

Ecological site R029XY039NV

COARSE GRAVELLY LOAM 3-5 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.



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.

Associated sites

R029XY012NV	SANDY 5-8 P.Z.
R029XY032NV	SODIC LOAM 3-5 P.Z.
R029XY035NV	LOAMY 3-5 P.Z.

Similar sites

R029XY035NV	LOAMY 3-5 P.Z. Less productive site; AMDU2 absent
R029XY087NV	GRAVELLY LOAM 5-8 P.Z. More productive site; AMDU2 absent; SAVEB dominant shrub
R029XY032NV	SODIC LOAM 3-5 P.Z. Less productive site; AMDU2 absent
R029XY033NV	LOAMY SLOPE 3-5 P.Z. Less productive site; AMDU2 absent

Table 1. Dominant plant species

Tree	Not specified
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Shrub	(1) <i>Atriplex confertifolia</i> (2) <i>Ambrosia dumosa</i>
Herbaceous	(1) <i>Achnatherum hymenoides</i>

Physiographic features

This site occurs on lower fan piedmonts and inset fans. Slopes range from 0 to 15 percent, but slope gradients of 2 to 4 percent are typical. Elevations are 4000 to about 5400 feet.

Table 2. Representative physiographic features

Landforms	(1) Fan piedmont (2) Inset fan
Flooding duration	Very brief (4 to 48 hours)
Flooding frequency	Rare
Elevation	1,219–1,646 m
Slope	0–15%
Aspect	Aspect is not a significant factor

Climatic features

The climate associated with this site is arid, characterized by cool, moist winters and hot, dry summers. Average annual precipitation is 3 to 5 inches. Mean annual air temperature is 51 to 57 degrees F. The average growing season is about 120 to 160 days.

Table 3. Representative climatic features

Frost-free period (average)	160 days
Freeze-free period (average)	0 days
Precipitation total (average)	127 mm

Influencing water features

This site receives additional moisture as run-in from higher landscapes.

Soil features

The soils associated with this site have formed in alluvium from mixed rock sources and are very deep. Surface soils are medium to moderately coarse textured and are typically gravelly to very gravelly. These soils are well drained to somewhat excessively drained and have rapid to moderate permeability. Runoff is very low to negligible and available water capacity is very low. The soils are generally moderately to strongly alkaline. Potential for sheet and rill erosion is moderate. The soils are usually moist in winter and spring and dry in summer and fall, except for 10 to 20 days between July and October due to convection storms. The soil moisture regime is aridic bordering on xeric and the soil temperature regime is mesic.

The soil series associated with this site include Gynelle and Keefa.

Table 4. Representative soil features

Surface texture	(1) Very gravelly sand (2) Very gravelly loamy sand (3) Sandy loam
Family particle size	(1) Loamy

Drainage class	Well drained to somewhat excessively drained
Permeability class	Moderate to rapid
Soil depth	183–213 cm
Surface fragment cover <=3"	10–60%
Surface fragment cover >3"	0–3%
Available water capacity (0-101.6cm)	3.81–9.65 cm
Calcium carbonate equivalent (0-101.6cm)	0%
Electrical conductivity (0-101.6cm)	0–8 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	13–30
Soil reaction (1:1 water) (0-101.6cm)	7.9–9.6
Subsurface fragment volume <=3" (Depth not specified)	16–26%
Subsurface fragment volume >3" (Depth not specified)	0–16%

Ecological dynamics

Where management results in abusive livestock use by cattle and /or feral horses, Indian ricegrass composition will decline. Species likely to invade this site are halogeton, Russian thistle, cheatgrass and annual mustards.

Fire Ecology:

The mean fire return interval for shadscale communities range from 35 to 100 years. 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. Increased presence of non-native annual grasses, such as cheatgrass, can alter fire regimes in shadscale communities by increasing fire frequency under wet to near-normal summer moisture conditions. When fire does occur, the effect on the ecosystem may be extreme. Fire generally kills white bursage. Greasewood may be killed by severe fires, but it commonly sprouts soon after low to moderate-severity fire. There is little mention of fire in relation to white bursage in the literature. Fire generally kills white bursage. Fire typically destroys aboveground parts of Shockley's wolfberry, but the degree of damage to the plant depends on fire severity. 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. Galleta is a rhizomatous perennial which can resprout after top-kill by fire.

State and transition model

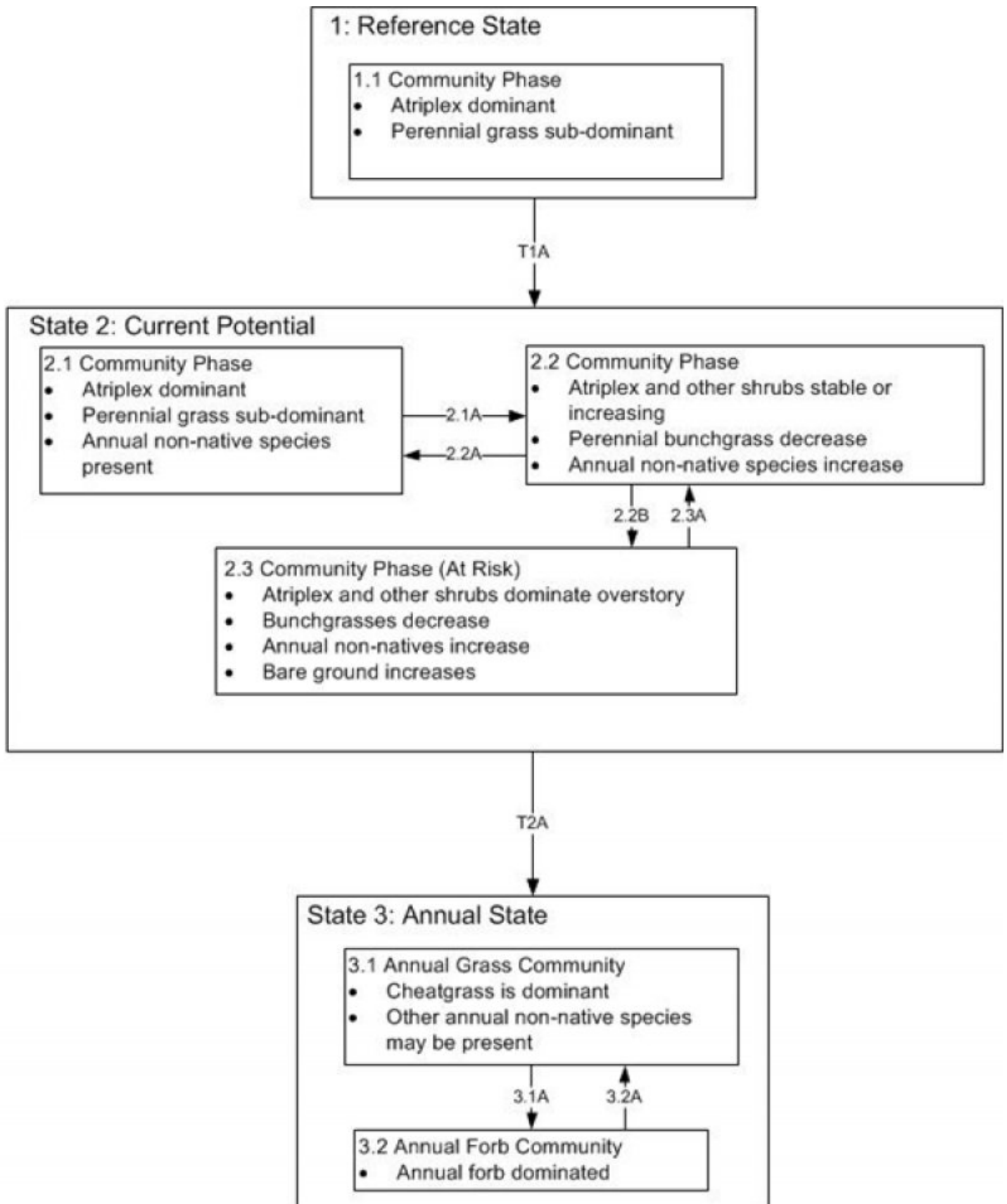


Figure 3. DRAFT STM

T1A: introduction of non-native species

2.1A: prolonged drought/ inadequate rest and recovery from defoliation

2.2A: rest and recovery

2.2B: prolonged drought/ inadequate rest and recovery from defoliation

2.3A: recovery or changes in management

T2A: Inadequate rest and recovery from defoliation and/or prolonged drought/Catastrophic wildfire.

3.1A: fire or cheatgrass die off

3.2A: time

Figure 4. DRAFT STM LEGEND

State 1

Reference State

Community 1.1

Reference Plant Community

The reference plant community is dominated by Indian ricegrass and shadscale. Other important species on this site are white bursage, Shockley's wolfberry, and Bailey's greasewood. Potential vegetative composition is about 10% grasses, 5% forbs and 85% shrubs. Approximate ground cover (basal and crown) is 15 to 25 percent.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Shrub/Vine	191	333	476
Grass/Grasslike	22	39	56
Forb	11	20	28
Total	224	392	560

State 2

Current Potential State

State 3

Annual State

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			146–177	
	Indian ricegrass	ACHY	<i>Achnatherum hymenoides</i>	138–157	–
	James' galleta	PLJA	<i>Pleuraphis jamesii</i>	8–20	–
2	Secondary Perennial Grasses			8–31	
	desert needlegrass	ACSP12	<i>Achnatherum speciosum</i>	2–8	–
	King's eyelashgrass	BLKI	<i>Blepharidachne kingii</i>	2–8	–
	squirreltail	ELEL5	<i>Elymus elymoides</i>	2–8	–
Forb					
3	Perennial			8–31	
	King's eyelashgrass	BLKI	<i>Blepharidachne kingii</i>	2–8	–
	globemallow	SPHAE	<i>Sphaeralcea</i>	2–8	–
4	Annual			0–20	
Shrub/Vine					
5	Primary Shrubs			127–288	
	shadscale saltbush	ATCO	<i>Atriplex confertifolia</i>	78–138	–
	burrobush	AMDU2	<i>Ambrosia dumosa</i>	20–59	–
	Shockley's desert-thorn	LYSH	<i>Lycium shockleyi</i>	8–31	–
6	Secondary Shrubs			20–59	
	Shockley's goldenhead	ACSH	<i>Acamptopappus shockleyi</i>	4–12	–
	fourwing saltbush	ATCA2	<i>Atriplex canescens</i>	4–12	–
	yellow rabbitbrush	CHVI8	<i>Chrysothamnus viscidiflorus</i>	4–12	–
	Nevada jointfir	EPNE	<i>Ephedra nevadensis</i>	4–12	–
	winterfat	KRLA2	<i>Krascheninnikovia lanata</i>	4–12	–
	bud sagebrush	PIDE4	<i>Picrothamnus desertorum</i>	4–12	–

Animal community

Livestock Interpretations:

This site is suited to livestock grazing. Grazing management should be keyed to perennial grass 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. When actively growing, galleta provides good to excellent forage for cattle and horses and fair forage for domestic sheep. Although not preferred, all classes of livestock may use galleta when it is dry. Domestic sheep show greater use in winter than summer months and typically feed upon central portions of galleta tufts, leaving coarser growth around the edges. Galleta may prove somewhat coarse to domestic sheep. Shadscale is a valuable browse species, providing a source of palatable, nutritious forage for a wide variety of livestock. Shadscale provides good browse for domestic sheep. Shadscale leaves and seeds are an important component of domestic sheep and cattle winter diets. 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. Bailey's greasewood is an important winter browse plant for domestic sheep and cattle. It also receives light to moderate use by domestic sheep and cattle during spring and summer months. Greasewood contains soluble sodium and potassium oxalates that may cause poisoning and death in domestic sheep and cattle if large amounts are consumed in a short time. Shockley's wolfberry is sometimes used as forage by livestock. Palatability of Shockley's wolfberry browse is presumably fair to low. This species is used as forage only when more desirable species are unavailable. The fruit, however, appears to be moderately palatable.

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:

Shadscale is a valuable browse species, providing a source of palatable, nutritious forage for a wide variety of wildlife particularly during spring and summer before the hardening of spiny twigs. It supplies browse, seed, and cover for birds, small mammals, rabbits, deer, and pronghorn antelope.

White bursage is an important browse species for wildlife. Bailey's greasewood is an important winter browse plant for big game animals and a food source for many other wildlife species. It also receives light to moderate use by mule deer and pronghorn during spring and summer months. Palatability of Anderson wolfberry browse is presumably fair to low. This species is used as forage only when more desirable species are unavailable. The fruit, however, appears to be moderately palatable. Anderson wolfberry is sometimes used as forage by feral burros. The red berries are eaten by some birds and mammals. Berries of this plant constituted 2 percent of the diet of chukar partridges. In some areas of southern Nevada, the fleshy leaves and juicy berries provide part of the succulence permitting Gambel quail to occupy desert areas devoid of drinking water. In desert washes Anderson wolfberry grows in dense thorny thickets which provide good cover for quail and other small wildlife. Indian ricegrass is an important forage species for several wildlife species. Galleta provides moderately palatable forage when actively growing and relatively unpalatable forage during dormant periods. Galleta provides poor cover for most wildlife species.

Hydrological functions

Runoff is negligible to very low. Permeability is moderate to rapid.

Recreational uses

Aesthetic value is derived from the diverse floral and faunal composition. This site offers rewarding opportunities to photographers and for nature study. This site is used for camping and hiking and has potential for upland and big game hunting.

Other products

Seeds of shadscale were used by Native Americans of Arizona, Utah and Nevada for bread and mush. 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. The leaves, seeds and stems of greasewood are edible. Native Americans used the fleshy berries of Anderson wolfberry either fresh or boiled and then dried them for later use. This shrub is also used as an ornamental valued chiefly for its showy red berries. Indian ricegrass was traditionally eaten by some Native Americans. The Paiutes used seed as a reserve food source.

Other information

White bursage may be used to revegetate disturbed sites in southwestern deserts.

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: Esmeralda County, NV	
Township/Range/Section	T4S R39E S7
Latitude	37° 36' 25"
Longitude	117° 41' 33"
General legal description	Section 7, T4S. R39E. MDBM. Approximately 9 miles south of Silver Peak, Clayton Valley area, Esmeralda County, Nevada. This site also occurs in Mineral and Nye Counties, 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

HA/RRK/GKB/VWM

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:**
-