

Ecological site R034AY303CO

Loamy Slopes

Last updated: 9/07/2023
Accessed: 05/19/2024

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): 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: 14-18 inches
- RV Frost-Free Days: 98-114 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 moderately deep, or deep
 - o are skeletal within 20" of the soil surface; and have minimal rock fragments at the soil surface
 - o are not strongly or violently effervescent in the surface mineral layer (within top 10")
 - o have surface textures that usually range from sandy loam to clay loam in surface mineral layer (4")
- have slopes greater than 30 percent
- does not have a clay content that is greater than 35% in mineral soil surface layer (1-2")

Associated sites

R034AY300CO	Loamy Breaks
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Similar sites

R034AY331CO	Sandy Slopes
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Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) <i>Cercocarpus</i> (2) <i>Purshia tridentata</i>
Herbaceous	(1) <i>Pseudoroegneria spicata</i> (2) <i>Achnatherum hymenoides</i>

Physiographic features

This site occurs on moderate to very steep stony slopes. Direction of slope in the upper foothill zone is north and east, and in the lower oakbrush zone is south and west.

Elevation ranges from 6000 to 8000 feet.

Table 2. Representative physiographic features

Landforms	(1) Hillslope
Runoff class	Medium to very high
Elevation	1,829–2,438 m
Slope	15–90%
Aspect	Aspect is not a significant factor

Climatic features

Annual precipitation varies from 14 to 18 inches. More than one half of the effective moisture is snow. Optimum growing season for the native vegetation is May 15 to June 30. Winters are typically cold, averaging below freezing.

June, July, and August are generally the drier months. April and May are usually windy.

Table 3. Representative climatic features

Frost-free period (characteristic range)	73-78 days
Freeze-free period (characteristic range)	98-114 days
Precipitation total (characteristic range)	432-457 mm
Frost-free period (actual range)	71-80 days
Freeze-free period (actual range)	94-118 days
Precipitation total (actual range)	356-457 mm
Frost-free period (average)	76 days
Freeze-free period (average)	106 days
Precipitation total (average)	432 mm

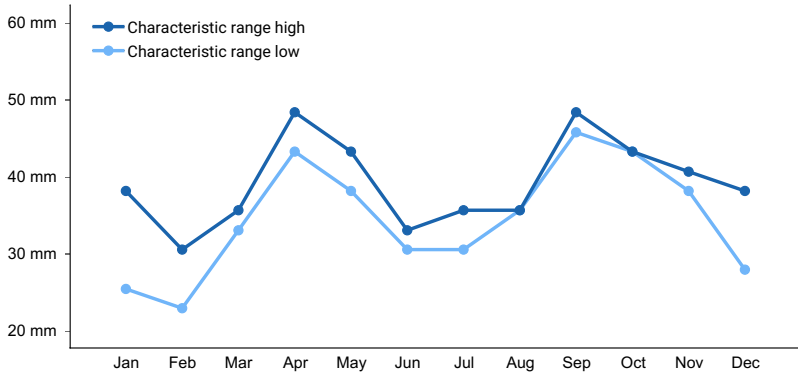


Figure 1. Monthly precipitation range

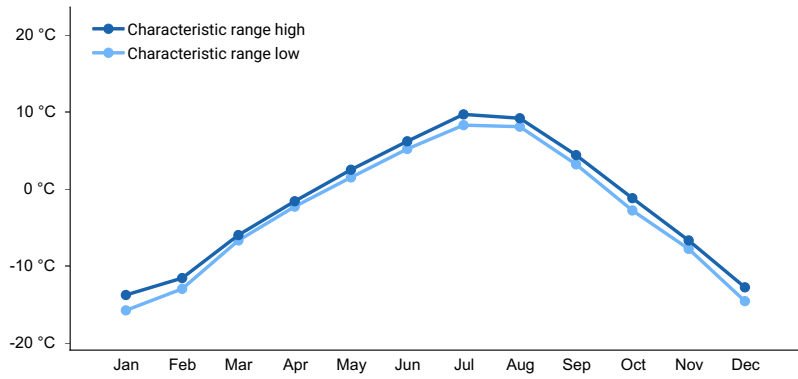


Figure 2. Monthly minimum temperature range

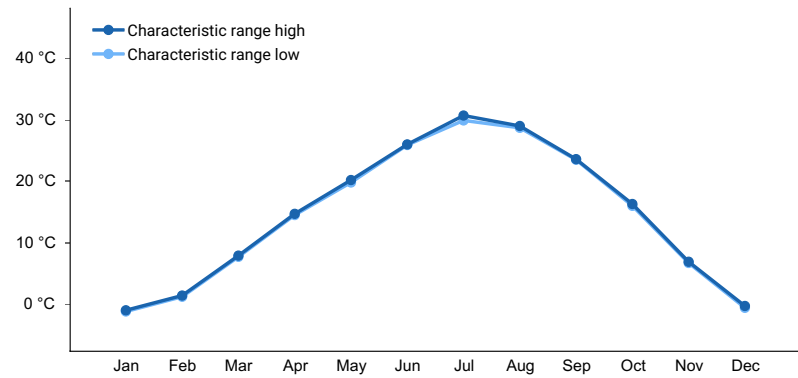


Figure 3. Monthly maximum temperature range

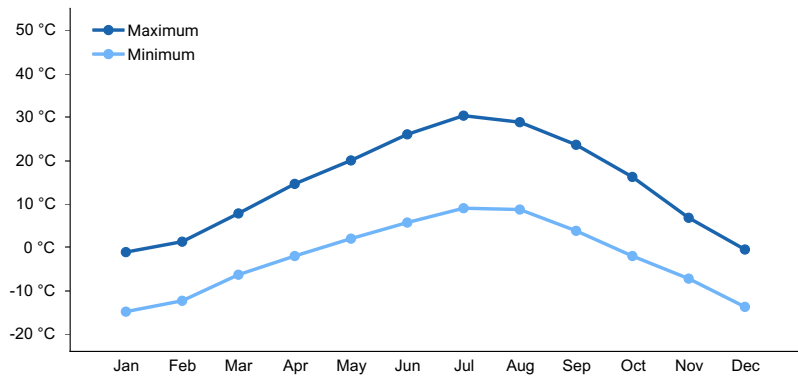


Figure 4. Monthly average minimum and maximum temperature

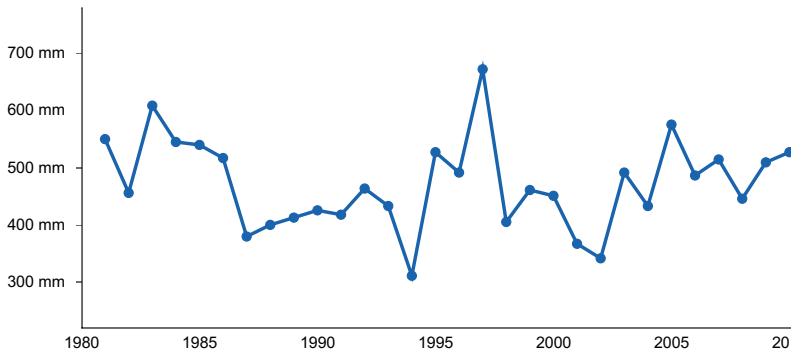


Figure 5. Annual precipitation pattern

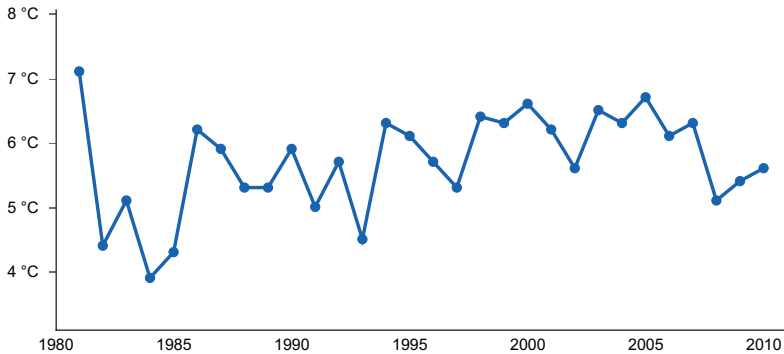


Figure 6. Annual average temperature pattern

Climate stations used

- (1) CRAIG MOFFAT CO AP [USW00024046], Craig, CO
- (2) HAYDEN [USC00053867], Hayden, CO

Influencing water features

N/A

Wetland description

N/A

Soil features

Soils in this range site are moderately deep to deep stone filled sandy loam to light clay loam. Permeability is moderate and moisture holding capacity is reduced due to stoniness. These soils are droughty because of steepness of slopes. Stones in the profile enhanced plant growth by increasing water available in a given volume of soil.

Table 4. Representative soil features

Parent material	(1) Colluvium
Surface texture	(1) Stony sandy loam
Family particle size	(1) Loamy
Permeability class	Moderate
Soil depth	76–198 cm
Surface fragment cover >3"	0–50%

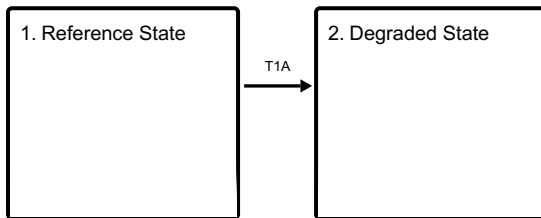
Available water capacity (Depth not specified)	1.78–7.62 cm
Soil reaction (1:1 water) (Depth not specified)	6.6–8.4
Subsurface fragment volume >3" (Depth not specified)	0–50%

Ecological dynamics

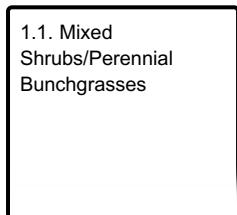
This is a browse-grass plant community. Approximately one half of the annual production is made up of grass species. Bluebunch wheatgrass, Indian ricegrass, western wheatgrass, prairie Junegrass, and bottlebrush squirreltail are the most abundant grasses. The main browse plants are mountain mahogany, antelope bitterbrush, serviceberry, and big sagebrush. Principal forb species include Indian paintbrush, arrowleaf balsamroot, low larkspur, buckwheat, and longleaf phlox.

State and transition model

Ecosystem states



State 1 submodel, plant communities



State 1 Reference State

Community 1.1 Mixed Shrubs/Perennial Bunchgrasses

This site may have scattered pinyon pine and Utah juniper. Optimum ground cover is 25 percent. Invaders on this site are cheatgrass, cactus, thistle species, plus numerous other annual species which move in as the plant community deteriorates. Total annual production. Favorable years 1200 Pounds per Acre air dry Median years 900 Pounds per Acre air dry Unfavorable years 500 Pounds per Acre air dry Growth curve number??? Mar Apr May Jun Jul Aug Sep Oct 8 32 32 18 0 0 4 6

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	140	454	628
Shrub/Vine	325	432	560
Forb	95	129	157
Total	560	1015	1345

State 2

Degraded State

This State is result of soil-disturbing activities such as hoof-action, anthropogenic activity, and rodent activity. It can also occur after brush management followed by improper grazing techniques that usually include high-intensity grazing without appropriate recovery periods.

Transition T1A State 1 to 2

The driver for transition T1A from State 1 (Reference State) to State 2 (Degraded) is low to high intensity, long duration, and high frequency herbivory events.

Additional community tables

Table 6. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
Grass/Grasslike					
1	Grasses			353–555	
	Indian ricegrass	ACHY	<i>Achnatherum hymenoides</i>	50–101	–
	prairie Junegrass	KOMA	<i>Koeleria macrantha</i>	50–101	–
	western wheatgrass	PASM	<i>Pascopyrum smithii</i>	50–101	–
	bluebunch wheatgrass	PSSP6	<i>Pseudoroegneria spicata</i>	50–101	–
	muttongrass	POFE	<i>Poa fendleriana</i>	28–50	–
	squirreltail	ELEL5	<i>Elymus elymoides</i>	28–50	–
	needle and thread	HECOC8	<i>Hesperostipa comata ssp. comata</i>	28–50	–
Forb					
2	Forbs			101–151	
	arrowleaf balsamroot	BASA3	<i>Balsamorhiza sagittata</i>	11–28	–
	Indian paintbrush	CASTI2	<i>Castilleja</i>	11–28	–
	yellow larkspur	DELU	<i>Delphinium luteum</i>	11–28	–
	buckwheat	ERIOG	<i>Eriogonum</i>	11–28	–
	Fremont's beardtongue	PEFR	<i>Penstemon fremontii</i>	11–28	–
	longleaf phlox	PHLO2	<i>Phlox longifolia</i>	11–28	–
	scarlet globemallow	SPCO	<i>Sphaeralcea coccinea</i>	11–28	–
Shrub/Vine					
3	Shrubs			353–504	
	alderleaf mountain mahogany	CEMO2	<i>Cercocarpus montanus</i>	50–151	–
	antelope bitterbrush	PUTR2	<i>Purshia tridentata</i>	50–151	–
	yellow rabbitbrush	CHVI8	<i>Chrysothamnus viscidiflorus</i>	78–101	–
	big sagebrush	ARTR2	<i>Artemisia tridentata</i>	73–101	–
	snowberry	SYMPH	<i>Symphoricarpos</i>	40–50	–

Animal community

INTERPRETATIONS FOR GRAZING ANIMALS:

This site provides a low value rating for cattle and sheep. It is not applicable for horses.

INTERPRETATIONS FOR WILDLIFE:

This site provides a medium value rating for deer, elk, cottontail, jackrabbit, and upland game birds. It is not applicable for antelope and waterfowl.

Hydrological functions

This site provides a low value rating for watershed.

Recreational uses

RECREATION AND NATURAL BEAUTY:

This site provides a medium value.

Wood products

This site supports an occasional pinyon or Utah juniper which could be used for fence posts.

Other information

RARE, THREATENED OR ENDANGERED PLANTS AND ANIMALS

(To be added when known)

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	
Township/Range/Section	T6N R100W S29
General legal description	Sec 29, T6N, R100W, Moffat County, Colorado – south side of Yampa Bench Road at the foot of the Castle Park Dugway.

Other references

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Contributors

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Approval

Kirt Walstad, 9/07/2023

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	05/19/2024
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:
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17. **Perennial plant reproductive capability:**
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