

Ecological site R028BY090NV SHALLOW CALCAREOUS HILL 14+ P.Z.

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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.

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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 rills can be expected on steeper slopes in areas subjected to summer convection storms or rapid spring snowmelt.

2. **Presence of water flow patterns:** Water flow patterns can be expected in areas recently subjected to summer convection storms or rapid snowmelt, particularly on steeper slopes. If waterflow patterns are evident, they are typically short in length (<1 m) and not extensive. They are meandering and are interrupted by plants and exposed rock.

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. Terracettes are none to rare and are typically small.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare Ground 25 to 40%; surface cover of rock and rock fragments variable but often more than 60%; tree canopy <10%; shrub canopy \pm 5%; basal area of perennial herbaceous plants <2%.

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

6. **Extent of wind scoured, blowouts and/or depositional areas:** None

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 large rainfall 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 4 to 6 on most soil textures found on this site.

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, or subangular blocky. Surface textures are typically silt loams. Soil surface colors are light grays and soils are typified by an ochric epipedon. Organic carbon of the surface 2 to 3 inches is typically 1 to 1.5 percent dropping off quickly below. Organic matter content can be more or less depending on micro-topography.

10. **Effect of community phase composition (relative proportion of different functional**

groups) and spatial distribution on infiltration and runoff: Deep-rooted bunchgrasses (i.e., bluebunch wheatgrass & Indian ricegrass) slow runoff and increase infiltration. Sparse canopy of trees and low-statured shrub understory (including associated litter) break raindrop impact and provide some opportunity for snow catch on site.

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. Subangular blocky structure is not to be interpreted as compacted.
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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 State: Low shrubs (black sagebrush) = deep-rooted, cool season, bunchgrasses (bluebunch wheatgrass & Indian ricegrass)

Sub-dominant: > associated shrubs = evergreen trees (pinyon and juniper) with <10% canopy cover > deep-rooted, cool season, perennial forbs = shallow-rooted perennial grasses = fibrous, shallow-rooted, cool season, perennial and annual forbs.

Other:

Additional: With an extended fire return interval, the shrub and tree component increases at the expense of the herbaceous component. Singleleaf pinyon and Utah juniper may eventually dominate this site.

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 have dead centers.
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14. **Average percent litter cover (%) and depth (in):** Between plant interspaces (10-20) and litter depth is $\pm \frac{1}{4}$ inch.
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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 (through June) ± 250 lbs/ac; Spring moisture significantly affects total production; Favorable years ± 400 lbs/ac and unfavorable years ± 150 lbs/ac.

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, annual mustards and Russian thistle are invaders on this site. Singleleaf pinyon and Utah juniper are increasers and may eventually dominate this site.
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17. **Perennial plant reproductive capability:** All functional groups should reproduce in average (or normal) and above average growing season years. Reduced growth and reproduction occurs during extreme or extended drought periods.
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