USDA Natural Resources
Conservation Service

Ecological site R041XB214AZ
Sandy Upland 8-12" p.z.

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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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Approved by	Curtis Talbot
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** None

2. **Presence of water flow patterns:** Water flow paths occupy less than 10% of the surface area. Steeper sections have flow paths which are continuous. Smaller flow paths are discontinuous and 5-10 feet in length. Sandy soils preclude runoff in all but the most severe storms.

3. **Number and height of erosional pedestals or terracettes:** Pedestals are common on all longer lived grasses and young atriplex (shrubs) and are from 1-3 inches in height. Pedestals on older atriplex shrubs are from 6-12 inches tall. All mesquite are quite old and have large mounds 2 to 3 feet tall with much rodent activity. Terracettes are uncommon on the site.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare soil is 70-75%, gravel ranges from 1-3% and basal cover of live perennial grasses is 1%. Bare areas are 10-20 feet in diameter and generally not connected.

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

6. **Extent of wind scoured, blowouts and/or depositional areas:** Some evidence of wind scour around the bases of small shrubs (young atriplex and snakeweed). Erosion is evident on the windward side of smaller shrubs (SW) and deposition on the lee side. Large shrubs of both mesquite and atriplex species have symmetrical mounds.

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7. **Amount of litter movement (describe size and distance expected to travel):** Both fine and coarse litter size classes are moving short distances (2-6 feet) from wind in open spaces. Under large shrubs all litter classes are staying in place.

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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):** Values from soil slake test ratings were 1-2s (88%) and 3-5s (12%).

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** A horizon is loamy sand 9 inches thick with no structure. Colors are 10 YR 6/4 dry and 10 YR 4/3 moist.

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Sandy soil textures dominate the hydrology on the site. The plant community affords stability but adds little to hydrologic function. 61% of canopy gaps are > 6 ft and 10% < 6 ft. 96% of basal gaps are > 6 ft.

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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 present, average depth of penetration from an ARS field penetrometer with a 2.2 kg. sliding hammer is 17 cm.

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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: large shrub (western honey mesquite, 94 plants/ac)

    Sub-dominant: smaller shrubs (desert and fourwing saltbush, 345 plants/ac) > perennial grasses = subshrubs > succulents (soaptree yucca, 73 plants/ac) > annual forbs and grasses.

    Other:

    Additional:

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Plant mortality strongly affected by weather patterns; 10-15% mortality on perennial grasses and sub-shrubs due to previous drought. No mortality on mesquite but some canopy die-back. Large shrubs of atriplex species appear decadent.

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14. **Average percent litter cover (%) and depth (in):** Litter is absent from water flow patterns and bare areas.

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** 360 lbs/ac. in a below average year; 420 lbs/ac. in an average year; 480 lbs/ac. in an above 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:** Tumbleweed

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17. **Perennial plant reproductive capability:** Not impaired.
