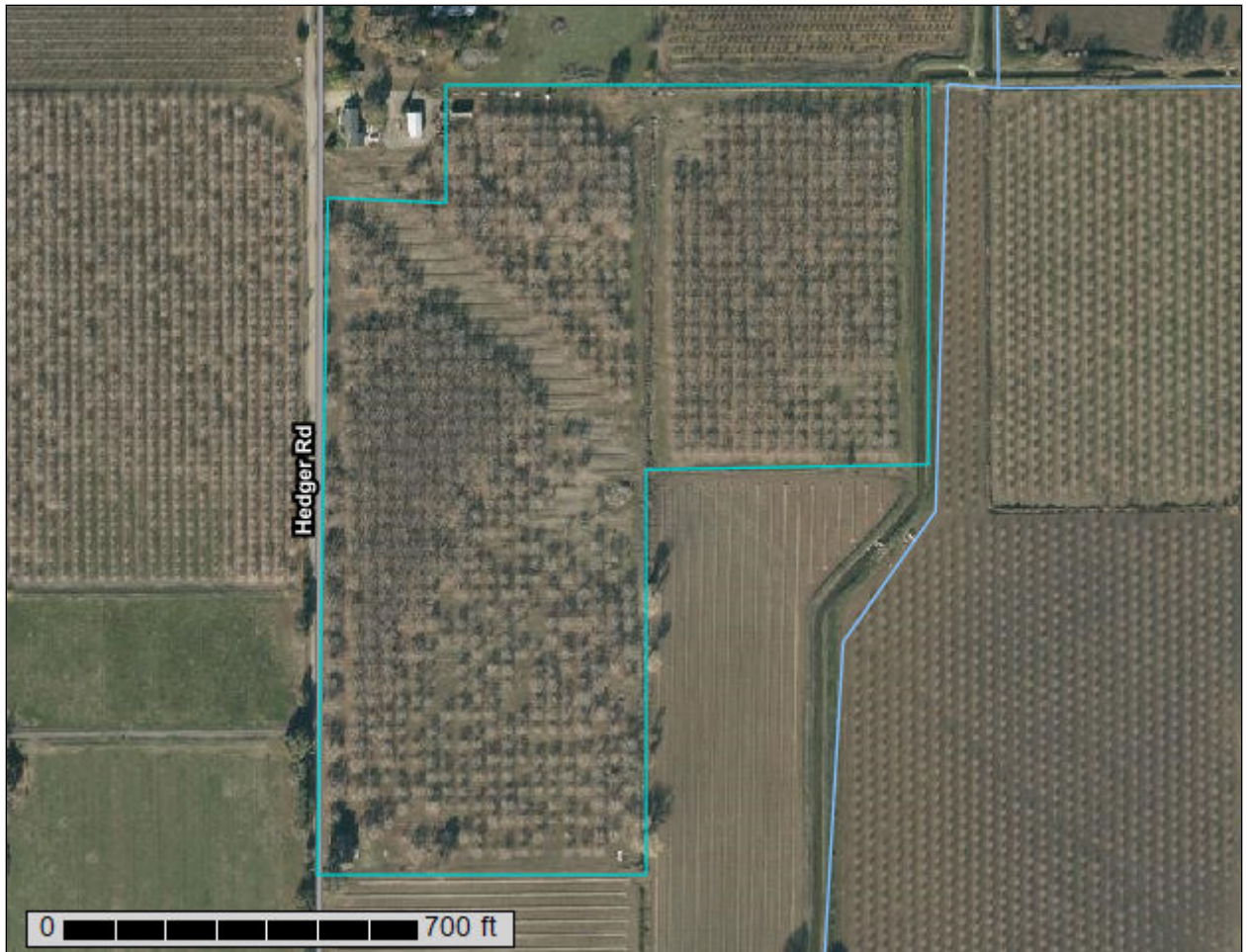


# Custom Soil Resource Report for **Sutter County, California**

**Heitz**



# Preface

---

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist ([http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2\\_053951](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951)).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

# Contents

---

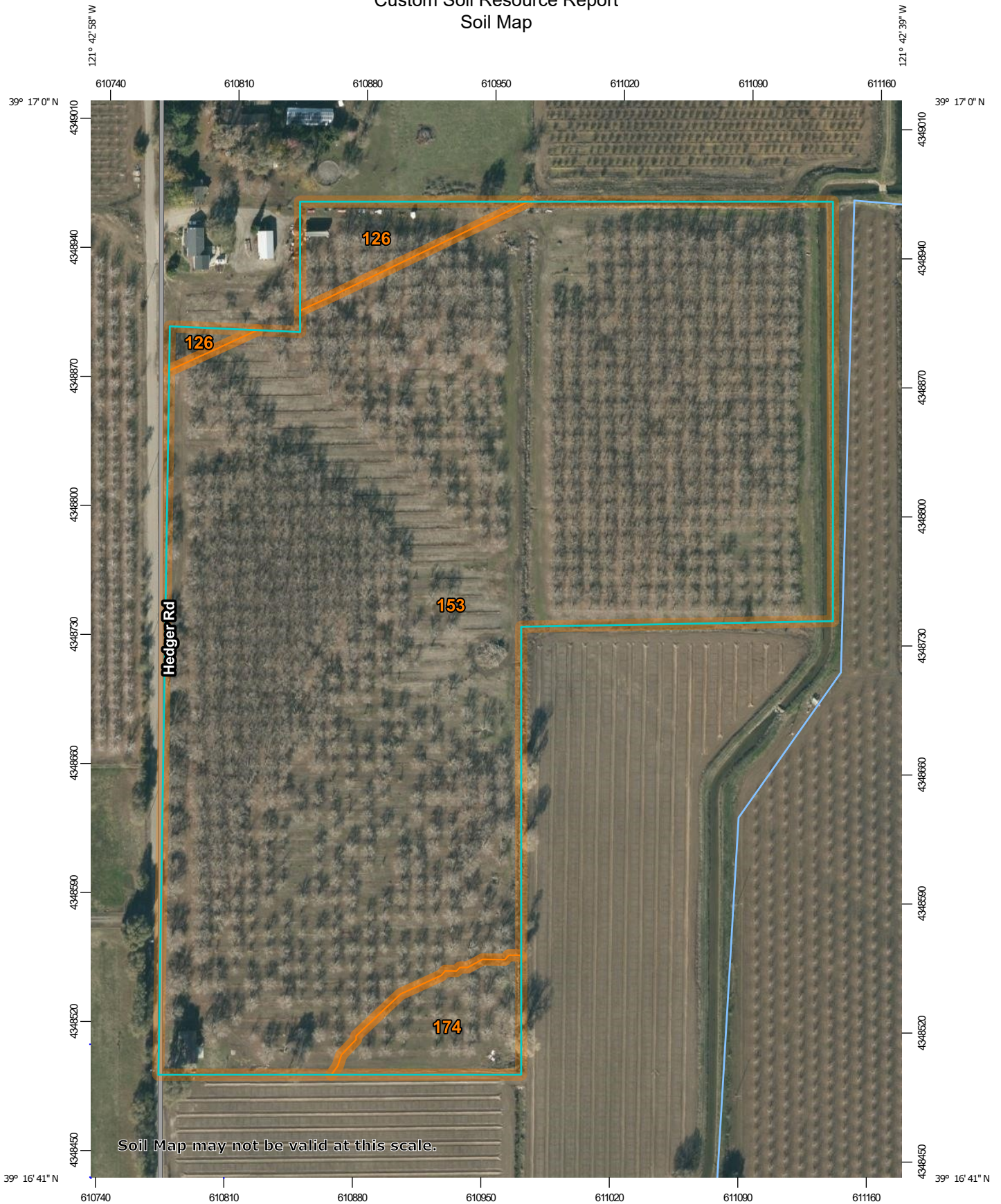
<b>Preface</b> .....	2
<b>Soil Map</b> .....	5
Soil Map.....	6
Legend.....	7
Map Unit Legend.....	8
Map Unit Descriptions.....	8
Sutter County, California.....	10
126—Conejo-Tisdale complex, 0 percent slopes, MLRA 17.....	10
153—Oswald clay, 0 to 2 percent slopes.....	12
174—Tisdale clay loam, 0 to 2 percent slopes.....	13

# Soil Map

---

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

# Custom Soil Resource Report Soil Map




Map Scale: 1:2,850 if printed on A portrait (8.5" x 11") sheet.



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


### MAP LEGEND

**Area of Interest (AOI)**

 Area of Interest (AOI)




















**Soils**







 Soil Map Unit Polygons

 Soil Map Unit Lines


 Soil Map Unit Points

**Special Point Features**






-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot

-  Spoil Area
-  Stony Spot
-  Very Stony Spot
-  Wet Spot
-  Other
-  Special Line Features


**Water Features**

 Streams and Canals

**Transportation**

-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads

**Background**

 Aerial Photography

### MAP INFORMATION

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

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

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: Sutter County, California  
 Survey Area Data: Version 17, Jun 1, 2020

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

Date(s) aerial images were photographed: Dec 6, 2018—Dec 12, 2018

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
126	Conejo-Tisdale complex, 0 percent slopes, MLRA 17	1.1	3.4%
153	Oswald clay, 0 to 2 percent slopes	29.0	92.9%
174	Tisdale clay loam, 0 to 2 percent slopes	1.2	3.7%
<b>Totals for Area of Interest</b>		<b>31.2</b>	<b>100.0%</b>

## Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or



## Custom Soil Resource Report

landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

## Sutter County, California

### 126—Conejo-Tisdale complex, 0 percent slopes, MLRA 17

#### Map Unit Setting

*National map unit symbol:* 2y0fn

*Elevation:* 40 to 80 feet

*Mean annual precipitation:* 21 to 24 inches

*Mean annual air temperature:* 62 to 62 degrees F

*Frost-free period:* 319 to 322 days

*Farmland classification:* Farmland of statewide importance

#### Map Unit Composition

*Conejo, loam, dense substratum, and similar soils:* 45 percent

*Tisdale, clay loam, and similar soils:* 40 percent

*Minor components:* 15 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Conejo, Loam, Dense Substratum

##### Setting

*Landform:* Stream terraces

*Landform position (two-dimensional):* Toeslope

*Landform position (three-dimensional):* Tread

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Loamy alluvium derived from igneous and metamorphic rock over dense alluvium derived from igneous and metamorphic rock

##### Typical profile

*Ap - 0 to 11 inches:* loam

*Bt - 11 to 42 inches:* loam

*2Cd - 42 to 80 inches:* material

##### Properties and qualities

*Slope:* 0 percent

*Depth to restrictive feature:* 40 to 60 inches to densic material

*Drainage class:* Moderately well drained

*Runoff class:* Very low

*Capacity of the most limiting layer to transmit water (Ksat):* Low to moderately low  
(0.00 to 0.06 in/hr)

*Depth to water table:* About 20 to 40 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Maximum salinity:* Nonsaline (0.2 to 0.5 mmhos/cm)

*Available water capacity:* Moderate (about 7.6 inches)

##### Interpretive groups

*Land capability classification (irrigated):* 1

*Land capability classification (nonirrigated):* 4c

*Hydrologic Soil Group:* C

*Hydric soil rating:* No

## Description of Tisdale, Clay Loam

### Setting

*Landform:* Stream terraces

*Landform position (two-dimensional):* Toeslope

*Landform position (three-dimensional):* Tread

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Loamy alluvium derived from igneous and metamorphic rock over dense alluvium derived from igneous and metamorphic rock

### Typical profile

*Ap - 0 to 7 inches:* clay loam

*A - 7 to 11 inches:* clay loam

*Bt1 - 11 to 21 inches:* clay loam

*Bt2 - 21 to 31 inches:* clay loam

*2Cd - 31 to 40 inches:* material

### Properties and qualities

*Slope:* 0 percent

*Depth to restrictive feature:* 20 to 40 inches to densic material

*Drainage class:* Moderately well drained

*Runoff class:* Very low

*Capacity of the most limiting layer to transmit water (Ksat):* Low to moderately low (0.00 to 0.06 in/hr)

*Depth to water table:* About 11 to 40 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Maximum salinity:* Nonsaline (0.1 to 0.5 mmhos/cm)

*Sodium adsorption ratio, maximum:* 1.0

*Available water capacity:* Low (about 5.5 inches)

### Interpretive groups

*Land capability classification (irrigated):* 3s

*Land capability classification (nonirrigated):* 4s

*Hydrologic Soil Group:* C/D

*Hydric soil rating:* No

## Minor Components

### Gridley

*Percent of map unit:* 4 percent

*Hydric soil rating:* No

### Conejo

*Percent of map unit:* 4 percent

*Hydric soil rating:* No

### Liveoak

*Percent of map unit:* 4 percent

*Hydric soil rating:* No

### Oswald

*Percent of map unit:* 3 percent

*Landform:* Basin floors

*Hydric soil rating:* Yes

## 153—Oswald clay, 0 to 2 percent slopes

### Map Unit Setting

*National map unit symbol:* hf05

*Elevation:* 20 to 40 feet

*Mean annual precipitation:* 14 to 17 inches

*Mean annual air temperature:* 61 to 64 degrees F

*Frost-free period:* 260 to 280 days

*Farmland classification:* Farmland of statewide importance

### Map Unit Composition

*Oswald, clay, and similar soils:* 90 percent

*Minor components:* 10 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Oswald, Clay

#### Setting

*Landform:* Basin floors

*Landform position (two-dimensional):* Toeslope

*Landform position (three-dimensional):* Tread

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Clayey alluvium derived from mixed

#### Typical profile

*H1 - 0 to 15 inches:* clay

*H2 - 15 to 33 inches:* clay

*H3 - 33 to 37 inches:* weathered bedrock

#### Properties and qualities

*Slope:* 0 to 2 percent

*Depth to restrictive feature:* 20 to 40 inches to paralithic bedrock

*Drainage class:* Poorly drained

*Runoff class:* Very low

*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:* About 18 to 42 inches

*Frequency of flooding:* Rare

*Frequency of ponding:* None

*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

*Available water capacity:* Low (about 5.3 inches)

#### Interpretive groups

*Land capability classification (irrigated):* 3w

*Land capability classification (nonirrigated):* 4w

*Hydrologic Soil Group:* D

*Hydric soil rating:* Yes

**Minor Components**

**Conejo**

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

**Gridley**

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

**Tisdale**

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

**174—Tisdale clay loam, 0 to 2 percent slopes**

**Map Unit Setting**

*National map unit symbol:* hf0v  
*Elevation:* 10 to 100 feet  
*Mean annual precipitation:* 18 inches  
*Mean annual air temperature:* 63 degrees F  
*Frost-free period:* 270 days  
*Farmland classification:* Farmland of statewide importance

**Map Unit Composition**

*Tisdale and similar soils:* 75 percent  
*Minor components:* 25 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Tisdale**

**Setting**

*Landform:* Terraces  
*Landform position (two-dimensional):* Toeslope  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Mixed loamy alluvium

**Typical profile**

*H1 - 0 to 11 inches:* clay loam  
*H2 - 11 to 31 inches:* clay loam  
*H3 - 31 to 35 inches:* weathered bedrock

**Properties and qualities**

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* 20 to 40 inches to paralithic bedrock  
*Drainage class:* Well drained  
*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

## Custom Soil Resource Report

*Frequency of flooding:* None

*Frequency of ponding:* None

*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

*Available water capacity:* Low (about 5.4 inches)

### **Interpretive groups**

*Land capability classification (irrigated):* 3s

*Land capability classification (nonirrigated):* 4s

*Hydrologic Soil Group:* C

*Hydric soil rating:* No

### **Minor Components**

#### **Oswald**

*Percent of map unit:* 5 percent

*Landform:* Flood plains

*Hydric soil rating:* Yes

#### **Liveoak**

*Percent of map unit:* 5 percent

*Hydric soil rating:* No

#### **Gridley**

*Percent of map unit:* 5 percent

*Hydric soil rating:* No

#### **Conejo**

*Percent of map unit:* 5 percent

*Hydric soil rating:* No

#### **Unnamed, w/ hardpan**

*Percent of map unit:* 5 percent