USDA Natural Resources
Conservation Service

Ecological site R035XF606AZ
Sandy Loam Upland 13-17" p.z.

Accessed: 05/02/2024

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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Date	10/24/2006
Approved by	S. Cassady
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** A few minor rills may form on steeper slopes due to the hig hazard of water erosion.

2. **Presence of water flow patterns:** A few water flow paterns may form due to the high hazard of water erosion for this site. These would be expected to be short and discontinuous due to the high potential for vegetative ground cover. These soils are moderately well drained and have moderately slow to moderate permeability.

3. **Number and height of erosional pedestals or terracettes:** Pedestals may form in and adjacent to water flow patterns. A few terracettes may form due to high hazard for water erosion. These soils are moderately well drained to well drained and have moderately slow to moderate permeability.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare ground ranges from 10-30%. This site has the potential to produce a moderate to heavy amount of plant cover and litter due to an available water capacity that ranges 6-10 inches. Drought may cause an increase in bare ground.

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

6. **Extent of wind scoured, blowouts and/or depositional areas:** Some wind scoured areas, blowouts, and/or depositional areas may occur, especially during drought, due to the moderately high win erosion hazard. High wind erosion hazard occurs on the soils with a surface texture of loamy sand or sandy loam.

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7. **Amount of litter movement (describe size and distance expected to travel):** Herbaceous and fine woody litter will be transported some appreciable distance by wind and in water flow pathways. Coarse woody litter will remain under shrub and tree canopies.

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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 textures are fine to very fine sandy loams. When well vegetated, these soils have a moderateto high resistance to water erosion, but only a low resistance to wind erosion.

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Soil surface structure is moderate to strong fine granular. The thickness of the A-horizon is 2-10 inches. The color of the A-horizon is slightly darker than the subsurface soil horizons below it.

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** This site is characterized by a distribution of grasses, shrubs and forbs, listed in decending order of occurrence. There may be some trees scattered sparsely across the site. Canopy cover ranges from 60-80% (grasses > shrubs > trees > forbs). Basal cover ranges from 5-10% (grasses > forbs) for vascular plants and 5-10% for biological crust (moss > cyanobacteria > lichen). Both canopy and basal cover values decrease during a prolonged drought. This type of plant communty is moderately effective at capturing and storing precipitation.

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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):** None. Most of the soils are not easily compacted. Many of the soils have a naturally granular structure.

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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: none >

    Sub-dominant: perennial bunchgrasses > perennial colonizing grasses > shrubs > annual forbs = perennial forbs = succulents > annual grasses > trees

    Other:

    Additional:

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** All plant functional groups are adapted to survival in all but the most severe droughts. Severe winter droughts affect trees and shrubs the most. Severe summer drought affects grasses the most.

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14. **Average percent litter cover (%) and depth (in):** Of the total litter amount, it would be expected that approximately 60-80% would be herbaceous litter and approximately 20-40% would be woody litter. Litter amounts increase during the first few years of drought and decrease in later years.

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** 300-500 lbs/ac dry years; 500-700 lbs/ac median years; 700-900 lbs/ac wet years.

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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 snakeeed, prickly pear, locoweed, six-weeks grama, and false buffalogass are natives that have the potential to increase and dominate the site after a sagebrush fire and heavy grazing. Cheatgrass is an exotic annual that is becoming endemic to the site regardless of management or fire frequency. It may become dominant after a fire, even with consevative or no grazing. Filaree is an exotic forb that has the potential to invade the site after heavy grazing and/or disturbance, especially if the site is near farm fields or disurbed lands.

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17. **Perennial plant reproductive capability:** All native plants are adapted to the climate and are capable of producing seeds, stolons and/or rhizomes except during the most severe droughts.
