USDA Natural Resources
Conservation Service

Ecological site R035XG706AZ
Clayey Upland 14-18" 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	Steve Cassady
Approval date	
Composition (Indicators 10 and 12) based on	Foliar Cover

Indicators

1. **Number and extent of rills:** Generally none. A few rills may form on the steeper slopes due to the slow permeability, medium runoff characteristics, and low natural soil surface structure of the soils.

2. **Presence of water flow patterns:** Generally none, but water flow patterns may occur on the steeper slopes.

3. **Number and height of erosional pedestals or terracettes:** Generally none. A few very short pedestals or terracettes may form on the steeper slopes.

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

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):** Generally none. Herbaceous and fine

woody litter will be transported in naturally occurring water flow pathways found on steeper slopes. Coarse woody litter will remains in place.

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8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Soil surface texture is mostly clay, with a few areas of silty clay and silty clay loam. Most surface horizons are cobbly, with some that are stony. Many areas have a surface cover of cobbles and stones that protect the surface from erosion. Most of the soils correlated to this site have shrink/swell clays, so there are many large cracks on the surface when the soil is dry. Cracking will reduce aggregate stability. When well vegetated and protected by surface rock armor, these soils have a moderate resistance to water erosion and a high resistance to wind erosion. Expect the average soil stability value to be 1.5 to 1.7, value under canopy (generally grass) to be 1.1 to 1.4, value in interspaces to be 1.7 to 2.0.

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Soil surface layer is dark brown (7.5 YR 3/2) (may vary due to parent material), clay (occasionally silty clay or silty clay loam) with strong very fine granular structure about 4 inches thick.

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** By line-point intercept transect expect a canopy of cool season grasses of 43 to 61 percent, warm season grasses 0 to 2 percent, annual forbs 9 to 11 percent, half shrubs 0 to 1 percent, and shrubs 0 to 1 percent. Expect basal cover of grass to be 3 to 4 percent and forbs 0 to 1 percent. The average fetch is 1 to 1.25 inches with a maximum fetch of 4 inches. Both canopy and basal cover values (especially canopy cover) naturally decrease due to grazing and/or during a prolonged drought.

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11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):** No compaction layer expected. A very hard, massive structure layer of clay beginning at about 4 inches occurs naturally in the soil profile.

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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:

    Sub-dominant:

    Other:

    Additional: By line-point intercept expect cool season rhizomatous grasses >>> annual forbs > warm season bunch grasses = warm season rhizomatous grasses = cool season bunch grasses = perennial forbs = half shrubs = shrubs.

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** In ungrazed situations expect 5 to 10 percent occurrence of decadent material on a line point intercept transect. In grazed areas this should be < 5 percent. Expect some mortality on short-lived grasses, forbs and half shrubs during and shortly after short term drought periods. Expect higher mortality on these plants and some mortality on longer lived bunch grasses, perennial forbs and shrubs and reduced basal cover of rhizomatous grasses during prolonged, severe drought.

14. **Average percent litter cover (%) and depth (in):** Mostly herbaceous litter with minor amount of woody litter. Litter amounts increase during the first few years of drought, then decrease in later years.

15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** 850 to 875 pounds per acre (dry weight) in a drought year, 875 to 1025 pounds per acre in a median year, 1025 to 1150 pounds per acre in a wet year.

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:** Broom snakeweed and cacti are native to the site, but they have the ability to increase and dominate the area after severe disturbance. Juniper and Colorado pinyon also naturally occur on the site in minor amounts, but have the ability to increase and dominate the site without periodic fire on the site.

17. **Perennial plant reproductive capability:** All plants native to this site are adapted to the climate and are capable of producing seeds, stolons, and rhizomes in all years except during but the most severe droughts.