

## Ecological site R025XY020ID LOAMY 7-10

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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): 025X—Owyhee High Plateau

#### MLRA Notes 25—Owyhee High Plateau

This area is in Nevada (56 percent), Idaho (30 percent), Oregon (12 percent), and Utah (2 percent). It makes up about 27,443 square miles. MLRA 25 is characteristically cooler and wetter than the neighboring MLRAs of the Great Basin. The western boundary is marked by a gradual transition to the lower and warmer basins of MLRA 24. The boundary to the south-southeast, with MLRA 28B, is marked by gradual changes in geology marked by an increased dominance of singleleaf pinyon and Utah juniper and a reduced presence of Idaho fescue. The boundary to the north, with MLRA 11, is a rapid transition from the lava plateau topography to the lower elevation Snake River Plain.

#### Physiography:

All of this area lies within the Intermontane Plateaus. The southern half is in the Great Basin section of the Basin and Range province. This part of the MLRA is characterized by isolated, uplifted fault-block mountain ranges separated by narrow, aggraded desert plains. This geologically older terrain has been dissected by numerous streams draining to the Humboldt River.

The northern half of the area lies within the Columbia Plateaus province. This part of the MLRA forms the southern boundary of the extensive Columbia Plateau basalt flows. Most of the northern half is in the Payette section, but the northeast corner is in the Snake River Plain section. Deep, narrow canyons draining into the Snake River have been incised into this broad basalt plain. Elevation ranges from 3,000 to 7,550 feet on rolling plateaus and in gently sloping basins. It is more than 9,840 feet on some steep mountains. The Humboldt River crosses the southern half of this area

#### Geology:

The dominant rock types in this MLRA are volcanic. They include andesite, basalt, tuff, and rhyolite. In the north and west parts of the area, Cretaceous granitic rocks are exposed among Miocene volcanic rocks in mountains. A Mesozoic igneous and metamorphic rock complex dominates the south and east parts of the area. Upper and Lower Paleozoic calcareous sediments, including oceanic deposits, are exposed with limited extent in the mountains. Alluvial fan and basin fill sediments occur in the valleys.

#### Climate:

The average annual precipitation in most of this area is typically 11 to 22 inches. It increases to as much as 49 inches at the higher elevations. Rainfall occurs in spring and sporadically in summer. Precipitation occurs mainly as snow in winter. The precipitation is distributed fairly evenly throughout fall, winter, and spring. The amount of precipitation is lowest from midsummer to early autumn. The average annual temperature is 33 to 51 degrees F. The freeze-free period averages 130 days and ranges from 65 to 190 days, decreasing in length with elevation. It is typically less than 70 days in the mountains.

#### Water:

The supply of water from precipitation and streamflow is small and unreliable, except along the Owyhee, Bruneau, and Humboldt Rivers. Streamflow depends largely on accumulated snow in the mountains. Surface water from mountain runoff is generally of excellent quality and suitable for all uses. The basin fill sediments in the narrow alluvial valleys between the mountain ranges provide some ground water for irrigation. The alluvial deposits along the large streams have the most ground water. Based on measurements of water quality in similar deposits in

adjacent areas, the basin fill deposits probably contain moderately hard water. The water is suitable for almost all uses. The carbonate rocks in this area are considered aquifers, but they are little used. Springs are common along the edges of the limestone outcrops.

#### Soils:

The dominant soil orders in this MLRA are Aridisols and Mollisols. The soils in the area dominantly have a mesic or frigid temperature regime and an aridic, aridic bordering on xeric, or xeric moisture regime. Soils with aquic moisture regimes are limited to drainage or spring areas, where moisture originates or runs on and through. These soils are of a very limited extent throughout the MLRA. They generally are well drained, clayey or loamy, and shallow or moderately deep. Most of the soils formed in mixed parent material. Volcanic ash and loess mantle the landscape. Surface soil textures are loam and silt loam with ashy texture modifiers in some areas. Argillic horizons occur on the more stable landforms. They are exposed nearer the soil surface on convex landforms, where ash and loess deposits are more likely to erode. Soils that formed in carbonatic parent material in areas that receive less than 12 inches of precipitation are characterized by calcic horizons throughout the profile, while soils in areas that receive more than 12 inches of precipitation do not have calcic horizons in the upper part of the profile. Soils that formed on stable landforms at the lower elevations are dominated by ochric horizons. Soils that formed at the middle and upper elevations are characterized by mollic epipedons. Soils in drainage areas at all elevations that receive moisture running on or through them are characterized by thicker mollic epipedons.

#### Biological Resources:

This MLRA supports shrub-grass vegetation. Lower elevations are characterized by Wyoming big sagebrush associated with bluebunch wheatgrass, western wheatgrass, and Thurber's needlegrass. Other important plants include bluegrass, squirreltail, penstemon, phlox, milkvetch, lupine, Indian paintbrush, aster, and rabbitbrush. Black sagebrush occurs but is less extensive. Singleleaf pinyon and Utah juniper occur in limited areas. With increasing elevation and precipitation, vast areas characterized by mountain big sagebrush or low sagebrush/early sagebrush in association with Idaho fescue, bluebunch wheatgrass, needlegrasses, and bluegrass become common. Snowberry, curl-leaf mountain mahogany, ceanothus, and juniper also occur. Mountains at the highest elevations support whitebark pine, Douglas-fir, limber pine, Engelmann spruce, subalpine fir, aspen, and curl-leaf mountain mahogany.

Major wildlife species include mule deer, bighorn sheep, pronghorn, mountain lion, coyote, bobcat, badger, river otter, mink, weasel, golden eagle, red-tailed hawk, ferruginous hawk, Swainson's hawk, northern harrier, prairie falcon, kestrel, great horned owl, short-eared owl, long-eared owl, burrowing owl, pheasant, sage grouse, chukar, gray partridge, and California quail. Reptiles and amphibians include western racer, gopher snake, western rattlesnake, side-blotched lizard, western toad, and spotted frog. Fish species include bull, red band, and rainbow trout.

## Classification relationships

*Artemisia Wyomingensis/ Poa Sandbergii* ht. Hironaka, M., M.A. Fosberg, A. H. Winward. 1983. Sagebrush-Grass Habitat Types of Southern Idaho. University of Idaho. Moscow, Idaho. Bulletin Number 35

## Ecological site concept

This site is on fan remnant landforms on slopes less than 20 percent. The site is on all aspects and elevation ranges from 3,000 to 5,500 feet (914 to 1,676 meters).

The soils supporting this site are shallow, well drained, with moderately slow permeability above a duripan. Runoff is high. The erosion hazard is moderate by water. The available water holding capacity (AWC) is very low. These soils are typically 16 inches (41 cm) deep to a duripan. The surface texture is generally stony loam. Stones and cobbles cover 5 to 25 percent of the surface.

This site is dominated by a Wyoming big sagebrush and Sandberg bluegrass plant community.

## Associated sites

R025XY040ID	<b>VERY SHALLOW STONY 8-12</b> Very Shallow Stony 8 -12 is usually found on terraces and lava plains. Dominant species are ARNO4/ACTH7.
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## Similar sites

R025XY019ID	<b>LOAMY 10-13</b> Loamy 10-13 typically lacks a cobbly surface texture. Dominant species are ARTRW8/PSSP6.
R025XY007ID	<b>ASH 10-14</b> Ash 10-14 typically lacks an argillic. Dominant species are ARTRW8/PSSP6.

**Table 1. Dominant plant species**

Tree	Not specified
Shrub	(1) <i>Artemisia tridentata</i> var. <i>wyomingensis</i>
Herbaceous	(1) <i>Poa secunda</i>

## Physiographic features

This site is on fan remnant landforms on slopes ranging from 0 to 20 percent. The site is on all aspects and elevations range from 3,000 to 5,500 feet (914 to 1,676 meters).

**Table 2. Representative physiographic features**

Landforms	(1) Fan remnant
Runoff class	Medium to high
Flooding frequency	None
Ponding frequency	None
Elevation	914–1,676 m
Slope	0–20%
Water table depth	152 cm
Aspect	W, NW, N, NE, E, SE, S, SW

## Climatic features

In MLRA 25 summers are hot, especially at lower elevations, and winters are cold and snowy. Precipitation is usually lighter at lower elevations throughout the year. At higher elevations precipitation is much greater, and snow accumulates to a considerable depth. The average total precipitation is 14.39 inches (37cm) (based on 6 long term climate stations located throughout the MLRA).

The mean annual temperature is 45.9 degrees F. The average high is 59.7 and the average low temperature is 32.1 degrees F. The prevailing wind is from the west. Average wind speed is greatest, at about 10 miles per hour, in March.

The mean annual precipitation of this site is 10 inches.

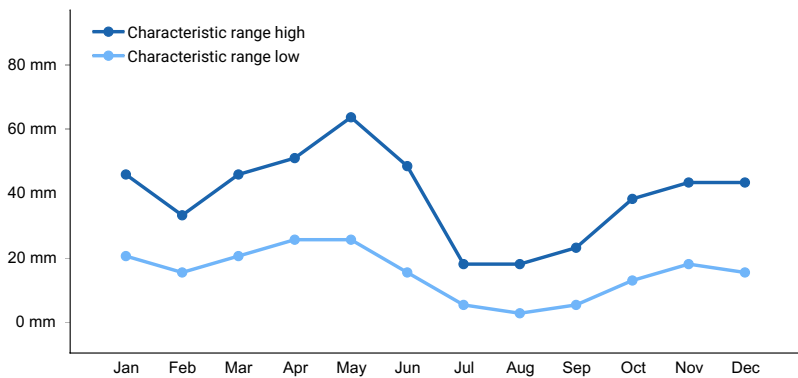
The frost-free period of this site ranges from 79 to 120 days and the freeze free period ranges from 90 to 135 days.

\* The above data is averaged from the Western Regional Climate Center and NASIS.

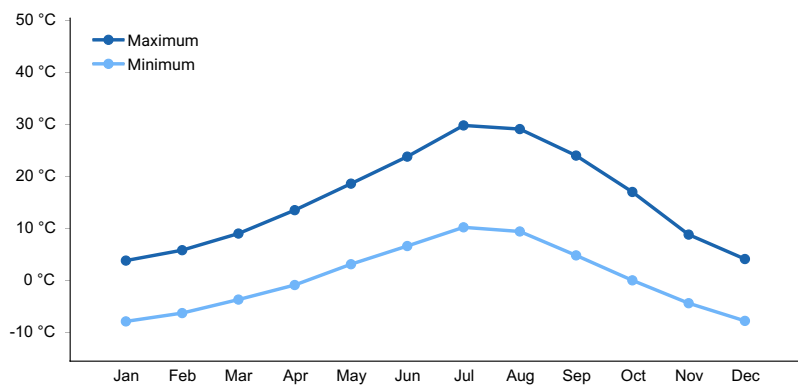
**Table 3. Representative climatic features**

Frost-free period (characteristic range)	79-120 days
Freeze-free period (characteristic range)	90-135 days
Precipitation total (characteristic range)	203-406 mm
Frost-free period (average)	103 days
Freeze-free period (average)	120 days

Precipitation total (average)	254 mm
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**Figure 1. Monthly precipitation range**



**Figure 2. Monthly average minimum and maximum temperature**

## Influencing water features

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

## Soil features

The soils supporting this site are shallow, well drained, with moderately slow permeability above a duripan. Runoff is high. The erosion hazard is moderate by water. The available water holding capacity (AWC) is very low. These soils are typically 16 inches (41cm) deep to a duripan.

The surface texture is generally stony loam. Stones and cobbles cover 5 to 25 percent of the surface. These soils contain 25 to 65 percent coarse fragments.

These soils are droughty due to the low precipitation, the clay loam subsoil, the presence of carbonates at 9 to 11 inches (23 to 28cm), and the high percentage of profile rock.

Soil series correlated to this site is: Troughs

**Table 4. Representative soil features**

Parent material	(1) Alluvium
Surface texture	(1) Cobbly loam
Family particle size	(1) Loamy-skeletal
Drainage class	Well drained
Permeability class	Moderately slow
Depth to restrictive layer	30–51 cm
Soil depth	30–51 cm

Surface fragment cover <=3"	14%
Surface fragment cover >3"	8%
Available water capacity (0-101.6cm)	4.57–5.59 cm
Calcium carbonate equivalent (0-101.6cm)	0%
Electrical conductivity (0-101.6cm)	0–2 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	0–5
Soil reaction (1:1 water) (0-101.6cm)	7.4–8.4
Subsurface fragment volume <=3" (Depth not specified)	25%
Subsurface fragment volume >3" (Depth not specified)	10–15%

## Ecological dynamics

During the last few thousand years, this site has evolved in an arid climate characterized by dry summers and cold, wet 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 60-80 years. Fire only occurs in favorable years.

Total annual production is 550 pounds per acre (616 kilograms per hectare) in a normal year. Production in a favorable year is 850 pounds per acre (952 kilograms per hectare). Production in an unfavorable year is 300 pounds per acre (336 kilograms per hectare). Structurally, tall shrubs are dominant, followed by shallow rooted bunchgrasses, followed by cool season deep-rooted perennial bunchgrasses, followed by perennial forbs.

### FUNCTION:

This site is well suited for livestock in spring and fall. It is used by big game in spring, fall and winter. If water is available, the site is easily grazed by livestock due to gentle slopes.

This site has limited value for recreation.

Due to the low rainfall and low available water holding capacity, this site is easily degraded by improper grazing management or frequent fires.

Infiltration can be good with a mixed stand of shrubs and perennial grasses. Runoff is medium and erosion hazard is moderate. Runoff, when it does occur, is non-erosive except during high intensity convection storms. Snow is caught in the shrub interspaces and a mixed stand of shrubs and perennial grasses is necessary to reach the potential of the site.

Impacts on the plant community:

Influence of fire:

In the absence of normal fire frequency, shrubs can gradually increase. Grasses and forbs decrease as shrubs increase.

When fires become more frequent than historic levels (60-80 years), Wyoming big sagebrush is reduced significantly. With continued short fire frequency, Wyoming big sagebrush can be completely eliminated along with many of the desirable understory species such as bottlebrush squirreltail, bluebunch wheatgrass, Thurber's

needlegrass and Indian ricegrass. These species may be replaced by cheatgrass along with a variety of annual and perennial forbs including invasive plants. Sandberg bluegrass usually is maintained in the community.

#### Influence of improper grazing management:

Season-long grazing and/or excessive grazing 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, the plant community becomes susceptible to an increase in Wyoming big sagebrush and noxious and invasive species.

Continued improper grazing management influences fire frequency by increasing fine fuels. If cheatgrass increases due to improper grazing management and becomes co-dominant with Sandberg bluegrass and other annuals, fires become more frequent.

Proper grazing management that addresses frequency, duration, and intensity of grazing can also keep fine fuels from developing, thereby reducing fire frequency. This reduction can lead to gradual increases in Wyoming big sagebrush. A planned grazing system can also be developed to intentionally accumulate fine fuels in preparation for a prescribed burn. Any brush management should be carefully planned as a reduction in shrubs can increase cheatgrass which will lead to more frequent fire intervals.

#### Weather influences:

Above normal precipitation in late March, April, May and June 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 good 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 reduction in fire frequency.

#### Influence of Insects and disease:

Outbreaks can affect vegetation health. An outbreak of a particular insect is usually influenced by weather. Two or more consecutive years may cause mortality of some species. The sagebrush defoliator moth (*Aroga websterii*) causes mortality in relatively small patches. It seldom kills the entire stand. 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 weeds 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 use this site in the spring, fall and winter. Their numbers are seldom high enough to adversely affect the plant community.

#### Watershed:

Decreased infiltration and increased runoff on slopes greater than 10 percent occur when Wyoming big sagebrush is removed with frequent fires, particularly following the fire event. The increased runoff also causes sheet 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 1.1 to 1.2. Develops in the absence of fire and improper grazing management.

Phase 1.1 to 1.3. Develops with fire.

Phase 1.2 to 1.1. Develops with prescribed grazing and no fire.

Phase 1.3 to 1.1. Develops with prescribed grazing and no fire.

State 1 Phase 1.3 to State 2. Develops through frequent fire with or without prescribed grazing management. This site has crossed the threshold. It is economically impractical to return this plant community to State 1 with accelerating practices.

State 2 to unknown site. Excessive soil loss and changes in the hydrologic cycle caused by continued improper grazing management and/or frequent fire cause this state to regress to a new site with reduced potential. It has crossed the threshold. It is economically impractical to return this plant community to State 1 with accelerating practices.

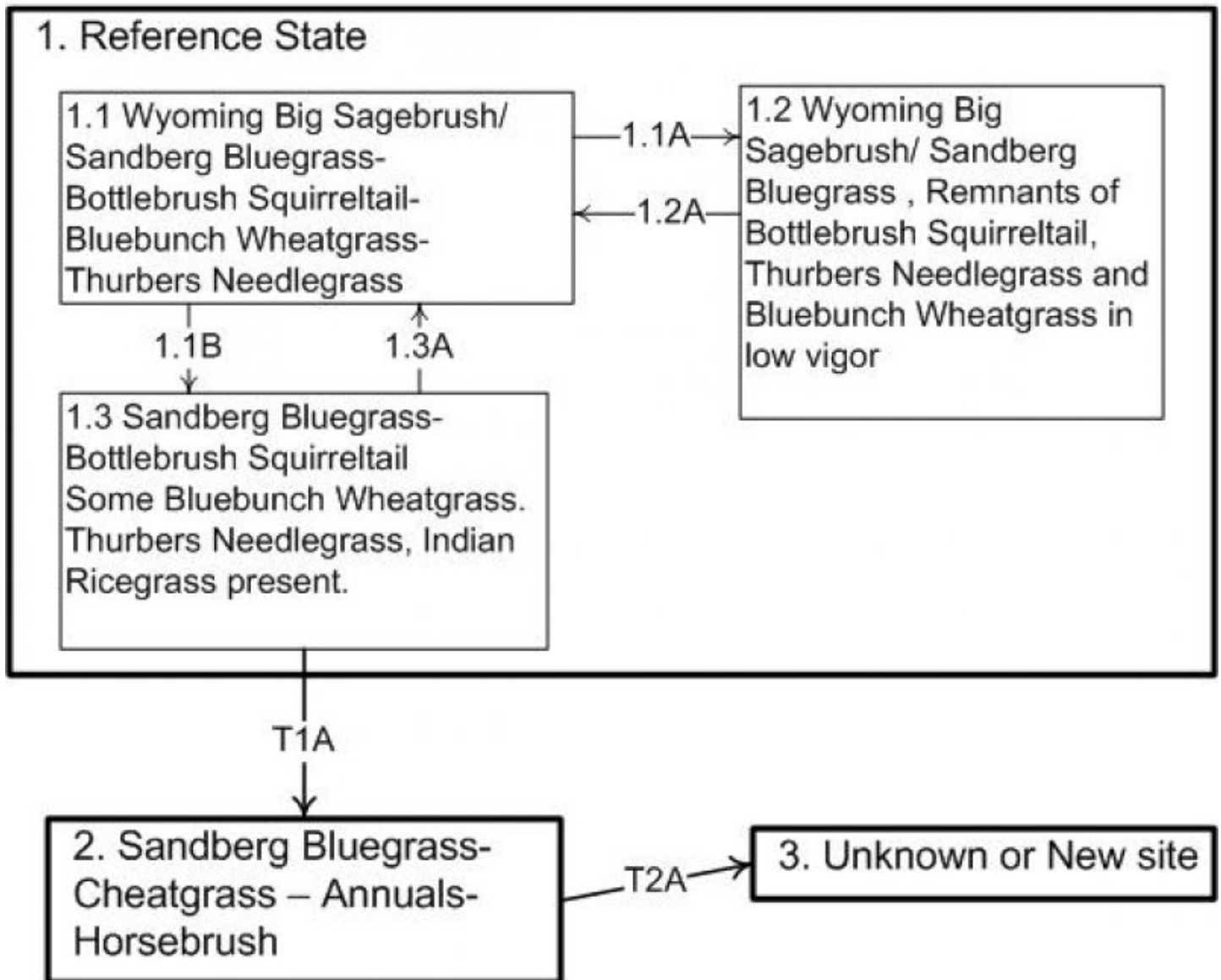
Practice limitations:

This range site is a very poor site to reseed because of the very low available water holding capacity (AWC), shallow depth and high amounts of coarse fragments on the surface and in the profile. There have been some successful seedings on this ecological site through adequate seedbed preparation and above average rainfall.

Prescribed burning, chemical spraying and mechanical treatment for brush management are all feasible with surface rock being the major limitation. Planning should carefully analyze the stand of perennial grasses and forbs, because removal of Wyoming big sagebrush can result in a significant increase in cheatgrass. If the plant community becomes dominated with cheatgrass, increased fire frequency could irreversibly degrade the plant community.

## **State and transition model**

# R025XY020ID – Loamy 7-10 ARTRW8-POSE



## State 1 Reference State

The Reference State (State 1), moves through many phases depending on the natural and human caused forces that impact the community over time. State 1, described later, indicates some of these phases. The reference Plant Community Phase is 1.1. This plant community is dominated by Wyoming big sagebrush, Sandberg bluegrass and bottlebrush squirreltail. Subdominant species may include Indian ricegrass, bluebunch wheatgrass, Thurber’s needlegrass, longleaf phlox and globemallow. The plant species composition of Phase 1.1 is listed later under “Reference Plant Community Phase Plant Species Composition”.

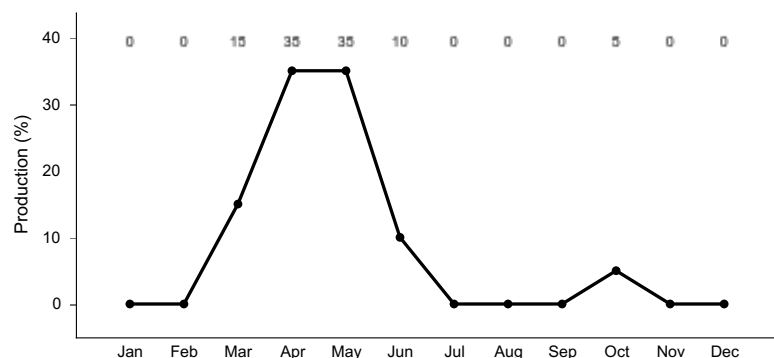
## Community 1.1 Reference Plant Community

This plant community has Wyoming big sagebrush in the overstory with Sandberg bluegrass dominating the understory. Spiny hopsage is often present in the community in small amounts. Other significant species in the plant community are bottlebrush squirreltail, Indian ricegrass, Thurber’s needlegrass, bluebunch wheatgrass, longleaf phlox, and globemallow. Natural fire frequency is 60 to 80 years. Composition by weight is approximately 35 to 45 percent grass, 5 to 15 percent forbs and 40 to 50 percent shrubs.



**Table 5. Annual production by plant type**

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Shrub/Vine	168	308	476
Grass/Grasslike	135	247	381
Forb	34	62	95
<b>Total</b>	<b>337</b>	<b>617</b>	<b>952</b>



**Figure 4. Plant community growth curve (percent production by month). ID0907, ARTRW8/PSSPS LOW PRECIP..**

## **Community 1.2**

### **Wyoming big sagebrush/Sandberg bluegrass**

This plant community is dominated by Wyoming big sagebrush with Sandberg bluegrass in the understory. This state has developed due to improper grazing management and lack of fire. There is a reduced amount of bluebunch wheatgrass, Indian ricegrass, Thurber's needlegrass, and bottlebrush squirreltail. These deep-rooted perennial bunchgrasses are typically in low vigor.

## **Community 1.3**

### **Sandberg bluegrass/Squirreltail**

This plant community is dominated by Sandberg bluegrass and bottlebrush squirreltail. Some bluebunch wheatgrass, Thurber's needlegrass, and Indian ricegrass may be present. Forbs remain about in the same proportion as Phase 1.1. No shrubs are present due to wildfire.

## **Pathway 1.1a**

### **Community 1.1 to 1.2**

Develops in the absence of fire and improper grazing management.

## **Pathway 1.1b**

### **Community 1.1 to 1.3**

Develops with fire.

## **Pathway 1.2a**

### **Community 1.2 to 1.1**

Develops with prescribed grazing and no fire.

## **Pathway 1.3a**

### **Community 1.3 to 1.1**

Develops with prescribed grazing and no fire.

**State 2**  
**Sandberg bluegrass-Annuals**

State is dominated by Sandberg bluegrass and non-native annual species.

**Community 2.1**  
**POSE-Annuals**

This plant community is dominated by Sandberg bluegrass, cheatgrass and other annuals. Root sprouting shrubs such as littleleaf horsebrush can be present. 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 with or without improper grazing management.

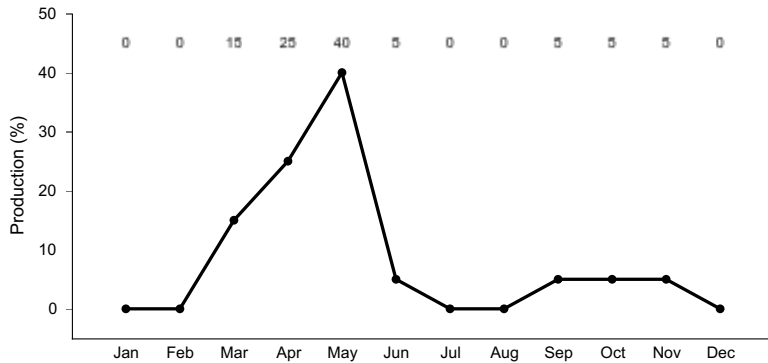


Figure 5. Plant community growth curve (percent production by month). ID0911, D25 POSE/BRTE/ANNUALS.

**State 3**  
**Unknown new site**

This is an undocumented state that may occur with extensive site degradation.

**Community 3.1**  
**Unknown new site**

This plant community has gone over the threshold to a new site. Site potential has been reduced. Significant soil loss has occurred. Infiltration has been reduced and run-off has become more rapid. This state has developed due to continued improper grazing management and/or frequent fires.

**Transition T1A**  
**State 1 to 2**

Develops through frequent fire with or without prescribed grazing management. This site has crossed the threshold. It is economically impractical to return this plant community to State 1 with accelerating practices.

**Transition T2A**  
**State 2 to 3**

Excessive soil loss and changes in the hydrologic cycle caused by continued improper grazing management and/or frequent fire cause this state to retrogress to a new site with reduced potential. It has crossed the threshold. It is economically impractical to return this plant community to State 1 with accelerating practices.

**Additional community tables**

Table 6. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
<b>Grass/Grasslike</b>					
1	<b>Grass/Grasslike</b>			135–381	
	Sandberg bluegrass	POSE	<i>Poa secunda</i>	84–241	–
	squirreltail	ELEL5	<i>Elymus elymoides</i>	34–95	–
	bluebunch wheatgrass	PSSPS	<i>Pseudoroegneria spicata</i> ssp. <i>spicata</i>	1–11	–
	Indian ricegrass	ACHY	<i>Achnatherum hymenoides</i>	1–11	–
	Thurber's needlegrass	ACTH7	<i>Achnatherum thurberianum</i>	1–11	–
<b>Forb</b>					
2	<b>Forb</b>			34–95	
	longleaf phlox	PHLO2	<i>Phlox longifolia</i>	11–22	–
	scarlet globemallow	SPCO	<i>Sphaeralcea coccinea</i>	11–22	–
	fleabane	ERIGE2	<i>Erigeron</i>	6–17	–
	desertparsley	LOMAT	<i>Lomatium</i>	6–17	–
	aster	ASTER	<i>Aster</i>	0–6	–
	milkvetch	ASTRA	<i>Astragalus</i>	0–6	–
	larkspur	DELPH	<i>Delphinium</i>	0–6	–
<b>Shrub/Vine</b>					
3	<b>Shrub</b>			168–476	
	Wyoming big sagebrush	ARTRW8	<i>Artemisia tridentata</i> ssp. <i>wyomingensis</i>	112–336	–
	spiny hopsage	GRSP	<i>Grayia spinosa</i>	11–39	–
	littleleaf horsebrush	TEGL	<i>Tetradymia glabrata</i>	6–17	–
	Shrub (>.5m)	2SHRUB	<i>Shrub (&gt;.5m)</i>	6–17	–

## Animal community

Wildlife Interpretations.

Animal Community – Wildlife Interpretations

This rangeland ecological site provides diverse habitat for many native wildlife species. Large herbivore use of this ecological site is dominated by mule deer and pronghorn antelope. Important seasonal habitat is provided for resident and migratory animals including western toad, common sagebrush lizard, western rattlesnake, shrews, bats, jackrabbits, ground squirrels, mice, coyote, red fox, badger, sage-grouse, Ferruginous hawk, prairie falcon, horned lark, and western meadowlark. Encroachment of noxious and invasive plant species (cheatgrass and Russian thistle) can replace native plant species which provide critical feed, brood-rearing, and nesting cover for a variety of native wildlife. Area sensitive species include greater sage-grouse, sage sparrow, Brewer's sparrow, sage thrasher, and Merriam's shrew. Water features are sparse provided by seasonal streams, artificial water catchments, and springs.

State 1 Phase 1.1 - Wyoming Big Sagebrush/ Sandberg Bluegrass/ Bottlebrush Squirreltail/ Bluebunch Wheatgrass/ Indian Ricegrass/ Thurber's Needlegrass/ Reference Plant Community (RPC): This plant community provides a diversity of grasses, forbs, and shrubs used by native insect communities that assist in pollination. The reptile and amphibian community is represented by common sagebrush lizard, western rattlesnake, and western toad. Amphibians are associated with springs and isolated water bodies adjacent to this plant community. Spring developments that capture all available water would preclude the use of these sites by amphibians. Native shrub-steppe obligate avian species include the Brewer's sparrow, sage sparrow, sage thrasher, and sage-grouse. Habitat (brood-rearing, nesting, and winter cover) for sage-grouse is provided by this diverse plant community. The plant community provides year round habitat for mule deer and pronghorn. Native perennial grasses, spiny hopsage, and

littleleaf horsebrush are desirable forage for mule deer and pronghorn. A diverse small mammal population including golden-mantled ground squirrels, Merriam's shrew, bushy-tailed woodrat, jackrabbit, and yellow-bellied marmots would utilize this plant community.

State 1 Phase 1.2 - Wyoming Big Sagebrush/ Sandberg Bluegrass/ Plant Community: This plant community is the result of improper grazing management and a lack of fire. An increase in canopy cover of sagebrush contributes to a sparse herbaceous understory. Grasses, forbs, and shrubs are used by native insects that assist in pollination, but the reduced herbaceous understory results in less diversity and numbers of insects. The reduced populations of insects may reduce reptile diversity and populations. Reduced herbaceous understory is a key factor in limiting the use of this plant community by ground nesting avian species. Shrub-steppe obligate bird species include Brewer's sparrow, sage sparrow, sage thrasher, and sage-grouse. Habitat (brood-rearing and winter cover) quality for sage grouse would decline due to a less diverse herbaceous plant community. The plant community supports seasonal needs of mule deer, providing food and cover. A small mammal population including golden-mantled ground squirrels, Merriam's shrew, bushy-tailed woodrat, jackrabbit and yellow-bellied marmots may utilize this plant community.

State 1 Phase 1.3 - Sandberg Bluegrass/ Bottlebrush Squirreltail Plant Community: This plant community is the result of wildfire. The plant community, dominated by herbaceous vegetation with little or no sagebrush provides less vertical structure and limits use by shrub obligate animals. Insect diversity would be reduced but a native forb plant community would still support select pollinators. The quality of habitat for the common sagebrush lizard and western rattlesnakes would decline due to the absence of sagebrush. The dominance of herbaceous vegetation with little sagebrush canopy cover would prevent use of these areas for nesting by Brewer's sparrow, sage sparrow, sage thrasher, and sage-grouse. This plant community provides brood-rearing habitat for sage-grouse if sagebrush cover is nearby. The herbaceous vegetation improves habitat for grassland avian species (horned lark and western meadowlark). Forage for mule deer would be seasonal (spring, summer, and fall). Habitat quality may increase for pronghorn due to the open landscape. Small mammal diversity maybe reduced due to an increase in hunting success by predators. Large blocks of this plant community would fragment the reference plant community and reduce the quality of the habitat for shrub-steppe obligate animal species.

State 2 - Sandberg Bluegrass/ Cheatgrass/ Annuals/ Littleleaf Horsebrush Plant Community: This plant community is the result of continued improper grazing management and. The loss of the sagebrush and herbaceous plant community would not support a diverse insect community. If rabbitbrush has a chance to sprout, late season pollinator habitat would be provided. Most native reptilian species are not supported with food or cover. This plant community does not support the habitat requirements for sage-grouse, sage thrasher, Brewer's sparrow, or sage sparrow. Diversity of grassland avian species is reduced due to poor cover and 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. Habitat quality (food and cover) for native small mammals would decline due to the loss of the native plant community. Large blocks of this plant community would fragment the reference plant community and reduce the quality of the habitat for shrub-steppe obligate animal species.

#### Grazing Interpretations.

This site is well suited for livestock in spring and fall. If water is available, the site is easily grazed by livestock due to gentle slopes.

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 in this group are in hydrologic group B. They have moderately low runoff potential.

### **Recreational uses**

This site has limited value or opportunities for recreation.

## 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, State Rangeland Management Specialist, NRCS, Idaho (Retired)

Brendan Brazee, State Rangeland Management Specialist, NRCS, Idaho

Leah Juarros, Resource Soil Scientist, NRCS, Idaho

Lee Brooks, Assistant State Conservationist, NRCS, Idaho (Retired)

## Type locality

Location 1: Owyhee County, ID	
Township/Range/Section	T13 S R6 E S6
Location 2: Owyhee County, ID	
Township/Range/Section	T14 S R5 E S24
General legal description	SW ¼, SW ¼, Sec. 24

## 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

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

USDA, NRCS.2001. The PLANTS Database, Version 3.1 (<http://plants.usda.gov>.) National Plant Data Center, Baton Rouge, LA 70874-4490 USA

USDI Bureau of Land Management, U S 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

Kendra Moseley, 4/25/2024

## 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)	
Contact for lead author	USDA/NRCS 9173 W. Barnes Drive, Suite C Boise, ID 83709 208-378-5722
Date	06/12/2007
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. If rills are present, they are likely to occur on slopes approaching 20 percent and immediately following wildfire. Rills are most likely to occur on soils with silt loam surface textures.

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- 2. Presence of water flow patterns:** These can occur on the site usually when slopes are greater than 10 percent. They occur as short and disrupted flows. They are disrupted by rocks, cool season grasses and tall shrubs and are not extensive.

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- 3. Number and height of erosional pedestals or terracettes:** Pedestals and/or Terracettes are rare on this site. Where flow patterns and/or rills are present, few pedestals may be expected. Terracettes can occur as deposits behind rocks, large bunchgrasses and shrubs. Terracettes occur usually on slopes greater than 10 percent. They are not extensive.

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- 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 30-50 percent. Moss is a common component of the site and reduces bare ground.

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- 5. Number of gullies and erosion associated with gullies:** None.

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- 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. Where sagebrush has repopulated the site after a fire, remnants of past wind scour may be present.

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- 7. Amount of litter movement (describe size and distance expected to travel):** Fine litter in the interspaces may move up to 3 feet following a significant run-off event. Coarse litter generally does not move.

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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):** Values should range from 4-6 .

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** The surface horizon is typically 4 inches thick. Structure typically includes moderate medium platy and moderate medium granular. Soil organic matter (SOM) is 1 to 2 percent.
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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Bunchgrasses, especially deep-rooted perennial species, slow run-off and increase infiltration. Tall shrubs can catch snow in the interspaces.
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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):** Not present.
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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: Tall shrubs> shallow rooted grasses> cool season deep rooted perennial bunchgrasses> perennial forbs.
- Sub-dominant:
- Other:
- Additional:
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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Wyoming big sagebrush will become decadent in the absence of normal fire frequency. Grass and forb mortality will occur as tall shrubs increase.
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14. **Average percent litter cover (%) and depth ( in):** Additional litter cover data is needed but is expected to be 5-20 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):** 550 pounds per acre (616 kilograms per hectare) in a year with normal temperatures and precipitation. Perennial grasses produce 35-45 percent of the total production, forbs 5-15 percent and shrubs 40-50 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:** Plants include cheatgrass, *Vulpia* sp., annual mustards, Russian thistle and annual Kochia.
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17. **Perennial plant reproductive capability:** All functional groups have the potential to reproduce in favorable years.

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