USDA Natural Resources
Conservation Service

Ecological site R034AY298CO
Rolling Loam

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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:** None to slight on gentle slopes. Rills can be more defined on steeper slopes, especially following intense storms.

2. **Presence of water flow patterns:** Flow paths should be short and mostly disconnected with debris dams obvious.

3. **Number and height of erosional pedestals or terracettes:** Pedestals may occur on steeper slopes near or in flow paths.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Expect 20-25% bareground. Extended drought can cause bare ground to increase.

5. **Number of gullies and erosion associated with gullies:** Gullies tend to be infrequent. Possible due to natural disturbance or off-site influence.

6. **Extent of wind scoured, blowouts and/or depositional areas:** Wind scouring/deposits are possible due to natural disturbance. Incidences would be infrequent.

7. **Amount of litter movement (describe size and distance expected to travel):** Litter movement associated with flow paths. Movement expected to be short and minimal.

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 3-5 in the interspaces at soil surface. Surface soil aggregates should be fairly stable.

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Average SOM is 1-3%. Soils are deep and well-drained. The A-horizon is 0-6 inches in depth or more with a brown to dark brown color. Structure ranges from fine to moderately coarse granular.

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Diverse grass, forb, shrub canopy and root structure reduces raindrop impact and slows overland flow providing increased time for infiltration to occur. Extended drought reduces cool season bunchgrasses causing 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 > (non sprouting) shrubs, = forbs = sprouting shrubs

    Other:

    Additional:

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Typically minimal. Expect slight shrub and grass mortality/ decadence during and following drought or lack of disturbance.

14. **Average percent litter cover (%) and depth (in):** Litter cover declines during and following extended drought.

15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** 500 lbs./ac. low precip years; 800 lbs./ac. average precip years; 1000 lbs./ac. above average precip. years. After extended drought or the first growing season following wildfire, production may be significantly reduced by 200 - 300 lbs./ac. or more.

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, pinyon/juniper and noxious weeds. Big sagebrush is a native increaser on this site.

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