USDA Natural Resources
Conservation Service

Ecological site R029XY173NV
SHALLOW GRAVELLY FAN 12-14 P.Z.

Last updated: 2/20/2025
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.

Author(s)/participant(s)	E.Hourihan
Contact for lead author	
Date	10/23/2012
Approved by	Kendra Moseley
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** A few rills may be present on steeper slopes, especially after summer convection storms.

2. **Presence of water flow patterns:** Water flow patterns are none to few and are located in the interspaces between shrubs, not connected.

3. **Number and height of erosional pedestals or terracettes:** Pedestals are none to rare. Occurrence is usually limited to areas of water flow patterns.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare Ground ± 10-20%, depending on amount of rock fragments.

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

6. **Extent of wind scoured, blowouts and/or depositional areas:** No wind-scoured or blow out areas. Small depositional areas found up slope of grasses and large shrubs.

7. **Amount of litter movement (describe size and distance expected to travel):** Fine litter (foliage from grasses and annual & perennial forbs) expected to move distance of slope length during intense summer convection storms or rapid snowmelt events. Persistent litter (large woody material) will remain in place except during large rainfall events.

---

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Soil stability values should be 3 to 6 on most soil textures found on this site (To be field tested).

---

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):**

---

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Perennial herbaceous plants (especially deep-rooted bunchgrasses) slow runoff and increase infiltration. Shrub canopy and associated litter break raindrop impact and provide opportunity for snow and overland flow catchment positively contributing to soil moisture storage.

---

11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):** Compacted layers are none. Subsurface calcic or petrocalcic horizons are not to be interpreted as compacted layers.

---

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: Low growing evergreen shrubs (black sagebrush)> deep-rooted, cool season, perennial bunchgrasses (muttongrass & Indian ricegrass)> sprouting shrubs> deep-rooted, cool season, perennial forbs= additional cool-season, perennial bunchgrasses> additional shrubs>shallow-rooted, perennial forbs & annual forbs.

    Sub-dominant:

    Other:

    Additional: succulents and evergreen trees

---

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Dead branches within individual shrubs common and standing dead canopy material may be as much as 20% of total woody canopy; few mature bunchgrasses (<10%) have dead centers.

---

14. **Average percent litter cover (%) and depth (in):** Under shrubs and within plant interspaces (25 to 35%) and depth of litter is ±¼ inch.

---

15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** For a normal or average growing season (through mid-June) ~500LBs/ac; favorable or above average years ~700LBs/ac; unfavorable or below average years ~300LBs/ac.

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 invaders on this ecological site include but are not limited to cheatgrass, red brome, Russian thistle and annual mustards.

17. **Perennial plant reproductive capability:** All function groups should reproduce in average (or normal) and above average (or favorable) growing seasons. Litter growth or reproduction occurs in below average (or unfavorable) and extreme drought years.