

Ecological site HX074XY104 Clay Lowland

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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	Chris Tecklenburg
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** No natural rill formation is common or part of the Clay Lowland ecological site.
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2. **Presence of water flow patterns:** There are no water flow patterns evidenced by litter, soil, or gravel redistribution, or pedestalling of vegetation or stones that break the flow of water as a result of overland flow.
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3. **Number and height of erosional pedestals or terracettes:** There is no evidence of pedestals or terracettes that would indicate the movement of soil by water and/or by wind on this site.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Less than 5% bare ground is found on this site. It is the remaining ground cover after accounting for ground surface covered by vegetation (basal and canopy [foliar] cover), litter, standing dead vegetation, gravel/rock, and visible biological crust (e.g., lichen, mosses, algae).

5. **Number of gullies and erosion associated with gullies:** No evidence of accelerated water flow resulting in downcutting of the soil.

6. **Extent of wind scoured, blowouts and/or depositional areas:** No wind-scoured or blowout areas where the finer particles of the topsoil have blown away, sometimes leaving residual gravel, rock, or exposed roots on the soil surface. Also, there are no areas of redeposited soil onto this site from another site due to the wind, i.e., depositional areas.

7. **Amount of litter movement (describe size and distance expected to travel):** No evidence of litter movement (i.e., dead plant material that is in contact with the soil surface).

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Soil surfaces may be stabilized by soil organic matter which has been fully incorporated into aggregates at the soil surface, adhesion of decomposing organic matter to the soil surface, and biological crusts. A soil stability kit will score a range from 5-6.

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Sutphen OSD:

Ap--0 to 15 centimeters (0 to 6 inches); very dark gray (10YR 3/1) silty clay loam, black (10YR 2/1) moist; weak fine granular structure; hard, firm, plastic and sticky; common very

fine roots; slightly acid; abrupt smooth boundary.

A1--15 to 33 centimeters (6 to 13 inches); very dark gray (10YR 3/1) silty clay, black (10YR 2/1) moist; moderate medium subangular blocky structure; very hard, very firm, very plastic and very sticky; common very fine roots; neutral; clear wavy boundary.

A2--33 to 76 centimeters (13 to 30 inches); dark gray (10YR 4/1) silty clay, very dark gray (10YR 3/1) moist; weak medium angular blocky structure; very hard, very firm, very plastic and very sticky; common very fine roots; a few slickensides; some old cracks filled with very dark gray (10YR 3/1) soil; slightly alkaline; gradual wavy boundary. (Combined thickness of the A horizon is 50 to 90 centimeters (20 to 36 inches.))

AC--76 to 117 centimeters (30 to 46 inches); dark grayish brown (10YR 4/2) silty clay, very dark grayish brown (10YR 3/2) moist; weak medium angular blocky structure; very hard, very firm, very plastic and very sticky; a few slickensides; common fine carbonate concretions; moderately alkaline; gradual wavy boundary. (0 to 46 centimeters (0 to 18 inches thick))

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Functional and structural groups are that of the Reference Plant Community (see functional and structural group worksheet). Note changes to plant communities if different than that of the functional and structural group worksheet.
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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):** There is no evidence of a compacted soil layer less than 6 inches from the soil surface. Soil structure is similar to that described in Indicator 9. Compacted physical features will include platy, blocky, dense soil structure over less dense soil layers, horizontal root growth, and increase bulk density (measured by weighing a known volume of oven-dry soil).
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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: Group 1 Tallgrass dominant 71% 3550 lbs; big bluestem 900-1330, prairie cordgrass 400-950, switchgrass 250-570, Indiangrass 250-570, eastern gamagrass 75-190, composite dropseed 10-60.

Sub-dominant: None

Other: Group 2 Midgrasses Minor 7% 350 lbs.; little bluestem 75-190, sideoats grama 50-190
Group 3 Cool-season grasses Minor 8% 400 lbs.; Canada wildrye 20-100, Virginia wildrye 20-100, western wheatgrass 10-80, wirestem muhly 0-65, field horsetail 0-30, sedge 0-30.
Group 5 Forbs Minor 10% 500 lbs

Additional: Group 4 Shortgrass Trace 2% 100 lbs., blue grama 10-50, buffalograss 0-50
Group 5 Forbs minor 10% 500 lbs.
Group 6 Shrubs and Trees Minor 2% 100 lbs.

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Recruitment of plants is occurring and there is a mixture of many age classes of plants. The majority of the plants are alive and vigorous. Some mortality and decadence is expected for the site, due to drought, unexpected wildfire, or a combination of the two events. This would be expected for both dominant and subdominant groups.
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14. **Average percent litter cover (%) and depth (in):** Plant litter is distributed evenly throughout the site. There is no restriction to plant regeneration due to depth of litter. When prescribed burning is practiced, there will be little litter the first half of the growing season.
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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** All species (e.g., native, seeded, and weeds) alive in the year of the evaluation, are included in the determination of total above ground production. Site potential (total annual production) ranges from 3,500 lbs in a below-average rainfall year and 7,500 lbs in an above-average rainfall year. The representative value for this site is 5,000 lbs production per year.
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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:** There are no

noxious weeds present. Invasive plants make up a small percentage of plant community, and invasive brush species are < 5% canopy.

17. **Perennial plant reproductive capability:** The number and distribution of tillers or rhizomes is assessed on perennial plants occupying the evaluation area. No reduction in vigor or capability to produce seed or vegetative tillers given the constraints of climate and herbivory.
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