USDA Natural Resources
Conservation Service

Ecological site R066XY066NE
Loamy Terrace

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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.

Author(s)/participant(s)	Original Author: Stan Boltz Version V participants: Emily Helms, Nadine Bishop, Jeff Nichols
Contact for lead author	Jeff Nichols Nebraska State Range Conservationist jeffrey.nichols@usda.gov
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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 should not be present 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 is exposed mineral soil that is not covered by vegetation (basal and/or foliar canopy), 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.

6. **Extent of wind scoured, blowouts and/or depositional areas:** None. Wind-scoured areas and depositional areas are not expected on this site.

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7. **Amount of litter movement (describe size and distance expected to travel):** None. Litter should fall in place and litter movement should not occur on the site.

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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 should typically be 5 to 6, normally 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 A-horizon should be 7 to 24 inches (18-60 cm) thick (Bigbend is 3 inches). Soil is very dark gray, dark grayish brown, or gray (values of 4 to 5) when dry and dark brown, very dark grayish brown, or very dark brown (values of 2 or 3) when moist; Bigbend, Nimbro, and Haynie may be dark grayish brown or grayish brown (value of 5),. Structure is variable with soil series and ranges from granular to subangular blocky to platy.

   The primary soils correlated to the Loamy Terrace ecological site include Shell, Bigbend, Grigston, Bridgeport, Brocksburg, Hall, Haynie, and Nimbro. Other soils correlated to the site include Bonn, Hillmoe, Blake and Cass.

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** The functional/structural groups provide a combination of rooting depths and structure which positively influences infiltration. Combination of shallow and deep rooted species (mid & tall rhizomatous and tufted perennial cool-season grasses) with fine and coarse roots positively influences infiltration. Large amounts of Kentucky bluegrass or encroachment of eastern redcedar may have an adverse impact on infiltration and runoff.

    The expected composition of the plant community is 75 to 85 percent perennial grasses and grass-likes, 5 to 10 percent forbs, 5 to 10 percent shrubs, and trees (1-5%). The perennial grass and grass-like component is made up of C3 rhizomatous grasses (20-35%), C3 bunchgrasses (20-25%), C4 tall- and midgrasses (5-20%), grass-likes (1-10%), and C4 shortgrasses (1-5%).

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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. A compaction layer should not be present.

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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, C3 rhizomatous grass, 560-980 #/ac, 20-35% (1 species minimum): western wheatgrass.
    2. Native, perennial, C3 bunchgrass, 560-700 #/ac, 20-25% (4 species minimum): green needlegrass, slender wheatgrass, Canada wildrye, needle and thread, porcupinegrass, prairie Junegrass.

    Phase 1.2
    1. Native, perennial, C4 shortgrass, 270-540 #/ac, 15-30% (2 species minimum): blue grama, buffalograss, saltgrass.
    2. Native, perennial, C3 rhizomatous grass, 180-450 #/ac, 10-25% (1 species minimum): western wheatgrass.

Phase 1.3
1. Native, perennial, C3 bunchgrass (2 species minimum): green needlegrass, Canada wildrye, needle and thread, slender wheatgrass, prairie Junegrass.
2. Native, perennial, C4 shortgrass (2 species minimum): blue grama, buffalograss, saltgrass.

Sub-dominant: Phase 1.1
1. Native, perennial, C4 tall- and midgrass, 140-560 #/ac, 5-20% (1 species minimum): big bluestem, sideoats grama, prairie sandreed, little bluestem, Indiangrass, composite dropseed.
2. Forb, 140-420 #/ac, 10-15% (10 species minimum): white sagebrush, American licorice, Maximilian sunflower, goldenrod, white heath aster, American vetch, purple prairie clover, upright prairie coneflower, western yarrow and other forbs that vary from location to location.

Phase 1.2
1. Forb, 90-270 #/ac, 5-15% (6 species minimum): white sagebrush, goldenrod, hoary verbena, western yarrow, Cuman ragweed, white heath aster and other forbs that vary from location to location.
2. Shrub, 90-270 #/ac, 5-15% (2 species minimum): western snowberry, rose and other shrubs that vary from location to location.

Phase 1.3
1. Grass-like (1 species minimum): sedges.
2. Native, perennial, C3, rhizomatous grass (1 species minimum): western wheatgrass.

Other: Minor - Phase 1.1
1. Shrub, 140-280 #/ac, 5-10%: western snowberry, leadplant, rose, and other shrubs that vary from location to location.
2. Grass-likes, 28-280 #/ac, 1-10%: sedges.
3. Native, perennial, C4, shortgrass, 40-280 #/ac, 1-5%: blue grama, buffalograss, saltgrass.
4. Native trees, 28-140 #/ac, 1-5%: green ash, bur oak and other trees which vary from location to location.

Minor - Phase 1.2
1. Native, perennial, C3 bunchgrass, 90-180 #/ac, 5-10%: green needlegrass, Canada wildrye, needle and thread, slender wheatgrass, prairie Junegrass.
2. Grass-like, 36-180 #/ac, 2-10%: sedges.
3. Non-native, C3 grass, 0-180 #/ac, 0-10%: Kentucky bluegrass, cheatgrass, smooth brome.
4. Native, perennial, C4, tall- and midgrass, 26-180 #/ac, 2-5 %: big bluestem, composite dropseed, little bluestem, prairie sandreed, sand dropseed, sideoats grama.
5. Native trees, 0-90 #/ac, 0-5%: green ash, bur oak and other trees that vary from location to location.

Minor - Phase 1.3
1. Non-native, C3 grass: Kentucky bluegrass, cheatgrass, smooth brome.
2. Native, perennial, C4, tall- and midgrass: big bluestem, composite dropseed, little bluestem, prairie sandreed, sand dropseed, sideoats grama.
3. Shrub: shrubs present vary from location to location.
4. Native forbs: forbs present vary from location to location.
5. Native tree: trees present vary from location to location.

Additional:

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Bunch grasses 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.

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 0.50 to 1.0 inch (1.3 to 2.6 cm). Excessive Kentucky bluegrass litter may impact the functionality of the site

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 2,800 pounds per acre on an air dry weight basis. Low and High production years should yield 2,000 and 3,600 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:** No non-native invasive species are present. Annual bromes (cheatgrass and Japanese/field), leafy spurge, Canada thistle, smooth brome, Kentucky bluegrass, Russian olive, and eastern redcedar are known invasives that have the potential to become dominant or co-dominant on this site. Consult the state noxious weed and state watch lists for potential invasive species.

    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 recent weather 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.