USDA Natural Resources
Conservation Service

Ecological site R030XB106NV
GRAVELLY SLOPE 5-7 P.Z.

Last updated: 2/26/2025
Accessed: 05/11/2025

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 and footslopes of hills and lower mountains. Slope gradients of 30 to 50 percent are typical. Elevations are 3200 to 4000 feet. The soil associated with this site are moderately deep, well drained, and typically have formed in residuum or colluvium from limestone parent material.

Please refer to group concept R030XB123NV to view the provisional STM.

Associated sites

R030XA002NV	**LIMESTONE HILL 5-7 P.Z.**
R030XA006NV	**SHALLOW LIMESTONE SLOPE 5-7 P.Z.**
R030XA066NV	**CALCAREOUS LOAM 5-7 P.Z.**
R030XB105NV	**BOULDERY LIMESTONE SLOPE 5-7 P.Z.**

Similar sites

R030XA006NV	**SHALLOW LIMESTONE SLOPE 5-7 P.Z.** CORA & ATCO dominant shrubs
R030XB010NV	**LOAMY SLOPE 5-7 P.Z.** PLRI3 minor spp., if present
R030XB125NV	**CHANNERY HILL 3-5 P.Z.** Much less productive site
R030XB123NV	**LIMESTONE SLOPE 5-7 P.Z.** ATCO rare to absent
R030XB111NV	**GRAVELLY LIMESTONE SLOPE 5-7 P.Z.** Less productive site
R030XA002NV	**LIMESTONE HILL 5-7 P.Z.** Much less productive site

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) *Atriplex confertifolia*
Herbaceous	(1) *Pleuraphis rigida*

Physiographic features

This site occurs on sideslopes and footslopes of hills and lower mountains. Slope gradients of 30 to 50 percent are typical. Elevations are 3200 to 4000 feet.

Table 2. Representative physiographic features

Landforms	(1) Hill (2) Mountain slope
Elevation	3,200–4,000 ft
Slope	30–50%

Climatic features

The climate is hot and arid, with mild winters and very hot summers. Precipitation is greatest in the winter with a lesser secondary peak in summer, typical of the Mojave Desert. Average annual precipitation is 5 to 7 inches. Mean annual air temperature is 57 to 63 degrees F. The average growing season is about 180 to 240 days.

Table 3. Representative climatic features

Frost-free period (average)	240 days
Freeze-free period (average)	
Precipitation total (average)	7 in

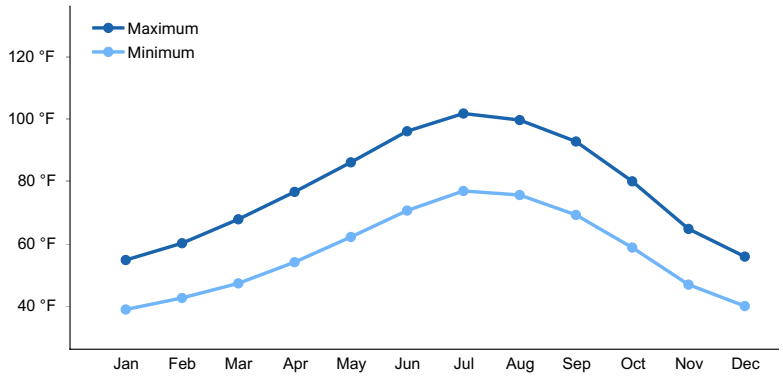

Figure 1. Monthly average minimum and maximum temperature

Influencing water features

There are no influencing water features associated with this site.

Soil features

The soil associated with this site are moderately deep, well drained, and typically have formed in residuum or colluvium from limestone parent material. Water intake rates are moderate to moderately rapid. Runoff is slow. Surface cover of gravel and cobbel-sized rock fragments is greater than 60 percent and stone and boulder-sized rock fragments are common.

Table 4. Representative soil features

Drainage class	Well drained

Ecological dynamics

Please refer to group concept R030XB123NV to view the provisional STM.

As ecological condition deteriorates, wolfberry and shadscale increase perennial herbaceous plants decrease.

Following wildfire, snakeweed and desertrue greatly increase. Species likely to invade this site are annual forbs and grasses.

Fire Ecology:
Shadscale communities are usually unaffected by fire because of low fuel loads, although a year of exceptionally heavy winter rains can generate fuels by producing a heavy stand of annual forbs and grasses. The mean fire return interval for shadscale communities range from 35 to 100 years. Increased presence of non-native annual grasses, such as cheatgrass, can alter fire regimes by increasing fire frequency under wet to near-normal summer moisture conditions. Winterfat is either killed or top-killed by fire, depending on fire severity. Severe fire can kill the perennating buds located several inches above the ground surface and thus kills the plant. In addition, severe fire usually destroys seed on the plant. Low-severity fire scorches or only partially consumes the aboveground portions of winterfat and thus does not cause high mortality. Fire typically destroys aboveground parts of Anderson wolfberry, but the degree of damage to the plant depends on fire severity. Fire most likely top-kills big galleta. Big galleta sprouts from rhizomes following fire. Damage to big galleta from fire varies, depending on whether big galleta is dormant when burned. 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. Bush muhly regenerates following fire from soil-stored seed. Fire probably top-kills bush muhly. Burning causes at least short-term decline of bush muhly. Recovery time is thought to vary considerably and is probably dependent on postfire weather and competition.

State and transition model

Ecosystem states

1. Reference Plant Community

State 1 submodel, plant communities

1.1. Reference Plant Community

State 1
Reference Plant Community

Community 1.1
Reference Plant Community

This reference plant community is dominated by big galleta grass and shadscale. Winterfat and wolfberry species are important plants associated with this site. Potential vegetative composition is about 65% grasses, 10% annual and perennial forbs, and 25% shrubs. Approximate ground cover (basal and crown) is 15 to 25 percent.

Table 5. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	455	585	715
Shrub/Vine	175	225	275
Forb	70	90	110
Total	**700**	**900**	**1100**

Additional community tables

Table 6. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Lb/Acre)	Foliar Cover (%)
Grass/Grasslike					
1	**Primary Perennial Grasses**			495–720	
	big galleta	PLRI3	*Pleuraphis rigida*	450–585	–
	bush muhly	MUPO2	*Muhlenbergia porteri*	45–135	–
2	**Secondary Perennial Grasses**			18–90	
	Indian ricegrass	ACHY	*Achnatherum hymenoides*	5–27	–
	desert needlegrass	ACSP12	*Achnatherum speciosum*	5–27	–
	threeawn	ARIST	*Aristida*	5–27	–
	slim tridens	TRMU	*Tridens muticus*	5–27	–
3	**Annual Grasses**			1–27	
Forb					
4	**Perennial forbs**			18–45	
5	**Annual forbs**			1–45	
Shrub/Vine					
6	**Primary shrubs**			81–279	
	shadscale saltbush	ATCO	*Atriplex confertifolia*	45–135	–
	winterfat	KRLA2	*Krascheninnikovia lanata*	18–72	–
	water jacket	LYAN	*Lycium andersonii*	9–36	–
	peach thorn	LYCO2	*Lycium cooperi*	9–36	–
7	**Secondary shrubs**			45–135	
	burrobush	AMDU2	*Ambrosia dumosa*	9–45	–
	Torrey's jointfir	EPTO	*Ephedra torreyana*	9–45	–
	pricklypear	OPUNT	*Opuntia*	9–45	–
	Mojave woodyaster	XYTO2	*Xylorhiza tortifolia*	9–45	–
	Joshua tree	YUBR	*Yucca brevifolia*	9–45	–
	Mojave yucca	YUSC2	*Yucca schidigera*	9–45	–

Animal community

Livestock Interpretations:
This site is suitable for livestock grazing. 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. Bush muhly is readily eaten by livestock throughout the year when available; however, it is usually not abundant enough to provide much forage. It is grazed heavily in winter when other species become scarce. Because of its branching habit, it is extremely susceptible to heavy grazing. Bush muhly is damaged when continuously grazed to a stubble height of less than 4 inches (10 cm). Shadscale provides good browse for domestic sheep and goats. Shadscale leaves and seeds are an important component of domestic sheep and cattle winter diets. Shadscale tends to be browse tolerant. Heavy grazing during the winter and/or spring reduces shadscale. Die-off can also occur during extended periods of high precipitation. Shadscale is tolerant of early spring light-intensity browsing. Winterfat is an important forage plant for livestock in salt-desert shrub rangeland and subalkaline flats. Winterfat palatability is rated as good for sheep, good to fair for horses, and fair for cattle. Abusive grazing practices have reduced or eliminated winterfat on some areas even though it is fairly resistant to browsing. Grazing season has more influence on winterfat than grazing intensity. Early winter grazing may actually be beneficial. Anderson wolfberry is sometimes used as forage by livestock and feral burros.

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:
Winterfat is an important forage plant for wildlife in salt-desert shrub rangeland and subalkaline flats. Animals that browse winterfat include mule deer, Rocky Mountain elk, desert bighorn sheep, and pronghorn antelope. The palatability of bush muhly for wildlife species is rated fair to poor. Shadscale is a valuable browse species providing a source of palatable, nutritious forage for a wide variety of wildlife. The fruits and leaves are a food source for deer, desert bighorn sheep and pronghorn antelope.

Hydrological functions

Water intake rates are moderate to moderately rapid. Runoff is slow.

Other products

Seeds of shadscale were used by Native Americans for bread and mush. Native Americans used the fleshy berries of Anderson wolfberry either fresh or boiled and then dried them for later use.

Other information

Big galleta's clumped growth form stabilizes blowing sand. Anderson wolfberry is also used as an ornamental valued chiefly for its showy red berries.

Type locality

Location 1: Clark County, NV	
Township/Range/Section	T24S R57E S26
General legal description	Low elevation mountain sideslopes three to four miles northeast of Sandy, Clark County, Nevada.

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

BLS/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	05/11/2025
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:**

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:

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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:**
