

## Ecological site R030XA071NV COBBLY LOAM 5-7 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.

### Ecological site concept

This site occurs on fan remnants. Slopes range from 2 to 8 percent. Elevations are 1800 to 4500 feet. The soils of this site are shallow to moderately deep and well drained to somewhat excessively drained. They are formed in alluvium derived from limestone and dolomite. Please refer to group concept R030XB005NV to view the provisional STMs.

### Associated sites

|             |                        |
|-------------|------------------------|
| R030XA058NV | LIMY 5-7 P.Z.          |
| R030XA093NV | QUARTZITE FAN 5-7 P.Z. |
| R030XB134NV | QUARTZITE OUTWASH      |

### Similar sites

|             |                                                                             |
|-------------|-----------------------------------------------------------------------------|
| R030XB074NV | <b>COBBLY LOAM 5-7 P.Z.</b><br>PLRI3 dominant grass; MUPO2 important grass. |
| R030XB133NV | <b>GRAVELLY INSET FAN 5-7 P.Z.</b><br>PSFR codominant shrub.                |
| R030XA051NV | <b>COBBLY CLAYPAN 5-7 P.Z.</b><br>ATCO dominant shrub                       |
| R030XB075NV | <b>GRAVELLY FAN 5-7 P.Z.</b><br>More productive site; PLRI3 dominant plant. |

|                    |                                                                                  |
|--------------------|----------------------------------------------------------------------------------|
| <b>R030XB039NV</b> | <b>LIMY FAN 5-7 P.Z.</b><br><br>Much more productive site; PLRI3 dominant plant. |
|--------------------|----------------------------------------------------------------------------------|

**Table 1. Dominant plant species**

|            |                                                              |
|------------|--------------------------------------------------------------|
| Tree       | Not specified                                                |
| Shrub      | (1) <i>Ambrosia dumosa</i><br>(2) <i>Menodora spinescens</i> |
| Herbaceous | Not specified                                                |

### Physiographic features

This site occurs on fan remnants. Slopes range from 2 to 8 percent. Elevations are 1800 to 4500 feet.

**Table 2. Representative physiographic features**

|                    |                                    |
|--------------------|------------------------------------|
| Landforms          | (1) Fan remnant                    |
| Flooding frequency | None                               |
| Ponding frequency  | None                               |
| Elevation          | 550 – 1,370 m                      |
| Slope              | 0 – 10 %                           |
| Aspect             | Aspect is not a significant factor |

### Climatic features

The climate on this site is arid, characterized by cool, moist winters, and hot, dry summers. Average annual precipitation is 3 to 7 inches. Mean annual air temperature is 56 to 65 degrees F. The average growing season is about 180 to 250 days.

**Table 3 Representative climatic features**

|                               |          |
|-------------------------------|----------|
| Frost-free period (average)   | 250 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 moderately deep and well drained to somewhat excessively drained. They are formed in alluvium derived from limestone and dolomite. Soil depth to a layer restrictive to root development is greater than ten inches. The soils have a calcic horizon or a duripan. The soil series associated with this site includes; Lastchance, Lealandic, and Yurm.

**Table 4. Representative soil features**

|                                             |                                                                                                                     |
|---------------------------------------------|---------------------------------------------------------------------------------------------------------------------|
| Surface texture                             | (1) Extremely cobbly fine sandy loam<br>(2) Extremely gravelly fine sandy loam<br>(3) Extremely gravelly sandy loam |
| Family particle size                        | (1) Loamy                                                                                                           |
| Drainage class                              | Well drained to somewhat excessively drained                                                                        |
| Permeability class                          | Slow to moderately rapid                                                                                            |
| Soil depth                                  | 30 – 100 cm                                                                                                         |
| Surface fragment cover <=3"                 | 40 – 60 %                                                                                                           |
| Surface fragment cover >3"                  | 0 – 10 %                                                                                                            |
| Available water capacity<br>(0-101.6cm)     | 2.29 – 5.08 cm                                                                                                      |
| Calcium carbonate equivalent<br>(0-101.6cm) | 0 – 50 %                                                                                                            |
| Electrical conductivity<br>(0-101.6cm)      | Not specified                                                                                                       |
| Sodium adsorption ratio<br>(0-101.6cm)      | 0 – 10                                                                                                              |

|                                                          |           |
|----------------------------------------------------------|-----------|
| Soil reaction (1:1 water)<br>(0-101.6cm)                 | 7.9 – 10  |
| Subsurface fragment volume <=3"<br>(Depth not specified) | 30 – 40 % |
| Subsurface fragment volume >3"<br>(Depth not specified)  | 0 – 10 %  |

## Ecological dynamics

Please refer to group concept R030XB005NV to view the provisional STMs.

As ecological condition deteriorates, perennial grasses and forbs decrease as creosotebush and white bursage become more dominant. Introduced annual forbs and grasses readily invade this site.

### Fire Ecology:

Fires in the Mojave desert are infrequent and of low severity because production of annual and perennial herbs seldom provides a fuel load capable of sustaining fire. Fire generally kills white bursage.

When fire does occurs it kills many creosotebush. Creosotebush may sprout if its root crown is not killed by fire. Creosotebush is poorly adapted to fire because of its limited sprouting ability. Creosotebush survives some fires that burn patchily or are of low severity. Historically, infrequent fires may have limited the invasion of desert grasslands by creosotebush.

Desert needlegrass has persistent dead leaf bases, which make it susceptible to burning. Fire most often top-kills desert needlegrass. Most needlegrasses (*Achnatherum* spp.), especially young plants, are very susceptible to fire damage. Surviving tufts of desert needlegrass will likely sprout.

When fire occurs Indian ricegrass are generally killed by fire. 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               | Perennial grasses  |        |                               | 1-34                 |                  |
|                 | Indian ricegrass   | ACHY   | <i>Achnatherum hymenoides</i> | 2-17                 | —                |
|                 | desert needlegrass | ACSP12 | <i>Achnatherum speciosum</i>  | 2-17                 | —                |
|                 | threeawn           | ARIST  | <i>Aristida</i>               | 2-17                 | —                |
|                 | low woollygrass    | DAPU7  | <i>Dasyochloa pulchella</i>   | 2-17                 | —                |
|                 | big galleta        | PLRI3  | <i>Pleuraphis rigida</i>      | 2-17                 | —                |
|                 | slim tridens       | TRMU   | <i>Tridens muticus</i>        | 2-17                 | —                |
| 2               | Annual Grasses     |        |                               | 1-17                 |                  |
| Forb            |                    |        |                               |                      |                  |
| 3               | Perennial Forbs    |        |                               | 7-27                 |                  |
|                 | desert globemallow | SPAM2  | <i>Sphaeralcea ambigua</i>    | 2-10                 | —                |
|                 | low woollygrass    | DAPU7  | <i>Dasyochloa pulchella</i>   | 0-2                  | —                |
| 4               | Annual Forbs       |        |                               | 0-34                 |                  |

|                   |                          |       |                                                      |         |   |
|-------------------|--------------------------|-------|------------------------------------------------------|---------|---|
|                   | big galleta              | PLRI3 | <i>Pleuraphis rigida</i>                             | 1-9     | – |
|                   | slim tridens             | TRMU  | <i>Tridens muticus</i>                               | 0-2     | – |
| <b>Shrub/Vine</b> |                          |       |                                                      |         |   |
| 5                 | <b>Primary shrubs</b>    |       |                                                      | 126-286 |   |
|                   | burrobush                | AMDU2 | <i>Ambrosia dumosa</i>                               | 84-168  | – |
|                   | spiny menodora           | MESP2 | <i>Menodora spinescens</i>                           | 17-50   | – |
|                   | creosote bush            | LATR2 | <i>Larrea tridentata</i>                             | 17-34   | – |
|                   | Nevada jointfir          | EPNE  | <i>Ephedra nevadensis</i>                            | 1-17    | – |
| 6                 | <b>Secondary shrubs</b>  |       |                                                      | 17-50   |   |
|                   | Virgin River brittlebush | ENVI  | <i>Encelia virginensis</i>                           | 3-10    | – |
|                   | Eastern Mojave buckwheat | ERFAP | <i>Eriogonum fasciculatum</i> var. <i>polifolium</i> | 3-10    | – |
|                   | water jacket             | LYAN  | <i>Lycium andersonii</i>                             | 3-10    | – |
|                   | Fremont's dalea          | PSFR  | <i>Psoralea fremontii</i>                            | 3-10    | – |
|                   | wirelettuce              | STEPH | <i>Stephanomeria</i>                                 | 3-10    | – |
|                   | Mojave yucca             | YUSC2 | <i>Yucca schidigera</i>                              | 3-10    | – |

## Animal community

Livestock Interpretations: This site is suitable for spring grazing by sheep and also marginally suitable for cattle grazing where water is available. 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. Creosotebush is unpalatable to livestock. Consumption of creosotebush may be fatal to sheep. 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 has good forage value for domestic sheep, cattle, and horses. It can be important cattle forage in winter, particularly in salt desert communities. Indian ricegrass is often used most heavily in late winter, when succulent and nutritious new green leaves are produced. It cures well and provides excellent winter forage for cattle, domestic sheep, and horses. 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: Many animals bed in or under creosotebush. Desert tortoises dig their shelters under creosotebush where its roots stabilize the soil. Many small mammals browse creosotebush or consume its seeds. Creosotebush is unpalatable to most browsing wildlife. Indian ricegrass is eaten by pronghorn in moderate amounts whenever available. In Nevada it is consumed by desert bighorn sheep. Indian ricegrass is eaten by mule deer in the spring.

## Hydrological functions

Runoff is high and permeability is slow to moderately rapid.

## Other products

White bursage is a host for sandfood (*Pholisma sonora*), a parasitic plant with a sweet, succulent, subterranean flowerstalk. Sandfood was a valuable food supply for desert people. Creosotebush has been highly valued for its medicinal properties by desert peoples. It has been used to treat at least 14 illnesses. Twigs and leaves may be boiled as tea, steamed, pounded into a powder, pressed into a poultice, or heated into an infusion. Creosotebush is used as an ornamental throughout its range. Indian ricegrass seeds make a gluten-free, nutritious flour with a potentially good market. Indian ricegrass was traditionally eaten by 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

White bursage may be used to revegetate disturbed sites in southwestern deserts. White bursage may be planted from containerized plants with a high probability of success. Plantings should be made in late winter or early spring, although the time of planting is less important than the vigor of the seedlings. Rodent protectors should be used. Creosotebush may be used to rehabilitate disturbed environments in southwestern deserts. Once established, creosotebush may improve sites for annuals that grow under its canopy by trapping fine soil, organic matter, and symbiont propagules. It may also increase water infiltration and storage. 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. Indian ricegrass can be difficult to establish.

**Type locality**

|                            |                                                                                                    |
|----------------------------|----------------------------------------------------------------------------------------------------|
| Location 1: Nye County, NV |                                                                                                    |
| Township/Range/Section     | T17 S. R52 E. S10                                                                                  |
| General legal description  | Fan remnants, west side of Mount Schader, about 20 miles northeast of Pahrump, Nye County, Nevada. |

**Other references**

USDA-NRCS Plant Database (Online, <http://plants.usda.gov>).

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

**Contributors**

GKB

**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)                    | GK BRACKLEY       |
| Contact for lead author                     |                   |
| Date                                        | 05/02/2013        |
| Approved by                                 |                   |
| 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 (short and stable) 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.

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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 35%.

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5. **Number of gullies and erosion associated with gullies:** None

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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) expected to move 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.

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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):** 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 moderate, thick platy. Soil surface colors are browns and soils are typified by an ochric epipedon. Organic matter 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 slow runoff and aid in infiltration. Shrub canopy and associated litter provide some protection from raindrop impact.

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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 none. Subsoil petrocalcic horizons 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: Deciduous shrubs

Sub-dominant: Evergreen shrubs > deep-rooted, cool season, perennial bunchgrasses = warm season, bunchgrasses > deep-rooted, cool season, perennial forbs = fibrous, shallow-rooted, cool season, perennial and annual forbs.

Other: succulents

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 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 10-20% <1/4 depth
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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; Favorable years  $\pm$ 500 lbs/ac and unfavorable years  $\pm$ 200 lbs/ac.
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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: Potential invaders include red brome, redstem filaree, annual mustards and Mediterranean grass.
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17. **Perennial plant reproductive capability:** All functional groups should reproduce in average (or normal) and above average growing season year. Little growth or reproduction occurs during extreme or extended drought periods.
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