

## Ecological site R064XY049NE Badlands Overflow

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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:** None on stable areas; some rills present during early development phase.  

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- Presence of water flow patterns:** Typically none or barely visible on stable areas. Water flow patterns will be conspicuous on areas under the early development phase.  

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- Number and height of erosional pedestals or terracettes:** None.  

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- Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** 0 to 5 percent is typical on stable areas. On areas under the early development phase, 50 to 80 percent bare ground may occur.  

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- Number of gullies and erosion associated with gullies:** None typical, however limited headcutting may form after high runoff or flooding events. Existing gullies should be stabilized with good vegetative cover. Severe downcutting results in a shift to the Badlands Terrace ecological site.  

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- Extent of wind scoured, blowouts and/or depositional areas:** None typical on stable areas, but limited deposition may occur after major runoff or flooding events. Major deposition can occur on areas under the early development

phase, especially adjacent to badlands.

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7. **Amount of litter movement (describe size and distance expected to travel):** Litter of small and medium size classes will move after average to high rainfall events. Litter does not travel far, typically being trapped in small bunches by the extensive vegetative cover. Litter movement may be fairly extensive after major runoff or flooding events.

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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 aggregate stability ratings should typically be 3 to 4.

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** A-horizon should be 2 to 6 inches thick, and mollic colors are typically not present. Structure typically is weak very thin platy structure in the A-horizon.

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Combination of shallow and deep rooted species (mid & tall rhizomatous and tufted perennial cool- and warm-season grasses) with fine and coarse roots positively influences infiltration on stable areas.

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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 – when dry, A horizon can appear to be compacted as platy structure is common.

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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: Tall warm-season rhizomatous grasses > Mid cool-season rhizomatous grasses >

Sub-dominant: Mid/tall cool-season bunchgrasses > Mid/short warm-season grasses > Shrubs >

Other: Forbs

Additional:

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Very little evidence of decadence or mortality. Bunch grasses have strong, healthy centers and shrubs are vigorous.

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14. **Average percent litter cover (%) and depth ( in):** Litter cover is typically 50 to 70 percent, with depth roughly 0.25 to 0.5 inches. These values are for stable areas.

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-**

**production):** Total annual production ranges from 1,900 to 2,900 pounds/acre, with the reference value being 2,400 pounds/acre (air-dry basis).

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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: State and local noxious weeds.
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17. **Perennial plant reproductive capability:** All species exhibit high vigor relative to climatic conditions. Do not rate based solely on seed production. Perennial grasses should have vigorous rhizomes or tillers.
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