

Ecological site R067AY126WY Loamy Overflow (LyO)

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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	Kirt Walstad
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

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

- 2. Presence of water flow patterns:** Typically, none or barely visible. Evidence of water flow may be present after high overland flow events or flooding from adjacent streams, but vegetation normally remains intact.

- 3. Number and height of erosional pedestals or terracettes:** Typically, none.

- 4. Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare ground is typically less than 10 percent, and patches less than 2 inches (5.1 cm) in diameter.

- 5. Number of gullies and erosion associated with gullies:** None. Gullies should not be present on this site.

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

7. **Amount of litter movement (describe size and distance expected to travel):** Litter of small and medium size classes will move after above 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 excessive after major runoff or flooding events. Small woody debris may move up to 6 inches (15.25 cm). Fine litter may move up to 12 inches (30.5 cm). Numerous debris dams or vegetative barriers may be present.

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 5 to 6, normally 6. Surface organic matter adheres to the soil surface. Soil surface peds 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):** The surface layer is 2 to 20 inches (5.1-50.8 cm) thick. Soil surface colors are typically grayish brown (5/2) when dry and very dark grayish brown (3/2) when moist. Haverson soils are pale brown (6/3) and dark brown (3/3) respectively. Soil surface structure is granular.

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. The expected composition of the plant community is 80 to 95 percent perennial grasses and grass-likes, 5 to 10 percent forbs, and 0 to 10 percent shrubs.

In the 12-14" Precipitation Zone, the grass and grass-like component is made up of cool-season rhizomatous grasses (35-40%), cool-season, bunch grasses (20-40%); warm-season tall grasses (10-15%); warm-season mid-grasses (5-15%); warm-season, short grasses (5-10%); and grass-likes (0-5%).

In the 15-17" Precipitation Zone, the grass and grass-like component is made up of cool-season, rhizomatous grasses (35-40%), cool-season, bunch grasses (20-40%); warm-season tall grasses (10-20%); warm-season mid-grasses (5-15%); warm-season, short grasses (5-10%); and grass-likes (0-5%).

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 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: 12-14" PZ - Community 1.1:

1. Native, C3, rhizomatous grasses – 630-720 (35-40%), 1 species minimum

15-17" PZ - Community 1.1:

1. Native, C3, rhizomatous grasses – 700-800 (35-40%), 1 species minimum

Sub-dominant: 12-14" PZ - Community 1.1:

2. Native, C3, bunch grasses – 360-720 #/ac (20-40%), 2 species minimum

3. Native, C4, tall, grasses – 180-270 #/ac (10-15%), 1 species minimum

4. Native, C4, mid-grasses – 90-270 (10-15%), 1 species minimum

15-17" PZ - Community 1.1:

2. Native, C3, bunch grasses – 400-800 #/ac (20-40%), 2 species minimum

3. Native, C4, tall, grasses – 200-400 #/ac (10-20%), 1 species minimum

4. Native, C4, mid-grasses – 100-300 (5-15%), 1 species minimum

Other: 12-14" PZ - Community 1.1:

5. Minor: Native, C4, short grasses – 90-180 (5-10%)

6. Minor: Native, Perennial and Annual Forbs – 90-180 #/ac (5-10%)

7. Minor: Shrubs, Vines, Cacti – 0-180 #/ac (0-10%)

8. Minor: Grass-likes – 0-90 #/ac (0-5%)

15-17" PZ - Community 1.1:

5. Minor: Native, C4, short grasses – 100-200 (5-10%)

6. Minor: Native, Perennial and Annual Forbs – 100-200 #/ac (5-10%)

7. Minor: Shrubs, Vines, Cacti – 0-200 #/ac (0-10%)

8. Minor: Grass-likes – 0-100 #/ac (0-5%)

Additional: 12-14" PZ:

12a. Relative Dominance:

Community 1.1: Native, C3, rhizomatous grasses > Native, C3 bunch grasses > Native, C4, tall grasses = Native, C4, mid-grasses > Native, C4, short grasses = Native, Annual or Perennial Forbs > Shrubs, Cacti, Vines > Grass-likes

12b. F/S Groups not expected for the site: Introduced annual grasses, perennial introduced and naturalized grasses, trees.

12c. Number of F/S Groups: 8

12d. Species number in Dominant and Sub-dominant F/S Groups: 5

15-17" PZ:

12a. Relative Dominance:

Community 1.1: Native, C3, rhizomatous grasses > Native, C3 bunch grasses > Native, C4, tall grasses > Native, C4, mid-grasses > Native, C4, short grasses = Native, Annual or Perennial Forbs > Shrubs, Cacti, Vines > Grass-likes

12b. F/S Groups not expected for the site: Introduced annual grasses, perennial introduced and naturalized grasses, trees.

12c. Number of F/S Groups: 8

12d. Species number in Dominant and Sub-dominant F/S Groups: 5

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 with less than 3 percent mortality and shrubs have few dead stems.

14. **Average percent litter cover (%) and depth (in):** Plant litter cover is evenly distributed throughout the site and is expected to be 60 to 80 percent. Litter depth is expected to be 0.25-0.50 inch (0.65-1.3 cm).

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** In the 12-14" precipitation zone, annual production ranges from 900 pounds per acre during unfavorable years to 2,700 pounds per acre in above average years on an air dry basis. Average annual production is 1,800 pounds per acre under normal precipitation and weather conditions.

In the 15-17" annual production ranges from 1,000 pounds per acre during unfavorable years to 3,000 pounds per acre in above average years on an air dry basis. Average annual production is 2,000 pounds per acre under normal precipitation and weather conditions.

No significant reduction is expected the growing season following wildfire.

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:** Leafy spurge, Canada thistle, dalmatian toadflax, Kentucky bluegrass, smooth brome, annual bromes, Russian thistle. Under certain management strategies, curlycup gumweed, green sagewort, and hairy goldaster can dominate the site.

See:

Colorado Department of Agriculture Invasive Species Website:

<https://www.colorado.gov/pacific/agconservation/noxious-weed-species>

Wyoming Weed and Pest Council Website: <https://wyoweed.org/>

Nebraska Invasive Species website: <https://neinvasives.com/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.
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