

## Ecological site R030XB208AZ Gypsum Hills 6-9" p.z.

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.

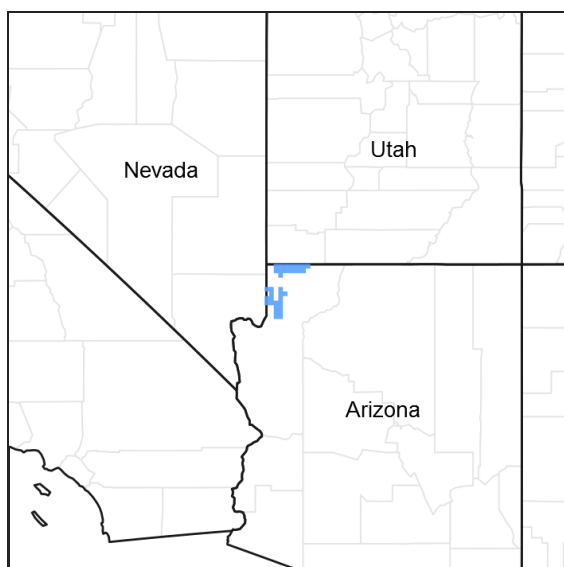


Figure 1. Mapped extent

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 on steeply sloping uplands (slopes 15%-65%). Soils very shallow to shallow

gypsiferous loam overlying stratified (alternating hard and soft) gypsite.

## Associated sites

R030XB205AZ	<b>Sandy Loam Upland 6-10" p.z. Limy Subsurface, Gravelly</b>
R030XB210AZ	<b>Limestone Hills 6-9" p.z.</b>
R030XB214AZ	<b>Limy Upland 6-9" p.z.</b>
R030XB222AZ	<b>Gypsum Hills 6-9" p.z. Alkaline</b>

**Table 1. Dominant plant species**

Tree	Not specified
Shrub	(1) <i>Ephedra nevadensis</i> (2) <i>Hymenoclea salsola</i>
Herbaceous	Not specified

## Physiographic features

This ecological site occurs in an upland position as rounded, eroded hills and escarpments. The soil is very shallow to shallow to gypsiferous layers. Slopes range from 6 to 70 percent.

**Table 2. Representative physiographic features**

Landforms	(1) Escarpment (2) Hill
Flooding frequency	None
Ponding frequency	None
Elevation	1,600–3,400 ft
Slope	6–70%
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 very shallow to shallow to gypsiferous layers. The surface texture ranges from fine sandy loam to loam. The subsurface texture is loam. The soil contains high amounts of gypsum. The available

water holding capacity is very low. The hazard of erosion by water is very severe and by wind is slight.

A typical soil profile is as follows:

0 to 2 inches - gypsiferous fine sandy loam

2 to 12 inches - gypsiferous loam

12 to 16 inches - alternate layers of soft and hard gypsite

Soil map units correlated to this ecological site include 623030 and 623034, Gypsil soil, Shivwits Area SSA.

**Table 4. Representative soil features**

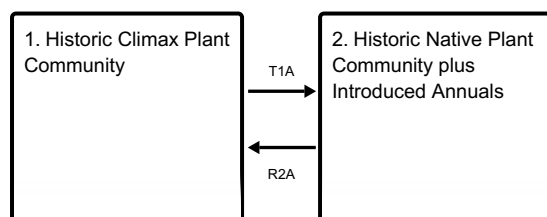
Surface texture	(1) Fine sandy loam (2) Loam
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Moderate
Soil depth	4–15 in
Surface fragment cover ≤3"	0%
Surface fragment cover >3"	0%
Available water capacity (0–40in)	1.3–1.9 in
Calcium carbonate equivalent (0–40in)	5–35%
Electrical conductivity (0–40in)	0–4 mmhos/cm
Soil reaction (1:1 water) (0–40in)	7.4–8.4
Subsurface fragment volume ≤3" (Depth not specified)	0%
Subsurface fragment volume >3" (Depth not specified)	0%

## Ecological dynamics

Gypsum Hills, 6"-9" p.z., is a sparse shrubland. Perennial grasses and forbs are generally absent. Annual forbs and grasses may be encountered following rainfall. Natural disturbances are rare. After introduction of non-native annuals (forbs and/or grasses), the shift in total productivity is shifted increased seasonal herbaceous production following periods of rain. Dominant shrubs are Nevada Mormon tea, white bursage, and Fremont dalea. Other assorted half-shrubs are very widely scattered.

## State and transition model

### Ecosystem states



State 1 submodel, plant communities

1.1. Historic Climax  
Plant Community

State 2 submodel, plant communities

2.1. Non-native  
Annuals

State 1  
Historic Climax Plant Community

Community 1.1  
Historic Climax Plant Community

The dominant aspect of this site is desert shrub. The dominant shrubs are Nevada Mormon tea, white burrobrush and Fremont dalea. With severe disturbance plants that will increase or invade are exotic annuals. The site's total annual production by weight (air-dried) is comprised of: grasses and grasslike plants - 0 to 2 percent, forbs 1 to 8 percent, and shrubs 90 to 100 percent.

Table 5. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Shrub/Vine	24	118	225
Forb	1	6	16
Grass/Grasslike	0	1	4
Total	25	125	245

Table 6. Ground cover

Tree foliar cover	0%
Shrub/vine/liana foliar cover	0-1%
Grass/grasslike foliar cover	0-1%
Forb foliar cover	0-1%
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	—	—	0-1%	0-1%
>0.5 <= 1	—	—	—	—
>1 <= 2	—	—	—	—
>2 <= 4.5	—	4-6%	—	—
>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

Figure 6. Plant community growth curve (percent production by month). AZ3074, 30.23, 6-9 p.z., Nevada Mormon Tea. Growth primarily in spring and early summer months..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	15	25	20	15	15	10	0	0	0	0

## State 2

### Historic Native Plant Community plus Introduced Annuals

#### Community 2.1

##### Non-native Annuals

This plant community resembles the historic native plant community, but exotic annuals have been introduced. Non-native species include red brome, Mediterranean grass (*Schismus* spp.), and filaree. The flourish of non-native annuals that occurs following rainfalls may preclude native annuals.

#### Transition T1A

##### State 1 to 2

Introduction of non-native annual forb and grass seed.

#### Restoration pathway R2A

##### State 2 to 1

None known.

### Additional community tables

Table 8. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Lb/Acre)	Foliar Cover (%)
<b>Grass/Grasslike</b>					
1				0–1	
	gyp dropseed	SPNE	<i>Sporobolus nealleyi</i>	0–1	–
2				0–1	
	Grass, perennial	2GP	<i>Grass, perennial</i>	0–1	–
<b>Forb</b>					
3				0–6	
	Forb, perennial	2FP	<i>Forb, perennial</i>	0–6	–
4				0–4	
	Forb, annual	2FA	<i>Forb, annual</i>	0–4	–
<b>Shrub/Vine</b>					
5				38–50	
	Nevada jointfir	EPNE	<i>Ephedra nevadensis</i>	38–50	–
6				19–31	
	burrobrush	HYSA	<i>Hymenoclea salsola</i>	19–31	–
7				12–19	
	Fremont's dalea	PSFR	<i>Psoralea fremontii</i>	12–19	–
8				6–19	
	water jacket	LYAN	<i>Lycium andersonii</i>	6–19	–
9				1–2	
	fourwing saltbush	ATCA2	<i>Atriplex canescens</i>	1–2	–
10				0–19	
	banana yucca	YUBA	<i>Yucca baccata</i>	0–19	–
11				0–6	
	creosote bush	LATR2	<i>Larrea tridentata</i>	0–6	–
12				0–6	
	winterfat	KRLA2	<i>Krascheninnikovia lanata</i>	0–6	–
13				1–5	
	Shrub (>.5m)	2SHRUB	<i>Shrub (&gt;.5m)</i>	1–5	–

## 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:**

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2. **Presence of water flow patterns:**

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3. **Number and height of erosional pedestals or terracettes:**

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4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):**

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5. **Number of gullies and erosion associated with gullies:**

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6. **Extent of wind scoured, blowouts and/or depositional areas:**

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7. **Amount of litter movement (describe size and distance expected to travel):**

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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:**
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