

Ecological site R034AY300CO

Loamy Breaks

Last updated: 4/10/2025
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): 034A–Cool Central Desertic Basins and Plateaus

Major Land Resource Area (MLRA): 34A–Cool Central Desertic Basins and Plateaus For further information regarding MLRAs, refer to: <http://soils.usda.gov/survey/geography/mlra/index.html>

LRU notes

Land Resource Unit (LRU) 34A-10: • Moisture Regime: aridic ustic • Temperature Regime: frigid • Dominant Cover: rangeland • Representative Value (RV) Effective Precipitation: 12-15 inches • RV Frost-Free Days: 75-95 days

Classification relationships

Relationship to Other Established Classification Systems Ecoregions (EPA): Level I: 10 North American Deserts Level II: 10.1 Cold Deserts Level III: 10.1.4 Wyoming Basin

Ecological site concept

• This site does not receive any additional water. • These soils: o are not saline or saline-sodic o are shallow o are skeletal within 20" of the soil surface; and have minimal rock fragments at the soil surface o are strongly or violently effervescent in the surface mineral layer (within top 10") o have surface textures that usually range from loam and stony loam in surface mineral layer (4") • have slopes less than 25 percent • does not have a clay content that is greater than 35% in mineral soil surface layer (1-2")

Associated sites

R034AY298CO	Rolling Loam
R034AY293CO	Sandhills

Similar sites

R034AY420CO	Cold Desert Breaks
-------------	--------------------

Table 1. Dominant plant species

Tree	Not specified
------	---------------

Shrub	(1) <i>Purshia tridentata</i> (2) <i>Cercocarpus</i>
Herbaceous	(1) <i>Pseudoroegneria spicata</i> (2) <i>Hesperostipa comata</i>

Physiographic features

This site occupies stony ridges and canyon slopes with some rock outcroppings lying adjacent to larger Rolling Loam and Sandy Foothill range sites.

Degree of slope ranges from 3 to 25 percent. Direction of slope varies from west to south. Elevation ranges from 5500 to 7000 feet above sea level.

Table 2. Representative physiographic features

Landforms	(1) Hill (2) Plateau (3) Ridge
Runoff class	High to very high
Flooding frequency	None
Ponding frequency	None
Elevation	1,680 – 2,130 m
Slope	0 – 30 %
Aspect	W, S, SW

Climatic features

Annual precipitation averages from 12 to 15 inches. About half of the annual precipitation is in the form of snow. Optimum growing season for native plants is mid-April to July. Winters are typically cold. Range forage plants are favored by spring moisture from accumulated snow. July and August are usually the driest months of the growing period.

Table 3 Representative climatic features

Frost-free period (characteristic range)	50 days
Freeze-free period (characteristic range)	80-100 days
Precipitation total (characteristic range)	310-380 mm

Frost-free period (actual range)	50 days
Freeze-free period (actual range)	80-100 days
Precipitation total (actual range)	310-380 mm
Frost-free period (average)	50 days
Freeze-free period (average)	90 days
Precipitation total (average)	330 mm

- (1) MAYBELL [USC00055446], Maybell, CO
- (2) BROWNS PARK STORE [USC00051018], Maybell, CO

Influencing water features

None

Wetland description

None

Soil features

Soils in this site are shallow, brown to dark gray brown, medium textured loam or stony loam underlaid by sandstone or shale. The soils have moderate permeability, but due to the steep slopes, the effective moisture is reduced. This is generally a droughty and unproductive site.

Soils in this site include: Crestman, Duffymont, and Tolman.

Table 4. Representative soil features

Parent material	(1) Slope alluvium (2) Residuum
Surface texture	(1) Very stony loam (2) Loam
Family particle size	(1) Loamy
Drainage class	Well drained to excessively drained
Permeability class	Moderate to rapid

Depth to restrictive layer	10 – 50 cm
Soil depth	10 – 50 cm
Surface fragment cover <=3"	0 – 30 %
Surface fragment cover >3"	0 – 40 %
Available water capacity (0-50.8cm)	1.78 – 6.86 cm
Calcium carbonate equivalent (0-50.8cm)	10 – 20 %
Soil reaction (1:1 water) (0-50.8cm)	6.6 – 8.4
Subsurface fragment volume <=3" (0-50.8cm)	0 – 30 %
Subsurface fragment volume >3" (0-50.8cm)	0 – 40 %

Ecological dynamics

The aspect of this site is a rather sparse stand of shrubs and grass. Bluebunch wheatgrass, needleandthread, Indian ricegrass, prairie Junegrass, western wheatgrass and bottlebrush squirreltail are the principal grass species. Shrubs of this site include antelope bitterbrush, mountain mahogany, Wyoming big sagebrush and black sagebrush. Important forbs are arrowleaf balsamroot, buckwheat, lupine, loco, and stemless goldenweed. Additional plants include native bluegrass, low rabbitbrush, gray horsebrush, serviceberry and snakeweed.

The site is treeless. Optimum ground cover is 20 percent. Invaders on this site are mainly introduced species.

State and transition model

Additional community tables

Table 5. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
Grass/Grasslike					
1				196-336	
	western wheatgrass	PASM	<i>Pascopyrum smithii</i>	56-84	–
	Sandberg bluegrass	POSE	<i>Poa secunda</i>	28-56	–
	bluebunch wheatgrass	PSSP6	<i>Pseudoroegneria spicata</i>	28-45	–

	needle and thread	HECOC8	Hesperostipa comata ssp. comata	28-45	–
	prairie Junegrass	KOMA	Koeleria macrantha	0-28	–
	squirreltail	ELEL5	Elymus elymoides	0-28	–
	Indian ricegrass	ACHY	Achnatherum hymenoides	0-22	–
Forb					
2				28-84	
	arrowleaf balsamroot	BASA3	Balsamorhiza sagittata	6-28	–
	lupine	LUPIN	Lupinus	6-28	–
	locoweed	OXYTR	Oxytropis	6-28	–
	stemless mock goldenweed	STAC	Stenotus acaulis	6-28	–
	buckwheat	ERIOG	Eriogonum	0-11	–
Shrub/Vine					
3				196-280	
	black sagebrush	ARNO4	Artemisia nova	28-84	–
	Wyoming big sagebrush	ARTRW8	Artemisia tridentata ssp. wyomingensis	28-84	–
	yellow rabbitbrush	CHVI8	Chrysothamnus viscidiflorus	28-56	–
	antelope bitterbrush	PUTR2	Purshia tridentata	28-56	–
	spineless horsebrush	TECA2	Tetradymia canescens	17-28	–
	alderleaf mountain mahogany	CEMO2	Cercocarpus montanus	17-28	–
	Utah serviceberry	AMUT	Amelanchier utahensis	17-28	–
	broom snakeweed	GUSA2	Gutierrezia sarothrae	0-11	–

Animal community

WILDLIFE INTERPRETATIONS: This site offers a medium rating for antelope, deer, and jackrabbits. It offers a low rating for bison, elk, cottontail, and upland game birds. GRAZING INTERPRETATIONS: Thir site offers a medium value for sheep. It offers a low value for cattle and horses.

Hydrological functions

This site offers a low value for watershed.

Recreational uses

Medium value.

Wood products

None.

Inventory data references

Information presented here has been derived from NRCS clipping data and other inventory data. Field observations from range trained personnel were also used. Other sources used as references include: USDA NRCS Water and Climate Center, USDA NRCS National Range and Pasture Handbook, and USDA NRCS Soil Surveys from various counties.

Type locality

Location 1: Moffat County, CO	
General legal description	Open sagebrush areas near Great Divide, Moffat County, Colorado.

Other references

Belnap, J. and S. L. Phillips. 2001. Soil biota in an ungrazed grassland: Response to annual grass (*Bromus tectorum*) invasion. *Ecological Applications*: 11: 1261-1275.

Caudle, D., H. Sanchez, J. DiBenedetto, C. Talbot, and M. Karl. 2013. Draft Interagency Ecological Site Handbook for Rangelands. US Dept. of Agriculture. Washington D.C

Cleland, D.T.; Freeouf, J.A.; Keys, J.E., Jr.; Nowacki, G.J.; Carpenter, C; McNab, W.H. 2007. Ecological Subregions: Sections and Subsections of the Conterminous United States.[1:3,500,000], Sloan, A.M., cartog. Gen. Tech. Report WO-76. Washington, DC: U.S. Department of Agriculture, Forest Service.

Musgrave, G.W. 1955. How much of the rain enters the soil? In *Water*: U.S. Department of Agriculture Yearbook. Washington, D.C. P. 151-159.

National Engineering Handbook. US Department of Agriculture, Natural Resources Conservation Service. Available: <http://www.info.usda.gov/CED/Default.cfm#National%20Engineering%20Handbook>. Accessed February 25, 2008.

Passey, H. B., W. K. Hugie, E. W. Williams, and D. E. Ball. 1982. Relationships between soil, plant community, and climate on rangelands of the Intermountain west. USDA, Soil Conservation Service, Tech. Bull. No. 1669.

Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. Available online at <http://websoilsurvey.nrcs.usda.gov/>. Accessed [8/10/2015].

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.

Western Regional Climate Center. Retrieved from <http://www.wrcc.dri.edu/summary/Climsmco.html> on May 17, 2018.

Contributors

Suzanne Mayne Kinney

Approval

Kirt Walstad, 4/10/2025

Acknowledgments

Field offices in Colorado where the site occurs: Craig, Eagle, Glenwood Springs, Meeker, and Steamboat Springs.

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	04/10/2025
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:
