

## Ecological site R025XY326UT Upland Shallow Stony Loam (Utah Juniper)

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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)	Shane A. Green (NRCS), Brock Benson (NRCS), Robert D. Stager (BLM), Mike Gates (BLM), Tyler Staggs (BLM), Alan Bass (BLM). Revised to include updated terminology and concepts by V. Keith Wadman (NRCS Retired).
Contact for lead author	shane.green@ut.usda.gov
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Approved by	Shane A. Green
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

### Indicators

- Number and extent of rills:** A moderate amount of rills will normally be present in this site. Rills should be <1 inch deep, fairly short (8-10 feet) and somewhat widely spaced (4-6 feet). On very steep slopes, rills may extend down the entire slope. Rill occurrence may also increase on areas located below exposed bedrock or other water shedding areas where increased runoff may occur. An increase in rill development may also be observed following major thunderstorm or spring runoff events.
- Presence of water flow patterns:** Some evidence of water flow patterns may be found around perennial plant bases, large rock fragments and across surface gravels. There may be some evidence of current erosion. They are expected to be somewhat short (6-8 feet), fairly stable, sinuous and not connected. There may also be some evidence of deposition. Evidence of water flow will increase with slope.
- Number and height of erosional pedestals or terracettes:** Perennial vegetation shows some evidence of erosional pedestalling (3 to 5% of individual plants). Plant roots are covered and litter remains mostly in place around plant crowns. A very few terracettes may also be present but should be stable. An increase in both pedestal and terracette development may occur with increasing slope.
- Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not**

**bare ground):** 5-20% bare ground. Soil surface is typically covered by 40 to 65% coarse fragments. Bare ground spaces should not be greater than 2 to 3 feet in diameter. Most bare ground is associated with waterflow patterns, rills and gullies.

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5. **Number of gullies and erosion associated with gullies:** A very few gullies may be present on site. Some minor additional gully development may also be present in landscape settings where they transport runoff from areas of greater water flow such as exposed bedrock. These landscape level gullies should be limited to slopes exceeding 20% slope and adjacent to sites where this runoff accumulation occurs. Any gullies present should show little sign of accelerated erosion and should be mostly stabilized with perennial vegetation.

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6. **Extent of wind scoured, blowouts and/or depositional areas:** None. No evidence of wind generated soil movement is present. Wind caused blowouts and deposition are not present.

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7. **Amount of litter movement (describe size and distance expected to travel):** Much of the sites litter resides in place with moderate redistribution downslope caused by water movement. Some litter removal may also occur in flow channels with deposition occurring within 2 to 4 feet at points of obstruction. The majority of litter accumulates at the base of plants. Some grass leaves and small twigs (grass stems) may accumulate in soil depressions adjacent to plants. Woody stems may also move 1 to 2 feet down slope. Increased litter movement is expected (up to 6 feet) with increases in slopes and/or increased runoff resulting from heavy thunderstorms.

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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):** This site should have a soil stability rating of 4 or 5 under the plant canopies, and a rating of 3 to 4 in the interspaces. The average rating should be a 4. Soil surface texture is typically a gravelly sandy loam.

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):**  
(Overland) Soil surface 0-2 inches. Texture is an extremely gravelly loam; color is brownish gray (10YR6/2); and structure is massive, slightly hard friable. Ochric epipedon ranges to 7 inches. Use the specific information for the soil you are assessing found in the published soil survey to supplement this description.

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** The cobbles or rock fragments on the surface and within the soil profile would be expected to provide a runoff surface that would naturally reduce infiltration in all but gentle storms and slow snowmelt. Plant spatial distribution should slow runoff somewhat, allowing additional time for infiltration. When perennial grasses and shrubs decrease due to natural events including drought, insect damage, etc., which further reduce ground cover and increasing bare ground, runoff is expected to increase and any associated infiltration reduced.

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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. Limestone bedrock is found at 22 inches.

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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: Trees (Utah juniper) > Non-Sprouting shrubs (black sagebrush, antelope bitterbrush, Wyoming big sagebrush) > Perennial bunchgrasses (bluebunch wheatgrass, Indian ricegrass).

Sub-dominant: Other Perennial bunchgrasses (basin wildrye, Nevada bluegrass) > Sprouting shrubs (green rabbitbrush, ) >> Perennial forbs (arrowleaf balsamroot).

Other: A wide variety of other perennial grasses and both perennial and annual forbs can be expected to occur in the plant community.

Additional: Natural disturbance regimes include fire, drought, and insects. Functional/structural groups may appropriately contain non-native species if their ecological function is the same as the native species in the reference state (e.g. Crested wheatgrass, intermediate wheatgrass, Siberian Wheatgrass etc.)

Following a disturbance such as fire, drought, rodents or insects that remove woody vegetation, forbs and perennial grasses (herbaceous species) may dominate the community for a period of time. If a disturbance has not occurred for an extended period of time, woody species may continue to increase. These conditions would reflect a functional community phase within the reference state.

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** The plant community is made up of young, mid, and old aged juniper trees (seedling to 400+ years old) perennial grasses and shrubs. Standing dead trees may be present on the site and approximately 5-20 % of the trees can show evidence of decadence. All age classes of perennial grasses should be present under average to above average growing conditions with age class expression likely subdued during below average years or on sites with a high (usually greater than 65%) similarity index (late seral to historic climax). In drought and/or insect/fungus infestations, juniper mortality may increase with the first sign being a yellowish to reddish leaf color.
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14. **Average percent litter cover (%) and depth ( in):** Litter may only occur under perennial vegetation. Most litter will be herbaceous and depths of 0 to 1/4 inch would be considered normal. Perennial vegetation should be well distributed on the site.
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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** Annual production in air-dry herbage should be approximately 650 - 750#/acre on an average year, but could range from 450 to 950#/acre during periods of prolonged drought or above average precipitation.
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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:** Cheatgrass, Russian thistle, and non-native invasive annual forbs such as alyssum.
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17. **Perennial plant reproductive capability:** All perennial plants should have the ability to reproduce in most years, except in extreme drought years. Some seedling recruitment of major species should be present during average and above average growing years.
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