USDA Natural Resources
Conservation Service

Ecological site DX032X01A122
Loamy (Ly) Big Horn Basin Core

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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	Rick L. Peterson
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** Rills should not be present, but may be occurring on slopes up to 20%. Where occurring, short and widely spaced.

2. **Presence of water flow patterns:** Barely observable but may be occurring on steeper slopes.

3. **Number and height of erosional pedestals or terracettes:** Essentially non-existent.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** *Bare Ground* can range from 15 - 35%, as small areas dispersed across the site.

5. **Number of gullies and erosion associated with gullies:** Active gullies should not be present.

6. **Extent of wind scoured, blowouts and/or depositional areas:** Rare to nonexistent.

7. **Amount of litter movement (describe size and distance expected to travel):** Little to no plant litter movement. Plant

litter remains in place and is not moved by erosional forces.

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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 stability index ratings range from 1 (interspaces) to 6 (under plant canopy), but the average values should be 3.33 or greater.

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Soil data is limited for this site. Described A-horizons vary from 1-12 inches (3-30 cm's) in depth with Organic Matter (OM) of 1 to 2%.

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** The plant community consists of 60-75% grasses, 10% forbs and 15-30% shrubs. Evenly distributed plant canopy (35-75%) and litter plus moderate to moderately rapid infiltration rates result in minimal runoff. Basal cover is typically less than 5% for this site and does very little to effect runoff on this site.

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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: Mid-size cool season bunchgrasses

    Sub-dominant: perennial shrubs=cool season rhizomatous grasses

    Other: perennial forbs > short cool season bunchgrass = short warm season bunchgrasses

    Additional:

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Minimal decadence typically associated with shrub component of canopy cover.

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14. **Average percent litter cover (%) and depth (in):** Litter ranges from 5-30% of total canopy measurement with total litter (including beneath the plant canopy) from 25-50% expected. Herbaceous litter depth typically ranges from 3-10 mm. Woody litter can be up to a couple inches (4-6 cm's).

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** English: 190 - 515 lbs/ac (320 lbs/ac average); Metric: 213 - 577 kg/ha (358.7 kg/ha average).

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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: The increase of bare ground above 50% is an indicator that a threshold is being crossed. Corresponding increase will be noted in one or more of the following species is common: Blue grama, Sandberg bluegrass, Fendler threeawn, Fringed sagewort, Broom snakeweed, Prickly pear cactus, and Wyoming big sagebrush. Annual weeds such as kochia, mustards, Lambsquarter, Russian thistle, and pepperweeds are common invasive species in disturbed sites. Common noxious weeds that invade are: Cheatgrass (Downy brome), knapweeds, thistles (Bull, Canada), Houndstongue, Black henbane and Whitetop.

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17. **Perennial plant reproductive capability:** All species are capable of reproducing, except in drought years.
