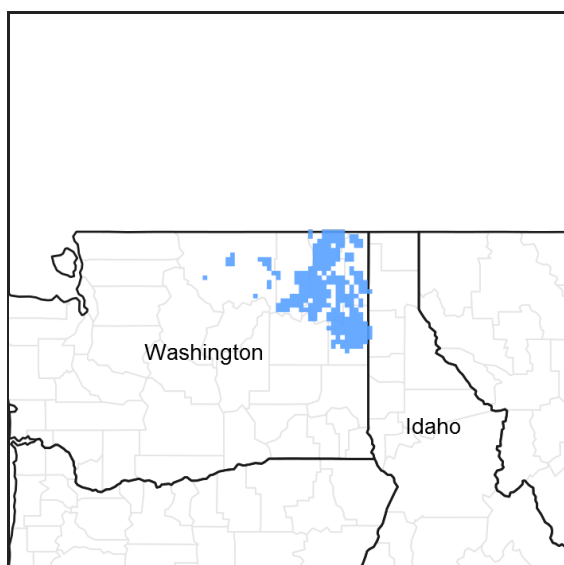


**Ecological site F043AY510WA**  
**Warm, Xeric, Loamy Hillsides, Low Available Water Capacity (Ponderosa Pine/Dry Grass) *Pinus ponderosa* / *Pseudoroegneria spicata* , *Pinus ponderosa* / *Festuca idahoensis***

Last updated: 3/11/2019  
Accessed: 05/12/2025

## 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.



**Figure 1. Mapped extent**

Areas shown in blue indicate the maximum mapped extent of this ecological site. Other ecological sites likely occur within the highlighted areas. It is also possible for this ecological site to occur outside of highlighted areas if detailed soil survey has not been completed or recently updated.

## MLRA notes

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

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

Description of MLRAs can be found in: United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land Resource Regions and Major Land Resource Areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296.

Available electronically at: [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/ref/?cid=nrcs142p2\\_053624#handbook](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/ref/?cid=nrcs142p2_053624#handbook)

## LRU notes

Most commonly found in LRU 43A03 (Columbia-Colville Valleys).

This LRU is composed predominantly of glaciated foothills, lower mountain slopes and outwash terraces near the

Columbia and Colville Rivers. The LRU is in the portion of the Northern Rocky Mountains that was subjected to continental glaciation. The soils tend to be loamy mollisols and inceptisols with thin to mixed volcanic ash surfaces. 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 mesic or frigid temperature regime and xeric moisture regime with average annual precipitation around 495 mm (19 inches) and an average annual air temperature around 8.2 degrees C (47 degrees F). Elevation ranges from about 370 to 1030 m (1,200 to 3,380 feet).

Also found in LRU 44A01 (Spokane-Rathdrum Outwash Plains) and areas of 43A01 (Okanogan Plateau).

## Classification relationships

Relationship to Other Established Classifications:

United States National Vegetation Classification (2008) – A3447 Ponderosa Pine / Herbaceous 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 Mt. Forest-Steppe-Coniferous Forest-Alpine Meadow Province

Level III and IV Ecoregions of WA, US EPA, June 2010 - 15r Okanogan – Colville Xeric Valleys & Foothills and 15s Spokane Valley Outwash Plains

This ecological site includes the following USDA Forest Service Plant Associations: PIPO/PSSP, PIPO/FEID, and PIPO-PSME/PSSP. (Williams et. al. 1995)

## Ecological site concept

This site consists of glaciated hillslopes, low mountain slopes and outwash plains with the following characteristics: loamy soil materials; a water table (perched or apparent) more than 75 cm (30 in) below the soil surface during the April to October period; cumulative available water capacity to a depth of 40 inches that is < 3 inches; PIPO/FEID, PIPO/PSSP6 or PIPO-PSME/PSSP6 habitat types.

Table 1. Dominant plant species

Tree	(1) <i>Pinus ponderosa</i> (2) <i>Pseudotsuga menziesii</i> var. <i>glauca</i>
Shrub	Not specified
Herbaceous	(1) <i>Festuca idahoensis</i> (2) <i>Pseudoroegneria spicata</i>

## Physiographic features

Physiographic Features

Landscapes: Valleys, glaciated mountains

Landform: hill slopes, mountain slopes, outwash plains

Elevation (m): Total range = 390 to 1440 m

(1,280 to 4,725 feet)

Core Concept = 680 to 985 m

(2,230 to 3,230 feet)

Slope (percent): Total range = 0 to 100 percent

Core Concept = 20 to 55 percent

Aspect (degrees):  
68-207-311  
Core Concept = 158-207-293

**Table 2. Representative physiographic features**

Landforms	(1) Mountains > Mountain slope (2) Valley > Outwash plain (3) Foothills > Hillslope
Flooding frequency	None
Ponding frequency	None
Elevation	680–985 m
Slope	20–55%
Water table depth	203 cm
Aspect	W, S, SW

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

Flooding frequency	Not specified
Ponding frequency	Not specified
Elevation	390–1,440 m
Slope	0–100%
Water table depth	Not specified

## Climatic features

### Climatic Features

Frost-free period (days): Total range = 90 to 140 days  
Core Concept = 110 to 120 days

Mean annual precipitation: Total range = 265 to 910 mm  
(10 to 36 inches)  
Core Concept = 440 to 625 mm  
(17 to 25 inches)

MAAT Total range = 5.2 to 10.3 C  
(41 to 51 F)  
Core Concept = 7.1 to 8.4 C  
(45 to 47 F)

Climate Stations: INCHELIUM 2 NW,JAY,MALOTT,MOUNT BONAPART,TONASKET,TONASKET (1)

**Table 4. Representative climatic features**

Frost-free period (characteristic range)	110-120 days
Freeze-free period (characteristic range)	
Precipitation total (characteristic range)	432-635 mm
Frost-free period (actual range)	90-140 days
Freeze-free period (actual range)	
Precipitation total (actual range)	254-914 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 Dehart, Garrison, Lacy, Lithic Haploxerepts, Maki, Northstar, Raisio, Rufus, Skanid). The soil components can be grouped into: Entic Ultic Haploxerolls, Lithic Haploxerepts, Lithic Ultic Haploxerolls, Typic Haploxerepts, Vitrandic Haploxerepts, and Vitrandic Haploxerolls. These soils have developed in mixed Mazama tephra deposits, till, outwash, colluvium and residuum. The soils are shallow to very deep and have low available water capacity to a depth of 1 m. The soils are well or somewhat excessively drained.

**Table 5. Representative soil features**

Parent material	(1) Volcanic ash (2) Till (3) Outwash (4) Colluvium–granite and gneiss (5) Residuum–granite and gneiss
Surface texture	(1) Ashy loam (2) Ashy sandy loam
Drainage class	Well drained
Permeability class	Moderately rapid
Soil depth	203 cm
Available water capacity (0-101.6cm)	5.84 cm
Calcium carbonate equivalent (0-101.6cm)	0%
Soil reaction (1:1 water) (0-152.4cm)	Not specified
Subsurface fragment volume <=3" (25.4-101.6cm)	46%

**Table 6. Representative soil features (actual values)**

Drainage class	Well drained to somewhat excessively drained
Permeability class	Moderate to rapid
Soil depth	Not specified
Available water capacity (0-101.6cm)	2.92–7.11 cm
Calcium carbonate equivalent (0-101.6cm)	0–5%

Soil reaction (1:1 water) (0-152.4cm)	5.5–7.9
Subsurface fragment volume <=3" (25.4-101.6cm)	12–63%

## Ecological dynamics

A description of vegetation dynamics and a state and transition model can be found in Ecological Site Group EX043AESG03.

## State and transition model

### 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:

---

### 2. Presence of water flow patterns:

---

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

---

### 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):**
- 
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):**
- 
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:**

---

17. **Perennial plant reproductive capability:**

---