

Ecological site R030XA017CA

Droughty Loam 5-7" P.Z.

Last updated: 10/21/2024

Accessed: 07/13/2025

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 fan piedmonts. Elevations are 2400 to 2600 feet. Slopes range from 2 to 5 percent. Surface textures are loamy sands. The subsoil is sandy loam to 50 inches. The substratum is loamy sand to 60 inches.

Associated sites

| | |
|-------------|-------------------------------------|
| R030XA027CA | Sandy 5-7" P.Z. Sandy 5-7 |
|-------------|-------------------------------------|

Similar sites

| | |
|-------------|---|
| R030XA015CA | Coarse Loamy 5-7" P.Z. Coarse Loamy 5-7 |
|-------------|---|

Table 1. Dominant plant species

| | |
|------------|---|
| Tree | Not specified |
| Shrub | (1) <i>Grayia spinosa</i> (2) <i>Ambrosia dumosa</i> |
| Herbaceous | (1) <i>Achnatherum speciosum</i> (2) <i>Achnatherum hymenoides</i> |

Physiographic features

This site occurs on fan piedmonts. Elevations are 2400 to 2600 feet. Slopes range from 2

to 5 percent.

Table 2. Representative physiographic features

| | |
|--------------------|------------------------------------|
| Landforms | (1) Fan piedmont |
| Flooding duration | Extremely brief (0.1 to 4 hours) |
| Flooding frequency | None to rare |
| Ponding duration | Very brief (4 to 48 hours) |
| Ponding frequency | None to rare |
| Elevation | 2,400–2,600 ft |
| Slope | 2–5% |
| Aspect | Aspect is not a significant factor |

Climatic features

The climate on this site is characterized by cool, relatively dry winters (30 to 60 degrees F) and hot, dry summers (70 to 100 degrees F). The average annual precipitation ranges from 3 to 7 inches with most falling as rain from November to March. Mean annual air temperature is 60 to 64 degrees F.

The average frost free period is 200 to 250 days.

Minimum and maximum precipitation data were not available. Data provided is average precipitation by year and by month.

Table 3. Representative climatic features

| | |
|-------------------------------|----------|
| Frost-free period (average) | 230 days |
| Freeze-free period (average) | 260 days |
| Precipitation total (average) | 5 in |

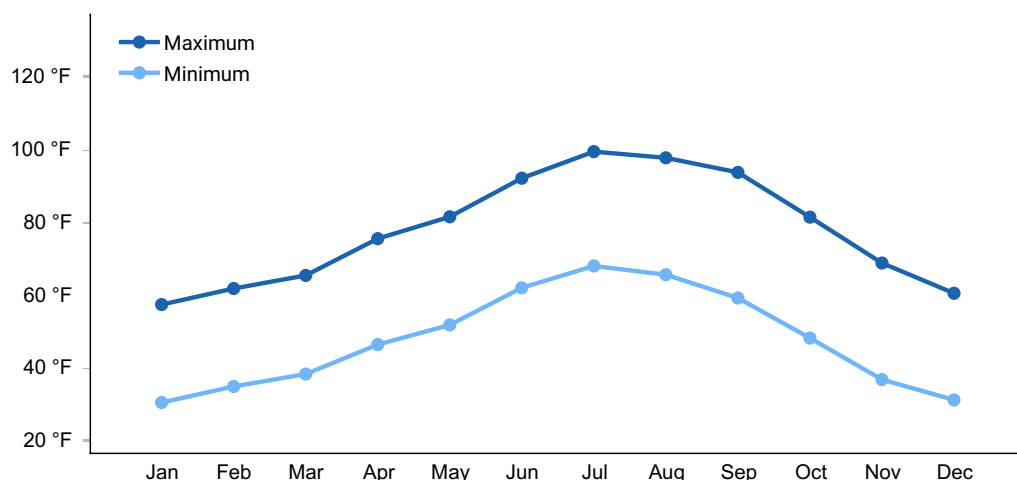


Figure 1. Monthly average minimum and maximum temperature

Influencing water features

Soil features

The soils that characterize this site are well drained and very deep. They are formed in alluvium weathered from mixed but dominantly granitic material. Surface textures are loamy sands. The subsoil is sandy loam to 50 inches. The substratum is loamy sand to 60 inches. Available water capacity is moderate and the hazard of water erosion is slight. Wind erosion hazard is severe. Effective rooting depth is 60 inches or more. Water tables are greater than 60 inches.

Soil Map Units
 117 Helendale-Cajon complex, 2-5% slopes

Table 4. Representative soil features

| | |
|--|----------------|
| Surface texture | (1) Loamy sand |
| Family particle size | (1) Loamy |
| Drainage class | Well drained |
| Soil depth | 60 in |
| Available water capacity (0-40in) | 5–8 in |
| Calcium carbonate equivalent (0-40in) | 0–2% |
| Electrical conductivity (0-40in) | 0–2 mmhos/cm |
| Sodium adsorption ratio (0-40in) | 0–4 |

| | |
|---------------------------------------|---------|
| Soil reaction (1:1 water) (0-40in) | 7.4–8.4 |
|---------------------------------------|---------|

Ecological dynamics

Please refer to group concept R030XA020CA to view the provisional STM.

The representative natural plant community is the historical climax prior to European colonization.

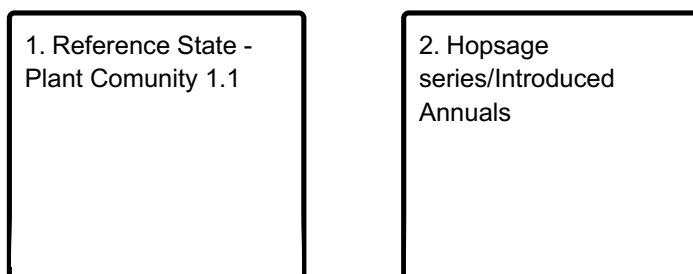
The representative natural plant community is Desert Saltbush Scrub or Hopsage series. This community is dominated by spiny hopsage (*Grayia spinosa*), white bursage (*Ambrosia dumosa*), and desert needlegrass (*Achnatherum speciosum*). Potential vegetative composition by production (pounds of air-dry weight per acre in an average year) is about 30% grasses, 10% forbs, and 60% shrubs. Species composition and relative production may fluctuate between years due to abnormal precipitation or other climatic factors.

Desert 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. When fires do occur, the effect on the ecosystem may be extreme because of the harsh environment and the slow rate of recovery. Thus, fire is not recommended as a management tool to reduce shrub cover. Other disturbances affecting the natural community were drought.

Additional human disturbances to this ecosite include fire, grazing, and off-highway vehicle use. As disturbance increases, spiny hopsage, winterfat (*Krascheninnikovia lanata*), white bursage, and perennial grasses decrease. Some species that increase with disturbance are Cooper's goldenbush (*Ericameria cooperi*) and rayless goldenhead (*Acamptopappus sphaerocephalus*). Species likely to invade this site following disturbance include burrobush (*Hymenoclea salsola*), and non-native annual forbs and grasses such as redstem stork's bill (*Erodium cicutarium*), red brome (*Bromus rubens*), and schismus (*Schismus arabicus*). Non-native annual grasses and forbs may form the dominant herbaceous component in a disturbed state (Hopsage series/Introduced Annuals) of the natural plant community.

State and transition model

Ecosystem states



State 1 submodel, plant communities

1.1. Reference State -
Plant Community 1.1

State 2 submodel, plant communities

2.2. Hopsage
series/Introduced
Annuals

State 1

Reference State - Plant Community 1.1

Community 1.1

Reference State - Plant Community 1.1

The representative natural plant community is Desert Saltbush Scrub or Hopsage series. The historic site potential is usually comprised of low, grayish, microphyllous shrubs, 0.3 to 1 meter tall, with some succulent species. Perennial grasses are common. Annuals are seasonally present. Potential vegetative composition by production (pounds of air-dry weight per acre in an average year) is about 30% grasses, 10% forbs, and 60% shrubs. Fluctuations in species composition and relative production may change from year to year dependent upon abnormal precipitation or other climatic factors. The following table lists the major plant species, and the percentage by air-dry weight of the total plant community that each contributes in an average production year.

Forest overstory. **Allow no more than 3% of each species of the shrub group, and no more than 10% in aggregate

Other shrubs comprise 5 to 10% composition (air-dry weight)

Forest understory. **Allow no more than 3% of each species of the grass group, and no more than 10% in aggregate

Other perennial grasses comprise 2 to 10% composition (air-dry weight)

**Allow no more than 2% of each species of the forb group, and no more than 8% in aggregate

Other perennial forbs comprise 2 to 8% composition (air-dry weight)

Other annual forbs comprise 2 to 8% composition (air-dry weight)

Table 5. Annual production by plant type

| Plant Type | Low (Lb/Acre) | Representative Value (Lb/Acre) | High (Lb/Acre) |
|-----------------|------------------|-----------------------------------|-------------------|
| Shrub/Vine | 150 | 240 | 390 |
| Grass/Grasslike | 75 | 120 | 195 |
| Forb | 25 | 40 | 65 |
| Total | 250 | 400 | 650 |

Table 6. Ground cover

| | |
|-----------------------------------|-------|
| Tree foliar cover | 0% |
| Shrub/vine/liana foliar cover | 9-18% |
| Grass/grasslike foliar cover | 4-9% |
| Forb foliar cover | 1-3% |
| Non-vascular plants | 0% |
| Biological crusts | 0% |
| Litter | 0% |
| Surface fragments >0.25" and <=3" | 0% |
| Surface fragments >3" | 0% |
| Bedrock | 0% |
| Water | 0% |
| Bare ground | 0% |

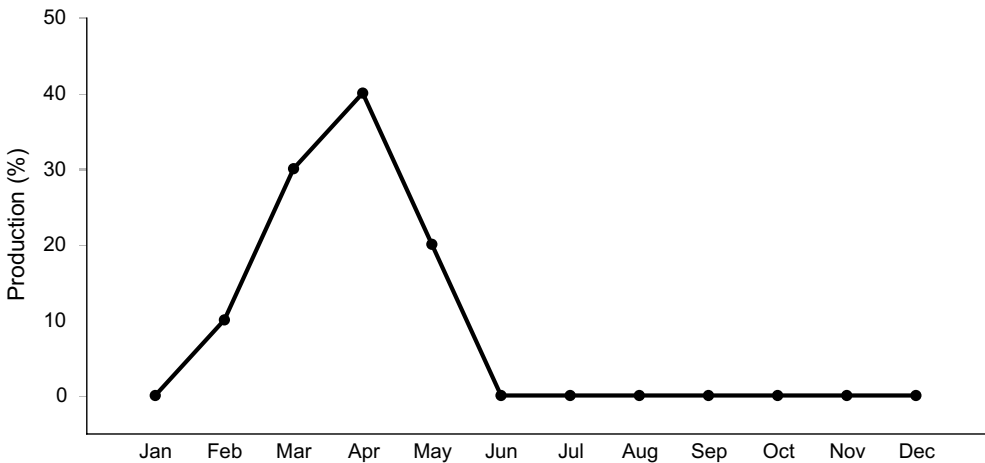


Figure 3. Plant community growth curve (percent production by month).

CA3006, Spiny hopsage. Growth starts in late winter. Flowering and seed set occur by June. Seeds remain on the shrubs for several months. Dormancy occurs during the hot summer months..

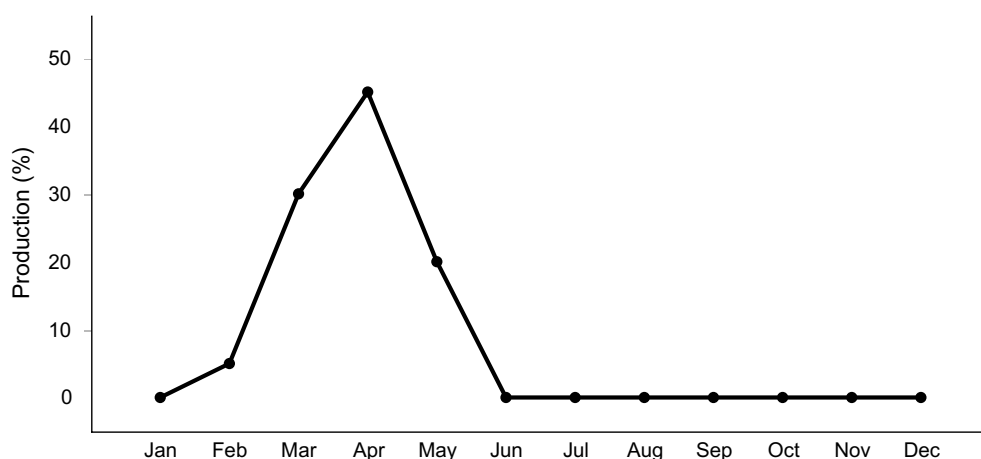


Figure 4. Plant community growth curve (percent production by month). CA3083, Burrobush XY. Growth begins in mid-winter and by late spring, seed has set..

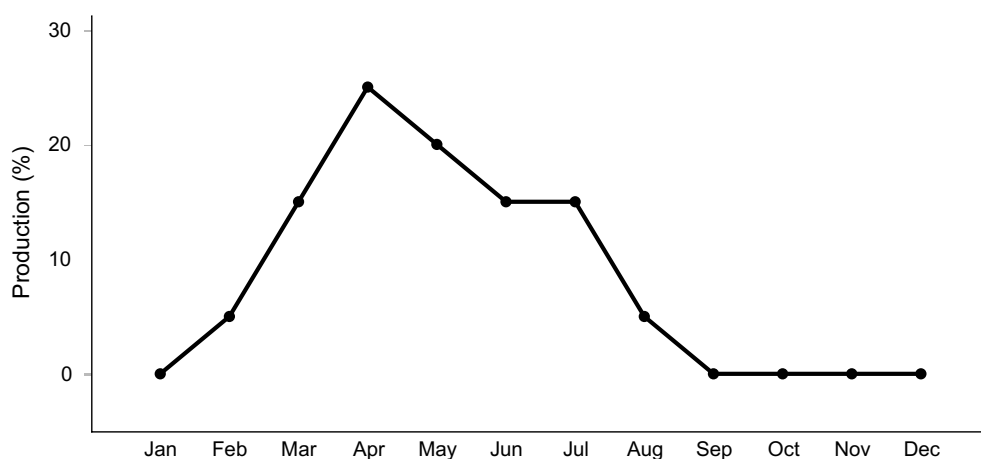


Figure 5. Plant community growth curve (percent production by month). CA3087, Desert needlegrass. Growth begins in mid-winter and continues through summer, setting seed in late summer..

State 2

Hopsage series/Introduced Annuals

Community 2.1

Hopsage series/Introduced Annuals

This plant community occurs across the western portion of the MLRA. Introduced annuals such as red brome, cheatgrass (*Bromus tectorum*), schismus, and red stem stork's bill have invaded the historical climax plant community and have become a dominant component of the herbaceous cover. This change from native to non-natives may be due to a combination of factors such as (1)invasion of alien species, (2)changes in the kinds of animals and their grazing patterns, (3)drought and (4)changes in fire history. This site is stable in this condition.

Additional community tables

Table 7. Community 1.1 plant community composition

| Group | Common Name | Symbol | Scientific Name | Annual Production (Lb/Acre) | Foliar Cover (%) |
|------------------------|---------------------|--------|---|-----------------------------|------------------|
| Shrub/Vine | | | | | |
| 1 | Shrubs | | | 150–390 | |
| | spiny hopsage | GRSP | <i>Grayia spinosa</i> | 60–100 | – |
| | burrobush | AMDU2 | <i>Ambrosia dumosa</i> | 40–80 | – |
| | winterfat | KRLA2 | <i>Krascheninnikovia lanata</i> | 8–40 | – |
| | water jacket | LYAN | <i>Lycium andersonii</i> | 8–20 | – |
| | peach thorn | LYCO2 | <i>Lycium cooperi</i> | 0–12 | – |
| | horsebrush | TETRA3 | <i>Tetradymia</i> | 0–12 | – |
| | Joshua tree | YUBR | <i>Yucca brevifolia</i> | 0–12 | – |
| | Cooper's goldenbush | ERCO23 | <i>Ericameria cooperi</i> | 0–12 | – |
| | rayless goldenhead | ACSP | <i>Acamptopappus sphaerocephalus</i> | 0–12 | – |
| Grass/Grasslike | | | | | |
| 2 | Grass | | | 75–195 | |
| | desert needlegrass | ACSP12 | <i>Achnatherum speciosum</i> | 60–100 | – |
| | Indian ricegrass | ACHY | <i>Achnatherum hymenoides</i> | 20–40 | – |
| | squirreldtail | ELELE | <i>Elymus elymoides</i> ssp. <i>elymoides</i> | 0–12 | – |
| | Sandberg bluegrass | POSE | <i>Poa secunda</i> | 0–12 | – |
| Forb | | | | | |
| 3 | Forbs | | | 25–65 | |
| | Forb, annual | 2FA | <i>Forb, annual</i> | 8–32 | – |
| | milkvetch | ASTRA | <i>Astragalus</i> | 0–8 | – |
| | desert globemallow | SPAM2 | <i>Sphaeralcea ambigua</i> | 0–8 | – |

Animal community

This site provides suitable habitat for small mammals such as kangaroo rats and ground squirrels, and game and fur mammals such as coyotes and squirrels. Reptiles, raptors and

songbirds also frequent this site. The Joshua trees provide song perches, lookout posts and next sites for birds. They also provide protective havens for birds and lizards, particularly the desert night lizard. These soils also provide suitable habitat for desert tortoise. Historically, antelope may have frequented this site.

Management for this site would be to protect it from excessive disturbance and maintain existing plant cover. Water developments would also increase the species diversity of this site. Habitat-destructive military maneuvers and vehicle activity off of designated roads are incompatible with desert tortoise recovery. Access to non-essential roads and trails should be closed. These and other disturbed areas should be restored to pre-disturbance conditions.

Hydrological functions

Runoff is very low. Hydrologic soil group B - soils having moderate infiltration rates when thoroughly wetted and consisting chiefly of moderately deep to deep, moderately well drained to well-drained soils with moderately fine to moderately coarse textures. These soils have a moderate rate of water transmission. Hydrologic condition: good - >70% ground cover (includes litter, grass and brush overstory); fair - 30 to 70% ground cover; poor - <30% ground cover.

Soil Series: Helendale

Hydrologic Group: B

Hydrologic Conditions and Runoff Curves:

Good 68; Fair 72; Poor 77

Recreational uses

This site is valued for open space. Recreation users include mountain bikers, joggers, wildlife enthusiasts and off-roaders. Flowering wildflowers may also attract visitors in the spring.

Wood products

There are no wood products derived from this ecosite.

Other products

Livestock grazing:

This site is suitable for spring grazing by sheep and also cattle where water is available. In favorable years, annual forbs and grasses provide additional forage.

General guide to initial stocking rate. Before making specific recommendations, an on-site evaluation must be made.

Production in an average year: 300 pounds/acre, air dry

Some species of horsebrush and milkvetch found on this ecosite are poisonous to livestock.

Other information

Military Operations - Land clearing or other disturbances that destroys the vegetation and soil structure can result in increased erosion, soil blowing and barren areas. Off-road vehicles should be restricted to existing roads and trails. Native species indigenous to this site are recommended for any revegetation efforts.

Inventory data references

Sampling technique:

☒_3_ NV-ECS-1

☒_1_ SCS-Range 417

☐ Other

Type locality

| | |
|-----------------------------|---------------------------------------|
| Location 1: Kern County, CA | |
| Township/Range/Section | T10N R11W S34 |
| General legal description | North of Rosamond Hills, Kern Co., CA |

Other references

This ecosite was developed in cooperation with: U.S. Department of Defense, Air Force Flight Test Center, Edwards Air Force Base; National Aeronautics and Space Administration-Dryden Flight Research Center, and Regents of the University of California.

Western Regional Climate Center <http://www.wrcc.dri.edu/> (Accessed 27 June 2006)

Contributors

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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 | 07/13/2025 |
| Approved by | Kendra Moseley |
| 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:
