Ecological site DX035X03A112
Loamy

Last updated: 5/29/2025
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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.

Ecological site concept

This site occurs on moderately deep to very deep, well-drained, medium-textured soils. This site occurs on piedmont slopes or plains. Slopes range from 0 to 15 percent.

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) *Atriplex canescens* (2) *Krascheninnikovia lanata*
Herbaceous	(1) *Bouteloua gracilis* (2) *Pascopyrum smithii*

Legacy ID

R035XA112NM

Physiographic features

This site occurs on level to sometimes strongly sloping piedmont slopes or plains. Average slopes are 5 percent or less, although slopes may range as high as 15 percent. Elevations vary from about 6,000 to 7,300 feet above sea level.

Table 2. Representative physiographic features

Landforms	(1) Fan piedmont (2) Plain (3) Fan remnant
Flooding duration	Extremely brief (0.1 to 4 hours) to very brief (4 to 48 hours)
Flooding frequency	None to occasional
Ponding frequency	None

Elevation	1,830 – 2,230 m
Slope	0 – 20 %
Water table depth	180 cm
Aspect	Aspect is not a significant factor

Climatic features

Average annual precipitation varies from about 10 inches to just over 16 inches. Fluctuations ranging from about 5 inches to 25 inches are not uncommon. The overall climate is characterized by cold dry winters in which winter moisture is less than summer. As much as half or more of the annual precipitation can be expected to come during the period of July through September. Thus, fall conditions are often more favorable for good growth of cool-season perennial grasses, shrubs, and forbs than are those of spring.

The average frost-free season is about 120 days and extends from approximately mid May too early or mid September. Average annual air temperatures are 50 degrees F or lower and summer maximums rarely exceed 100 degrees F. Winter minimums typically approach or go below zero. Monthly mean temperatures exceed 70 degrees F for the period of July and August.

Rainfall patterns generally favor warm-season perennial vegetation, while the temperature regime tends to favor cool-season vegetation. This creates a somewhat complex community of plants on any given ecological site, which is quite susceptible to disturbance and is at or near its productive potential only when both the natural warm/cool-season dominants are present.

Climate data was obtained from http://www.wrcc.sage.dri.edu/summary/climsmnm.html web site using 50% probability for freeze-free and frost-free seasons using 28.5 degrees F and 32.5 degrees F respectively.

Table 3 Representative climatic features

Frost-free period (average)	150 days
Freeze-free period (average)	170 days
Precipitation total (average)	410 mm

Influencing water features

This is an upland site, and is not associated with water features or wetlands. During heavy rain events, this site may receive run-on moisture from landforms above and contribute runoff to landforms below.

Soil features

Typical soils are moderately deep to very deep and well drained. The surface layer is medium textured loams, fine sandy loams, and very fine sandy loams. Surface and underlying textures may contain gravels but generally contains less than 35 percent. Underlying layers vary from moderately coarse to fine textured. The water-holding capacity is moderately high to high, and permeability is moderately slow to moderate. As vegetation cover deteriorates, however, intake rates may be reduced to slow.

Table 4. Representative soil features

Surface texture	(1) Gravelly loam (2) Fine sandy loam (3) Sandy loam
Family particle size	(1) Clayey
Drainage class	Well drained
Permeability class	Slow to moderate
Soil depth	50 – 180 cm
Surface fragment cover <=3"	10 – 40 %
Surface fragment cover >3"	0 – 40 %
Available water capacity (0-101.6cm)	15.24 – 30.48 cm
Calcium carbonate equivalent (0-101.6cm)	0 – 30 %
Electrical conductivity (0-101.6cm)	Not specified
Sodium adsorption ratio (0-101.6cm)	Not specified
Soil reaction (1:1 water) (0-101.6cm)	6.6 – 10
Subsurface fragment volume <=3" (Depth not specified)	0 – 40 %

Subsurface fragment volume >3" (Depth not specified)	0 – 40 %

Ecological dynamics

Overview
The Loamy site is one of the broadest ecological sites in WP-2 encompassing a wide range of soil series. It is associated with Sandy, Shallow Sandstone, Malpais, Limy, Shallow, Swale, and Savannah sites. Loamy sites occur as distinct units adjacent to or as part of complex or association with soil map units correlated to the above sites. The historic plant community of the Loamy site is a grassland characterized by a mixture of cool and warm-season grasses, and occasional shrubs and forbs. Blue grama and western wheatgrass are the dominant grasses. Fourwing saltbush and winterfat are characteristic shrubs. Loss of herbaceous cover and resulting decreased competition by grasses may favor piñon/juniper invasion or the encroachment of shrubs, typically, rabbitbrush or horsebrush. Seed dispersal and the reduction of natural fire frequency may also contribute to the invasion of piñon/juniper. Decreased available soil moisture due to drought and overgrazing, seed dispersal, and decreased fire frequency may promote the transition to a Grass/Succulent state. A severe loss of herbaceous cover, soil sealing, and reduced infiltration may cause the transition to a Bare state. While Piñon/Juniper-Invaded, Grass Succulent-Mix, and Shrub-Dominated may result from similar transitional drivers, it is unclear what factor or combination of factors ultimately determine the transition pathway.

State and transition model

Figure 3. Loamy WP-2 036B State and Transition Diagram

Additional community tables

Table 5. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
Grass/Grasslike					
1				146-191	
	blue grama	BOGR2	*Bouteloua gracilis*	149-186	–
2				78-146	
	western wheatgrass	PASM	*Pascopyrum smithii*	74-149	–
3				56-90	
	spike muhly	MUWR	*Muhlenbergia wrightii*	59-90	–
4				34-78	
	squirreltail	ELEL5	*Elymus elymoides*	37-74	–
5				34-78	
	needle and thread	HECO26	*Hesperostipa comata*	37-74	–
	New Mexico feathergrass	HENE5	*Hesperostipa neomexicana*	37-74	–
6				11-34	
	James' galleta	PLJA	*Pleuraphis jamesii*	8-37	–
7				11-34	
	sideoats grama	BOCU	*Bouteloua curtipendula*	8-37	–
8				11-34	
	common wolfstail	LYPH	*Lycurus phleoides*	8-37	–
	sand dropseed	SPCR	*Sporobolus cryptandrus*	8-37	–
9				11-34	
	threeawn	ARIST	*Aristida*	8-37	–
	ring muhly	MUTO2	*Muhlenbergia torreyi*	8-37	–
10				11-22	
	black grama	BOER4	*Bouteloua eriopoda*	8-22	–

11				11-34	
	alkali sacaton	SPAI	*Sporobolus airoides*	8-37	–
Forb					
12				11-59	
	Forb, perennial	2FP	*Forb, perennial*	8-59	–
13				11-34	
	Forb, annual	2FA	*Forb, annual*	8-37	–
Shrub/Vine					
14				11-34	
	fourwing saltbush	ATCA2	*Atriplex canescens*	8-37	–
15				11-34	
	winterfat	KRLA2	*Krascheninnikovia lanata*	8-37	–
16				11-34	
	Bigelow sage	ARBI3	*Artemisia bigelovii*	8-37	–
	prairie sagewort	ARFR4	*Artemisia frigida*	8-37	–
17				11-22	
	rubber rabbitbrush	ERNAN5	*Ericameria nauseosa ssp. nauseosa var. nauseosa*	8-22	–
	broom snakeweed	GUSA2	*Gutierrezia sarothrae*	8-22	–
	spineless horsebrush	TECA2	*Tetradymia canescens*	8-22	–
18				11-22	
	Apache plume	FAPA	*Fallugia paradoxa*	8-22	–
	pale desert-thorn	LYPA	*Lycium pallidum*	8-22	–

Table 6. Community 2.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)

Table 7. Community 3.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)

Table 8. Community 4.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)

Table 9. Community 5.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)

Animal community

Habitat for Wildlife: This site provides habitat which support a resident animal community that is characterized by pronghorn antelope, black-tailed jackrabbit, badger, Gunnison's prairie dog, banner-tailed kangaroo rat, Botta's pocket gopher, silky pocket mouse, burrowing owl, mourning dove, chipping sparrow, western spadefoot toad, leopard lizard, short-horned lizard, and prairie rattlesnake. The chestnut-collared longspur winters on this site, and the common raven and prairie falcon hunt over it.

Hydrological functions

The runoff curve numbers are determined by field investigations using hydrologic cover conditions and hydrologic soil groups. Hydrologic Interpretations Soil Series----------Hydrologic Group Aquima----------B Augustine----------B Celacy----------C Celsosprings----------C Clovis----------B Datil----------B Dioxice----------B Doakum----------B El Rancho----------B Flaco----------C Flugle----------B Galestina----------C Gilco----------B Goesling----------B Grieta----------B Guy----------B Hagerman----------C & B Jacee----------C Jocity----------B Khapo----------B Kim----------B La Fonda----------B Landavaso----------B Las Lucas----------B Loarc----------B Maia----------B

Manzano----------B Marianolake----------B Mikim----------B Millpaw----------C & D
Oelop----------B Paguate----------C Panky----------B Penistaja----------B
Querencia----------B Redpen----------B Scholle----------B Shavano----------B
Silver----------C Tapia----------B Teczuni----------C Tejana----------B
Veteado----------C Witt----------B Zepol----------B Zia----------B

Recreational uses

This site offers fair to good potential for hiking, horseback riding, nature observation, photography, and hunting for pronghorn antelope. Very limited hunting opportunities for quail and dove usually exist. During seasons when soil moisture is favorable, the site may display a colorful array of wildflowers.

Wood products

This site has no significant value for wood products.

Other products

Grazing: This site is suitable for grazing by cattle, sheep, and horses in all seasons of the year, but is poorly suited to continuous year long use if potential natural vegetation is to be maintained. Under such use, cool-season grasses such as western wheatgrass may decline rapidly. If use is heavy and prolonged, such species as sideoats grama and spike muhly will also decline. Typical site deterioration is characterized by low-vigor, sod-like blue grama, which may eventually come to make up 80 to 95 percent of the composition. Further deterioration is characterized by increasing amounts of bare ground, possible invasion by woody plants, such as pinyon and juniper, and increases in ring muhly, threeawn spp., and sand dropseed. The site is also susceptible to takeover by rabbitbrush. Production in these instances may be cut to onethird or even one- fourth of the potential.

Other information

Guide to Suggested Initial Stocking Rate Acres per Animal Unit Month Similarity Index----------Ac/AUM 100 - 76----------3.3 – 4.6 75 – 51----------4.4 – 6.8 50 – 26----------6.5 – 11.0 25 – 0----------11.0+

Type locality

Location 1: Catron County, NM
Location 2: Socorro County, NM

Other references

Data collection for this site was done in conjunction with the progressive soil surveys within the New Mexico and Arizona Plateaus and Mesas 36 Major Land Resource Area of New Mexico. This site has been mapped and correlated with soils in the following soil surveys: McKinley, Cibola, Sandoval, Catron, Socorro.

1. Brockway, D.G., R.G. Gatewood, and R.B. Paris. 2002. Restoring grassland savannas from degraded pinyon-juniper woodlands: effects of mechanical overstory reduction and slash treatment alternatives. Journal of Environmental Management. 64: 179-197.

2. Johnsen, T. N., Jr. 1962. One-seeded juniper invasion of northern Arizona grasslands. Ecological Monographs. 32:187-207.

3. Miller, R.F., and R.J. Tausch. 2001. The role of fire in pinyon and juniper woodlands: a descriptive analysis. Pages 15–30 in K.E.M. Galley and T.P. Wilson (eds.). Proceedings of the Invasive Species Workshop: the Role of Fire in the Control and Spread of Invasive Species. Fire Conference 2000: the First National Congress on Fire Ecology, Prevention, and Management. Miscellaneous Publication No. 11, Tall Timbers Research Station, Tallahassee, FL.

4. Parker, K. W. 1945. Juniper comes to the grassland. American Cattle Producer. 27: 12-14.

5. Phillips, Frank J. 1910. The dissemination of junipers by birds. Forestry Quarterly. 8: 60-73. (From Expt. Sta. Rec. 22: 644.)

6. Pieper, R.D. 1971. Blue grama vegetation responds inconsistently to cholla cactus control. Journal of Range Management. 24: 52- 54.

7. Richardson, D.M. and W.J. Bond. 1991. Determinants of plant distribution: Evidence from pine invasions. The American Naturalist.

137: 639-668

8. Vallentine, J.F. 1989. Range Developments and Improvements. 3rd Edition. Academic Press. San Diego, California
Characteristic Soils Are: Datil and Dioxice

Other Soils included are:
Aquima, Augustine, Bond, Celacy Celsosprings, Clovis, Doakum, El Rancho, Flaco, Flugle, Galestina, Gilco, Goesling, Grieta, Guy Hagerman, Jacee, Jocity, Kim, La Fonda Landavaso, Las Lucas, Loarc, Maia, Manzano Marianolake, Mikim, Millpaw, Oelop, Paguate Penistaja, Querencia, Redpen, Scholle, Shavano Silver, Tapia, Teczuni, Tejana, Veteado, Witt, Zia

Contributors

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Approval

Kendra Moseley, 5/29/2025

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	06/15/2026
Approved by	
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:**

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7. **Amount of litter movement (describe size and distance expected to travel):**

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8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):**

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):**

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:**

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11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):**

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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:

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):**

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14. **Average percent litter cover (%) and depth (in):**

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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:**