Ecological site R035XF605AZ
Loamy 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	Steve Barker
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** Generally none, although minor rill formation is possible on steeper slopes (10 to 15%), due to loamy surface textures, moderately slow permeability, medium runoff, and high amount of bare ground.

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2. **Presence of water flow patterns:** Water flow patterns are few and scattered. They are less than 2 meters in length and generally are less than 10% of the site composition.

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3. **Number and height of erosional pedestals or terracettes:** There is mounding that may be present near shrubs (1-6”) and trees (6-10”) and pedestals are seen along water flow patterns near perennial grasses (1-2”).

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4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** The bare ground for this particular site is varied and although it is normally 20-35% it will appear as high as 60% near water flow patterns. The available water capacity ranges from 8.5 to 11 inches, so this site has the potential to produce a high amount of plant cover. The average fetch between perennial plants is 2.5 inches.

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

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6. **Extent of wind scoured, blowouts and/or depositional areas:** There can be some deposition around long lived perennial shrubs and grasses.

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7. **Amount of litter movement (describe size and distance expected to travel):** Fine litter is transported by wind and water about 1-2 meters in open areas that are away from shrubs and trees and under shrubs and trees movement is less at 0-1 meter. Coarse woody litter tends to stay in place in all areas.

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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):** The soil surface textures are loam, silt loam and sandy clay loam. The soil stability test results showed an average of 1.8 to 2.3 out of a possible 6 for open areas outside of any canopy and an average of 5 out 6 for soil samples that were extracted from under various plant canopies. The soil surface and profile does not contain many rock fragments. The presence of cracks could lead to low aggregate stability of the surface. When well vegetated, these soils have a low to moderate resistance to water erosion and a moderate to high resistance to 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 platy (weak to moderate, thin to thick) or granular (weak to moderate, fine to medium). The thickness of the A-horizon is 2-3 inches in depth. The surface colors are brown 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:** This site is characterized by a relatively even distribution of mostly grasses and shrubs, with a few patches of trees in some areas. Canopy cover range is 15-50% (warm season grasses>evergreen shrubs>deciduous shrubs>cool season grasses>forbs>succulents> trees). Basal cover ranges from 18% to 21% (grasses>shrubs). Both of these cover values will decrease during prolonged drought. This type of plant community is moderately 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. Most of the soils may be easily compacted when wet (some animal trails) due to the loam or silt loam, textures at or near the surface. Many of the soils have a naturally platy surface structure.

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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: (>40%): none

    Sub-dominant: (11%-40%): warm season colonizing grasses = evergreen shrubs > deciduous shrubs > cool season grasses.

    Other: Minor (0%-10%): forbs. Trace (0-3%): succulents > trees.

    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, trees, and cool season grasses the most. Severe summer droughts affect warm season grasses the most.

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14. **Average percent litter cover (%) and depth (in):** Of the total litter amount, it would be expected that approximately 70% to 90% would be herbaceous litter and approximately 10% to 30% would be woody litter. 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):** 400-500 pounds per acre (dry weight) in dry years; 500-850 pounds per acre in median years; 850-1200 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. Broom snakeweed and pricklypear cactus are natives that have the potential to increase and dominate after a sagebrush fire. Utah juniper and Colorado pinyon are natives that may increase after fire suppression. Sixweeks fescue and lupine are natives that may increase after severe disturbance. Cheatgrass is an exotic annual that is becoming endemic to the site regardless of management or fire frequency. It may become dominant after a sagebrush fire.

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17. **Perennial plant reproductive capability:** All plants native to this site are adapted to the climate and are capable of producing seeds, stolons and rhizomes in most years except during the most severe droughts.