

Ecological site R102CY046NE Subirrigated

Last updated: 12/10/2024
Accessed: 05/13/2025

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	12/04/2024
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.
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2. **Presence of water flow patterns:** None. Water flow patterns are not expected on this site.
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3. **Number and height of erosional pedestals or terracettes:** None. Pedestals and terracettes are not expected to occur on this site.
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4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare ground is 5 percent or less.

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 crust (e.g., lichen, mosses, algae).

5. **Number of gullies and erosion associated with gullies:** None. Gullies are not expected on this site.
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6. **Extent of wind scoured, blowouts and/or depositional areas:** None. Wind-scoured and/or depositional areas should not be present.

7. **Amount of litter movement (describe size and distance expected to travel):** None. Litter falls into place. Litter movement is not expected on this site.

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.

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** A-horizon varies from 6 to 38 inches (15-97 cm) thick. Soil colors range from very dark gray, dark gray, gray to dark grayish brown (Hue: 10YR; value: 3 to 5; chroma: 1 or 2) when dry and black, very dark brown, very dark grayish brown, dark grayish brown, or very dark gray (Hue: 10YR; value 2 to 4; chroma: 1 or 2).

Soil structure of the A-horizon varies significantly with soil series and ranges from weak very fine granular to moderate fine granular, moderate very fine granular to medium subangular blocky.

See Official Soils Descriptions for additional details; major soil series correlated to the site are Ackmore, Boel, Coleridge, Els, Elsmere, Gibbon, Lamo, Ord, Primghar, Spillco, Splitrock, and Wann.

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 grasses or grass-like plants, 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) grasses; 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 grasses such as reed canarygrass, creeping foxtail, smooth brome, or Kentucky bluegrass may negatively impact infiltration. Tree encroachment will also adversely impact infiltration.

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 on this site.

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, 2295-3825 #/ac, 45-75% (4 species minimum): big bluestem, switchgrass, Indiangrass, prairie cordgrass.

2. Native, perennial, warm-season, midgrass, 765-1785 #/ac, 15-35%, (2 species minimum): Little bluestem, sideoats grama.

Phase 1.2

1. Native, perennial, warm-season, tallgrasses (3 species minimum): big bluestem, switchgrass, Indiangrass, prairie cordgrass.

Sub-dominant: Phase 1.1

1. Native, perennial, cool-season grass, 255-1020 #/ac, 5-20% (2 species minimum): western wheatgrass, reed canarygrass, porcupinegrass, foxtail barley, prairie Junegrass, prairie wedgescale, needle and thread, Scribner's rosettegrass.

Phase 1.2

1. Native, perennial, warm-season, midgrass (1 species minimum): little bluestem, sideoats grama.
2. Native, perennial, cool-season grass (2 species minimum): western wheatgrass, reed canarygrass, porcupinegrass, foxtail barley, prairie Junegrass, prairie wedgescale, needle and thread, Scribner's rosettegrass.

Other: Minor - Phase 1.1

1. Grass-likes, 255-510 #/ac, 5-10%: sedges, broom sedge, awlfruit sedge, rush, cloaked bulrush, common threesquare.
2. Native forbs, 255-510 #/ac, 5-10%: forbs present vary from location to location.
3. Shrubs, 0-255 #/ac, 0-5%: shrubs present will vary from location to location.

Minor - Phase 1.2

1. Grass-likes: sedges, broom sedge, awlfruit sedge, rush, cloaked bulrush, common threesquare.
2. Native forbs: forbs present vary from location to location.
3. Shrubs: shrubs present will vary from location to location.

Additional: The Big Bluestem-Little Bluestem Community or Reference Community (1.1) includes six F/S groups which include in order of relative abundance, native, perennial, warm-season (C 4) tallgrass; native, perennial, warm-season (C4) midgrass; native, perennial, cool-season (C3) grass; grass-likes; native forbs; shrubs.

The Prairie Cordgrass – Big Bluestem Community (1.2) includes six 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) grass; grass-likes; native, perennial, warm-season (C4) shortgrass; native forbs; 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 80 to 90 percent and at a depth of approximately 0.5 to 1.0 inch (1.3 to 2.5 cm).
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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 5,100 pounds per acre in a year with normal precipitation and temperatures. Low and High production years should yield 4,300 and 5,600 pounds per acre respectively.
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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: No non-native invasive species are present. Kentucky bluegrass, smooth brome, reed canarygrass, leafy spurge, Canada thistle, eastern red cedar, roughleaf dogwood, buckbrush, and Siberian elm 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.
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