USDA Natural Resources Conservation Service

# Ecological site R029XY107NV
# GRANITIC COBBLY LOAM 5-8 P.Z.

Accessed: 05/18/2024

## 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.

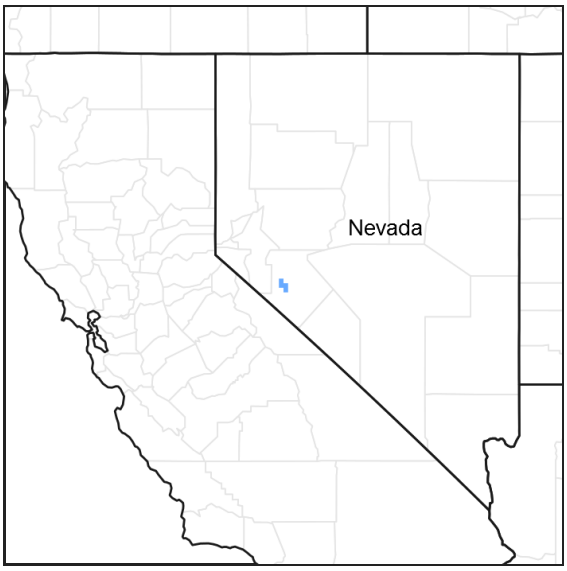


**Figure 1. Mapped extent**

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

| | |
|---|---|
| R027XY050NV | **COARSE GRAVELLY LOAM 4-8 P.Z.** |
| R027XY065NV | **GRANITIC SLOPE 8-10 P.Z.** |
| R029XY074NV | **SHALLOW LOAM 5-8 P.Z.** |

## Similar sites

| | |
|---|---|
| R029XY037NV | **COBBLY SLOPE 5-8 P.Z.**<br>productive site; may be a "burned" expression (seral stage) of 029XY107? |
| R029XY031NV | **SHALLOW DROUGHTY LOAM 5-8 P.Z.**<br>ACHY dominant grass; GRSP-MESP2 codominant |
| R029XY036NV | **COBBLY LOAM 5-8 P.Z.**<br>ACHY dominant grass |
| R029XY074NV | **SHALLOW LOAM 5-8 P.Z.**<br>MESP2-ATCO codominant shrubs |

**Table 1. Dominant plant species**

| | |
|---|---|
| Tree | Not specified |

| | |
|---|---|
| Shrub | (1) *Menodora spinescens* |
| Herbaceous | (1) *Achnatherum speciosum* |

## Physiographic features

This site occurs on inset fans, alluvial fans and fan remnants on all aspects. Slopes range from 2 to 15 percent. Elevations are 4100 to about 5200 feet.

**Table 2. Representative physiographic features**

| | |
|---|---|
| Landforms | (1) Inset fan<br>(2) Alluvial fan<br>(3) Fan remnant |
| Flooding duration | Very brief (4 to 48 hours) |
| Flooding frequency | Rare to occasional |
| Ponding frequency | None |
| Elevation | 1,250–1,585 m |
| Slope | 2–15% |
| 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 5 to 8 inches. Mean annual air temperature is 52 to 55 degrees F. The average growing season is about 120 to 150 days.

**Table 3. Representative climatic features**

| | |
|---|---|
| Frost-free period (average) | 150 days |
| Freeze-free period (average) | 0 days |
| Precipitation total (average) | 203 mm |

## Influencing water features

There are no influencing water features assocciated with this site.

## Soil features

The soils associated with this site have formed in alluvium or colluvium from predomininantly granitic parent materials. Surfaces are stony or cobbly and are coarse textured. Water intake rates are slow to very rapid, available water capacity is very low to low, runoff is negligible to very high and the soils are well to excessively drained. Soil series associated with this site are Itme and Terlco.

**Table 4. Representative soil features**

| | |
|---|---|
| Surface texture | (1) Gravelly loamy sand<br>(2) Very bouldery loamy sand<br>(3) Very gravelly sand |
| Family particle size | (1) Sandy |
| Drainage class | Well drained to excessively drained |
| Permeability class | Slow to very rapid |
| Soil depth | 183–213 cm |

| | |
|---|---|
| Surface fragment cover <=3" | 35–75% |
| Surface fragment cover >3" | 2–14% |
| Available water capacity (0-101.6cm) | 5.08–9.4 cm |
| Calcium carbonate equivalent (0-101.6cm) | 0–25% |
| Electrical conductivity (0-101.6cm) | 0–8 mmhos/cm |
| Sodium adsorption ratio (0-101.6cm) | 0–30 |
| Soil reaction (1:1 water) (0-101.6cm) | 7.4–9 |
| Subsurface fragment volume <=3" (Depth not specified) | 17–33% |
| Subsurface fragment volume >3" (Depth not specified) | 2–16% |

## Ecological dynamics

Where management results in abusive grazing use by livestock or feral horses, Douglas' rabbitbrush, Bailey's greasewood, and Anderson's wolfberry increase while desert needlegrass and other desirable forage species decline. Species most likely to invade this site are cheatgrass and annual mustards. This site, when in deteriorated condition, subjected to wildfire, may become a nearly solid stand of horsebrush, snakeweed, and rabbitbrush with introduced annual grasses or galleta occurring in the shrub interspaces.

Fire Ecology:
Desert shrub communities fire return interval ranges from 35-100 years. Abundance of species varies by site condition, frequency, and seasonal timing of fire. Increased presence of non-native annual grasses, such as cheatgrass, can alter fire regimes in desert shrub 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. Desert needlegrass has persistent dead leaf bases, which make it susceptible to burning. Fire removes the accumulation; a rapid, cool fire will not burn deep into the root crown. Shadscale is fire intolerant and it does not readily recover from fire, except for establishment through seed. Fall prescribed burning killed 100% of shadscale on study plots in a basin big sagebrush community. Spring burning left a few surviving shadscale plants but greatly reduced shadscale density and frequency. Spiny hopsage is considered to be somewhat fire tolerant and often survives fires that kill sagebrush. Mature spiny hopsage generally sprout after being burned. Spiny hopsage is reported to be least susceptible to fire during summer dormancy. 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. 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

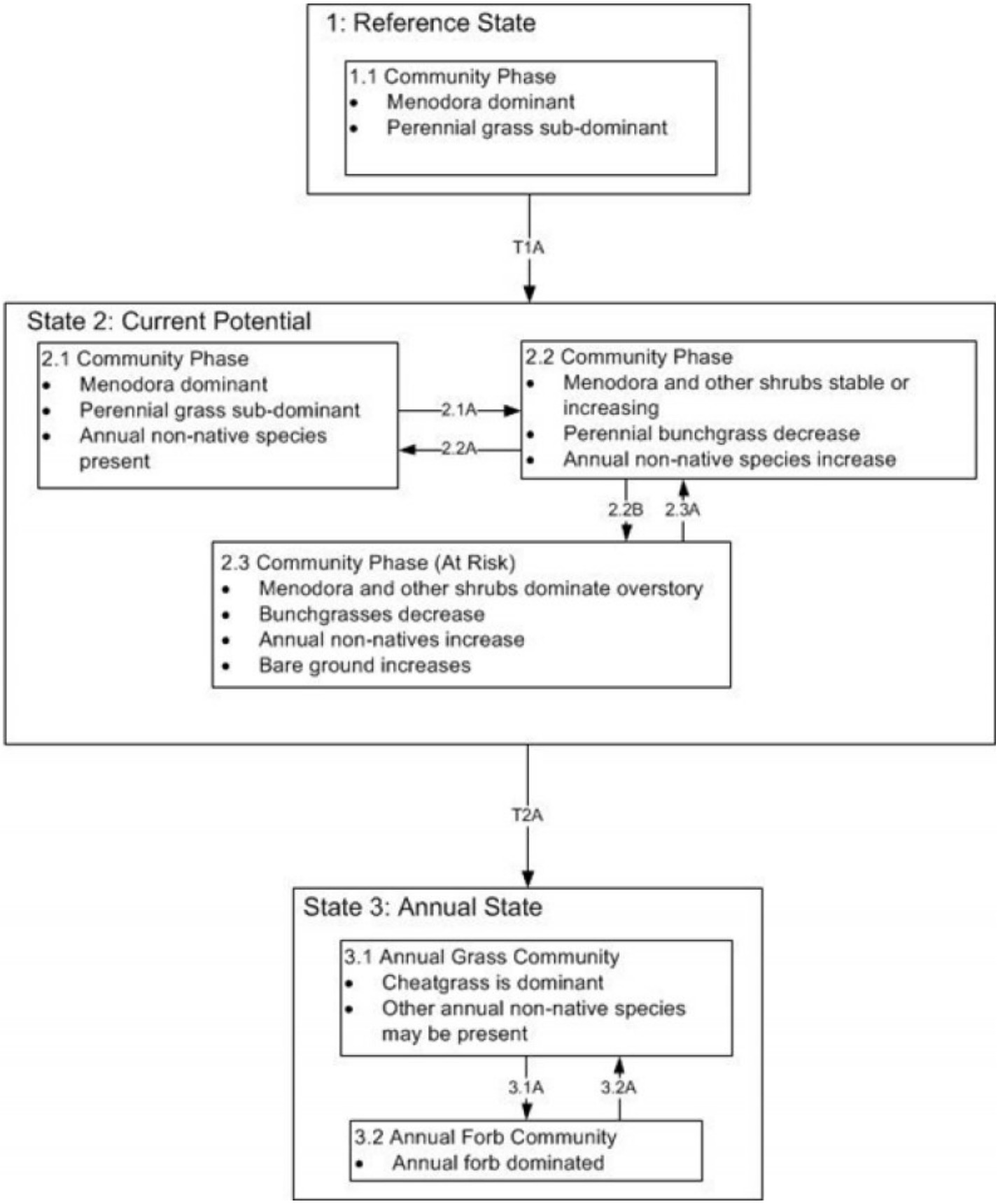


**Figure 3. DRAFT STM**

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 desert needlegrass. Potential vegetative composition is about 40% grasses, 5% forbs and 55% shrubs. Approximate ground cover (basal and crown) is 15 to 20 percent.

**Table 5. Annual production by plant type**

| Plant Type | Low (Kg/Hectare) | Representative Value (Kg/Hectare) | High (Kg/Hectare) |
|---|---|---|---|
| Shrub/Vine | 154 | 247 | 370 |
| Grass/Grasslike | 112 | 179 | 269 |
| Forb | 15 | 22 | 34 |
| **Total** | **281** | **448** | **673** |

### State 2
### Current Potenital 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** | | | 121–193 | |
| | desert needlegrass | ACSP12 | *Achnatherum speciosum* | 112–157 | – |
| | Indian ricegrass | ACHY | *Achnatherum hymenoides* | 9–36 | – |
| 2 | **Secondary Perennial Grasses** | | | 9–36 | |
| | King's eyelashgrass | BLKI | *Blepharidachne kingii* | 2–13 | – |
| | squirreltail | ELEL5 | *Elymus elymoides* | 2–13 | – |
| | needle and thread | HECO26 | *Hesperostipa comata* | 2–13 | – |
| | James' galleta | PLJA | *Pleuraphis jamesii* | 2–13 | – |
| | sand dropseed | SPCR | *Sporobolus cryptandrus* | 2–13 | – |
| **Forb** | | | | | |
| 3 | **Perennial** | | | 9–36 | |
| | desert needlegrass | ACSP12 | *Achnatherum speciosum* | 112–157 | – |
| | Indian ricegrass | ACHY | *Achnatherum hymenoides* | 9–36 | – |
| | squirreltail | ELEL5 | *Elymus elymoides* | 2–13 | – |
| | needle and thread | HECO26 | *Hesperostipa comata* | 2–13 | – |
| | sand dropseed | SPCR | *Sporobolus cryptandrus* | 2–13 | – |
| | beardtongue | PENST | *Penstemon* | 2–9 | – |
| | globemallow | SPHAE | *Sphaeralcea* | 2–9 | – |
| | princesplume | STANL | *Stanleya* | 2–9 | – |
| 4 | **Annual** | | | 1–13 | |
| **Shrub/Vine** | | | | | |
| 5 | **Primary Shrubs** | | | 179–404 | |
| | spiny menodora | MESP2 | *Menodora spinescens* | 112–157 | – |
| | shadscale saltbush | ATCO | *Atriplex confertifolia* | 22–67 | – |
| | Nevada jointfir | EPNE | *Ephedra nevadensis* | 9–36 | – |
| | spiny hopsage | GRSP | *Grayia spinosa* | 9–36 | – |
| | winterfat | KRLA2 | *Krascheninnikovia lanata* | 9–36 | – |
| | water jacket | LYAN | *Lycium andersonii* | 9–36 | – |
| 6 | **Secondary Shrubs** | | | 28–56 | |
| | fourwing saltbush | ATCA2 | *Atriplex canescens* | 4–13 | – |
| | yellow rabbitbrush | CHVI8 | *Chrysothamnus viscidiflorus* | 4–13 | – |
| | horsebrush | TETRA3 | *Tetradymia* | 4–13 | – |

## Animal community

Livestock Interpretations:
This site is suited to livestock grazing. Grazing management should be keyed to desert needlegrass production. 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. Spiny menodora has lower palatability than the other shrubs but is consumed during early spring before spines mature. Indian ricegrass is highly palatable to all classes of livestock in both green and cured condition. It supplies a source of green feed before most other native grasses have produced much new growth. 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. Spiny hopsage provides a palatable and nutritious food source for livestock, particularly during late winter through spring. Domestic sheep browse the succulent new growth of spiny hopsage in late winter and early spring. Winterfat is an important forage plant for livestock, especially during winter when forage is scarce. Abusive grazing practices have reduced or eliminated winterfat on some areas even though it is fairly resistant to browsing. Effects depend on severity and season of grazing. Nevada ephedra is important winter range browse for domestic cattle, sheep and goats. Anderson wolfberry is sometimes used as forage by livestock. 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. 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:
Both spiny menodora and desert needlegrass are important forage species for several wildlife species. 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. 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. Spiny hopsage provides a palatable and nutritious food source for big game animals. Spiny hopsage is used as forage to at least some extent by domestic goats, deer, pronghorn, and rabbits. Winterfat is an important forage plant for wildlife, especially during winter when forage is scarce. Winterfat seeds are eaten by rodents and are a staple food for black-tailed jackrabbits. Mule deer and pronghorn antelope browse winterfat. Winterfat is used for cover by rodents. It is potential nesting cover for upland game birds, especially when grasses grow up through its crown. Mule deer, bighorn sheep, and pronghorn browse Nevada ephedra, especially in spring and late summer when new growth is available. 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. 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.

## Hydrological functions

Runoff is negligible to very high. Permeability is slow to very rapid.

## Recreational uses

Aesthetic value is derived from the diverse floral and faunal composition and the colorful flowering of wild flowers and shrubs during the spring and early summer. 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

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 was traditionally eaten by some Native Americans. The Paiutes used seed as a reserve food source. Seeds of shadscale were used by Native Americans for bread and mush. Some Native American peoples traditionally ground parched seeds of spiny hopsage to make pinole flour. Native Americans used Nevada ephedra as a tea to treat stomach and kidney ailments. 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.

## Other information

Spiny hopsage has moderate potential for erosion control and low to high potential for long-term revegetation projects. It can improve forage, control wind erosion, and increase soil stability on gentle to moderate slopes. Spiny hopsage is suitable for highway plantings on dry sites in Nevada. Winterfat adapts well to most site conditions, and its extensive root system stabilizes soil. However, winterfat is intolerant of flooding, excess water, and acidic soils. 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.

## Type locality

| Location 1: Mineral County, NV | |
|---|---|
| Township/Range/Section | T7N R30E S22 |
| Latitude | 38° 27′ 3″ |
| Longitude | 118° 37′ 10″ |
| General legal description | NW¼NW¼ Section 22, T7N. R30E. MDBM. Approximately 5 miles south of Hawthorne, Mineral 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

FR/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:**