USDA Natural Resources
Conservation Service

Ecological site R040XA123AZ
Volcanic Hills 10"-13" 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.

Author(s)/participant(s)	Dave Womack, Dan Robinett, Emilio Carrillo
Contact for lead author	NRCS Tucson Area Office
Date	12/13/2005
Approved by	S. Cassady
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** Rills are present on this site with high gravel cover but follow fractures, bedding planes and joints in the bedrock parent materials. Soils with high rock cover have no natural rills.

2. **Presence of water flow patterns:** Uncommon; broken primarily by high rock and gravel cover.

3. **Number and height of erosional pedestals or terracettes:** Pedestals are uncommon on perennial grass and shrubs (1-2 per 50 plants and no more than 1 inch of root exposed); limited soil material not conducive to forming continuous stands of plants that promote terracettes; high rock cover forms limited natural terracettes.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Estimated at 1-2%. Gravel cover 90-95%, rock 2-3%. Some soils may have 90-95% rock cover.

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

6. **Extent of wind scoured, blowouts and/or depositional areas:** None

7. **Amount of litter movement (describe size and distance expected to travel):** Woody litter stays in place, herbaceous litter transported in limited flow paths.

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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):** Expect values of 1-2 in canopy interspaces, and 4-5 under plant canopies.

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Weak thir platy to weak granular; thickness to 5 inches.

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Canopy cover = 26%; 35-40% of canopy cover is shrubs, 20-25% half shrubs, 15-20% paloverde, 7-8% succulents, 3-4% perennial grass, 3-4% perennial forbs. Cover is well dispersed throughout the site. North facing slopes may have tree and shrub cover values reversed versus above values and higher values for succulents.

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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: shrubs > half shrubs > trees > succulents > perennial grasses and forbs (Note: In El Nino years, annual forbs and grasses are #1 in above ground weight). North slopes may have trees > succulents > half shrubs > shrubs > perennial forbs > perennial grasses.

    Sub-dominant:

    Other:

    Additional:

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** 3 and 15% canopy mortality of triangle bursage and jojoba, respectively at Gates Pass west slope. 5-10% mortality of bursage at Tumamoc Hill north slope.

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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):** 242 lbs/ac unfavorable precipitation; 775 lbs/ac normal precipitation; 1850 lbs/ac favorable 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: Filaree, Red brome, bufflegrass

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17. **Perennial plant reproductive capability:** Not impaired for shrubs, drought impaired for perennial grasses and forbs.
