Ecological site R030XB163CA
Sandy Wash

Last updated: 2/25/2025
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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 ecosite is located in narrow drainageways. The soils on this site are very deep coarse-textured soils derived from mixed alluvium. Please refer to group concept R030XB052NV to view the provisional STM.

Associated sites

R030XB043NV	**CLAYPAN 5-7 P.Z.** Occurs at the lower elevational range of the site on adjacent alluvial fans.
R030XC007NV	**SHALLOW GRAVELLY LOAM 7-9 P.Z.** Occurs at the higher elevational range of the site on adjacent uplands and alluvial fans.

Similar sites

R030XB145CA	**Valley Wash** Dominated by white burrobush and includes a significant component of creosotebush (Larrea tridentata).

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) *Salvia dorrii* (2) *Acacia greggii*
Herbaceous	Not specified

Physiographic features

This ecosite is located in narrow drainageways.

Table 2. Representative physiographic features

Landforms	(1) Drainageway

Flooding duration	Very brief (4 to 48 hours) to brief (2 to 7 days)
Flooding frequency	Occasional to frequent
Ponding duration	Very brief (4 to 48 hours) to brief (2 to 7 days)
Ponding frequency	None to rare
Elevation	1,070 – 1,680 m
Slope	0 – 20 %
Ponding depth	0 cm
Water table depth	150 cm
Aspect	Aspect is not a significant factor

Climatic features

The Mojave Desert experiences clear, dry conditions for a majority of the year. Winter temperatures are mild, summer temperatures are hot, and seasonal and diurnal temperature fluctuations are large. Monthly minimum temperature averages range from 30 to 80 degrees F (-1 to 27 degrees C). Monthly maximum temperature averages range from 60 to 110 degrees F (16 to 43 degrees C) (CSU 2002).

Average annual rainfall is between 2 and 8 inches (50 to 205 millimeters) (USDA 2006). Snowfall is more common above 4000 feet (1220 meters), but it may not occur every year (WRCC 2002b). The Mojave Desert receives precipitation from two sources. Precipitation falls primarily in the winter as a result of storms originating in the northern Pacific Ocean. The Sierra Nevada and Transverse Ranges create a rain shadow effect, causing little precipitation to reach the Mojave Desert. Sporadic rainfall occurs during the summer as a result of convection storms formed when moisture from the Gulf of Mexico or Gulf of California moves into the region. Summer rainfall is more common and has a greater influence on soil moisture in the eastern Mojave Desert.

Windy conditions are also common in the Mojave Desert, particularly in the west and central Mojave Desert. Spring is typically the windiest season, with winds averaging 10-15 miles per hour (WRCC 2002a). Winds in excess of 25 miles per hour and gusts in excess of 50 miles per hour are not uncommon (CSU 2002).

In the BLM Grazing Allotments Soil Survey (Northeast Part of Mojave Desert Area, CA (CA805)), most areas receive approximately 5 to 7 inches of precipitation annually (WRCC 2002b). At elevations above 4000 feet (1370 meters), average annual precipitation in the form of rain may exceed 8 inches, and average annual snowfall may reach 10 inches (WRCC 2002b).

The data from the following climate stations were used to describe the climate in the BLM Grazing Allotments Soil Survey (station number in parentheses):
Pahrump, NV (265890)
Mountain Pass, CA (045890)
Searchlight, NV (267369)
Red Rock Canyon State Park, NV (266691)

Due to the range of elevation at which this ecosite occurs, precipitation averages represent data from two weather stations.

"Maximum monthly precipitation" represents average monthly precipitation at Mountain Pass, CA (high elevation).

"Minimum monthly precipitation" represents average monthly precipitation at Pahrump, NV (low elevation).

Maximum and minimum temperatures are from Pahrump, NV. Average high temperatures at Mountain Pass are approximately 8-10 degrees cooler than at Pahrump. Average low temperatures at Mountain Pass are within 3-5 degrees of average low temperatures at Pahrump.

Table 3 Representative climatic features

Frost-free period (average)	290 days
Freeze-free period (average)	270 days
Precipitation total (average)	180 mm

Influencing water features

Soil features

The soils on this site are very deep coarse-textured soils derived from mixed alluvium. The soils are Typic Torriorthents, and have no soil development thoughout due to constant deposition and removal from floodings. The soils are somewhat excessively drained and have rapid to very rapid permeability. Soils are slightly to moderately alkaline.

Soil survey area - Map unit symbol - Component
CA805 - 3000 - Arizo, frequently flooded (minor component)
CA805 - 3641 - Arizo, frequently flooded (minor component)
CA805 - 4200 - Arizo, frequently flooded (minor component)

Table 4. Representative soil features

Surface texture	(1) Loamy sand (2) Sand
Family particle size	(1) Sandy
Drainage class	Moderately well drained to well drained
Permeability class	Moderate to moderately rapid
Soil depth	150 – 200 cm
Surface fragment cover <=3"	50 – 60 %
Surface fragment cover >3"	10 – 20 %
Available water capacity (0-101.6cm)	1.27 – 3.81 cm

Calcium carbonate equivalent (0-101.6cm)	Not specified
Electrical conductivity (0-101.6cm)	Not specified
Sodium adsorption ratio (0-101.6cm)	0 – 10
Soil reaction (1:1 water) (0-101.6cm)	7.6 – 8.4
Subsurface fragment volume <=3" (Depth not specified)	60 – 70 %
Subsurface fragment volume >3" (Depth not specified)	0 – 10 %

Ecological dynamics

Please refer to group concept R030XB052NV to view the provisional STM.

This ecosite occurs in drainageways in which seasonal rainstorms may produce moderate to heavy flooding, but evidence indicating regular uprooting of established plants by these events is minimal. Small or young plants without well-developed root systems are more likely to be uprooted by flooding. Relative species composition may vary over short distances within this ecosite depending on the intensity of the flooding disturbance. Where drainageways are wider, water moves more slowly, and disturbance is less intense. The dominant species on this ecosite—purple sage (Salvia dorrii) and catclaw acacia (Acacia greggii)—are more common in these areas. In narrower reaches where water flows more rapidly, the disturbance may result in a nearly bare active channel. Species such as burrobrush (Hymenoclea salsola), desert almond (Prunus emarginata), and Mexican bladdersage (Salazaria mexicana) are more common in these areas.

Purple sage is common in dry locations on coarse-textured soils (Hickman 1993). Although occasionally to frequently flooded, well-drained soils and short flooding duration may help to keep the site suitable for purple sage growth. Spreading roots at varying depths help anchor the plant (Schweich 2006). Purple sage is often associated with plants indicative of disturbance (Caltrans [no date]), but can also be found in stable communities (Schweich 2006).

Catclaw acacia is commonly found in drainageways (Hickman 1993), indicating its tolerance to disturbance. It has a well-developed lateral root system that enhances water uptake, particularly near the soil surface, and it has a large taproot to access water in deeper horizons (Rundel and Gibson 1996). The root system also helps to anchor the plant against uprooting by water movement. Catclaw acacia produces seed dispersed by water and animals (Gucker 2005). The dynamics of catclaw acacia in other ecosystems also suggest that edaphic conditions may have played a role in its establishment on this ecosite. In a desert plains grassland, catclaw acacia was often more abundant on alkali soils in drainageways and floodplains (Whitfield and Anderson 1938).

State and transition model

Additional community tables

Table 5. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)

Shrub/Vine					
1	**Perennial Shrubs**			213-639	
	purple sage	SADO4	*Salvia dorrii*	62-179	–
	catclaw acacia	ACGR	*Acacia greggii*	45-135	–
	Mexican bladdersage	SAME	*Salazaria mexicana*	34-101	–
	desert almond	PRFA	*Prunus fasciculata*	34-101	–
	burrobrush	HYSA	*Hymenoclea salsola*	22-67	–
	Eastern Mojave buckwheat	ERFA2	*Eriogonum fasciculatum*	6-20	–
	Nevada jointfir	EPNE	*Ephedra nevadensis*	4-13	–
	water jacket	LYAN	*Lycium andersonii*	2-7	–
	Stansbury cliffrose	PUST	*Purshia stansburiana*	2-7	–
	turpentinebroom	THMO	*Thamnosma montana*	1-3	–
	white sagebrush	ARLU	*Artemisia ludoviciana*	0-2	–
Grass/Grasslike					
2	**Perennial Grasses**			4-13	
	desert needlegrass	ACSP12	*Achnatherum speciosum*	2-7	–
	bush muhly	MUPO2	*Muhlenbergia porteri*	1-3	–
	Sandberg bluegrass	POSE	*Poa secunda*	1-3	–
Forb					
3	**Annual Forbs**			7-20	
	fiveneedle pricklyleaf	THPE4	*Thymophylla pentachaeta*	4-13	–
	whitemargin sandmat	CHAL11	*Chamaesyce albomarginata*	1-3	–
	flatcrown buckwheat	ERDE6	*Eriogonum deflexum*	1-3	–

Animal community

This site provides habitat for birds and small animals, and in most years receives sufficient moisture for plant growth. Catclaw acacia is an important food source for wildlife. Catclaw acacia is grazed in spring when new growth is available or when forage is scarce, and pods are eaten by wildlife. It is considered marginal forage for livestock (Ladyman 2003), and may also be injurious due to the prickles on its branches. Purple sage is poor forage for livestock (Sampson and Jespersen 1963).

Hydrological functions

This ecological site is located in drainageways that may be flooded during rainstorms. Bimodal rainfall patterns and variability in the frequency and intensity of storms may limit the ability to manage this ecosite. Flooding may cause losses or injuries. Uses occurring during the rainy season (recreational use, etc.) would likely have to be such that people and/or property can be easily and quickly moved out of potentially dangerous situations.

Recreational uses

Larger drainageways are often used by off-highway vehicles as travel corridors. Smaller shrubs like purple sage are more easily trampled than larger ones like catclaw acacia. Species such as burrobrush and Mexican bladdersage often colonize sites disturbed by human activities.

Inventory data references

Vegetation cover was sampled in lieu of production due to a poor growing season. Ten 100-foot point-intercept transects were sampled on 25 March 2006 at the type locality. The top two tiers of vegetation or other cover class (e.g. bare soil, gravel, rock, litter, biological soil crust) were recorded at every foot. Annual production numbers were estimated based on similar ecological sites.

Type locality

Location 1: San Bernardino County, CA

UTM zone	N
UTM northing	3940389
UTM easting	624988
Latitude	35° 35′57″
Longitude	115° 37′12″
General legal description	Located on the Pachalka Springs topographical quadrangle, several miles to the northwest of Clark Mountain. Accessible from the powerline road.

Other references

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Contributors

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Approval

Sarah Quistberg, 2/25/2025

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	09/15/2026
Approved by	
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):**

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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:

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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:**
