

Ecological site R044AY502WA

Warm-frigid, Aquic-Xeric, Loamy, Flood Plains (Grass/Sedge) Semi-wet Meadow

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Accessed: 08/18/2026

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): 044A–Northern Rocky Mountain Valleys

Major Land Resource Area (MLRA): 044A–Northern Rocky Mountain Valleys 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.

LRU notes

Major land resource area (MLRA): 044A-Northern Rocky Mountain Valleys Modal LRU – 44A01 - Spokane-Rathdrum Outwash Plains This LRU is composed predominantly of low foothills, outwash plains and valley floors. The soils tend to be loamy to sandy andisols, inceptisols, and mollisols with mixed or distinct ash surfaces. Recent alluvium, till, outwash and residuum from granitic or metamorphic rock are the dominant parent materials. Soil climate is a mesic temperature regime and xeric moisture regime with average annual precipitation around 525 mm (21 inches).

Classification relationships

This ES group fits into the National Vegetation Standard's Rocky Mountain-Great Basin Riparian Shrubland Group and is most closely related to Washington State's Natural Heritage Program's Rocky Mountain Alpine-Montane Wet Meadow but occurs at a lower elevation than is typical. (Compare to previous Washington range site: R044XY602WA, Semi-wet meadow 15+ PZ)

Ecological site concept

This ES is found on loamy soils in drainageways with a water table within 30 inches of the surface and a plant community dominated by grasses and forbs and some shrubs.

Associated sites

F043AY518WA	Warm-Frigid, Xeric, Loamy Slopes, mixed ash surface (Douglas-Fir/Warm Dry Shrub) <i>Pseudotsuga menziesii</i> / <i>Physocarpus malvaceus</i> - <i>Symphoricarpos albus</i> This site occurs on hillslopes, mountain slopes, and terraces. They have loamy soil materials and lack a high water table. They do not have a distinct volcanic ash mantle and are very deep. Overstory species include <i>Pseudotsuga menziesii</i> var. <i>glauca</i> , and <i>Pinus ponderosa</i> . The understory is typified by <i>Physocarpus malvaceus</i> , <i>Symphoricarpos albus</i> , <i>Calamagrostis rubescens</i> , and <i>Bromus vulgaris</i> .
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F043AY521WA	Warm-Frigid, Moist- Xeric Loamy Foothills/Mountainsides, ashy surface (Grand Fir Warm Dry Shrub) <i>Abies grandis</i> - <i>Pseudotsuga menziesii</i> / <i>Physocarpus malvaceus</i> - <i>Symphoricarpos albus</i> Found on lower Hill slopes, mountain slopes and terraces. Textures are loamy and sites lack a high water table. The soil surface has a dsitinct layer of volcanic ash material. Overstory species include <i>Abies grandis</i> and <i>Pseudotsuga menziesii</i> var. <i>glauca</i>. The understory is typified by <i>Physocarpus malvaceus</i>,<i>Symphoricarpos albus</i>,<i>Calamagrostis rubescens</i>,and <i>Hieracium albiflorum</i>.
F043AY512WA	Warm, Xeric, Loamy Mountainsides, ashy surface (Ponderosa Pine/Dry Grass) <i>Pinus ponderosa</i> / <i>Pseudoroegneria spicata</i> , <i>Pinus ponderosa</i> / <i>Festuca idahoensis</i> This site occurs on very poorly and poorly drained loamy mineral soils in drainageways with a water table within 20 inches of the surface. Site vegetation is dominated by a mix of wetland adapted species including <i>Alnus incana</i>,<i>Salix</i>,<i>Deschampsia cespitosa</i>, and <i>Carex</i>

Similar sites

R044AY501WA	Mesic, Aquic, Organic Depressions and Seeps Found on floodplains and seeps at lower, warmer elevations. Confined to depressions and other areas of water accumulation; water table at 0 to 6 inches with mucky surface texture. Site vegetation is dominated by a mix of wetland adapted species including <i>Spiraea</i>, <i>Alnus viridis</i> , <i>Carex</i>, and <i>Sphagnum</i>
R043AY510ID	Poorly Drained Floodplains 23-25" PZ Mesic Columbia-Colville Valleys Found on floodplains and in drainageways. Water table within 30 inches of the surface for some time during spring and summer. They have loamy surface textures. Found in locations where MLRA 44A transitions to MLRA 43A at valley margins and upper reaches. Site vegetation is typified by <i>Carex</i> and <i>Calamagrostis stricta</i>.

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	(1) <i>Calamagrostis canadensis</i> (2) <i>Galium trifidum</i>

Physiographic features

Physiographic Features

This ecological site occurs mainly on somewhat poorly drained drainageways in valleys. Parent materials are derived from mixed volcanic ash, loess and alluvium.

Elevation:

Total range = 565 to 730 m

(1,855 to 2,395 feet)

Median = 640 m

(2,100 feet)

Water Table Depth:

50 to 75 cm (median= 56 cm)

(20 to 30 inches; median = 22 inches)

Table 2. Representative physiographic features

Landforms	(1) Valley > Drainageway
Elevation	640 m
Slope	0 %
Water table depth	60 cm
Aspect	Aspect is not a significant factor

Table 3. Representative physiographic features (actual ranges)

Elevation	570 – 730 m
Slope	0 – 10 %
Water table depth	50 – 80 cm

Climatic features

Climatic Features

During the spring and summer, a circulation of air around a high-pressure center brings a prevailing westerly and northwesterly flow of comparatively dry, cool and stable air into the region. As the air moves inland, it becomes warmer and drier which results in a dry season beginning in the late spring and reaching a peak in mid-summer. In the fall and winter, a circulation of air around two pressure centers over the ocean brings a prevailing southwesterly and westerly flow of air into the Pacific Northwest. This air from over the ocean is moist and near the temperature of the water. Condensation occurs as the air moves inland over the cooler land and rises along the windward slopes of the mountains or highlands. This results in a wet season beginning in October, reaching a peak in winter, then gradually decreasing in the spring.

The elevation within the LRU varies from approximately 1,500 feet in the lower river valleys to about 3,500 feet on foothills. The annual precipitation increases from 15 inches in the valleys to over 39 inches on higher foothills. Winter season snowfall averages about 43 inches. Both rainfall and snowfall increase with elevation. Snow can be expected after the first of November and to remain on the ground from the first of December until March or April.

In January, the average maximum temperature is near 34° F and the minimum temperature is 23° F. Minimum temperatures from -1° to -20°F are recorded almost every winter and temperatures ranging to -25° F have been recorded. In July, the average maximum temperature is 83° and the minimum temperature 46° F. Maximum temperatures reach 100° F on a few afternoons each summer and temperatures as high as 108° F have been recorded. The average date of the last freezing temperatures can be expected by early-May and after early-October in the warmer areas.

(Compiled from WRCC: Climate of Washington and available station data)

Mean annual precipitation (cm):

Total range = 495 to 725 mm

(20 to 29 inches)

Central tendency = 505 to 595 mm

(20 to 23 inches)

MAAT (C)

Total range = 7.4 to 8.7

(45 to 47 F)

Central tendency = 7.8 to 8.2

(46 to 47 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)	510-580 mm
Frost-free period (actual range)	120-130 days
Freeze-free period (actual range)	
Precipitation total (actual range)	510-740 mm

Influencing water features

Water Table Depth:

50 to 75 cm (median= 56 cm)

(20 to 30 inches; median = 22 inches)

Flooding:

Frequency: None

Duration: None

Ponding:

Frequency: None

Duration: None

Soil features

Representative Soil Features

This ecological site is associated with the Colburn series. The soils are Aquandic Haploxerepts. These soils have developed in mixed volcanic ash, loess, and alluvium.

Surface Fragments

Table 5. Representative soil features

Parent material	(1) Volcanic ash (2) Loess (3) Alluvium
Surface texture	(1) Ashy loam

Drainage class	Somewhat poorly drained
Permeability class	Moderate
Depth to restrictive layer	Not specified
Surface fragment cover <=3"	Not specified
Surface fragment cover >3"	Not specified
Available water capacity (0-101.6cm)	17.78 cm
Calcium carbonate equivalent (0-152.4cm)	Not specified
Electrical conductivity (0-152.4cm)	Not specified
Sodium adsorption ratio (0-152.4cm)	Not specified
Soil reaction (1:1 water) (0-152.4cm)	6.7
Subsurface fragment volume <=3" (25.4-152.4cm)	Not specified
Subsurface fragment volume >3" (25.4-152.4cm)	Not specified

Table 6. Representative soil features (actual values)

Drainage class	Somewhat poorly drained
Permeability class	Moderate

Depth to restrictive layer	0 cm
Surface fragment cover <=3"	0 %
Surface fragment cover >3"	0 %
Available water capacity (0-101.6cm)	9.91 – 17.78 cm
Calcium carbonate equivalent (0-152.4cm)	0 %
Electrical conductivity (0-152.4cm)	0 mmhos/cm
Sodium adsorption ratio (0-152.4cm)	0
Soil reaction (1:1 water) (0-152.4cm)	6.1 – 7.8
Subsurface fragment volume <=3" (25.4-152.4cm)	0 – 60 %
Subsurface fragment volume >3" (25.4-152.4cm)	0 – 20 %

Ecological dynamics

State and transition model

Figure 1. STM

Figure 2. Narrative

Additional community tables

References

. (Date accessed). USNVC [United States National Vegetation Classification]. 2019. United States National Vegetation Classification Database, V2.03. Federal Geographic Data Committee, Vegetation Subcommittee, Washington DC.. USNVC: <http://usnvc.org/>.

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Contributors

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Approval

Kirt Walstad, 9/07/2023

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	08/18/2026
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:
