

**Ecological site R009XY021OR**  
**Shallow Clayey**  
**17-22 PZ**

Accessed: 07/20/2026

**General information**

**Provisional.** A provisional ecological site description has undergone quality control and quality assurance review. It contains a working state and transition model and enough information to identify the ecological site.

**Associated sites**

|                    |                                                           |
|--------------------|-----------------------------------------------------------|
| <b>R009XY025OR</b> | <b>Very Shallow 14-18 PZ</b><br><br>Very Shallow 14" PZ   |
| <b>R009XY031OR</b> | <b>Shallow South 14+ PZ</b><br><br>Shallow South 14" + PZ |

**Similar sites**

|                    |                                                                                         |
|--------------------|-----------------------------------------------------------------------------------------|
| <b>R009XY013OR</b> | <b>Loamy 17-22 PZ</b><br><br>Loamy 17-22" Pz (medium textured soil, higher production). |
| <b>R009XY016OR</b> | <b>Clayey 17-22 PZ</b><br><br>Clayey 17-22" PZ (deeper soil, higher production)         |

Table 1. Dominant plant species

|            |               |
|------------|---------------|
| Tree       | Not specified |
| Shrub      | Not specified |
| Herbaceous | Not specified |

**Physiographic features**

This site occurs within forestland on table lands and mountain plateaus. It is typically within the northern portion of the blue mountains. Slopes range from 0 to 12 %. Elevation varies from 3000 to 4000 feet.

Table 2. Representative physiographic features

|           |              |
|-----------|--------------|
| Landforms | (1) Mountain |
|-----------|--------------|

|           |                                    |
|-----------|------------------------------------|
| Elevation | 910 – 1,220 m                      |
| Slope     | 0 – 10 %                           |
| Aspect    | Aspect is not a significant factor |

### Climatic features

The annual precipitation ranges from 17 to 22 inches, most of which occurs in the form of snow during the months of November through March followed by ample early summer rainfall. Localized convectional storms occasionally occur during the summer. The soil temperature regime is mesic approaching frigid with the mean annual air temperature of 47 degrees F. The frost-free period ranges from 80 to 110 days. The optimum period for plant growth is from mid-April to early July.

**Table 3 Representative climatic features**

|                               |          |
|-------------------------------|----------|
| Frost-free period (average)   | 110 days |
| Freeze-free period (average)  | 0 days   |
| Precipitation total (average) | 560 mm   |

### Influencing water features

#### Soil features

The soils of this site are shallow over basalt bedrock, and well drained. Areas of rock outcrop may occur. Typically the surface layer is a very stony or very cobbly silt loam. The subsoil varies from a cobbly silty clay to a very gravelly clay. Depth to bedrock averages 15 inches. Permeability is slow and the available water holding capacity (AWC) is about 1 to 3 inches for the profile. The potential for erosion is slight to moderate.

**Table 4. Representative soil features**

|                      |                          |
|----------------------|--------------------------|
| Surface texture      | (1) Very stony silt loam |
| Family particle size | (1) Clayey               |
| Drainage class       | Well drained             |
| Permeability class   | Slow                     |

### Ecological dynamics

Range in Characteristics:

Variability in plant composition and yeild is dependent on aspect, soil depth and coarse fragments rather than on precipitation and elevation ranges that occur within the site. There tends to be a higher proportion of bluebunch wheatgrass and lower overall prduction on south and southwesterly slopes at shallower depths. Conversely, Idaho fescue is in higher proportion with higher overall production on north slopes.

Response to Disturbance:

If the condition of the site deteriorates as a result of overgrazing, Idaho fescue decreases and bluebunch wheatgrass increases. Idaho fescue is the preferred species during early summer use. With further deterioration, bluebunch wheatgrass decreases, Sandberg's bluegrass increases, bulbous and other bluegrasses invade along with soft chess, tarweed, and other annuals. Unpalatable forbs such as yarrow and mulesear wyethia increase and medusahead may invade. Under deteriorated conditions, annuals and invading bluegrass dominate the site. Excessive erosion in the bare interspaces markedly reduces the potential of the site 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>        |        |                                | 673-1031             |                  |
|                        | Idaho fescue                                 | FEID   | <i>Festuca idahoensis</i>      | 493-673              | –                |
|                        | bluebunch wheatgrass                         | PSSP6  | <i>Pseudoroegneria spicata</i> | 179-359              | –                |
| 4                      | <b>Perennial Shallow-rooted Sub-dominant</b> |        |                                | 36-90                |                  |
|                        | Sandberg bluegrass                           | POSE   | <i>Poa secunda</i>             | 18-45                | –                |
|                        | prairie Junegrass                            | KOMA   | <i>Koeleria macrantha</i>      | 9-27                 | –                |
|                        | onespike danthonia                           | DAUN   | <i>Danthonia unispicata</i>    | 9-18                 | –                |
| <b>Forb</b>            |                                              |        |                                |                      |                  |
| 7                      | <b>Perennial All Dominant</b>                |        |                                | 27-81                |                  |
|                        | common yarrow                                | ACMI2  | <i>Achillea millefolium</i>    | 9-27                 | –                |
|                        | arrowleaf balsamroot                         | BASA3  | <i>Balsamorhiza sagittata</i>  | 9-27                 | –                |
|                        | lupine                                       | LUPIN  | <i>Lupinus</i>                 | 9-27                 | –                |
| 8                      | <b>Perennial All Dominant</b>                |        |                                | 18-36                |                  |
|                        | buckwheat                                    | ERIOG  | <i>Eriogonum</i>               | 9-18                 | –                |
|                        | desertparsley                                | LOMAT  | <i>Lomatium</i>                | 9-18                 | –                |
| 9                      | <b>PPFF</b>                                  |        |                                | 9-72                 |                  |
|                        | agoseris                                     | AGOSE  | <i>Agoseris</i>                | 1-6                  | –                |
|                        | milkvetch                                    | ASTRA  | <i>Astragalus</i>              | 1-6                  | –                |
|                        | brodiaea                                     | BRODI  | <i>Brodiaea</i>                | 1-6                  | –                |
|                        | Indian paintbrush                            | CASTI2 | <i>Castilleja</i>              | 1-6                  | –                |
|                        | hawksbeard                                   | CREPI  | <i>Crepis</i>                  | 1-6                  | –                |
|                        | fleabane                                     | ERIGE2 | <i>Erigeron</i>                | 1-6                  | –                |
|                        | Scouler's woollyweed                         | HISC2  | <i>Hieracium scouleri</i>      | 1-6                  | –                |
|                        | beardtongue                                  | PENST  | <i>Penstemon</i>               | 1-6                  | –                |
|                        | phlox                                        | PHLOX  | <i>Phlox</i>                   | 1-6                  | –                |
|                        | cinquefoil                                   | POTEN  | <i>Potentilla</i>              | 1-6                  | –                |
|                        | stonecrop                                    | SEDUM  | <i>Sedum</i>                   | 1-6                  | –                |
|                        | plumed clover                                | TRPL2  | <i>Trifolium plumosum</i>      | 1-6                  | –                |
|                        | mule-ears                                    | WYAM   | <i>Wyethia amplexicaulis</i>   | 1-6                  | –                |
| <b>Shrub/Vine</b>      |                                              |        |                                |                      |                  |
| 13                     | <b>Perennial Deciduous Dominant</b>          |        |                                | 18-36                |                  |
|                        | rose                                         | ROSA5  | <i>Rosa</i>                    | 9-18                 | –                |
|                        | common snowberry                             | SYAL   | <i>Symphoricarpos albus</i>    | 9-18                 | –                |

## Animal community

**Livestock Grazing:** This site is suited to use by cattle and sheep in summer and fall. Stoniness and shallow depths are the main limitations. Care should be taken to avoid trampling damage and soil compaction when soils are wet. **Wildlife:** This site is important as a spring, summer and fall grazing site for deer and elk. The sites are usually adjacent to forested areas which provide hiding and thermal cover. **Native Wildlife Associated With The Potential Climax Community:** Rodents, Songbirds, Red-tailed hawk, Coyote, Rocky Mountain elk, Mule deer, White-tailed deer.

## Hydrological functions

The hydrologic cover condition is good at higher condition classes. The soils are in hydrologic groups C and D.

## Recreational uses

In the Blue Mountains this site occurs on ridge tops interfingering with the forest. It provides a pleasing visual diversity with the forests.

## Wood products

A few scattered ponderosa pine may occur on inclusions of deeper soil. These provide little economic benefits in terms of wood products, but are of some value for shade and diversity.

## Other information

This site has a low potential for range seedign because of coarse fragments and shallow depth.

## Contributors

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## 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)                    | Jeff Repp, Bruce Franssen |
| Contact for lead author                     |                           |
| Date                                        | 07/11/2007                |
| Approved by                                 |                           |
| Approval date                               |                           |
| Composition (Indicators 10 and 12) based on | Annual Production         |

## Indicators

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

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2. Presence of water flow patterns: None to some

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

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4. Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground): 10-20%

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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: 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: aggregate stability = 3-5

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9. Soil surface structure and SOM content (include type of structure and A-horizon color and thickness): Fine platy structure; Dry color value 4-5; 4-7" thickness; moderate OM (2-5%)

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10. Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff: Sparse to moderate ground cover (50-60%) and gentle slopes (0-12%) moderately 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: Idaho fescue > bluebunch wheatgrass

Sub-dominant: forbs > other grasses

Other: shrubs

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
- 

14. Average percent litter cover (%) and depth ( in):
- 

15. Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):  
Favorable: 1100, Normal: 800, Unfavorable:400 lbs/acre/year at high RSI (HCPC)
- 

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: Perennial forb species will increase with deterioration of plant community. Bluegrasses, annual bromes, and medusahead invade sites that have lost deep rooted perennial grass functional groups. Excessive erosion may occur, deteriorating site potential.
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17. Perennial plant reproductive capability: All species should be capable of reproducing annually
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