

Ecological site R010XA014ID

Steep South Slope

16-22 PZ

Last updated: 4/01/2025
Accessed: 08/31/2026

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): 010X—Central Rocky and Blue Mountain Foothills

This MLRA is characterized by gently rolling to steep hills, plateaus, and low mountains at the foothills of the Blue Mountains in Oregon and the Central Rocky Mountains in Idaho. The geology of this area is highly varied and ranges from Holocene volcanics to Cretaceous sedimentary rocks. Mollisols are the dominant soil order and the soil climate is typified by mesic or frigid soil temperature regimes, and xeric or aridic soil moisture regimes. Elevation ranges from 1,300 to 6,600 feet (395 to 2,010 meters), increasing from west to east with higher elevations reaching 9250 feet on the northern fringe of the MLRA. The climate is characterized by dry summers and snow dominated winters with precipitation averaging 8 to 16 inches (205 to 405 millimeters) and increasing from west to east. Higher elevations on the northern fringe of this MLRA receive upwards of 41 inches in precipitation. These areas are the foothills and lower mountain side slopes as the MLRA transitions into MLRA 43C. These factors support plant communities with trees and shrub-grass associations with considerable acreage of sagebrush grassland. Western juniper is one of the few common tree species and since European settlement has greatly expanded its extent in Oregon. Nearly half of the MLRA is federally owned and managed by the Bureau of Land Management. Most of the area is used for livestock grazing. For further information, see "Land Resource Regions and Major Land Resource Areas of the United States, the Caribbean, and the Pacific Basin (U.S. Department of Agriculture Handbook 296, 2006)" available online at: https://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/survey/?cid=nrcs142p2_053624

Ecological site concept

- Site occurs on uplands
- Slopes greater than 45% on southerly aspects
- Deep soils
- Occurs in 16-22 inch PZ

Associated sites

R010XA004ID	Loamy 12-16 PZ ARTRV/FEID-PSSPS Adjacent low slope areas
R010XA008ID	North Slope Loamy 16-22 PZ Adjacent north slopes
R010XA021ID	South Slope Fractured 12-16 PZ Adjacent shallow soils on south aspects

Similar sites

R010XA021ID	South Slope Fractured 12-16 PZ Soils less than 20
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R010XA004ID	Loamy 12-16 PZ ARTRV/FEID-PSSPS Slopes less than 30%, occurring in the 12-16 inch precip zone
R010XA015ID	South Slope Loamy 16-22 PZ Slopes less than 45%

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) <i>Artemisia tridentata</i> var. <i>vaseyana</i>
Herbaceous	(1) <i>Pseudoroegneria spicata</i>

Physiographic features

This site occurs on south and west facing very steep slopes over 45 percent. The elevations range from 5000 to 6300 feet (1520 to 1920 meters).

Table 2. Representative physiographic features

Landforms	(1) Mountains > Mountain
Flooding frequency	None
Ponding frequency	None
Elevation	1,520 – 1,920 m
Slope	50 – 90 %
Water table depth	150 cm
Aspect	W, S, SW

Climatic features

The Big and Little Wood River Foot slopes and Plains, proposed as MLRA 10X, has a mean elevation of 5310 feet above sea level, and varies from 3600 to 9235 feet. In general, average annual precipitation is greatest on the western side, with the southeast area being the driest. However, the northern fringe receives upwards of 41 inches of precipitation. Monthly precipitation is generally greatest at the end of the year, diminishes steadily until a low in July and August, then increases rapidly in the autumn.

Monthly temperatures can vary considerably. Highs of up to 102° and lows down to -52° Fahrenheit have been recorded. The average annual temperature is 42.9°. The frost-free period ranges from 60 to 85 days. The freeze-free period is a bit longer: 80 to 105 days.

Both morning and afternoon average relative humidity values peak in the winter, and reach their low in July and August. The average

number of sunny, cloud-free days is above average for the summer months, but below average for the period from November through February.

Table 3 Representative climatic features

Frost-free period (characteristic range)	60-90 days
Freeze-free period (characteristic range)	80-110 days
Precipitation total (characteristic range)	410-560 mm
Frost-free period (average)	70 days
Freeze-free period (average)	100 days
Precipitation total (average)	460 mm

Influencing water features

This site is not influenced by adjacent streams or run on.

Wetland description

This site is not influenced by adjacent wetlands.

Soil features

The soils on this site are coarse textured loams derived. The steep slopes and coarse texture causes the soils to be somewhat unstable. The available water holding capacity (AWC) is moderate. The soils of this site are generally deep, and formed in colluvium from monzonite and rhyolite. They are well drained, and have moderate permeability. The available water holding capacity (AWC) is low. Runoff is high. Water erosion hazard is severe and very severe when the vegetation cover is depleted. The surface texture is are coarse textured loams. These soils are characterized by a xeric moisture regime. Soil temperature regime is cryic.

Table 4. Representative soil features

Parent material	(1) Colluvium – monzonite
Surface texture	(1) Loam
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Moderate
Soil depth	100 – 150 cm

Surface fragment cover <=3"	0 – 10 %
Surface fragment cover >3"	0 – 30 %
Available water capacity (0-101.6cm)	11.18 cm
Soil reaction (1:1 water) (0-101.6cm)	6.6 – 7.8
Subsurface fragment volume <=3" (10.2-152.4cm)	0 – 20 %
Subsurface fragment volume >3" (10.2-152.4cm)	0 – 20 %

Ecological dynamics

The dominant visual aspect of this site is mountain big sagebrush with bluebunch wheatgrass in the understory. Composition by weight is approximately 35 percent grass, 15 percent forbs, and 50 percent shrubs.

During the last few thousand years, this site has evolved in a semi-arid climate characterized by dry summers and cold, wet winters. Herbivory has historically occurred on this site at low levels of utilization. Herbivores include mule deer, Rocky Mountain elk, and lagomorphs.

Fire has historically occurred on the site at intervals of 20 to 50 years.

The the Reference State (State 1), historically referred to as the Historic Climax Plant Community (HCPC), 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.

FUNCTION:

The steep slopes severely restrict livestock movement and use. Big game animals use the site in the spring, summer, and fall. The site can be winter range for big game in moderate winters. Other wildlife may include upland birds and predators. The site offers opportunities for hunting and other recreational activities.

Due to the rainfall, elevation and steep topography on this site, it is susceptible to degradation from erosion. Accelerated erosion can be caused by improper grazing management. Infiltration is good where the community is in mid to late seral status. The site has moderate to high runoff potential. Runoff, when it does occur can be erosive on steeper slopes particularly during high intensity convection storms. Snow accumulates on the site due to high elevation and presence of tall shrubs.

Impacts on the Plant Community.

Influence of fire:

In the absence of normal fire frequency, Mountain big sagebrush and other shrubs can gradually increase on the site. Grasses and forbs decrease as shrubs increase. With the continued absence of fire, mountain big sagebrush can displace most of the primary understory species.

When fires become more frequent than historic levels (20 to 50 years), mountain big sagebrush and antelope bitterbrush are reduced

significantly. Rabbitbrush and other resprouting shrubs can increase slightly. With continued short fire frequency, mountain big sagebrush, and antelope bitterbrush can be completely eliminated along with many of the desirable understory species such as bluebunch wheatgrass. These species may be replaced by cheatgrass, bulbous bluegrass, and a variety of annual and perennial forbs including noxious and invasive plants. These fine fuels will increase the fire frequency.

Influence of improper grazing management:

Due to the steep slopes, livestock are severely limited for movement and access. If livestock are forced to use the site, season-long grazing and/or excessive utilization can be very detrimental to this site. This type of management leads to reduced vigor of the bunchgrasses. With reduced vigor, recruitment of these species declines. As these species decline, an increase in mountain big sagebrush and noxious and invasive plants will occur.

Continued improper grazing management influences fire frequency by increasing fine fuels. As cheatgrass increases and becomes co-dominant with other annuals, fires become more frequent. Severe erosion can occur on the site as it deteriorates. Forced livestock grazing of this site will normally result in adjacent sites with moderate slopes being severely impacted.

Proper grazing management that addresses frequency, duration, and intensity of grazing can also keep fine fuels from developing, thereby reducing fire frequency. This can lead to gradual increases in mountain big sagebrush. A planned grazing system can be developed to intentionally accumulate fine fuels in preparation for a prescribed burn. Due to the shrub species on this site, any brush management efforts should be carefully planned. Antelope bitterbrush is very important as a browse species for wildlife and needs to be protected with any brush control practices applied. A reduction in shrubs without a suitable understory of perennial grasses can lead to an increase in fine fuels which will lead to a more frequent fire regime. Loss of shrub species on this site can have very negative impacts on wildlife.

Weather influences:

Above normal precipitation in March, April, and May can dramatically increase total annual production of the plant community. These weather patterns can also increase viable seed production of desirable species to provide for recruitment. Likewise, below normal precipitation during these spring months can significantly reduce total annual production and be detrimental to viable seed production. Overall plant composition is normally not affected when perennials have good vigor.

Below normal temperatures in the spring can have an adverse impact on total production regardless of the precipitation. An early, hard freeze can occasionally kill some plants.

Prolonged drought adversely affects this plant community in several ways. Vigor, recruitment, and production are usually reduced. Mortality can occur. Prolonged drought can lead to a reduction in fire frequency.

Influence of Insects and disease:

Outbreaks can affect vegetation health. Bitterbrush can be severely affected by the western tent caterpillar (*Malacosoma fragilis*). Two consecutive years of defoliation by the tent caterpillar can cause mortality in bitterbrush. Mormon cricket and grasshopper outbreaks occur periodically. Outbreaks seldom cause plant mortality since defoliation of the plant occurs only once during the year of the outbreak.

Influence of noxious and invasive plants:

Many of these species add to the fine-fuel component and lead to increased fire frequency.

Many of the 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.

Influence of wildlife:

Big game animals use this site in the spring, summer, and fall and in moderate winters. Their numbers are seldom high enough to adversely affect the plant community. Herbivory can be detrimental to bitterbrush when livestock grazing and browsing by big game occurs at the same time and season. This will occur when both kinds of animal are using the plant in the late summer or fall. The adverse impact is excessive use of the current year's leader growth. The deer mouse is beneficial to this site as it is the principal vector for planting bitterbrush seed.

Watershed:

Decreased infiltration and increased runoff occur with an increase in mountain big sagebrush. Severe erosion can occur. Desired understory species can be reduced. This composition change can affect nutrient and water cycles. Increased runoff also causes sheet and rill erosion. Abnormally short fire frequency also gives the same results, but to a lesser degree. The long term effect is a transition to a different state.

Practice Limitations:

Mechanical seeding and brush control are not feasible due to the steep slopes of this site. Implementation of facilitating practices and vegetative management has moderate to severe limitations due to steep slopes.

State and transition model

Additional community tables

Table 5. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
Grass/Grasslike					
1				392-549	
	bluebunch wheatgrass	PSSP6	<i>Pseudoroegneria spicata</i>	336-476	–
	basin wildrye	LECI4	<i>Leymus cinereus</i>	34-56	–
	slender wheatgrass	ELTR7	<i>Elymus trachycaulus</i>	1-22	–
	mountain brome	BRMA4	<i>Bromus marginatus</i>	1-22	–
	prairie Junegrass	KOMA	<i>Koeleria macrantha</i>	1-22	–
	sedge	CAREX	<i>Carex</i>	1-17	–
	Idaho fescue	FEID	<i>Festuca idahoensis</i>	1-17	–
	oniongrass	MEBU	<i>Melica bulbosa</i>	1-17	–
Forb					
2				168-235	
	arrowleaf balsamroot	BASA3	<i>Balsamorhiza sagittata</i>	45-67	–
	lupine	LUPIN	<i>Lupinus</i>	45-67	–
	beardtongue	PENST	<i>Penstemon</i>	1-34	–
	phlox	PHLOX	<i>Phlox</i>	17-34	–
	tapertip hawksbeard	CRAC2	<i>Crepis acuminata</i>	17-34	–
	parsnipflower buckwheat	ERHE2	<i>Eriogonum heracleoides</i>	1-22	–
	cinquefoil	POTEN	<i>Potentilla</i>	1-22	–
	white hawkweed	HIAL2	<i>Hieracium albiflorum</i>	1-22	–
	pale agoseris	AGGL	<i>Agoseris glauca</i>	1-17	–
	fleabane	ERIGE2	<i>Erigeron</i>	1-17	–
	buckwheat	ERIOG	<i>Eriogonum</i>	1-17	–
Shrub/Vine					
3	Shrubs			560-785	
	mountain big sagebrush	ARTRV	<i>Artemisia tridentata ssp. vaseyana</i>	336-476	–
	mountain snowberry	SYOR2	<i>Symphoricarpos oreophilus</i>	67-112	–
	antelope bitterbrush	PUTR2	<i>Purshia tridentata</i>	1-22	–
	yellow rabbitbrush	CHVI8	<i>Chrysothamnus viscidiflorus</i>	1-22	–
	Saskatoon serviceberry	AMAL2	<i>Amelanchier alnifolia</i>	0-22	–
	chokecherry	PRVI	<i>Prunus virginiana</i>	0-17	–
	snowbrush ceanothus	CEVE	<i>Ceanothus velutinus</i>	0-17	–
	Woods' rose	ROWO	<i>Rosa woodsii</i>	1-17	–

Table 6. Community 1.2 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 7. Community 1.3 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 8. Community 2.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Animal community

Wildlife Interpretations. Animal Community – Wildlife Interpretations This rangeland ecological site provides diverse habitat for many native wildlife species. The plant community exhibits a diverse mixture of forbs throughout the growing season offering excellent habitat for invertebrates. Wildlife use these areas on a seasonal basis due to the high elevation, short growing season, steepness of slope and temperature regimes. Mule deer and elk are the large herbivores using the site. The site provides seasonal habitat for resident and migratory animals including western toad, sagebrush lizard, shrews, bats, ground squirrels, mice, coyote, red fox, badger, Ferruginous hawk, prairie falcon, horned lark and western meadowlark. Sagebrush obligate avian species including sage-grouse, Brewer's sparrow and sage thrasher utilize these sites on a limited basis due to the high elevation, steepness of slope and associated cold temperatures throughout much of the year. A change in the quality of the historic plant community over time can reduce the numbers and diversity of native wildlife species in the area. Encroachment of noxious and invasive plant species (cheatgrass and medusahead) in isolated areas can replace native plant species which provide, foraging areas, brood-rearing and nesting cover for a variety of native wildlife. The loss of herbaceous understory vegetation has a negative impact on ground nesting birds, while the loss of shrub cover negatively affects both ground and shrub nesting avians. Water features are sparse provided by seasonal streams, artificial water catchments and springs. State 1 Phase 1.1 – Mountain Big Sagebrush/ Bluebunch Wheatgrass/ Mountain Snowberry/ Nevada Bluegrass Reference Plant Community (RPC): This plant community provides a diversity of grasses, forbs and shrubs, used by native insect communities that assist in pollination. An extensive array of forbs is represented throughout the growing season leading to a diverse insect community. Many avian and mammal species utilize this habitat based on the availability of invertebrate prey species. The reptile and amphibian community is represented by leopard lizard, short horned lizard, sagebrush lizard, western skink, western rattlesnake, western toad, boreal chorus frog and northern leopard frog. Amphibians are associated with springs and isolated water bodies adjacent to this plant community. Development of spring sites that collect all available water would exclude amphibian use on these sites. Native shrub-steppe obligate avian species utilizing the habitat include the Brewer's sparrow, sage sparrow and sage thrasher. The plant community provides seasonal forage needs for large mammals including mule deer and elk. A diverse small mammal population including golden-mantled ground squirrels, chipmunks and yellow-bellied marmots utilize this community. The deer mouse is beneficial to this site as it is the principal vector for planting bitterbrush seed. State 1 Phase 1.2- Mountain Big Sagebrush/ Mountain Brome/Slender Wheatgrass/ Mountain Snowberry/ Woods Rose Plant Community: This plant community is the result of improper grazing management and no fire. An increase in canopy cover of sagebrush contributes to a sparse herbaceous understory. Antelope bitterbrush has decreased. Reduced herbaceous understory results in reduced diversity and numbers of insects. The reptile community is represented by leopard lizard, short horned lizard, sagebrush lizard and western skink. The reduction of grasses and forbs in the plant community would reduce the available prey species and cover for these resident reptile species. Amphibian habitat would be tied to permanent spring sites in the area. Development of spring sites that collect all available water would exclude amphibian use on these sites. Fewer prey species and less understory cover results in less available food, brood-rearing and nesting habitat. Key shrub-steppe avian obligates include Brewer's sparrow, sage sparrow and sage thrasher. The reduction of understory plants, and antelope bitterbrush limits seasonal habitat for large mammals including mule deer, and elk. A small mammal population including golden-mantled ground squirrels, chipmunks and yellow-bellied marmots utilize these areas. The deer mouse is beneficial to this site as it is the principal vector for planting bitterbrush seed. State 1 Phase 1.3 – Bluebunch Wheatgrass/ Mountain Brome/ Basin Wildrye/ Slender Wheatgrass Plant Community Plant Community: This plant community is the result of fire. The plant community, dominated by herbaceous vegetation with little or no sagebrush or antelope bitterbrush would provide less vertical structure for animals. Patches of root sprouting shrubs (snowberry and rabbitbrushes) may be present to provide limited vertical structure for wildlife. Insect diversity would be reduced but a diverse native forb plant community would still support select pollinators. The reptiles including, short horned lizard and sagebrush lizard, would be limited or excluded due to the loss of sagebrush. Amphibian habitat would be tied to permanent spring sites in the area. Development of spring sites that collect all available water would exclude amphibian use on these sites. The dominance of herbaceous vegetation with little sagebrush canopy would prevent use of these areas as nesting habitat by Brewer's sparrow, sage sparrow and sage thrasher. The dominant herbaceous vegetation improves habitat for grassland avian species (horned lark and western meadowlark). Large mammal (mule deer, and elk) use would be seasonal and offer little thermal cover and young of year cover with the loss of shrub cover. The diversity and populations of small mammals would be dominated by open grassland species like the Columbian ground squirrel. State 2 – Bulbous Bluegrass/ Cheatgrass / Annuals Plant Community: This plant community is the result of continued improper grazing management and/or frequent fire. Invasive herbaceous plants and patches of root sprouting shrubs like rabbitbrushes and mountain snowberry can be present. The plant community does not support a diverse insect community. The reduced forb and shrub component 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 support the habitat requirements for sage thrasher, Brewer's sparrow or sage sparrow. 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. The diversity and populations of small mammals would be dominated by open grassland species like the Columbian ground squirrel. Grazing Interpretations. The steep slopes of this site severely restrict livestock movement and access. Forcing livestock to use this site can severely impact associated sites that have moderate slopes. If livestock are to use the site, grazing should occur in the late spring and fall. 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.

Hydrological functions

The soils on this site are in hydrologic group C. When ground cover is at or near potential, the erosion hazard is slight to moderate.

Recreational uses

The site has limited opportunities for hunting, hiking, photography and nature study. The steep slopes limit access for recreation.

Wood products

None

Other products

None

Other information

Field Offices Mountain Home, ID Gooding, ID Shoshone, ID Rupert, ID Arco, ID

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 Leah Juarros, Resource Soil Scientist, NRCS, Idaho Lee Brooks, Range Management Specialist, IASCD

Type locality

Location 1: Blaine County, ID	
Township/Range/Section	T2N R21E S5
Location 2: Blaine County, ID	
Township/Range/Section	T3N R21E S16

References

. 2004. **Restoring Western Ranges and Wildlands**. General Technical Report RMRS-GTR-136 Vols 1-3. USDA Forest Service, Rocky Mountain Research Station.

Other references

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USDA, Forest Service, Fire Effects Information Database. 2004. www.fs.fed.us/database/feis

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.

Contributors

Dave Franzen And Jacy Gibbs

Approval

Kirt Walstad, 4/01/2025

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	03/28/2008
Approved by	
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

- 1. Number and extent of rills:** rills can occur on this site. If rills are present they are likely to occur immediately following wildfire. Rills are most likely to occur on soils with surface textures of silt loam and clay loam.

- 2. Presence of water flow patterns:** water-flow patterns occur on this site. When they occur, they may be long, continuous and extensive. Tall shrubs and bunchgrass interrupt flows.

- 3. Number and height of erosional pedestals or terracettes:** both can occur on this site. In areas where flow patterns and/or rills are present, a few pedestals may be expected. Terracettes also occur on the site uphill from tall shrub bases and large bunchgrasses. They are not extensive.

4. Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):
On sites in mid-seral status bare ground may range from 35-50 percent.

5. Number of gullies and erosion associated with gullies: none.

6. Extent of wind scoured, blowouts and/or depositional areas: usually not present. Immediately following wildfire some soil movement may occur on lighter textured soils.

7. Amount of litter movement (describe size and distance expected to travel): fine litter in the interspaces may move up to 5 feet following a significant run-off event. Coarse litter generally does not move. Terracettes can trap fine litter.

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 4 to 6 .

9. Soil surface structure and SOM content (include type of structure and A-horizon color and thickness): structure ranges from weak fine granular to moderate fine granular. Soil organic matter (SOM) needs to be determined. The A or A1 horizon is typically 3 inches thick. Surface soil color is very dark grayish brown moist.

10. Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff: bunchgrasses, especially deep-rooted perennials and the bases of tall shrubs slow run-off and increase infiltration. Tall shrubs catch blowing 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): 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: tall shrubs

Sub-dominant: Cool season deep-rooted perennial bunchgrasses

Other: perennial forbs

Additional: shallow rooted bunchgrasses

13. Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence): mountain big sagebrush will become decadent in the absence of normal fire frequency and ungulate grazing. Grass and forb mortality

will occur as tall shrubs increase.

14. Average percent litter cover (%) and depth (in): additional litter cover data is needed but is expected to be 20-30 percent to a depth of 0.1 inches. Under mature shrubs litter is >0.5 inches deep and is 90-100 percent ground cover.
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15. Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production): is 1250 pounds per acre (1400 kilograms per hectare) in a year with normal temperatures and precipitation. Perennial grasses produce 35 percent of the total production, forbs 15 percent and shrubs 50 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: includes bulbous bluegrass, rush skeletonweed, musk and scotch thistle, and diffuse and spotted knapweed. Cheatgrass can invade the site at the lower elevations.
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17. Perennial plant reproductive capability: all functional groups have the potential to reproduce in most years.
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