Ecological site R009XY001ID
Shallow Stony Loam 16-22 PZ

Last updated: 9/23/2020
Accessed: 05/10/2025

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.

Ecological site concept

This ecological site meets the NESH 2014 requirements for PROVISIONAL. A provisional ecological site is established after ecological site concepts are developed and an initial state-and-transition model is drafted. Following quality control and quality assurance reviews of the ecological site concepts, an identification number and name for the provisional ecological site are entered into ESIS. A provisional ecological site may include literature reviews, land use history information, some soils data, legacy data, ocular estimates for canopy and/or species composition by weight, and even some line-point intercept information. A provisional ecological site does not meet the NESH 2014 standards for an Approved ESD, but does provide the conceptual framework of soil-site correlation for the development of the ESD.

Associated sites

R009XY001ID	**Shallow Stony Loam 16-22 PZ**
R009XY002ID	**North Slope Loamy 16-22 PZ**
R009XY003ID	**Loamy 16-22 PZ**
R009XY004ID	**South Slope Loamy 16-22 PZ**
R009XY008ID	**Schist 16-22 PZ PSSPS-FEID**
R009XY009ID	**North Slope Schist 16-22 PZ FEID-PSSPS**
R009XY010ID	**South Slope Schist 16-22 PZ PSSPS-POSE**

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	(1) *Pseudoroegneria spicata* (2) *Festuca idahoensis*

Physiographic features

This site occurs on broad, nearly level to moderately sloping ridges generally with south and west facing exposures. Occasionally at higher elevations it occurs as a depression in complex with mounds of deeper soils. Slopes range from 1-30 percent. Elevations range from 1600 to 4500 feet (490-1375 meters).

Table 2. Representative physiographic features

Landforms	(1) Canyon (2) Plateau (3) Hill

Elevation	1,600–4,500 ft
Slope	1–30%
Water table depth	60 in
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)	26 in

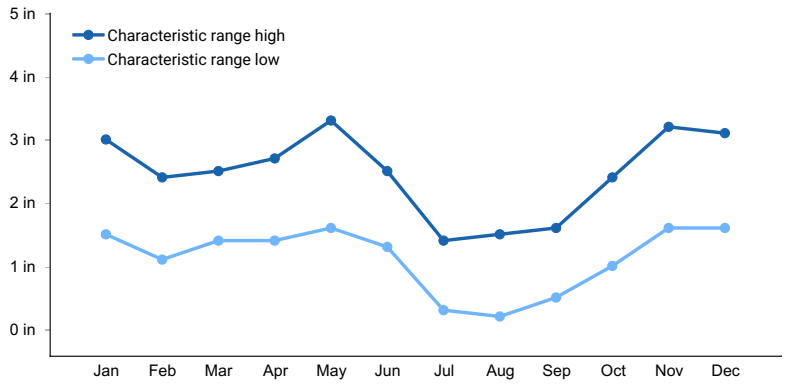

Figure 1. Monthly precipitation range

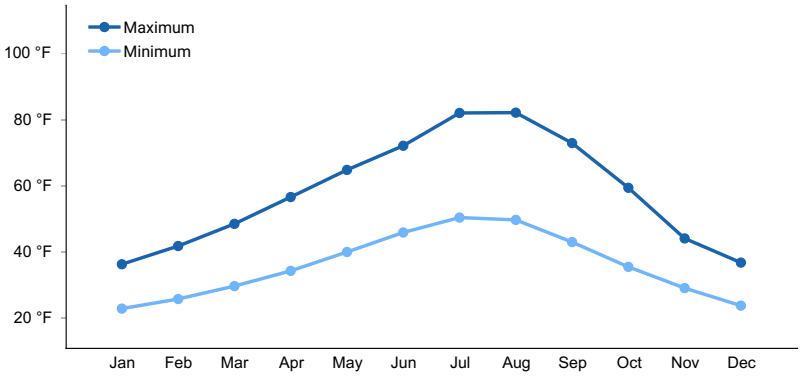

Figure 2. Monthly average minimum and maximum temperature

Influencing water features

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

Soil features

The soils on this site are well-drained, very gravelly or very stony silt loams 10-20 inches (25-50cm) deep to fractured bedrock. The have moderate to moderately slow permeability and available water capacity is very low.

The soils formed in colluvium from basalt, granite or seven devils volcanics mixed with loess. Runoff is high and surface layer reaction is slightly acid to neutral. These soils are characterized by xeric moisture and mesic temperature regimes.

Soil Series Correlated to this Ecological Site

Gwin
Riggins

Table 4. Representative soil features

Surface texture	(1) Very cobbly sandy loam (2) Stony loam (3) Gravelly
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Moderate to moderately slow
Soil depth	10–20 in
Surface fragment cover <=3"	15–35%
Surface fragment cover >3"	5–30%
Available water capacity (0-40in)	1.3–2.2 in
Calcium carbonate equivalent (0-40in)	0%
Electrical conductivity (0-40in)	0 mmhos/cm
Sodium adsorption ratio (0-40in)	0
Soil reaction (1:1 water) (0-40in)	6.1–7.3
Subsurface fragment volume <=3" (Depth not specified)	35–75%
Subsurface fragment volume >3" (Depth not specified)	30–65%

Ecological dynamics

The dominant visual aspect of this site is grassland dominated by bluebunch wheatgrass. Composition by weight is approximately 70-80 percent grasses and 20-30 percent forbs. Shrubs, when present, are a very minor component of the plant community.

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, mule deer, and lagomorphs.

Fire has historically occurred on the site at intervals of 25-40 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 bluebunch wheatgrass and Idaho fescue. Big bluegrass and Sandberg bluegrass are present in the community in smaller amounts. The plant species composition of Phase A is listed later under “Reference Plant Community Phase Plant Species Composition”.

This site exhibits a wide variation in both production and composition. Wide variation should be expected since the

soils range in depth from 10 to 20 inches. This amounts to 100 percent difference in the soil depth that is found on the site. Near the 10 inch soil depth range, shallow-rooted bunchgrasses such as Sandberg bluegrass will be more dominant. Shrubs will be sparse in the stand. At the opposite end of the range, near 20 inches of depth, large bunchgrasses will be dominant and shallow-rooted bunchgrasses will be sub-dominant. Shrub cover will likewise be greater.

Total annual production is 650 pounds per acre (730 Kg/ha) in a normal year. Production in a favorable year is 1000 pounds per acre (1120 Kg/ha). Production in an unfavorable year is 400 pounds per acre (450 Kg/ha). Structurally, cool season, deep rooted perennial grasses are dominant followed by perennial forbs.

This site is suited for grazing by domestic livestock in late spring, summer, and fall. This site is important winter and spring range for big game. During the spring it is important habitat for chukars and Hungarian partridge. Mourning doves, bald eagles, and Merriam's turkey also frequent the site. This site has high value for chukar and Hungarian partridge hunting, and to a lesser degree, big game hunting. Aesthetic values are good. A large variety of flora is present which have flowers that bloom in spring. The site position offers an excellent view of the surrounding countryside. The site is popular as a hiking area because of the variety of views and activities offered.

Due to the stony soils the site is fairly resistant to disturbances that can potentially degrade the site.

Impacts on the Plant Community.

Influence of fire:

When this site burns within the normal fire frequency of 25-40 years, it has minimal effect on the plant community.

In the absence of normal fire frequency Woods' rose and snowberry, when present, will increase slightly. These shrubs will only be present when the soils are approaching 20 inches in depth. When fires are more frequent than historic levels (25-40 years), vigor of the bunchgrasses will generally be reduced for a year or two. Root sprouting shrubs such as Woods' rose and snowberry will increase. With continued short fire frequency, fine leaved grasses such as Idaho fescue, will have their vigor reduced significantly and may even die out. These species may be replaced by cheatgrass, Sandberg bluegrass, ventenata, and/or bulbous bluegrass along with a variety of annual and perennial forbs including noxious and invasive plants.

Influence of improper grazing management:

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, the plant community becomes susceptible to 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. A planned grazing system can be developed to intentionally accumulate fine fuels in preparation for a prescribed burn. Prescribed burns need careful planning. Areas without a suitable understory of perennial grasses are low priority areas for prescribed burns, especially if reseeding is not a possibility.

Weather influences:

Above normal precipitation in 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 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 a 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 in the spring, summer, and fall. 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 through frequent fire and continued improper grazing management. The site crosses the threshold. The 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 crosses the threshold. 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. It is not economically feasible to move this state back to State 1 with accelerating practices.

Practice Limitations.

There are moderate to severe limitations for seeding on this site by conventional methods on the steeper slopes and very cobbly areas. Attaining uniform utilization on the steeper slopes is difficult.

State and transition model

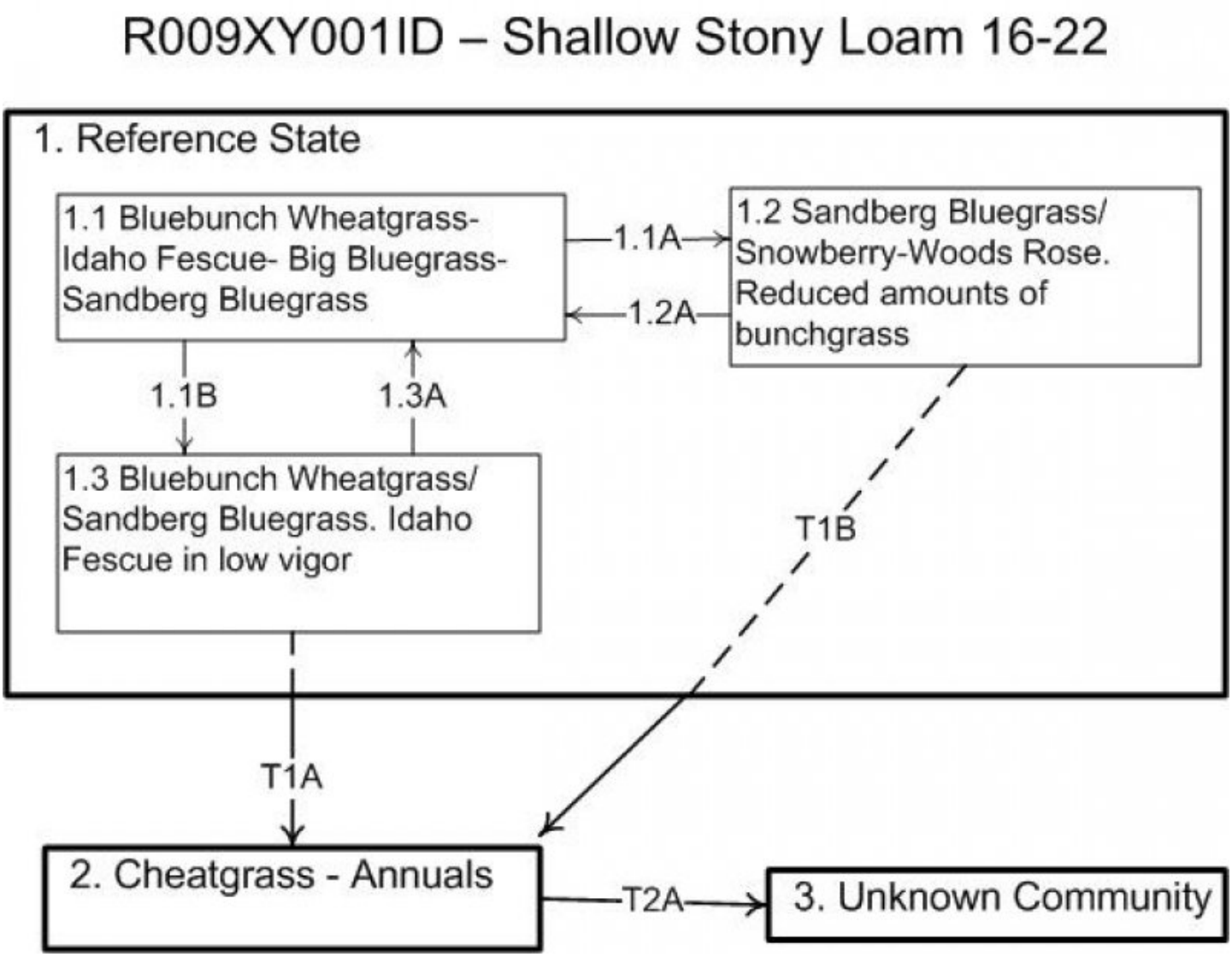

Figure 3. 9x-01

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 bluebunch wheatgrass. Idaho fescue, big bluegrass, and Sandberg bluegrass are present in the community in smaller amounts. Natural fire frequency is 25-40 years.

Table 5. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	300	535	750
Forb	100	115	250
Total	**400**	**650**	**1000**

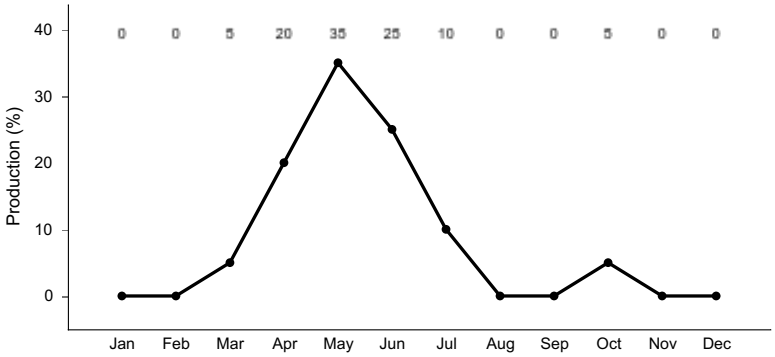

Figure 5. Plant community growth curve (percent production by month). ID0101, B9 PSSPS-FEID REFERENC PLANT COMMUNITY. State 1.

Community 1.2
State 1, Phase B.

State 1, Phase B. This plant community is dominated by Sandberg bluegrass with reduced amounts of bluebunch wheatgrass and Idaho fescue. All deep-rooted bunchgrasses are typically in low vigor. Snowberry and Woods' rose have increased. This state has developed due to improper grazing management. Some cheatgrass and other invasive annuals may have invaded the site.

Community 1.3
State 1, Phase C.

This plant community is dominated by bluebunch wheatgrass and Sandberg bluegrass . Idaho fescue is present but has reduced vigor. Forbs remain about in the same proportion as Phase A. Rose and snowberry may be present due to sprouting. Some cheatgrass may have invaded the site. This plant community is the result of wildfire.

State 2
State 2 Annuals

State 2. This plant community is dominated by cheatgrass and other annuals. Root sprouting shrubs such as snowberry and Woods' rose can be present. 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 fires 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.

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 and Idaho fescue. All deep-rooted bunchgrasses are typically in low vigor. Snowberry and Woods' rose have increased. This state has developed due to improper grazing management. Some cheatgrass and other invasive annuals may have invaded the site.

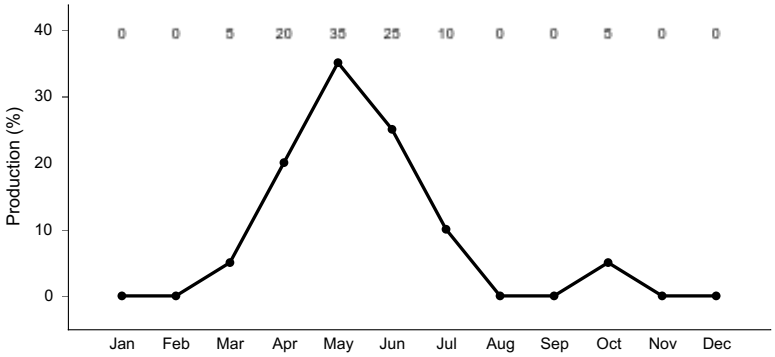

Figure 6. Plant community growth curve (percent production by month). ID0101, B9 PSSPS-FEID REFERENC PLANT COMMUNITY. State 1.

State 3
Unknown new site

Community 3.1
State 3 Phase A

Additional community tables

Table 6. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Lb/Acre)	Foliar Cover (%)
Grass/Grasslike					
1	**Perennial Grass/Grasslike**			–	
	bluebunch wheatgrass	PSSPS	*Pseudoroegneria spicata ssp. spicata*	190–475	–
	Idaho fescue	FEID	*Festuca idahoensis*	70–175	–
	Sandberg bluegrass	POSE	*Poa secunda*	30–80	–
	prairie Junegrass	KOMA	*Koeleria macrantha*	0–10	–
	Columbia needlegrass	ACNEN2	*Achnatherum nelsonii ssp. nelsonii*	0–10	–
2	**Big Bluegrass**			–	
	Sandberg bluegrass	POSE	*Poa secunda*	0–10	–
Forb					
3	**Forbs**			–	
	arrowleaf balsamroot	BASA3	*Balsamorhiza sagittata*	20–55	–
	silvery lupine	LUAR3	*Lupinus argenteus*	10–30	–
	desert biscuitroot	LOFO	*Lomatium foeniculaceum*	0–25	–
	parsnipflower buckwheat	ERHE2	*Eriogonum heracleoides*	0–25	–
	scabland penstemon	PEDE4	*Penstemon deustus*	0–10	–
	old man's whiskers	GETR	*Geum triflorum*	0–10	–
	common yarrow	ACMI2	*Achillea millefolium*	0–10	–
	longleaf phlox	PHLO2	*Phlox longifolia*	0–10	–
	largehead clover	TRMA3	*Trifolium macrocephalum*	0–10	–
	Rollins' biscuitroot	LORO2	*Lomatium rollinsii*	0–10	–
	little larkspur	DEBI	*Delphinium bicolor*	0–10	–
	Hooker's balsamroot	BAHO	*Balsamorhiza hookeri*	0–10	–
	sticky cinquefoil	POGLP	*Potentilla glandulosa ssp.*	0–10	–

			pseudorupestris		
	western stoneseed	LIRU4	*Lithospermum ruderale*	0–10	–
	shaggy fleabane	ERPU2	*Erigeron pumilus*	0–10	–
	milkvetch	ASTRA	*Astragalus*	0–10	–
	Idaho blue-eyed grass	SIID	*Sisyrinchium idahoense*	0–5	–
	broadfruit mariposa lily	CANI	*Calochortus nitidus*	0–5	–
	trumpet	COLLO	*Collomia*	0–5	–
	scarlet gilia	IPAG	*Ipomopsis aggregata*	0–5	–
	roundleaf alumroot	HECY2	*Heuchera cylindrica*	0–5	–
	slender phlox	MIGR	*Microsteris gracilis*	0–5	–
	speckled false dandelion	NONI	*Nothocalais nigrescens*	0–5	–
	prickly lettuce	LASE	*Lactuca serriola*	0–5	–
	deathcamas	ZIGAD	*Zigadenus*	0–5	–
	oneflower helianthella	HEUN	*Helianthella uniflora*	0–5	–
	tapertip hawksbeard	CRAC2	*Crepis acuminata*	0–5	–
	pale agoseris	AGGL	*Agoseris glauca*	0–5	–
	western pearly everlasting	ANMA	*Anaphalis margaritacea*	0–5	–
	maiden blue eyed Mary	COPA3	*Collinsia parviflora*	0–5	–
	onion	ALLIU	*Allium*	0–5	–
	pale agoseris	AGGL	*Agoseris glauca*	0–5	–
	Indian paintbrush	CASTI2	*Castilleja*	0–5	–
Shrub/Vine					
4	**Shrubs**			–	
	Woods' rose	ROWO	*Rosa woodsii*	0–10	–
	common snowberry	SYAL	*Symphoricarpos albus*	0–10	–
	parsnipflower buckwheat	ERHE2	*Eriogonum heracleoides*	0–10	–

Animal community

Wildlife Interpretations.

This site is important winter and spring range for big game. During the spring it is important habitat for chukars and Hungarian partridge. Mourning doves, bald eagles, and Merriam’s turkey also frequent the site.

Grazing Interpretations.

This site is suited for grazing by domestic livestock in late spring, summer, 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. 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. Soils on this site have slow to very rapid runoff, depending upon degree

of slope.

Recreational uses

Aesthetic values are good. A large variety of flora is present which have flowers that bloom in spring. The site position offers an excellent view of the surrounding countryside. The site is popular as a hiking area because of the variety of views and activities offered. This site has high value for chukar and Hungarian partridge hunting, and to a lesser degree, big game hunting.

Wood products

None

Other products

None

Other information

Field Offices

Grangeville, ID
Lewiston, ID
Nezperce, ID
Orofino, ID
Plummer, ID
Cascade, 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: Nez Perce County, ID	
General legal description	Open ridgetops near Zaza
Location 2: Idaho County, ID	
General legal description	Joseph plains area
Location 3: Idaho County, ID	
Location 4: Lewis County, ID	
Location 5: Nez Perce County, ID	
Location 6: Latah County, ID	
Location 7: 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.

Contributors

Dave Franzen And Jacy Gibbs

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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Date	03/20/2009
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.

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

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3. **Number and height of erosional pedestals or terracettes:** Both can occur on this site. They are not extensive. Do not mistake frost heaves for pedestals.

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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 25-40 percent but additional data is needed.

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

6. **Extent of wind scoured, blowouts and/or depositional areas:** Blowouts and depositional areas are 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 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 4 to 6 .

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** No data.

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 vegetative 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.

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: When soils are 15-20” deep:
    cool season bunchgrasses
    When soils are 10-15” deep:
    shallow-rooted bunchgrasses

    Sub-dominant: When soils are 15-20” deep:
    perennial forbs
    When soils are 10-15” deep:
    forbs

    Other: When soils are 15-20” deep:
    shrubs
    When soils are 10-15” deep:
    shrubs

    Additional: When soils are 15-20” deep:
    shallow-rooted bunchgrasses

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Very little decadence is expected to occur on this site. Mortality can occur following extended drought.

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 650 lbs. per acre in a year with normal precipitation and temperatures. Perennial grasses produce 70-80 percent of the total and forbs produce 20-30 percent. Shrubs, when present, produce 0-5 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, Canadian thistle, tarweed, curlycup gumweed, spotted and diffuse knapweed, and yellow starthistle.

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