

## **Ecological site R048BY231CO Dry Mountain Loam**

Last updated: 9/07/2023  
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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): 048B–Southern Rocky Mountain Parks and Valleys

This area is in Colorado (96 percent) and Wyoming (4 percent). It makes up about 2,325 square miles (6,020 square kilometers). The town of Walden, in the northern part of this MLRA, is in a wide valley locally known as North Park. The town of Kremmling is in a valley locally known as Middle Park. The town of Hartsel, in the center of the southern part of the MLRA, is in a broad intermontane basin locally known as South Park. The northern part is bordered by the Medicine Bow, Routt, and Arapaho National Forests, and the southern part is bordered by the San Isabel and Pike National Forests. The Arapaho National Wildlife Refuge is directly south of the town of Walden.

This area is within the Southern Rocky Mountains Province of the Rocky Mountain System. It consists of nearly level to rolling mountain parks and valleys and a few narrow mountain ridges. It occurs as two separate parts in the center of the Southern Rockies. The southern half of the northern part is on the west side of the Continental Divide, and the rest of the MLRA is on the east side of the divide. Elevation ranges from 7,850 to 10,850 feet (2,395 to 3,310 meters). The head waters of North Platte River leaves Colorado and enters Wyoming in the northern half of the northern part of the MLRA (North Park). The headwaters of Colorado River is in the southern half of the northern part of the MLRA (Middle Park). The headwaters of South Platte River is in the southern part of the MLRA (South Park).

The mountain valleys and parks that are characteristic of this MLRA are surrounded by high mountain peaks of the adjacent Southern Rocky Mountains MLRA (48A). Steep slopes give rise to steep-gradient streams that can move cobbles and gravel from the mountain slopes down into the valleys. The coarse textured sediments on the surface of this area were deposited by either glacial meltwater or present-day rivers. Buried deep beneath the sediments is a complex of sedimentary and igneous rocks. Residuum from sedimentary rocks is on the steeper slopes that were not covered by alluvium and glacial outwash.

The average annual precipitation is mainly 10 to 16 inches (255 to 405 millimeters), but it is as high as 28 inches (710 millimeters) at the higher elevations that border the Southern Rocky Mountains MLRA. Precipitation generally increases with elevation. Rainfall occurs as high-intensity, convective thunderstorms during the growing season. About half of the annual precipitation falls as snow. Soil moisture is unevenly distributed within short distances because of snowdrifts. The amount of precipitation is highly influenced by rain shadows. The surrounding peaks receive most of the precipitation as storm systems traverse the area. The average annual temperature is 35 to 42 degrees F (1 to 6 degrees C). The freeze-free period averages 95 days and ranges from 70 to 120 days, decreasing in length with elevation.

The dominant soil order in this MLRA is Mollisols. Alfisols are of lesser extent. The soils are very shallow to deep, generally well drained, and loamy or clayey and have mixed or smectitic mineralogy. The soil temperature regime is dominantly cryic, but it is frigid in some small areas, primarily on south- or west-facing slopes. The soil moisture regime is mainly ustic, but a marginal aridic regime has been identified in areas where the average annual precipitation is less than about 12 inches (305 millimeters). The most extensive great group is Argicryolls (Hodden, Lucky, Parlin, Tiagos, and Cabin series), which commonly formed in outwash and slope alluvium on outwash

terraces, fan remnants, hills, and mountain slopes. Haplocryolls (Redcloud and Tealson series) formed in outwash and slope alluvium on outwash terraces, valley side slopes, hills, and ridges. Haplocryalfs (Gebson and Harsha series) formed in slope alluvium and outwash on outwash terraces, fan remnants, hills, ridges, and mountain slopes. Cryaquolls (Dobrow and Randman series) formed in alluvium on stream terraces and flood plains.

## Classification relationships

NRCS:

Major Land Resource Area 48B, Southern Rocky Mountain Parks (United States Department of Agriculture, Natural Resources Conservation Service, 2006).

USFS:

M331I – North Parks and Ranges Section Southern Rocky Mountain Steppe - Open Woodland - Coniferous Forest - Alpine Meadow

EPA:

21i – Sagebrush Parks and 21j – Grassland Parks < 21 Southern Rockies < 6.2 Western Cordillera < 6 Northwestern Forested Mountains North American Deserts (Griffith, 2006).

USGS: Southern Rocky Mountain Province

## Ecological site concept

R048BY231CO Dry Mountain Loam occurs on alluvial fans, valley sides, mountainsides, fans, terraces, and outwash plains. Slopes is between level to 30 percent. Soils are moderately deep to very deep (20 to 60 inches). Soils are derived from alluvium from sedimentary rock; colluvium from basalt or sandstone; or outwash. Soil surface texture is usually loam with fine-loamy textured subsurface. It is a Wyoming big sagebrush – needlegrass – bluebunch wheatgrass community. It has an aridic ustic moisture regime. The effective precipitation ranges from 12 to 16 inches.

## Associated sites

R048BY237CO	<p><b>Stony Loam</b></p> <p>R048BY237CO Stony Loam occurs on mountain-slopes, ridges, fans and moraines. Slopes is between 20 to 70%. Soils are very deep (60+ inches). Soils are derived from till; colluvium from igneous and metamorphic rock; or residuum from igneous and metamorphic rock. Soil surface texture is usually stony loam, cobbly loam, extremely stony sandy loam, gravelly sandy loam, very gravelly sandy loam, or very cobbly sandy loam with loamy-skeletal textured subsurface. It is a bluebunch wheatgrass – needlegrass community. It has a typic ustic moisture regime. The effective precipitation ranges from 16 to 20 inches.</p>
R048BY296CO	<p><b>Claypan</b></p> <p>R048BY296CO Claypan occurs on hills, ridges, alluvial fans and terraces. Slopes is between 0 to 15%. Soils are moderately deep to deep (20 to 60 inches). Soils are derived from alluvium from sedimentary rock; colluvium from sandstone and shale; residuum from shale; or slope alluvium from sandstone and shale. Soil surface texture is usually loam or clay with fine textured subsurface. It is a little sagebrush – western wheatgrass – pine needlegrass community.</p>

## Similar sites

R048BY227CO	<p><b>Dry Loamy Slopes</b></p> <p>R048BY227CO Dry Loamy Slopes occurs on fan remnants, pediments, fills, outwash terrace and fan terraces. Slopes is between 3 to 40%. Soils are deep to very deep (40 to 80 inches). Soils are derived from alluvium; slope alluvium from tuff, limestone, sandstone and/or shale; colluvium from tuff; residuum from tuff; or outwash from granite and gneiss or sedimentary rock. Soil surface texture is usually gravelly loam, very cobbly loam or very cobbly sandy loam or sandy loam with fine-loamy or loamy-skeletal textured subsurface. It is a mountain muhly – Arizona fescue community.</p>
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R048AY231CO	<b>Dry Mountain Loam</b> R048AY231CO Dry Mountain Loam occur on alluvial fans, valley sides, mountainsides, and terraces. Slopes are less than 30%. Soils are moderately deep to deep (20 to 60+ inches) soils derived from alluvium from sedimentary rock; colluvium from basalt; or colluvium sandstone. Soil surface texture is a loam with fine-loamy subsurface. It is a Wyoming big sagebrush – needlegrass community.
R048AY242CO	<b>Dry Mountain Shale</b> R048AY242CO Dry Mountain Shale occurs on hills and structural benches. Slopes is between 5 to 20%. Soils are deep (60 inches or more), soils derived from colluvium from sandstone and shale; or from residuum from sandstone and shale. Soil surface texture is loamy with fine-loamy subsurface. It is a Wyoming big sagebrush – western wheatgrass community.
R048AY292CO	<b>Deep Loam</b> R048AY292CO Deep Loam occurs alluvial fans, terraces, hills, fan remnants, valley sides, and structural benches. Slopes is between 0 to 25%. Soils are deep (60+ inches) in depth. Soils are derived from alluvium from basalt, or sandstone and shale; colluvium from sandstone and shale; slope alluvium from sandstone and shale or eolian deposits from sandstone and shale. Soil surface texture is loam, sandy clay loam or very channery loam, with a fine-loamy subsurface. It is a mountain big sagebrush – needle and thread community.
R048AY303CO	<b>Loamy Slopes</b> R048AY303CO Loamy Slopes occurs on alluvial fans, terraces, hills mountains and mountainsides. Slopes is between 25 to 65%. Soils are moderately deep to deep (20 to 60+ inches). Soils are derived from alluvium from sandstone and siltstone or sandstone; residuum or colluvium from sandstone or outwash from basalt. Soil surface texture is cobbly sandy loam or cobbly, very flaggy or channery loam with loamy-skeletal textured subsurface. It is a mountain mahogany – Indian ricegrass community.
R048AY228CO	<b>Mountain Loam</b> R048AY228CO Mountain Loam occurs mainly alluvial fans, mountain slopes, benches, terraces, or hills. Slopes average between 5 and 10% but can range from 0 to 30%. Soils are moderately deep to deep (20-60 inches) loamy soils derived from residuum from igneous and metamorphic rocks or sandstone and shale; slope alluvium from sandstone and shale, or igneous and metamorphic rocks; colluvium from igneous and metamorphic rocks or sandstone and shale, and/or alluvium from igneous and metamorphic rocks. Soil surface texture are loam, sandy loam or silt loam with loamy subsurface. It is a mountain big sagebrush -Arizona fescue community. It has a typic ustic moisture regime. The effective precipitation ranges from 16 to 20 inches.
R048BY222CO	<b>Loamy Park</b> R048BY222CO Loamy Park occurs on flood plains, flood-plain steps, hills, fans and stream terrace. Slopes is between 0 to 15%. Soils are very deep (60+ inches). Soils are derived from alluvium or colluvium. Soil surface texture is usually loam or sandy loam with fine-loamy textured subsurface. It is an Arizona fescue – mountain muhly community. It has a typic ustic moisture regime. The effective precipitation ranges from 16 to 20 inches.
R048BY225CO	<b>Mountain Loam 10-16 PZ South Park</b> R048BY225CO Mountain Loam 10-16" South Park occurs fan remnants, pediments and hills. Slopes is between 1 to 25%. Soils are deep to very deep (40 to 80 inches). Soils are derived from alluvium; slope alluvium from volcanic breccia, limestone, sandstone, and/or shale; and outwash from sedimentary rock or granite and gneiss. Soil surface texture is usually loam, sandy loam, gravelly loam or very gravelly sandy loam with either a fine-loamy or loamy-skeletal textured subsurface. It is an Arizona fescue – western wheatgrass community.

**Table 1. Dominant plant species**

Tree	Not specified
Shrub	(1) <i>Artemisia tridentata ssp. wyomingensis</i>
Herbaceous	(1) <i>Achnatherum</i> (2) <i>Pseudoroegneria spicata</i>

## Physiographic features

Topography is gently sloping to hilly lands. Slope is usually less than 30 percent. Elevation ranges from 7000 feet to 9000 feet.

**Table 2. Representative physiographic features**

Landforms	(1) Alluvial fan (2) Valley side (3) Mountainside (4) Fan (5) Terrace (6) Outwash plain
Runoff class	Medium to high
Flooding frequency	None
Ponding frequency	None
Elevation	7,000–9,000 ft
Slope	0–30%
Aspect	W, S, SW

## Climatic features

Average annual precipitation is about 12 to 16 inches. Of this, approximately 65 to 75 percent falls as snow, and 25 to 35 percent falls as rain between middle of June and the end of September. Summer moisture is mostly from thundershowers in June thru September. November thru March is the driest period of the year with the driest month being February. July and August are the wettest months.

The average annual total snowfall is 77.1 inches. The snow depth usually ranges from 1 to 16 inches during September thru May. The highest winter snowfall record in this area is 174.8 inches which occurred in 1983-1984. The lowest snowfall record is 35 inches during the 1980-1981 winter.

The frost-free period typically ranges from 32 to 85 days. The last spring frost is typically the middle of June to the first of July. The first fall frost is usually the middle of August to the second week of September.

Mean daily annual air temperature ranges from about 21.8°F to 51.1°F, averaging about 16°F for the winter and 56°F in the summer. Summer high temperatures of low-70°F to mid-70°F are not unusual. The coldest winter temperature recorded was -46°F on January 10, 1962 and the warmest winter temperature recorded was 58°F on December 24, 1971. The coldest summer temperature recorded was 21°F on June 1, 1990 and the warmest was 89°F on July 1, 2002. Wide yearly and seasonal fluctuations are common for this climatic zone. Data taken from Western Regional Climate Center (2018) for Grand Lake 6 SSW, Colorado Climate Station.

This zone in MLRA 48B will need to be broken up into at least two land resources zones in future projects based on current knowledge of precipitation and temperature patterns based on North Park-Middle Park and South Park. Williams Fork Dam, Hot Sulphur Springs 2 SW and Grand Lake 6SSW are in Middle Park. Middle Park is used in the write-up above.

North Park has growing season of 15 to 45 days; July and August are the wettest months; and the driest months is February. North Park: Green Mountain Dam, Spicer, and Rand.

South Park has a growing season of 80 to 110 days with July and August being the wettest months and January is the driest month. Lake George 8 SW

Effective precipitation is limited by the low water intake rate of the soil. Over fifty percent of the precipitation falls in the form of snow. Optimum growing season for native plants is mid-April to the first of July. Winters are cold with deep snow cover. Native plants are favored by spring moisture from accumulated snow. July and August are normally dry months during the growing season.

**Table 3. Representative climatic features**

Frost-free period (characteristic range)	34-43 days
Freeze-free period (characteristic range)	80-84 days
Precipitation total (characteristic range)	14-15 in

Frost-free period (actual range)	32-45 days
Freeze-free period (actual range)	79-85 days
Precipitation total (actual range)	12-16 in
Frost-free period (average)	39 days
Freeze-free period (average)	82 days
Precipitation total (average)	15 in

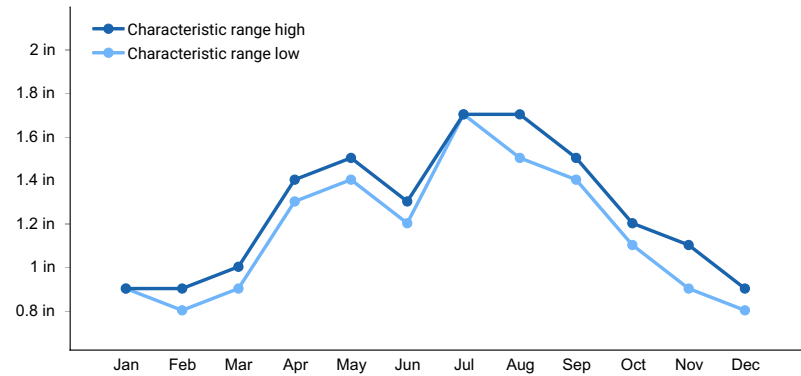


Figure 1. Monthly precipitation range

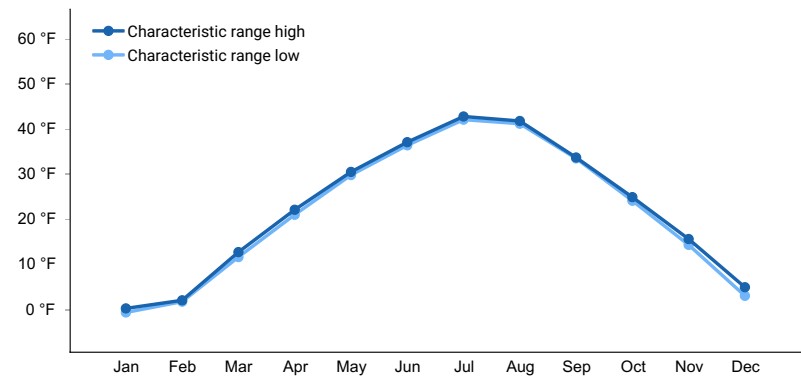


Figure 2. Monthly minimum temperature range

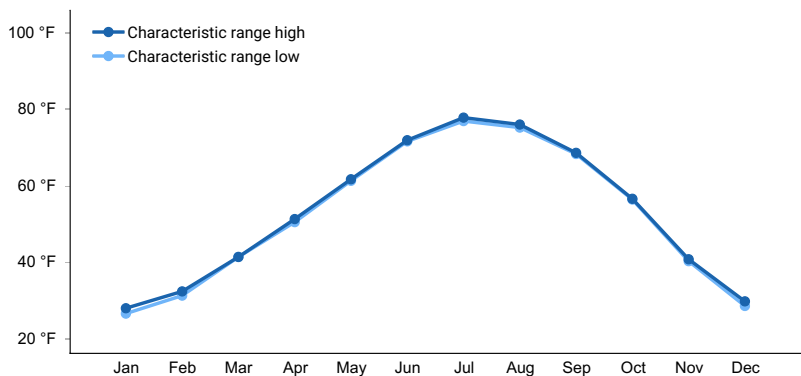
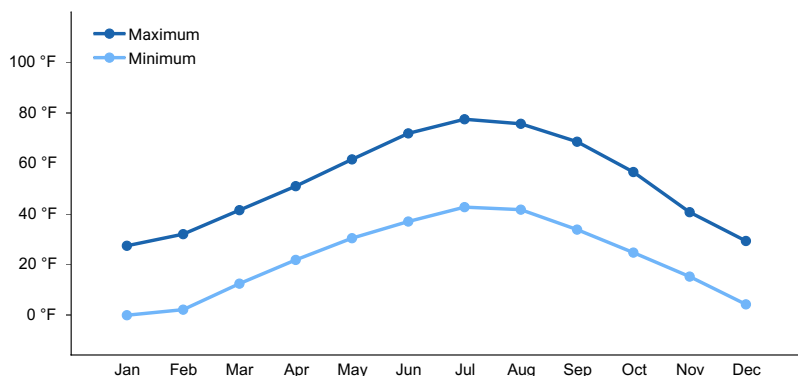
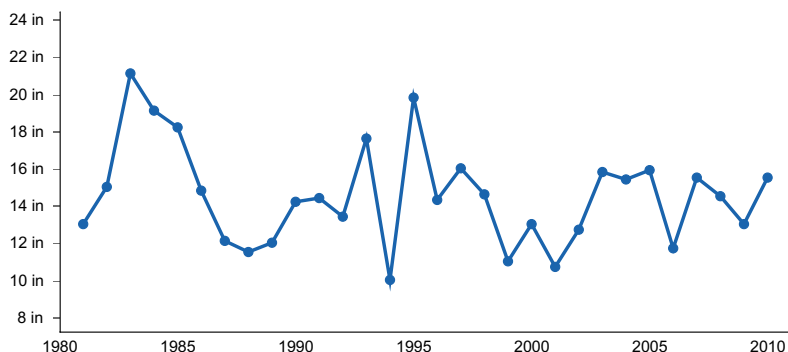


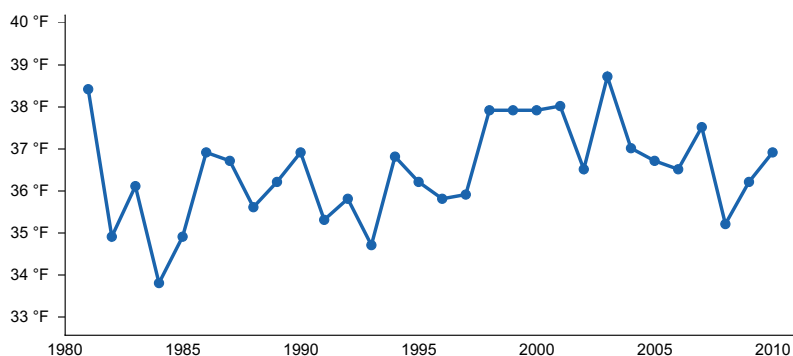
Figure 3. Monthly maximum temperature range



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



**Figure 5. Annual precipitation pattern**



**Figure 6. Annual average temperature pattern**

## Climate stations used

- (1) GRAND LAKE 6 SSW [USC00053500], Granby, CO
- (2) WILLIAMS FORK DAM [USC00059096], Parshall, CO

## Influencing water features

There are no water features associated with this site.

## Wetland description

N/A

## Soil features

Soils in fine-loamy particle size family. Clay content in the profile ranges from 15 to 25 percent at the soil surface and 25 to 35 percent clay in the subsurface. Dominate surface texture is a loam.

These soils are examples of the modal concept of this site and not an inclusive list of all the soils where this

ecological site can be found.

Forelle, Gelkie, Harsha, Lymanson, Morset and Woolsey.

**Table 4. Representative soil features**

Parent material	(1) Alluvium—sedimentary rock (2) Colluvium—basalt (3) Colluvium—sandstone (4) Outwash
Surface texture	(1) Loam
Family particle size	(1) Fine-loamy
Drainage class	Well drained
Permeability class	Slow to moderate
Soil depth	20–60 in
Surface fragment cover $\leq 3$ "	0–25%
Surface fragment cover $> 3$ "	0–15%
Available water capacity (Depth not specified)	3.5–6.5 in
Calcium carbonate equivalent (Depth not specified)	0–5%
Soil reaction (1:1 water) (Depth not specified)	6.6–8.4
Subsurface fragment volume $\leq 3$ " (Depth not specified)	0–20%
Subsurface fragment volume $> 3$ " (Depth not specified)	0–10%

## Ecological dynamics

Bluebunch wheatgrass usually grows north of the Colorado River and it is replaced functionally and structurally by Indian ricegrass south of the Colorado River. Pine needlegrass, needle and thread, prairie Junegrass, bottlebrush squirreltail, Nevada bluegrass now known as Sandberg bluegrass, muttongrass, and sedges contribute toward a rather sparse grassland appearance.

Wyoming big sagebrush has a noticeable place on this site. Yellow rabbitbrush, snowberry, serviceberry, and bitterbrush may be present in small amounts. Low phlox, pussytoes, buckwheat, stonecrop and fringed sagewort are common.

The following species are most likely to invade this site: tall rabbitbrush (rubber rabbitbrush).

## State and transition model

## R048BY231CO Dry Mountain Loam

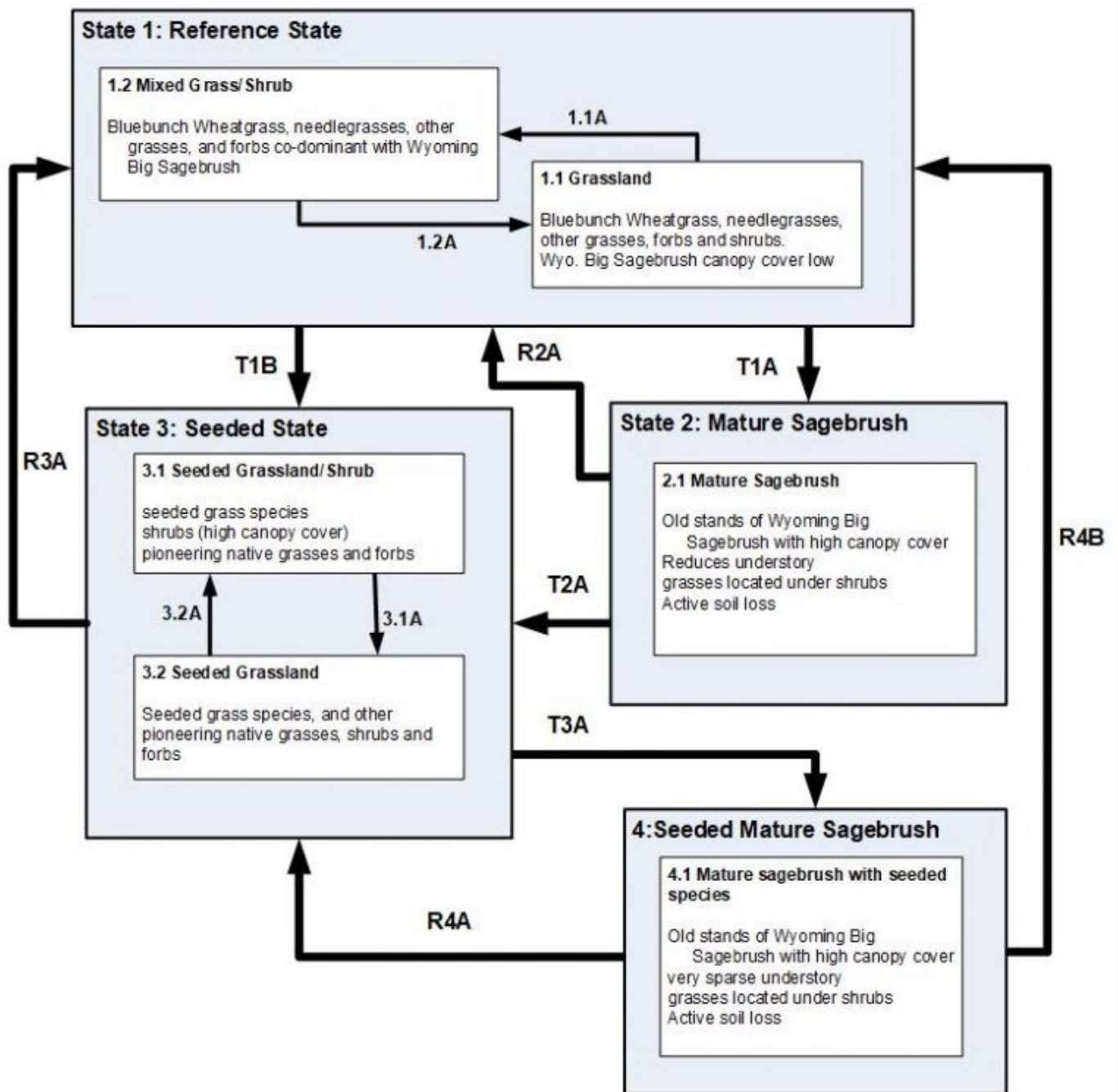


Figure 7. State & Transition Model

## Legend

- 1.1A, 3.2A, T1A, T3A – Extended improper grazing, lack of fire, extended drought, time without disturbance, and/or lack of insect/pathogen outbreaks
- 1.2A, 3.1A, R4A – Fire, proper grazing, wet climatic cycles, vegetative treatments, and/or small scale insect/pathogen outbreaks
- T1B, T2A – Seeded herbaceous species planted and/or shrub removal
- R2A – fire, vegetation treatments, insect herbivory, proper grazing, wet climatic cycles, and/or encroached shrub removal
- R3A – intensive management and inputs maybe required to return to reference state, wet climatic years, native plantings, vegetative treatments, proper grazing and/or fire

Figure 8. Legend



## State 1 Reference State

The potential vegetation is about 60 to 75 percent grasses and grass-like plants, 5 to 10 percent forbs and 20 to 30 percent woody plants. Bluebunch wheatgrass/Indian ricegrass, pine needlegrass, needle and thread, Junegrass, streambank wheatgrass, squirrel tail, Nevada bluegrass(Sandberg bluegrass), muttongrass and sedges contribute toward a rather sparse grassland appearance. Wyoming big sagebrush has a noticeable place on this site. Low (yellow) rabbitbrush, snowberry, serviceberry, and bitterbrush may be present in small amounts. Low phlox, pussytoes, buckwheat, stonecrop and fringed sagewort are common. Optimum ground cover is 35 percent. The following species are most likely to invade this site: Tall rabbitbrush. This plant community is diverse, stable, and productive. Litter is properly distributed with little movement off-site and natural plant mortality is low. Community dynamics, nutrient cycle, water cycle and energy flow are functioning properly. Total Annual Production Favorable years: 1000 pounds per acre Median years: 750 pounds per acre Unfavorable years: 500 pounds per acre

## Community 1.1 Reference State

Table 5. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	420	626	833
Shrub/Vine	75	112	150
Forb	5	12	17
<b>Total</b>	<b>500</b>	<b>750</b>	<b>1000</b>

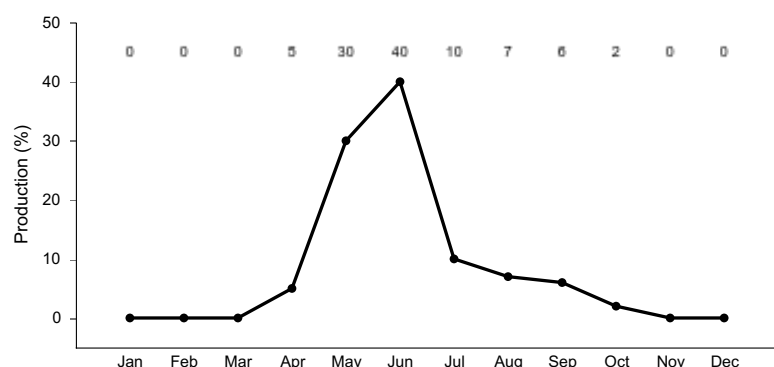


Figure 10. Plant community growth curve (percent production by month). CO0104, MLRA 48A & 34A - Foothill Frigid. MLRA 48A & 34A.

## Additional community tables

Table 6. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Lb/Acre)	Foliar Cover (%)
<b>Grass/Grasslike</b>					
1	<b>Grass and grasslikes</b>			420–833	
	needle and thread	HECO26	<i>Hesperostipa comata</i>	200–250	–
	western wheatgrass	PASM	<i>Pascopyrum smithii</i>	200–250	–
	bluebunch wheatgrass	PSSP6	<i>Pseudoroegneria spicata</i>	0–250	–
	muttongrass	POFE	<i>Poa fendleriana</i>	100–200	–
	mountain muhly	MUMO	<i>Muhlenbergia montana</i>	100–200	–
	pine needlegrass	ACPI2	<i>Achnatherum pinetorum</i>	100–200	–
	Arizona fescue	FEAR2	<i>Festuca arizonica</i>	100–200	–

	Sandberg bluegrass	POSE	<i>Poa secunda</i>	125–175	–
	prairie Junegrass	KOMA	<i>Koeleria macrantha</i>	110–115	–
	Indian ricegrass	ACHY	<i>Achnatherum hymenoides</i>	0–100	–
	James' galleta	PLJA	<i>Pleuraphis jamesii</i>	50–100	–
	sheep fescue	FEOV	<i>Festuca ovina</i>	50–100	–
	Geyer's sedge	CAGE2	<i>Carex geyeri</i>	50–100	–
	sedge	CAREX	<i>Carex</i>	50–100	–
	squirreltail	ELEL5	<i>Elymus elymoides</i>	50–100	–
<b>Shrub/Vine</b>					
2	<b>Shrubs</b>			75–150	
	Wyoming big sagebrush	ARTRW8	<i>Artemisia tridentata</i> ssp. <i>wyomingensis</i>	110–115	–
	longflower rabbitbrush	CHDE2	<i>Chrysothamnus depressus</i>	50–100	–
	yellow rabbitbrush	CHVI8	<i>Chrysothamnus viscidiflorus</i>	50–100	–
	Saskatoon serviceberry	AMAL2	<i>Amelanchier alnifolia</i>	50–100	–
	black sagebrush	ARNO4	<i>Artemisia nova</i>	50–100	–
	antelope bitterbrush	PUTR2	<i>Purshia tridentata</i>	50–100	–
	western snowberry	SYOC	<i>Symphoricarpos occidentalis</i>	50–100	–
	roundleaf snowberry	SYRO	<i>Symphoricarpos rotundifolius</i>	50–100	–
	plains pricklypear	OPPO	<i>Opuntia polyacantha</i>	5–25	–
	wax currant	RICE	<i>Ribes cereum</i>	0–10	–
	Woods' rose	ROWO	<i>Rosa woodsii</i>	0–5	–
	Utah serviceberry	AMUT	<i>Amelanchier utahensis</i>	0–5	–
	rubber rabbitbrush	ERNA10	<i>Ericameria nauseosa</i>	0–5	–
	broom snakeweed	GUSA2	<i>Gutierrezia sarothrae</i>	0–5	–
	spineless horsebrush	TECA2	<i>Tetradymia canescens</i>	0–5	–
	winterfat	KRLA2	<i>Krascheninnikovia lanata</i>	0–4	–
	creeping barberry	MARE11	<i>Mahonia repens</i>	0–2	–
<b>Forb</b>					
3	<b>Forbs</b>			5–17	
	hollyleaf clover	TRGY	<i>Trifolium gymnocarpon</i>	0–10	–
	bluebells	MERTE	<i>Mertensia</i>	0–10	–
	mat penstemon	PECA4	<i>Penstemon caespitosus</i>	0–10	–
	mountain ball cactus	PESI	<i>Pediocactus simpsonii</i>	0–10	–
	Rocky Mountain penstemon	PEST2	<i>Penstemon strictus</i>	0–10	–
	spiny phlox	PHHO	<i>Phlox hoodii</i>	0–10	–
	longleaf phlox	PHLO2	<i>Phlox longifolia</i>	0–10	–
	hoary tansyaster	MACA2	<i>Machaeranthera canescens</i>	0–10	–
	elegant cinquefoil	POCO13	<i>Potentilla concinna</i>	0–10	–
	woolly cinquefoil	POHI6	<i>Potentilla hippiana</i>	0–10	–
	cinquefoil	POTEN	<i>Potentilla</i>	0–10	–
	yarrow	ACHIL	<i>Achillea</i>	0–10	–
	pussytoes	ANTEN	<i>Antennaria</i>	0–10	–

	aster	ASTER	<i>Aster</i>	0–10	–
	balsamroot	BALSA	<i>Balsamorhiza</i>	0–10	–
	Wyoming Indian paintbrush	CALI4	<i>Castilleja linariifolia</i>	0–10	–
	larkspur	DELPH	<i>Delphinium</i>	0–10	–
	fleabane	ERIGE2	<i>Erigeron</i>	0–10	–
	buckwheat	ERIOG	<i>Eriogonum</i>	0–10	–
	sulphur-flower buckwheat	ERUM	<i>Eriogonum umbellatum</i>	0–10	–
	geranium	GERAN	<i>Geranium</i>	0–10	–
	lupine	LUPIN	<i>Lupinus</i>	0–10	–
	silky lupine	LUSE4	<i>Lupinus sericeus</i>	0–5	–
	small-leaf pussytoes	ANPA4	<i>Antennaria parvifolia</i>	0–5	–
	prairie sagewort	ARFR4	<i>Artemisia frigida</i>	0–5	–
	beautiful cinquefoil	POPU9	<i>Potentilla pulcherrima</i>	0–5	–
	clover	TRIFO	<i>Trifolium</i>	0–5	–
	shortstyle bluebells	MEBR	<i>Mertensia brevistyla</i>	0–2	–
	flaxleaf plainsmustard	SCLI	<i>Schoenocrambe linifolia</i>	0–2	–
	scarlet globemallow	SPCO	<i>Sphaeralcea coccinea</i>	0–2	–
	twinpod	PHYSA2	<i>Physaria</i>	0–2	–
	white sagebrush	ARLU	<i>Artemisia ludoviciana</i>	0–2	–
	Gunnison milkvetch	ASAN4	<i>Astragalus anisus</i>	0–2	–
	lesser rushy milkvetch	ASCO12	<i>Astragalus convallarius</i>	0–2	–
	onion	ALLIU	<i>Allium</i>	0–2	–
	Douglas' dustymaiden	CHDO	<i>Chaenactis douglasii</i>	0–2	–
	narrowleaf goosefoot	CHLE4	<i>Chenopodium leptophyllum</i>	0–2	–
	daisy	CHRY2	<i>Chrysanthemum</i>	0–2	–
	scrambled eggs	COAU2	<i>Corydalis aurea</i>	0–2	–
	bastard toadflax	COUM	<i>Comandra umbellata</i>	0–2	–
	widewing springparsley	CYPU	<i>Cymopterus purpurascens</i>	0–2	–
	pygmyflower rockjasmine	ANSE4	<i>Androsace septentrionalis</i>	0–2	–
	scarlet gilia	IPAG	<i>Ipomopsis aggregata</i>	0–2	–
	bladderpod	LESQU	<i>Lesquerella</i>	0–2	–
	spearleaf buckwheat	ERLO4	<i>Eriogonum lonchophyllum</i>	0–2	–
	redroot buckwheat	ERRA3	<i>Eriogonum racemosum</i>	0–2	–
	Navajo fleabane	ERCO27	<i>Erigeron concinnus</i>	0–2	–
	Eaton's fleabane	EREA	<i>Erigeron eatonii</i>	0–2	–

## Animal community

### INTERPRETATIONS FOR GRAZING ANIMALS:

This site provides a medium value for cattle, sheep and horses.

### INTERPRETATIONS FOR WILDLIFE:

The site provides a medium value rating for antelope, deer, elk, cottontail, and upland game birds. It provides a low value rating for jackrabbits.

## Hydrological functions

This site provides a medium value for watershed.

## Recreational uses

The site provides a medium value rating for recreation and natural beauty.

## Wood products

No wood products are produced on this site.

## Other products

None

## Other references

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## Contributors

Suzanne Mayne-Kinney

## Approval

Kirt Walstad, 9/07/2023

## Acknowledgments

Project Staff:

Suzanne Mayne-Kinney, Ecological Site Specialist, NRCS MLRA, Grand Junction SSO

Chris Fabian, MLRA Soil Survey Leader, NRCS MLRA Fort Collins SSO

Program Support:

Rachel Murph, NRCS CO State Rangeland Management Specialist, Denver

Scott Woodhall, NRCS MLRA Ecological Site Specialist-QA Phoenix, AZ

Eva Muller, Regional Director, Rocky Mountain Regional Soil Survey Office, Bozeman, MT

B.J. Shoup, CO State Soil Scientist, Denver

Eugene Backhaus, CO State Resource Conservationist, Denver

Those involved in developing earlier versions of this site description include: Bob Rayer, retired NRCS Soil Scientist; Herman Garcia, retired CO State RMS and NRCS MLRA Ecological Site Specialist-QA Phoenix, AZ.

#### --Site Development and Testing Plan--:

Future work to validate and further refine the information in this Provisional Ecological Site Description is necessary. This will include field activities to collect low-, medium-, and high-intensity sampling, soil correlations, and analysis of that data.

Additional information and data is required to refine the Plant Production and Annual Production tables for this ecological site. The extent of MLRA 48A must be further investigated.

Field testing of the information contained in this Provisional ESD is required. As this ESD is moved to the Approved ESD level, reviews from the technical team, quality control, quality assurance, and peers will be conducted.

### 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	10/22/2019
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:**

- 
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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