USDA Natural Resources
Conservation Service

Ecological site R025XY069NV
SUBIRRIGATED CLAY BASIN

Last updated: 4/25/2024
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.

MLRA notes

Major Land Resource Area (MLRA): 025X–Owyhee High Plateau

MLRA 25 lies within the Intermontane Plateaus physiographic province. The southern half is in the Great Basin Section of the Basin and Range Province. This part of the MLRA is characterized by isolated, uplifted fault-block mountain ranges separated by narrow, aggraded desert plains. This geologically older terrain has been dissected by numerous streams draining to the Humboldt River. The northern half of the area lies within the Columbia Plateaus geologic province. This part of the MLRA forms the southern boundary of the extensive Columbia Plateau basalt flows. Deep, narrow canyons drain to the Snake River which incise the broad volcanic plain. The Humboldt River, route of a major western pioneer trail, crosses the southern half of this area. Reaches of the Owyhee River in this area have been designated as National Wild and Scenic Rivers.
Nevada's climate is predominantly arid, with large daily ranges of temperature, infrequent severe storms, heavy snowfall in the higher mountains, and great location variations with elevation. Three basic geographical factors largely influence Nevada's climate: continentality, latitude, and elevation. Continentality is the most important factor. The strong continental effect is expressed in the form of both dryness and large temperature variations. Nevada lies on the eastern, lee side of the Sierra Nevada Range, a massive mountain barrier that markedly influences the climate of the State.

Ecological site concept

This site occurs on relict lake plains. Slopes range from 0 to 2 percent. Elevations range from 5,400 to 5,600 feet. The average growing season is about 80 to 100 days.

The soils associated with this site are typically very deep and poorly drained. These soils are formed in alluvium from mixed rock sources. Surface textures are medium to fine. Available water capacity is moderate due to the presence of a seasonally high water table in the spring and moisture as run-in from surrounding landscapes. Subsoils are non-saline to slightly saline. The potential for sheet and rill erosion is slight.

The reference plant community is dominated by creeping wildrye. Potential vegetative composition is about 85% grasses and grass-like plants, 10% forbs, and 5% shrubs. Approximate ground cover (basal and crown) is 30 to 50 percent.

Associated sites

R025XY014NV	**LOAMY 10-12 P.Z.**
R025XY019NV	**LOAMY 8-10 P.Z.**

Similar sites

R025XY001NV	**MOIST FLOODPLAIN** Moist Floodplain. Site occurs on axial-stream floodplains; LECI4 and SALIX major species; more productive site.

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	(1) *Leymus triticoides*

Physiographic features

This site occurs on relict lake plains. Slopes range from 0 to 2 percent. Elevations are 5400 to 5600 feet.

Table 2. Representative physiographic features

Landforms	(1) Lake plain
Runoff class	Very high
Flooding frequency	None
Ponding frequency	None
Elevation	1,646–1,707 m
Slope	0–2%
Water table depth	38–91 cm
Aspect	Aspect is not a significant factor

Climatic features

The climate associated with this site is semiarid, characterized by cold, moist winters and warm, dry summers. The average annual precipitation ranges from 8 to 10 inches. Mean annual air temperature is about 45 to 50 degrees F.

Mean annual precipitation across the range in which this ES occurs is 9.85".

Monthly mean precipitation: January 1.00”; February 0.72”; March 0.87”; April 0.79”; May 1.32”; June 1.06”; July 0.47”; August 0.53”; September 0.59”; October 0.70”; November 0.84”; December 0.96”.

*The above data is averaged from the Elko AP and Contact WRCC climate stations.

Table 3. Representative climatic features

Frost-free period (average)	74 days
Freeze-free period (average)	105 days
Precipitation total (average)	279 mm

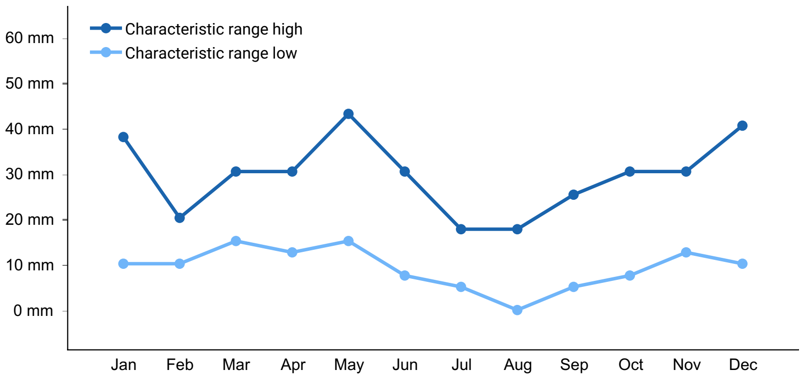

Figure 1. Monthly precipitation range

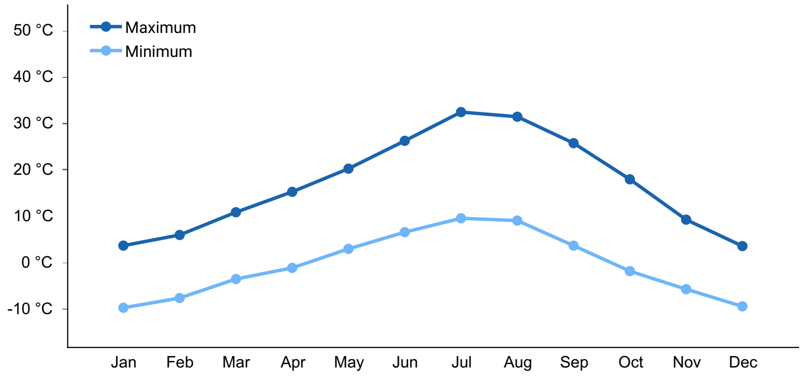

Figure 2. Monthly average minimum and maximum temperature

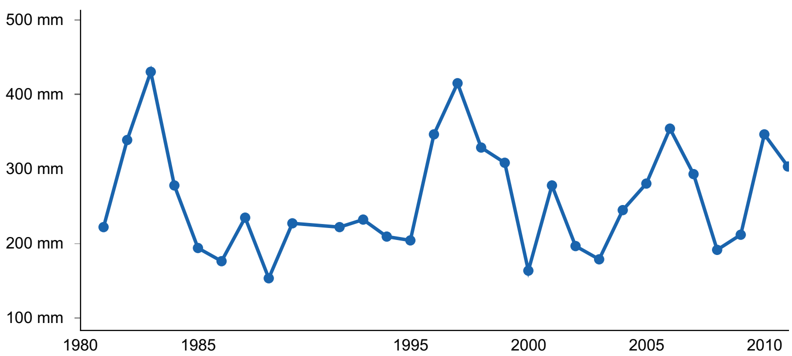

Figure 3. Annual precipitation pattern

Climate stations used

- (1) ELKO RGNL AP [USW00024121], Elko, NV
- (2) CONTACT [USC00261905], Jackpot, NV

Influencing water features

The site is influenced by run-in moisture from surrounding landscapes.

Soil features

The soils associated with this site are typically very deep and poorly drained. These soils are formed in alluvium from mixed rock sources. Surface textures are medium to fine. Available water capacity is moderate due to the presence of a seasonally high water table in the spring and moisture as run-in from surrounding landscapes. Subsoils are non-saline to slightly saline. The potential for sheet and rill erosion is slight.

The soil series associated with this site includes: Piline.

The representative soil series is Piline, classified as a fine, smectitic, mesic Xeric Epiaquert. These soils are very deep, poorly drained and were formed in alluvium derived from mixed rocks. Reaction is slightly alkaline. Diagnostic features include an ochric epipedon that occurs from the soil surface to approximately 8 inches. Slickensides occur between 12 and 28 inches. Clay content in the particle-size control section is 35 to 50 percent. When the soil is dry, vertical cracks 0.4 inches or more wide extend to a depth of greater than 39 inches. The cracks are closed for more than 60 consecutive days in the early spring.

Table 4. Representative soil features

Parent material	(1) Lacustrine deposits
Surface texture	(1) Silty clay loam
Family particle size	(1) Fine
Drainage class	Poorly drained
Permeability class	Very slow
Depth to restrictive layer	183–213 cm
Soil depth	183–213 cm
Surface fragment cover <=3"	0%
Surface fragment cover >3"	0%
Available water capacity (0-101.6cm)	15.75–16 cm
Calcium carbonate equivalent (0-101.6cm)	0%
Electrical conductivity (0-101.6cm)	0–2 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	0–5
Soil reaction (1:1 water) (0-101.6cm)	7.4–8.4
Subsurface fragment volume <=3" (Depth not specified)	0%
Subsurface fragment volume >3" (Depth not specified)	0%

Ecological dynamics

An ecological site is the product of all the environmental factors responsible for its development and has a set of key characteristics that influence a site’s resilience to disturbance and resistance to invasives. Key characteristics include 1) climate (precipitation and temperature), 2) topography (aspect, slope, elevation, and landform), 3) hydrology (infiltration and runoff), 4) soils (depth, texture, structure, and organic matter), 5) plant communities (functional groups and productivity), and 6) natural disturbance regime (fire, herbivory, etc.) (Caudle et al. 2013). Biotic factors that influence resilience include site productivity, species composition and structure, and population regulation and regeneration (Chambers et al. 2013).

The Subirrigated Clay Basin ecological site is dominated by creeping wildrye, a cool-season perennial grass that is strongly rhizomatous. Mat muhly – another perennial grass frequently found on this site – does well on disturbed sites, withstands heavy grazing and is considered an effective soil binder. Nevada bluegrass, a cool-season plant, is also common on this site. This grass, with the exception of Sandberg’s bluegrass, is the most drought-tolerant of the bluegrasses. Remarkably deep, extensive, and fibrous roots enable this plant to grow on rather dry sites and to endure extended droughts. Although drought resistant, this plant succumbs to heavy grazing and trampling and has been reduced in extent on many western ranges due to over utilization – unlike Sandberg’s bluegrass, which has increased (USDA Range Plant Handbook 1988).

Mountain silver sagebrush is a minor component of this site and is geographically limited to Humboldt, Elko, White

Pine, Eureka, and Nye Counties in Nevada (Perryman 2014). Silver sagebrush is rhizomatous and is often found on deep, poorly drained, often flooded alluvial soils high in clay with a seasonally high water table. Silver sagebrush is an evergreen shrub that often forms colonies from a system of extensive rhizomes (Stubbendieck 1992). The root system of silver sagebrush consists of a taproot with lateral roots and rhizomes, usually located within a few inches of the soil surface. Silver sagebrush is the most vigorous sprouter of all sagebrush (Wright et al 1979). It is able to sprout from roots, rhizomes, and the root crown after disturbance (Ellison and Woolfolk 1937, Whitson 1999, Blaisdell 1982). It has been known to readily layer, meaning it can generate adventitious roots from branches touching soil (Blaisdell 1982). Silver sagebrush is also capable of reproducing by seeds (Whitson 1999).

Silver sagebrush is a host species for the sagebrush defoliator Aroga moth (Aroga websteri) (Henry 1961, Gates 1964, Hall 1965), but it remains unclear whether the moth causes significant damage or mortality to individuals or entire stands of plants. Severe drought has been known to kill the crowns of entire stands of silver sagebrush, however after release from drought, it can rapidly regrow due to its vigorous sprouting ability (Ellison and Woolfolk 1937).

Basin big sagebrush, while a minor component, is the dominant shrub on this site. The Great Basin sagebrush communities have high spatial and temporal variability in precipitation both among years and within growing seasons. Nutrient availability is typically low but increases with elevation and closely follows moisture availability. The invasibility of plant communities is often linked to resource availability. Disturbance can decrease resource uptake due to damage or mortality of the native species and depressed competition. It can also increase resource pools via the decomposition of dead plant material following disturbance. The invasion of sagebrush communities by cheatgrass (*Bromus tectorum*) has been linked to disturbances (fire, abusive grazing) that have resulted in fluctuations in resources (Chambers et al. 2007).

As ecological condition declines, creeping wildrye decreases as povertyweed and other annual forbs increase. Annual mustards and thistle are species likely to invade this site.

This ecological site has low to moderate resilience to disturbance and resistance to invasion. Significant year-to-year variation in ponding and depth to water table are primary drivers for above-ground biomass production. Prolonged drought or prolonged flooding decreases resilience and increases the probability of annual or perennial weed invasion. Five possible alternative stable states have been identified for this ecological site.

Fire Ecology:
Fire likely was a rare occurrence on this ecological site. The fire return interval for this ecological site is primarily a function of the surrounding upland sagebrush sites capability to carry fire, along with prior-year rainfall and ponding duration affecting fine fuel production within the site.

Basin big sagebrush does not sprout after fire. Because of the time needed to produce seed, it is eliminated by frequent fires (Bunting et al. 1987). Basin big sagebrush reinvades a site primarily by off-site seed or seed from plants that survive in unburned patches. Approximately 90% of big sagebrush seed is dispersed within 30 feet (9 m) of the parent shrub (Goodrich et al. 1985) with maximum seed dispersal at approximately 108 feet (33 m) from the parent shrub (Shumar and Anderson 1986). Therefore, regeneration of basin big sagebrush after stand replacing fires is difficult and dependent upon proximity of residual mature plants and favorable moisture conditions (Johnson and Payne 1968, Humphrey 1984).

Silver sagebrush has been found to be less sensitive to fire due to its ability to resprout. Silver sagebrush is capable of resprouting from roots and rhizomes when top growth is destroyed (Cronquist 1994, Blaisdell 1982, Whitson 1999). Silver sagebrush also reproduces by seed. Seedling establishment can occur in the years after fire if the growing season is favorably wet (Wambolt et al. 1989). White and Currie (1983) found spring and fall burning both resulted in complete top kill of silver sagebrush regardless of fire intensity, however spring burning when soil moisture was high and before plants began rapid stem growth resulted in low mortality and vigorous sprouting. Fall burning resulted in mortality of 40 to >70% of the silver sagebrush plants suggesting summer wildfires could cause substantial stand death. Post-fire recovery and resilience is primarily influenced by pre-fire site conditions, fire severity, and post-fire weather and land use that relate to vegetation recovery. Sites with low abundances of native perennial grasses and forbs typically have reduced resiliency following disturbance and are less resistant to invasion or increases in cheatgrass or other weedy species (Miller et al 2013).

Creeping wildrye - the dominant grass on this site - is top-killed by fire. Creeping wildrye is generally tolerant of fire but may be damaged by early season fire combined with dry soil conditions.

Mat muhly is resistant to damage from fire because the rhizome buds are insulated by soil (Benedict 1984). A few studies have observed that fire in the spring has stimulated flowering (Anderson and Bailey 1980, Pemble et al. 1981), though there is little other documentation of this plant's post-fire response.

Nevada bluegrass is generally not damaged by wildfire due to its short, tufted growth form and panicles lacking in density (Monsen et al. 2004). The lack of litter build up within the grass plant along with early dormancy typically preclude extensive damage to the buds however early fires during dry years may be more damaging (Kearney et al. 1960). Cover of Nevada bluegrass may increase following wildfire (Blackburn et al. 1971). Similarly, Sandberg bluegrass, a minor component of this site, has been found to increase following fire likely due to its low stature and productivity (Daubenmire 1975). Overall, the grass components of this ecological site possess structural attributes that suggest high resiliency to fire.
Povertyweed, a native perennial, rhizomatous forb, will increase following fire due to its prolific seed production and resprouting ability. Povertyweed possesses characteristics of early seral species capable of rapidly increasing within disturbed sites (Whitson et al. 1999).

State and transition model

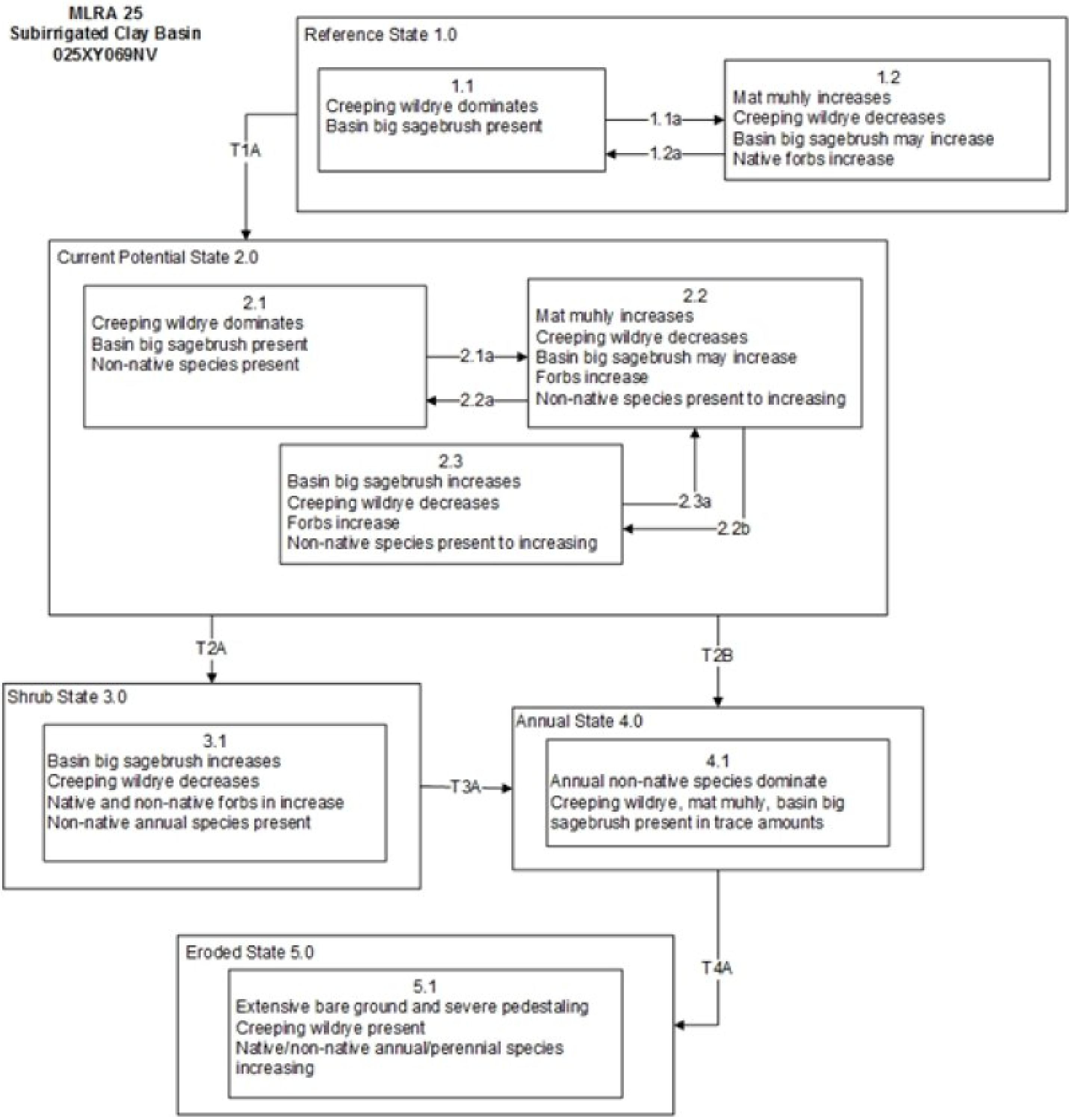

Figure 5. T Stringham

MLRA 25
Subirrigated Clay Basin
025XY069NV

Reference State 1.0 Community Phase Pathways
1.1a: Drought and/or herbivory
1.2a: Fire, release from long-term drought and/or herbivory. Prolonged high water tables during growing season will reduce basin big sagebrush.

Transition T1A: Introduction of non-native species

Current Potential State 2.0 Community Phase Pathways
2.1a: Drought and/or inappropriate grazing management
2.2a: Fire, release from drought and/or grazing management
2.2b: Continued long-term drought and/or inappropriate grazing management
2.3a: Release from drought/grazing

Transition T2A: Long term drought and/or inappropriate grazing management
Transition T2B: Long term drought, inappropriate grazing management coupled with severe trampling, off-site or on-site water diversion, repeated fire, or combinations.

Shrub State 3.0 Community Phase Pathways
None

Transition T3A: Long term drought, inappropriate grazing management coupled with severe trampling, off-site or on-site water diversion, repeated fire or combinations.

Eroded State 4.0 Community Phase Pathways
None

Transition T4A: Long term drought, inappropriate grazing management coupled with severe trampling, off-site or on-site water diversion, repeated fire or combinations.

Figure 6. Legend

State 1
Reference State

The Reference State 1.0 represents the natural range of variability under pristine conditions. The Reference State has two general community phases: a grass-dominant phase and a grass-dominated phase with an increase in forbs and shrubs. State dynamics are maintained by interactions between climatic patterns and disturbance regimes. Negative feedbacks enhance ecosystem resilience and contribute to the stability of the state. These include the presence of all structural and functional groups, low fine fuel loads, and retention of organic matter and nutrients. Plant community phase changes are primarily driven by periodic drought or ponding and/or insect or disease attack.

Community 1.1
Community Phase

The reference plant community is dominated by creeping wildrye. Potential vegetative composition is about 85% grasses and grass-like plants, 10% forbs, and 5% shrubs. Approximate ground cover (basal and crown) is 30 to 50 percent.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	953	1334	1715
Forb	112	157	202
Shrub/Vine	56	78	101
Total	**1121**	**1569**	**2018**

Community 1.2
Community Phase

Silver sagebrush and mat muhly increase while creeping wildrye decreases. Basin big sagebrush and povertyweed may increase.

Pathway a
Community 1.1 to 1.2

Drought and/or inappropriate herbivory will reduce creeping wildrye and increase mat muhly. Povertyweed and basin big sagebrush may increase.

Pathway a
Community 1.2 to 1.1

Release from long-term drought, or release from herbivory allows understory species to recover over time. Prolonged high water tables during growing season will reduce silver sagebrush.

State 2
Current Potential State

This state is similar to the Reference State 1.0, but has an additional community phase. Ecological function has not changed in this state; however the resiliency of the state has been reduced by the presence of invasive weeds. Non-natives may increase in abundance but will not become dominant within this State. These non-natives can be highly flammable and can promote fire where historically fire had been infrequent. Negative feedbacks enhance ecosystem resilience and contribute to the stability of the state. These feedbacks include the presence of all structural and functional groups, low fine fuel loads, and retention of organic matter and nutrients. Positive feedbacks decrease ecosystem resilience and stability of the state. These include the non-natives' high seed output, persistent seed bank, rapid growth rate, ability to cross-pollinate, and adaptations for seed dispersal.

Community 2.1
Community Phase

This community phase is similar to the Reference State Community Phase 1.1, but non-native species are present in trace amounts. This phase is characterized by its healthy understory grass community. Creeping wildrye dominates and basin big sagebrush is present.

Community 2.2
Community Phase

Silver sagebrush and mat muhly increase. Creeping wildrye declines. Perennial weedy forbs such as povertyweed increase. Non-native annual species such as cheatgrass may also increase.

Community 2.3
Community Phase

Basin big sagebrush is dominant. Annual and perennial weedy species such as cheatgrass, povertyweed and small whitetop (*Cardaria draba*) increase. Rabbitbrush may increase in this phase. All perennial grasses are reduced.

Pathway a
Community 2.1 to 2.2

Drought and/or inappropriate grazing would reduce creeping wildrye.

Pathway a
Community 2.2 to 2.1

Release from long-term drought, or release from grazing pressure allows understory species to recover over time. Prolonged high water tables during growing season will reduce silver sagebrush.

Pathway b
Community 2.2 to 2.3

Continued long-term drought and/or inappropriate grazing facilitate an increase in silver sagebrush, rabbitbrush and weedy species while all grasses decline in production.

Pathway a
Community 2.3 to 2.2

Release from long-term drought, or release from grazing pressure allows understory species to recover over time. Prolonged high water tables during growing season will reduce silver sagebrush.

State 3
Shrub State

This state has one community phase and is a product of many years of heavy grazing during time periods harmful to perennial grasses. Sites may also transition to a shrub state if the hydrology of the area is affected by lowering water tables. In both cases, mat muhly and creeping wildrye are significantly reduced and silver sagebrush and basin big sagebrush become dominant. Rabbitbrush may be a significant component. Sandberg bluegrass and bottlebrush squirreltail may be maintained as minor components. The shrub overstory and shallower rooted grasses dominate site resources such that soil water, nutrient capture, nutrient cycling and soil organic matter are temporally and spatially redistributed.

Community 3.1
Community Phase

Basin big sagebrush dominates site resources. Rabbitbrush may be a significant component. Mat muhly and creeping wildrye may be present in trace amounts, and other grasses such as Sandberg bluegrass and bottlebrush squirreltail may be maintained as minor components. Non-native annual and native species increase. Povertyweed may increase. Bare ground is extensive.

State 4
Annual State

This state has one community phase and is characterized by the dominance of weedy species such as povertyweed, cheatgrass, Russian thistle (*Salsola tragus*), whitetop (*Cardaria draba*), and clasping pepperweed (Lepidium perfolatum).

Community 4.1
Community Phase

Povertyweed and non-native invasive grasses and forbs dominate.

State 5
Eroded State

This state has one community phase and is characterized by active soil redistribution. Weedy species such as povertyweed, cheatgrass, Russian thistle, white and clasping pepperweed dominate the site. Bare ground and erosion are significant.

Community 5.1
Community Phase

Native and/or non-native forb species dominate the site. Trace amounts of preferred species are present. Bare ground is significant.

Transition A
State 1 to 2

Trigger: This transition is caused by the introduction of non-native plants, such as cheatgrass and mustards. Slow variables: Over time the non-native species will increase within the community. Threshold: Any amount of introduced non-native species causes an immediate decrease in the resilience of the site. Annual and perennial non-native species cannot be easily removed from the system and have the potential to significantly alter disturbance regimes from their historic range of variation.

Transition A
State 2 to 3

Trigger: Long-term chronic drought, and/or inappropriate grazing management. Slow variables: Long-term reduction in mat muhly and other grasses. Threshold: Loss of the perennial grass component changes nutrient cycling, nutrient redistribution, and reduces soil organic matter.

Transition B
State 2 to 4

Trigger: Long-term chronic drought, inappropriate grazing management coupled with severe trampling, off-site or on-site water diversion, or combinations of these disturbances. Slow variables: Increased production and cover of non-native annual species. Long-term lowering of the water table. Reduced organic matter inputs. Threshold: Hydrology has permanently changed. Loss of deep-rooted perennial bunchgrasses and shrubs truncates, spatially and temporally, nutrient capture and cycling within the community.

Transition A
State 3 to 4

Trigger: Long-term chronic drought, inappropriate grazing management coupled with severe trampling, off-site or on-site water diversion, fire, or combinations of these disturbances. Slow variables: Long-term decline in deep-rooted perennial grass density and increase in shrub overstory. Production and cover of non-native annual species increases over time. Long-term lowering of the water table and reduced organic matter inputs. Threshold: Hydrology has permanently changed. Loss of deep-rooted perennial bunchgrasses and shrubs truncates, spatially and temporally, nutrient capture and cycling within the community. Increased continuous fine fuels from annual non-native plants modify the fire regime by changing intensity, size, and spatial variability of fires.

Transition A
State 4 to 5

Trigger: Long-term chronic drought, inappropriate grazing management coupled with severe trampling, off-site or on-site water diversion, or combinations of these disturbances. Slow variables: Long-term decline in deep-rooted perennial grass and shrub density. Production and cover of non-native perennial and annual species increases over time. Long-term lowering of the water table and reduced organic matter inputs. Threshold: Hydrology has permanently changed. Loss of deep-rooted perennial bunchgrasses and shrubs truncates, spatially and temporally, nutrient capture and cycling within the community. Bareground patches are large and connected. Active soil redistribution and loss from wind erosion is evident by excessive pedestalling, mounding and deflection of the soil profile.

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	**Primary Perennial Grasses**			1098–1412	
	beardless wildrye	LETR5	*Leymus triticoides*	1098–1412	–
2	**Secondary Perennial Grasses**			31–78	
	sedge	CAREX	*Carex*	8–31	–
	slender wheatgrass	ELTR7	*Elymus trachycaulus*	8–31	–
	basin wildrye	LECI4	*Leymus cinereus*	8–31	–
	mat muhly	MURI	*Muhlenbergia richardsonis*	8–31	–
Forb					
3	**Perennial Forbs**			78–235	
	basin wildrye	LECI4	*Leymus cinereus*	8–31	–
	povertyweed	IVAX	*Iva axillaris*	8–31	–
	evening primrose	OENOT	*Oenothera*	8–31	–
	dandelion	TARAX	*Taraxacum*	8–31	–
Shrub/Vine					
4	**Primary Shrubs**			16–47	
	basin big sagebrush	ARTRT	*Artemisia tridentata ssp. tridentata*	16–47	–
	sedge	CAREX	*Carex*	8–31	–
5	**Secondary Shrubs**			16–47	
	Forb, perennial	2FP	*Forb, perennial*	55–141	–
	povertyweed	IVAX	*Iva axillaris*	8–16	–
	evening primrose	OENOT	*Oenothera*	8–16	–
	dandelion	TARAX	*Taraxacum*	8–16	–

Animal community

Livestock Interpretations:
This site is suited for livestock grazing. Considerations for grazing management include timing, intensity and duration of grazing.

In general, inappropriate grazing by domestic livestock or feral horses can cause Nevada bluegrass to decrease and mat muhly to initially increase. Continued deterioration leads to a decrease in mat muhly an increase in poverty weed and other annual and perennial weedy forbs along with silver sagebrush.

Creeping wildrye is utilized as forage for both domestic livestock and wildlife, particularly in early spring, and is often used for cover. Once established, it is very rhizomatous and maintains stands for many years.

Young mat muhly is readily eaten by livestock, though 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. Mat muhly withstands heavy grazing due to of its sod-forming growth form (USDA 1988). It is a short-statured plant with stems typically 3 to 8 inches long and many basal and stem leaves between one-half and two or more inches long (USDA 1988).

Nevada bluegrass is very palatable and is preferred by both domestic livestock and wildlife during the spring and early summer, with reported crude protein levels of over 17% (Monson et al. 2004). In today's botanical climate, Nevada bluegrass and Sandberg bluegrass are no longer differentiated taxonomically, however the grasses typically grow in different ecological niches; Nevada bluegrass prefers locations with greater soil moisture during the growing season. Nevada bluegrass exhibits the characteristic of early spring growth, however in locations with sufficient soil moisture the growing season may be extended allowing the plant to increase in stature. Depending on soil moisture availability along with intensity, frequency and season of use, Nevada bluegrass may decrease under grazing pressure. Conversely, Sandberg bluegrass has been found to increase under grazing pressure due to its early dormancy and short stature (Tisdale and Hironaka 1981).

Livestock use of silver sagebrush is variable depending upon availability of palatable herbs. Domestic sheep generally browse silver sagebrush more heavily than cattle. Livestock may make greater use of silver sagebrush when there is ample grass to go with it. Silver sagebrush can provide an important source of browse and is used by livestock and big game when other food sources are scarce (Kufeld et al. 1973, Wasser 1982, Cronquist 1994). In fall and winter feeding trials, silver sagebrush was among the most preferred sagebrush species for mule deer and sheep (Sheehy and Winward 1981). However, silver sagebrush is an aggressive colonizer and can occupy areas at high densities, due to its ability to resprout from the crown and to spread by rhizomes (Munson 2004). Therefore, silver sagebrush can increase significantly under inappropriate grazing management on this site.

Povertyweed is a weedy, native, perennial forb with early seral characteristics such as high seed production allowing it to spread rapidly in disturbed areas (Whitson et al. 1999). Reduction in the perennial grass component or increases in bare ground through excessive mechanical damage to the perennial grasses or soil during wet periods could facilitate an expansion of povertyweed.

Stocking rates vary over time depending upon season of use, climate variations, site, and previous and current management goals. A safe starting stocking rate is an estimated stocking rate that is fine-tuned by the client by adaptive management through the year and from year to year.

Hydrological functions

Runoff is very high. Permeability is very slow. Hydrologic soil group is D.

Recreational uses

Aesthetic value is derived from the diverse floral and faunal composition and the colorful flowering of wild flowers and shrubs during the spring and early summer. This site offers rewarding opportunities to photographers and for nature study. This site is used for camping and hiking and has potential for upland and big game hunting.

Other information

Creeping wildrye is primarily used for reclamation of wet, saline soils.

Inventory data references

Soils and physiographic features were gathered from NASIS.

Type locality

Location 1: Humboldt County, NV	
Township/Range/Section	T44N R44E S36
UTM zone	N
UTM northing	4613037
UTM easting	500017
Latitude	41° 40′ 8″

Longitude	116° 59′ 59″
General legal description	Button Lake, Owyhee Desert, Humboldt County, Nevada. This site also occurs in Elko County, Nevada.

Other references

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Contributors

CP

Approval

Kendra Moseley, 4/25/2024

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	05/13/2025
Approved by	Kendra Moseley
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:**

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):**

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):**

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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:**
