USDA Natural Resources
Conservation Service

Ecological site R035XY146UT
Desert Very Steep Stony Loam (Shadscale)

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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)	Jacob Owens (NRCS), Shane Green, (NRCS)
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

1. **Number and extent of rills:** None to very few. Due to the stony characteristic of this site, rill formation is impaired. However, the overall surface is expected to be resistant to rill formation and accelerated erosion in general.

2. **Presence of water flow patterns:** Flow patterns are very sinuous and wind around gravel and/or boulders, and perennial plant bases. During episodic precipitation events e.g. thunderstorms, these sites are expected to shed large volumes of water to adjacent ecological sites.

3. **Number and height of erosional pedestals or terracettes:** Pedestals or terracettes are rare due to the talus nature of the site. They may naturally occur where the water flows around the gravel, rock or boulders.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** 5 – 40%. Ground cover is based on first raindrop impact, and bare ground is the opposite of ground cover. Ground cover + Bare ground = 100%. With a surface texture ranging from gravelly loam to channery loam and a in some locations a talus surface, actual bare ground (soil) is typically a minor component (5-10%). Poorly developed biological soil crusts that are interpreted as functioning as bare ground (therefore they would be susceptible to raindrop splash erosion) should be recorded as bare ground.

5. **Number of gullies and erosion associated with gullies:** None to few. Length often extends from exposed bedrock until gully reaches a stream or an area where water and sediment accumulate, but they may be wide and shallow and

armored with very large rocks.

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6. **Extent of wind scoured, blowouts and/or depositional areas:** None. The stony surface of this site precludes this from occurring.

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7. **Amount of litter movement (describe size and distance expected to travel):** Due to the steepness of slope being between 35 to 80 percent, down slope redistribution of any incident litter caused by water is expected. Deposition would likely occur at points of obstruction such as the uphill side of gravel, rocks and boulders, especially following major storm events.

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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 plant canopies and a rating of 3 to 4 in the interspaces using the soil stability test kit. Surface texture is gravelly sandy loam to channery loam. Vegetation cover, litter, biological soil crusts and surface rock reduce erosion.

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Soil surface horizon is 0 to 3 inches deep. Structure is weak fine subangular to granular. Color is dark reddish brown (2.5YR ¾). 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:** Due to the stony and steep nature of this site, plants would be expected to only have a minor effect on infiltration and runoff. The armored surface would naturally shed a majority of the incident water.

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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.

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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: Dominance by average annual production: Perennial bunchgrasses > non-sprouting shrubs > sprouting shrubs >= perennial and native annual forbs 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, etc.)

    Sub-dominant:

    Other: Biological soil crust is variable in it’s expression where present on this site and is measured as a component of ground cover.

    Additional: Following a recent disturbance such as fire, drought, or insects that removes the woody vegetation, forbs and perennial grasses (herbaceous species) may dominate the community. If a disturbance has not occurred for an extended period of time, woody species may continue to increase crowding out the perennial herbaceous understory

species. In either case, these conditions would reflect a functional community phase within the reference state. Dominants: Indian ricegrass, galletta, and shadscale; Sub-dominants: other perennial grasses, Torrey's jointfir, broom snakeweed, and Stansburry Mexican cliffrose. Perennial and annual forbs can be expected to vary widely in their expression in the plant community based upon departures from average growing conditions.

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** All age classes of perennial grasses should be present under average growing conditions with age class expression likely subdued during below average years, or on sites with high (usually greater than 65%) similarity index (late seral to historic climax). Reference state includes a mixture of plants of various ages with some plants being dead or showing characteristics of decadence. The overall plant vigor of a steep stony loam (shadscale) site is expected to be good due to the "highway runoff water concentrating effect" of the gravel, rocks and/or boulders.

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14. **Average percent litter cover (%) and depth (in):** Variability may occur due to weather.

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** 65 - 115 #/acre on an average year.

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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:** Due to the low productive and steep characteristics of this site, grazing and fire are not usually an important factor impacting the site. However, cheatgrass may invade site.

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17. **Perennial plant reproductive capability:** All perennial plants should have the ability to reproduce sexually or asexually in most years, except in extreme drought years.
