

Ecological site R065XY013NE Choppy Sands 14-17" PZ

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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

- Number and extent of rills:** None. Rills are not expected on this site.
- Presence of water flow patterns:** Typically, none. Water flow patterns may occur during extreme precipitation events and will be less than 12 inches (30 cm) long, less than 6 inches (15 cm) wide, discontinuous, and usually found between catsteps.
- Number and height of erosional pedestals or terracettes:** Bunch grasses may be slightly pedestalled (0.5 inch / 1.25 cm) with no exposed roots; pedestalled plants are expected but not common. Pedestalled plants will typically occur on north and west aspects of slopes where bunchgrasses are more common. Drought or wildfire can contribute to increased incidences of pedestalled plants.
- Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare ground is typically 25 percent or less. Bare patches should be disconnected and less than 12 inches (30 cm) across. Multi-year drought and/or wildfire can increase bare ground to 35 percent for up to two years following the disturbance.

Bare ground is exposed mineral soil that is not covered by vegetation (basal and/or foliar canopy), standing dead vegetation, gravel/rock, and visible biological crust (e.g., lichen, mosses, algae).

5. **Number of gullies and erosion associated with gullies:** None. Gullies are not expected on this site.

6. **Extent of wind scoured, blowouts and/or depositional areas:** Occasional small blowouts may occur immediately adjacent to areas receiving repeated disturbance, such as increased animal activity (e.g. rodent burrow, animal trailing). Wind-scoured areas are typically less than 10 feet (3 meters) wide and comprise less than 5 percent of the site.

7. **Amount of litter movement (describe size and distance expected to travel):** Litter should fall in place. Fine litter movement should be less than 12 inches (30 cm). Coarse litter is not expected to move.

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** This site has low organic matter in the surface horizon and the structure is single grain sand. Soil stability will be difficult to measure on these soils. Soil stability ratings of less than 2 are expected. Surface erosion by water rarely occurs due to rapid infiltration, but surface is susceptible to wind erosion when vegetative cover is reduced due to multi-year drought, wildfire, or multi-year heavy grazing. Biological crusts may be present and may serve to provide resistance to erosion.

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** The A-horizon should be 2 to 3 inches (5 to 8 cm) thick. Soils have little organic matter in the A- horizon and soil color is grayish brown (values of 4 to 6) when dry and dark grayish brown colors (values of 3 to 5) when moist. Structure ranges from fine granular to single grained in the A-horizon.

Valent and /Valentine are the soils correlated to this ecological site.

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** The functional/structural groups provide a combination of rooting depths and structure which positively influences infiltration. Combination of shallow and deep rooted species (rhizomatous, warm-season tall- and midgrasses and tufted perennial cool season grasses) with fine and coarse roots positively influences infiltration. Due to the high infiltration rate of these soils, there is no measurable difference in infiltration rate among plant communities in the Reference State.

The expected composition of the plant community is 80 to 90 percent perennial grasses and grass-like, 5 to 10 percent forbs, and 1 to 10 percent shrubs. The perennial grass and grass-like component is made up of warm-season tallgrasses (35-50%); cool-season grasses (10-20%); warm-season shortgrasses (5-15%); warm-season midgrasses (5-10%); and grass-like (1-5%).

11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):** None. Compaction layers should not be present.

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: Phase 1.1

1. Native, perennial, warm-season, tallgrass, 490-700 #/ac, 35-50%, 2 species minimum: sand bluestem, prairie sandreed, switchgrass.

Phase 1.2

1. Native, perennial, warm-season, tallgrass, 330-550 #/ac, 30-50%, 2 species minimum: sand bluestem, prairie sandreed, switchgrass.

Phase 1.3

1. Native, perennial, warm-season shortgrass, 120-240#/ac, 20-40%, 2 species minimum: blue grama, hairy grama, sandhill muhly.

2. Native, perennial, warm-season, tallgrass, 120-210 #/ac, 20-35%, 2 species minimum: sand bluestem, prairie sandreed, switchgrass.

3. Shrubs, 120-210 #/ac, 20-35%, 1 species minimum: soapweed yucca, sand sagebrush, rose, brittle pricklypear, western sandcherry.

Sub-dominant: Phase 1.1

1. Native, perennial, cool-season grass, 140-280 #/ac, 10-20%, 1 species minimum: needle and thread, prairie Junegrass, Indian ricegrass.

2. Native, perennial, warm-season shortgrass, 70-210#/ac, 5-15%, 1 species minimum: blue grama, hairy grama, sandhill muhly.

Phase 1.2

1. Native, perennial, warm-season shortgrass, 110-165#/ac, 10-15%, 1 species minimum: blue grama, hairy grama, sandhill muhly.

2. Native, perennial, cool-season grass, 55-165 #/ac, 5-15%, 1 species minimum: needle and thread, prairie Junegrass, Indian ricegrass.

Phase 1.3

1. Native, perennial, warm-season midgrass, 60-180#/ac, 10-30%, 2 species minimum: blowout grass, sand lovegrass, sand dropseed.

2. Native Forbs, 30-90 #/ac, 5-15%, 1 species minimum: common sunflower, fourpoint evening primrose, Cuman ragweed, and other forbs that vary from location to location.

Other: Minor - Phase 1.1

1. Native, perennial, warm-season midgrass, 70-140#/ac, 5-10%: blowout grass, sand lovegrass, sand dropseed.

2. Native, perennial and annual forbs, 70-140 #/ac, 5-10%: forbs present vary from location to location.

3. Shrubs, 14-140 #/ac, 1-10%: soapweed yucca, sand sagebrush, rose, brittle pricklypear, western sandcherry.

4. Grass-likes, 14-70 #/ac, 1-5%: sedges.

Minor - Phase 1.2

1. Native, perennial, warm-season midgrass, 55-110#/ac, 5-10%: blowout grass, sand lovegrass, sand dropseed.

2. Native, perennial and annual forbs, 55-110 #/ac, 5-10%: forbs present vary from location to location.

3. Shrubs, 11-110 #/ac, 1-10%: soapweed yucca, sand sagebrush, rose, brittle pricklypear, western sandcherry.

4. Grass-likes, 0-55 #/ac, 0-5%: sedges.

Minor - Phase 1.3

1. Native, perennial, cool-season grass, 30- 60 #/ac, 5-10%: needle and thread, prairie Junegrass, Indian ricegrass.

2. Grass-likes, 12-30 #/ac, 2-5%: sedges.

Additional: The Reference Community (1.1) includes seven functional/structural groups which are in order of relative abundance native, perennial, warm-season tallgrass; native perennial, cool-season grass; native perennial, warm-season shortgrass; native, perennial, warm-season midgrass=native forbs; grass-likes; shrubs.

The Degraded Native Grass Community (1.2) includes seven functional/structural groups which are in order of relative abundance native, perennial, warm-season tallgrass; native perennial, warm-season shortgrass; native perennial, cool-season grass; native, perennial, warm-season midgrass=native forbs; shrubs; grass-like.

The At-Risk Community (1.3) includes seven functional/structural groups which are in order of relative abundance native, perennial, warm-season shortgrass; native perennial, warm-season tallgrass; shrubs; native, perennial, warm-season midgrass; native forbs; native perennial, cool-season grass; grass-like.

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Very little evidence of decadence or mortality. Bunch grasses have strong, healthy centers and shrubs have few dead stems. The exception is the potential of up to 25 percent mortality of warm-season bunch grasses during multi-year drought cycles.
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14. **Average percent litter cover (%) and depth (in):** Plant litter cover is evenly distributed throughout the site and is expected to be 40 to 50 percent and at a depth of 0.25 to 0.50 inch (0.65-1.3 cm). Litter cover during and following drought can range from 30 to 40 percent.
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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** The representative value (RV) for annual production is 1,400 pounds per acre on an air dry weight basis. Low and high production years should yield 800 and 2,000 pounds per acre respectively.
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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:** No non-native invasive species are present. Annual bromes (cheatgrass and Japanese/field) are known invasives that have the potential to be dominant or co-dominant on the site. Eastern redcedar is a potential native invasive species. Consult the state noxious weed and state watch lists for potential invasive species on each ecological site.

NOTE: Invasive plants (for the purposes of the IIRH protocol) are plant species that are typically not found on the ecological site or should only be in trace or minor categories under the natural disturbance regime and have the potential to become a dominant or codominant species on the site if their establishment and growth are not actively controlled by natural disturbances or management interventions. Species listed characterize degraded states AND have the potential to become a dominant or co-dominant species

17. **Perennial plant reproductive capability:** All perennial species exhibit high vigor relative to recent weather conditions. Perennial grasses should have vigorous rhizomes or tillers; vegetative and reproductive structures are not stunted. All perennial species should be capable of reproducing annually.
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