

Ecological site R028BY010NV LOAMY 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.

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Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

- 1. Number and extent of rills:** Rills are none to rare. Occurrence is limited to steeper slopes in areas subjected to summer convection storms or rapid spring snowmelt.

- 2. Presence of water flow patterns:** Water flow patterns are none to rare and limited to steeper slopes in areas subjected to summer convection storms or rapid snowmelt. Water flow patterns, if present, are short in length (< 1m) and not connected. They will meander and are interrupted by vegetation.

- 3. Number and height of erosional pedestals or terracettes:** Pedestals are none to rare. Should pedestals occur, they are confined to areas of water flow. Frost heaving of shallow rooted plants should not be considered as pedestalling. Terracettes are none.

- 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 rock fragments 15 to 25%; shrub canopy 15 to 25%; basal area for perennial herbaceous plants \pm 8%.

- 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) 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 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 6 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.

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. Surface textures are typically loams and sandy loams. Soil surface colors are light brownish 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:** Perennial herbaceous plants (especially deep-rooted bunchgrasses [i.e., 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.

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. Platy or massive sub-surface horizons, subsoil calcic, argillic horizons or duripans 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 >> Wyoming big sagebrush. (By above ground production)

Sub-dominant: Associated shrubs >shallow-rooted, cool season, perennial bunchgrasses>deep-rooted, cool season, perennial forbs>fibrous, shallow-rooted, cool season, perennial forbs. (By above ground production)

Other: evergreen trees

Additional: With an extended fire return interval, the shrub and tree component will increase at the expense of the herbaceous component. Singleleaf pinyon and Utah juniper may eventually increase and 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 are 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):** Between plant interspaces (15-25%) and depth (<0.25 in.)

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) ~600 lbs/ac; Spring moisture significantly affects total production. Favorable years ~800 lbs/ac and unfavorable years ~400 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 on this site and eventually dominate. Singleleaf pinyon may invade this site and eventually dominate.

17. **Perennial plant reproductive capability:** All functional groups should reproduce in average (or normal) and above average growing season years. Little growth or reproduction occurs in extreme drought years.
