

Ecological site R012XY013ID Playa <8 PZ KRLA2/ACHY

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General information

Provisional. A provisional ecological site description has undergone quality control and quality assurance review. It contains a working state and transition model and enough information to identify the ecological site.

MLRA notes

Major Land Resource Area (MLRA): 012X–Lost River Valleys and Mountains

Land Resource Region: B (Northwestern Wheat and Range)
MLRA: 12 (Lost River Valleys and Mountains)

EPA EcoRegion: Level III (Middle Rockies)

LRU notes

012X-Lost River Valleys and Mountains

Precipitation or Climate Zone: <8" P.Z.
<https://soils.usda.gov/survey/geography/mlra/index.html>

Ecological site concept

Site does not receive additional water.
Soils are:
Not saline or saline-sodic.
Deep to very deep. Not skeletal within 20" of soil surface.
Not strongly or violently effervescent in the to 20" of the soil profile.
textures usually range from loam to silty clay loam in surface mineral 4".
Basalt bedrock occurs at or near 40" depth
Slope is < 30%.
Clay content is = <35% in surface mineral 4".
Site does not have an argillic horizon with > 35% clay.

Associated sites

R012XY003ID	Saline Flat <8 PZ ATGA/ACHY
R012XY011ID	Alluvial Bottom 8-13 PZ ARTRT/ELLAL-LECI4
R012XY018ID	Saline Loamy 8-11 PZ SAVE4/LECI4
R012XY019ID	Fragile Lands <8 PZ ATCO/LESAS2
R012XY030ID	Loamy 7-10 PZ ARTRW8/POSE
R012XY032ID	Loamy 8-12 PZ ARTRW8/PSSPS

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) <i>Krascheninnikovia lanata</i>
Herbaceous	(1) <i>Achnatherum hymenoides</i>

Physiographic features

This site occurs on silty, alluvial deposit areas. The slopes range from 0-3 percent while elevations range from 4700 to 5300 feet (1433 to 1615 meters).

Table 2. Representative physiographic features

Landforms	(1) Alluvial flat
Elevation	1,433–1,615 m
Slope	0–3%

Climatic features

MLRA 12 is dominated by dramatic changes in elevation which, in turn, influence local weather patterns. The intermontane valleys have elevations as low as 3800 feet, while the adjacent mountains may reach more than 12,600 feet. The average annual precipitation for the entire MLRA, based on 10 long term climate stations located throughout the MLRA, is approximately 9.38 inches. However, the dry valleys may have averages as low as 6 inches, while the upper peaks may have averages that exceed 46 inches per year.

Temperatures vary considerably over the year. The average annual temperature is 42.25 degrees F. The average low is 27.4 degrees while the average high temperature is 57 degrees.

In the summer the sun shines 78% of the time, but drops to 40% in the winter. The prevailing wind is location-dependent, and generally flows parallel to the orientation of the dominant valleys. In the summer localized afternoon upslope winds and evening downslope winds are common. The average windspeed is greatest in the spring and early summer.

The frost free period ranges from 102 to 107 days while the freeze free period ranges from 134 to 139 days across the MLRA.

Table 3. Representative climatic features

Frost-free period (average)	107 days
Freeze-free period (average)	139 days
Precipitation total (average)	279 mm

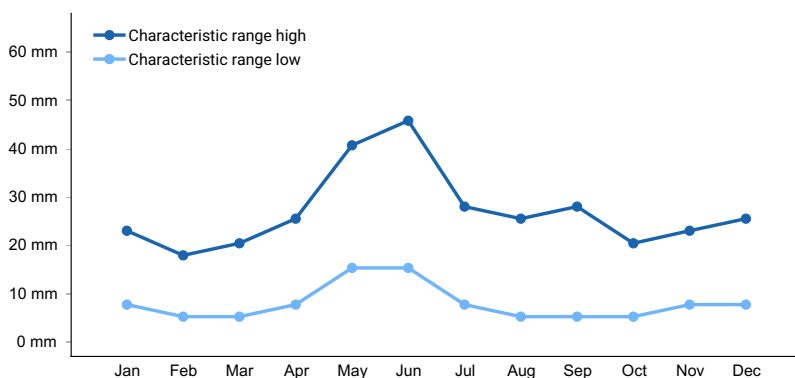


Figure 1. Monthly precipitation range

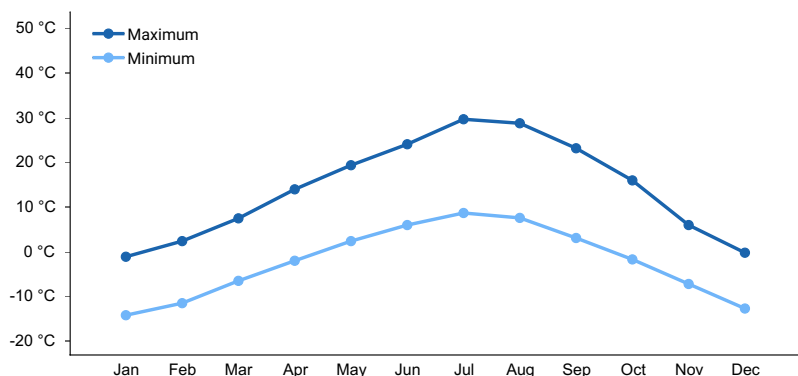


Figure 2. Monthly average minimum and maximum temperature

Influencing water features

This site is influenced by run on.

Soil features

The soils on this site are loam to gravelly loam with moderate permeability. They are deep and well drained. Basalt bedrock may occur at depths below 40 inches. Roots are concentrated at depths of 8-18 inches. The available water holding capacity (AWC) is medium.

Ecological dynamics

The dominant visual aspect of this site is winterfat, Indian ricegrass and bottlebrush squirreltail. Composition by weight is approximately 20-30% grass, 5-10% forbs and 60-70% shrubs.

During the last few thousand years, this site has evolved in an arid climate characterized by dry summers and cold winters. Herbivory has historically occurred on this site at low levels of utilization. Herbivores include pronghorn antelope, mule deer and lagomorphs.

Fire has historically occurred on the site at intervals of 50-70 years. Fire only occurs in favorable years.

The Historic Climax Plant Community (HCPC), the Reference State (State 1), moves through many phases depending on the natural and man-made forces that impact the community over time. State 1, described later, indicates some of these phases. The Reference Plant Community Phase is Phase A. This plant community is dominated by Indian ricegrass, bottlebrush squirreltail and winterfat. Subdominants include Sandberg bluegrass, phlox, fleabane, shadscale saltbush and Gardner saltbush. The plant species composition of Phase A is listed later under "Reference Plant Community Phase Plant Species Composition".

Total annual production is 600 pounds per acre (672 Kg/ha) in a normal year. Production in a favorable year is 800 pounds per acre (896 Kg/ha). Production in an unfavorable year is 400 pounds per acre (448 Kg/ha). Structurally, medium height shrubs are dominant followed by cool season grasses being more dominant than perennial forbs while shallow rooted bunchgrasses are subdominant.

FUNCTION:

This site is suited for grazing by domestic livestock in the spring, fall and winter. Natural water supplies are absent or limited and livestock water may have to be piped, hauled or otherwise made available. Because of the flat slopes and non-stony surface, this site is easily degraded by improper grazing management.

Winterfat is an important food item for both big game species and livestock, particularly in winter when other food sources may be unavailable. The palatability of this species is above average with greater preference being shown during periods of active growth. Winterfat is superior winter browse for pronghorn antelope and lagomorphs. Mule deer also use the species moderately on winter ranges and during spring and summer. Many rodents use winterfat for food, cover and nesting, which in turn serve as prey for many species of raptors.

Antelope hunting is the major recreational use of this site and associated sites. The site is open space with flat terrain and low growing vegetation.

Impacts on the Plant Community.

Influence of fire:

This site historically had a very low fire frequency, approximately every 50-70 years. Most of the shrubs evolved in the absence of fire; therefore, they can be severely damaged or killed when burned at a high intensity. Winterfat will re-sprout after a low intensity fire. Gardner saltbush, however, will re-sprout after fire, regardless of intensity. Cheatgrass can be a troublesome invader on this site after fire, preventing perennial grass and shrub re-establishment and increasing the fire frequency.

Influence of improper grazing management:

Winterfat, shadscale saltbush and Gardner saltbush, along with Indian ricegrass, can all be impacted by improper grazing management. Relatively low levels of utilization by cattle and sheep are needed to maintain the shrub component. Proper grazing management helps maintain the integrity of the plant community.

Weather influences:

Extended periods of drought reduces the vigor of the perennial grasses and palatable shrubs. Extreme drought may cause plant mortality.

Influence of insects and disease:

Mormon crickets and grasshopper outbreaks occur occasionally. Since defoliation usually occurs only once during the growing season, little mortality occurs. Shadscale saltbush can be heavily impacted by the scale insect, *Orthezia annae*. It is also called "mealy bug". This insect is moved by ants from one plant to another and feeds on the roots of shadscale saltbush. It can cause stand mortality, especially following a series of drought years.

Influence of noxious and invasive plants:

Annual and perennial invasive species compete with desirable plants for moisture and nutrients. The result is reduced production and change in composition of the understory. Cheatgrass can be invasive on this site, especially after fire. Once it becomes established the fire frequency increases. As a result, the shrub component can be lost or severely reduced.

Influence of wildlife:

Relatively low numbers of wildlife use this site and have little impact on it. Pronghorn antelope is the dominant large herbivore using the site. They use the site yearlong but prefer it in the spring, fall and early winter. Winter and spring use by mule deer occurs occasionally.

Watershed:

Decreased infiltration and increased runoff occurs when winterfat, shadscale saltbush and Gardner saltbush are removed with frequent fires. This is particularly true the year following the fire event. The increased runoff also increases sheet, wind and rill erosion. The long-term effect is a transition to a different state.

Plant Community and Sequence:

Transition pathways between common vegetation states and phases:

State 1.

Phase A to B. Develops under improper grazing management and no fire.

Phase A to C. Develops with fire, approximately every 50-70 years. Fire only occurs in above normal precipitation (favorable) years.

Phase C to A. Develops under a good prescribed grazing management program and no fire.

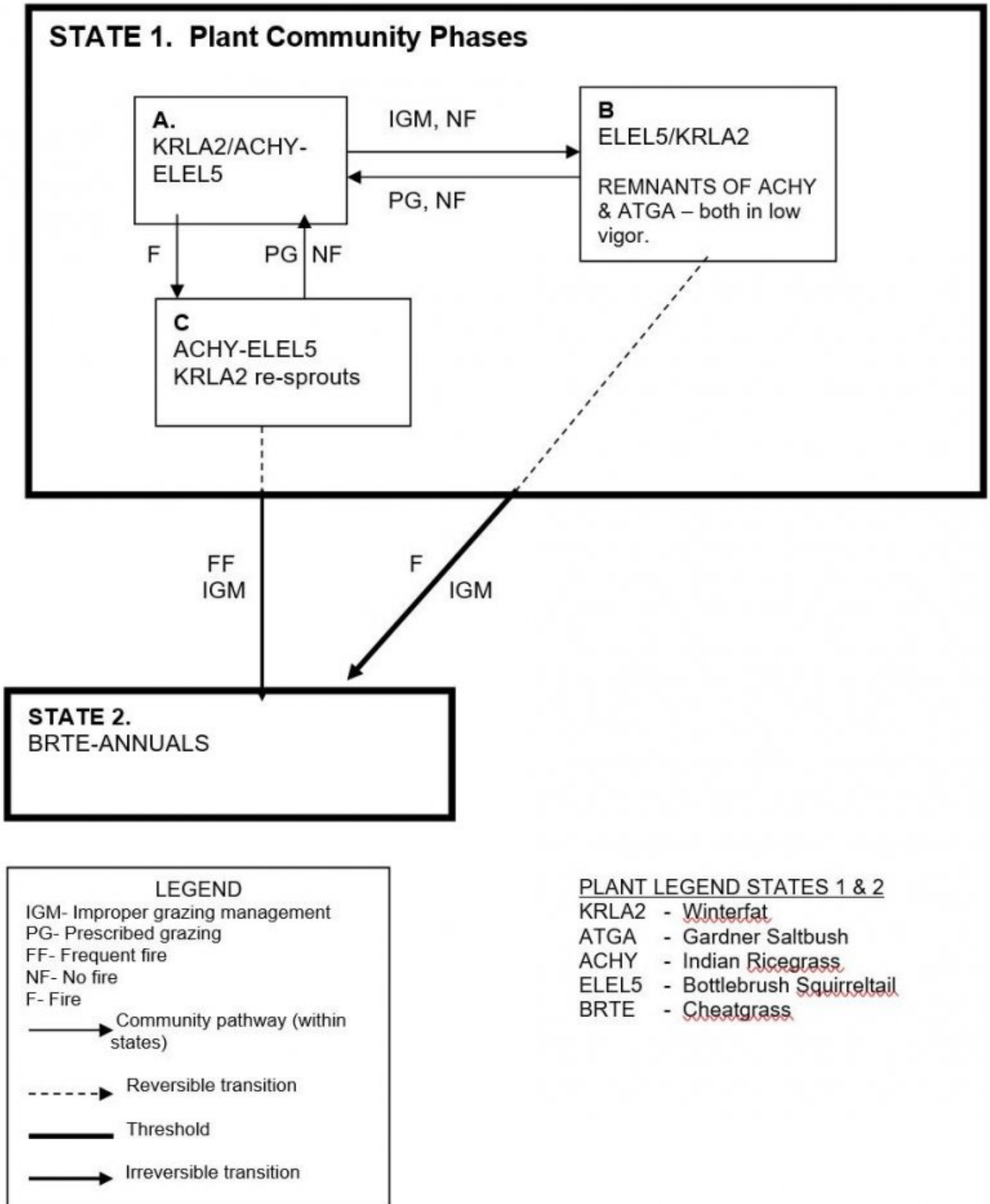
Phase B to A. Develops from prescribed grazing and no fire.

State 1 to State 2. Develops from Phase B with frequent fire and improper grazing management or from Phase C with improper grazing management and fire.

Practice Limitations:

Seeding limitations are severe due to low annual precipitation. Brush management is usually not recommended due to moderate to high forage value of the shrubs that occur on the site.

State and transition model



State 1
State 1, Phase A, Reference Plant Community Phase

Community 1.1

State 1, Phase A, Reference Plant Community Phase

This plant community has winterfat in the overstory with Indian ricegrass and bottlebrush squirreltail dominating the understory. Shadscale saltbush, Gardner saltbush and Sandberg bluegrass are often present in the community in smaller amounts. Natural fire frequency is 50-70 years.

State 2

State 1, Phase B

Community 2.1

State 1, Phase B

This plant community is dominated by bottlebrush squirreltail with small amounts of winterfat remaining. This state has developed due to improper grazing management and lack of fire. There are remnants of Indian ricegrass and Gardner saltbush. These deep-rooted bunchgrasses and shrubs are typically in low vigor.

State 3

State 1, Phase C

Community 3.1

State 1, Phase C

This plant community is dominated by Indian ricegrass and bottlebrush squirreltail. Forbs remain about in the same proportion as Phase A. Winterfat has re-sprouted. This state is a result of wildfire.

State 4

State 2

Community 4.1

State 2

This plant community is dominated by cheatgrass and other annuals. This site has crossed the threshold. It is economically impractical to return this plant community to State 1 with accelerating practices. This state has developed due to frequent fires and improper grazing management from Phase C, State 1 and improper grazing management and fire from Phase B, State 1.

Additional community tables

Animal community

Wildlife Interpretations.

Animal Community – Wildlife Interpretations

This rangeland ecological site provides a sparse plant community for select native wildlife species. The plant community exhibits a low diversity of grasses, forbs, and shrubs. Mule deer and pronghorn are the large herbivores using the site during spring, summer, and winter months. The site provides seasonal habitat for resident and migratory animals including shrews, ground squirrels, mice, jackrabbits, coyote, red fox, badger, sage-grouse, Ferruginous hawk, prairie falcon, horned lark, and western meadowlark. Area sensitive species may include Great Basin ground squirrel, Idaho pocket gopher, and sage-grouse. Encroachment of noxious and invasive plant species (cheatgrass, Russian thistle, and kochia) in isolated areas can replace native plant species which provide critical feed, brood-rearing, and nesting cover for a variety of native wildlife. Water features are sparse provided by seasonal streams and artificial water catchments.

State 1 Phase 1.1 –Winterfat/ Indian Ricegrass/ Bottlebrush Squirreltail Reference Plant Community (RPC) This plant community provides grasses, forbs, and shrubs used throughout the growing season by native insect communities that assist in pollination. The reptile community is represented by leopard lizard and sagebrush lizard.

Sage-grouse may utilize the site on a limited basis for brood-rearing habitat when adjacent to sagebrush cover. The plant community provides forage throughout the year for large mammals including mule deer, elk, bighorn sheep, and pronghorn. Winterfat, Gardner saltbush, and shadscale saltbush provide fair to good feed for deer. Pronghorn utilize the site throughout the year. Winterfat is utilized extensively by rodents, jackrabbits, birds, mule deer, and pronghorn. Rodent populations can be high and provide an excellent prey base for raptors.

State 1 Phase 1.2 – Bottlebrush Squirreltail/ Winterfat Plant Community: This plant community is the result of improper grazing and lack of fire. The plant community is similar to State 1 Phase 1.1, but with low vigor and reduced canopy cover of winterfat and Gardner saltbush. The plant community, dominated by herbaceous vegetation would provide less vertical structure for animals. Insect diversity would be reduced but native forbs are still present and would support select pollinators. Habitat quality for reptiles would be fair for short horned lizard and sagebrush lizard due to the reduction of winterfat, Gardner saltbush, and other native shrubs. The dominant herbaceous vegetation improves habitat for grassland avian species (horned lark and western meadowlark). The reduction of saltbush and winterfat would reduce the quality of the habitat for mule deer and pronghorn. The site would provide poor winter habitat for large mammals. Quality of cover and forage habitat for small mammals would be reduced. The populations of small mammals would be dominated by open grassland species.

State 1 Phase 1.3- Indian Ricegrass/ Bottlebrush Squirreltail/ Winterfat Plant Community: This plant community is the result of fire. The plant community, dominated by herbaceous vegetation would provide less vertical structure for animals. Winterfat and Gardner saltbush would re-sprout adding vertical structure over time. The forbs present would be similar to State 1 Phase 1.1. Diversity of insects and reptiles would be reduced due to the loss of shrubs. The herbaceous vegetation improves habitat for grassland avian species (horned lark and western meadowlark). The decline of Gardner saltbush, winterfat, and shadscale saltbush would lower the quality of habitat for mule deer and pronghorn. Winter habitat for large mammals would be reduced or eliminated. Indian ricegrass provides excellent early spring feed for mule deer and pronghorn. Small mammal diversity and populations may be reduced with the loss of cover and food.

State 2 – Cheatgrass / Annuals Plant Community:

This state has developed due to frequent fires and improper grazing management. The reduced forb and shrub components in the plant community would support a very limited population of pollinators. Most reptilian species are not supported with food, water, or cover. This plant community does not provide the habitat requirements for sage-grouse. Diversity of grassland avian species is reduced due to poor cover and available food. Birds of prey including hawks and falcons may range throughout these areas looking for prey species. Large mammals may utilize the herbaceous vegetation in the early part of the year when the invasive annuals (cheatgrass) are more palatable. At other times of the year large mammals would not regularly utilize these areas due to poor food and cover conditions. The populations of small mammals would be dominated by open grassland species.

Grazing Interpretations.

This site is suited for grazing by domestic livestock in the spring, fall and winter. Natural water supplies are typically very limited or non-existent and livestock water may have to be piped, hauled or otherwise made available.

Estimated initial stocking rate will be determined with the landowner or decision-maker. They will be based on the inventory which includes species, composition, similarity index, production, past use history, season of use and seasonal preference. Calculations used to determine estimated initial stocking rate will be based on forage preference ratings.

Recreational uses

Antelope hunting is the major recreational use of this site and associated sites. The site is open space with flat terrain and low growing vegetation.

Wood products

None.

Other products

None.

Inventory data references

Information presented here has been derived from NRCS clipping and other inventory data. Also, field knowledge of range-trained personnel was used.

Those involved in developing this site description include:

Dave Franzen, co-owner, Intermountain Rangeland Consultants, LLC

Jacy Gibbs, co-owner, Intermountain Rangeland Consultants, LLC

Jim Cornwell, Range Management Specialist, IASCD

Brendan Brazee, State Rangeland Management Specialist, NRCS, Idaho

Lee Brooks, Range Management Specialist, IASCD

Other references

Hironaka, M., M.A. Fosberg, A. H. Winward. 1983. Sagebrush-Grass Habitat Types of Southern Idaho. University of Idaho. Moscow, Idaho. Bulletin Number 35.

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USDI Bureau of Land Management, US Geological Survey; USDA Natural Resources Conservation Service, Agricultural Research Service; Interpreting Indicators of Rangeland Health. Technical Reference 1734-6; Version 4-2005.

Approval

Kendra Moseley, 9/21/2020

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.

Author(s)/participant(s)	
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Date	02/01/2008
Approved by	Kendra Moseley
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** Rills rarely occur on this site due to the relatively flat slopes.

2. **Presence of water flow patterns:** Water-flow patterns rarely occur on this site. When they do occur, they are short and disrupted by cool season grasses and shrubs. They are not extensive.

3. **Number and height of erosional pedestals or terracettes:** Erosional pedestals or terracettes rarely occur on this site.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare ground typically ranges from 70-80 percent but additional data is needed.

5. **Number of gullies and erosion associated with gullies:** Gullies do not occur on this site.

6. **Extent of wind scoured, blowouts and/or depositional areas:** Wind scoured, blowouts and/or depositional areas are usually not present.

7. **Amount of litter movement (describe size and distance expected to travel):** Fine litter in the interspaces typically moves up to three feet primarily by wind. Coarse litter generally does not move.

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Values should range from 3-5 but need to be tested.

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

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Bunchgrasses, especially deep rooted perennials, slow runoff and increase infiltration. Medium height shrubs accumulate some snow in the interspaces.

11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):** Compaction layer is not 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: Medium height shrub>>

Sub-dominant: Cool season perennial grasses> perennial forbs>shallow rooted bunchgrasses

Other:

Additional:

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Very little mortality or decadence is expected on this site. Mortality of shallow rooted grasses may occur due to extended periods of drought.
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14. **Average percent litter cover (%) and depth (in):** Additional data is needed but is expected to be low and at a shallow depth.
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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** Annual production is 600 pounds per acre (672 Kg/ha) in a year with normal precipitation and temperatures. Perennial grasses produce 20-30 percent of the total production, forbs 5-10 percent and shrubs 60-70 percent.
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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:** Invasive species includes cheatgrass, kochia, Russian thistle, annual mustards and halogeton.
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17. **Perennial plant reproductive capability:** All functional groups have the potential to reproduce in normal and favorable years.
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