USDA Natural Resources
Conservation Service

Ecological site R030XY024NV
SALINE BOTTOM

Last updated: 2/24/2025
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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 alluvial flats and axial stream floodplains on all exposures. Slopes range from 0 to 4 percent, but slope gradients of 0 to 2 percent are most typical. Elevations are 1000 to 5400 feet. The soils associated with this site are deep alluvium from mixed sources. Textures are medium to moderately coarse. They are strongly salt and sodium affected.

Please refer to group concept R030XB114NV to view the provisional STM.

Similar sites

R030XY022NV	**WET MEADOW** more productive site; JUNCU-CAREX codominant species; SPAI minor species

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) *Atriplex lentiformis*
Herbaceous	(1) *Sporobolus airoides*

Physiographic features

This site occurs on alluvial flats and axial stream floodplains on all exposures. Slopes range from 0 to 4 percent, but slope gradients of 0 to 2 percent are most typical. Elevations are 1000 to 5400 feet.

Table 2. Representative physiographic features

Landforms	(1) Alluvial flat

Climatic features

The climate is hot and arid, with mild winters and very hot summers. Precipitation is greatest in the winter with a lesser secondary peak in summer, typical of the Mojave Desert. Average annual precipitation is 3 to 12 inches. Mean annual air temperature is 55 to 76 degrees F. The average growing season is about 140 to 360 days.

Table 3. Representative climatic features

Frost-free period (average)	12 days
Freeze-free period (average)	
Precipitation total (average)	9,144 mm

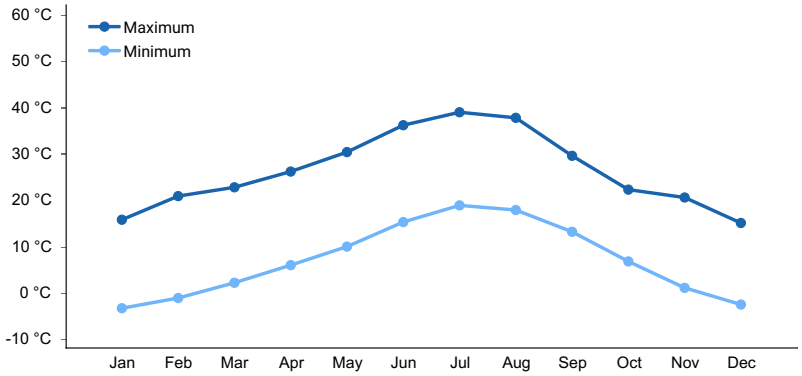

Figure 1. Monthly average minimum and maximum temperature

Influencing water features

There are no influencing water features associated with this site.

Soil features

The soils associated with this site are deep alluvium from mixed sources. Textures are medium to moderately coarse. They are strongly salt and sodium affected. The soils are mostly somewhat poorly to poorly drained and have a seasonally high water table at depths of 20 to 60 inches.

Ecological dynamics

Please refer to group concept R030XB114NV to view the provisional STM.

As ecological condition deteriorates, rubber rabbitbrush increases while fourwing saltbush, alkali sacaton, and other desirable grasses and grass-like plants decrease. Species likely to invade this site are mesquite and annuals.

Fire Ecology:
Big saltbush produces abundant seeds and is demonstrably fire resistant. Big saltbush has been shown to have reduced flammability due to high moisture and ash contents. Big saltbush can survive at least some fires. The most likely post fire regeneration strategy of big saltbush is seed production. Fourwing saltbush may sprout after top-kill. Fourwing saltbush probably establishes primarily from seed after fire, with some populations also regenerating vegetatively. Rubber rabbitbrush is often top-killed by fire. Rubber rabbitbrush is a fire-adapted species that is typically unharmed or enhanced by fire. Recovery time is often rapid to very rapid. Rubber rabbitbrush is often one of the first species to colonize burned areas by sprouting or from off-site seed. Fire typically destroys aboveground parts of wolfberry, but the degree of damage to the plant depends on fire severity. Alkali sacaton is classified as tolerant of, but not resistant to, fire. Top-killing by fire is probably frequent, and the plants can be killed by severe fire. Saltgrass rhizomes occur deep in the soil where they are insulated from the heat of most fires. Saltgrass survives fire by sending up new growth from rhizomes. Baltic rush is fire tolerant when dormant and top-killed by fire during the growing season. It establishes after fire through seed and/or lateral spread by rhizomes. Sedge is top-killed by fire, with rhizomes protected by insulating soil. The rhizomes of sedge species may be killed by high-severity fires that remove most of the soil organic layer. Reestablishment after fire occurs by seed establishment and/or rhizomatous spread.

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 alkali sacaton, inland saltgrass, and big saltbush and fourwing saltbush. Potential vegetative composition is about 60% grasses, 10% forbs, and 30% shrubs. Approximate ground cover (basal and crown) is less than 20 to 45 percent.

Table 4. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	202	605	1076
Shrub/Vine	101	303	538
Forb	34	101	179
Total	**337**	**1009**	**1793**

Additional community tables

Table 5. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
Grass/Grasslike					
1	**Primary Perennial Grasses/Grasslikes**			434–706	
	alkali sacaton	SPAI	*Sporobolus airoides*	303–404	–
	saltgrass	DISP	*Distichlis spicata*	101–151	–
	sedge	CAREX	*Carex*	10–50	–
2	**Secondary Perennial Grasses**			50–101	
Forb					
3	**Perennial**			50–151	
	marsh elder	IVA	*Iva*	6–30	–
4	**Annual**			1–30	
Shrub/Vine					
5	**Primary Shrubs**			111–333	
	big saltbush	ATLE	*Atriplex lentiformis*	50–151	–
	fourwing saltbush	ATCA2	*Atriplex canescens*	20–81	–
	rubber rabbitbrush	ERNAN5	*Ericameria nauseosa ssp. nauseosa var. nauseosa*	20–50	–
	desert-thorn	LYCIU	*Lycium*	20–50	–
6	**Secondary Shrubs**			50–151	
	mesquite	PROSO	*Prosopis*	10–50	–
	willow	SALIX	*Salix*	10–50	–

Animal community

Livestock Interpretations:
This site is suitable for livestock grazing. Grazing management should be keyed to perennial grass production. Alkali sacaton is a valuable forage species in arid and semiarid regions. Plants are tolerant to moderate grazing and can produce abundant herbage utilized by livestock. Saltgrass's value as forage depends primarily on the relative availability of other grasses of higher nutritional value and palatability. It can be an especially important late summer grass in arid environments after other forage grasses have deceased. Saltgrass is rated as a fair to good forage species only because it stays green after most other grasses dry. Livestock generally avoid saltgrass due to its coarse foliage. Saltgrass is described as an increaser under grazing pressure. 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. Sedge provides good to fair forage for domestic grazing. Livestock browse the leaves, though toxicity of big saltbush may be a problem in some areas. Fourwing saltbush is one of the most palatable shrubs in the West. Its protein, fat, and carbohydrate levels are comparable to alfalfa. It provides nutritious forage for all classes of livestock. Palatability is rated as good for domestic sheep and domestic goats; fair for cattle; fair to good for horses in winter, poor for horses in other seasons. In general, livestock forage only lightly on rubber rabbitbrush during the summer, but winter use can be heavy in some locations. Fall use is variable, but flowers are often used by livestock. A few leaves and the more tender stems may also be used. Wolfberry is sometimes used as forage by livestock. Palatability of Anderson wolfberry browse is presumably fair to low. This species is used as forage only when more desirable species are unavailable. The fruit, however, appears to be moderately palatable.

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.

Wildlife Interpretations:

Leaves and seeds of big saltbush are eaten by many species including mule deer, pronghorn, small rodents, game birds, and insects. Dense stands of big saltbush provide excellent cover for several species. Fourwing saltbush provides valuable habitat and year-round browse for wildlife. Fourwing saltbush also provides browse and shelter for small mammals. Additionally, the browse provides a source of water for black-tailed jackrabbits in arid environments. Granivorous birds consume the fruits. Wild ungulates, rodent and lagomorphs readily consume all aboveground portions of the plant. Palatability is rated good for deer, elk, pronghorn and bighorn sheep. Wildlife forage only lightly on rubber rabbitbrush during the summer, but winter use can be heavy in some locations. Fall use is variable, but flowers are often used by wildlife. A few leaves and the more tender stems may also be used. The forage value of rubber rabbitbrush varies greatly among subspecies and ecotypes. Palatability of wolfberry browse is presumably fair to low. This species is used as forage only when more desirable species are unavailable. The fruit, however, appears to be moderately palatable. Wolfberry is sometimes used as forage by feral burros. The red berries are eaten by some birds and mammals. Berries of this plant constituted 2 percent of the diet of chukar partridges. In some areas of southern Nevada, the fleshy leaves and juicy berries provide part of the succulence permitting Gambel quail to occupy desert areas devoid of drinking water. In desert washes Wolfberry grows in dense thorny thickets which provide good cover for quail and other small wildlife. The western salt desert shrub and grassland communities where alkali sacaton is common support an abundance of mule deer, pronghorn, carnivores, small mammals, birds, amphibians, and reptiles. Saltgrass provides cover for a variety of bird species, small mammals, and arthropods and is on occasion used as forage for several big game wildlife species. 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. Sedges have a high to moderate resource value for elk and a medium value for mule deer. Elk consume beaked sedge later in the growing season.

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 products

Native American’s practice of pit curing and drying big saltbush seeds before using them to make a thick gruel, as well as use of the flour to make small cakes, use of leaves as a soap, and use of flowers, stems and leaves as a treatment for nasal congestion. The seeds were likely used in a similar way to fourwing saltbush. Seeds of fourwing saltbush were also reportedly ground into flour. Other uses for fourwing saltbush that may have been similar for big saltbush are the use of the ground meal as an emetic, use of ground flowers or roots moistened with saliva in treating ant bites, and addition of ashes to water for dyeing meal greenish-blue. Fourwing saltbush is traditionally important to Native Americans. They ground the seeds for flour. The leaves, placed on coals, impart a salty flavor to corn and other roasted food. Top-growth produces a yellow dye. Young leaves and shoots were used to dye wool and other materials. The roots and flowers were ground to soothe insect bites. Native Americans used the fleshy berries of Anderson wolfberry either fresh or boiled and then dried them for later use. This shrub is also used as an ornamental valued chiefly for its showy red berries. The stems of Baltic rush were historically used by Native Americans as a foundation for coiled basketry.

Other information

Big saltbush is a suspected hay fever plant. Big saltbush is a recommended revegetation species in riparian areas throughout its range. It has been planted in projects with varied goals, including soil stabilization and improvement or creation of habitat and forage for wildlife and those with constraints, such as the need for quick growth or revegetation sites with high salinity. Fourwing saltbush is widely used in rangeland and riparian improvement and reclamation projects, including burned area recovery. It is probably the most widely used shrub for restoration of winter ranges and mined land reclamation. Alkali sacaton is one of the most commonly used species for seeding and stabilizing disturbed lands. Due to alkali sacaton’s salt tolerance, is recommended for native grass seeding on subirrigated saline sites. Given its extensive system of rhizomes and roots which form a dense sod, saltgrass is considered a suitable species for controlling wind and water erosion. Baltic rush's production of deep and fibrous roots originating from a mass of coarse and creeping rhizomes makes it a valuable species for stabilizing streambanks and protecting against soil erosion.

Type locality

Location 1: Nye County, NV	
Township/Range/Section	T18S R50E S8
UTM zone	N
UTM northing	556971
UTM easting	4028665
Latitude	36° 24′ 5″
Longitude	116° 21′ 52″
General legal description	Ash Meadows area, Nye County, Nevada. This site also occurs in Clark County, Nevada.

Location 2: Nye County, NV	
Township/Range/Section	T17S R50E S33
UTM zone	N
UTM northing	558560
UTM easting	4031920
Latitude	36° 25′ 50″
Longitude	116° 20′ 48″
General legal description	Ash Meadows area, Nye County, Nevada. This site also occurs in Clark County, Nevada.

Other references

Fire Effects Information System (Online; http://www.fs.fed.us/database/feis/plants/).

USDA-NRCS Plants Database (Online; http://www.plants.usda.gov).

Contributors

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Approval

Sarah Quistberg, 2/24/2025

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	05/12/2025
Approved by	Sarah Quistberg
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:

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:**

17. **Perennial plant reproductive capability:**