

Ecological site R026XY033NV SANDY CLAYPAN 8-10 P.Z.

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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.

Associated sites

R026XY047NV	DROUGHTY CLAYPAN 8-10 P.Z.
R026XY095NV	GRANITIC CLAYPAN 8-12 P.Z.

Similar sites

R026XY047NV	DROUGHTY CLAYPAN 8-10 P.Z. ACSP12 dominant grass; less productive site; ATCO and PIDE4 important shrubs on site
R026XY101NV	SANDY LOAM 8-10 P.Z. More productive site; ACSP12 dominant grass
R026XY095NV	GRANITIC CLAYPAN 8-12 P.Z. ACSP12 dominant grass
R026XY088NV	CLAY SLOPE 10-12 P.Z. ACTH7 dominant grass; GLSPA major shrub
R026XY050NV	GRAVELLY CLAY 10-12 P.Z. ACTH7 dominant grass
R026XY091NV	CHURNING CLAYPAN 10-12 P.Z. POSE dominant grass; occurs on vertisols
R026XY097NV	CHURNING CLAYPAN 8-10 P.Z. More productive site; only occurs on vertisols of plateau summits; slopes less than 8 percent

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) <i>Artemisia arbuscula ssp. longicaulis</i>
Herbaceous	(1) <i>Achnatherum hymenoides</i>

Physiographic features

This site occurs on summits and sideslopes of fan remnants, on sand sheets of lower fan piedmonts and on mountain slopes. Slopes range from 2 to 50 percent. Elevations are 4100 to 6700 feet.

Table 2. Representative physiographic features

Landforms	(1) Fan remnant (2) Sand sheet (3) Mountain slope
Flooding frequency	None

Elevation	1,250–2,042 m
Slope	2–50%
Aspect	Aspect is not a significant factor

Climatic features

The climate associated with this site is semiarid, characterized by cool, moist winters and warm, dry summers. Average annual precipitation is 8 to about 10 inches. Mean annual air temperature is 49 to 51 degrees F. The average growing season is about 90 to 110 days.

Nevada's climate is predominantly arid, with large daily ranges of temperature, infrequent severe storms, heavy snowfall in the higher mountains, and great location variations with elevation. Three basic geographical factors largely influence Nevada's climate: continentality, latitude, and elevation. Continentality is the most important factor. The strong continental effect is expressed in the form of both dryness and large temperature variations. Nevada lies on the eastern, lee side of the Sierra Nevada Range, a massive mountain barrier that markedly influences the climate of the State. The prevailing winds are from the west, and as the warm moist air from the Pacific Ocean ascend the western slopes of the Sierra Range, the air cools, condensation occurs and most of the moisture falls as precipitation. As the air descends the eastern slope, it is warmed by compression, and very little precipitation occurs. The effects of this mountain barrier are felt not only in the West but throughout the state, with the result that the lowlands of Nevada are largely desert or steppes. The temperature regime is also affected by the blocking of the inland-moving maritime air. Nevada sheltered from maritime winds, has a continental climate with well-developed seasons and the terrain responds quickly to changes in solar heating.

Nevada lies within the mid-latitude belt of prevailing westerly winds which occur most of the year. These winds bring frequent changes in weather during the late fall, winter and spring months, when most of the precipitation occurs. To the south of the mid-latitude westerlies, lies a zone of high pressure in subtropical latitudes, with a center over the Pacific Ocean. In the summer, this high-pressure belt shifts northward over the latitudes of Nevada, blocking storms from the ocean. The resulting weather is mostly clear and dry during the summer and early fall, with scattered thundershowers. The eastern portion of the state receives significant summer thunderstorms generated from monsoonal moisture pushed up from the Gulf of California, known as the North American monsoon. The monsoon system peaks in August and by October the monsoon high over the Western U.S. begins to weaken and the precipitation retreats southward towards the tropics (NOAA 2004).

Average annual precipitation is 16 to over 20 inches. Mean annual air temperature is 41 to 44 degrees F. The average growing season is about 50 to 70 days.

Mean annual precipitaion at the Bear Creek, Nevada SNOTEL station (170501020301) is 37.69 inches.

monthly mean precipitation is:

January 3.84; February 3.75; March 4.38; April 4.9;
 May 3.99; June 2.82; July .95; August 1.66;
 September 1.22; October 2.12;
 November 3.67; December 4.38.

Table 3. Representative climatic features

Frost-free period (average)	100 days
Freeze-free period (average)	0 days
Precipitation total (average)	229 mm

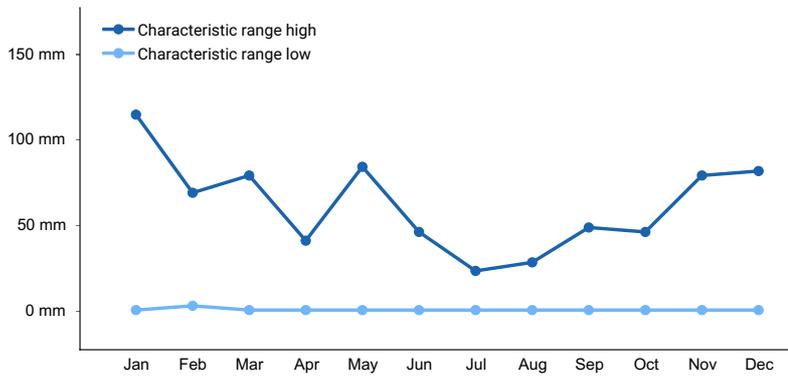


Figure 1. Monthly precipitation range

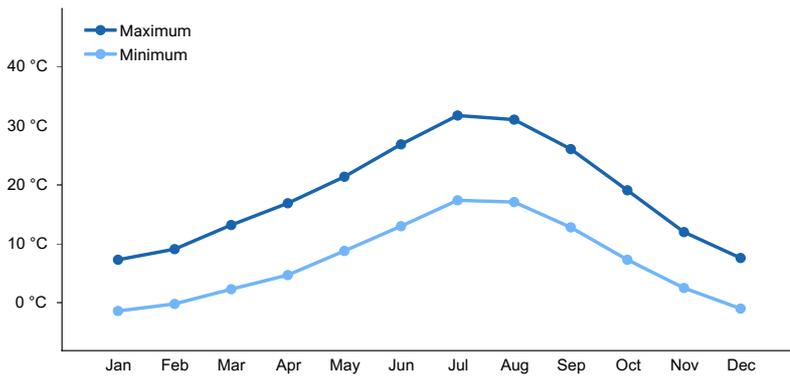


Figure 2. Monthly average minimum and maximum temperature

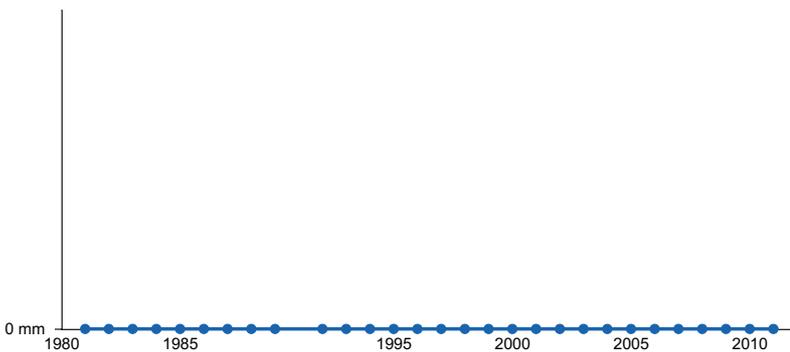


Figure 3. Annual precipitation pattern

Influencing water features

There are no influencing water features associated with this site.

Soil features

The soils associated with this site are shallow and have formed in alluvium from mixed rock sources. The soil surface is coarse textured over a medium to fine-textured subsoil. Some soils have a relatively thick (± 20 inches) sandy surface horizon. Permeability is moderate slow and the soils are well drained. Available water capacity is very low. The soil associated with this site includes lithic Argixerolls.

Table 4. Representative soil features

Surface texture	(1) Very stony sandy loam
Family particle size	(1) Sandy
Drainage class	Well drained

Permeability class	Moderately slow
Soil depth	25–51 cm
Surface fragment cover <=3"	22–24%
Surface fragment cover >3"	19–29%
Available water capacity (0-101.6cm)	3.05–3.3 cm
Calcium carbonate equivalent (0-101.6cm)	0%
Electrical conductivity (0-101.6cm)	0 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	0
Soil reaction (1:1 water) (0-101.6cm)	6.1–7.8
Subsurface fragment volume <=3" (Depth not specified)	22–24%
Subsurface fragment volume >3" (Depth not specified)	19–29%

Ecological dynamics

As ecological condition declines, Lahontan sagebrush and Douglas' rabbitbrush increase as Indian ricegrass and fourwing saltbush decrease. Cheatgrass, halogeton, and Russian thistle are species most likely to invade this site.

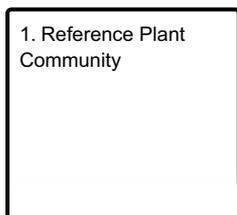
Fire Ecology:

The mean fire return intervals for Lahontan sagebrush communities have been estimated to be from 35 to over 100 years. Fire most often occurs during wet years with high forage production. Lahontan sagebrush is very susceptible to fire damage. Lahontan sagebrush is usually killed by fire and does not re-sprout. The recovery in burned areas is usually via small, light, wind-dispersed seed for all low sagebrush subspecies. Partially injured Lahontan sagebrush may re-grow from living branches, but sprouting does not occur.

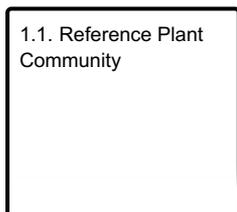
Indian ricegrass can be killed by fire, depending on severity and season of burn. Indian ricegrass reestablishes on burned sites through seed dispersed from adjacent unburned areas.

State and transition model

Ecosystem states



State 1 submodel, plant communities



State 1 Reference Plant Community

Community 1.1 Reference Plant Community

The reference plant community is dominated by Lahontan sagebrush and Indian ricegrass. Spiny hopsage, fourwing saltbush, winterfat, and needleandthread are other important species associated with this site. Potential vegetative composition is about 55% grasses, 5% forbs and 40% shrubs. Approximate ground cover (basal and crown) is about 15 to 25 percent.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	154	277	432
Shrub/Vine	112	202	314
Forb	15	26	39
Total	281	505	785

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			178–344	
	Indian ricegrass	ACHY	<i>Achnatherum hymenoides</i>	151–228	–
	needle and thread	HECO26	<i>Hesperostipa comata</i>	26–76	–
	desert needlegrass	ACSP12	<i>Achnatherum speciosum</i>	1–40	–
2	Secondary Perennial Grasses			10–26	
	squirreltail	ELEL5	<i>Elymus elymoides</i>	2–16	–
	basin wildrye	LECI4	<i>Leymus cinereus</i>	2–16	–
Forb					
3	Perennial			10–40	
	milkvetch	ASTRA	<i>Astragalus</i>	2–10	–
	desertparsley	LOMAT	<i>Lomatium</i>	2–10	–
	lupine	LUPIN	<i>Lupinus</i>	2–10	–
Shrub/Vine					
4	Primary Shrubs			123–324	
	little sagebrush	ARARL3	<i>Artemisia arbuscula ssp. longicaulis</i>	76–151	–
	fourwing saltbush	ATCA2	<i>Atriplex canescens</i>	26–76	–
	spiny hopsage	GRSP	<i>Grayia spinosa</i>	10–40	–
	winterfat	KRLA2	<i>Krascheninnikovia lanata</i>	10–40	–
	Nevada jointfir	EPNE	<i>Ephedra nevadensis</i>	1–16	–
5	Secondary Shrubs			10–40	
	shadscale saltbush	ATCO	<i>Atriplex confertifolia</i>	6–16	–
	yellow rabbitbrush	CHVI8	<i>Chrysothamnus viscidiflorus</i>	6–16	–
	desert peach	PRAN2	<i>Prunus andersonii</i>	6–16	–
	Nevada dalea	PSPO	<i>Psoralea polydenius</i>	6–16	–
	littleleaf horsebrush	TEGL	<i>Tetradymia glabrata</i>	6–16	–

Animal community

Livestock Interpretations:

This site is suited to livestock grazing. Grazing management should be keyed to Indian ricegrass production. Indian ricegrass has good forage value for domestic sheep, cattle and horses. It supplies a source of green feed before most other native grasses have produced much new growth. Lahontan sagebrush is considered a valuable browse plant during the spring, fall and winter months. In some areas it is of little value in winter due to heavy snow. Lahontan sagebrush is considered a valuable browse plant during the spring, fall and winter months. In some areas it is of little value in winter due to heavy snow.

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:

Lahontan sagebrush is considered a valuable browse plant during the spring, fall and winter months. In some areas it is of little value in winter due to heavy snow. Mule deer utilize and sometimes prefer Lahontan sagebrush, particularly in winter and early spring. Sagebrush-grassland communities provide critical sage-grouse breeding and nesting habitats. Meadows surrounded by sagebrush may be used as feeding and strutting grounds. Sagebrush is a crucial component of their diet year-round, and sage-grouse select sagebrush almost exclusively for cover. Leks are often located on low sagebrush sites, grassy openings, dry meadows, ridgetops, and disturbed sites. Indian ricegrass is an important forage species for several wildlife species. Indian ricegrass is also an important forage species for several wildlife species.

Hydrological functions

Runoff is low, permeability is moderately slow.

Recreational uses

Aesthetic value is derived from the diverse floral and faunal composition and the colorful flowering of wildflowers and shrubs during the spring and early summer. This site is used for camping and hiking and has potential for upland and big game hunting.

Other products

Indian ricegrass was traditionally eaten by some Native American peoples. The Paiutes used seed as a reserve food source.

Other information

Indian ricegrass is well-suited for surface erosion control and desert revegetation although it is not highly effective in controlling sand movement.

Type locality

Location 1: Washoe County, NV	
Township/Range/Section	T22N R23E S13
General legal description	Approximately 5¼ miles south of Nixon on east side of State Route 34, Pyramid Lake Paiute Tribe, Washoe County, Nevada.
Location 2: Washoe County, NV	
UTM zone	N
UTM northing	4447465
UTM easting	0266502

General legal description	Approximately 15 miles north of Sutcliff on northwest side of Pyramid Lake, Pyramid Lake Paiute Tribe, Washoe County, Nevada.
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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

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	
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:**

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:

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):**

14. **Average percent litter cover (%) and depth (in):**

15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):**

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:**

17. **Perennial plant reproductive capability:**
