

## Ecological site R035XB240AZ Limestone/Sandstone Cliffs 6-10" 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	
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

### Indicators

- Number and extent of rills:** Few expected. Rills are not likely in most areas due to extensive surface cover of rock fragment armor and the large amount of rock fragments in the soil profile.

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- Presence of water flow patterns:** Occasional water flow patterns are expected. Flow patterns present are usually very short and discontinuous due to frequency of rock fragments on the surface.

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

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- Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare ground ranges from 3-10 percent.

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

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- 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, fine woody and some coarse woody litter will be transported in water flow pathways. Most coarse woody litter will remain under shrub canopies. There may be more litter movement in areas that are adjacent to large expanses of rock outcrop.
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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 textures are mostly loamy coarse sand to fine sandy loam. All surface horizons contain a significant amount of rock fragments (gravel, cobbles and/or stones). Most soils have 50-80% cover of rock fragments (mostly gravels and stones with some cobbles.) When well vegetated or covered with rock armor, the soils have a 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):** Surface thickness range is 2 to 5 inches. Structure is single grain, loose or weak, fine subangular blocky structure. Surface horizon color typically ranges from light brown to yellowish brown, but can vary to reddish brown.
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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** The vegetation communities on this site are scattered and patchy. This site is characterized by a dominance of shrubs followed by grasses, succulents and then forbs. Canopy cover range is 20-40 % and is also dominated by shrubs. The plant basal cover ranges from 5-10%, where basal cover values are higher is where more grasses occur. Due to a high amount of rock cover and the site's low water holding capacity this site is only slight to moderately effective at capturing and storing moisture.
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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. These soils are not easily compacted due to the extensive rock fragments throughout the profile.
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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: Summer flowering shrubs > Warm season grasses > Spring flowering shrubs >
- Sub-dominant: Cool season grasses > Cacti >
- Other: Forbs > Annual grasses > Yucca & Agaves
- 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 survive in all but most severe droughts. Severe winter droughts affect shrubs the most. Severe summer droughts affect grasses the most.
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14. **Average percent litter cover (%) and depth ( in):** Litter consists of a combination of herbaceous and woody litter. Litter depth range from 1 leaf thickness to ¼ inches. Litter amounts increase during the first few years of drought, then decrease in later years. Litter amounts can vary greatly between plant canopies and interspaces, and also with aspects.

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** Average annual production on this site is expected to be 175-275 lbs/ac. in a year of average annual 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: Cheatgrass, red brome, filaree, and Russian thistle
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17. **Perennial plant reproductive capability:** All plants native to this site are adapted and are capable of producing seeds, stolons and rhizomes in all but the most severe drought.
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