USDA Natural Resources
Conservation Service

Ecological site R070AY013NM
Salt Meadow

Last updated: 9/12/2023
Accessed: 05/13/2025

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.

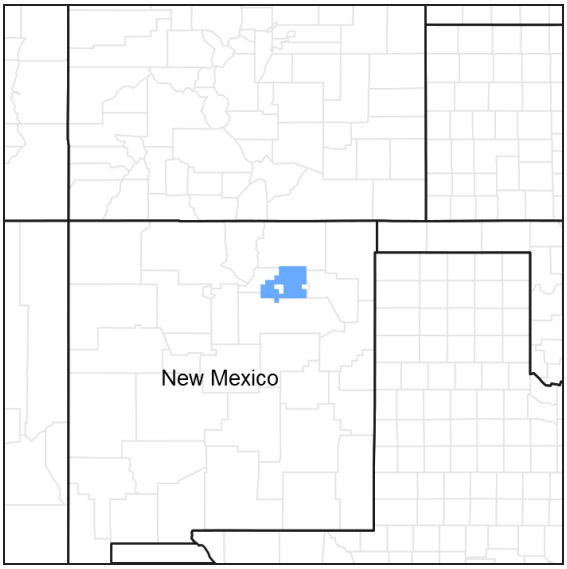

Figure 1. Mapped extent

Areas shown in blue indicate the maximum mapped extent of this ecological site. Other ecological sites likely occur within the highlighted areas. It is also possible for this ecological site to occur outside of highlighted areas if detailed soil survey has not been completed or recently updated.

Ecological site concept

This site occurs on run-on landforms such as alluvial flats and ephemeral drainageways. While not stated in the legacy soil description, it stands to reason that soils here have measurable salinity, and are derived from alluvium dominated by marine shales. Given the description in the Soils section, it appears that this site includes both hydric and non-hydric soils. NASIS correlations suggest that this site is dominated by the latter.
This site correlates to the Run-on ecological site group.

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) *Atriplex canescens* (2) *Suaeda suffrutescens*
Herbaceous	(1) *Sporobolus airoides* (2) *Distichlis spicata*

Physiographic features

This is on nearly level to gently sloping bottoms and fans. Elevation ranges from 5,800 to 7,200 feet above sea level. Slopes are concave and range from 0 to 4 percent. These sites receive water from surrounding sites, either

as shallow ground water or surface runoff.

Table 2. Representative physiographic features

Landforms	(1) Basin-floor remnant (2) Depression
Elevation	1,768–2,195 m
Slope	0–4%

Climatic features

The climate of this area can be classified as “semi-arid continental”.

Precipitation averages 14 to 16 inches. Seventy seven percent of the year’s moisture normally falls during the period of May through October. Practically all of it is brought by brief afternoon and evening thunderstorms. In July and August, normally the wettest months of the year, one can expect about one day in five when rainfall exceeds one-tenth inch. Early spring precipitation in May benefits the cool-season plants. Winter precipitation, supplying 24 percent of the year’s moisture, normally has no more than two days a month with as much as one-tenth inch of moisture. Much of the winter precipitation falls as snow.

Air temperatures vary from a monthly mean of 20 degrees F in January to 69 degrees F in July. Daily high temperatures average in the 80’s and low 90’s during the summer. Winter low temperatures fall below the freezing mark much of the time from November through March with minimum temperatures approaching 25 degrees F below zero. Dates of the last killing frost may vary from May 9th through May 17th, and the first killing frost from September 27th to October 8th. The frost-free season ranges from 141 days to 153 days from early May to early October.

Wind velocities for the area average 10 to 12 miles per hour and prevail from the south and southwest. Generally, March is the windiest month. Strong winds during the spring cause rapid drying of the soil surface.

Nearby mountains to the west intercept much of the precipitation from the Pacific storms coming through this area during the winter. About 70 percent of the 14 to 16 inches of annual precipitation falls in the form of rainfall during the frost-free season. About 40 percent of the annual precipitation benefits cool-season plants, 50 percent benefits warm-season plants and 10 percent falls during the season of plant dormancy. Relative humidity is moderately low. The sun shines approximately 75 percent of the time.

Climate data was obtained from http://www.wrcc.sage.dri.edu/summary/climsmnm.html web site using 50 percent 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)	149 days
Freeze-free period (average)	171 days
Precipitation total (average)	406 mm

Influencing water features

Original legacy text:
"This site is not influenced by water from a wetland or stream."

Given that this site is described as occupying run-on positions, and that its soils include very poorly-drained components, it stands to reason that this site does include wetlands. Perhaps the original author(s) meant that this is not a riparian wetland site.

Soil features

The soils on this site are very poorly drained to somewhat poorly drained. Permeability is moderate to slow. The available water-holding capacity is high. Effective rooting depth ranges from 12 to more than 60 inches. The effective rooting depth is sometimes determined by high saline content in the subsoil. These soils have water tables at or near the surface much of the growing season.

While not state explicitly in the legacy narrative above, it stands to reason that these soils often have measurable salinity (EC), and are derived from alluvium dominated by marine shale.

Table 4. Representative soil features

Drainage class	Poorly drained to somewhat poorly drained
Permeability class	Slow to moderate
Soil depth	30–183 cm
Available water capacity (0-101.6cm)	22.86–30.48 cm

Ecological dynamics

Text from the Grazing Section that is relevant to plant ecology:

Approximately 85 percent of the total annual yield are from species that furnish forage for livestock. Continuous grazing during the growing season will cause the more desirable forage plants such as western wheatgrass, vine mesquite, blue grama, and fourwing saltbush to decrease. Species most likely to increase are alkali sacaton, saltgrass, mat muhly, alkali muhly, and salt sagebrush. As the ecological conditions deteriorate, it is accompanied by a sharp increase of saltgrass or alkali sacaton. As deterioration advances, saltgrass and a reduction of plant cover may dominate the plant community. Rest during April, May, and June is especially beneficial to western wheatgrass.

State and transition model

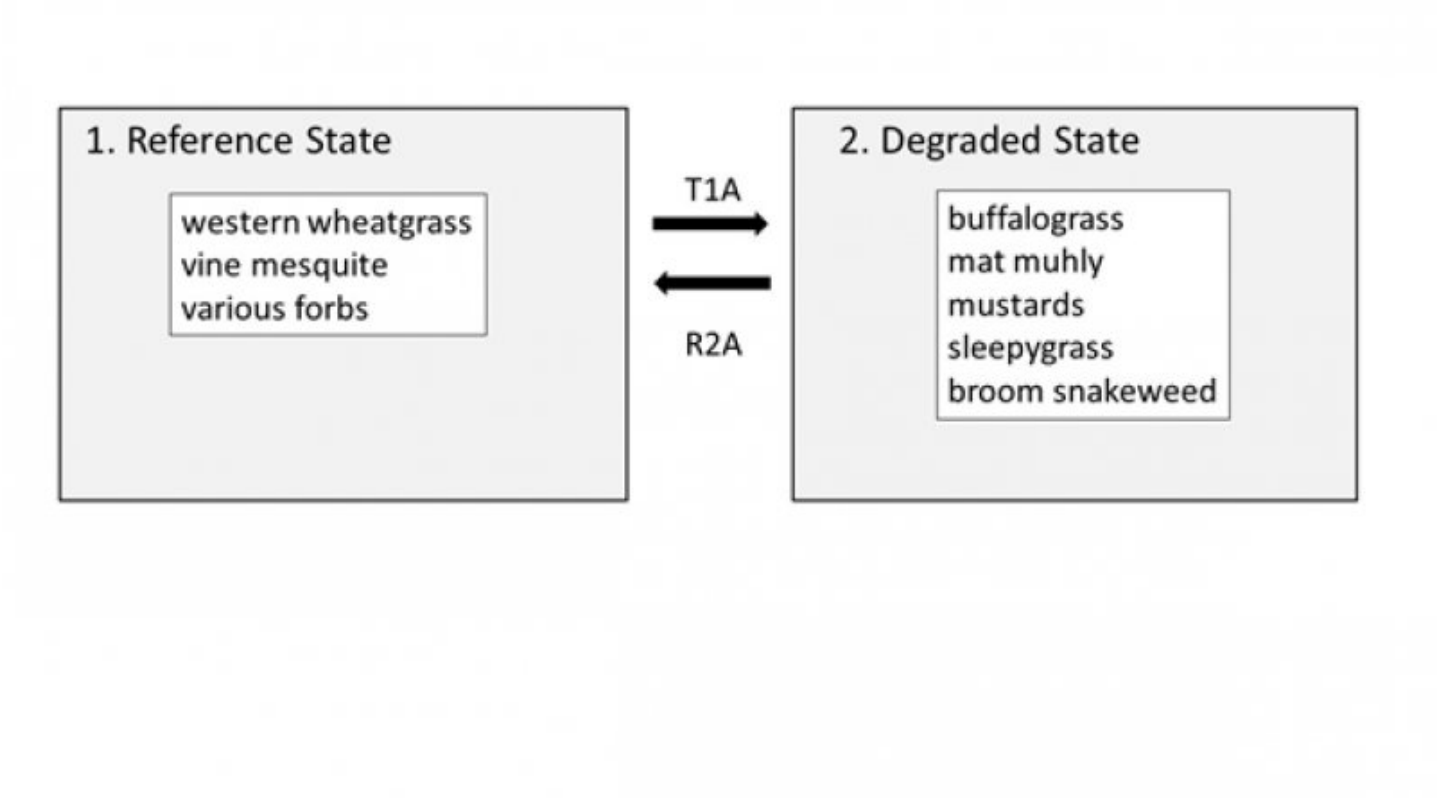

Figure 4. Generalized STM for run-on sites in 70A. Note that

State 1

Reference State

Community 1.1
Historic Climax Plant Community

This site is a grassland mixed with shrubs. Vegetation is tolerant to saline or alkaline factors, which dominate this site. Grasses such as alkali sacaton, desert saltgrass, western wheatgrass and vine-mesquite dominate the site, with shrubs and forbs making up an important part of the vegetative community. Since moisture for plant growth is supplied principally by a shallow water table, the annual amount of precipitation received is not as critical for this site as for the drier upland sites.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	986	2040	3105
Shrub/Vine	179	359	549
Forb	112	224	336
Total	**1277**	**2623**	**3990**

Table 6. Ground cover

Tree foliar cover	0%
Shrub/vine/liana foliar cover	0-5%
Grass/grasslike foliar cover	35-45%
Forb foliar cover	0%
Non-vascular plants	0%
Biological crusts	0%
Litter	10-15%
Surface fragments >0.25" and <=3"	0%
Surface fragments >3"	0%
Bedrock	0%
Water	0%
Bare ground	35-40%

Figure 6. Plant community growth curve (percent production by month). NM3713, R070AY013NM Salt Meadow HCPC. R070AY013NM Salt Meadow HCPC Grassland mixed with shrubs with a minor component of forbs..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	3	5	10	10	25	30	12	5	0	0

State 2
Degraded

This state is generally dominated by such plants as alkali sacaton, saltgrass, mat muhly, alkali muhly, and salt sagebrush.

Transition T1A
State 1 to 2

Season-long grazing providing little rest and recovery for preferred grazed plants during critical growing periods, coupled with high utilization.

Restoration pathway R2A
State 2 to 1

Restoration pathway resulting from the implementation of prescribed grazing.

Conservation practices

Grazing Management Plan - Applied

Additional community tables

Table 7. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
Grass/Grasslike					
1				841–975	
	alkali sacaton	SPAI	*Sporobolus airoides*	841–981	–
2				280–415	
	saltgrass	DISP	*Distichlis spicata*	280–420	–
3				280–415	
	western wheatgrass	PASM	*Pascopyrum smithii*	280–420	–
4				135–280	
	vine mesquite	PAOB	*Panicum obtusum*	140–280	–
5				78–135	
	mat muhly	MURI	*Muhlenbergia richardsonis*	84–140	–
6				78–135	
	scratchgrass	MUAS	*Muhlenbergia asperifolia*	84–140	–
7				78–135	
	meadow barley	HOBR2	*Hordeum brachyantherum*	78–135	–
8				78–135	
	blue grama	BOGR2	*Bouteloua gracilis*	84–140	–
9				78–135	
	James' galleta	PLJA	*Pleuraphis jamesii*	84–140	–
10				78–135	
	salt sedge	CAHA5	*Carex hassei*	84–140	–
Forb					
11				78–135	
	saltbush	ATRIP	*Atriplex*	84–140	–
12				78–135	
	Forb, perennial	2FP	*Forb, perennial*	84–140	–
13				78–135	
	Forb, annual	2FA	*Forb, annual*	84–140	–
Shrub/Vine					
14				280–415	
	fourwing saltbush	ATCA2	*Atriplex canescens*	280–420	–
15				78–135	
	desert seepweed	SUSU	*Suaeda suffrutescens*	84–140	–
16				0–135	
	Shrub, deciduous	2SD	*Shrub, deciduous*	0–140	–

Animal community

Habitat for Wildlife:

This site provides habitats which support a resident animal community that is characterized by coyote, desert cottontail, meadow mole, sparrow hawk, scaled quail, mourning dove, roadrunner, bullsnake, ornate box turtle, and Great Plains skunk.

The killdeer will often use these habitats for breeding. There may be seasonal use by pronghorn antelope.

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
Swastika---------- C
Vermejo---------- C

Recreational uses

This site, due to the open space dotted with shrubs, has fair aesthetic appeal. It is poor for camping, hiking, and picnicking. Hunting is poor to fair for antelope, rabbits, and upland game birds. This site provides a fair winter range for big game where it is located in the foothills of the mountains.

Wood products

This site has no significant potential for wood products.

Other products

Grazing: This site is suitable for late winter, spring and early summer grazing but may be restricted because of boggy conditions. Open water may be present during this time causing bogs. Forage could best be utilized by grazing cattle or horses due to the coarseness of the forage produced by alkali sacaton. When alkali sacaton dominates the site, maximum available forage production from this site can be achieved by mowing in late winter and concentrating livestock in small pastures during the summer and by grazing and resting the pastures in alternate years. Approximately 85 percent of the total annual yield are from species that furnish forage for livestock. Continuous grazing during the growing season will cause the more desirable forage plants such as western wheatgrass, vine mesquite, blue grama, and fourwing saltbush to decrease. Species most likely to increase are alkali sacaton, saltgrass, mat muhly, alkali muhly, and salt sagebrush. As the ecological conditions deteriorate, it is accompanied by a sharp increase of saltgrass or alkali sacaton. As deterioration advances, saltgrass and a reduction of plant cover may dominate the plant community. A system of deferred grazing, which varies the time of grazing and rest in a pasture during successive years, is needed to maintain or improve the plant community. Rest during April, May, and June is especially beneficial to western wheatgrass.

Other information

Guide to Suggested Initial Stocking Rate Acres per Animal Unit Month

Similarity Index------- Ac/AUM
100 - 76---------- 1.0 – 1.9
75 – 51---------- 1.8 – 2.6
50 – 26---------- 2.5 – 5.9
25 – 0---------- 5.9+

Contributors

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Approval

Kendra Moseley, 9/12/2023

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.

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Date	04/26/2005
Approved by	Kendra Moseley
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** None

2. **Presence of water flow patterns:** None

3. **Number and height of erosional pedestals or terracettes:** None

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare Ground 10 to 20 percent

5. **Number of gullies and erosion associated with gullies:** None

6. **Extent of wind scoured, blowouts and/or depositional areas:** None

7. **Amount of litter movement (describe size and distance expected to travel):** Typically slight, however during major flooding events this site slows water flow and captures litter and sediment.

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Stability class rating anticipated to be 5-6 at soil surface. This will need to be verified at reference area.

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** SOM ranges from 3 to 4 percent. (La Brier) A1-0 to 6 inches; brown (7.5 YR 5/2) silty clay loam, dark brown (7.5 YR 3/2) moist; weak, medium subangular blocky structure parting to moderate coarse granular; slightly hard, very friable, slightly sticky and slightly plastic; many fine roots; many fine tubular pores; moderately alkaline.

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Diverse grass, forb, shrub functional/structural groups and diverse root structure reduce raindrop impact and slow overland flow, providing increase time for infiltration to occur.

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

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: Warm-Season mid Bunchgrass>Warm-Season Sod=Cool-Season Mid Rhizomatous

    Sub-dominant: Warm-Season Sod>Warm-Season mid Sod Forming>Cool-Season Grass like,

    Other: Warm-Season Bunchgrass=Shrubs>Forbs

    Additional:

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** None to slight

14. **Average percent litter cover (%) and depth (in):** Litter percent will be reduced following or during extended drought and or wildfire event.

15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** (Low Production 1,200 pounds per acre) (Average RV Production 2,500 pounds per acre) (High Production 3,800 pounds per acre) Production can be reduced following extended drought or the first growing season following wildfire.

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:** Invasive plants should not occur in the reference plant community. However, salt cedar may infrequently invade if seed source is located near the site. Inland salt grass and foxtail barley are the major native (non-invasive) increasers on this site.

17. **Perennial plant reproductive capability:** All plants should be vigorous, healthy and reproductive depending on disturbances i.e. drought. Plants should have numerous seedheads, vegetative tillers etc. The only limitations are weather, wildfire, and natural disease that may temporarily reduce reproductive capability.