USDA Natural Resources
Conservation Service

Ecological site R048BY225CO
Mountain Loam 10-16 PZ South Park

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

Indicators

1. **Number and extent of rills:** Typically none

2. **Presence of water flow patterns:** None to minimal on gentle slopes. Flow paths should be broken, irregular in appearance with obstructions altering flow path.

3. **Number and height of erosional pedestals or terracettes:** None

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** 5% or less bare ground, with bare patches generally less than 3 inches. Extended drought may increase bare ground up to 10%.

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):** Minimal and short. Litter movement is associated with water flow patterns.

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Stability class rating anticipated to be 5-6 at soil surface. Soil surface is stabilized by decomposing organic matter.

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Soil organic matter ranges from 2-4%. Soils are deep and well drained. Surface texture is a sandy loam to a gravelly loam A-horizon ranges from 0-5 inches in depth, dark brown and has a weak fine granular to a weak coarse platy structure. Surface soil may contain 5-10% gravel and up to 5% cobbles.

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Cover from bunchgrasses, sod forming grasses, forbs, and shrubs reduce bare ground. Raindrop impact is reduced as well as overland flow, providing increased time for infiltration to occur. Extended drought may reduce mid bunchgrass basal cover resulting in decreased infiltration and increased runoff following intense storms.

11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):** None

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: cool season bunchgrass

    Sub-dominant: cool season rhizomatous grass> shrubs

    Other: warm season bunchgrass > forbs grasslikes = legumes

    Additional:

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Typically minimal. Expect slightly more bunchgrass mortality during and following drought. Lack of disturbance will increase occurrence of decadence.

14. **Average percent litter cover (%) and depth (in):** 30-40% litter cover. Litter cover can range up to .25 inches in depth. Litter cover during and following extended drought decreases to 10-20%.

15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** 400 lbs.lac. low precipitation years; 750 lbs.lac. average precipitation years; 1,000 lbs.lac. high precipitation years. After extended drought, production may be significantly reduced by 200-300 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:** Invasive plants should not occur in the reference plant community. Species that become dominant for only

one to several years (e.g., short-term response to drought) are not invasive plants.

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17. **Perennial plant reproductive capability:** The only limitations are weather-related, natural disease, and insects that may temporarily reduce reproductive capability.
