

Ecological site R035XY324UT Upland Sand (Utah Juniper-Pinyon)

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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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Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** None to very few. Any rills present should be somewhat short in length (less than 6 feet long) and follow the surface micro-features. An increase in rill formation may be seen after disturbance events such as recent fire or thunderstorms in adjacent landscape settings where increased runoff may accumulate (such as areas below exposed bedrock). Such rill development should usually be limited to slopes exceeding 6%. Rills heal rapidly due to the coarse soil textures.

2. **Presence of water flow patterns:** Flow patterns wind around perennial plant bases and show little to slight evidence of erosion. They are short and stable and there is minor evidence of deposition. On gently sloping (< 4 % slopes) locations within the site, water flow patterns are infrequent and usually less than 3 feet. Longer water flow patterns may be found on steeper slopes.

3. **Number and height of erosional pedestals or terracettes:** Herbaceous plants may show little pedestaling. Pedestals may be up to 4 inches for shrubs. Terracettes should be absent or few. Pedestals that occur are usually associated with natural wind erosion.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** 30 – 40% bare ground. 0-5% surface fragments. Ground cover is based on the first raindrop impact, and bare ground is the opposite of ground cover. Any well developed biological crusts present should not be recorded as bare ground. 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. Some gullies may be present in landscape settings where increased runoff may accumulate (such as areas below exposed bedrock). Such gully development is expected to be limited to steeper slopes and adjacent to sites where runoff accumulation occurs. Any gullies present should show little sign of accelerated erosion and should be stabilized with perennial vegetation.

6. **Extent of wind scoured, blowouts and/or depositional areas:** Some wind generated soil movement is normal. This site has the appearance of dunes that have been healed over. Wind caused blowouts and deposition are mostly stable or have healed over. Coppice mounding around perennial vegetation is common, especially the *Mormontea*. Increased wind generated soil movement can occur during severe wind events.

7. **Amount of litter movement (describe size and distance expected to travel):** Most litter resides in place with some redistribution caused by water movement. Very minor litter removal may occur in flow patterns and rills with deposition occurring 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 are not likely to move.

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 2 to 4 in the interspaces. The average should be a 3 or 4. Surface texture is fine sand to loamy very fine sand. Vegetation cover, litter, biological soil crusts and surface rock reduce erosion.

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Soil surface horizon is typically 6 to 7 inches deep. Structure is typically single grain and weak fine subangular blocky to weak medium granular. Color is typically pale brown (10YR6\3) to yellowish red (5YR5/6). There is little if any difference under canopy or in interspaces and a recognizable A horizon is expected to be present throughout. Use the specific information for the soil you are assessing found in the published soil survey to supplement this description.

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Vascular plants will break raindrop impact and splash erosion. Spatial distribution of vascular plants provide detention storage and surface roughness that slows runoff allowing time for infiltration. Interspaces between plants may serve as water flow patterns during episodic runoff events, with natural erosion expected in severe storms. When perennial grasses decrease, reducing ground cover and increasing bare ground, runoff is expected to increase and any associated infiltration reduced.

11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):** none

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 (Juniper > Pinion) > Non sprouting shrubs > Cool season perennial grasses > Sprouting shrubs = Warm season perennial grasses

Sub-dominant: forbs > native annual grass

Other: 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.)

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

Additional: Disturbance regime includes parasites, drought, insects, and infrequent fire. 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 could reflect a functional community phase within the reference state.

Dominants: Utah juniper, Pinion, Mountain big sagebrush, Mormontea, Broom snakeweed ; Sub-dominants: Indian ricegrass, Sandhill muhly, Squirreltail, Bitterbrush. 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 to above 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). In general, a mix of age classes may be expected with some dead and decadent plants present.

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14. **Average percent litter cover (%) and depth (in):**

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** 400-500 lbs/ac

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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:** Snakeweed and introduced annual grasses and forbs are expected to increase or invade this 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 drought years.
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