USDA Natural Resources
Conservation Service

Ecological site EX044B01A060
Overflow (Ov) LRU 01 Subset A

Last updated: 9/08/2023
Accessed: 04/20/2024

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)	Grant Petersen
Contact for lead author	grant.petersen@usda.gov
Date	03/26/2019
Approved by	Kirt Walstad
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** Rills are not present in the reference condition.

2. **Presence of water flow patterns:** Water flow patterns are not present in the reference condition.

3. **Number and height of erosional pedestals or terracettes:** None

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare ground is low (<5 percent). Bare ground refers to exposed mineral soil not covered by litter, rock, basal cover, plant cover, standing dead, lichen and/or moss.

5. **Number of gullies and erosion associated with gullies:** None present

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

7. **Amount of litter movement (describe size and distance expected to travel):** Extremely limited litter movement may

exist after high precipitation events. Size of litter and distance traveled varies by species however if litter movement does occur it is rarely more than a few inches.

---

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Site has strong resistance to erosion due to both high amounts of deep fibrous rooted plants, high organic matter and fungal hyphae. Soil Stability values under plant canopy will be 6 with areas of bare ground having rating of 5. A horizon is 6-10 inches thick. Biotic crust and root mat may be present

---

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Soil surface structure will be medium to strong granular. Dark A horizon from 6 to 10 inches thick. Color tends to have a moist (rubbed) Value of 3 and Chroma of 3 or darker. Local geology may affect color in which it is important to reference the Official Series Description (OSD) for characteristic range.

---

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Infiltration is moderately rapid. The mixed fibrous rooting depth of dominant bunchgrasses combined with the taproots of forbs and shrubs in reference state allows for good infiltration. Canopy cover currently adequate for site protection varies however in reference canopy percentage often exceeds 100% in Reference State with even distribution of mid-statured bunchgrasses. An even distribution of tall and mid stature bunchgrasses (65-75% of site production), cool season rhizomatous grasses (10% of site production) along with a mix of shortgrasses, forbs and shrubs (5-15%).

---

11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):** Not present, some soils profiles may contain an abrupt transition to an Argillic horizon which can be interpreted as compaction however the soil structure will typically fine to medium subangular blocky whereas a compaction layer will tend to be structureless.

---

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: Tall and Mid-Statured cool season bunchgrasses (Basin wildrye, Green needlegrass, bluebunch wheatgrass, slender wheatgrass)

    Sub-dominant: Shrubs ≥ Cool season rhizomatous grasses = Cool season shortgrasses ≥ Forbs > subshrubs

    Other:

    Additional:

---

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Mortality in herbaceous species is not evident. Species with bunch growth forms may have some natural mortality in centers is 3% or less.

---

14. **Average percent litter cover (%) and depth (in):** Total litter cover ranges from 50 to 70%. Most litter is irregularly

distributed on the soil surface and is less than .25 inch.

---

15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** Average annual production is 2010 lbs per acre. Low: 1740 High 2450 lbs per acre. Production varies based on effective precipitation and natural variability of soil properties for this ecological site.

---

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:** Potential invasive species on this ecological site include (but not limited to) dandelion, annual brome spp., spotted knapweed, yellow toadflax, leafy spurge, Kentucky bluegrass, Ventenata

    Native species such as rocky mtn Juniper, big sagebrush, Sandberg's bluegrass, etc. when their populations are significant enough to affect ecological function, indicate site condition departure.

---

17. **Perennial plant reproductive capability:** Density of plants indicates that plants reproduce at level sufficient to fill available resources. In the reference condition, all plants are vigorous enough for reproduction either by seed or rhizomes in order to balance natural mortality with species recruitment.
