USDA Natural Resources
Conservation Service

Ecological site R030XC002NV
DRY MEADOW

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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 inset fans and mountain valleys. Slopes range from 2 to 8 percent, but slope gradients of 2 to 4 percent are most typical. Elevations range from 6500 to 9500 feet.

Please refer to group concept R030XC028NV to view the provisional STM.

Associated sites

F030XC280NV	**Pinus ponderosa ssp. scopulorum/Ribes cereum/Pseudoroegneria spicata ssp. spicata**
R030XC013NV	**LOAMY BOTTOM 11-13 P.Z.**

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	(1) *Poa secunda* (2) *Carex*

Physiographic features

This site occurs on inset fans and mountain valleys. Slopes range from 2 to 8 percent, but slope gradients of 2 to 4 percent are most typical. Elevations range from 6500 to 9500 feet.

Table 2. Representative physiographic features

Landforms	(1) Inset fan (2) Mountain valley
Flooding duration	Very brief (4 to 48 hours) to brief (2 to 7 days)
Flooding frequency	Rare to occasional
Elevation	6,500–9,500 ft
Slope	2–8%
Water table depth	20 in
Aspect	Aspect is not a significant factor

Climatic features

The primary air masses affecting the Spring Mountains are cold maritime polar air from the Gulf of Alaska and warmer, moist maritime subtropical air from lower latitudes. Occasionally there are invasions of cold continental

polar air from northern Canada or the Rocky Mountains. Precipitation in the area results primarily from the passage of cyclones with associated fronts during fall, winter and spring; from closed cyclones in late winter and spring; and from the flow of moist tropical air from the southeast to the southwest quadrant in the summer.

The mean annual precipitation is about 14 to 20 inches. The mean annual air temperature is 39 to 52 degrees F. The average growing season is about 50 to 130 days.

The following data is from snow courses in the Spring Mountains, Nevada. The data is average snow depth and snow water equivalent from 1971 to 2000 at March 1 and April 1 of each year.

Kyle Canyon. (Elevation 8200 feet.) March 1: 36 inch snow depth, 10.9 inches of water equivalent. April 1: 31 inch snow depth, 11.7 inches of water equivalent.

Rainbow Canyon #2 (Elevation 8100 feet) March: 44 inch snow depth, 13.8 inches of water equivalent. April 1: 46 inch snow depth, 16.7 inches of water equivalent.

Lee Canyon #2. (Elevation 9000 feet) March 1: 35 inch snow depth, 10.6 inches of water equivalent. April 1: 31 inch snow depth, 11.1 inches of water equivalent.

Lee Canyon #3. (Elevation 8500 feet) March 1: 28 inch snow depth, 8.5 inches of water equivalent. April 1: 24 inch snow depth, 9.1 inches of water equivalent.

Table 3. Representative climatic features

Frost-free period (average)	130 days
Freeze-free period (average)	
Precipitation total (average)	20 in

Influencing water features

This site is associated with stream channels.

Soil features

The soils of this site are very deep and well drained. These soils typically have moderately permeability, high available water capacity, and low runoff. There is a water table near the surface for short periods in the early spring that usually stabilizes at depths below 20 inches during the summer. Capillary rise of this ground water enhances soil moisture during the growing season. Additional moisture is received on this site as run-in from higher landscapes or as overflow from adjacent streams. Soils are classified as Cumulic Haplustolls.

Table 4. Representative soil features

Surface texture	(1) Silt loam
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Moderate
Soil depth	72 in
Surface fragment cover <=3"	0–5%
Surface fragment cover >3"	0–1%
Available water capacity (0-40in)	6.5–7 in

Calcium carbonate equivalent (0-40in)	0%
Electrical conductivity (0-40in)	0–2 mmhos/cm
Sodium adsorption ratio (0-40in)	0
Soil reaction (1:1 water) (0-40in)	7.4–8.4
Subsurface fragment volume <=3" (Depth not specified)	0–2%
Subsurface fragment volume >3" (Depth not specified)	0%

Ecological dynamics

Please refer to group concept R030XC028NV to view the provisional STM.

This site is prone to gully erosion. Where stream channels become entrenched or gullying occurs, the water table is lowered and a more drought tolerant vegetation becomes established on the site. Where management results in abusive grazing use by livestock and/or feral horses, palatable grasses and sedges decrease while sagebrush, rabbitbrush, and rush increase along with trees from the adjacent uplands. Where grass species such as smooth brome have been introduced to the site, they may dominate the site after establishment.

Fire effects:
Pre-settlement fire return intervals vary for dry meadows, depending on the frequency of burning by Native Americans. Montane meadows create natural fire breaks, however, long-term fire suppression of adjoining conifer forests and changes in climate and hydrology will allow for encroachment of conifers into dry meadows.

Sandberg bluegrass is generally unharmed by fire. It produces little litter, and its small bunch size and sparse litter reduces the amount of heat transferred to perennating buds in the soil. Its rapid maturation in the spring also reduces fire damage, since it is dormant when most fires occur.

State and transition model

Ecosystem states

1. Reference Plant Community

State 1 submodel, plant communities

1.1. Reference Plant Community

State 1
Reference Plant Community

Community 1.1
Reference Plant Community

The reference plant community is dominated by bluegrasses, sedges, and forbs. Potential vegetative composition is about 80 percent grasses and grass-like plants, 15 percent forbs and 5 percent shrubs. Approximate ground cover (basal and crown) is 50 to 70 percent. Total annual air-dry production for favorable years is 1600 pounds, normal years is 1000 pounds and unfavorable years is 800 pounds.

Table 5. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	640	800	1280
Forb	120	150	240
Shrub/Vine	40	50	80
Total	**800**	**1000**	**1600**

Table 6. Ground cover

Tree foliar cover	0%
Shrub/vine/liana foliar cover	0-5%
Grass/grasslike foliar cover	50-60%
Forb foliar cover	1-15%
Non-vascular plants	0%
Biological crusts	0%
Litter	10-30%
Surface fragments >0.25" and <=3"	0%
Surface fragments >3"	0%
Bedrock	0%
Water	0%
Bare ground	1-40%

Additional community tables

Table 7. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Lb/Acre)	Foliar Cover (%)
Grass/Grasslike					
1	**Primary Perennial Grasses**			500–800	
	Sandberg bluegrass	POSE	*Poa secunda*	350–500	–
	sedge	CAREX	*Carex*	50–100	–
	mat muhly	MURI	*Muhlenbergia richardsonis*	50–100	–
2	**Secondary Perennial Grasses**			50–150	
	slender wheatgrass	ELTR7	*Elymus trachycaulus*	5–30	–
	foxtail barley	HOJU	*Hordeum jubatum*	5–30	–
	basin wildrye	LECI4	*Leymus cinereus*	5–30	–
Forb					
3	**Perennial Forbs**			50–150	
	mat muhly	MURI	*Muhlenbergia richardsonis*	50–100	–
	yarrow	ACHIL	*Achillea*	5–30	–
	aster	ASTER	*Aster*	5–30	–
	woolly cinquefoil	POHI6	*Potentilla hippiana*	5–30	–
	ragwort	SENEC	*Senecio*	5–30	–
	clover	TRIFO	*Trifolium*	5–30	–
Shrub/Vine					
4	**Secondary Shrubs**			1–50	
	mountain big sagebrush	ARTRV	*Artemisia tridentata ssp. vaseyana*	10–20	–
	Woods' rose	ROWO	*Rosa woodsii*	10–20	–
	willow	SALIX	*Salix*	10–20	–

Animal community

Livestock Interpretations:
This site is suited to livestock grazing due to high forage value. Wild horses may use this site year round if water is avaible. Grazing management should be keyed to perennial grass production. Sedge provides good to fair forage for domestic grazing. Sandberg bluegrass is a palatable species, but its production is closely tied to weather conditions. It produces little forage in drought years, making it a less dependable food source than other perennial bunchgrasses. Baltic rush is described as a fair to good forage species for cattle. On average, Baltic rush's palatability is considered medium to moderately low. Baltic rush is considered palatable early in the growing season when plants are young and tender, but as stems mature and toughen palatability declines. Young mat muhly is readily eaten by livestock. Plants become less palatable as they mature. Mat muhly plants usually grow in scattered patches, so they are seldom sufficiently abundant to be of major importance to livestock. In the northern part of its range, mat muhly is rated as good to very good forage for cattle and horses and fairly good for domestic sheep.

Stocking rates vary with such factors as kind and class of grazing animal, season of use and fluctuations in climate. Actual use records for individual sites, a determination of the degree to which the sites have been grazed, and an evaluation of trend in site condition offer the most reliable basis for developing initial stocking rates.

Wildlife Interpretations:
This site has high forage value for mule deer during the spring and elk year round. Various songbirds, rodents, reptiles and associated predators native to the area may be found. Sedges have a high to medium value for mule deer. Sandberg bluegrass is desirable for pronghorn antelope and mule deer in the spring and preferable in the spring, summer, and fall for elk and desirable as part of their winter range. Baltic rush provides food for several wildlife species and waterfowl. Baltic rush is an important cover species for a variety of small birds, upland game birds, birds of prey, and waterfowl. The palatability of mat muhly for wildlife species has been rated as fair to poor.

Hydrological functions

Runoff is low.

Rills –Not common due to vegetative cover.
Water flow Patterns – None.
Pedestals and/or Terracettes – None.
Gullies – None.

Other information

There are 13 plant species of concern associated with this site in the Spring Mountain National Recreation Area (SMNRA).

Type locality

Location 1: Clark County, NV	
Township/Range/Section	T19 S. R56 E. S10
General legal description	Lee Canyon, Spring Mountains, Clark County, Nevada.

Other references

Clokey, Ira. 1951. Flora of the Charleston Mountains, Clark County, Nevada. University of California Press, Berkeley and Los Angeles.

Fire Effects Information System [Online]. http://www.fs.fed.us/feis.

Glenne, G., Johnson, D. 2002. Guide to Species of Concern in the Spring Mountains National Recreation Area, Clark and Nye Counties, Nevada. USFS, Las Vegas, NV.

Nachlinger, J., G. Reese. 1996. Plant Community Classification of the Spring Mountains National Recreation Area, Clark and Nye Counties, Nevada. The Nature Conservancy. Reno, Nevada.

Contributors

TJW

Approval

Kendra Moseley, 3/10/2025

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)	TJ WOLFE
Contact for lead author	State Rangeland Management Specialist

Date	06/22/2006
Approved by	Sarah Quistberg
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** Not common due to high vegetative cover.

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):** 5 to 20 percent. Mostly covered by vegetation and litter.

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):** 1 inch or less in size in water flow areas.

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Soil surface resistance due to vegetation cover and litter. Stability values be 3-5 (not tested).

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

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Plant community composition is approximately 95 percent herbaceous and 5 percent shrubs which aid in snow catchment and infiltration.

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: Perennial, cool-season bunchgrasses>>grass-likes

    Sub-dominant: Deep-rooted, perennial forbs>warm-season rhizomatous grasses>deciduous and evergreen shrubs

    Other:

    Additional:

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Up to 10% mortality and 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):** Approximately 1000 pounds in a normal year.

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:** Rubber rabbitbrush and conifers are invaders on this site.

17. **Perennial plant reproductive capability:** All plants should reproduce on a normal year.