Ecological site R046XC599MT
Thin Breaks (TB) RRU 46-C 13-19 PZ

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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 may be frequent in reference especially on slopes exceeding 25%. Rills will be less than 5 feet long

2. **Presence of water flow patterns:** Water flow patterns will be evident on this site on steeper slopes.

3. **Number and height of erosional pedestals or terracettes:** Pedestals, if present, will be less than 0.5 inches tall and directly associated with the waterflow patterns on steep slopes.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare ground is 30-60%. Large patches may exist as a result of the steep and shallow nature of the site.

5. **Number of gullies and erosion associated with gullies:** Remnant gullies from extreme weather events may be present however these will show signs of healing (vegetation growing).

6. **Extent of wind scoured, blowouts and/or depositional areas:** Wind scoured, or depositional areas are not evident in the reference condition.

7. **Amount of litter movement (describe size and distance expected to travel):** Litter movement is minimal however on steeper slopes litter movement such as litter dams may be present. Litter tends to move less than 5 feet.

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** The average soil stability rating is 4-5 under plant canopies and 2-4 in interspaces. The A horizon is 1-3 inches thick.

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Soil Structure at the surface is weak subangular blocky to weak fine granular. A Horizon should be 1-3 inches thick with color, when wet, typically ranging in Value of 5 or less and Chroma of 3 or less.
Local geology may affect color, it is important to reference the Official Series Description (OSD) for characteristic range. https://soilseries.sc.egov.usda.gov/osdname.aspx

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Infiltration of the Thin Breaks ecological site is high and is well drained. An even distribution of mid stature grasses (65-75%), cool season shortgrasses (10-15%) along with rhizomatous grass (<5%), forbs (5%), shrubs (10-15%), and trees (5-10%)

11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):** A compaction layer is not present in the reference condition. Soil profile may contain an abrupt transition to an Argillic horizon which can be misinterpreted as compaction, however, the soil structure will be fine to medium subangular blocky, where a compaction layer will be platy or structureless (massive).

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: Mid-statured, perennial bunchgrasses (bluebunch wheatgrass, little bluestem)

    Sub-dominant: shortgrass grasses/grasslikes (needle and thread, Sandberg bluegrass) > Shrubs ≥ trees ≥ forbs > rhizomatous grasses

    Other:

    Additional:

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Mortality in herbaceous species is not evident. Species with bunch growth forms may have some natural mortality in centers is 3% or less.

14. **Average percent litter cover (%) and depth (in):** Total litter cover ranges from 30-40%. Most litter is irregularly distributed on the soil surface and is not at a measurable depth

15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** Average annual production is 823. Low: 585 High 1085. Production varies based on effective precipitation and natural variability of soil properties for this ecological site.

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 invasive (including noxious) species (native and non-native). Invasive species on this ecological site include (but not limited to): annual brome spp., spotted knapweed, leafy spurge, crested wheatgrass, yellow salsify.
Native species such as Rocky Mountain juniper, ponderosa pine, prickly pear cactus, broom snakeweed, Sandberg's bluegrass, etc. when their populations are significant enough to affect ecological function, indicate site condition departure.

17. **Perennial plant reproductive capability:** In the reference condition, all plants are vigorous enough for reproduction either by seed or rhizomes in order to balance natural mortality with species recruitment.