

Ecological site R035XY015UT Sandy Bottom

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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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Composition (Indicators 10 and 12) based on	Annual Production

Indicators

- 1. **Number and extent of rills:** Very minor rill development, increasing as slope steepens. Rill development will increase following large storm events, but rills heal within a few months due to the very sandy soil textures on soils that have weak soil structure.
- 2. Presence of water flow patterns: Flow patterns will occur more often on soils with more structure (fine sandy loams), and less often on soils with less structure (sands). Flow patterns are usually sinuous and wind around perennial plant bases and show very minor evidence of erosion due to sandy texture of soil. They are expected to be short (3 to 6 feet), narrow (less than 1 foot), and somewhat widely spaced (> 15 feet). They are typically stable with only minor evidence of deposition. Evidence of flow will increase somewhat with a slope greater than 3 percent. This site is periodically inundated with runoff water (i.e. in flash floods) due to its geomorphic location. During very high flow events in adjacent channels (lotic, wash, etc.), this site may act as a filter and trap sediment, sometimes up to a foot or more.
- 3. Number and height of erosional pedestals or terracettes: Plants may show very minor pedestalling where they are adjacent to water flow patterns, but there should never be any exposed roots. Terracettes should be very few and stable, occurring behind pieces of woody litter blocking water flow patterns.
- 4. Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground): 30-45%. Ground cover is based on the first raindrop impact, and bare ground is the opposite of ground

cover. Ground cover + bare ground = 100%. Poorly developed biological soil crusts that are interpreted as functioning as bare ground (therefore they would be susceptible to raindrop splash erosion) should be recorded as bare ground.

- 5. Number of gullies and erosion associated with gullies: Very few. They would usually be expected in the lowest part of the site where water flows concentrate and/or in locations where there are concentrated flows into the site from an adjacent area. Gullies may show minor signs of active erosion but the sides and bottoms would be mostly stabilized with perennial vegetation. Gullies may show more indication of erosion on slopes greater than 3 percent, or as influenced by adjacent areas (watersheds) that may be providing concentrated flow patterns.
- 6. Extent of wind scoured, blowouts and/or depositional areas: Slight wind generated soil movement is normal. Wind caused blowouts and deposition are rare. If present, they are mostly stable or have healed over. Coppice mounding around perennial vegetation may occur is typical.
- 7. Amount of litter movement (describe size and distance expected to travel): Due to the natural periodic concentration of runoff in this site, some fine litter movement is common. Often litter from adjacent sites/watershed contribute to litter noted on this ecological site. Litter removal may occur in flow patterns with deposition occurring at points of obstruction, especially following large storm events. Litter movement is expected to increase with slopes over 3 percent.
- 8. Soil surface (top few mm) resistance to erosion (stability values are averages most sites will show a range of values): This site should have a soil stability rating of 4 or 5 under the plant canopies and a rating of 3 to 4 in the interspaces using the soil stability kit test. The average should be a 4. Surface texture is loamy sand to sandy loam. Vegetation cover, litter, and surface rock reduce erosion.
- Soil surface structure and SOM content (include type of structure and A-horizon color and thickness): Soil surface horizon is typically 3 to 6 inches deep. Structure is typically moderate fine granular. Color is typically light brown (7.5YR6/4) to light brownish gray (10YR6/2). Use the specific information for the soil you are assessing found in the published soil survey to supplement this description.
- 10. Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff: Vascular plants are expected to break raindrop impact and splash erosion. Spatial distribution of vascular plants slows runoff by obstructing surface flows to help create sinuous flow patterns that dissipate energy and allow time for infiltration within the naturally receptive loamy sand to sandy loam soil textures. With the geomorphic location of the site being in low stream terraces, flood plains, alluvial bottoms, channels and valley flats, and alluvial fans this site is one of the terminal accumulation sites for runoff water. As such, infiltration is naturally facilitated. Natural erosion would be expected in severe thunder storms or heavy spring runoff. When perennial grasses decrease, reducing ground cover and increasing bare ground, runoff is expected to increase and any associated infiltration reduced.
- 11. Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site): None

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: Perennial bunchgrasses (Indian ricegrass, Galleta, Sand dropseed) > non-sprouting shrubs (Fourwing saltbush)

Sub-dominant: perennial and native annual forbs (Globernallow and others) > sprouting shrubs (Torrey tea, rabbitbrush, Sand sagebrush)

Other: Functional/structural groups may appropriately contain non-native species if their ecological function is the same as the native species in the reference state (e.g. Crested wheatgrass, Smooth brome, Intermediate wheatgrass, etc.) Biological soil crust is variable in its expression where present on this site and is measured as a component of ground cover.

Forbs can be expected to vary widely in their expression in the plant community based upon departures from average growing conditions.

Additional: Assumed disturbance regime includes insects, very infrequent fire, and flooding that kills the non-sprouting shrub species. Dominance by average annual production:

Following a recent disturbance such as fire, drought, or insects that removes the woody vegetation, forbs and perennial grasses (herbaceous species) may dominate the community. If a disturbance has not occurred for an extended period of time, woody species may continue to increase crowding out the perennial herbaceous understory species. In either case, these conditions reflect a community phase within the reference state.

- 13. Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence): During years with average to above average precipitation, there should be very little recent mortality or decadence apparent in either the shrubs or grasses. Some mortality of bunchgrass and other shrubs may occur during very severe (long term) droughts. Snakeweed may normally die out on 7-10 year cycles.
- 14. Average percent litter cover (%) and depth (in): Litter cover (including under plants) nearly all of which should be fine litter. Depth should be 1-2 leaf thickness in the interspaces and up to 1/2" under canopies. Litter cover may increase to 15-20% on some years due to increased plant production.
- 15. Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annualproduction): 550-650 #/acre on an average 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: Cheatgrass, filaree, other annual forbs, common ragweed, Russian thistle and common sunflower.
- 17. **Perennial plant reproductive capability:** All perennial plants should have the ability to reproduce sexually or asexually in most years, except in drought years.