USDA Natural Resources
Conservation Service

# Ecological site R023XY420OR
# Shallow Granular Clayey 10-12 PZ

Last updated: 4/10/2025
Accessed: 12/17/2025

## 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

Currently there is only a draft of the initial concept for this ecological site. The initial concept for this site places it within the Clayey Mesic Plateaus 8-14 PZ Wyoming Big Sagebrush and Thurber's Needlegrass Ecological Site Group. To view the General STM and other information available for this ESG please go to https://edit.jornada.nmsu.edu/catalogs/esg/023X/R023XY909OR

This site had a limited distribution on Lookout soils. The documented plant community conforms well to the group's modal site with a higher annual production.

**Table 1. Dominant plant species**

| | |
|---|---|
| Tree | Not specified |
| Shrub | (1) *Artemisia tridentata ssp. wyomingensis* |
| Herbaceous | (1) *Pseudoroegneria spicata ssp. spicata* |

## Physiographic features

This site occurs on terraces, rolling uplands, and mountain foothills. Slopes range from 2 to 15%. Elevation varies from 4200 to 5,300 feet.

**Table 2. Representative physiographic features**

| | |
|---|---|
| Landforms | (1) Terrace |
| Elevation | 4,200–5,300 ft |
| Slope | 2–15% |

| | |
|---|---|
| Aspect | Aspect is not a significant factor |

## Climatic features

The annual precipitation ranges from 10 to 12 inches, most of which occurs in the form of snow during the months of December through March. Localized convection storms occasionally occur during the summer. The soil temperature regime is frigid with a mean air temperature of 44 degrees F. Temperature extremes range from 100 to -30 degrees F. The frost free period ranges from less than 50 to 90 days. The optimum growth period for native plants is from April through June.

**Table 3. Representative climatic features**

| | |
|---|---|
| Frost-free period (average) | 70 days |
| Freeze-free period (average) | |
| Precipitation total (average) | 11 in |

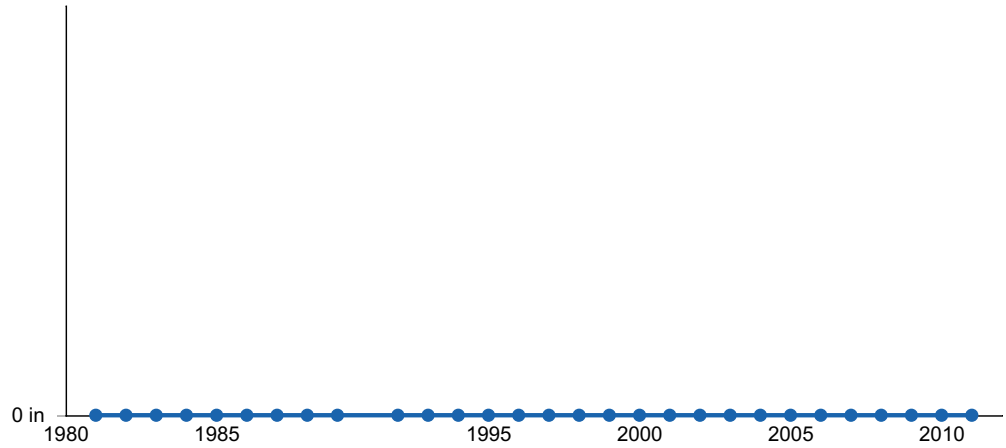


**Figure 1. Annual precipitation pattern**

## Influencing water features

## Soil features

The soils have a very thin, loamy surface layer over an abrupt textural change to a clayey subsoil. Typically the surface layer is 1 to 4 inches thick and has an ashy loam texture. The upper subsoil has strong very fine blocky or medium granular structure and a clay texture. Permeability is slow. Drainage class is moderately well. The surface layer is commonly saturated in late winter or spring. Available water holding capacity is about 2 inches in the surface and upper subsoil layers.

**Table 4. Representative soil features**

| | |
|---|---|
| Surface texture | (1) Loam |
| Family particle size | (1) Clayey |

## Ecological dynamics

The potential native plant community is dominated by Wyoming sagebrush and bluebunch wheatgrass. Sandberg bluegrass, Cusick bluegrass, and spiny hopsage are present. Vegetative composition of the community is approximately 50 percent grasses, 10 percent forbs, and 40 percent shrubs.

5. Range in Characteristics
Sandberg bluegrass and bottlebrush squirreltail increase and bluebunch wheatgrass decrease as depth to an abruptic clay layer decreases . Deep to the abruptic clay layer will effect production totals. If significant soil loss occurs or the site experiences prolonged wet periods the site may grade into a Claypan 10-12 PZ site

6. Response to Disturbance
Disturbances, such as overgrazing, will only cause slight deterioration of the site. Sandberg bluegrass, bottlebrush squirreltail , broom snakeweed and green rabbitbrush will increase in dominance while bluebunch wheatgrass will decline.

## State and transition model

**Ecosystem states**

1. Reference State

**State 1 submodel, plant communities**

1.1. Reference Plant Community

## State 1
## Reference State

## Community 1.1
## Reference Plant Community

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

| Plant Type | Low (Lb/Acre) | Representative Value (Lb/Acre) | High (Lb/Acre) |
|---|---|---|---|
| Grass/Grasslike | 150 | 200 | 250 |
| Shrub/Vine | 120 | 160 | 200 |
| Forb | 30 | 40 | 50 |
| **Total** | **300** | **400** | **500** |

# 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 | **Moderately deep-rooted, perennial bunchgrass** | | | 40–120 | |
| | bluebunch wheatgrass | PSSP6 | *Pseudoroegneria spicata* | 40–120 | – |
| 2 | **Moderately deep-rooted, perennial bunchgrass** | | | 8–40 | |
| | squirreltail | ELEL5 | *Elymus elymoides* | 8–40 | – |
| 3 | **Shallow rooted, perennial bunchgrass** | | | 8–40 | |
| | Sandberg bluegrass | POSE | *Poa secunda* | 8–40 | – |
| 4 | **Other perennial grasses** | | | 8–24 | |
| | Thurber's needlegrass | ACTH7 | *Achnatherum thurberianum* | 0–8 | – |
| | Cusick's bluegrass | POCU3 | *Poa cusickii* | 0–8 | – |
| **Forb** | | | | | |
| 7 | **Perennial Forbs** | | | 16–32 | |
| | tapertip hawksbeard | CRAC2 | *Crepis acuminata* | 4–8 | – |
| | fleabane | ERIGE2 | *Erigeron* | 4–8 | – |
| | buckwheat | ERIOG | *Eriogonum* | 4–8 | – |
| | phlox | PHLOX | *Phlox* | 4–8 | – |
| 8 | **Other perennial forbs** | | | 4–20 | |

| | | | | | |
|---|---|---|---|---|---|
| | onion | ALLIU | *Allium* | 0–4 | – |
| | low pussytoes | ANDI2 | *Antennaria dimorpha* | 0–4 | – |
| | milkvetch | ASTRA | *Astragalus* | 0–4 | – |
| | Douglas' dustymaiden | CHDO | *Chaenactis douglasii* | 0–4 | – |
| | desertparsley | LOMAT | *Lomatium* | 0–4 | – |
| | lupine | LUPIN | *Lupinus* | 0–4 | – |
| | beardtongue | PENST | *Penstemon* | 0–4 | – |
| **Shrub/Vine** | | | | | |
| 11 | **Non-sprouting Shrub** | | | 80–120 | |
| | Wyoming big sagebrush | ARTRW8 | *Artemisia tridentata ssp. wyomingensis* | 80–120 | – |
| 12 | **Shrub** | | | 8–20 | |
| | spiny hopsage | GRSP | *Grayia spinosa* | 8–20 | – |
| 13 | **Other Shrubs** | | | 8–20 | |
| | yellow rabbitbrush | CHVI8 | *Chrysothamnus viscidiflorus* | 0–8 | – |
| | broom snakeweed | GUSA2 | *Gutierrezia sarothrae* | 0–8 | – |
| | littleleaf horsebrush | TEGL | *Tetradymia glabrata* | 0–8 | – |

## Animal community

Wildlife:

Antelope
Deer
Rodents
Coyotes
Songbirds

## Hydrological functions

The soils are in hydrologic group C. The soils of this site have slow permeability and a restrictive layer.

## Type locality

| |
|---|
| Location 1: Malheur County, OR |

| | |
|---|---|
| Township/Range/Section | T29 S R38 E S28 |
| General legal description | About 2 miles NW of Ryegrass Creek Ranch. |

## Contributors

Tackman And Williams
Vale Soils/Range Team

## 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 | |
| Date | 12/17/2025 |
| Approved by | Kendra Moseley |
| Approval date | |
| Composition (Indicators 10 and 12) based on | Annual Production |

## Indicators

1. **Number and extent of rills:**

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2. **Presence of water flow patterns:**

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3. **Number and height of erosional pedestals or terracettes:**

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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. **Number of gullies and erosion associated with gullies:**

6. **Extent of wind scoured, blowouts and/or depositional areas:**

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

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):**

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):**

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:**

11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):**

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:

    Sub-dominant:

    Other:

    Additional:

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):**

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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):**

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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:**

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17. **Perennial plant reproductive capability:**

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