

## **Ecological site EX044B01A165 Thin Claypan (TCp) 10-14" PZ Frigid**

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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	Kirt Walstad
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

### **Indicators**

1. **Number and extent of rills:** Rills are not present in the reference condition.  

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2. **Presence of water flow patterns:** Water flow patterns are rarely present except after heavy rainfall events. If present, flow patterns will be short (less than 2 feet in length).  

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3. **Number and height of erosional pedestals or terracettes:** Pedestals are not evident in the reference condition.  

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4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare ground is 20-25%. It consists of small, randomly scattered patches.
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5. **Number of gullies and erosion associated with gullies:** Gullies are not present in the reference condition.
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6. **Extent of wind scoured, blowouts and/or depositional areas:** Wind scoured, or depositional areas are not evident in the reference condition.
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7. **Amount of litter movement (describe size and distance expected to travel):** Litter movement is not evident in the reference condition.
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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 average soil stability rating is 4-5 under plant canopies and 3 in plant interspaces. The A horizon thickness is highly variable and is 1-4 inches thick.
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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Soil Structure at the surface is medium granular. A Horizon should be 1-4 inches thick with color, when wet, typically ranging in Value of 4 or less and Chroma of 3 or less.

Local geology may affect color, it is important to reference the Official Series Description (OSD) for characteristic range. <https://soilseries.sc.egov.usda.gov/osdname.aspx>

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Infiltration of the Thin Clay Pan ecological site is slow to very slow. The site is well drained. An even distribution of mid stature bunchgrasses (40 percent), rhizomatous grass (35 percent), cool season shortgrasses (10-15 percent), forbs (1-5 percent), and shrubs (5-15 percent) optimizes infiltration and reduces runoff under normal moisture events.
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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):** A compaction layer is not present in the reference condition. Soil profile will contain an abrupt transition to an argillic horizon which can be misinterpreted as compaction, however, the soil structure will be strong medium subangular blocky, where a compaction layer will be platy or structureless (massive).
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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-statured, cool season, perennial bunchgrasses (Bluebunch wheatgrass) = rhizomatous grasses

Sub-dominant: shrubs > shortgrass grasses/grasslikes (blue grama, Junegrass) > forbs

Other:

Additional:

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Mortality in herbaceous species is not evident. Species with bunch growth forms may have some natural mortality in centers is 3 percent or less.
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14. **Average percent litter cover (%) and depth ( in):** Total litter cover ranges from 25-30%. Most litter is irregularly distributed on the soil surface and is not at a measurable depth.
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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** Average annual production is 500lbs/acre. Low: 300lbs/acre High 700lbs/acre. Production varies based on effective precipitation and natural variability of soil properties for this ecological site.

Metric: Low: 336 kg/ha Average (RV): 560 kg/ha High: 785 kg/ha

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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: Potential invasive (including noxious) species (native and non-native). Invasive species on this ecological site include (but not limited to) annual brome spp., spotted knapweed, crested wheatgrass, pale alyssum, field pennycress (fanweed)

Native species such as broom snakeweed, Sandberg's bluegrass, blue grama, pricklypear cactus, greasewood, etc. when their populations are significant enough to affect ecological function, indicate site condition departure.

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17. **Perennial plant reproductive capability:** In the reference condition, all plants are vigorous enough for reproduction either by seed or rhizomes in order to balance natural mortality with species recruitment.
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