USDA Natural Resources
Conservation Service

Ecological site R038XB209AZ
Loamy Upland 16-20" 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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Approved by	Scott Woodall
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** None present on the site. Perennial bunch grass plants are approximately 1-2 foot apart, promote high infiltration, and make the site not conducive to rill formation.

2. **Presence of water flow patterns:** Flow patterns are indiscrete and highly sinuous. Water flows no more than 1-2 feet before encountering base of perennial bunch grass plant.

3. **Number and height of erosional pedestals or terracettes:** None present on the site. Bunch grass community not conducive to forming terracettes.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** 5-15%.

5. **Number of gullies and erosion associated with gullies:** None present on the site. Very dense bunchgrass community promotes high infiltration and very stable soils.

6. **Extent of wind scoured, blowouts and/or depositional areas:** None present on the site. Perennial bunchgrass canopy cover is 55-65%.

7. **Amount of litter movement (describe size and distance expected to travel):** Herbaceous litter is the dominant litter on the site. Litter moves no more than 1-2 feet before being intercepted by plant bases.

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Soil surface is highly resistant to erosion. Expect soil stability values of 4-6 across the site.

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Strong very fine granular structure. Soil organic matter content is 1-3%. A horizon is 4-8" thick with 7.5YR4/3 dry color and 7.5YR3/3 moist color.

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Very high density bunch grass dominated plant community promotes very high infiltration. Perennial grass densities are approximately 3-5 plants per square yard.

11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):** None present on the site. Dry argillic horizon at 4-8 inches can be mistaken for compaction layer.

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: Midgrasses >> shortgrasses

    Sub-dominant: Cool season grass > miscellaneous grasses > Perennial forbs = subshrubs > annual forbs = annual grass (Note: In El Nino years annual grasses = annual forbs > misc. grass > perennial forbs).

    Other:

    Additional:

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Approximately 2-5% mortality of perennial grass plants.

14. **Average percent litter cover (%) and depth (in):**

15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** Below average year = 745 lb/ac, normal year = 1,700 lbs/ac, above average year 2,400 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:** With continuous heavy livestock grazing blue grama will become dominant. Deterioration of blue grama cover will open community up to spiny tansyaster, snakeweed, annual goldeneye, and tumble mustard. Absence of fire can result in increase in beargrass and juniper.

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17. **Perennial plant reproductive capability:** Not affected after several years of regional drought.
