

Ecological site R040XD028CA

Frequently Flooded, Low Intensity Ephemeral Stream

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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.

MLRA notes

Major Land Resource Area (MLRA): 040X–Sonoran Basin and Range

MLRA Statement: Major land resource area (MLRA) 31 is the Lower Colorado Desert. This area is in the extreme southeastern part of California, in areas along the Colorado River, and in Western Arizona. The area is comprised of rough, barren, steep, and strongly dissected mountain ranges, generally northwest to southwest trending that are separated by intermontane basins. Elevation ranges from approximately 275 feet below sea level at the lowest point in the Salton Trough to 2700 feet along low northwest to southeast trending mountain ranges. The average annual precipitation is 2 to 6 inches with high temporal and spatial variability. Winter temperatures are mild, summer temperatures are hot, and seasonal and diurnal temperature fluctuations are large. Monthly minimum temperature averages range from 40 to 80 degrees F (4 to 27 degrees C). Monthly maximum temperature averages range from 65 to 110 degrees F (18 to 43 degrees C) (WRCC 2002). Temperatures are rarely below 28 degrees F, and extremely rarely fall below 24 degrees F. Precipitation is bimodal, with approximately 20 to 40 percent of annual precipitation falling between July and September. This summer rainfall, in combination with very hot temperatures and very few to no days of hard freeze are what characterize this MLRA and distinguish it from the Mojave Desert (MLRA 30). XD LRU concept: The XD LRU is an extremely hot and dry portion of the MLRA. Mean annual precipitation is about 4 inches or less where the majority of the precipitation can arrive in only a couple storm events during any given year. The very few hard freezing days allows this region to have Plant Hardiness Zones of 9b or warmer. This LRU covers most of the Lower Colorado Desert except elevations above 500 m where Plant Hardiness Zones are less than 9b.

Ecological site concept

This site is a small ephemeral stream having a stream order between 1 and 2 often draining low sloping land forms where stream velocity is low enough that only gravel and smaller particles are transported rather than being capable of transporting cobbles and stones.

Similar sites

R040XD010CA	Valley Wash R031XY010CA Valley Wash is dominated by blue paloverde (<i>Parkinsonia florida</i>). It has higher productivity and density.
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Table 1. Dominant plant species

Tree	(1) <i>Parkinsonia florida</i>
Shrub	(1) <i>Larrea tridentata</i>
Herbaceous	Not specified

Physiographic features

This ecological site occurs in broad drainageways. It occurs at elevations of 0 to 1000 feet and has slopes ranging from 1 to 5 percent. Frequent flooding is typical, but may be occasional. Flooding duration is very brief to brief, and runoff is negligible to very low.

Table 2. Representative physiographic features

Landforms	(1) Drainageway
Flooding duration	Extremely brief (0.1 to 4 hours) to very brief (4 to 48 hours)
Flooding frequency	Frequent
Ponding frequency	None
Elevation	0 – 310 m
Slope	0 – 10 %
Water table depth	150 cm
Aspect	Aspect is not a significant factor

Climatic features

The Colorado Desert of California represents the northwestern most portion of the Sonora Desert. The subtropical Colorado Desert results from the descent of cold air which is heated by compression and arrives hot and dry at the earth's surface. Precipitation is frontal in nature during the winter and convectional in the summer. Reduced summer rainfall and high potential evapotranspiration make the Colorado Desert one of the most arid regions in North America. Summer temperatures frequently exceed 105 degrees F. The average annual precipitation ranges from 2 to 6 inches with most falling as rain. Snowfall is rare. Approximately 35% of annual precipitation occurs from July to September as a result of intense convection storms. Spring months are the windiest.

Table 3 Representative climatic features

Frost-free period (characteristic range)	290-370 days
Freeze-free period (characteristic range)	370 days
Precipitation total (characteristic range)	100 mm
Frost-free period (actual range)	250-370 days
Freeze-free period (actual range)	370 days
Precipitation total (actual range)	100-130 mm

Frost-free period (average)	320 days
Freeze-free period (average)	370 days
Precipitation total (average)	100 mm

- (1) DESERT CTR 2 NNE [USC00042410], Desert Center, CA
- (2) IRON MTN [USC00044297], Vidal, CA
- (3) BLYTHE AP [USW00023158], Blythe, CA
- (4) HAYFIELD PUMPING PLT [USC00043855], Desert Center, CA

Influencing water features

Frequent flooding is typical, but may be occasional. Flooding duration is very brief to brief, and runoff is negligible to very low.

Soil features

This ecological site is found on alluvial soils derived from mixed sources. Soils are very deep and have extremely gravelly, sandy surface textures. Subsurface textures are sandy-skeletal. For rock fragments less than 3 inches in diameter, the percent surface cover ranges from 65 to 75 percent, and subsurface volume ranges from 50 to 60 percent. For rock fragments greater than 3 inches in diameter, the percent surface cover ranges from 5 to 15 percent, and subsurface volume ranges from 10 to 15 percent. Soils excessively drained, and permeability is rapid to very rapid.

This ecological site is found on the following soil series: Rizzo (Sandy-skeletal, mixed, hyperthermic Typic Torriorthents)

This ecological site has been correlated to the following map units and soil components in the Colorado Desert Soil Survey Area (CA803).

Map unit ID; Map unit name; Component; Phase; Percent

1212; Stormjade-Rock outcrop association, 30 to 75 percent slopes; Rizzo; frequently flooded; 5
 2050; Havasulake-Rizzo association, 1 to 8 percent slopes; Rizzo; frequently flooded; 6
 2055; Catfishbay association, 0 to 8 percent slopes; Rizzo; frequently flooded; 2
 2056; Catfishbay loamy fine sand, 4 to 15 percent slopes; Rizzo; frequently flooded; 3
 2415; Rizzo association, dry, 2 to 4 percent slopes; Rizzo; frequently flooded; 65

Table 4. Representative soil features

Surface texture	(1) Extremely gravelly sand
Family particle size	(1) Sandy
Drainage class	Excessively drained
Permeability class	Rapid to very rapid
Soil depth	150 – 200 cm
Surface fragment cover <=3"	60 %

Surface fragment cover >3"	10 – 20 %
Calcium carbonate equivalent (0-101.6cm)	Not specified
Electrical conductivity (0-101.6cm)	Not specified
Sodium adsorption ratio (0-101.6cm)	Not specified
Soil reaction (1:1 water) (0-101.6cm)	7.8 – 8.4
Subsurface fragment volume <=3" (Depth not specified)	50 – 60 %
Subsurface fragment volume >3" (Depth not specified)	10 – 20 %

Ecological dynamics

Major factors affecting this ecological site are its hydrology and climate. The dominant species are adapted to hyperthermic conditions. The large width of the drainageway allows for areas of differing flooding intensities. The most frequently flooded areas are dominated by and blue paloverde (*Parkinsonia florida*). Small amounts of other species tolerant of water disturbance are desert lavender (*Hyptis emoryi*) and smoketree (*Psoralea arguta*), ironwood (*Olneya tesota*), catclaw acacia (*Acacia greggii*). Areas of less frequent disturbance include species such as brittlebush (*Encelia farinosa*), burrobrush (*Hymenoclea salsola*), and creosote bush (*Larrea tridentata*).

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 (%)
Grass/Grasslike					
1	Primary perennial grasses			17-59	
	big galleta	PLRI3	<i>Pleuraphis rigida</i>	17-39	–
	bush muhly	MUPO2	<i>Muhlenbergia porteri</i>	1-20	–
2	Secondary perennial grasses			8-39	
	bush muhly	MUPO2	<i>Muhlenbergia porteri</i>	1-20	–
	Indian ricegrass	ACHY	<i>Achnatherum hymenoides</i>	2-8	–

3	Annual grasses			0-20	
Forb					
4	Perennial			8-39	
5	Annual			0-39	
Shrub/Vine					
6	Primary shrubs			72-290	
	creosote bush	LATR2	Larrea tridentata	17-78	–
	burrobush	AMDU2	Ambrosia dumosa	8-39	–
	woolly fruit bur ragweed	AMER	Ambrosia eriocentra	8-39	–
	desertbroom	BASA2	Baccharis sarothroides	9-30	–
	Emory's baccharis	BAEM	Baccharis emoryi	8-29	–
	Mojave yucca	YUSC2	Yucca schidigera	2-20	–
	Nevada jointfir	EPNE	Ephedra nevadensis	3-20	–
	Eastern Mojave buckwheat	ERFAP	Eriogonum fasciculatum var. polifolium	3-20	–
	burrobrush	HYSA	Hymenoclea salsola	8-20	–
	desert willow	CHLI2	Chilopsis linearis	3-11	–
	catclaw acacia	ACGR	Acacia greggii	3-11	–
7	Secondary shrubs			17-59	
	cattle saltbush	ATPO	Atriplex polycarpa	2-20	–
	sweetbush	BEJU	Bebbia juncea	2-20	–
	brittlebush	ENFA	Encelia farinosa	2-20	–
	Mojave rabbitbrush	ERPA29	Ericameria paniculata	2-20	–
	ratany	KRAME	Krameria	2-20	–
	desert-thorn	LYCIU	Lycium	2-20	–
	desert almond	PRFA	Prunus fasciculata	2-20	–
	purple sage	SADOI	Salvia dorrii ssp. dorrii var. incana	2-20	–
	Mexican bladdersage	SAME	Salazaria mexicana	2-20	–
	Schott's yucca	YUSC	Yucca ×schottii	2-8	–

Table 6. Community 1.2 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 7. Community 2.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 8. Community 2.2 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 9. Community 3.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 10. Community 3.2 plant community composition

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

Kendra Moseley, 10/17/2024

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	09/03/2026
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):

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):

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:
