

# Ecological site R009XY005OR

## Cold Swale

### 13-17 PZ

Last updated: 5/05/2025  
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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.

#### Associated sites

<b>R009XY006OR</b>	<p><b>Cold Clayey Swale 13-17 PZ</b></p> <p>Mountain Clayey Swale 13-17 PZ</p>
<b>R009XY017OR</b>	<p><b>Cold Loamy 13-17 PZ</b></p> <p>Mountain Loamy 13-17 PZ</p>
<b>R009XY034OR</b>	<p><b>Cold South 13-17 PZ</b></p> <p>Mountain South 13-17 PZ</p>
<b>R009XY040OR</b>	<p><b>North 14-17 PZ</b></p> <p>North 13-17 PZ</p>

**Table 1. Dominant plant species**

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

#### Physiographic features

This site occurs in uplands adjacent to and on the flood plains of ephemeral drainages. It typically occurs at the upper end of drainages. Slopes range from 2-15%. Elevation varies from 3400 to 4400 feet.

**Table 2. Representative physiographic features**

Landforms	<p>(1) Mountain</p> <p>(2) Swale</p>
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Elevation	1,040 – 1,340 m
Slope	0 – 20 %
Water table depth	80 – 150 cm
Aspect	Aspect is not a significant factor

### Climatic features

The annual precipitation ranges from 12 to 18 inches. It occurs as snow during the months of November through March followed by ample spring rainfall. Localized, occasionally severe, convection storms occur during the summer. Ephemeral subsurface moisture flow augments the precipitation. The mean annual air temperature is approximately 45 degrees F. Extreme temperatures range from 90 degrees F. to -30 degrees F. Soil temperature regimes are frigid. The frost-free period ranges from 30-100 days. The period of optimum plant growth is from mid April through July.

Table 3 Representative climatic features

Frost-free period (average)	100 days
Freeze-free period (average)	
Precipitation total (average)	430 mm

### Influencing water features

#### Soil features

The soils of this site are formed in recent alluvium and loess. They are deep to very deep. Typically the surface layer is a silt loam about 10 to 30 inches thick. the subsoil is a silty clay loam over 40 inches thick. Gravels may be present. The substratum varies from alluvium to bedrock. Soil permeability is moderate. The available water holding capacity (AWC) is 8 to 10 inches. A seasonal water table occurs at depths of 30 to greater than 60 inches. The soils are well drained. The potential for erosion is moderate.

Table 4. Representative soil features

Surface texture	(1) Silt loam
Family particle size	(1) Clayey
Drainage class	Well drained
Permeability class	Moderate
Soil depth	130 – 180 cm

## Ecological dynamics

### Range in Characteristics:

The amount of basin wildrye is dependant on the extent and duration of lateral subsurface water flows. Basin wildrye increases and Idaho fescue decreases on swales receiving subsurface flows late into the growing season. This would be on swales with large drainage areas. Conversely, Idaho fescue would increase on swales with limited drainage areas. This would be typically be at the upper ends of the watersheds where drainage area is limited. Production follows a similar pattern, increasing on swales with large drainage areas.

### Response to Disturbance:

If the condition of the site deteriorates as a result of overgrazing, basin wildrye and Idaho fescue decrease. Bluegrass and quackgrass invade and forbs increase. With further deterioration, annuals invade and usable forage production rapidly decreases. Intermittent streambeds and banks become unstable from loss of vegetation and channels degrade, incising and becoming deeper and wider in the process. Subsurface flows are affected. Peak discharges increase, seasonal water tables are lowered and storage of water for late season use is reduced. Erosion from concentrated flows reduces the site productivity and contributes to downstream sedimentation.

## State and transition model

## Additional community tables

Table 5. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
<b>Grass/Grasslike</b>					
1	<b>Perennial Deep-rooted Dominant</b>			1401-1961	
	basin wildrye	LECI4	<i>Leymus cinereus</i>	1401-1961	–
2	<b>Perennial Deep-rooted Subdominant</b>			616-981	
	Idaho fescue	FEID	<i>Festuca idahoensis</i>	560-841	–
	bluebunch wheatgrass	PSSP6	<i>Pseudoroegneria spicata</i>	56-140	–
4	<b>Perennial Shallow-rooted Subdominant</b>			28-84	
	bluegrass	POA	<i>Poa</i>	28-84	–
5	<b>PPGG</b>			56-224	
	squirreltail	ELEL5	<i>Elymus elymoides</i>	19-75	–
	prairie Junegrass	KOMA	<i>Koeleria macrantha</i>	19-75	–
	Sandberg bluegrass	POSE	<i>Poa secunda</i>	19-75	–
<b>Shrub/Vine</b>					
13	<b>Perennial Deciduous Dominant</b>			28-84	
	rose	ROSA5	<i>Rosa</i>	28-84	–
15	<b>SSSS</b>			56-224	
	Saskatoon serviceberry	AMAL2	<i>Amelanchier alnifolia</i>	15-56	–
	green rabbitbrush	ERTE18	<i>Ericameria teretifolia</i>	15-56	–
	wax currant	RICE	<i>Ribes cereum</i>	15-56	–
	common snowberry	SYAL	<i>Symphoricarpos albus</i>	15-56	–

## Animal community

**Livestock Grazing:** This site is well suited to late spring, summer and fall use by cattle and horse under a planned grazing system. The key species is basin wildrye. This site can be damaged if heavily grazed during periods of basin wildrye flowering and seed formation when root reserves are low. Basin wildrye can provide excellent standing dried forage during fall dormancy. Grazing system design and implementation should consider the improvement and maintenance of streambed and bank cover during all seasons. This is particularly important in the fall when enough residue should be left over winter for protection during spring runoff events. **Wildlife:** When the ecological consideration is high this site provides good food and cover for deer, elk and various other mammals. It provides excellent nesting areas for a variety of upland birds. It is an important wintering area for mule deer and elk. **Native Wildlife Associated With the Potential Climax Community:** Mule Deer, White tail deer, elk, rodents and a variety of upland birds use this site for food and cover. Cover is excellent when the ecological condition is high.

## Hydrological functions

The soils of this site have excellent water holding capacities, providing late season water for plant growth and slow water release to streams. The hydrologic cover condition is excellent when the ecological condition is high. Under a high ecological condition the primary channel is shallow and not well defined. Adequate vegetative cover protects the swale from incision. During runoff events flows are broad and shallow across the vegetative cover which flattens, protects the soil surface and catches additional sediment.

## Other information

In fair condition this site responds rapidly to good management. When in fair condition, periodic prescribed burns will control invading vegetation and rapidly improve the vigor and seed production of basin wildrye. When incised channels are present, rehabilitation will markedly improve production and restore hydrologic characteristics. On altered sites in poor condition the reintroduction of desirable deep rooted plants may be needed to fully restore the site potential.

## Contributors

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## Approval

Kirt Walstad, 5/05/2025

## Rangeland health reference sheet

**Interpreting Indicators of Rangeland Health** is a qualitative assessment protocol used to determine ecosystem condition based on benchmark characteristics described in the Reference Sheet. A suite of 17 (or more) indicators are typically considered in an assessment. The ecological site(s) representative of an assessment location must be known prior to applying the protocol and must be verified based on soils and climate. Current plant community cannot be used to identify the ecological site.

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Date	07/27/2012
Approved by	
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

## Indicators

1. **Number and extent of rills:** None to some, moderate sheet & rill erosion hazard

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2. **Presence of water flow patterns:** Frequent flooding with seasonal high water table

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3. **Number and height of erosional pedestals or terracettes:** None

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4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):**  
5-10%

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5. **Number of gullies and erosion associated with gullies:** Poor resistance to erosion when cover is lacking - subject to incision and downcutting

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6. **Extent of wind scoured, blowouts and/or depositional areas:** None, slight wind erosion hazard

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7. **Amount of litter movement (describe size and distance expected to travel):** Fine - limited movement

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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):**  
Moderately resistant to erosion with adequate cover: aggregate stability = 3-4

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Deep recent alluvium with a thick (10-30") silt loam surface: Low OM (1-2%)

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Significant ground cover (90-100%) and gentle slopes (0-15%) effectively limit rainfall impact and overland flow

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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):** None

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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:** Basin wildrye > Idaho fescue > other shrubs = other perennial grasses > Bluebunch wheatgrass > other forbs > sedges = bluegrasses = Rose > Buckwheat = Lupine

**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):**  
Normal decadence and mortality expected
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- 14. Average percent litter cover (%) and depth ( in):**
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- 15. Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):**  
Favorable: 3000, Normal: 2500, Unfavorable: 2000 lbs/acre/year at high RSI (HCPC)
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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: With deterioration of plant community, bluegrasses invade sites that have lost deep rooted perennial grass functional groups**
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- 17. Perennial plant reproductive capability: All species should be capable of reproducing annually**
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