USDA Natural Resources
Conservation Service

Ecological site R030XB084NV
ERODED SLOPE

Last updated: 2/26/2025
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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.

Ecological site concept

This site occurs on sideslopes of hills and lower mountains on all exposures. Slopes range from 2 to 75 percent, but slope gradients of 15 to 50 percent are typical. Elevations are 2500 to 4000 feet. The soils associated with this site are shallow and well drained and have formed in colluvium from andesite.

Please refer to group concept R030XB243CA to view the provisional STM.

Associated sites

R030XB019NV	**Eroded Fan Remnant Pavette 4-6 P.Z.**

Similar sites

R030XB078NV	**BARREN HILL 3-5 P.Z.** Stable plant community

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) *Larrea tridentata* (2) *Ambrosia dumosa*
Herbaceous	(1) *Pleuraphis rigida*

Physiographic features

This site occurs on sideslopes of hills and lower mountains on all exposures. Slopes range from 2 to 75 percent, but slope gradients of 15 to 50 percent are typical. Elevations are 2500 to 4000 feet.

Table 2. Representative physiographic features

Landforms	(1) Hill (2) Mountain
Elevation	762–1,219 m
Slope	2–75%
Aspect	Aspect is not a significant factor

Climatic features

The climate is arid with hot, dry summers and warm, moist winters. Average annual precipitation is 3 to 6 inches. Mean annual air temperature is 65 to 70 degrees F. The average growing season is about 270 to 360 days. There is no climate station associated with this site.

Table 3. Representative climatic features

Frost-free period (average)	360 days
Freeze-free period (average)	
Precipitation total (average)	152 mm

Influencing water features

There are no influencing water features associated with this site.

Soil features

The soils associated with this site are shallow and well drained and have formed in colluvium from andesite. Water intake rates are moderately rapid and available water capacity is very low. Runoff is very high and the soils are well drained. The soil series associated with this site include Haleburu.

Table 4. Representative soil features

Surface texture	(1) Extremely gravelly sandy loam (2) Extremely gravelly fine sandy loam
Family particle size	(1) Loamy

Drainage class	Well drained
Permeability class	Moderately rapid
Soil depth	10–36 cm
Surface fragment cover <=3"	40–65%
Surface fragment cover >3"	5–15%
Available water capacity (0-101.6cm)	1.27–1.52 cm
Calcium carbonate equivalent (0-101.6cm)	0–10%
Electrical conductivity (0-101.6cm)	0–2 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	0–5
Soil reaction (1:1 water) (0-101.6cm)	7.9–9
Subsurface fragment volume <=3" (Depth not specified)	49–69%
Subsurface fragment volume >3" (Depth not specified)	10–15%

Ecological dynamics

Please refer to group concept R030XB243CA to view the provisional STM.

This site occurs on steep, extremely gravelly soils that are constantly subject to sloughing and settling of rock fragments. Determination of Similarity Index and ratings of ecological condition are not appropriate for this plant community due to the unstable conditions.

Fire Ecology:
Fires in the desert are infrequent and of low severity because production of annual and perennial herbs seldom provides a fuel load capable of sustaining fire. The fire return interval for creosotebush communities ranges from 35 to 100 years. Fire kills many cresotebush. Creosotebush is poorly adapted to fire because of its limited sprouting ability. Creosotebush survives some fires that burn patchily or are of low severity.
Fire generally kills white bursage.
Damage to big galleta from fire varies. If big galleta is dry, damage may be severe. However, when plants are green, fire will tend to be less severe and damage may be minimal, with big galleta recovering quickly.

State and transition model

Ecosystem states

1. Reference State	2. Invaded

State 1 submodel, plant communities

1.1. Reference Plant Community

State 1
Reference State

Community 1.1
Reference Plant Community

The reference plant community is dominated by creosotebush. Potential vegetative composition is about 5% grasses, 5% forbs and 90% shrubs. creosotebush. Approximate ground cover (basal and crown) is less than 5 percent.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Shrub/Vine	26	75	127
Forb	1	4	7
Grass/Grasslike	1	4	7
Total	**28**	**83**	**141**

State 2
Invaded

Introduced annuals such as red brome, schismus and redstem stork's bill have invaded the reference plant community and have become a dominant component of the herbaceous cover. This invasion of non-natives is attributed to a combination of factors including: 1) surface disturbances, 2) changes in the kinds of animals and their grazing patterns, 3) drought, and 4) changes in fire history. These non-natives annuals are highly flammable and promote wildfires where fires historically have been infrequent. LATR and AMDU

would persist after this invasion by non-native annuals, but the other shrubs and desirable grasses would either be unsuccessful in competing with the non-natives or removed from the system. The threshold that is crossed, is the introduction of non-native annuals that cannot be removed from the system and will alter disturbance regimes significantly from their natural or historic range of disturbances.

Additional community tables

Table 6. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
Grass/Grasslike					
1	**Primary Perennial Grasses**			2–7	
	Indian ricegrass	ACHY	*Achnatherum hymenoides*	0–2	–
	low woollygrass	DAPU7	*Dasyochloa pulchella*	0–2	–
	big galleta	PLRI3	*Pleuraphis rigida*	0–2	–
2	**Annual Grasses**			1–4	
Forb					
3	**Perennial forbs**			2–7	
	Indian ricegrass	ACHY	*Achnatherum hymenoides*	0–2	–
	desert globemallow	SPAM2	*Sphaeralcea ambigua*	0–2	–
4	**Annual**			1–4	
	desert trumpet	ERIN4	*Eriogonum inflatum*	0–2	–
	plantain	PLANT	*Plantago*	0–2	–
Shrub/Vine					
5	**Primary shrubs**			64–76	
	creosote bush	LATR2	*Larrea tridentata*	63–72	–
	burrobush	AMDU2	*Ambrosia dumosa*	1–4	–
6	**Secondary shrubs**			2–9	
	Nevada jointfir	EPNE	*Ephedra nevadensis*	1–2	–
	snakeweed	GUTIE	*Gutierrezia*	1–2	–
	burrobrush	HYSA	*Hymenoclea salsola*	1–2	–

Animal community

Livestock Interpretations:
This site has limited value for livestock grazing, due to the low forage production and steep slopes. Creosotebush is unpalatable to livestock. Consumption of creosotebush may be fatal to sheep. White bursage is an important browse species. Browsing pressure on white bursage is particularly heavy during years of low precipitation, when production of winter annuals is low. White bursage is of intermediate forage value. It is fair to good forage for horses and fair to poor for cattle and sheep. However, because there is often little other forage where white bursage grows, it is often highly valuable to browsing animals. Big galleta is considered a valuable forage plant for cattle and domestic sheep. Its coarse, rigid culms make it relatively resistant to heavy grazing and trampling.

Stocking rates vary over time depending upon season of use, climate variations, site, and previous and current management goals. A safe starting stocking rate is an estimated stocking rate that is fine tuned by the client by adaptive management through the year and from year to year.

Wildlife Interpretations:
Many small mammals browse creosotebush or consume its seeds. Desert reptiles and amphibians use creosotebush as a food source and perch site and hibernate or estivate in burrows under creosotebush, avoiding predators and excessive daytime temperatures. White bursage is an important browse species for wildlife. Big galleta is an important forage species for several wildlife species.

Hydrological functions

Runoff is very high. Permeability is moderately rapid.

Recreational uses

Aesthetic value is derived from the diverse floral and faunal composition and the colorful flowering of wild flowers and shrubs during the spring and early summer. This site offers rewarding opportunities to photographers and for nature study.

Other products

Creosotebush has been highly valued for its medicinal properties by Native Americans. Twigs and leaves may be boiled as tea, steamed, pounded into a powder,pressed into a poultice, or heated into an infusion.
White bursage is a host for sandfood, a parasitic plant with a sweet, succulent, subterranean flowerstalk. Sandfood was a valuable food supply for Native Americans.

Other information

Creosotebush may be used to rehabilitate disturbed environments in southwestern

deserts. Once established, creosotebush may improve sites for annuals that grow under its canopy by trapping fine soil, organic matter, and symbiont propagules. It may also increase water infiltration and storage.
White bursage may be used to revegetate disturbed sites in southwestern deserts.
Big galleta's clumped growth form stabilizes blowing sand.

Other references

Fire Effects Information System (Online; http://www.fs.fed.us/database/feis/plants/).

USDA-NRCS Plants Database (Online; http://www.plants.usda.gov).

Contributors

GKB

Approval

Sarah Quistberg, 2/26/2025

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	05/21/2025
Approved by	Sarah Quistberg
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:**

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:**
