

# Ecological site F044AP901MT

## Ashy Cool Moist Woodland Group

Last updated: 9/08/2023  
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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): 044A–Northern Rocky Mountain Valleys

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This MLRA includes the northern portion of the Northern Rocky Mountain Valleys Province of the Rocky Mountain System. The mountain valleys are deeply dissected and are typically bordered by mountains trending north to south. The nearly level broad flood plains are bordered by gently to strongly sloping terraces and alluvial fans. The surrounding mountains and in some areas the valleys experienced glaciation. The average precipitation is 12 to 16 inches generally, though can vary widely. The dominant soil orders are Inceptisols, Mollisols and Andisols. The valleys support coniferous forests, shrublands and grasslands.

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)

### Classification relationships

#### ASSOCIATED HABITAT TYPES:

Major association with:  
grand fir/queencup beadlily

Minor association with:  
western hemlock/queencup beadlily

### Ecological site concept

- Site does not receive any additional water
- Dominant Cover: Coniferous Forest

Reference vegetation community has an overstory dominated by Grand fir with an understory that can have diverse shrub and herbaceous species and low to moderate moss. The understory production averages 800 dry pounds per acre. Understory species can include *Calamagrostis rubescens*, *Carex geyeri*, *Clintonia uniflora*, *Coptis occidentalis*, *Holodiscus discolor*, *Linnaea borealis*, *Maianthemum stellatum*, *Oshorhiza berteroi*, *Physocarpus malvaceus*, *Pteridium aquilinum*, *Symphoricarpos albus*. This site can also have a western hemlock dominant or mixed with western redcedar overstory, with an understory that has queencup beadlily and moderate moss cover. Ecological dynamics are the same with either overstory.

- Soils are
  - o Generally not limy (limited extent)
  - o Moderately deep, deep, or very deep
  - o Ashy or medial textural family

- o Typically less than 5% stone and boulder cover (<15% max)
- Soil surface texture ranges from gravelly ashy silt loam to ashy silt loam in surface mineral 4"
- Parent material is volcanic ash over alluvium or outwash
- Drainage class is well drained; no flooding frequency
- Site Landform: stream terraces, outwash terraces, lake terraces
- Moisture Regime: udic
- Temperature Regime: frigid
- Elevation Range: 2200-3000 ft
- Slope: 0-15%

### Associated sites

F044AP904MT	<p><b>Upland Cool Moist Woodland Group</b></p> <p>This associated ecological site resides in areas with moister site conditions due to aspect, slope or other factors than this ecological site.</p>
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### Similar sites

F044AF001MT	<p><b>Lower Subalpine Moderately Warm and Moist Coniferous Pend Oreille-Kootenai Valleys grand fir/bride's bonnet</b></p> <p>This is a similar ecological site that also has moister site conditions and has an overstory of grand fir but is limited to the LRU in the western most extent of this MLRA.</p>
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**Table 1. Dominant plant species**

Tree	(1) <i>Abies grandis</i> (2) <i>Larix occidentalis</i>
Shrub	(1) <i>Vaccinium membranaceum</i> (2) <i>Rubus parviflorus</i>
Herbaceous	(1) <i>Clintonia uniflora</i> (2) <i>Moss</i>

### Physiographic features

- Site Landform: stream terraces, outwash terraces, lake terraces
- Elevation Range: 2200 to 3000 ft
- Slope: 0 to 15 percent

**Table 2. Representative physiographic features**

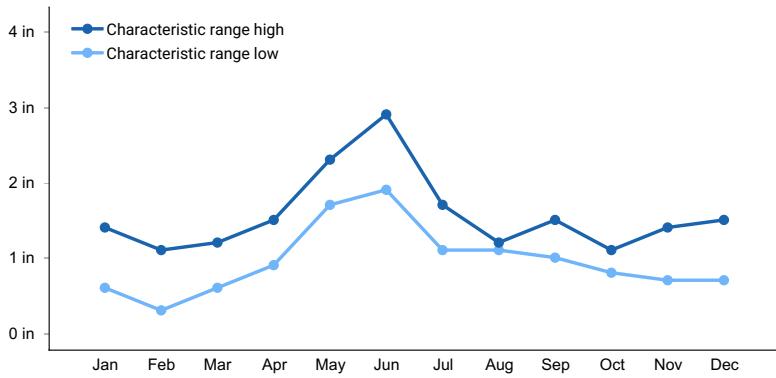
Landforms	(1) Valley > Lake terrace (2) Valley > Outwash terrace (3) Valley > Stream terrace
Elevation	2,200–3,000 ft
Slope	0–15%
Water table depth	60 in
Aspect	W, NW, N, NE, E, SE, S, SW

### Climatic features

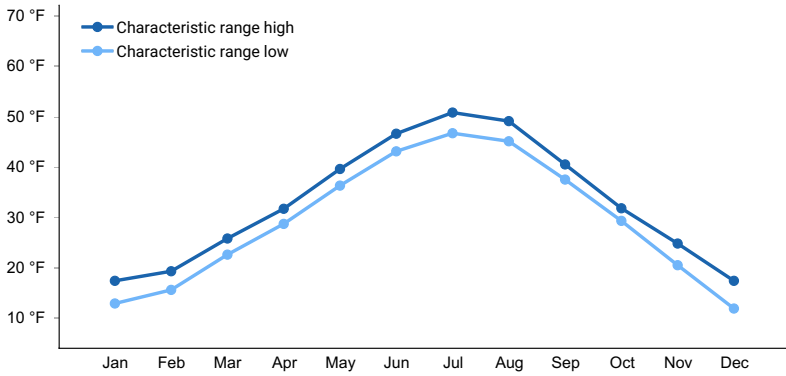
- Moisture Regime: udic
- Temperature Regime: frigid
- Representative Value (RV) of range of Mean Annual Precipitation: 24-34 inches
- Representative Value (RV) of range of Mean Average Annual Temperature: 43-45 degrees
- Representative Value (RV) of range of Frost Free Days: 70-105 days

**Table 3. Representative climatic features**

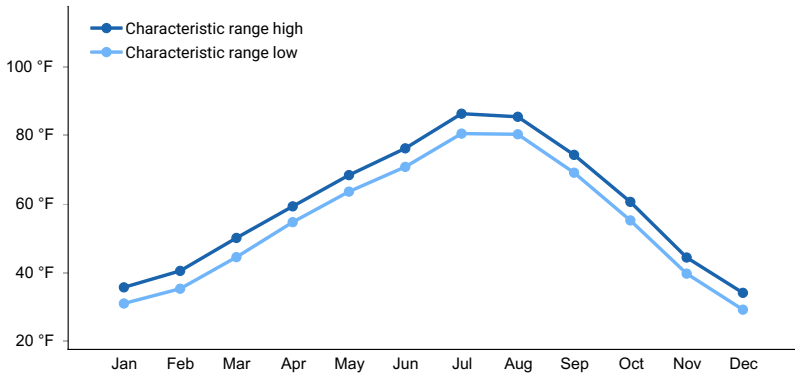
Frost-free period (characteristic range)	41-94 days
Freeze-free period (characteristic range)	95-131 days
Precipitation total (characteristic range)	12-19 in
Frost-free period (actual range)	13-97 days
Freeze-free period (actual range)	75-133 days
Precipitation total (actual range)	11-20 in
Frost-free period (average)	69 days
Freeze-free period (average)	111 days
Precipitation total (average)	15 in



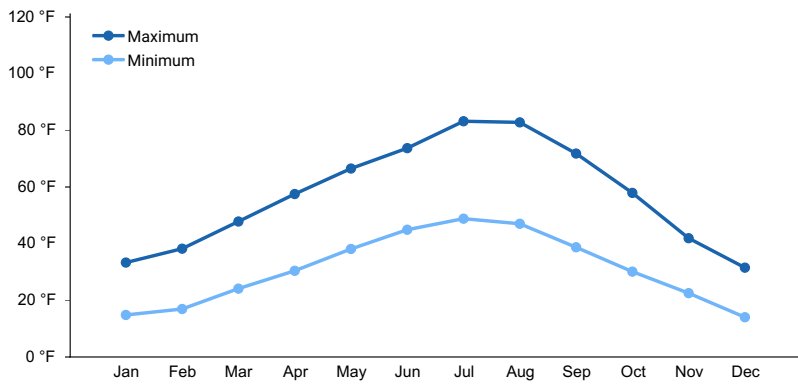
**Figure 1. Monthly precipitation range**



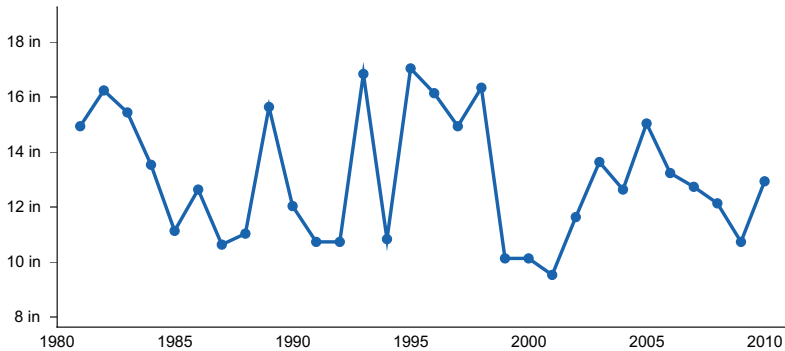
**Figure 2. Monthly minimum temperature range**



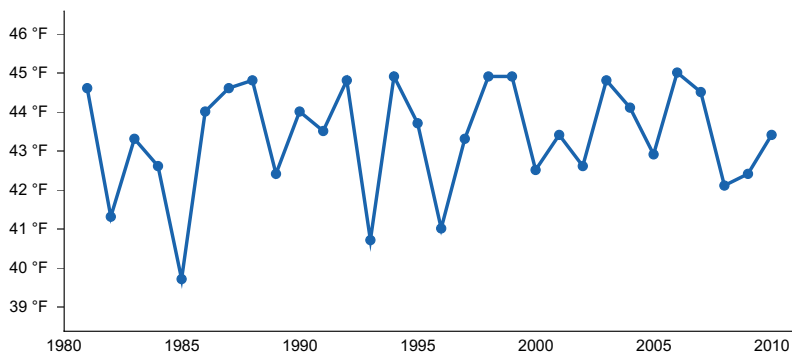
**Figure 3. Monthly maximum temperature range**



**Figure 4. Monthly average minimum and maximum temperature**



**Figure 5. Annual precipitation pattern**



**Figure 6. Annual average temperature pattern**

### Climate stations used

- (1) WHITEFISH [USC00248902], Whitefish, MT
- (2) KALISPELL 9 NNE [USC00244560], Kalispell, MT
- (3) CRESTON [USC00242104], Kalispell, MT
- (4) OVANDO 9 SSE [USC00246304], Helmville, MT
- (5) DRUMMOND AVIATION [USW00024139], Drummond, MT
- (6) STEVENSVILLE [USC00247894], Stevensville, MT
- (7) TRIDENT [USC00248363], Three Forks, MT
- (8) TOWNSEND [USC00248324], Townsend, MT

### Influencing water features

#### NO WATER FEATURES

- Site does not receive any additional water

### Wetland description

DOES NOT APPLY

## Soil features

- Soils are
  - o Generally not limy (limited extent)
  - o Moderately deep, deep, or very deep
  - o Ashy or medial textural family
  - o Typically less than 5 percent stone and boulder cover (less than 15 percent max)
- Soil surface texture ranges from gravelly ashy silt loam to ashy silt loam in surface mineral 4 inches
- Parent material is volcanic ash over alluvium or outwash
- Drainage class is well drained; no flooding frequency

Table 4. Representative soil features

Parent material	(1) Alluvium (2) Outwash (3) Volcanic ash
Surface texture	(1) Gravelly, ashy silt loam (2) Ashy silt loam
Drainage class	Well drained
Soil depth	20–60 in
Surface fragment cover >3"	0–15%

## Ecological dynamics

STATE 1: Historic reference state with presence of western white pine as a major seral tree species. Ash presence within soil allows for higher water holding capacity and therefore more rapid recovery from disturbance during prolonged drought than Shallow Cold Woodland (F44AP904MT).

STATE 2: Current reference state with minor or none presence of western white pine as a seral tree species. Ash presence within soil allows for higher water holding capacity and therefore more rapid recovery from disturbance during prolonged drought than Shallow Cold Woodland (F44AP904MT).

STATE 3: Armillaria root rot induced shrubland state.

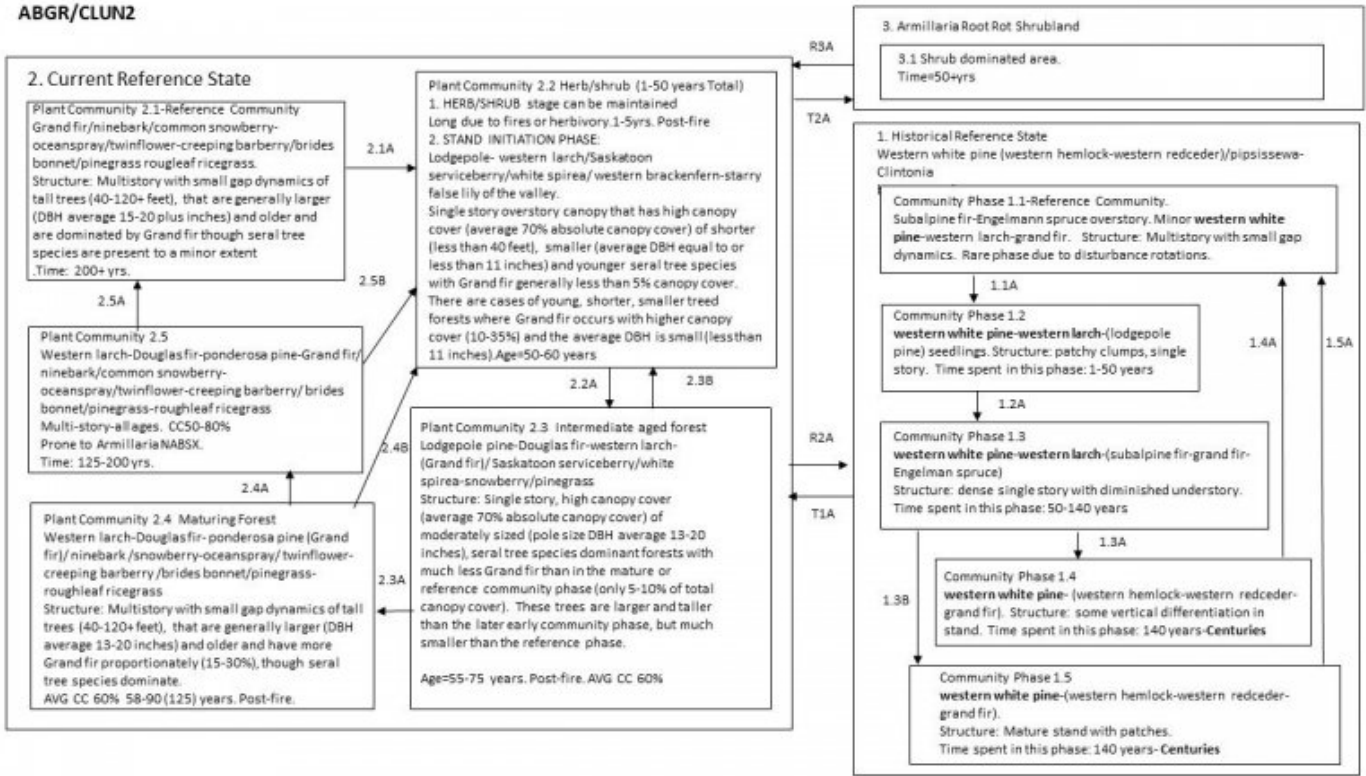
T1A - Transition from State 1 to State 2: Substantial loss of western white pine as a major seral tree species.

R2A - Restoration from State 2 to State 1: Western white pine restored as a major seral tree species.

T2A - Transition from State 2 to State 3: Significant loss of susceptible tree species at a site due to Armillaria root rot and conversion of the forest to a shrubland.

R3A - Restoration from State 3 to State 2: Conversion of the Armillaria root rot induced shrubland to forest, generally of less susceptible seral tree species and eventually to climax tree species.

## State and transition model



## **Pathways**

- 1.1A- A major stand-replacement disturbance, such as a major insect outbreak or major fire event, which leads to the stand initiation phase of forest development
- 1.2A- Continued growth over time with no further major disturbance to dense single story pole sized stand
- 1.3A- Continued growth over time with no further major disturbance to mature stand with all size classes
- 1.3B- Continued growth over time with no further major disturbance with patches of regeneration
- 1.4A- Continued growth over time with no further major disturbance with patches of regeneration
- 1.5A- Continued growth over time with no further major disturbance with patches of regeneration
- 2.1A Major stand-replacement fire disturbance such as a high-intensity fire, large scale wind event, or major insect infestation.
- 2.2A Growth over time with no further significant disturbance.
- 2.3A Continued growth over time with no further major disturbance.
- 2.3B Mixed severity fire 50-85 years or stand replacing fire 150-250 intervals This pathway represents a major stand-replacement fire disturbance such as a high-intensity fire, large scale wind event or major insect infestation.
- 2.4A Time decades to centuries
- 2.4B Stand replacing fire 150-250-year intervals This pathway represents a major stand-replacement fire disturbance, such as a major insect outbreak, or major fire event which leads to the stand initiation phase of forest development.
- 2.5A Continued growth over time, as well as ongoing mortality, leads to continued vertical diversification. The community begins to resemble the structure of the reference community, with small pockets of regeneration and a more diversified understory.
- 2.5B A major stand-replacement fire disturbance leading to the stand initiation phase of forest development.

## **Transitions**

- T1A Substantial loss of western white pine as a major seral tree species.
- R2A Western white pine restored as a major seral tree species.
- T2A Significant loss of susceptible tree species at a site due to Armillaria root rot and conversion of the forest to a shrubland.
- R3A Conversion of the Armillaria root rot induced shrubland to forest, generally of less susceptible seral tree species and eventually to climax tree species.

## **Animal community**

### Wildlife uses

Early seral phase has high forage potential for deer and elk, but minimal in other phases except for overwintering uses.

Livestock use is very low due to lack of palatable forage.

## **Hydrological functions**

Generally confined to bottomlands and stream sides, therefore functioning in streambank stability via soil stability.

In timber management harvests, areas directly in streamside zones are usually left intact (not harvested).

## Recreational uses

hunting, fishing, hiking, camping, photography

## Wood products

These stands, especially in the seral stages, have very high timber productivity. Potential for even aged stand management and regenerates readily with adequate seed source.

## Other references

Hansen, Paul L. Classification and management of Montana's riparian and wetland sites. No. 54. Montana Forest and Conservation Experiment Station, School of Forestry, The University of Montana, 1995.

Pfister, Robert D., et al. "Forest habitat types of Montana." Gen. Tech. Rep. INT-GTR-34. Ogden, UT: US Department of Agriculture, Forest Service, Intermountain Forest & Range Experiment Station. 174 p. 34 (1977).

## Contributors

Jay Skovlin  
Stephanie Shoemaker

## Approval

Kirt Walstad, 9/08/2023

## 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	04/19/2024
Approved by	Kirt Walstad
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):**
- 
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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