USDA Natural Resources Conservation Service

Ecological site R044AP806MT
Subirrigated Grassland Group

Last updated: 9/07/2023
Accessed: 05/02/2024

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

Ecological site concept

• Seasonal high water table < 100cm from ground surface
• Site not located in a flood plain
• Dominant Cover: Grassland
This is a very productive site and can have 3000 dry pounds per acre.
• Soils are
o Not saline or sodic
o Not limy
o Moderately deep, deep or very deep
o Not ashy or medial textural family
o Typically less than 15% stone and boulder surface area (<15% max)
• Soil surface texture silt loam or loam with very limited extent of mucky peat in surface mineral 4”
• Parent material is alluvium or outwash
• Drainage class is somewhat poorly to poorly drained; no flooding frequency
• Site Landform: drainageways, stream terraces, outwash fans, inset fans
• Moisture Regime: aquic/ustic
• Temperature Regime: frigid
• Elevation Range: 3300-4300 ft
• Slope: 0-4%

Associated sites

R044AP801MT	**Bottomland Group** This associated ecological site resides in adjacent floodplains and bottomlands near this ecological site.

Similar sites

R044AP807MT	**Subirrigated Saline-Sodic Grassland Group** This ecological site is similar to the Subirrigated grassland ecological site in its subirrigated hydrologic processes and the additional water influx compared to upland areas, but differs in having saline and/or sodic soil conditions.

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	(1) *Calamagrostis canadensis* (2) *Leymus cinereus*

Physiographic features

Table 2. Representative physiographic features

Landforms	(1) Valley > Drainageway (2) Valley > Stream terrace (3) Valley > Outwash fan (4) Valley > Inset fan
Elevation	3,300–4,300 ft
Slope	0–4%
Water table depth	10–40 in
Aspect	W, NW, N, NE, E, SE, S, SW

Climatic features

- Moisture Regime: aquic/ustic
- Temperature Regime: frigid
- Representative Value (RV) of range of Mean Annual Precipitation: 13-17 inches
- Representative Value (RV) of range of Mean Average Annual Temperature: 39-45 degrees
- Representative Value (RV) of range of Frost Free Days: 85-105 days

Table 3. Representative climatic features

Frost-free period (characteristic range)	28-103 days
Freeze-free period (characteristic range)	67-136 days
Precipitation total (characteristic range)	12-23 in
Frost-free period (actual range)	3-115 days
Freeze-free period (actual range)	45-145 days
Precipitation total (actual range)	12-34 in
Frost-free period (average)	68 days
Freeze-free period (average)	106 days
Precipitation total (average)	18 in

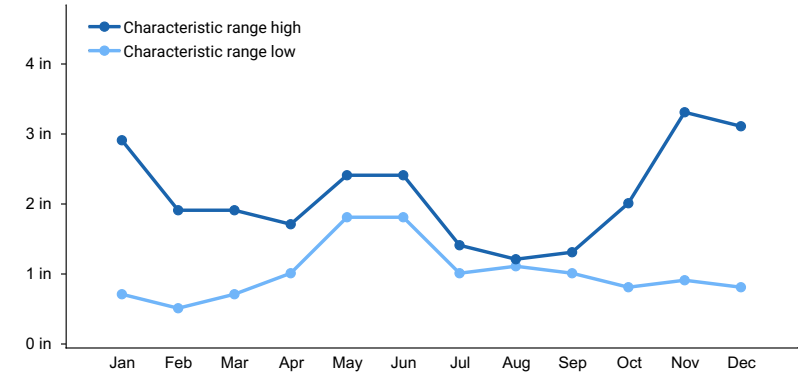


Figure 1. Monthly precipitation range

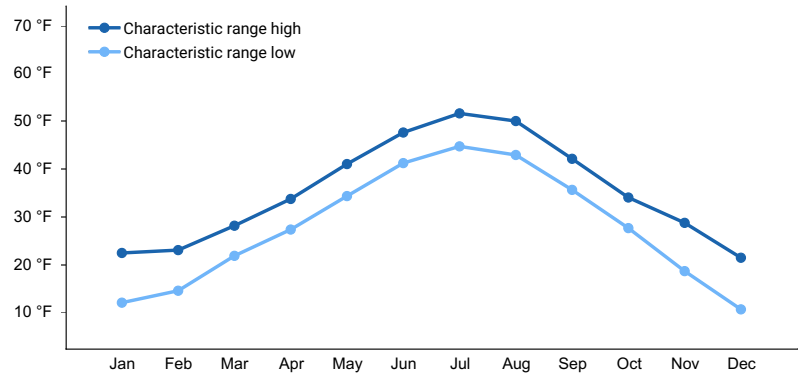


Figure 2. Monthly minimum temperature range

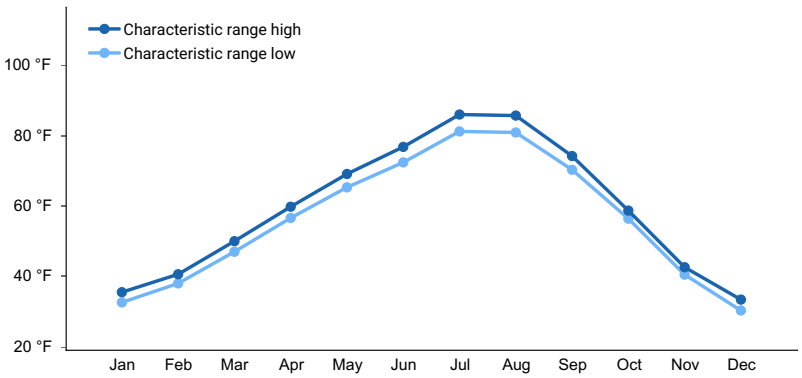


Figure 3. Monthly maximum temperature range

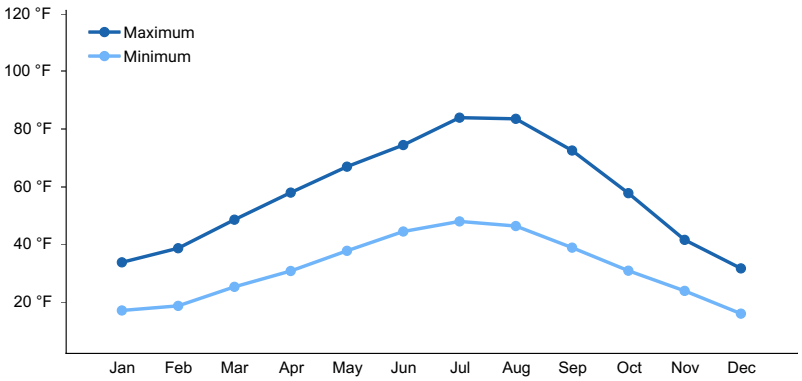


Figure 4. Monthly average minimum and maximum temperature

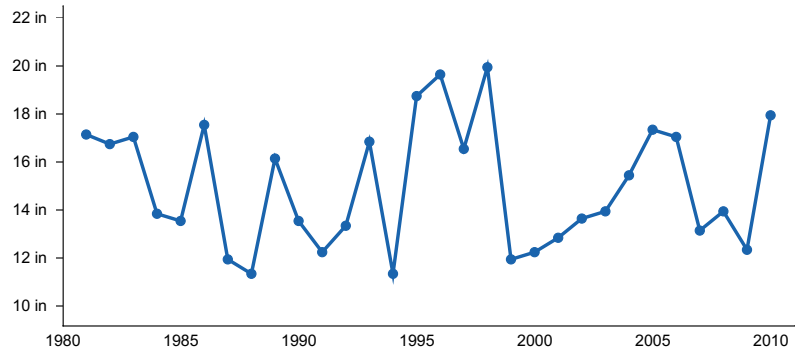


Figure 5. Annual precipitation pattern

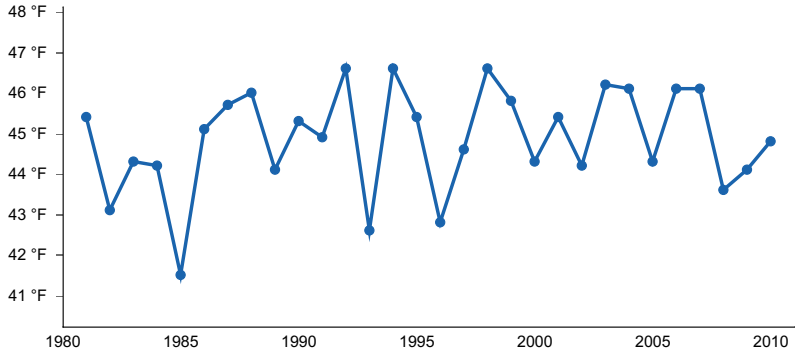


Figure 6. Annual average temperature pattern

Climate stations used

- (1) DRUMMOND AVIATION [USW00024139], Drummond, MT
- (2) BONNERS FERRY [USC00101079], Bonners Ferry, ID
- (3) EUREKA RS [USC00242827], Eureka, MT
- (4) HERON 2 NW [USC00244084], Heron, MT
- (5) KELLOGG [USC00104831], Kellogg, ID
- (6) TROUT CREEK RS [USC00248380], Trout Creek, MT
- (7) SAINT REGIS 1 NE [USC00247318], Saint Regis, MT
- (8) MISSOULA INTL AP [USW00024153], Missoula, MT
- (9) STEVENSVILLE [USC00247894], Stevensville, MT
- (10) POLSON KERR DAM [USC00246640], Polson, MT
- (11) OVANDO 9 SSE [USC00246304], Helmville, MT
- (12) WISDOM [USC00249067], Wisdom, MT
- (13) DEER LODGE 3 W [USC00242275], Deer Lodge, MT
- (14) TRIDENT [USC00248363], Three Forks, MT

Influencing water features

• Seasonal high water table less than 100 cm from ground surface
• Site not located in a flood plain

Wetland description

SUBIRRIGATED GRASSLAND

Soil features

o Not saline or sodic
o Not limy
o Moderately deep, deep or very deep
o Not ashy or medial textural family

o Typically less than 15 percent stone and boulder surface area (less than 15 percent max)
• Soil surface texture silt loam or loam with very limited extent of mucky peat in surface mineral 4 inches
• Drainage class is somewhat poorly to poorly drained; no flooding frequency

Table 4. Representative soil features

Parent material	(1) Alluvium (2) Outwash
Surface texture	(1) Silt loam (2) Loam
Drainage class	Somewhat poorly drained to poorly drained
Soil depth	20–60 in
Surface fragment cover >3"	0–15%

Ecological dynamics

1.1 Bluejoint reedgrass, Basin Wildrye dominated site with mixed grass community of Tufted hairgrass and thickspike wheatgrass. Water sedge or Northwest Territory Sedge can occur in lowest areas with ponding. Shrubs rare. Bare ground low
1.1a Extended drought, improper grazing, climate change
1.2a Proper grazing management, favorable growing conditions, time
1.2 Tufted Hairgrass and Basin wildrye share dominance. Shrubs such as Shrubby cinquefoil increasing

2.1 Basin wildrye rare with Tufted hairgrass and thickspike dominant. Shrubby cinquefoil common. Increase in species such as Kentucky bluegrass, fowl bluegrass, creeping bentgrass, reed canarygrass. On wetter sites, mountain rush and/or Nebraska sedge can increase if originally on the site. Possible hummocking from livestock. Bare ground high

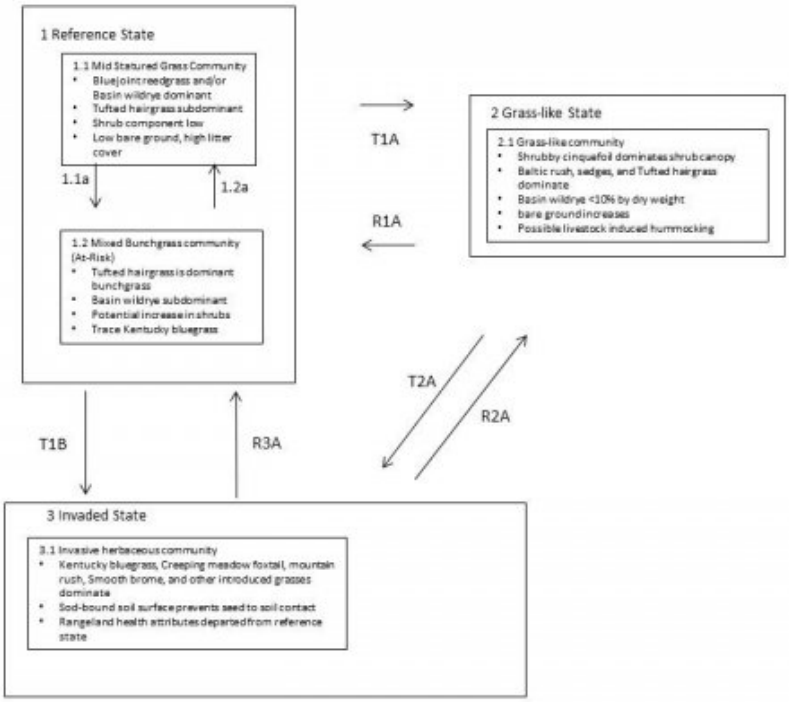
T1A Poor grazing, drought with improper grazing, multiple spring grazing
T1B Sodbusting, introduction of tame pasture species and other invasive plants, overgrazing, drought, heavy
R1A Proper grazing management, favorable growing conditions, time, range seeding
T2A Overgrazing, introduction of weeds, drought, heavy human disturbance, conversion to introduced species
R2A Fire, range seeding, timely moisture, proper grazing management, IPM

3.1 Site generally devoid of most native plants. Kentucky bluegrass and smooth brome common.

R3A IPM, range seeding, timely moisture, grazing management, brush management, range seeding

State and transition model

Subirrigated Grassland R044AP806MT



Legend

Pathways

1.1a Extended drought, improper grazing, climate change

1.2a Proper grazing management, favorable growing conditions, time

Transitions

T1A Poor grazing, drought with improper grazing, multiple spring grazing

T1B Sod busting, introduction of tame pasture species and other invasive plants, overgrazing, drought, heavy

R1A Proper grazing management, favorable growing conditions, time, range seeding

T2A Overgrazing, introduction of weeds, drought, heavy human disturbance, conversion to introduced species

R2A Fire, range seeding, timely moisture, proper grazing management, IPM

R3A IPM, range seeding, timely moisture, grazing management, brush management, range seeding

Animal community

WILDLIFE AND LIVESTOCK GRAZING

Recreational uses

HIKING, BIKING, PHOTOGRAPHY

Wood products

NONE

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.

Contributors

Jay Skovlin
Stephanie Shoemaker

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	05/02/2024
Approved by	Kirt Walstad
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:**