Ecological site R030XA094NV
SHALLOW GRAVELLY LOAM 5-7 P.Z.

Last updated: 2/18/2025
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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 summits and sideslopes of lower mountains, hills, and upper fan piedmonts. Slopes range from 0 to over 30 percent, but slope gradients of 2 to 15 percent are typical. Elevations are 3300 to about 6500 feet. The soils of this site are shallow to a restrictive layer and have formed in residuum, colluvium, or alluvium from mixed parent materials. Please refer to group concept R030XB029NV to view the provisional STM.

Associated sites

R030XA058NV	**LIMY 5-7 P.Z.**
R030XA095NV	**SHALLOW GRAVELLY SLOPE 5-7 P.Z.**

Similar sites

R030XA095NV	**SHALLOW GRAVELLY SLOPE 5-7 P.Z.** Less productive site.
R030XA006NV	**SHALLOW LIMESTONE SLOPE 5-7 P.Z.** ATCO codominant shrub.

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) *Coleogyne ramosissima*
Herbaceous	(1) *Achnatherum hymenoides* (2) *Achnatherum speciosum*

Physiographic features

This site occurs on summits and sideslopes of lower mountains, hills, and upper fan piedmonts. Slopes range from 0 to over 30 percent, but slope gradients of 2 to 15 percent are typical. Elevations are 3300 to about 6500 feet.

Table 2. Representative physiographic features

Landforms	(1) Fan remnant (2) Pediment (3) Hill
Flooding frequency	None
Ponding frequency	None
Elevation	1,010 – 1,980 m
Slope	0 – 30 %
Water table depth	0 cm
Aspect	Aspect is not a significant factor

Climatic features

The climate on this site is arid, characterized by cold, moist winters, and hot, dry summers. Average annual precipitation is 5 to 7(8) inches. Mean annual air temperature is 53 to 60 degrees F. The average growing season is about 130 to 180 days.

Table 3 Representative climatic features

Frost-free period (average)	180 days
Freeze-free period (average)	
Precipitation total (average)	180 mm

Influencing water features

There are no influencing water features associated with this site.

Soil features

The soils of this site are shallow to a restrictive layer and have formed in residuum, colluvium, or alluvium from mixed parent materials. A representative surface cover of rock fragments is about 60 percent gravels and 5 percent cobbles. These soils are well drained with slow to medium runoff. The soils series associated with this site includes; Ferrogold, Dedas, and Longjim.

Table 4. Representative soil features

Surface texture	(1) Extremely gravelly loam (2) Very gravelly fine sandy loam (3) Gravelly fine sandy loam
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Moderate
Soil depth	40 – 150 cm
Surface fragment cover <=3"	30 – 60 %
Surface fragment cover >3"	0 – 10 %
Available water capacity (0-101.6cm)	2.54 – 6.6 cm
Calcium carbonate equivalent (0-101.6cm)	30 – 50 %
Electrical conductivity (0-101.6cm)	Not specified
Sodium adsorption ratio (0-101.6cm)	0 – 10
Soil reaction (1:1 water) (0-101.6cm)	7.9 – 8.4
Subsurface fragment volume <=3" (Depth not specified)	30 – 50 %

Subsurface fragment volume >3" (Depth not specified)	0 – 10 %

Ecological dynamics

Please refer to group concept R030XB029NV to view the provisional STM.

As ecological condition deteriorates, blackbrush increases almost to the exclusion of all other species. Following wildfire, fire tolerant/crown-sprouting shrubs increase and often dominate this site. Upwards of 60 or more, years, may be required for reestablishing a blackbrush stand following a fire.

Fire Ecology:
Fire return intervals for blackbrush communities range from 35 to 100 years. Blackbrush stands are substantially decreased or eliminated by fire. Blackbrush stands are subject to fire, and fire will start and spread easily due to the dense, close spacing and resinous foliage of blackbrush. There are usually few forbs or grasses in blackbrush stands that might aid in carrying fire, but despite this, blackbrush community's burn under conditions of high temperature, high wind velocity, and low relative humidity. Nevada ephedra is top-killed by fire. Underground regenerative structures commonly survive when aboveground vegetation is consumed by fire. Nevada ephedra generally sprouts after fire damages aboveground vegetation and may increase in plant cover. Spiny menodora often survives fire because its foliage does not readily burn. Desert needlegrass has persistent dead leaf bases, which make it susceptible to burning. Fire probably top-kills desert needlegrass. Most needlegrasses (Achnatherum spp.), especially young plants, are very susceptible to fire damage. Surviving tufts of desert needlegrass are likely to sprout. Indian ricegrass reestablishes on burned sites through seed dispersed from adjacent unburned areas. Indian ricegrass may also sprout from tillers following fire.

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	**Primary Perennial Grasses**			13-34	
	Indian ricegrass	ACHY	*Achnatherum hymenoides*	7-17	–
	desert needlegrass	ACSP12	*Achnatherum speciosum*	7-17	–
2	**Secondary Perennial Grasses**			7-27	
	threeawn	ARIST	*Aristida*	2-10	–
	King's eyelashgrass	BLKI	*Blepharidachne kingii*	2-10	–
	squirreltail	ELEL5	*Elymus elymoides*	2-10	–
	James' galleta	PLJA	*Pleuraphis jamesii*	2-10	–
	bluegrass	POA	*Poa*	2-10	–
3	**Annual Grasses**			1-10	
Forb					
4	**Perennial Forbs**			1-17	
	desert globemallow	SPAM2	*Sphaeralcea ambigua*	2-7	–
	threeawn	ARIST	*Aristida*	0-4	–
5	**Annual Forbs**			1-17	
Shrub/Vine					
6	**Primary shrubs**			176-289	
	blackbrush	CORA	*Coleogyne ramosissima*	168-235	–
	Nevada jointfir	EPNE	*Ephedra nevadensis*	7-27	–
	spiny menodora	MESP2	*Menodora spinescens*	1-27	–
7	**Secondary shrubs**			17-50	
	burrobush	AMDU2	*Ambrosia dumosa*	3-17	–

	winterfat	KRLA2	*Krascheninnikovia lanata*	3-17	–
	creosote bush	LATR2	*Larrea tridentata*	3-17	–
	desert pepperweed	LEFR2	*Lepidium fremontii*	3-17	–
	water jacket	LYAN	*Lycium andersonii*	3-17	–
	yucca	YUCCA	*Yucca*	3-17	–

Animal community

Livestock Interpretations: This site is suitable for spring sheep grazing and marginally suitable for cattle grazing due to low forage producation and limited water availability. Blackbrush is not preferred as forage by domestic livestock, deer, or pronghorn, but it does provide poor forage during the spring, summer, and fall for domestic cattle, horses, and domestic sheep. Blackbrush provides poor to good forage for domestic goats. Big galleta is considered a valuable forage plant for cattle and domestic sheep in the Mohave Desert. Its coarse, rigid culms make it relatively resistant to heavy grazing and trampling. Desert needlegrass produces considerable basal foliage and is good forage while young. Young desert needlegrass is palatable to all classes of livestock. Mature herbage is moderately grazed by horses and cattle but rarely grazed by sheep. Indian ricegrass is described as highly palatable to all classes of livestock in both green and cured condition. Wildlife Interpretations: Mule deer and bighorn sheep generally use the blackbrush vegetation type in winter. The principal forage value of blackbrush appears to be as a browse species for bighorn sheep. In southern Nevada, blackbrush communities with an understory including big galleta are preferred cover for desert bighorn sheep. Blackbrush provides cover for nongame birds and small mammals. Indian ricegrass is eaten by pronghorn in moderate amounts whenever available. Indian ricegrass receives moderate pronghorn use from March through May. Indian ricegrass is consumed by desert bighorn sheep. Indian ricegrass is eaten by mule deer in the spring.

Hydrological functions

Permeability is moderately rapid and available water capacity is low.

Other products

Indian ricegrass seeds make a gluten-free, nutritious flour with a potentially good market. Indian ricegrass was traditionally eaten by some Native American people. The Paiutes used the seed as a reserve food source. The large-seeded panicle is often used in dry floral arrangements.

Other information

Blackbrush contributes to desert fertility by protecting the soil against wind erosion through retarding the movement of soil and increasing the accumulation of fine soil particles around its base. Blackbrush protects under story vegetation from the effects of high temperatures, thereby helping to retain surface nitrogen and adding organic matter to the soil. Blackbrush also serves as a nitrogen reservoir through the storage of nitrogen in roots, leaves, and stems. Desert needlegrass seeds are easily germinated and have potential for commercial use. Desert needlegrass may be used for groundcover in areas of light disturbance, but it is susceptible to excessive trampling. Indian ricegrass is well-suited for surface erosion control and desert revegetation although it is not highly effective in controlling sand movement. Certain native ecotypes exhibit desirable characteristics such as drought and salinity tolerance, low seed dormancy, and good nutritional qualities.

Inventory data references

NV-ECS-1: 2 records

Type locality

Location 1: Nye County, NV	
Township/Range/Section	T8 S R48 E S21
General legal description	Thirsty Canyon area, Pahute Mesa just east of Sarcobatus Flat, Nye County, Nevada.

Other references

USDA-NRCS Plant Databse (Online, http://plants.usda.gov/).

Fire Effect Information System (Online, http://www.fs.fed.us/database/feis/).

Contributors

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Approval

Kendra Moseley, 2/18/2025

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	09/10/2026
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:**

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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:**
