USDA Natural Resources
Conservation Service

Ecological site R015XF005CA
Steep Loamy Foothills

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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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Date	09/25/2013
Approved by	
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** Rills were noted on steep slopes following heavy precipitation events. Approximate number and distance 2-4 per 100 feet.

2. **Presence of water flow patterns:** Water flow patterns are generally short flows of 200-500 feet.

3. **Number and height of erosional pedestals or terracettes:** Some minor pedestals or terracettes might be found on this site, though uncommon.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare ground ranges from 10 to 27 percent.

5. **Number of gullies and erosion associated with gullies:** No gullies were noted.

6. **Extent of wind scoured, blowouts and/or depositional areas:** No wind scour or blowouts were noted.

7. **Amount of litter movement (describe size and distance expected to travel):** Very little if any litter movement was

noted. Foothill pine tree litter would be 6 to 8 inches in length by 1/10th of an inch; oak tree litter would be 3 to 4 inches in length by 2 inches wide; annual grass litter would be 4 to 6 inches in length by 1/10 inch wide; forb litter would be 1 to 2 inches in length by 1/4 to 1/2 inch wide.

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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):** Soils generally have a surface layer that is heavy clay loam or light clay. Permeability is slow, runoff rapid and erosion hazard is severe.

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** 0 to 5 inches; brown (7.5YR 5/4) clay loam, dark brown (7.5YR 3/4) moist; moderate coarse granular structure; hard, friable, sticky, plastic; many fine roots; about 12 percent coarse fragments; neutral (pH 6.9); abrupt wavy boundary. (4 to 10 inches thick). 0.5 to 3.0 percent SOM

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Annual Grasses 60%
    Trees 25%
    Annual Forbs 10%
    Shrubs 5%

    High grass cover on footslopes should prevent soil loss from rainfall impact. Backslopes would have less grass cover and more tree cover. The presence of trees and shrubs aids water infiltration and grass cover slows runoff. Trees and low to moderate shrub cover intercept rainfall slowing infiltration. Soil cover of grasses and forbs decreases runoff.

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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 noted.

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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: Annual Grasses>

    Sub-dominant: Trees>>

    Other:
    Shrubs = Forbs

    Additional:

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Plant mortality highest in annual grasses and forbs after May through June drought conditions. Foothill pine may show up to 20 percent mortality and oak 1-2 percent mortality

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14. **Average percent litter cover (%) and depth (in):**

15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** Annual production varies. Double sampling production values were collected in a 50-80 percent of normal precipitation year. Unfavorable, normal and favorable production ranges from 400 to 1300 pounds per acre respectively.

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:** Invasives such as medusahead and yellow star-thistle do not have the potential to become dominant on this site.

17. **Perennial plant reproductive capability:** Minor amounts of native perennial grasses exist on the site including Chinook brome amd California Melic. Typically the native perennial grasses face strong competition from non-native grasses and forbs. Wet years with fall and winter rains tend to favor non-native grasses on well drained deep soils (Stromberg et al., 2007).