

**Ecological site F043AY505WA**  
**Warm Mesic Xeric Loamy Foothills/Mountainsides, ashy surface**  
**(Ponderosa Pine Dry Shrub, Grass)**  
***Pinus ponderosa* / *Purshia tridentata* – *Festuca idahoensis* -**  
***Pseudoroegneria spicata***

Last updated: 3/11/2019

Accessed: 04/21/2026

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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.

### MLRA notes

Major Land Resource Area (MLRA): 043A–Northern Rocky Mountains

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### LRU notes

Most commonly found in LRU 43A01 (Okanogan Plateau). This LRU is composed predominantly of glaciated foothills and mountains west of the Republic Graben. The LRU is in the portion of the Northern Rocky Mountains that was subjected to continental glaciation. The soils tend to be loamy mollisols andisols and inceptisols with strong volcanic ash influence. Till and outwash are the dominant parent materials though colluvium and residuum from granitic and/or metamorphic geology are also common.. Soil climate is a dominantly cryic or frigid temperature regime and xeric moisture regime with average annual precipitation around 450 mm (18 inches) and an average annual air temperature around 6.3 degrees C (43 degrees F). Elevation ranges from about 560 to 1530 m (1,800 to 5,000 feet).

### Classification relationships

Relationship to Other Established Classifications: United States National Vegetation Classification (2008) – A3446 Ponderosa Pine / Shrub Understory Central Rocky Mt. Forest & Woodland Alliance Washington Natural Heritage Program. Ecosystems of Washington State, A Guide to Identification, Rocchio and Crawford, 2015 – Northern Rocky Mountain Ponderosa Pine Woodland and Savanna Description of Ecoregions of the United States, USFS PN # 1391, 1995 - M332 Middle Rocky Mountain Steppe– Coniferous Forest - Alpine Meadow Province Level III and IV Ecoregions of WA, US EPA, June 2010 - 15r Okanogan – Colville Xeric Valleys & Foothills This ecological site includes the following USDA Forest Service Plant Associations: PIPO/PUTR, PIPO/PUTR-FEID, and PIPO/PUTR-PSSP. (Williams et. al. 1995)

### Ecological site concept

This site consists of hillslopes and lower mountain slopes with the following characteristics: loamy soil materials; a volcanic ash surface greater than 7 inches thick; a water table (perched or apparent) greater than 75 cm (30 in) below the soil surface during the April to October period; PIPO/PUTR-FEID, PIPO/PUTR-PSSP6 habitat types.

Table 1. Dominant plant species

Tree	(1) <i>Pinus ponderosa</i>
Shrub	(1) <i>Purshia tridentata</i>

Herbaceous	(1) <i>Festuca idahoensis</i> (2) <i>Pseudoroegneria spicata</i>
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### Physiographic features

#### Physiographic Features

Landscapes: Mountains, Foothills, Canyons

Landform: sideslopes, foot slopes, toe slopes

Elevation (m): Total range = 555 to 1135 m

(1,820 to 3,725 feet)

Core Concept = 695 to 870 m

(2,280 to 2,855 feet)

Slope (percent): Total range = 0 to 65 percent

Core Concept = 15 to 35 percent

**Table 2. Representative physiographic features**

Landforms	(1) Mountains > Mountain slope (2) Foothills > Hillslope
Flooding frequency	None
Ponding frequency	None
Elevation	700 – 870 m
Slope	20 – 40 %
Aspect	SE, S, SW

**Table 3. Representative physiographic features (actual ranges)**

Flooding frequency	Not specified
Ponding frequency	Not specified
Elevation	560 – 1,140 m
Slope	0 – 70 %

### Climatic features

#### Climatic Features

Frost-free period (days): Total range = 105 to 135 days

Core Concept = 110 to 120 days

Mean annual precipitation (cm): Total range = 370 to 540 mm  
 (15 to 21 inches)  
 Core Concept = 430 to 510 mm  
 (17 to 20 inches)

MAAT (C): Total range = 7.3 to 8.8  
 (45 to 48 F)  
 Core Concept = 7.8 to 8.1  
 (46 to 47 F)

Climate Stations: CHIEF JOSEPH SUBSTN

**Table 4 Representative climatic features**

Frost-free period (characteristic range)	110-120 days
Freeze-free period (characteristic range)	
Precipitation total (characteristic range)	430-510 mm
Frost-free period (actual range)	110-140 days
Freeze-free period (actual range)	
Precipitation total (actual range)	380-530 mm

### Influencing water features

Water Table Depth (cm):  
 >200 cm  
 (>80 inches)

Flooding:  
 Frequency: None  
 Duration: None

Ponding:  
 Frequency: None  
 Duration: None

### Soil features

#### Representative Soil Features

This ecological subsite is associated with several soil series (e.g. Thowson, Wadams). The soils are Typic Vitrixerands. These soils have developed in Mazama tephra deposits over till. The tephra layers are important for forest productivity in that they retain large amounts of water compared to other parent materials, have high cation exchange capacity and high availability of organically bound plant nutrients. The soils range from moderately deep to very deep and have adequate available water capacity to a depth of 1 m. The soils are mostly well-drained.

**Table 5. Representative soil features**

Parent material	(1) Volcanic ash (2) Till
Surface texture	(1) Ashy sandy loam (2) Ashy coarse sandy loam
Drainage class	Well drained
Surface fragment cover >3"	Not specified
Available water capacity (0-101.6cm)	12.95 cm
Soil reaction (1:1 water) (0-152.4cm)	Not specified
Subsurface fragment volume <=3" (25.4-101.6cm)	20 %

Table 6. Representative soil features (actual values)

Drainage class	Not specified
Surface fragment cover >3"	0 – 10 %
Available water capacity (0-101.6cm)	12.95 – 14.48 cm
Soil reaction (1:1 water) (0-152.4cm)	6.7 – 10
Subsurface fragment volume <=3" (25.4-101.6cm)	10 – 20 %

### Ecological dynamics

A description of vegetation dynamics and a state and transition model can be found in Ecological Site Group EX043AESG02.

### State and transition model

## Additional community tables

### Approval

Scott Woodall, 3/11/2019

### 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	
Approved by	
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):**

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

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

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

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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):

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

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

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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):

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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:

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):

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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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