

Ecological site F043AY501WA**Warm Mesic Xeric Loamy Foothills, Terraces, High Water Table
(Ponderosa Pine/Shrub)****Pinus Ponderosa /Symphoricarpos albus, Pinus Ponderosa / Physocarpus
malvaceus**

Last updated: 3/19/2020

Accessed: 08/31/2026

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.

MLRA notes

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

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LRU notes

Modal LRU – 43A03 – Columbia-Colville Valleys (also found in 43A01 - Okanogan Plateau) This LRU is composed predominantly of low elevation valley floors and the slopes of foothills or low mountains adjacent to 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 mixed or thin ash surfaces. Till and outwash are the dominant parent materials. Soil climate is a 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).

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 - M333 Northern 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/SYAL, PIPO/PHMA, and PIPO/SYOR. (Williams et. al. 1995)

Ecological site concept

This site consists of terraces and valley floors with the following characteristics: loamy soil materials; a water table (perched or apparent) within 75 cm (30 in) of the soil surface during the April to October period; PIPO/SYAL, PIPO/PHMA habitat types.

Table 1. Dominant plant species

Tree	(1) <i>Pinus ponderosa</i>
Shrub	(1) <i>Symphoricarpos albus</i> (2) <i>Physocarpus malvaceus</i>

Herbaceous	Not specified
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Physiographic features

Physiographic Features

Landscapes: Foothills, Valleys

Landform: sideslopes, foot slopes, toe slopes

Elevation (m): Total range = 390 to 925 m

(1,280 to 3,035 feet)

Core Concept = 665 to 705 m

(2,180 to 2,310 feet)

Slope (percent): Total range = 0 to 30 percent

Core Concept = 3 to 15 percent

Table 2. Representative physiographic features

Landforms	(1) Foothills > Hillslope (2) Valley > Stream terrace
Flooding frequency	None
Ponding frequency	None
Elevation	660 – 700 m
Slope	0 – 20 %
Aspect	Aspect is not a significant factor

Table 3. Representative physiographic features (actual ranges)

Flooding frequency	Not specified
Ponding frequency	Not specified
Elevation	390 – 930 m
Slope	0 – 30 %

Climatic features

Climatic Features

Frost-free period (days): Total range = 110 to 140 days

Core Concept = 115 to 125 days

Mean annual precipitation (cm): Total range = 270 to 670 mm
(11 to 26 inches)
Core Concept = 400 to 510 mm
(16 to 20 inches)

MAAT (C): Total range = 7.3 to 10.0
(45 to 50 F)
Core Concept = 8.3 to 9.0
(47 to 48 F)

Climate Stations: none

Table 4 Representative climatic features

Frost-free period (characteristic range)	120-130 days
Freeze-free period (characteristic range)	
Precipitation total (characteristic range)	410-510 mm

Influencing water features

Water Table Depth (cm):
15 – 58 cm (median = 56 cm)
(6 – 23 inches; median = 22 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. Dearyton, Hardesty, Lakespring, Omak). The soils are Vitrandic Haploxeralfs, Vitrandic Palexeralfs, Vitrandic Haploxerolls, Vitrandic Durixerolls, and Aquic Xerofluvents. These soils have developed in mixed Mazama tephra deposits over till, glaciolacustrine material, outwash and alluvium from granitic and other mixed rock. The soils range are very deep and have a water table within 75cm of the surface during some part of the year. The soils are mostly moderately well drained.

Table 5. Representative soil features

Parent material	(1) Volcanic ash (2) Till (3) Outwash
Surface texture	(1) Ashy loam (2) Ashy silt loam

Drainage class	Poorly drained to moderately well drained
Permeability class	Moderately rapid to rapid
Soil depth	150 – 200 cm
Available water capacity (0-101.6cm)	Not specified
Soil reaction (1:1 water) (0-152.4cm)	Not specified
Subsurface fragment volume <=3" (25.4-101.6cm)	0 – 20 %

Table 6. Representative soil features (actual values)

Drainage class	Not specified
Permeability class	Not specified
Soil depth	Not specified
Available water capacity (0-101.6cm)	11.43 – 21.08 cm
Soil reaction (1:1 water) (0-152.4cm)	10 – 7.8
Subsurface fragment volume <=3" (25.4-101.6cm)	0 – 30 %

Ecological dynamics

A description of vegetation dynamics and a state and transition model can be found in Ecological Site Group EX043AESG01.

State and transition model

Additional community tables

Approval

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	08/31/2026
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:
