USDA Natural Resources
Conservation Service

Ecological site R102CY051NE
SANDY LOWLAND

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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	Suzanne Mayne-Kinney
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** None. Rills are not expected on this site.

2. **Presence of water flow patterns:** None. Water flow patterns are not expected on this site.

3. **Number and height of erosional pedestals or terracettes:** None. Pedestals and terracettes are not expected to occur on this site.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare ground is typically 5 percent or less. Bare ground may increase up to 10 percent during and immediately after multi-year drought.

   Bare ground is exposed mineral soil that is not covered by vegetation (basal and/or foliar canopy), litter, standing dead vegetation, gravel/rock, and visible biological curst (e.g., lichen, mosses, algae).

5. **Number of gullies and erosion associated with gullies:** None. Gullies are not expected on this site.

6. **Extent of wind scoured, blowouts and/or depositional areas:** None. Wind-scoured and/or depositional areas should

not be present.

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7. **Amount of litter movement (describe size and distance expected to travel):** Typically, none. Litter should fall in place. Slight amount of movement of fine litter from water is possible, but not normal. Litter movement from wind is not expected.

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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 stability ratings will be 5 to 6, typically 6. Surface organic matter adheres to the soil surface. Soil surface fragments will typically retain structure indefinitely when dipped in distilled water.

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** The thickness of the A-horizon is highly variable depending upon soil series and ranges from 3 to 20 inches (8 to 50 cm) thick. Soil surface color is typically grayish brown (hue: 10 YR, value: 4 or 5, chroma: 2) when dry and very dark grayish brown, dark gray, grayish brown, or dark brown (hue: 10 YR, value: 2, 3 or 4, chroma: 1, 2 or 3) when moist.

   Soil structure in the A-horizon is weak fine or very fine or weak coarse granular and may be weak coarse prismatic in the lower A-horizon.

   See Official Soil Description for more information; primary soil series associated with this site are Cass, Inavale, Inglewood, and Nenzel.

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Plant community composition is approximately 80 to 95 percent perennial grasses and grass-likes, 5 to 10 percent forbs, and 0 to 5 percent shrubs which optimizes infiltration on the site. The perennial grass and grass-like component is made up of warm-season (C4) tallgrasses; warm-season (C4), midgrasses, cool-season (C3) bunchgrasses, warm-season (C4) shortgrasses, and grass-likes. The functional/structural groups provide a combination of rooting depths and structure which positively influences infiltration.

    Invasion of introduced cool-season grasses such as Kentucky bluegrass and smooth brome may have an adverse impact infiltration and runoff. Woody encroachment of native tree species may also negatively impact infiltration and runoff.

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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. No compaction layers are expected for this site.

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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: Phase 1.1
    1. Native, perennial, warm-season, tallgrasses (3 species minimum): sand bluestem, switchgrass, Indiangrass, prairie sandreed.

    Phase 1.2
    1. Native, perennial, warm-season, midgrass (2 species minimum): Little bluestem, sideoats grama.

2. Native, perennial, warm-season tallgrass (2 species minimum): big bluestem, Indiangrass, switchgrass, prairie dropseed.

Sub-dominant: Phase 1.1
1. Native, perennial, warm-season, midgrass (1 species minimum): Little bluestem, sideoats grama.
2. Native, perennial, cool-season bunchgrass: porcupinegrass, needle and thread, Canada wildrye, porcupinegrass, Scribner's rosettegrass, prairie Junegrass.

Phase 1.2
1. Native, perennial, cool-season bunchgrass (2 species minimum): Canada wildrye, porcupinegrass, needle and thread, Scribner's rosettegrass, prairie Junegrass.
2. Native, perennial, cool-season bunchgrass (1 species minimum): western wheatgrass.

Other: Minor - Phase 1.1
1. Native, perennial, warm-season shortgrasses: blue
grama, hairy grama, purple lovegrass, thin paspalum.
2. Native forbs: forbs present vary from location to location.
3. Native, perennial, cool-season, rhizomatous grass: western wheatgrass.
4. Grass-likes: sedges.
5. Shrubs: shrubs present will vary from location to location.

Minor - Phase 1.2
1. Perennial, native, warm-season, shortgrass: Blue grama, purple lovegrass hairy grama, thin paspalum.
2. Native forbs: forbs present will vary from location to location.
3. Grass-likes: sedges.
4. Shrubs: shrubs present will vary from location to location.

Additional: The Sand Bluestem-Little Bluestem Community or Reference Community (1.1) includes seven F/S groups which include in order of relative abundance, native, perennial, warm-season (C4), tallgrass; native, perennial, warm-season (C4), midgrass; native, perennial, cool-season (C3), bunchgrass; native, perennial, warm-season (C4), shortgrass; native forbs; grass-likes = shrubs.

The Little Bluestem-Prairie Sandreed Community (1.2) includes seven F/S groups which include in order of relative abundance, native, perennial, warm-season (C4), midgrass; native, perennial, warm-season (C4), tallgrass; native, perennial, cool-season (C3), bunchgrass; native, perennial, warm-season (C4), shortgrass = native forbs; grass-likes; and shrubs.

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Bunchgrasses have strong, healthy centers with few (less than 3 percent) dead centers. Shrubs may show some dead branches (less than 5 percent) as plants age.

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14. **Average percent litter cover (%) and depth (in):** Plant litter cover is evenly distributed throughout the site and is expected to be 60 to 75 percent and at a depth of 0.50 to 1.0 inch (1.3-2.6 cm). Kentucky bluegrass excessive litter can negatively impact the functionality of this site.

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** The representative value (RV) for annual production is 3,500 pounds per acre in a year with normal precipitation and temperatures. Low and High production years should yield 2,750 and 4,250 pounds per acre respectively.

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:** Annual bromes, Kentucky bluegrass, smooth brome, plumeless thistle, musk thistle, Canada thistle, leafy spurge, spotted and diffuse knapweed, absinth wormwood, sulphur cinquefoil, leafy spurge, eastern redcedar, roughleaf dogwood, Siberian elm, and autumn olive are known invasives that have the potential to become dominant or co-dominant on the site. Note: species that become dominant for only one to several years (e.g., short-term response to drought or wildfire) are not invasive plants.

17. **Perennial plant reproductive capability:** All perennial species exhibit high vigor relative to climatic conditions. Perennial grasses should have vigorous rhizomes or tillers; vegetative and reproductive structures are not stunted. All perennial species should be capable of reproducing annually.