USDA Natural Resources
Conservation Service

Ecological site R013XY027ID
Sand 12-16 PZ PUTR2/HECOC8

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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:** rills are rare on this site. If rills are present they are likely to occur immediately following wildfire and a high intensity convection storm. Sandy surface textures will limit rill development.

2. **Presence of water flow patterns:** water-flow patterns are rare on this site. They may, however, occur immediately following a high intensity convention storm. If they do occur, they are short and disrupted by cool season grasses and tall shrubs and are not extensive. Water infiltration is generally rapid for the site.

3. **Number and height of erosional pedestals or terracettes:** both are rare on this site.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** data is not available for this site. On sites in mid-seral status, bare ground is expected to be about 50-60 percent. This site is naturally unstable due to sandy surface textures particularly following a wildfire.

5. **Number of gullies and erosion associated with gullies:** none.

6. **Extent of wind scoured, blowouts and/or depositional areas:** wind-scour and deposition areas can occur on this site particularly following a wildfire. Old depositions will be noticeable in the crowns of bunchgrasses and at the base of shrubs.

7. **Amount of litter movement (describe size and distance expected to travel):** fine litter in the interspaces may move up to 2 feet following a significant run-off event or further with wind. Coarse litter generally does not move.

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** values average 1 to 2 but needs to be tested.

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** structure is single grain to weak very fine and fine granular to weak fine and medium subangular blocky. Soil organic matter (SOM) ranges from 0.5 to 3 percent. Surface color is very dark brown to very dark grayish brown to dark brown. The A or A1 horizon is typically 4 to 10 inches thick.

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** bunchgrasses, especially deep-rooted perennials, slow run-off and increase infiltration. Tall shrubs accumulate snow in the interspaces.

11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):** not present.

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 deep-rooted perennial bunchgrasses

    Sub-dominant: tall shrubs

    Other: perennial forbs

    Additional: shallow rooted perennial bunchgrasses

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** antelope bitterbrush and basin big sagebrush will become decadent in the absence of fire and ungulate grazing. Grass and forb mortality will occur as tall shrubs increase.

14. **Average percent litter cover (%) and depth (in):** additional litter cover data is needed but is expected to be 5-10 percent to a depth of <0.1 inches. Under mature shrubs litter is >0.5 inches deep and is 90-100 percent ground cover.

15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** is 900 pounds per acre (1008 kilograms per hectare) in a year with normal temperatures and precipitation. Perennial grasses produce 40-50 percent of the total production, forbs 10-20 percent and shrubs 35-45 percent.

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:** includes cheatgrass, leafy spurge, dalmatian toadflax, rush skeletonweed, musk and scotch thistle, and diffuse, Russian and spotted knapweed, Russian thistle, and mustard.

17. **Perennial plant reproductive capability:** all functional groups have the potential to reproduce in most years.