USDA Natural Resources
Conservation Service

Ecological site R035XY211UT
Semidesert Sand (Dune)

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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	Shane A. Green
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** Some. Due to the duning nature of this site, rills are expected to refill with sand in areas that are not stabilized by the establishment of grass. Rills increase immediately following episodic storm events.

2. **Presence of water flow patterns:** Frequent and often continuous. Occur throughout the site, but are often masked by wind blown sand. Interspaces between vegetation serve as water flow patterns across during episodic precipitation events. Evidence of flow will increase somewhat with slope.

3. **Number and height of erosional pedestals or terracettes:** Herbaceous plants may show little pedestalling. Pedestals may be up to 4 inches for shrubs. Terracettes should be absent or few. Pedestals that occur are usually associated with natural wind erosion.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** 35 – 60%. Ground cover is based on the first raindrop impact, and bare ground is the opposite of ground cover. Any well developed biological crusts present should not be recorded as bare ground. 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:** None. Some gullies may be present in landscape settings where increased runoff may accumulate. Such gully development is expected to be limited to slopes exceeding 15% and

adjacent to sites where runoff accumulation occurs.

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6. **Extent of wind scoured, blowouts and/or depositional areas:** Wind generated soil movement is common. Wind caused blowouts and depositions are somewhat stable or have healed over. Coppice mounding around perennial vegetation is common.

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7. **Amount of litter movement (describe size and distance expected to travel):** Most litter accumulates under or adjacent to plant bases. Litter ¼" in diameter moves 3' or less from origin. Some litter (leaves, small stems) may accumulate in soil depressions located near plants. Woody stems are usually not expected to be moved from the base of shrubs. Minor litter removal may occur in flow patterns and rills with deposition occurring at points of obstruction. Fine litter may be removed from the site by wind action.

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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 1 to 3 in the interspaces. The average should be a 2-3. Vegetation cover, litter, biological and soil crusts help reduce erosion.

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Soil surface varies from 0 to 2 inches. Color is reddish brown (5YR5/4). 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 and/or biological soil crusts (where present) intercept raindrops preventing splash erosion. Plants and biological soil crusts (where present) are usually distributed in sufficient density to slow runoff allowing time for infiltration. When perennial grasses and shrubs decrease, reducing ground cover and increasing bare ground, runoff can increase and infiltration would be 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

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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: Sprouting and non-sprouting shrubs >> Cool season perennial grasses > Warm season perennial grasses > forbs. 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 and Russian wildrye etc.)

    Sub-dominant:

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

Additional: When soils are stabilized perennial grasses and forbs(herbaceous species) may dominate the community. These conditions would reflect a functional community phase within the reference state.
Dominants — sand sagebrush, mormon tea, Havard oak, resinbush, Indian ricegrass, and Galleta. Perennial and annual forbs can be expected to vary widely in their expression in the plant community based upon departures from average growing conditions.

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** All age classes of perennial grasses should be present under average growing conditions with age class expression likely subdued during below average years, or on sites with high (usually greater than 65%) similarity index (late seral to historic climax). Reference state includes mix of plants of various ages with some plants being dead or showing characteristics of decadence.

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14. **Average percent litter cover (%) and depth (in):** Variability may occur due to weather.

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** 200-430 #/acre on an average year.

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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:** Cheatgrass, Russian thistle, and other introduced annual forbs are most likely to invade this site.

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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.
