA Natural Resources
Conservation Service

Ecological site R030XB225AZ
Loamy Wash 6-9" p.z. Gypsic

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.

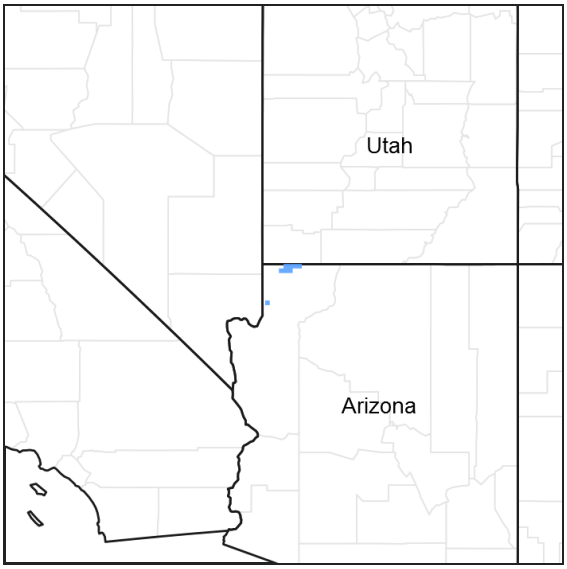


Figure 1. Mapped extent

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): 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 30-2 – Middle Mohave Desert

Elevations range from 1500 to 3200 feet and precipitation averages 6 to 9 inches per year. Vegetation includes creosotebush, white bursage, yucca, prickly pear and cholla species, Mormon tea, flattop buckwheat, ratany, winterfat, bush muhly, threeawns, and big galleta. The soil temperature regime is thermic and the soil moisture regime is typic aridic.

Ecological site concept

This ecological site is located in bottom position. Soils are deep loams, effervescent with visible gypsum crystals

throughout.

Associated sites

R030XB208AZ	**Gypsum Hills 6-9" p.z.**
R030XB214AZ	**Limy Upland 6-9" p.z.**
R030XB224AZ	**Gypsum Fan 6-9" p.z.**

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) *Larrea tridentata* (2) *Lycium andersonii*
Herbaceous	(1) *Pleuraphis rigida* (2) *Sporobolus cryptandrus*

Physiographic features

This ecological site is found in a bottom position on alluvial fans and fan terraces. It collects run-in moisture from adjacent ecological sites. The ephemeral flows across this site are rare and brief.

Table 2. Representative physiographic features

Landforms	(1) Alluvial fan (2) Fan (3) Terrace
Flooding duration	Extremely brief (0.1 to 4 hours) to very brief (4 to 48 hours)
Flooding frequency	Rare to occasional
Ponding duration	Very brief (4 to 48 hours)
Ponding frequency	None to rare
Elevation	1,600–3,200 ft
Slope	1–5%
Aspect	Aspect is not a significant factor

Climatic features

The climate is arid and warm. Annual precipitation ranges from 6 to 9 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 59 to 70 degrees F. The average frost-free period ranges from 156 to 259 days.

Table 3. Representative climatic features

Frost-free period (average)	259 days
Freeze-free period (average)	290 days
Precipitation total (average)	9 in

Influencing water features

Soil features

The soil of this ecological site is deep to very deep with parent material of mixed alluvium from gypsiferous sedimentary and ignenous formations. The available water capacity of the soil is medium to high. The soil is naturally susceptable to erosion with an erosion hazard by water of moderate and by wind moderate to high. The soil is non-sodic, non-saline with moderately alkaline pH (7.4 - 8.4). The soil moisture regime is typic aridic and temperature regime is thermic. The soil is calcareous and gypsiferous.

A typical soil profile is:
A--0 to 1 inch; reddish yellow (5YR 6/6) very fine sandy loam, yellowish red (5YR 5/6) moist; weak thin platy structure; soft, very friable, slightly sticky and nonplastic; common very fine and few fine roots; many fine and very fine vesicular and common very fine tubular pores; slightly effervescent; moderately alkaline (pH 8.0); abrupt smooth boundary. (1 to 2 inches thick)

Bk--1 to 8 inches; reddish yellow (5YR 6/6) very fine sandy loam, yellowish red (5YR 5/6) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and nonplastic; common very fine and few fine roots; common fine and very fine tubular pores; slightly effervescent, common fine rounded calcium carbonate nodules, 16 percent calcium carbonate equivalent; 5 percent crystalline gypsum; moderately alkaline (pH 8.0); clear smooth boundary. (6 to 14 inches thick)

Bky1--8 to 15 inches; reddish yellow (5YR 6/6) fine sandy loam, yellowish red (5YR 5/6) moist; massive; slightly hard, friable, slightly sticky and nonplastic; many very fine and common fine roots; common fine and very fine tubular pores; slightly effervescent, common fine rounded calcium carbonate nodules, 19 percent calcium carbonate equivalent; 10 percent crystalline gypsum; moderately alkaline (pH 8.0); clear smooth boundary. (4 to 10 inches thick)

Bky2--15 to 33 inches; reddish yellow (5YR 6/6) loam, yellowish red (5YR 5/6) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; common fine and very fine roots; common fine and very fine tubular pores; slightly effervescent, common fine rounded calcium carbonate nodules, 15 percent calcium carbonate equivalent; 15 percent crystalline gypsum; moderately alkaline (pH 8.0); clear smooth boundary. (8 to 12 inches thick)

Bky3--33 to 42 inches; reddish yellow (5YR 6/6) loam, yellowish red (5YR 4/6) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common fine and very fine tubular pores; slightly effervescent, common fine rounded calcium carbonate nodules, 19 percent calcium carbonate equivalent; 15 percent crystalline gypsum; moderately alkaline (pH 8.0); abrupt smooth boundary. (8 to 12 inches thick)

Bky4--42 to 51 inches; reddish yellow (5YR 6/6) loam, yellowish red (5YR 4/6) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few fine and very fine roots; common fine and very fine tubular pores; slightly effervescent, few fine rounded calcium carbonate, 13 percent calcium carbonate equivalent; 5 percent crystalline gypsum; moderately alkaline (pH 8.0); clear smooth boundary. (8 to 12 inches thick)

Bky5--51 to 63 inches; reddish yellow (5YR 6/6) very fine sandy loam, yellowish red (5YR 4/6) moist; massive; slightly hard, friable, slightly sticky and nonplastic; few very fine and fine roots; common fine and very fine tubular pores; slightly effervescent, few fine rounded calcium carbonate nodules, 19 percent calcium carbonate equivalent; 5 percent crystalline gypsum; moderately alkaline (pH 8.0).

The soil taxanomic classification is Coarse-loamy, mixed, superactive, thermic Typic Calcigypsids.

Soils correlated to this ecological site include map unit 623026, Hobcan soil, Shivwits Area, Arizona, Parts of Mohave County, SSA.

Table 4. Representative soil features

Parent material	(1) Alluvium–rock gypsum
Surface texture	(1) Very fine sandy loam (2) Fine sandy loam

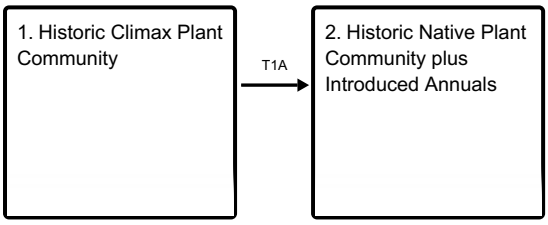
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Moderate
Soil depth	60 in
Surface fragment cover <=3"	0–5%
Surface fragment cover >3"	0%
Available water capacity (0-40in)	8.42–9.5 in
Calcium carbonate equivalent (0-40in)	15–19%
Electrical conductivity (0-40in)	2–4 mmhos/cm
Sodium adsorption ratio (0-40in)	0
Soil reaction (1:1 water) (0-40in)	7.4–8.4
Subsurface fragment volume <=3" (Depth not specified)	0–5%
Subsurface fragment volume >3" (Depth not specified)	0%

Ecological dynamics

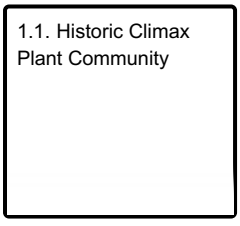
Loamy Wash, Gypsic, 6"-9" p.z., is a shrub-grassland. Annual forbs and grasses flourish following rainfall. Natural disturbances are rare. After introduction of non-native annuals (forbs and/or grasses), the shift in total productivity is shift increased seasonal herbaceous production following periods of rain. Dominant shrubs are creosote and white bursage. Assorted half-shrubs are widely scattered.

State and transition model

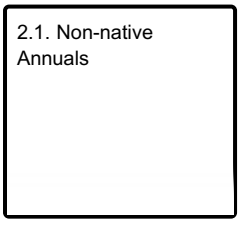
Ecosystem states



State 1 submodel, plant communities



State 2 submodel, plant communities



State 1
Historic Climax Plant Community

Community 1.1
Historic Climax Plant Community

The dominant aspect of this plant community is a desert shrub-grassland mix. The dominant grasses are big galleta and sand dropseed. The dominant shrub is creosotebush.

Table 5. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Shrub/Vine	59	180	331
Grass/Grasslike	37	125	235
Forb	4	20	34
Total	**100**	**325**	**600**

Table 6. Ground cover

Tree foliar cover	0%
Shrub/vine/liana foliar cover	1-3%
Grass/grasslike foliar cover	2-4%
Forb foliar cover	0%
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	–	–	–	–
>0.5 <= 1	–	–	9-11%	–
>1 <= 2	–	–	–	–
>2 <= 4.5	–	9-11%	–	–
>4.5 <= 13	–	–	–	–
>13 <= 40	–	–	–	–
>40 <= 80	–	–	–	–
>80 <= 120	–	–	–	–
>120	–	–	–	–

Figure 5. Plant community growth curve (percent production by month). AZ3022, 30.2 6-9" p.z. upland sites. Growth begins in the late winter, most growth occurs in the spring..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	2	19	33	18	7	7	11	3	0	0	0

State 2
Historic Native Plant Community plus Introduced Annuals

Community 2.1
Non-native Annuals

Non-native annual grasses and forbs like; red brome, cheatgrass, kochia, tumble pigweed, russian thistle, tumble mustard, yellow starthistle, wild oats and filaree, can invade and dominate areas of the site with very low tobosa cover. Perennial forbs like russian knapweed and leafy spurge could invade and, perhaps, dominate this site. These species can, over time, reduce the seed-bank of native annual grasses and forbs.

Transition T1A
State 1 to 2

Introduction of non-native annual forb and grass seed.

Additional community tables

Table 8. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Lb/Acre)	Foliar Cover (%)
Grass/Grasslike					
1				81–146	
	big galleta	PLRI3	*Pleuraphis rigida*	49–81	–
	sand dropseed	SPCR	*Sporobolus cryptandrus*	32–65	–
2				0–3	
	Grass, perennial	2GP	*Grass, perennial*	0–3	–
	squirreltail	ELELE	*Elymus elymoides ssp. elymoides*	0–3	–
3				3–10	
	Grass, annual	2GA	*Grass, annual*	3–10	–
Forb					
4				3–6	
	desert globemallow	SPAM2	*Sphaeralcea ambigua*	3–6	–
5				3–6	
	Forb, perennial	2FP	*Forb, perennial*	0–6	–
	desert marigold	BAMU	*Baileya multiradiata*	0–6	–
	desert trumpet	ERIN4	*Eriogonum inflatum*	0–6	–
6				3–10	
	Forb, annual	2FA	*Forb, annual*	0–5	–
	buckwheat	ERIOG	*Eriogonum*	0–5	–
	desert Indianwheat	PLOV	*Plantago ovata*	0–5	–
Shrub/Vine					
7				98–138	
	creosote bush	LATR2	*Larrea tridentata*	98–138	–
8				16–32	
	water jacket	LYAN	*Lycium andersonii*	16–32	–
9				10–23	
	fourwing saltbush	ATCA2	*Atriplex canescens*	10–23	–
10				3–6	
	winterfat	KRLA2	*Krascheninnikovia lanata*	3–6	–
11				3–6	
	broom snakeweed	GUSA2	*Gutierrezia sarothrae*	3–6	–
12				3–6	
	white ratany	KRGR	*Krameria grayi*	3–6	–
13				0–16	
	burrobush	AMDU2	*Ambrosia dumosa*	0–16	–
14				0–10	
	Shrub, other	2S	*Shrub, other*	0–5	–
	rayless goldenhead	ACSP	*Acamptopappus sphaerocephalus*	0–5	–
	Nevada jointfir	EPNE	*Ephedra nevadensis*	0–5	–
	burrobrush	HYSA	*Hymenoclea salsola*	0–5	–
	pricklypear	OPUNT	*Opuntia*	0–5	–

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	05/11/2025
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):

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

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

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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:**
