

Ecological site R035XY264UT Semidesert Gypsum (Torrey's Jointfir)

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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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Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

- Number and extent of rills:** A. On more gentle slopes (< 10 %): Few, but may occur on the site. Rills may be 6 to 10 feet in length. Sides of rills may be up to 2 inches high. Rills are most likely to form below adjacent exposed bedrock or water flow patterns where sufficient water accumulates to cause erosion. B. On steeper slopes (> 10 %): Common. Occur throughout the site. Rills may extend down entire slope.
- Presence of water flow patterns:** Frequent and occur throughout area. They are expected to be long and connected into drainage networks. Evidence of flow will increase somewhat with slope.
- Number and height of erosional pedestals or terracettes:** Pedestals form at the base of plants. On steeper slopes (>20%), gullies may remove soil from the base of shrubs and/or trees exposing roots that resemble pedestals. Terracettes may be present. Some debris dams of small to medium sized litter (up to 1 inch in diameter) may form in water flow patterns, rills, and gullies. These debris dams may accumulate smaller litter (leaves, grass and forb stems).
- Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** 30 – 60%. Soil surface may have 0 to 5 percent rock fragments. Ground cover is based on 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.

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5. **Number of gullies and erosion associated with gullies:** Very few to few on gentle slopes (< 10 %). On steeper slopes and areas below adjacent exposed bedrock, gullies may be more numerous. Length often extends the entire slope until it reaches an area where water and sediment accumulate. Gullies may show slightly more indication of erosion as slope steepens, or as the site occurs adjacent to steep areas where runoff accumulation occurs.
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6. **Extent of wind scoured, blowouts and/or depositional areas:** Very few. While there may be some evidence of wind generated soil movement, wind caused blowouts would not be expected. Some depositional areas may exist.
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7. **Amount of litter movement (describe size and distance expected to travel):** On gentle slopes (< 10 %) most litter accumulates at base of plants. Some down slope redistribution caused by water. Some litter removal may occur in flow patterns and rills with deposition occurring at points of obstruction, especially following major storm events. Litter movement will increase with slopes > 10%.
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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):** This site should have a soil stability rating of 3 or 4 under the plant canopies and a rating of 2 to 3 in the interspaces using the soil stability kit test. The average should be a 3. Surface texture is loam to very fine sandy loam. Vegetation cover, litter, biological soil crusts and surface rock reduce erosion.
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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** 0 to 0.5 inch; brown (7.5YR 5/4) loam, brown (7.5YR 4/4) moist; strong thin platy structure; slightly hard, friable, nonsticky and nonplastic; few very fine and fine roots; strongly effervescent, moderately alkaline (pH 8.4); abrupt smooth boundary. (0 to 2 inches thick)
- The A horizon would be expected to be more strongly developed under plant canopies. It is important if you are sampling to observe the A horizon under plant canopies as well as the interspaces. Use the specific information for the soil you are assessing found in the published soil survey to supplement this description.
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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Distribution of vascular plants are expected to intercept raindrops reducing splash erosion but not eliminating it. Plants are usually distributed to slow runoff a little to allow time for some infiltration. With the physiographic location of the site being on remnant hillsides, rolling hills, pediment surfaces, alluvial fans, dissected benches and upland valley plains infiltration is somewhat reduced by slope and less plant cover. Natural erosion would be expected and especially in severe thunder storms or heavy spring runoff. When perennial grasses and shrubs decrease, reducing ground cover and increasing bare ground, runoff is expected to increase and any associated infiltration reduced.
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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. The associated structure is strong to moderate thin platy. This should not be considered to be compaction layers.
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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):**
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Dominant: Sprouting and nonsprouting shrubs = perennial grass > perennial and native annual forbs

Sub-dominant:

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. Siberian Wheatgrass, Forage kochia etc.)

Biological soil crust is variable in it's expression where present on this site and is measured as a component of ground cover.

Additional: Disturbance regime includes erosion events, drought and insects. Following a recent disturbance such as drought or insects that removes the woody vegetation, forbs and perennial grasses (herbaceous species) may dominate the community. These conditions would reflect a functional community phase within the reference state.

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** In general, a mix of age classes for shrubs and grasses may occur with some dead and decadent plants present but the absence some age classes should not be a concern.
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14. **Average percent litter cover (%) and depth (in):**
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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** 135-390 Lbs/ac
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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:** The only species expected to invade this site are those that can tolerate high gypsum and arid conditions. Cheatgrass and Russian thistle are noted invaders.
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17. **Perennial plant reproductive capability:** All perennial plants should have the ability to reproduce sexually or asexually in most years, except in drought years. The gypsic and arid nature of this site would be expected to inhibit some reproduction on site.
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