

Ecological site R067AY162WY Shallow (Sw)

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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

- Number and extent of rills:** Rills may occur on slopes steeper than 15 percent becoming more evident as slopes increase.

- Presence of water flow patterns:** None expected on level to gently sloping terrain. Water flow patterns will be present on slope exceeding 15 percent increasing as slopes increase. Debris dams will be present in association with the waterflow patterns.

- Number and height of erosional pedestals or terracettes:** Pedestalled plants and terracettes are not expected on gentle slopes but will occur on slopes steeper than 15 percent becoming more evident as slopes increase.

- Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare ground is typically 15 to 20 percent, and patches less than 2 to 3 inches (5.1-7.6 cm) in diameter, increasing to 20 to 25 percent during multi-year drought.

- 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 are expected on gentle slopes but may occur on slopes steeper than 15 percent, on ridges, and on sandier soils.

7. **Amount of litter movement (describe size and distance expected to travel):** Litter should fall in place. Slight amount of movement of fine litter from water is possible, but not normal. On slopes greater than 15 percent, litter movement is expected with distances increasing as slopes increase, especially following high precipitation events.

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 on soils with loamy surface textures and 3 to 4 on soils with sandy surface textures. Surface organic matter adheres to the soil surface.

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** The surface layer ranges 4 to 8 inches (10.2-20.3 cm) thick. Soil surface structure is fine to medium granular. Soil colors range from grayish brown, brown, yellowish brown to light brownish gray (values of 5 to 6) when dry and very dark greyish brown, dark grayish brown, dark yellowish brown to dark brown (values of 3 to 5) moist.

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 75 to 80 percent perennial grasses and grass-likes, 10 to 15 percent forbs, and 0 to 5 percent woody plants.

In the 12-14" PZ, the grass and grass-like component is made up of cool-season, bunch grasses (15-35%); warm-season tall and mid-grasses (15-35%); cool-season, rhizomatous grasses (15-25%), warm-season short grasses (15-20%); and grass-likes (5-15%).

In the 15-17" PZ, the grass and grass-like component is made up of warm-season tall and mid-grasses (15-35%); cool-season, bunch grasses (10-35%); cool-season, rhizomatous grasses (15-25%), warm-season short grasses (15-20%); and grass-likes (5-15%).

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.

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, bunch grasses – 135-315 #/ac (15-35%), 2 species minimum

2. Native, C4, tall and mid-grasses – 135-315 #/ac (15-35%), 1 species minimum

15-17" PZ - Community 1.1

1. Native, C3, bunch grasses – 110-385 #/ac (10-35%), 2 species minimum

2. Native, C4, tall and mid-grasses – 165-385 #/ac (15-35%), 1 species minimum

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

3. Native, C3, rhizomatous grasses – 135-225 (15-25%), 1 species minimum

4. Native, C4, short grasses – 135-180 #/ac (15-20%), 1 species minimum

5. Grass-likes – 45-135 #/ac (5-15%), 1 species minimum

15-17" PZ - Community 1.1

3. Native, C3, rhizomatous grasses – 165-275 (15-25%), 1 species minimum

4. Native, C4, short grasses – 165-220 #/ac (15-20%), 1 species minimum

5. Grass-likes – 55-165 #/ac (5-15%), 1 species minimum

Other: Minor:

12-14" PZ - Community 1.1

6. Native, Perennial and Annual Forbs – 45-90 #/ac (5-10%)

7. Shrubs, Vines, Cacti – 0-45 #/ac: (0-5%)

15-17" PZ - Community 1.1

6. Native, Perennial and Annual Forbs – 55-110 #/ac (5-10%)

7. Shrubs, Vines, Cacti – 0-55 #/ac: (0-5%)

Additional: 12- 14" PZ Community 1.1

12a. Relative Dominance: Native, C3 bunch grasses = Native, C4, tall and mid-grasses > Native, C3, rhizomatous grasses > Native, C4, short grasses > Grass-likes > Native, Perennial and Annual Forbs > Shrubs, cacti, vines.

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

12c. Number of F/S Groups: 7

12d. Species number in Dominant and Sub-dominant F/S Groups: 6

15- 17" PZ Community 1.1

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12c. Number of F/S Groups: 7

12d. Species number in Dominant and Sub-dominant F/S Groups: 6

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 40 to 60 percent. Litter depth is expected to be approximately 0.25 inch (0.65 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 600-1200 pounds per acres (air dry basis). Average annual production is 900pounds per acre under normal precipitation and weather conditions.

In the 15-17" Precipitation Zone, annual production ranges from 750-1500 pounds per acre (air dry basis). Average annual production is 1,100 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:** Annual bromes fringed sagewort, broom snakeweed, and others as they become known.

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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