USDA Natural Resources
Conservation Service

Ecological site R030XB131NV
CALCAREOUS PEDIMENT 3-5 P.Z.

Last updated: 3/10/2025
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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 typically occurs on rock pediments and upper fan piedmonts. Slopes may range from 2 to over 50 percent (on short backslopes) but slope gradients of 4 to 30 percent are typical. Elevations are 1200 to about 1800 feet. The soil associated with this site are moderately deep to soft bedrock and well drained. These soils have formed in alluvium and colluvium from limestone and sandstone over residuum from sandstone and siltstone.

Please refer to group concept R030XB086CA to view the provisional STM.

Similar sites

R030XY013NV	**SHALLOW SILTY** ATCO dominant plant on site
R030XY040NV	**SODIC TERRACE** ATCO-LYCIU codominant; ATPO and ATCA2 important shrubs
R030XB126NV	**GRAVELLY PEDIMENT 5-7 P.Z.** ATCO-PSFR-AMDU2 codominant shrubs; ENAR absent

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) *Ambrosia dumosa* (2) *Atriplex confertifolia*
Herbaceous	(1) *Enceliopsis argophylla*

Physiographic features

This site typically occurs on rock pediments and upper fan piedmonts. Slopes may range from 2 to over 50 percent (on short backslopes) but slope gradients of 4 to 30 percent are typical. Elevations are 1200 to about 1800 feet.

Table 2. Representative physiographic features

Landforms	(1) Fan piedmont
Elevation	366–549 m
Slope	2–50%

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. The average annual precipitation ranges from 3 to 5 inches with most falling as rain from November to March. About 30 percent of the annual precipitation occurs from July to September as a result of summer convection storms. Mean annual air temperature is 65 to 76 degrees F. The average growing season is about 270 to 360 days.

Table 3. Representative climatic features

Frost-free period (average)	360 days
Freeze-free period (average)	
Precipitation total (average)	127 mm

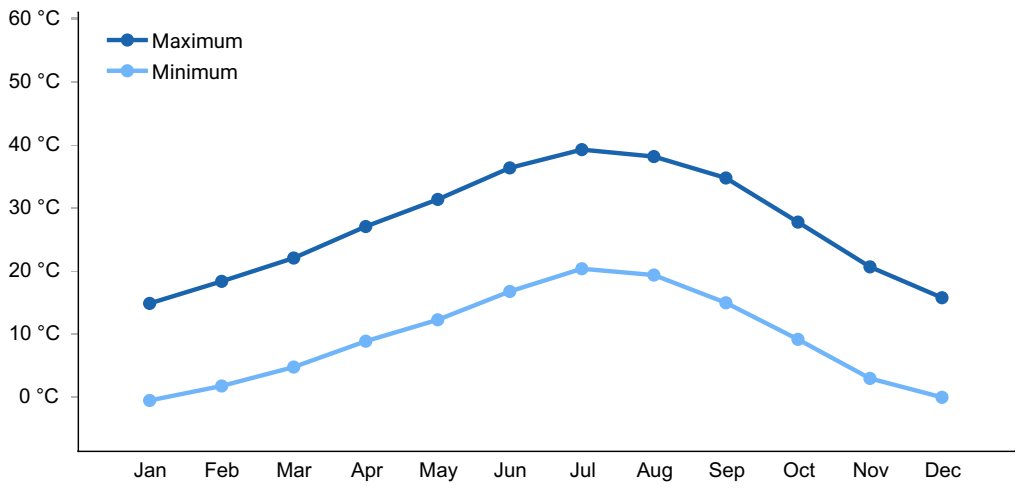

Figure 1. Monthly average minimum and maximum temperature

Influencing water features

There are no influencing water features associated with this site.

Soil features

The soil associated with this site are moderately deep to soft bedrock and well drained. These soils have formed in alluvium and colluvium from limestone and sandstone over residuum from sandstone and siltstone. The soil surface has from 60 to over 75 percent cover of gravel and small cobbles. These soils have high runoff, moderately rapid permeability and the available water capacity is very low.

Table 4. Representative soil features

Drainage class	Well drained
Permeability class	Moderately rapid

Ecological dynamics

Please refer to group concept R030XB086CA to view the provisional STM.

In many areas, badlands (devoid of vegetation), form a complex with the plant community.

Fire Ecology;
Fires in the Mojave desert are infrequent and of low severity because production of annual and perennial herbs seldom provides a fuel load capable of sustaining fire. Fire generally kills white bursage. However, most white bursage plants burned because their canopies contained numerous small branches in proximity to herbaceous fuels. Shadscale communities are usually unaffected by fire because of low fuel loads, although a year of exceptionally heavy winter rains can generate fuels by producing a heavy stand of annual forbs and grasses. The mean fire return interval for shadscale communities range from 35 to 100 years. Increased presence of non-native annual grasses, such as cheatgrass, can alter fire regimes by increasing fire frequency under wet to near-normal summer moisture conditions. Fires in creosotebush scrub were an infrequent event in pre-settlement desert habitats, because fine fuels from winter annual plants were probably sparse, only occurring in large amounts during exceptionally wet winters. Fire kills many creosotebush. Creosotebush is poorly adapted to fire because of its limited sprouting ability. Creosotebush survives some fires that burn patchily or are of low severity. Fire typically destroys aboveground parts of Anderson wolfberry, but the degree of damage to the plant depends on fire severity.

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 silver sunray, white bursage and shadscale. Creosotebush, Fremont dalea and Anderson wolfberry are other important shrub species that occur on this site. Approximate ground cover (basal and crown) is typically less than 8 percent (˜6%). Potential vegetative composition is about 5% grasses, 40% forbs and 55% shrubs.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Shrub/Vine	31	77	123
Forb	22	56	90
Grass/Grasslike	2	7	11
Total	**55**	**140**	**224**

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**			1–7	
	low woollygrass	DAPU7	*Dasyochloa pulchella*	1–7	–
2	**Secondary Perennial Grasses**			1–7	
	purple threeawn	ARPU9	*Aristida purpurea*	1–4	–
	big galleta	PLRI3	*Pleuraphis rigida*	1–4	–
Forb					
3	**Primary Perennial forbs**			18–49	
	silverleaf sunray	ENAR	*Enceliopsis argophylla*	15–43	–
	desert globemallow	SPAM2	*Sphaeralcea ambigua*	3–7	–
4	**Perennial forbs**			1–7	
5	**Annual forbs**			1–7	
	desert trumpet	ERIN4	*Eriogonum inflatum*	1–4	–
Shrub/Vine					
6	**Primary shrubs**			66–135	
	burrobush	AMDU2	*Ambrosia dumosa*	28–43	–
	shadscale saltbush	ATCO	*Atriplex confertifolia*	21–35	–
	creosote bush	LATR2	*Larrea tridentata*	7–21	–
	Fremont's dalea	PSFR	*Psorothamnus fremontii*	7–21	–
	water jacket	LYAN	*Lycium andersonii*	3–15	–
7	**Secondary shrubs**			3–21	
	catclaw acacia	ACGR	*Acacia greggii*	1–7	–
	desertholly	ATHY	*Atriplex hymenelytra*	1–7	–
	Torrey's jointfir	EPTO	*Ephedra torreyana*	1–7	–
	desert pepperweed	LEFR2	*Lepidium fremontii*	1–7	–
	wirelettuce	STEPH	*Stephanomeria*	1–7	–

Animal community

Livestock Interpretations:
This site has limited value for livestock grazing, due to the low forage production, steep slopes and stony surfaces. White bursage is of intermediate forage value. It is fair to good forage for horses and fair to poor for cattle and sheep. However, because there is often little other forage where white bursage grows, it is often highly valuable to browsing animals and is sensitive to browsing. Shadscale provides good browse for domestic sheep and goats. Shadscale leaves and seeds are an important component of domestic sheep and cattle winter diets. Shadscale tends to be browse tolerant. Heavy grazing during the winter and/or spring reduces shadscale. Die-off can also occur during extended periods of high precipitation. Shadscale is tolerant of early spring light-intensity browsing. Creosotebush is unpalatable to livestock. Consumption of creosotebush may be fatal to sheep. Anderson wolfberry is sometimes used as forage by livestock and feral burros.

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:
White bursage is an important browse species for wildlife. Shadscale is a valuable browse species providing a source of palatable, nutritious forage for a wide variety of wildlife. The fruits and leaves are a food source for deer, desert bighorn sheep and pronghorn antelope. Creosotebush is unpalatable to most browsing wildlife.

Hydrological functions

These soils have high runoff, moderately rapid permeability and the available water capacity is very low.

Other products

White bursage is a host for sandfood, a parasitic plant. Sandfood was a valuable food supply for Native Americans. Seeds of shadscale were used by Native Americans for bread and mush. Creosotebush has been highly valued for its medicinal properties by Native Americans. It has been used to treat at least 14 illnesses. Twigs and leaves may be boiled as tea, steamed, pounded into a powder, pressed into a poultice, or heated into an infusion. Native Americans used the fleshy berries of Anderson wolfberry either fresh or boiled and then dried them for later use.

Other information

White bursage may be used to revegetate disturbed sites in southwestern deserts. Once established, creosotebush may improve sites for annuals that grow under its canopy by trapping fine soil, organic matter, and symbiont propagules. It may also increase water

infiltration and storage. Anderson wolfberry is also used as an ornamental valued chiefly for its showy red berries.

Type locality

Location 1: Clark County, NV	
Township/Range/Section	T21S R63E S20
General legal description	Southern part of Rainbow Garden area, north of Las Vegas Wash, 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

GKB

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	12/10/2025
Approved by	Sarah Quistberg
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:**

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:

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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):**

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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:**
