

Ecological site R028AY140UT Desert Silt Flat (Winterfat)

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

Indicators

1. **Number and extent of rills:** Very minor rill development may be apparent in reference communities. Development will be more pronounced following significant storm or snow melt events. Rills should be somewhat short (< 4') and fairly widely spaced (6' – 8'). Rills will run from higher to lower micro-elevational areas within the site and will travel in random directions. Rills development may also be more pronounced on the edges of this site where run-on from adjacent upland sites or exposed bedrock concentrate flows.

2. **Presence of water flow patterns:** Evidence of stable overland water flow is apparent in the reference community. Flow patterns follow site micro-contours, are sinuous and may contain standing water after storm events. Flow patterns are normally <20 feet long, flow around shrub mounds, and are typically spaced 10 to 12 feet apart.

3. **Number and height of erosional pedestals or terracettes:** Very slight evidence of pedestals or terracettes caused by accelerated water erosion may be evident in the reference community. 1 – 2 inches of elevational mounding under Winterfat canopies and within biological soil crusts is normal and may not be water erosion caused. There are no exposed roots around perennial grass bunches and biological soil crusts, where present, show little sign of disturbance.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare ground ranges from 50% - 60% in the reference community. Ground cover (the inverse of bare ground) typically includes: coarse fragments – < 1%; plant canopy – 20% to 30%; litter – 15% to 20%, and cryptogamic crusts – 2% to 5%.

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5. **Number of gullies and erosion associated with gullies:** Developed gully channels are a normal component of desert environments. Gullies associated with reference areas will typically have stable, partially vegetated sides and bottoms with no evidence of head-cutting. Some evidence of disturbance may be apparent following significant weather events or when gullies convey runoff from higher elevation rocky or naturally eroding areas.
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6. **Extent of wind scoured, blowouts and/or depositional areas:** Very minor evidence of wind generated soil movement is present in reference communities. Wind caused blowouts are not present. Slight depositional mounding in perennial grass bunches, under Winterfat canopies and within biological soil crusts is a normal characteristic of this site.
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7. **Amount of litter movement (describe size and distance expected to travel):** Most litter resides in place within or under plant canopies. Some movement of the finest material (< 1/8" or less) may move (1' – 2') in the direction of prevailing winds or down slope if being transported by water. Little accumulation is observed behind obstructions.
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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):** This site should have a soil stability rating of 4 under plant canopies and 3 in interspaces. Surface textures are typically silt loams or fine loams containing very few coarse fragments.
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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Soil surface is 4 inches deep and structure varies from weak thin to moderate thick platy. The A-horizon color varies from 10YR 8/2 to 10YR 6/3. Soils have an Ochric epipedon that extends 4 inches into the soil profile. The A horizon is normally deeper and better developed under plant canopies.
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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** The presence of healthy perennial bunchgrasses and Winterfat in the reference community provides for the best infiltration and least runoff from storm events and snow melt. As perennial vegetation decreases and bare ground increases, runoff increases and soil loss is accelerated.
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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. Soils are deep to very deep. Increases in clay or silt content in subsoil layers could be mistaken for compaction.
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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: Dominant: Mixed shrubs (e.g. Winterfat and Shadscale) 60 – 80%, > > cool season grasses (e.g. Indian ricegrass and Bottlebrush squirreltail) 10 – 15%.
- Sub-dominant: Sub-dominant: Mixed shrubs (e.g. Bud sage and Low rabbitbrush) 3 - 5% > Cool season grasses (e.g. Sandberg bluegrass and Western wheatgrass) 1 - 3%.
- Other: Others: Shrubs (e.g. Shortspine horsebrush) 1-3%, perennial forbs (e.g. Scarlet globemallow and Utah milkvetch) 1-3%, biological crusts (e.g. lichens, mosses, cyanobacteria) 1-3%.

Additional: Moss and lichen communities will normally be found under plant canopies while the cyanobacteria will be found throughout the site. Functional/structural groups may appropriately contain non-native species if their ecological function is the same as the native species in the reference state. Perennial and annual forbs can be expected to vary widely in their expression in the plant community based upon departures from average growing conditions.

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** During years with average to above-average precipitation, there should be very little recent mortality or decadence apparent in either the shrubs or grasses. During severe (multi-year) drought or insect infestations up to 80% of the shadscale may die. There may be partial mortality of individual bunchgrasses and other shrubs during severe drought.
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14. **Average percent litter cover (%) and depth (in):** Litter cover ranges from 10 to 20% with a small spike when Bud Sage drops its leaves. Depth varies from 1/2 - 1/4 inch with depth increasing near plant canopies.
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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** 450 – 500 pounds on an average 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:** Russian thistle, annual bromes and Halogeton are likely to invade this site.
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17. **Perennial plant reproductive capability:** All perennial plant species have the ability to reproduce in most years except drought years.
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