

Ecological site R028AY013NV SHALLOW CALCAREOUS LOAM 8-10 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.

Author(s)/participant(s)	GK BRACKLEY/P.NOVAK-ECHENIQUE
Contact for lead author	State Rangeland Management Specialist
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Approved by	
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

- Number and extent of rills:** Rills are none to rare. A few can be expected on steeper slopes in areas subjected to summer convection storms or rapid spring snowmelt. These will heal during the following growing season.

- Presence of water flow patterns:** Water flow patterns are none to rare. A few (short <1m and disconnected) can be expected in areas subjected to summer convection storms or rapid snowmelt. If present, they will meander and are interrupted by plants and rock fragments.

- Number and height of erosional pedestals or terracettes:** Pedestals are none to rare. Occurrence is usually limited to areas of water flow patterns and may occur on shallow-rooted plants. Terracettes are typically not present.

- Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare Ground 5 to 25% depending on amount of surface rock fragments. Bare ground will increase under extreme drought conditions as perennial forbs and grasses may decrease in cover.

- Number of gullies and erosion associated with gullies:** None

- Extent of wind scoured, blowouts and/or depositional areas:** Wind scoured areas are none to rare. Surface rock

fragments protect the soil surface.

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 3 to 4 with no cover and 4 to 6 with canopy cover. Areas of this site occurring on soils that have a physical crust will probably have stability values less than 3.

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Surface structure is typically thin platy, medium granular or subangular blocky. Soil surface colors are light browns or grays and soils are typified by an ochric epipedon. Organic matter 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:** Perennial herbaceous plants (especially deep-rooted bunchgrasses [i.e., Indian ricegrass, needleandthread]) slow runoff and increase infiltration. Shrub canopy and associated litter break raindrop impact and will add in increasing infiltration and reducing runoff. With extended drought conditions plant cover may decrease and runoff will increase.

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. Massive sub-surface horizons or subsoil duripans or petrocalcic horizons are not to be interpreted as compacted layers.

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: Deep-rooted, cool season, perennial bunchgrasses >

Sub-dominant: low shrubs (black sagebrush) >> associated shrubs > shallow-rooted, cool season, bunchgrasses = warm season grasses = deep-rooted, cool season, perennial forbs > annual forbs.

Other: Evergreen trees, succulents, biological crusts

Additional: With an extended fire return interval the shrub component increases and the herbaceous component decreases.

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 (<20%) have dead centers.

14. **Average percent litter cover (%) and depth (in):** Within plant interspaces 15-30% and depth of litter is <¼ inch

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) ± 500 lbs/ac; Favorable years ± 700 lbs/ac and unfavorable years ± 300 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:** Potential invaders include cheatgrass, halogeton, Russian thistle and annual mustards. Utah juniper will increase and eventually dominate on this site with an extended fire interval. After wildfire cheatgrass will most likely invade and dominate.

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.
