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OUTDOOR PROPERTIES

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Barnes Creek Ranch

Soil Report

686 +/- acres, Davis Creek, CA

Modoc County



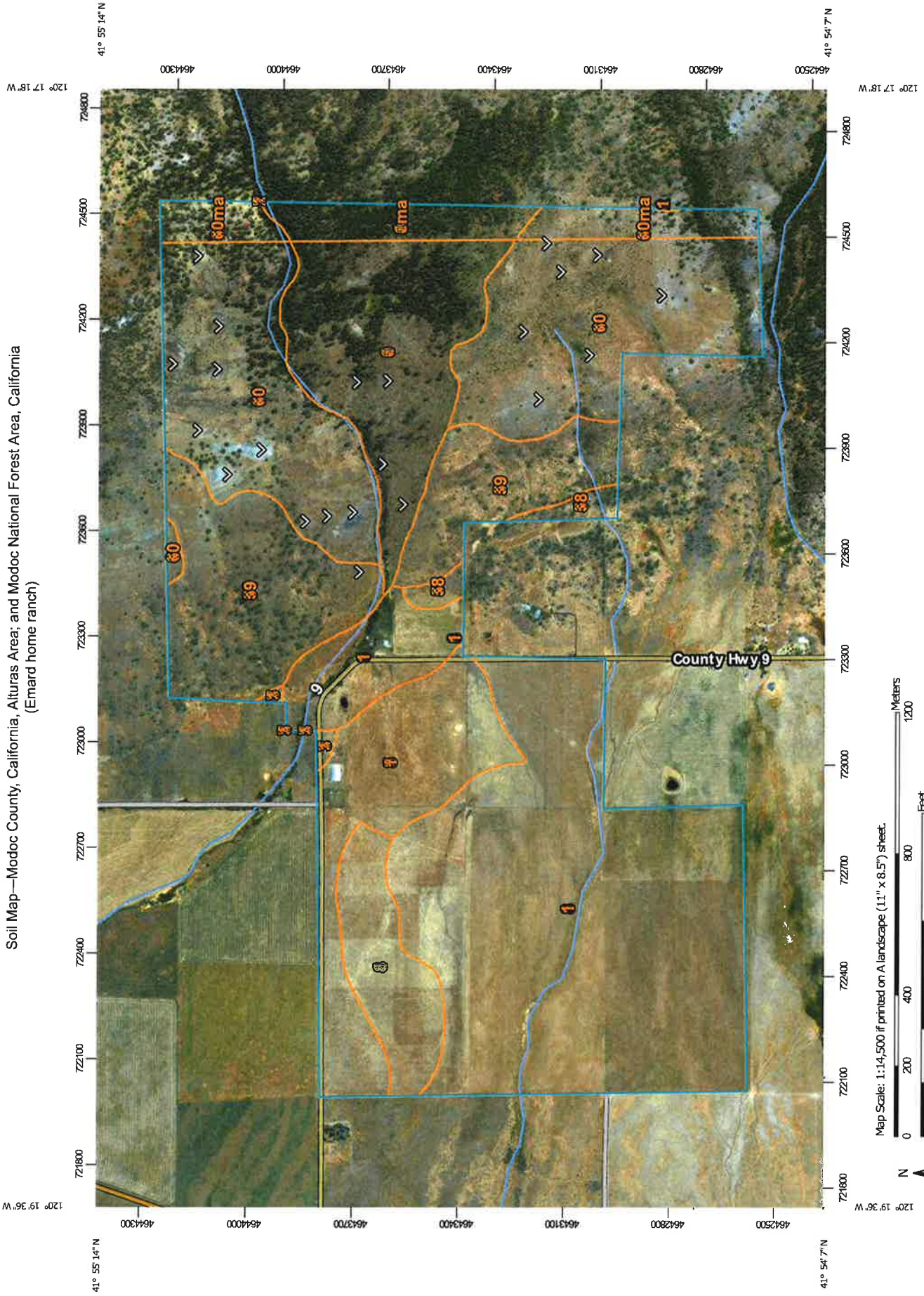
707 Merchant Street | Suite 100 | Vacaville, CA 95688

707-455-4444 Office | 707-455-0455 Fax | californiaoutdoorproperties.com

CalBRE# 01838294



Soil Map—Modoc County, California, Alturas Area; and Modoc National Forest Area, California
(Ernard home ranch)











































Map Scale: 1:14,500 if printed on A landscape (11" x 8.5") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

 Area of Interest (AOI)	 Spoil Area
 Soils	 Stony Spot
 Soil Map Unit Polygons	 Very Stony Spot
 Soil Map Unit Lines	 Wet Spot
 Soil Map Unit Points	 Other
 Special Point Features	 Special Line Features
 Blowout	 Streams and Canals
 Borrow Pit	 Transportation
 Clay Spot	 RAILS
 Closed Depression	 Interstate Highways
 Gravel Pit	 US Routes
 Gravelly Spot	 Major Roads
 Landfill	 Local Roads
 Lava Flow	 Background
 Marsh or swamp	 Aerial Photography
 Mine or Quarry	
 Miscellaneous Water	
 Perennial Water	
 Rock Outcrop	
 Saline Spot	
 Sandy Spot	
 Severely Eroded Spot	
 Sinkhole	
 Slide or Slip	
 Sodic Spot	

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Modoc County, California, Alturas Area
Survey Area Data: Version 9, Sep 8, 2017

Soil Survey Area: Modoc National Forest Area, California
Survey Area Data: Version 7, Sep 13, 2017

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 10, 2014—Aug 23, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres In AOI	Percent of AOI
133	Donica gravelly clay loam, 2 to 9 percent slopes	28.3	3.7%
134	Drews loam, 0 to 5 percent slopes, goose lake valley, southern part, mlra 21	32.3	4.3%
135	Drews gravelly loam, 0 to 9 percent slopes	65.0	8.6%
137	Drews clay loam, 2 to 5 percent slopes	1.8	0.2%
149	Kinkel loam, 30 to 50 percent slopes	80.1	10.6%
158	Lorella cobbly clay loam, 15 to 30 percent slopes	7.3	1.0%
159	Lorella cobbly clay loam, 30 to 50 percent slopes	103.1	13.6%
160	Lorella cobbly clay loam, 30 to 50 percent slopes, eroded	175.1	23.1%
188	Salisbury gravelly loam, 0 to 9 percent slopes	222.0	29.3%
Subtotals for Soil Survey Area		715.0	94.4%
Totals for Area of Interest		757.0	100.0%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
127	Bertag deep-Cavanaugh-Mascamp families association, 35 to 60 percent slopes.	0.0	0.0%
149ma	Kinkel loam, 30 to 50 percent slopes	18.6	2.5%
160ma	Lorella cobbly clay loam, 30 to 50 percent slopes, eroded	23.3	3.1%
212	Manila-Merlin-Mascamp families association, 10 to 35 percent slopes.	0.1	0.0%
Subtotals for Soil Survey Area		42.0	5.6%
Totals for Area of Interest		757.0	100.0%

Modoc County, California, Alturas Area

133—Donica gravelly clay loam, 2 to 9 percent slopes

Map Unit Setting

National map unit symbol: jb4l
Elevation: 4,800 to 5,000 feet
Mean annual precipitation: 16 to 20 inches
Mean annual air temperature: 48 degrees F
Frost-free period: 80 to 90 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Donica and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Donica

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Gravelly alluvium derived from basic igneous rock

Typical profile

H1 - 0 to 14 inches: gravelly clay loam
H2 - 14 to 33 inches: gravelly coarse sandy loam
H3 - 33 to 60 inches: very gravelly coarse sand

Properties and qualities

Slope: 0 to 9 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat excessively drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat):
Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Low (about 3.3 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: SANDY (R021XE088CA)

Hydric soil rating: No

Minor Components

Calimus, 2 to 5% slopes

Percent of map unit: 10 percent

Hydric soil rating: No

Drews, gravelly loam, 0 to 9% slopes

Percent of map unit: 5 percent

Hydric soil rating: No

Data Source Information

Soil Survey Area: Modoc County, California, Alturas Area

Survey Area Data: Version 9, Sep 8, 2017

Modoc County, California, Alturas Area

134—Draws loam, 0 to 5 percent slopes, goose lake valley, southern part, mlra 21

Map Unit Setting

National map unit symbol: 2wzs9
Elevation: 4,400 to 5,000 feet
Mean annual precipitation: 12 to 20 inches
Mean annual air temperature: 46 to 48 degrees F
Frost-free period: 90 to 100 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Draws and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Draws

Setting

Landform: Alluvial fans, lake terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from volcanic rock

Typical profile

A - 0 to 3 inches: loam
AB - 3 to 11 inches: clay loam
BA - 11 to 22 inches: clay loam
Bt - 22 to 33 inches: clay loam
C - 33 to 41 inches: sandy clay loam
Ab - 41 to 59 inches: clay loam
Btb - 59 to 67 inches: clay loam

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat):
Moderately high (0.16 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Moderate (about 6.6 inches)

Interpretive groups

Land capability classification (irrigated): 3e

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: C

Hydric soil rating: No

Minor Components

Draws, gravelly loam, 0 to 9% slopes

Percent of map unit: 3 percent

Landform: Alluvial fans, lake terraces

Landform position (two-dimensional): Summit

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

Draws, calcareous

Percent of map unit: 3 percent

Landform: Alluvial fans, lake terraces

Landform position (two-dimensional): Summit

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

Draws, clay loam

Percent of map unit: 2 percent

Landform: Alluvial fans, lake terraces

Landform position (two-dimensional): Summit

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

Calimus

Percent of map unit: 2 percent

Landform: Alluvial fans

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

Data Source Information

Soil Survey Area: Modoc County, California, Alturas Area

Survey Area Data: Version 9, Sep 8, 2017

Modoc County, California, Alturas Area

135—Drews gravelly loam, 0 to 9 percent slopes

Map Unit Setting

National map unit symbol: jb4n
Elevation: 4,500 to 4,800 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 48 degrees F
Frost-free period: 90 to 100 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Drews and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Drews

Setting

Landform: Lake terraces, alluvial fans
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from volcanic rock

Typical profile

H1 - 0 to 3 inches: gravelly loam
H2 - 3 to 67 inches: clay loam

Properties and qualities

Slope: 2 to 9 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat):
Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 11.2 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Drews, loam, 0 to 5% slopes

Percent of map unit: 7 percent

Hydric soil rating: No

Donica

Percent of map unit: 3 percent

Hydric soil rating: No

Data Source Information

Soil Survey Area: Modoc County, California, Alturas Area

Survey Area Data: Version 9, Sep 8, 2017

Modoc County, California, Alturas Area

137—Drews clay loam, 2 to 5 percent slopes

Map Unit Setting

National map unit symbol: jb4q
Elevation: 4,500 to 4,800 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 48 degrees F
Frost-free period: 90 to 100 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Drews and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Drews

Setting

Landform: Alluvial fans, lake terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from volcanic rock

Typical profile

H1 - 0 to 11 inches: clay loam
H2 - 11 to 67 inches: clay loam

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat):
Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 11.0 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Drews, gravelly loam, 0 to 9% slopes

Percent of map unit: 2 percent

Hydric soil rating: No

Drews, 0 to 2% slopes

Percent of map unit: 2 percent

Hydric soil rating: No

Unnamed, sodium affected

Percent of map unit: 1 percent

Hydric soil rating: No

Data Source Information

Soil Survey Area: Modoc County, California, Alturas Area

Survey Area Data: Version 9, Sep 8, 2017

Modoc County, California, Alturas Area

149—Kinkel loam, 30 to 50 percent slopes

Map Unit Setting

National map unit symbol: jb53
Elevation: 5,200 to 5,800 feet
Mean annual precipitation: 18 to 20 inches
Mean annual air temperature: 45 degrees F
Frost-free period: 80 days
Farmland classification: Not prime farmland

Map Unit Composition

Kinkel and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Kinkel

Setting

Landform: Mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear, concave
Across-slope shape: Convex, concave
Parent material: Welded residuum weathered from tuff

Typical profile

H1 - 0 to 8 inches: loam
H2 - 8 to 53 inches: cobbly clay loam
H3 - 53 to 63 inches: bedrock

Properties and qualities

Slope: 30 to 50 percent
Depth to restrictive feature: 45 to 60 inches to lithic bedrock
Natural drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat):
Moderately low to moderately high (0.14 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Moderate (about 6.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Woodcock

Percent of map unit: 10 percent

Hydric soil rating: No

Data Source Information

Soil Survey Area: Modoc County, California, Alturas Area

Survey Area Data: Version 9, Sep 8, 2017

Modoc County, California, Alturas Area

158—Lorella cobbly clay loam, 15 to 30 percent slopes

Map Unit Setting

National map unit symbol: jb5d
Elevation: 4,700 to 5,300 feet
Mean annual precipitation: 14 to 18 inches
Mean annual air temperature: 45 to 46 degrees F
Frost-free period: 80 to 100 days
Farmland classification: Not prime farmland

Map Unit Composition

Lorella and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lorella

Setting

Landform: Toes
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave, linear
Across-slope shape: Linear
Parent material: Residuum weathered from basic igneous rock

Typical profile

H1 - 0 to 5 inches: cobbly clay loam
H2 - 5 to 10 inches: cobbly clay loam
H3 - 10 to 15 inches: very cobbly clay
H4 - 15 to 25 inches: bedrock

Properties and qualities

Slope: 15 to 30 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Natural drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat):
Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Very low (about 1.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D

Ecological site: SHALLOW STONY UPLANDS (R021XE134CA)
Hydric soil rating: No

Minor Components

Daphnedale, clay loam, deep variant, 5 to 15% slopes

Percent of map unit: 5 percent

Hydric soil rating: No

Lorella, loam, 5 to 30% slopes

Percent of map unit: 5 percent

Hydric soil rating: No

Deven, 2 to 30% slopes

Percent of map unit: 3 percent

Hydric soil rating: No

Rock outcrop

Percent of map unit: 2 percent

Hydric soil rating: No

Data Source Information

Soil Survey Area: Modoc County, California, Alturas Area

Survey Area Data: Version 9, Sep 8, 2017

Modoc County, California, Alturas Area

160—Lorella cobbly clay loam, 30 to 50 percent slopes, eroded

Map Unit Setting

National map unit symbol: jb5g
Elevation: 4,700 to 5,300 feet
Mean annual precipitation: 14 to 18 inches
Mean annual air temperature: 45 to 46 degrees F
Frost-free period: 80 to 100 days
Farmland classification: Not prime farmland

Map Unit Composition

Lorella and similar soils: 85 percent
Minor components: 15 percent
*Estimates are based on observations, descriptions, and transects of
the mapunit.*

Description of Lorella

Setting

Landform: Mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear, concave
Across-slope shape: Convex
Parent material: Residuum weathered from basic igneous rock

Typical profile

H1 - 0 to 1 inches: cobbly clay loam
H2 - 1 to 10 inches: cobbly clay loam
H3 - 10 to 15 inches: very cobbly clay
H4 - 15 to 25 inches: bedrock

Properties and qualities

Slope: 30 to 50 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Natural drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat):
Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0
to 2.0 mmhos/cm)
Available water storage in profile: Very low (about 1.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e

Hydrologic Soil Group: D
Ecological site: SHALLOW STONY UPLANDS (R021XE134CA)
Hydric soil rating: No

Minor Components

Rock outcrop

Percent of map unit: 6 percent
Hydric soil rating: No

Mcquarrie, eroded

Percent of map unit: 5 percent
Hydric soil rating: No

Lithic xerorthents

Percent of map unit: 4 percent
Hydric soil rating: No

Data Source Information

Soil Survey Area: Modoc County, California, Alturas Area
Survey Area Data: Version 9, Sep 8, 2017

Modoc County, California, Alturas Area

160—Lorella cobbly clay loam, 30 to 50 percent slopes, eroded

Map Unit Setting

National map unit symbol: jb5g
Elevation: 4,700 to 5,300 feet
Mean annual precipitation: 14 to 18 inches
Mean annual air temperature: 45 to 46 degrees F
Frost-free period: 80 to 100 days
Farmland classification: Not prime farmland

Map Unit Composition

Lorella and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lorella

Setting

Landform: Mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear, concave
Across-slope shape: Convex
Parent material: Residuum weathered from basic igneous rock

Typical profile

H1 - 0 to 1 inches: cobbly clay loam
H2 - 1 to 10 inches: cobbly clay loam
H3 - 10 to 15 inches: very cobbly clay
H4 - 15 to 25 inches: bedrock

Properties and qualities

Slope: 30 to 50 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Natural drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat):
Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Very low (about 1.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e

Hydrologic Soil Group: D

Ecological site: SHALLOW STONY UPLANDS (R021XE134CA)

Hydric soil rating: No

Minor Components

Rock outcrop

Percent of map unit: 6 percent

Hydric soil rating: No

Mcquarrie, eroded

Percent of map unit: 5 percent

Hydric soil rating: No

Lithic xerorthents

Percent of map unit: 4 percent

Hydric soil rating: No

Data Source Information

Soil Survey Area: Modoc County, California, Alturas Area

Survey Area Data: Version 9, Sep 8, 2017

Modoc County, California, Alturas Area

188—Salisbury gravelly loam, 0 to 9 percent slopes

Map Unit Setting

National map unit symbol: jb6c
Elevation: 4,800 to 5,100 feet
Mean annual precipitation: 16 to 20 inches
Mean annual air temperature: 46 to 48 degrees F
Frost-free period: 100 to 110 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Salisbury and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Salisbury

Setting

Landform: Lake terraces, alluvial fans
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from basic igneous rock

Typical profile

H1 - 0 to 10 inches: gravelly loam
H2 - 10 to 23 inches: clay loam
H3 - 23 to 27 inches: indurated

Properties and qualities

Slope: 0 to 9 percent
Depth to restrictive feature: About 10 inches to abrupt textural change; 20 to 32 inches to duripan
Natural drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat):
Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Very low (about 1.3 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D

Ecological site: LOAMY (R021XE131CA)
Hydric soil rating: No

Minor Components

Bieber

Percent of map unit: 10 percent
Hydric soil rating: No

Drews

Percent of map unit: 3 percent
Hydric soil rating: No

Unnamed, 25% rounded obsidian gravels in surface

Percent of map unit: 2 percent
Hydric soil rating: No

Data Source Information

Soil Survey Area: Modoc County, California, Alturas Area
Survey Area Data: Version 9, Sep 8, 2017