

Ecological site F043AY512WA

Warm, Xeric, Loamy Mountainsides, ashy surface (Ponderosa Pine/Dry Grass) *Pinus ponderosa* / *Pseudoroegneria spicata* , *Pinus ponderosa* / *Festuca idahoensis*

Last updated: 3/11/2019

Accessed: 05/21/2025

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

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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

LRU notes

Most commonly found in LRU 43A02 (Western Selkirk Mountains).

This LRU is composed predominantly of glaciated foothills, mountain slopes and outwash terraces located in the high elevation terrain west of the Colville River and east 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 andisols and inceptisols with 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 frigid or cryic temperature regime and xeric or udic moisture regime with average annual precipitation around 660 mm (26 inches) and an average annual air temperature around 6.2 degrees C (43 degrees F). Elevation ranges from about 645 to 1735 m (2,115 to 5,690 feet).

Also found in LRU 44A01 (Spokane-Rathdrum Outwash Plains), areas of 43A01 (Okanogan Plateau) and 43A02 (Western Selkirk Mountains).

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 mountain slopes, and outwash terraces 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; a surface layer with andic soil properties >7 inches thick; 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: mountains

Landform: mountain slopes, terraces

Elevation (m): Total range = 535 to 2,165 m
(1,755 to 7,100 feet)

Core Concept = 1,200 to 1,755 m
(3,935 to 5,755 feet)

Slope (percent): Total range = 0 to 90 percent
Core Concept = 25 to 50 percent

Aspect (degrees):

152-210-289

Core Concept = 179-210-261

Table 2. Representative physiographic features

Landforms	(1) Mountains > Mountain slope (2) Mountains > Outwash terrace
Flooding frequency	None

Ponding frequency	None
Elevation	3,935–5,755 ft
Slope	25–50%
Water table depth	80 in
Aspect	W, S, SW

Table 3. Representative physiographic features (actual ranges)

Flooding frequency	Not specified
Ponding frequency	Not specified
Elevation	1,755–7,100 ft
Slope	0–90%
Water table depth	Not specified

Climatic features

Climatic Features

Frost-free period (days): Total range = 85 to 115 days

Core Concept = 90 to 100 days

Mean annual precipitation: Total range = 415 to 930 mm
(16 to 37 inches)

Core Concept = 595 to 790 mm
(23 to 31 inches)

MAAT Total range = 2.0 to 8.3 C
(36 to 47 F)

Core Concept = 3.5 to 4.6 C
(38 to 40 F)

Climate Stations: none

Table 4. Representative climatic features

Frost-free period (characteristic range)	90-100 days
Freeze-free period (characteristic range)	
Precipitation total (characteristic range)	23-31 in
Frost-free period (actual range)	85-115 days
Freeze-free period (actual range)	
Precipitation total (actual range)	16-37 in

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 Leonardo, Goosmus, Toroda). The soil components can be grouped into: humic vitrixerands and humic xeric vitricryands These soils have developed in 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) Colluvium–granite and gneiss (4) Residuum–granite and gneiss (5) Outwash
Surface texture	(1) Ashy silt loam (2) Ashy fine sandy loam
Drainage class	Well drained
Permeability class	Moderately rapid
Depth to restrictive layer	80 in
Soil depth	80 in
Available water capacity (0-40in)	5.1 in
Calcium carbonate equivalent (0-40in)	0%
Soil reaction (1:1 water) (0-60in)	Not specified

Subsurface fragment volume <=3" (10-40in)	38%
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Table 6. Representative soil features (actual values)

Drainage class	Well drained to somewhat excessively drained
Permeability class	Moderate to rapid
Depth to restrictive layer	Not specified
Soil depth	Not specified
Available water capacity (0-40in)	3–5.9 in
Calcium carbonate equivalent (0-40in)	0–5%
Soil reaction (1:1 water) (0-60in)	5.8–8.4
Subsurface fragment volume <=3" (10-40in)	3–45%

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:**
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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:

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:**
