

Ecological site R040XD007CA
Lacustrine Basin and Large River Floodplain

Last updated: 3/04/2025
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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.

MLRA notes

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

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).

Ecological site concept

The site occurs on well-drained, moderately rapidly permeable soils in lacustrine basins and large river floodplains. Slopes are gently sloping to nearly level. Mean annual precipitation is 2 to 4 inches. Elevation ranges from 230 feet below sea level to 800 feet above. Texture ranges from loam at the surface to very fine sand at the surface and throughout the profile. The site is well-drained, but perched water tables are common where the soil is irrigated. Irrigated areas are in citrus, grapes, and vegetables. Uncultivated areas have a sparse cover of desert shrubs.

Associated sites

R040XD010CA	Valley Wash This ephemeral stream occurs on large, broad, frequently flooded, valley bottom drainageways and channels, located at medial and distal positions on alluvial fans.
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Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

This site occurs on gently sloping to nearly level lacustrine basins at elevations of 230 feet below sea level to 800 feet above sea level. It also occurs on wide river floodplains.

Table 2. Representative physiographic features

Landforms	(1) Basin floor > Lake plain (2) Basin floor > Lakebed (3) Basin floor > Lakeshore (4) Delta plain > Flood plain
Aspect	Aspect is not a significant factor

Climatic features

The climate is arid with an annual precipitation of 2 to 4 inches that occurs as gently winter rains or as erratic high intensity summer storms. The average January temperature is about 53 degrees F, average July temperature is about 92 degrees F and an average annual temperature of about 72 degrees F. The frost-free season is 260 to 320 days.

Table 3 Representative climatic features

Frost-free period (characteristic range)	250-270 days
Freeze-free period (characteristic range)	370 days
Precipitation total (characteristic range)	80 mm
Frost-free period (actual range)	250-280 days
Freeze-free period (actual range)	370 days
Precipitation total (actual range)	80 mm
Frost-free period (average)	260 days
Freeze-free period (average)	370 days
Precipitation total (average)	80 mm

- (1) DESERT RESORTS RGNL AP [USW00003104], Thermal, CA
- (2) MECCA FIRE STN [USC00045502], Mecca, CA
- (3) BRAWLEY 2 SW [USC00041048], Brawley, CA

Influencing water features

Perched water tables are common where the soil is irrigated.

Soil features

The mean annual soil temperature at a depth of 20 inches is 72 to 77 degrees F. The soil is slightly to strongly effervescent and the lime is disseminated. The organic matter is less than 0.75 percent and decreases irregularly with depth. Textures range from loam to very fine sand.

Table 4. Representative soil features

Parent material	(1) Lacustrine deposits – igneous and metamorphic rock (2) Alluvium – igneous, metamorphic and sedimentary rock
Surface texture	(1) Very fine sand (2) Very fine sandy loam

Ecological dynamics

Much of this ecological site has been converted to irrigated cropland growing citrus, grapes, vegetables, and alfalfa. As irrigation and cropland are abandoned the site will slowly revert back to its natural state. Shrubs that may start to come back include Smoketree, burrobush, and creosote bush. Introduced annual forbs and grasses are common.

State and transition model

Additional community tables

Approval

Kendra Moseley, 3/04/2025

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	09/02/2026
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:
