

## Ecological site R067BY015CO Deep Sand

Last updated: 9/08/2023  
Accessed: 05/05/2024

### 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	11/16/2004
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Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

### Indicators

1. **Number and extent of rills:** None

2. **Presence of water flow patterns:** Typically none. If flow patterns are present, they are are broken, irregular in appearance or discontinuous with numerous debris dams or vegetative barriers.

3. **Number and height of erosional pedestals or terracettes:** Pedestalled plants caused by wind erosion would be minor.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** 3 percent or less bare ground, with bare patches ranging from 3-5 inches in diameter. Prolonged drought or wildfire events will cause bare ground to increase upwards to 5-10 percent with bare patches ranging from 8-12 inches in diameter.

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

6. **Extent of wind scoured, blowouts and/or depositional areas:** A minor amount of wind scouring may occur on naturally disturbed areas. Fire or extended drought can exacerbate the appearance. Typically, wind scouring is

insignificant.

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7. **Amount of litter movement (describe size and distance expected to travel):** Litter is uniformly distributed with little movement. On steep slopes or knolls, litter may move from a few inches to 1-2 feet depending on intensity of wind or rainfall event.
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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):** Stability class rating is anticipated to be 4-5 in the interspaces at soil surface. Soil surface is stabilized by decomposing organic matter. Biological crusts (lichens, algae, cyanobacteria, mosses) may be present on or just below soil surface.
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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Average SOM ranges from 1-4 percent. Soils are very deep, grayish-brown, weak very fine granular structure.
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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Raindrop impact is reduced by the diverse grass, forb, shrub functional/structural groups and root structure. This slows overland flow and provides increased time for infiltration to occur. Extended drought, wildfire or both may reduce basal density, canopy cover, and litter amounts (primarily from tall, warm-season bunch and rhizomatous grasses), resulting in decreased infiltration and increased runoff on steep slopes following intense rainfall events.
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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: Warm-season tall bunchgrass >>
- Sub-dominant: Warm-season tall rhizomatous grass > sprouting/leguminous shrubs > other shrubs > cool-season mid bunchgrass > warm-season mid bunchgrass > leguminous forbs >
- Other: Warm-season short bunchgrass = warm-season forbs > cool-season forbs
- Additional:
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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Typically minimal. Expect slight short and mid bunchgrass and shrub mortality and decadence during and following drought.
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14. **Average percent litter cover (%) and depth ( in):** Litter cover during and following drought can range from 20-30 percent and 5-15 percent following wildfire.

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** 1200 lbs./ac. low precip years; 1850 lbs./ac. average precip years; 2400 lbs./ac. high precip years. After extended drought or the first growing season following wildfire, production may be significantly reduced by 400 – 750 lbs./ac. or more.
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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:** Invasive plants should not occur in reference plant community. Following wildfire or extended drought, cheatgrass, Russian thistle, burningbush, Rocky Mountain beeplant may invade assuming a seed source is available.
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17. **Perennial plant reproductive capability:** The only limitations are weather-related, wildfire, natural disease, and insects that may temporarily reduce reproductive capability.
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