

## Ecological site R029XY036NV COBBLY LOAM 5-8 P.Z.

Accessed: 05/08/2024

### 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.

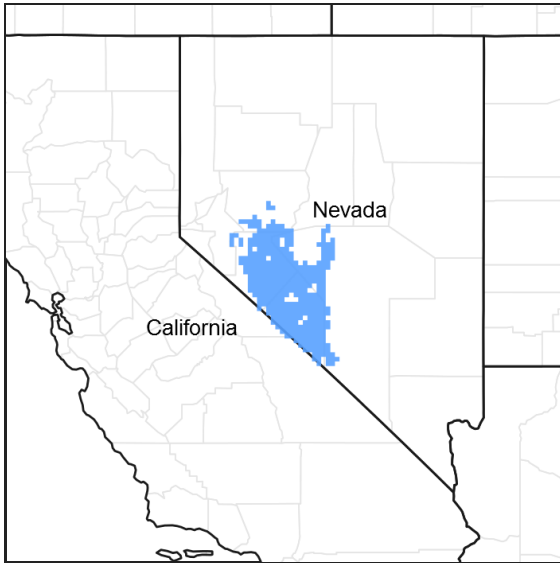


Figure 1. Mapped extent

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

R029XY016NV	LOAMY UPLAND 5-8 P.Z.
R029XY017NV	LOAMY 5-8 P.Z.

### Similar sites

R029XY038NV	<b>COBBLY LOAM 8-12 P.Z.</b> ARTRW8 codominant shrub
R029XY037NV	<b>COBBLY SLOPE 5-8 P.Z.</b> Less productive site; PLJA-ACSP12 codominant grasses
R029XY031NV	<b>SHALLOW DROUGHTY LOAM 5-8 P.Z.</b> More productive site; GRSP-MESP2 codominant shrubs
R029XY107NV	<b>GRANITIC COBBLY LOAM 5-8 P.Z.</b> ACSP12 dominant grass; soils from granitic parent material
R029XY074NV	<b>SHALLOW LOAM 5-8 P.Z.</b> More productive site; MESP2-ATCO codominant shrubs

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) <i>Menodora spinescens</i>
Herbaceous	(1) <i>Achnatherum hymenoides</i>

## Physiographic features

This site occurs on lower piedmont slopes, rock pediments, inset fans, and fan remnants. Slopes range from 0 to over 30 percent, but slope gradients of 2 to 8 percent are typical. Elevations are 4100 to about 7000 feet.

**Table 2. Representative physiographic features**

Landforms	(1) Fan piedmont (2) Inset fan (3) Fan remnant
Flooding duration	Very brief (4 to 48 hours)
Flooding frequency	Rare
Ponding frequency	None
Elevation	1,250–2,134 m
Slope	0–30%
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 5 to 8 inches. Mean annual air temperature is 49 to 58 degrees F. The average growing season is about 100 to 200 days.

**Table 3. Representative climatic features**

Frost-free period (average)	200 days
Freeze-free period (average)	0 days
Precipitation total (average)	203 mm

## Influencing water features

There are no influencing water features associated with this site.

## Soil features

The soils associated this site are very shallow to very deep and well drained to excessively drained. These soils have formed in mixed alluvium from mixed sources including volcanic rocks. Surfaces are stony or very cobbly with loam textures. Subsoils may have a restrictive layer within the main rooting depth. Water intake rates are moderate, available water capacity is low to moderate, runoff is low to very high. Soil stability values should be 2 to 4 on most soil textures found on this site. Areas of this site occurring on soils that have a physical crust will probably have stability values less than 3. Soils having thin surface sand sheet will have lower stability values. Soil series associated with this site are: Advokay, Annaw, Ardivey, Belted, Candelaria, Fuegosta, Gabbs, Garhill, Gynelle, Hollywell, Izo, Lathrop, Lyda, Minnye, Silverbow, Stonell, Terlco, Tomel, Truhoy, Vigus, and Wardenot.

**Table 4. Representative soil features**

Surface texture	(1) Very gravelly loamy sand (2) Gravelly sandy loam (3) Very stony loam
Drainage class	Well drained to excessively drained
Permeability class	Slow to rapid
Soil depth	10–183 cm
Surface fragment cover ≤3"	24–64%
Surface fragment cover >3"	0–31%
Available water capacity (0-101.6cm)	2.29–9.91 cm
Calcium carbonate equivalent (0-101.6cm)	0–15%
Electrical conductivity (0-101.6cm)	0–16 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	0–45
Soil reaction (1:1 water) (0-101.6cm)	6.6–9.6
Subsurface fragment volume ≤3" (Depth not specified)	7–61%
Subsurface fragment volume >3" (Depth not specified)	2–48%

## Ecological dynamics

Where management results in abusive livestock use, bud sagebrush, fourwing saltbush, winterfat and Indian ricegrass decrease. Species likely to invade this site are cheatgrass, snakeweed, halogeton, Russian thistle, and annual mustards. Galleta is an aggressive increaser following disturbance such as wildfire.

### Fire Ecology:

The mean fire return interval for spiny menodora communities is unknown but is probably similar to shadscale communities. Fire return intervals for shadscale communities range from 35 to 100 years. Desert shrub 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. Greasewood may be killed by severe fires, but it commonly sprouts soon after low to moderate-severity fire. Nevada ephedra generally sprouts after fire damages aboveground vegetation. Underground regenerative structures commonly survive when aboveground vegetation is consumed by fire. However, severe fires may kill shallowly buried regenerative structures. Budsage is killed by fire. Budsage communities rarely burn due to insufficient fire loads. 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

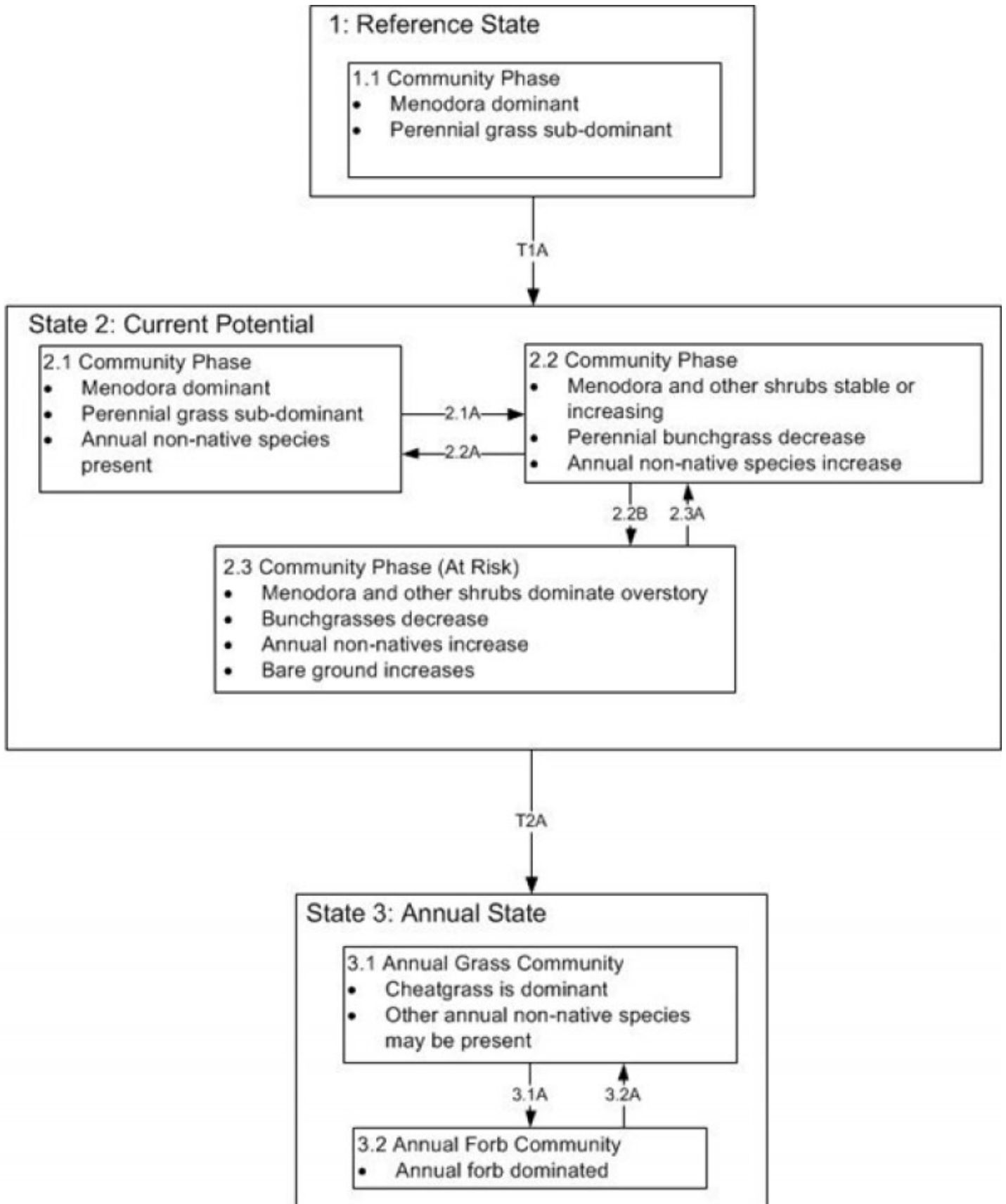


Figure 3. DRAFT STM

## 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 spiny menodora and Indian ricegrass. Bailey's greasewood, shadscale, Nevada ephedra and galleta are other important species associated with this site. Potential vegetative composition is about 20% grasses, 5% forbs and 75% shrubs. Approximate ground cover (basal and crown) is 4 to 12 percent. Bare ground is approximately 50%, shrub canopy is less than 15% and basal area for perennial herbaceous plants is less than 5%. Dead branches within individual shrubs are common and standing dead shrub canopy material may be as much as 25% of total woody canopy. Some of the mature bunchgrasses (less than 25%) have dead centers. Within plant interspaces litter is approximately 3% cover.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Shrub/Vine	84	252	336
Grass/Grasslike	22	67	90
Forb	6	17	22
<b>Total</b>	<b>112</b>	<b>336</b>	<b>448</b>

### 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 (%)
<b>Grass/Grasslike</b>					
1	<b>Primary Perennial Grasses</b>			24–77	
	Indian ricegrass	ACHY	<i>Achnatherum hymenoides</i>	17–50	–
	James' galleta	PLJA	<i>Pleuraphis jamesii</i>	7–27	–
2	<b>Secondary Perennial Grasses</b>			7–27	
	desert needlegrass	ACSP12	<i>Achnatherum speciosum</i>	2–10	–
	King's eyelashgrass	BLKI	<i>Blepharidachne kingii</i>	2–10	–
	squirreltail	ELEL5	<i>Elymus elymoides</i>	2–10	–
	needle and thread	HECO26	<i>Hesperostipa comata</i>	2–10	–
<b>Forb</b>					
3	<b>Perennial</b>			7–27	
	James' galleta	PLJA	<i>Pleuraphis jamesii</i>	7–27	–
	beardtongue	PENST	<i>Penstemon</i>	2–7	–
	globemallow	SPHAE	<i>Sphaeralcea</i>	2–7	–
	princesplume	STANL	<i>Stanleya</i>	2–7	–
4	<b>Annual</b>			0–10	
<b>Shrub/Vine</b>					
5	<b>Primary Shrubs</b>			148–279	
	spiny menodora	MESP2	<i>Menodora spinescens</i>	118–151	–
	shadscale saltbush	ATCO	<i>Atriplex confertifolia</i>	17–50	–
	Nevada jointfir	EPNE	<i>Ephedra nevadensis</i>	7–27	–
	bud sagebrush	PIDE4	<i>Picrothamnus desertorum</i>	7–17	–
6	<b>Secondary Shrubs</b>			17–34	
	fourwing saltbush	ATCA2	<i>Atriplex canescens</i>	2–10	–
	yellow rabbitbrush	CHVI8	<i>Chrysothamnus viscidiflorus</i>	2–10	–
	spiny hopsage	GRSP	<i>Grayia spinosa</i>	2–10	–
	winterfat	KRLA2	<i>Krascheninnikovia lanata</i>	2–10	–
	desert-thorn	LYCIU	<i>Lycium</i>	2–10	–
	horsebrush	TETRA3	<i>Tetradymia</i>	2–10	–

## Animal community

### Livestock Interpretations:

This site is suited to livestock grazing. Grazing management should be keyed to indian ricegrass and galleta production. Indian ricegrass has good forage value for domestic sheep, cattle and horses. Indian ricegrass is often used most heavily in the late winter, when succulent and nutritious new green leaves are produced. 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. Spiny menodora has lower palatability than the other shrubs but is consumed during early spring before spines mature. 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. 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. Nevada ephedra is important winter range browse for domestic cattle, sheep and goats. Budsage is palatable and nutritious forage for domestic sheep in the winter and spring although it is known to cause mouth sores in lambs. Budsage can be poisonous or fatal to calves when eaten in quantity. Budsage, while desired by cattle in spring, is poisonous to cattle when consumed alone.

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:

Spiny menodora has lower palatability than the other shrubs but is consumed during early spring before spines mature. 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. 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. Mule deer, bighorn sheep, and pronghorn browse Nevada ephedra, especially in spring and late summer when new growth is available. Budsage is palatable, nutritious forage for upland game birds, small game and big game in winter. Budsage is rated as "regularly, frequently, or moderately taken" by mule deer in Nevada in winter and is utilized by bighorn sheep in summer, but the importance of budsage in the diet of bighorns is not known. Bud sage comprises 18 – 35% of a Pronghorn's diet during the spring where it is available. Chukar will utilize the leaves and seeds of bud sage. Budsage is highly susceptible to effects of browsing. It decreases under browsing due to year-long palatability of its buds and is particularly susceptible to browsing in the spring when it is physiologically most active. Indian ricegrass is eaten by pronghorn in "moderate" amounts whenever available. In Nevada it is consumed by desert bighorns. A number of heteromyid rodents inhabiting desert rangelands show preference for seed of Indian ricegrass. Indian ricegrass is an important component of jackrabbit diets in spring and summer. In Nevada, Indian ricegrass may even dominate jackrabbit diets during the spring through early summer months. Indian ricegrass seed provides food for many species of birds. Doves, for example, eat large amounts of shattered Indian ricegrass seed lying on the ground. Desert bighorn sheep of the Mojave Desert utilize galleta as forage. 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

Rills and water flow patterns are rare on this site. A few can be expected on steeper slopes in areas subjected to summer convection storms or rapid snowmelt. Pedestals are rare. Occurrence is usually limited to areas of water flow patterns. Frost heaving of shallow rooted plants should not be considered a normal condition. Gullies are rare in areas of this site that occur on stable landforms. Where this site occurs on inset fans, gullies and head cuts associated with ephemeral channel entrenchment may be common. Gullies and head cuts should be healing or stable. Fine litter (foliage from grasses and annual and perennial forbs) are expected to move the distance of slope length during intense summer convection storms or rapid snowmelt events. Persistent litter (large woody material) will remain in place except during catastrophic events. Perennial herbaceous plants (especially deep-rooted bunchgrasses [i.e. desert needlegrass and Indian ricegrass] slow runoff and increase infiltration. Shrub canopy and associated litter break raindrop impact and provide opportunity for snow catch and accumulation on site.

## Recreational uses

This site offers opportunities for photography and nature study. This site has potential for off-road vehicle use and hiking.

## Other products

Seeds of shadscale were used by Native Americans of Arizona, Utah and Nevada for bread and mush. The leaves, seeds and stems of greasewood are edible. Native Americans used Nevada ephedra as a tea to treat stomach and

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

## Other information

Nevada ephedra is useful for erosion control, and seedlings have been successfully planted onto reclaimed strip mines, with survival ranging from 12 to 94%. Atrazine may be effective in controlling Nevada ephedra, though some plants can survive through crown sprouting. Irrigation may increase control by atrazine. 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	T2N R34E S23
General legal description	Approximately 15 miles west of Coaldale Junction, northside of US Hwy 6, Candelaria Hills, 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/GD

## 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)	GK BRACKLEY
Contact for lead author	State Rangeland Management Specialist
Date	06/05/2006
Approved by	P. Novak-Echenique
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

## Indicators

1. **Number and extent of rills:** Rills are rare. A few can be expected on steeper slopes in areas subjected to summer convection storms or rapid spring snowmelt.

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2. **Presence of water flow patterns:** Water flow patterns are rare but can be expected in areas subjected to summer convection storms or rapid snowmelt.



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3. **Number and height of erosional pedestals or terracettes:** Pedestals are rare. Occurrence is usually limited to areas of water flow patterns. Frost heaving of shallow rooted plants should not be considered a "normal" condition.
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4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare Ground  $\pm$  50%; surface cover of rock fragments more than 50-75%; shrub canopy <15%; foliar cover for perennial herbaceous plants <5%.
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5. **Number of gullies and erosion associated with gullies:** Gullies are rare in areas of this site that occur on stable landforms. Where this site occurs on inset fans, gullies and head cuts associated with ephemeral channel entrenchment sometimes occur. Gullies and head cuts should be healing or stable.
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6. **Extent of wind scoured, blowouts and/or depositional areas:** None
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7. **Amount of litter movement (describe size and distance expected to travel):** Fine litter (foliage from grasses and annual & perennial forbs) is expected to move the distance of slope length during intense summer convection storms or rapid snowmelt events. Persistent litter (large woody material) will remain in place except during catastrophic events.
- 
8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Soil stability values should be 2 to 4 on most soil textures found on this site. Areas of this site occurring on soils that have a physical crust will probably have stability values less than 3. (To be field tested.)
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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Surface structure is typically thin to thick platy, prismatic, or massive. Soil surface colors are light and soils are typified by an ochric epipedon. Organic carbon of the surface 2 to 3 inches is less than 1 percent.
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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Perennial herbaceous plants (especially deep-rooted bunchgrasses [i.e., Indian ricegrass and desert needlegrass] slow runoff and increase infiltration. Shrub canopy and associated litter break raindrop impact and provide opportunity for snow catch and accumulation on site.
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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):** Compacted layers are not typical. Platy or massive sub-surface horizons, subsoil argillic horizons or hardpans shallow to the surface are not to be interpreted as compacted layers.
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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: Reference Plant Community: Low-statured shrubs >> deep-rooted, cool season, perennial bunchgrasses

Sub-dominant: Shallow-rooted, warm season, rhizomatous grass > deep-rooted, cool season, perennial forbs = fibrous, shallow-rooted, cool season, perennial and annual forbs.

Other:

Additional:

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Dead branches within individual shrubs are common and standing dead shrub canopy material may be as much as 25% of total woody canopy; some of the mature bunchgrasses (<25%) have dead centers.
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14. **Average percent litter cover (%) and depth ( in):** Within plant interspaces ( $\pm$  3%)
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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** For normal or average growing season (end of May)  $\pm$  300 lbs/ac; Spring moisture significantly affects total 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:** Cheatgrass, snakeweed, halogeton, Russian thistle, and annual mustards, are invaders on this site. Douglas rabbitbrush is an increaser on this site. Galleta is an aggressive increaser following disturbance such as wildfire.
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17. **Perennial plant reproductive capability:** All functional groups should reproduce in average (or normal) and above average growing season years
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