

Ecological site R009XY017ID Very Shallow 12-22 PZ PSSPS-POSE

Last updated: 9/23/2020
 Accessed: 05/20/2024

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.

Classification relationships

No data.

Associated sites

R009XY003ID	Loamy 16-22 PZ
R009XY004ID	South Slope Loamy 16-22 PZ
R009XY008ID	Schist 16-22 PZ PSSPS-FEID
R009XY012ID	South Slope Loamy 12-16 PZ PSSPS-POSE

Similar sites

R009XY004ID	South Slope Loamy 16-22 PZ
R009XY011ID	Stony Loam 12-16 PZ PSSPS-POSE

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

This site occurs on broad, nearly level to steep sloping ridges and benches, hills on plateaus and canyonsides, generally with south and west exposures. Slopes range from 10-60 percent. Elevations range from 700 to 5500 feet (200-1375 meters).

Table 2. Representative physiographic features

Landforms	(1) Canyon (2) Plateau (3) Mountain
Elevation	213–1,676 m
Slope	10–60%
Water table depth	152 cm
Aspect	S, W

Climatic features

The elevation of MLRA 9 ranges from 2000 to 4000 feet with an average elevation of 3000 feet. Elevation along major streams averages only 650 feet above sea level. Average annual precipitation ranges from 20 to 25 inches with an average of 23 based on 9 long term climate stations located throughout the MLRA. Summers are relatively dry while precipitation is evenly distributed between fall, winter, and spring.

The maximum average annual temperature is 58 degrees Fahrenheit while the average minimum temperature is 35 degrees F. The average annual temperature is 46.8 degrees F. The frost free period ranges from 107 to 134 days and the freeze free period ranges from 143 to 173 days.

Table 3. Representative climatic features

Frost-free period (average)	134 days
Freeze-free period (average)	173 days
Precipitation total (average)	660 mm

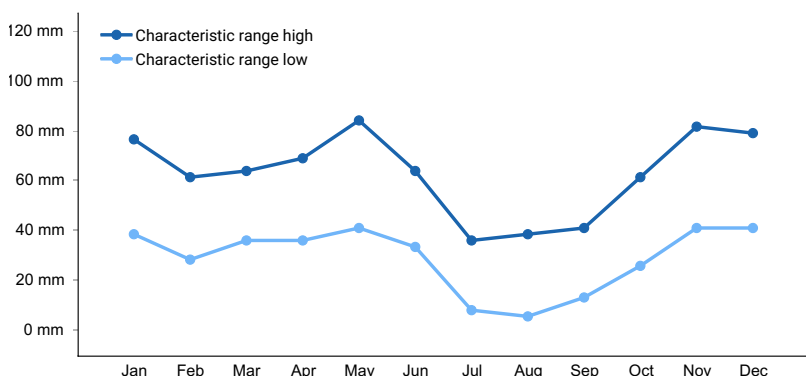


Figure 1. Monthly precipitation range

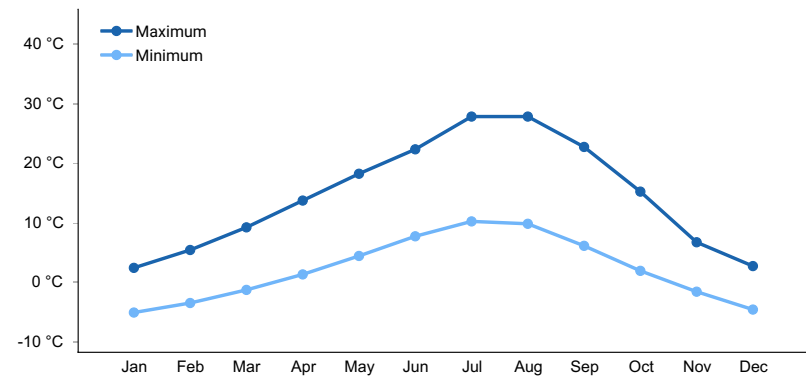


Figure 2. Monthly average minimum and maximum temperature

Influencing water features

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

Soil features

The soils on this site are very shallow, less than 10 inches in depth, extremely stony loam derived from basalt or andesite. Rock outcrops are usually associated with the site. Permeability is moderate to moderately slow, runoff is high and available water capacity is very low. The soil and site are extremely droughty. Soil reaction is moderately acid to neutral. These soils are characterized by aridic moisture and mesic temperature regimes.

Soil Series Correlated to this Ecological Site

Table 4. Representative soil features

Surface texture	(1) Very gravelly loam (2) Very cobbly silt loam (3) Extremely stony
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Moderate to moderately slow
Soil depth	13–25 cm
Surface fragment cover <=3"	10–25%
Surface fragment cover >3"	20–50%
Available water capacity (0-101.6cm)	0.76–2.54 cm
Calcium carbonate equivalent (0-101.6cm)	0%
Electrical conductivity (0-101.6cm)	0 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	0
Soil reaction (1:1 water) (0-101.6cm)	5.6–7.3
Subsurface fragment volume <=3" (Depth not specified)	10–25%
Subsurface fragment volume >3" (Depth not specified)	40–70%

Ecological dynamics

The dominant visual aspect of this site is a shrub-grassland dominated by stiff sagebrush and Sandberg bluegrass. Bluebunch wheatgrass may be present at the higher elevations of the site. Composition by weight is approximately 60-70 percent grasses, forbs 10-20 percent, and shrubs 15-25 percent.

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

Fire has historically occurred on the site at intervals of 80-100 years.

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 stiff sagebrush and Sandberg bluegrass. Bluebunch wheatgrass may be present at the higher elevations of the site and where the soil is near 10 inches deep. Big bluegrass is often present in the community in smaller amounts along with a variety of forbs. The plant species composition of Phase A is listed later under "Reference Plant Community Phase Plant Species Composition".

Total annual production is 250 pounds per acre (278 Kg/ha) in a normal year. Production in a favorable year is 350 pounds per acre (388 Kg/ha). Production in an unfavorable year is 150 pounds per acre (167 Kg/ha). Structurally, a mixture of cool season shallow rooted and deep rooted perennial grasses are dominant followed by shrubs being more dominant than perennial forbs.

The lower elevations of this site have warmer temperatures combined with the more frequently occurring summer

convection storms. This allows Fendler threeawn and sand dropseed, both of which are warm season grasses, to occur at the lower elevations of this site.

This site is suited for grazing by domestic livestock in the spring. This site is important winter and spring range for big game but is used yearlong. The site provides little recreation or aesthetic value. Due to the stony soils the site is fairly resistant to disturbances that can potentially degrade it.

Impacts on the Plant Community.

Influence of fire:

When this site burns within the normal fire frequency of 80-100 years, it has minimal effect on the plant community, other than on the stiff sagebrush. Normally, it will be killed by the fire. Stiff sagebrush, however re-establishes relatively quickly from seed from adjacent sites.

Very little decadence is expected to occur on this site. When fires become more frequent than historic levels (80-100 years), vigor of the bunchgrasses will generally be reduced for a year or two. Stiff sagebrush will be killed. Fendler threeawn, sand dropseed, and plains pricklypear will likely increase, especially at the lower elevations. With continued short fire frequency, fine leaved grasses such as Sandberg bluegrass and bluebunch wheatgrass will have their vigor reduced significantly and death may result. These species may be replaced by cheatgrass, ventenata, and bulbous bluegrass along with a variety of annual and perennial forbs including noxious and invasive plants.

Influence of improper grazing management:

Early spring grazing when the soils are saturated is very detrimental on this site due to trampling damage. Season-long grazing and/or excessive utilization can be very detrimental to this site. This type of management leads to reduced vigor of bluebunch wheatgrass. With reduced vigor, recruitment of this species declines. As this species declines, the plant community becomes susceptible to an increase of stiff sagebrush, Sandberg bluegrass, Fendler threeawn, sand dropseed, and an invasion by noxious and invasive plants.

Continued improper grazing management influences fire frequency by increasing fine fuels.

Proper grazing management that addresses frequency, duration, and intensity of grazing can also keep fine fuels from developing, thereby reducing fire frequency. Proper grazing management will help maintain the integrity of the plant community.

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 the 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. Prolonged drought can lead to reduction in fire frequency.

Influence of insects and disease:

Insect and disease outbreaks can affect vegetation health. Grasshopper outbreaks occur periodically. Since defoliation usually happens once during the growing season, mortality is normally low.

An outbreak of a particular insect is usually influenced by weather but no specific data for this site is available.

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 yearlong. Their numbers are seldom high enough to adversely affect the plant community.

Watershed:

Decreased infiltration and increased runoff occur with an increase in annual grasses and undesirable forbs. 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.

Plant Community and Sequence:

Transition pathways between common vegetation states and phases:

State 1.

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

Phase A to C. Develops with fire.

Phase B to A. Develops with prescribed grazing.

Phase C to A. Develops with prescribed grazing and no fire.

State 1, Phase B to State 2. Develops with frequent fire and continued improper grazing management. This site has crossed the threshold. It is not economically feasible to move this state back to State 1 with accelerating practices.

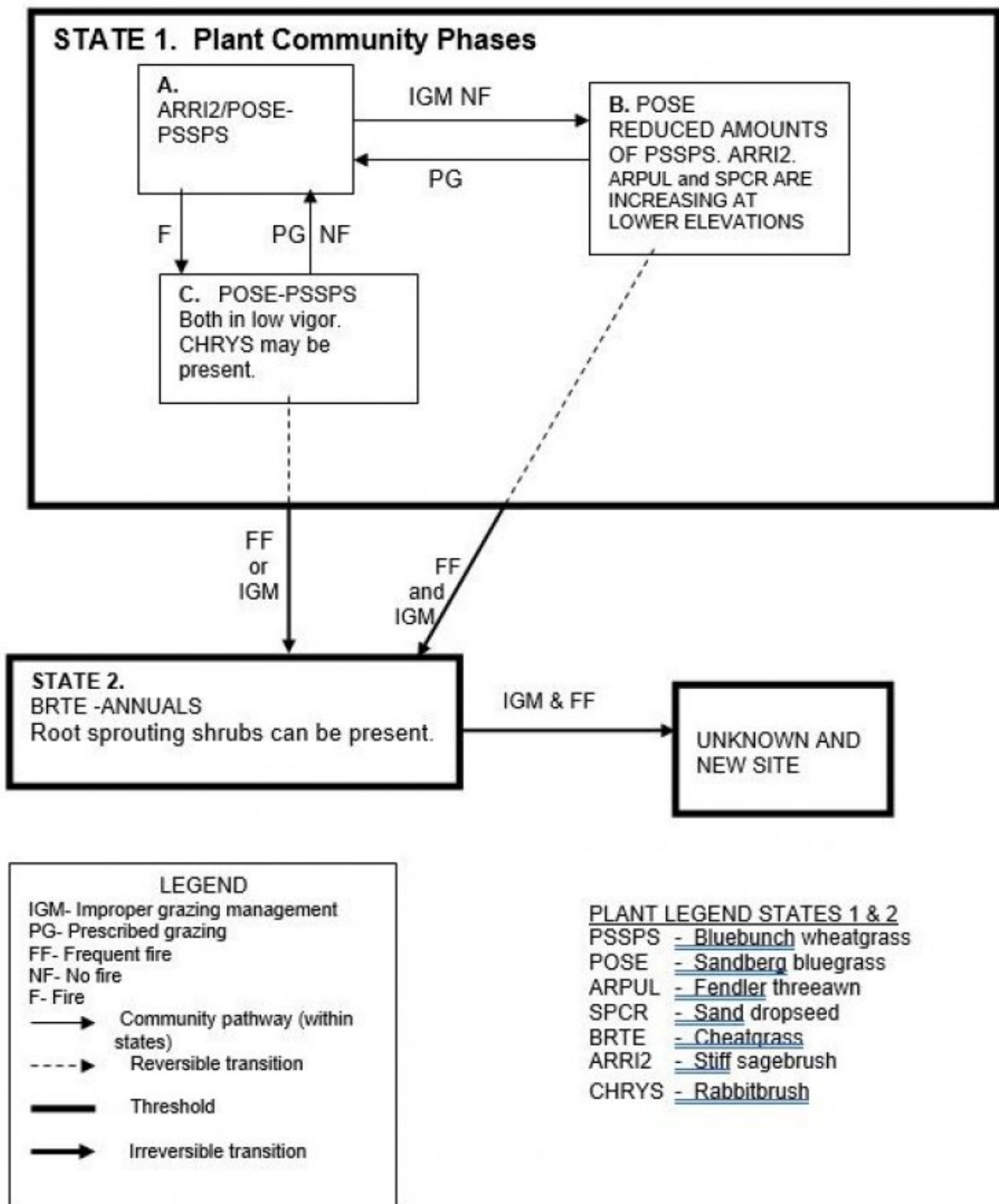
State 1 Phase C to State 2. Develops through frequent fire or continued improper grazing management. The site has crossed the threshold. It is not economically feasible to move this state back to State 1 with accelerating practices.

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 cross a threshold and retrogress to a new site with reduced potential.

Practice Limitations.

Severe limitations exist on this site for seeding due to the shallowness of the soil and excessive stones on or near the surface. The soil depth also limits the available water holding capacity (AWC) for seedling establishment. Brush management is generally not economically feasible on this site.

State and transition model



State 1
State 1 Phase A

Community 1.1
State 1 Phase A

State 1, Phase A. Reference Plant Community Phase. This plant community is dominated by stiff sagebrush, Sandberg bluegrass, and bluebunch wheatgrass. Other species that occur in minor amounts include big bluegrass, Fendler threeawn, sand dropseed, arrowleaf balsamroot, and lupine. Fendler threeawn and sand dropseed, both

warm season grasses, occur at the lower elevations of this site. At the lower elevation, warm season grasses are present due to the warmer temperatures combined with the more frequently occurring summer convection storms. Natural fire frequency is 80-100 years.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	106	179	252
Shrub/Vine	34	56	78
Forb	28	45	62
Total	168	280	392

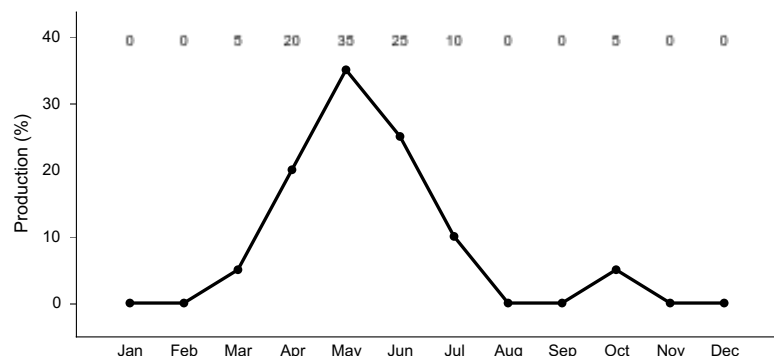


Figure 4. Plant community growth curve (percent production by month). ID0101, B9 PSSPS-FEID REFERENC PLANT COMMUNITY. State 1.

**State 2
State 1 Phase B**

**Community 2.1
State 1 Phase B**

State 1, Phase B. This plant community is dominated by Sandberg bluegrass with reduced amounts of bluebunch wheatgrass. All deep-rooted bunchgrasses are typically in low vigor. Fendler threeawn and sand dropseed have increased. This state has developed due to improper grazing management and no fire. Some cheatgrass and other invasive annuals may have invaded the site.

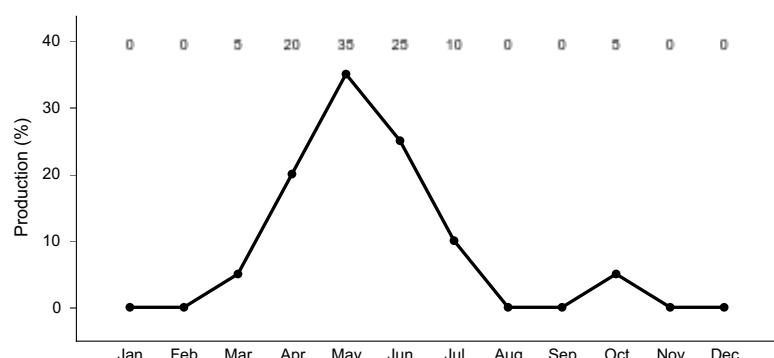


Figure 5. Plant community growth curve (percent production by month). ID0101, B9 PSSPS-FEID REFERENC PLANT COMMUNITY. State 1.

**State 3
State 1 Phase C**

**Community 3.1
State 1 Phase C**

State 1, Phase C. This plant community is dominated by bluebunch wheatgrass and Sandberg bluegrass. Forbs remain about in the same proportion as Phase A. Rabbitbrush may be present due to sprouting. Some cheatgrass may have invaded the site. This plant community is the result of wildfire.

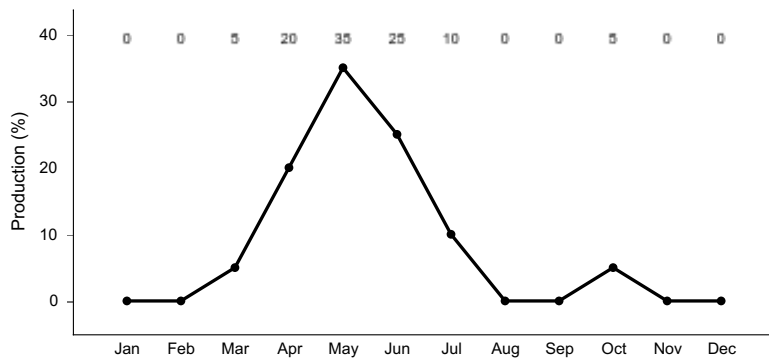


Figure 6. Plant community growth curve (percent production by month). ID0101, B9 PSSPS-FEID REFERENC PLANT COMMUNITY. State 1.

State 4
State 2

Community 4.1
State 2

State 2. This plant community is dominated by cheatgrass and other annuals. Root sprouting shrubs such as rabbitbrush can be present, dependent upon, how frequent, fire has occurred. Some soil loss has occurred. This state has developed due to frequent fires and improper grazing management from Phase B, State 1. It also occurs with frequent fire or improper grazing management from Phase C, State 1. The site has crossed the threshold. It is not economically feasible to move this state back to State 1 with accelerating practices.

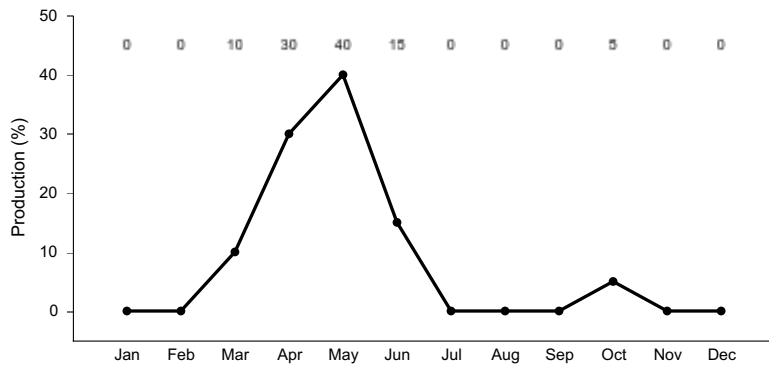


Figure 7. Plant community growth curve (percent production by month). ID0102, B9 BRTE-ANNUALS. State 2.

State 5
State 3

Community 5.1
State 3

Additional community tables

Table 6. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
Grass/Grasslike					
1	Grass and Grasslike			-	
	Sandberg bluegrass	BOSE	<i>Poa secunda</i>	78-170	

	Sandberg bluegrass	FOGL	<i>Poa secunda</i>	0-11	-
	bluebunch wheatgrass	PSSPS	<i>Pseudoroegneria spicata</i> ssp. <i>spicata</i>	0-28	-
	Idaho fescue	FEID	<i>Festuca idahoensis</i>	0-11	-
	onespike danthonia	DAUN	<i>Danthonia unispicata</i>	0-11	-
	Fendler threeawn	ARPUL	<i>Aristida purpurea</i> var. <i>longiseta</i>	0-6	-
	sand dropseed	SPCR	<i>Sporobolus cryptandrus</i>	0-6	-
2	Big Bluegrass			-	
	Sandberg bluegrass	POSE	<i>Poa secunda</i>	0-11	-
Forb					
3	Forbs			-	
	arrowleaf balsamroot	BASA3	<i>Balsamorhiza sagittata</i>	11-22	-
	longleaf phlox	PHLO2	<i>Phlox longifolia</i>	6-11	-
	common yarrow	ACMI2	<i>Achillea millefolium</i>	6-11	-
	nineleaf biscuitroot	LOTR2	<i>Lomatium triternatum</i>	6-11	-
	silvery lupine	LUAR3	<i>Lupinus argenteus</i>	6-11	-
	buckwheat	ERIOG	<i>Eriogonum</i>	6-11	-
	beardtongue	PENST	<i>Penstemon</i>	6-11	-
	phacelia	PHACE	<i>Phacelia</i>	6-11	-
	blazingstar	MENTZ	<i>Mentzelia</i>	6-11	-
	pincushion	CHAEN	<i>Chaenactis</i>	6-11	-
	Hooker's balsamroot	BAHO	<i>Balsamorhiza hookeri</i>	0-11	-
	broadfruit mariposa lily	CANI	<i>Calochortus nitidus</i>	0-6	-
	largehead clover	TRMA3	<i>Trifolium macrocephalum</i>	0-6	-
	woolly groundsel	PACA15	<i>Packera cana</i>	0-6	-
	Rollins' biscuitroot	LORO2	<i>Lomatium rollinsii</i>	0-6	-
	shaggy fleabane	ERPU2	<i>Erigeron pumilus</i>	0-6	-
	stonecrop	SEDUM	<i>Sedum</i>	0-6	-
	onion	ALLIU	<i>Allium</i>	0-6	-
	tapertip hawksbeard	CRAC2	<i>Crepis acuminata</i>	0-6	-
	Indian paintbrush	CASTI2	<i>Castilleja</i>	0-6	-
	Idaho blue-eyed grass	SIID	<i>Sisyrinchium idahoense</i>	0-2	-
	trumpet	COLLO	<i>Collomia</i>	0-2	-
	smallflower woodland-star	LIPA5	<i>Lithophragma parviflorum</i>	0-2	-
	blue eyed Mary	COLLI	<i>Collinsia</i>	0-2	-
	little larkspur	DEBI	<i>Delphinium bicolor</i>	0-2	-
Shrub/Vine					
4	Shrubs			-	
	scabland sagebrush	ARRI2	<i>Artemisia rigida</i>	28-62	-
	plains pricklypear	OPPO	<i>Opuntia polyacantha</i>	0-6	-
	chrysactinia	CHRY5	<i>Chrysactinia</i>	0-2	-

Animal community

Wildlife Interpretations.

Animal Community – Wildlife Interpretations

This rangeland ecological site provides diverse habitat for many native wildlife species. The plant community dominated by woody and herbaceous vegetation provides spring, fall, and winter forage for large herbivores. Seasonal habitat is provided for resident and migratory animals including western rattlesnake, jackrabbits, ground squirrels, mice, coyote, red fox, Ferruginous hawk, prairie falcon, horned lark, and western meadowlark. Areas of noxious and invasive plant species (cheatgrass, ventenata, bulbous bluegrass, and yellow star-thistle) 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 runoff, artificial water catchments, and springs.

State 1 Phase 1.1 – Stiff Sagebrush/ Sandberg Bluegrass/ Bluebunch Wheatgrass Reference Plant Community (RPC): This plant community provides a diversity of grasses and forbs, used by native insect communities that assist in pollination. The forbs and woody plants provide spring, summer, and fall pollinator habitat. The reptile and amphibian community is represented by western rattlesnake, northern alligator lizard, pygmy short-horned lizard, 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 this site by amphibians. The sparse plant community supports a variety of migratory and resident avian species providing for food, brood-rearing, and nesting cover. Species include savannah sparrow, lark sparrow, grasshopper sparrow, Say's phoebe, western kingbird, horned lark, and western meadowlark. The plant community provides spring, fall and winter forage for mule deer and elk. The plant community is desirable forage for elk and mule deer. The grazing management will determine the quality and duration of grazing available for large herbivores. The small mammal population including Preble's shrew, mountain cottontail, white-tailed jackrabbit, Merriam's shrew, western jumping mouse, and deer mouse.

State 1 Phase 1.2 - Sandberg Bluegrass Plant Community: This phase has developed due to improper grazing management and no fire. A decrease in vigor and production of perennial vegetation would reduce the quality of the habitat for pollinators. The reptile and amphibian community is represented by western rattlesnake, gophersnake, terrestrial gartersnake, and western toad. Amphibians are associated with springs adjacent to the site. Spring developments that capture all available water would preclude the use of the area by amphibians. Quality of cover habitat for ground-nesting birds is reduced due to improper grazing resulting in sparse herbaceous vegetation. The reduced vigor of plants result in a shorter grazing season for large herbivores. Quality of winter forage for large herbivores is reduced due to poor grazing management and loss of native deep rooted bunchgrasses and stiff sagebrush . The small mammal population would be similar to the one in State 1, Phase 1.1.

State 1 Phase 1.3 - Sandberg Bluegrass/ Bluebunch Wheatgrass Plant Community: This plant community is the result of fire. An increase in forbs would support a similar insect community as in State 1, Phase 1.1. The reptile community would be similar to that in State 1, Phase 1.1. Quality of cover and forage habitat for birds is reduced due to low vigor and production of herbaceous vegetation. The reduced vigor of plants, improper grazing management, and increase in cheatgrass provides a shorter grazing season for mule deer and elk. Small mammal populations would be similar to those in State 1, Phase 1.1.

State 2 – Cheatgrass/ Annuals Plant Community: This state has developed due to frequent fires and improper grazing management from Phase 1.2, State 1. It also occurs with frequent fire or improper grazing management from Phase 1.3, State 1. The plant community supports harmful insects, such as grasshoppers with improved breeding conditions. The plant community would support a very limited population of pollinators. Most reptilian species are not supported with food, water, or cover. 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 herbivores 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 herbivores would not regularly utilize these areas due to poor forage and cover conditions. The populations of small mammals would be reduced due to poor cover and forage habitat. Large blocks of this plant community would fragment the reference plant community and reduce the quality of the habitat for animal species that historically used the site.

Grazing Interpretations.

This site is best suited for grazing by domestic livestock in the spring.

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.

Hydrological functions

Soils on this site are in hydrologic group D. When hydrologic conditions of the vegetation cover is good, natural erosion hazard is slight to moderate.

Recreational uses

The site provides little recreation or aesthetic value.

Wood products

None.

Other products

None.

Other information

Field Offices

Grangeville, ID

Lewiston, ID

Nezperce, ID

Orofino, ID

Plummer, ID

Coeur d'Alene, 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

Bruce Knapp, Resource Soil Scientist, NRCS, Idaho

Lee Brooks, Range Management Specialist, IASCD

Type locality

Location 1: Idaho County, ID	
General legal description	Rough broken mountains on north side of Salmon River below the mouth of Whitebird Creek.
Location 2: Idaho County, ID	
General legal description	South facing slopes adjacent to Highway 95 approximately 1.5 miles north of Slate Creek on Salmon River.
Location 3: Idaho County, ID	
Location 4: Idaho County, ID	

Location 5: Nez Perce County, ID

Location 6: Adams County, ID

Other references

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

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

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, 9/23/2020

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.

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Contact for lead author	Brendan Brazee, State Rangeland Management Specialist USDA-NRCS 9173 W. Barnes Drive, Suite C, Boise, ID 83709
Date	04/16/2009
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. They are most likely to occur immediately following a wildfire. Cobbles and stones on the surface reduce erosion.

- 2. Presence of water flow patterns:** Water-flow patterns can occur on this site. When they do occur on slopes greater than 15 percent, they are short, disrupted by cool season perennial grasses, cobbles and stones and are not extensive.

- 3. Number and height of erosional pedestals or terracettes:** A few terracettes can occur on this site. They are not extensive. They typically develop on the uphill side of the larger bunchgrasses on steeper slopes. Pedestals do not occur on the site.

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4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare ground ranges from 20-40 percent but additional data is needed.
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5. **Number of gullies and erosion associated with gullies:** Gullies do not occur on this site.
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6. **Extent of wind scoured, blowouts and/or depositional areas:** Does not occur on the site.
-
7. **Amount of litter movement (describe size and distance expected to travel):** Fine litter in the interspaces may move up to 2-3 feet or further following a significant run-off event. High winds can also move fine litter. 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 needs to be tested.
-
9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Structure ranges from weak very fine to fine granular. Soil organic matter (SOM) ranges from 1 to 4 percent. The A or A1 horizon is typically 2 to 5 inches thick and dark brown when 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, slow run-off and increase infiltration. Terracettes provide a favorable micro-site for vegetation establishment, which further increases infiltration.
-
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: cool season bunchgrasses
- Sub-dominant: perennial forbs
- Other: shrubs
- Additional:
-
13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Some decadence is expected to occur on this site in the absence of ungulate grazing and/or fire. Mortality can occur following extended drought.
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14. **Average percent litter cover (%) and depth (in):** Annual litter cover in the interspaces will be 5-10 percent to a depth of <0.1ft. Fine litter can accumulate on the terracettes.

15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** Is 250 lbs. per acre in a year with normal precipitation and temperatures. Perennial grasses produce 60-70 percent of the total ,forbs 10-20 percent and shrubs 15-25 percent.

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 cheatgrass, soft chess, ventenata, bulbous bluegrass, medusahead, tarweed, curlycup gumweed, spotted and diffuse knapweed, and yellow star-thistle.

17. **Perennial plant reproductive capability:** All functional groups have the potential to reproduce in normal years.
