

Ecological site R035XF608AZ Limestone / Sandstone Upland 13-17" 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	S. Cassady
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

- 1. Number and extent of rills:** Some rill formation is possible, especially on steeper slopes due to loamy and clay loam surface textures, slow permeability, shallow depth, rapid runoff, and moderate amounts of bare ground. Rill formation will be reduced if the soil has a lot of rock fragment armor on the surface.

- 2. Presence of water flow patterns:** Water flow patterns may be occasional to common due to slow permeability, shallow depth, rapid runoff, and moderate amount of bare ground. There will be more water flow patterns in steeper areas adjacent to inclusions of rock outcrop or very shallow (<10 inches deep) soils, especially if there isn't much rock fragment armor on the surface.

- 3. Number and height of erosional pedestals or terracettes:** Some pedestals and terracettes may form, but they should be very short.

- 4. Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Areas with a greater cover of rock fragments will have less bare ground. Drought may cause an increase in bare ground. This site has only one inch of available water capacity, so the potential to produce plant cover is very low.

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

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6. **Extent of wind scoured, blowouts and/or depositional areas:** None
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7. **Amount of litter movement (describe size and distance expected to travel):** Herbaceous and fine woody litter will be transported in water flow pathways. Coarse woody litter will remain under shrub and tree canopies. Litter movement may be greater in areas adjacent to inclusions of rock outcrop and very shallow (<10 inches deep) soils.
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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):** Soil surface texture is generally very fine sandy loam. Most surface horizons contain a significant amount of rock fragments (mainly gravels). Many soils have a significant cover of rock fragment (mainly gravels) armor on the surface. When well vegetated or covered with rock armor, the soils have a moderate to high resistance to both water and wind erosion.
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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Soil surface structure is mostly granular(weak fine granular). Surface thickness averages about one inch. Color is variable depending upon parent material.
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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** This site is characterized by a relatively even distribution of mostly shrubs and grasses. There may be small patches of trees. Canopy cover averages about 30% (15% shrubs, 10% grasses, 2% trees, 1% forbs). Basal cover averages about 5% (2% shrubs, 2% grasses, 1% trees). The cover is reduced by the amount of rock fragment and bedrock ground cover. Both cover values decrease during a prolonged drought. This type of plant community is only slightly effective at capturing and storing precipitation.
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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. Due to very fine sandy loam surfaces and sandy clay loam subsurface textures, these soils may be easily compacted, but they are generally protected by a significant amount of rock fragment armor on the surface and within the surface horizons.
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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: cool season bunchgrasses >
- Sub-dominant: shrubs > warm season bunchgrasses >
- Other: minor: forbs >
- Trace: trees = Agave family
- Additional:
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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** All plant functional groups are adapted to survival in all years except during the most severe droughts.

Severe winter droughts affect shrubs and trees the most. Severe summer droughts affect grasses the most.

14. **Average percent litter cover (%) and depth (in):** Litter consists of a combination of woody and herbaceous. Litter amounts increase during the first few years of drought, then decrease in later years.
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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** 400-600 pounds per acre (dry weight) in drought years, 600-700 pounds per acre in median years, 700-850 pounds per acre in wet years.
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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:** Wyoming big sagebrush is native to the site, but has the potential to increase and dominate the site after heavy grazing. Broom snakeweed is a native that has the potential to increase and dominate the site after a sagebrush fire and heavy grazing. Cheatgrass is an exotic annual that is becoming endemic to the site regardless of management of fire frequency. It may become dominant after a sagebrush fire, even with conservative or no grazing.
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17. **Perennial plant reproductive capability:** All plants native to the site are adapted to the climate and are capable of producing seeds, stolons, and rhizomes in most years except during the most severe droughts.
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