

(DRAFT)

Delineation of Waters of the United States

Borge Development
Chico, Butte County, CA

May 2007



Prepared for:

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(DRAFT) DELINEATION OF WATERS OF THE UNITED STATES

Borge Development
Chico, Butte County, CA.

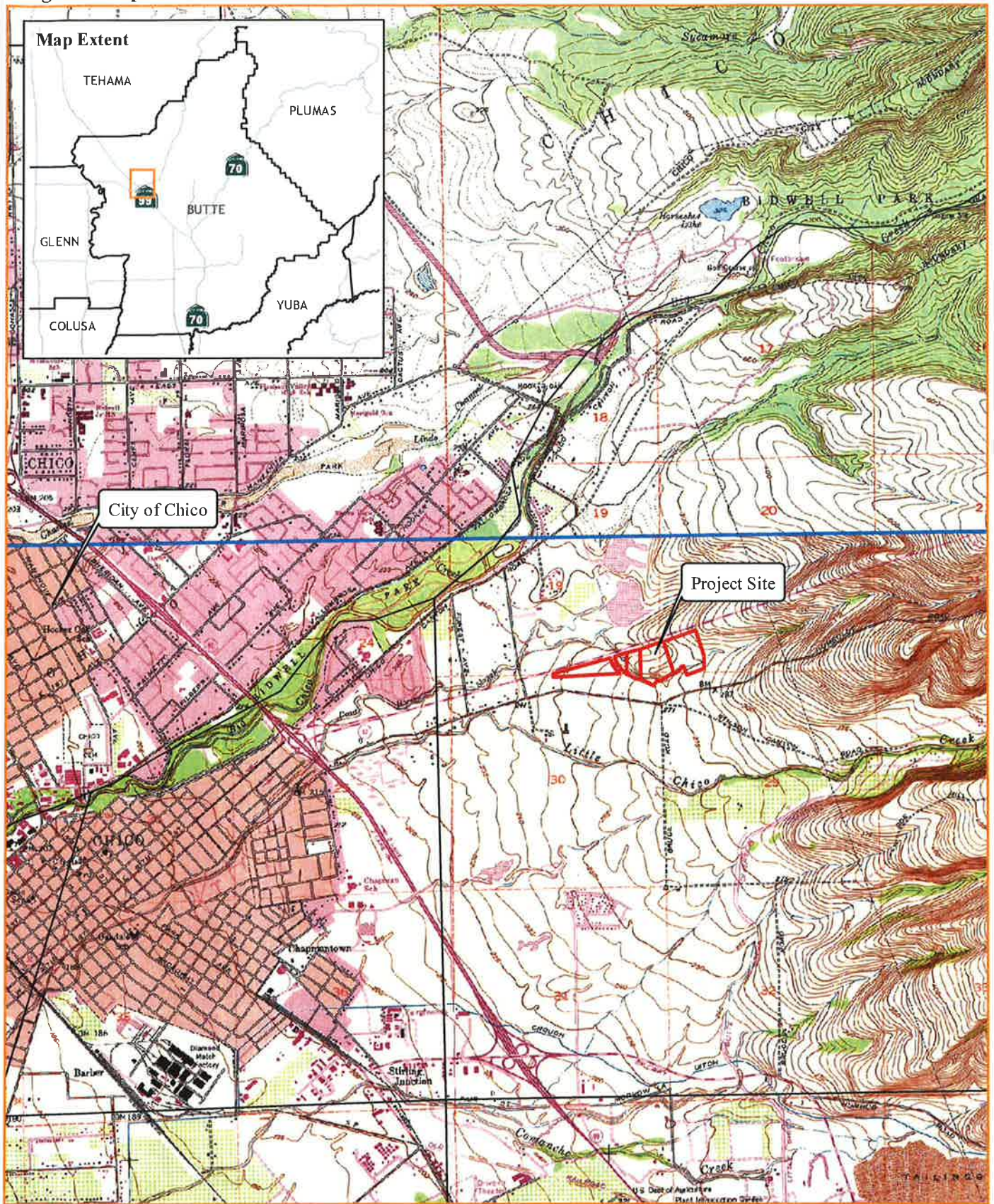
Introduction and Project Location

Gallaway Consulting, Inc. conducted a delineation of Waters of the U.S. for an approximately 47.3-acre survey area located in Chico, Butte County, California along State Highway 32 (**Figure 1**). The Borge Development property (survey area) is located within Sections 19, 20, 29 and 30, Township 22N, Range 2E, of the Chico U.S. Geological Survey (USGS) 7.5 minute quadrangle. The survey was conducted on March 12 and 29, 2007 by biologist Brooks Taylor and botanist Elena Alfieri. Surveys involved an examination of botanical resources, soils, hydrological features, and determination of wetland characteristics based on the *United States Army Corps of Engineers Wetlands Delineation Manual*, including the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region*.

This report addresses the nature, jurisdictional status, and landscape position of the wetlands on the survey area; it does not provide information suitable for structural analysis of soils for construction purposes, flood plain delineation, or other purposes not expressly stated. Wetland acreages presented in this report should be considered preliminary, and subject to review and modification by the U.S. Army Corps of Engineers (COE) during the wetland delineation verification process.

Site Conditions

The survey area is located in Chico, Butte County, California, in the northern Sacramento Valley (**Figure 1**). The survey area is bordered by State Highway 32 and residential housing on the north, Humboldt Road Burn Dump to the south, open grassland to the east, and Marsh Junior High School to the west. Bruce Road bisects the survey area into a western and an eastern section. Currently the Humboldt Road Burn Dump, located south of the survey area, is part of an extensive remediation project to reduce the amount of toxic materials within the soil. Portions of the burn dump rehabilitation site are located within the parcels discussed in this report; however these areas were excluded from the delineation due to constraints on future construction. The site totals 47.3 acres and occurs on valley annual grassland. Topography is characterized by rolling hills with the elevation ranging from 225-250 ft above sea level with 0-8% slopes. Local hydrology consists of the South Branch of Dead Horse Slough which conveys water from east to west along the southern boundary of the survey area where it follows Bruce Road to the north and exits the property underneath State Highway 32. This stream then forms a confluence with Dead Horse Slough north of the survey area. Two soil series occur within the survey site, Redtough-Redswale Complex, 0-2% slope and the Doemill-Jokerst Complex, 3-8%



Within Sections 19, 20, 29, & 30
of Township 22 N, and Range 2 E
Butte County, CA.
Chico USGS 7.5' Quad.
Map Date: April 17, 2007

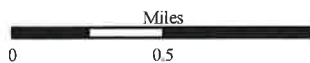


Figure. 1

slope. The average annual precipitation is 26 inches, and the average annual air temperature is approximately 61° F (Weather Underground).

Survey Methodology

Many of the terms used throughout this report have specific meanings relating to the federal wetland delineation process. Term definitions are based on the USACE 1987 wetlands delineation manual (Environmental Laboratory 1987). The terms defined below have specific meaning relating to the delineation of Waters of the U.S. as prescribed by Section 404 of the Clean Water Act (CWA).

Terminology

Atypical situation (significantly disturbed). In an atypical (significantly disturbed) situation, recent human activities or natural events have created conditions where positive indicators for hydrophytic vegetation, hydric soil, or wetland hydrology are not present or observable.

Ephemeral stream. An ephemeral stream has flowing water only during and for a short duration after, precipitation events in a typical year. Ephemeral streambeds are located above the water table year-round. Groundwater is not a source of water for the stream. Runoff from rainfall is the primary source of water for stream flow.

Growing season. The growing season is the portion of the year when soil temperatures are above biologic zero (41° F) as defined by soil taxonomy.

Hydric soil. Soil is hydric that is saturated, flooded, or ponded long enough during the growing season to develop anaerobic (oxygen-depleted) conditions in its upper part (*i.e.*, within the shallow rooting zone of herbaceous plants).

Intermittent stream. An intermittent stream has flowing water during certain times of the year, when groundwater provides water for stream flow. During dry periods, intermittent streams may not have flowing water. Runoff from rainfall is a supplemental source of water for stream flow.

Jurisdictional wetland. Sites that meet the definition of wetland provided below and that fall under COE regulations pursuant to Section 404 of the CWA are considered jurisdictional wetlands.

Man-induced wetlands. A man-induced wetland is an area that has developed at least some characteristics of naturally occurring wetlands due to either intentional or incidental human activities.

Normal circumstances. This term refers to the soil and hydrologic conditions that are normally present, without regard to whether the vegetation has been removed.

Other Waters of the United States. Other Waters of the U.S. are seasonal or perennial water bodies, including lakes, stream channels, drainages, ponds, and other surface water features, that exhibit an ordinary high-water mark but lack positive indicators for one or more of the three

wetland parameters (hydrophytic vegetation, hydric soil, and wetland hydrology) (33 CFR 328.4).

Perennial stream. A perennial stream has flowing water year-round during a typical year. The water table is located above the stream bed for most of the year. Groundwater is the primary source of water for stream flow. Runoff from rainfall is a supplemental source of water for stream flow.

Plant indicator status categories:

Obligate wetland plants (OBL) – plants that occur almost always (estimated probability 99%) in wetlands under normal conditions, but which may also occur rarely (estimated probability 1%) in non-wetlands.

Facultative wetland plants (FACW) - plants that usually occur (estimated probability 67% to 99%) in wetlands under normal conditions, but also occur (estimated probability 1% to 33%) in non-wetlands.

Facultative plants (FAC) – Plants with a similar likelihood (estimated probability 33% to 67%) of occurring in both wetlands and non-wetlands.

Facultative upland plants (FACU) – Plants that occur sometimes (estimated probability 1% to 33%) in wetlands, but occur more often (estimated probability 67% to 99%) in non-wetlands.

Obligate upland plants (UPL) – Plants that occur rarely (estimated probability 1%) in wetlands, but occur almost always (estimated probability 99%) in non-wetlands under natural conditions.

Ponded. Ponding is a condition in which free water covers the soil surface (e.g., in a closed depression) and is removed only by percolation, evaporation, or transpiration.

Problem area. Problem areas are those where one or more wetland parameters may be lacking because of normal seasonal or annual variations in environmental conditions that result from causes other than human activities or catastrophic natural events.

Waters of the United States. This is the encompassing term for areas under federal jurisdiction pursuant to Section 404 of the CWA. Waters of the U.S. are divided into “wetlands” and “Other Waters of the U.S.”

Wetland. Wetlands are defined as “areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” (33 CFR 328.3 [b], 40 CFR 230.3). To be considered under federal jurisdiction, a wetland must support positive indicators for hydrophytic vegetation, hydric soil, and wetland hydrology.

Determination of Hydrophytic Vegetation

The presence of hydrophytic vegetation was determined using the methods outlined in the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region*, a method approved by the COE for use in conjunction with the 1987 manual. Under this method, areas are considered to have positive indicators of hydrophytic vegetation if more than 50 percent of the dominant species are OBL, FACW, FAC (Reed 1988). Plant species were identifiable by flowering parts and fruits to the lowest taxonomy possible.

Determination of Hydric Soils

Soil survey information was reviewed for the survey area and the Natural Resources Conservation Service (NRCS) database was consulted on the local soil conditions. Information regarding local soil and series descriptions is provided in **Appendix A**.

Determination of Wetland Hydrology

Wetland hydrology was determined to be present if a site supported one or more of the following characteristics:

- Landscape position and surface topography (e.g. position of the site relative to an up-slope water source, location within a distinct wetland drainage pattern, and concave surface topography),
- Inundation or saturation for a long duration either inferred based on field indicators or observed during repeated site visits, and
- Residual evidence of ponding or flooding resulting in field indicators such as scour marks, sediment deposits, algal matting, and drift lines.

The presence of water or saturated soil for approximately 5 to 12.5 percent of the growing season typically creates anaerobic conditions in the soil, and these conditions affect the types of plants that can grow and the types of soils that develop (Environmental Laboratory 1987).

Determination of Ordinary High Water Mark

The lateral extent of non-tidal water bodies (i.e., intermittent streams, etc.) were based on the ordinary high water mark (OHWM), which is “the line on the shore established by the fluctuations of water” (COE 2005). The OHWM was determined based on physical characteristics of the area, including scour, multiple observed flow events (from current and historical aerial photos), shelving, changes in the character of soil, presence of mature vegetation (i.e., trees with a diameter at breast height larger than 20 inches), deposition, and topography. Due to the wide extent of some floodplains, adjacent riparian areas characterized by hydric soils, hydrophytic vegetation, and hydrology may be included within the OHWM of a non-tidal water body.

Jurisdictional Boundary Determination and Acreage Calculation

The wetland-upland boundary was determined based on the presence or inference of positive indicators of all mandatory criteria. The site was traversed on foot to identify wetlands. Standard data sheets (**Appendix B**) were used to describe plants, soils, and hydrological characteristics. Gallaway Consulting, Inc. performed the field delineation, map, and acreage calculations (**Attachment A**). The spatial data obtained during the preparation of this wetland delineation was collected using a Trimble GeoXT Global Positioning System (GPS) Receiver on March 12 and 29, 2007. The maximum position dilution of precision (PDOP) during data collection was 7.5. No readings were taken with fewer than 5 satellites. Point data locations were recorded for 25 seconds at a rate of 1 position per second. Area and line data was recorded at a rate of 1 position per second while walking at a slow pace. All GPS data was differentially corrected for maximum accuracy using the nearest National Geodetic Survey's Continuously Operating Reference Station (CORS).

Results

A total of 3.702 acres of pre-jurisdictional Waters of the U.S. were delineated within the survey area. The types of Waters of the U.S. identified on-site are distinguished as vernal pools, vernal swales, seasonal wetlands and intermittent streams (**Table 1**). These features are mapped at a 1' to 100" scale and are presented in **Attachment A**. Waters of the U.S. acreages presented in this report should be considered preliminary, subject to review and modification by the COE during the wetland delineation verification process. The wetlands, and the data of interpretation used to delineate their jurisdictional boundaries are described below.

Table 1. Jurisdictional wetland summary delineated within the Borge Development Project Area, City of Chico.

Other Waters Of the U.S. (OWOTUS)				
	Intermittent Stream Total =	1235.321	12669.103	0.291
	Other Waters Total =	1235.321	12669.103	0.291
Wetland Features				
	Vernal Swale Total =	n/a	115396.962	2.649
	Vernal Pool Total =	n/a	29339.477	0.674
	Seasonal Wetland Total =	n/a	3869.957	0.089
	Total of All Wetland Features =	n/a	148606.396	3.412
	Total of Jurisdictional Features =	1235.321	161275.499	3.702

Jurisdictional Features

Vernal Pools and Swales

The survey area supports 2.649 acres of vernal swales and 0.674 acres of vernal pools. Vernal pools are defined by the positive indication of three wetland parameters: hydrophytic vegetation specific to vernal pools, hydric soils, and hydrology (*i.e.*, ponding). All three parameters must be present to satisfy the vernal pool definition, which was applied while delineating all vernal pools present on-site. In addition to supporting positive indicators for hydrophytic vegetation, hydric soil, and wetland hydrology, vernal pools exhibit unique characteristics. Vernal pools form where there is a soil layer below or at the surface that is impermeable or nearly impermeable [U.S. Fish and Wildlife Service (USFWS 2006)]. Precipitation and surface runoff become trapped or “perched” above this layer. Hardpans are formed by leaching, re-deposition, and cementing of silica materials from high in the soil horizon to a lower (“B”) horizon (USFWS 2006). In addition, vernal pools typically occur in landscapes that, at a broad scale, are shallowly sloping or nearly level, but on a finer scale may be quite bumpy or uneven. Since appropriate combinations of climate, soil, and topography often occur over continuous areas rather than in isolated spots, vernal pools in the Central Valley tend to occur in clusters called “complexes.” Within these complexes, pools may be fed or connected by low drainage pathways called “swales,” which were detected throughout the site. Swales are often themselves seasonal wetlands that remain inundated with water for much of the wet season, but not long enough to support strong vernal pool characteristics. Vernal pools may remain inundated until spring or early summer, sometimes filling and emptying numerous times during the wet season. Vernal pools gradually dry down during the spring, often forming a unique “bathtub ring” of flowers from endemic vernal pool plants blooming successively at the pool margins. Dominant vegetation present within the vernal features on site include: *Eryngium castrense* (Coyote Thistle/FACW), *Limnanthes floccosa* spp. *californica* (Butte County meadowfoam/OBL), *Plagiobothrys stipitatus* (popcorn flower/OBL), *Blennosperma nanum* (Blennosperma/OBL), *Ranunculus aquatilis* (butter-cup/OBL), *Layia* sp. (tidy-tips/FAC), *Deschampsia danthonioides* (Annual hairgrass/FACW) and *Lasthenia fremontii* (Fremont’s goldfields/OBL)

Seasonal Wetlands

Seasonal wetlands are defined by the positive indication of three wetland parameters: hydrophytic vegetation, hydric soils, and hydrology (*i.e.*, ponding). All three parameters must be present to satisfy the wetland definition, which was applied while delineating all seasonal wetlands present on-site. These features allow water to pond for a long enough period of time to support hydrophytic vegetation and hydric soils. Seasonal wetlands tend to lack standing water during the late summer months, or during prolonged dry periods. They support hydrophytic plant species, such as *Eleocharis* that require longer and typically deeper inundation periods than those species occurring in vernal pools. The project area supports 0.089 acres of seasonal wetlands adjacent to the South Branch of Dead Horse Slough. Dominant plant species within the seasonal wetland include: *Lolium multiflorum* (not listed) and *Stellaria* sp. (starwort/FACW), *Medicago lupulina* (black medic/FAC), *Blennosperma nanum* (Blennosperma/OBL), and *Trifolium* sp. (clover/FAC).

Other Waters of the United States

Other Waters of the U.S. are seasonal or perennial water bodies, including lakes, stream channels, drainages, ponds, and other surface water features that exhibit an ordinary high-water mark but lack positive indicators for one or more of the three wetland parameters (*i.e.*, hydrophytic vegetation, hydric soil, and wetland hydrology) (33 CFR 328.4). The above definition was applied while delineating all Other Waters of the U.S. on-site. Drainages exhibited an ordinary high water mark and contained bed, bank, and/or scour morphology. A total of 0.291 acre (12669.103 square feet) of Other Waters of the U.S. was delineated on-site.

Soils

The U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) 2006 *Soil Survey of Butte Area, California Parts of Butte and Plumas Counties* identified two soils map units within the survey area (**Appendix A**). These are the Redtough-Redswale Complex, 0-2% slopes and the Doemill-Jokerst Complex, 3-8% slopes. Both soil series descriptions are presented in **Appendix A** and wetland data sheets are presented in **Appendix B**.

When pooled water and/or obligate plants were present, hydric soils were assumed. In areas with questionable upland/wetland distinction, soil pit samples were observed to determine the presence or absence of hydric soil indicators.

Vegetation

Wetland vegetation present within the jurisdictional features include *Eryngium castrense*, *Limnanthes floccosa* spp. *californica*, *Plagiobothrys stipitatus*, *Blennosperma nanum*, *Ranunculus aquatilis*, *Layia* sp., *Deschampsia danthonioides*, *Lasthenia fremontii*, *Lolium multiflorum*, and *Stellaria* sp., *Medicago lupulina*, *Blennosperma nanum*, and *Trifolium* sp. Upland vegetation dominated by: *Taeniatherum caput-medusa*, *Centaurea solstitialis*, *Brassica niger*, *Erodium botrys*, *Agrostis* sp. and *Vicia* sp.

Hydrology

Local hydrology consists of the South Branch of Dead Horse Slough which conveys water from east to west along the southern boundary of the survey area where it follows Bruce Road to the north and exits the property underneath State Highway 32. This stream then forms a confluence with Dead Horse Slough north of the survey area. Dead Horse Slough ultimately conveys water west to the Sacramento River. Copies of field data sheets are provided in **Appendix B**. For further explanation of field notes please contact Jody Gallaway at (530) 343-8327.

Site Photos



Vernal Pool, WF45 looking west



Vernal Swale



South Branch Dead Horse Slough.

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Appendix A. Soils Map, Map Unit Descriptions

Hydric Soils

Butte Area, California, Parts of Butte and Plumas Counties

Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria
302:					
REDTOUGH-REDSWALE COMPLEX, 0 TO 2 PERCENT SLOPES	Redswale, frequent long flooding	3	Fan terraces	Yes	4
	Unnamed, frequent long ponding	3	Fan terraces	Yes	3
	Anita, gravelly duripan	2	Fan terraces	Yes	2B3, 3
615:					
DOEMILL-JOKERST COMPLEX, 3 TO 8 PERCENT SLOPES	Unnamed, frequent long ponding	1	Ridges	Yes	3

Explanation of hydric criteria codes:

1. All Histels except for Folistels, and Histosols except for Folists.
2. Soils in Aquic suborders, great groups, or subgroups, Albolls suborder, Historthels great group, Histoturbels great group, Pachic subgroups, or Cumulic subgroups that:
 - A. are somewhat poorly drained and have a water table at the surface (0.0 feet) during the growing season, or
 - B. are poorly drained or very poorly drained and have either:
 - 1.) a water table at the surface (0.0 feet) during the growing season if textures are coarse sand, sand, or fine sand in all layers within a depth of 20 inches, or
 - 2.) a water table at a depth of 0.5 foot or less during the growing season if permeability is equal to or greater than 6.0 in/hr in all layers within a depth of 20 inches, or
 - 3.) a water table at a depth of 1.0 foot or less during the growing season if permeability is less than 6.0 in/hr in any layer within a depth of 20 inches.
3. Soils that are frequently ponded for long or very long duration during the growing season.
4. Soils that are frequently flooded for long or very long duration during the growing season.

Map Unit Description

Butte Area, California, Parts of Butte and Plumas Counties

302 REDTOUGH-REDSWALE COMPLEX, 0 TO 2 PERCENT SLOPES

Setting

Landscape: Valleys
Elevation: 200 to 400 feet
Mean annual precipitation: 23 to 28 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 250 to 255 days

Composition

Redtough, loam, and similar soils: 50 percent
Redswale, cobbly loam, and similar soils: 35 percent
Minor components: 15 percent

Description of Redtough, loam

Setting

Landform: Fan terraces
Landform position (two-dimensional): Toeslope
Microfeatures of landform position: Mounds
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Loamy alluvium over cemented cobbly and gravelly alluvium derived from volcanic rock

Properties and Qualities

Slope: 0 to 3 percent
Surface area covered with stones and boulders: 3.0 percent
Depth to restrictive feature: 10 to 20 inches to Duripan
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: About 2 to 20 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate maximum: 0 percent
Gypsum maximum: 0 percent
Available water capacity: Very low (about 1.6 inches)

Interpretive Groups

Land capability classification (irrigated): 7s
Land capability (non irrigated): 7s
Other vegetative classification: CLAYEY TERRACE (null_3)

Typical Profile

0 to 1 inches: loam
1 to 7 inches: gravelly loam
7 to 13 inches: very cobbly loam

Description of Redswale, cobbly loam

Setting

Landform: Fan terraces
Landform position (two-dimensional): Toeslope
Microfeatures of landform position: Swales
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Cobbly and loamy alluvium over cemented cobbly and gravelly alluvium derived from volcanic rock

Properties and Qualities

Slope: 0 to 3 percent
Surface area covered with stones and boulders: 30.0 percent
Depth to restrictive feature: 4 to 10 inches to Duripan
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: About 0 to 10 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate maximum: 0 percent

Map Unit Description

Butte Area, California, Parts of Butte and Plumas Counties

Gypsum maximum: 0 percent
Available water capacity: Very low (about 0.7 inches)

Interpretive Groups

Land capability classification (irrigated): 8
Land capability (non irrigated): 8
Other vegetative classification: CLAYEY TERRACE (null_3)

Typical Profile

0 to 1 inches: cobbly loam
1 to 7 inches: very cobbly loam

Minor Components

Redswale, frequent long flooding soils

Percent of map unit: 3 percent

Landform: Fan terraces

Microfeatures of landform position: Swales

Unnamed, frequent long ponding soils

Percent of map unit: 3 percent

Landform: Fan terraces

Microfeatures of landform position: Vernal pools

Munjar soils

Percent of map unit: 2 percent

Landform: Fan terraces

Microfeatures of landform position: Mounds

Abruptic durixeralfs soils

Percent of map unit: 2 percent

Landform: Fan terraces

Microfeatures of landform position: Mounds

Tuscan soils

Percent of map unit: 2 percent

Landform: Fan terraces

Microfeatures of landform position: Mounds

Anita, gravelly duripan soils

Percent of map unit: 2 percent

Landform: Fan terraces

Microfeatures of landform position: Swales

Unnamed, riser slopes soils

Percent of map unit: 1 percent

Landform: Fan terraces

Map Unit Description

Butte Area, California, Parts of Butte and Plumas Counties

615 DOEMILL-JOKERST COMPLEX, 3 TO 8 PERCENT SLOPES

Setting

Landscape: Foothills
Elevation: 160 to 1000 feet
Mean annual precipitation: 25 to 29 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 250 to 255 days

Composition

Doemill, gravelly loam, and similar soils: 50 percent
Jokerst, very cobbly loam, and similar soils: 40 percent
Minor components: 10 percent

Description of Doemill, gravelly loam

Setting

Landform: Ridges
Landform position (two-dimensional): Summit
Microfeatures of landform position: Mounds
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy residuum weathered from volcanic breccia

Properties and Qualities

Slope: 3 to 8 percent
Surface area covered with stones and boulders: 12.0 percent
Depth to restrictive feature: 10 to 20 inches to Lithic bedrock
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.43 to 1.28 in/hr)
Depth to water table: About 2 to 20 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate maximum: 0 percent
Gypsum maximum: 0 percent
Available water capacity: Very low (about 2.1 inches)

Interpretive Groups

Land capability classification (irrigated): 6e
Land capability (non irrigated): 6e
Ecological site: SHALLOW LOAMY (R018XD076CA)

Typical Profile

0 to 1 inches: gravelly loam
1 to 5 inches: gravelly loam
5 to 9 inches: gravelly loam
9 to 14 inches: gravelly loam

Description of Jokerst, very cobbly loam

Setting

Landform: Ridges
Landform position (two-dimensional): Summit
Microfeatures of landform position: Swales
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Loamy residuum weathered from volcanic breccia

Properties and Qualities

Slope: 3 to 8 percent
Surface area covered with stones and boulders: 47.0 percent
Depth to restrictive feature: 2 to 10 inches to Lithic bedrock
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.71 to 1.13 in/hr)
Depth to water table: About 0 to 10 inches
Frequency of flooding: Frequent
Frequency of ponding: Frequent

Map Unit Description

Butte Area, California, Parts of Butte and Plumas Counties

Calcium carbonate maximum: 0 percent
Gypsum maximum: 0 percent
Available water capacity: Very low (about 0.4 inches)

Interpretive Groups

Land capability classification (irrigated): 8
Land capability (non irrigated): 8
Ecological site: VERY STONY SHALLOW LOAM (R018XD099CA)

Typical Profile

0 to 1 inches: very cobbly loam
1 to 4 inches: gravelly loam

Minor Components

Rock outcrop, mudflow breccia
Percent of map unit: 6 percent
Landform: Ridges

Lithic xerorthents soils
Percent of map unit: 3 percent
Landform: Ridges

Unnamed, frequent long ponding soils
Percent of map unit: 1 percent
Landform: Ridges
Microfeatures of landform position: Vernal pools

Appendix C. Wetland Features & OWOTUS Data Table

Wetland Features & OWOTUS Data Table

Type	label	Length (ft.)	Area (ft. ²)	Acres
Seasonal Wetland	WF47	n/a	2845.347	0.065
Seasonal Wetland	WF48	n/a	626.928	0.014
Vernal Pool	WF01	n/a	315.058	0.007
Vernal Pool	WF02	n/a	79.305	0.002
Vernal Pool	WF03	n/a	90.289	0.002
Vernal Pool	WF04	n/a	84.811	0.002
Vernal Pool	WF05	n/a	138.229	0.003
Vernal Pool	WF06	n/a	29.905	0.001
Vernal Pool	WF07	n/a	38.366	0.001
Vernal Pool	WF09	n/a	106.189	0.002
Vernal Pool	WF10	n/a	557.809	0.013
Vernal Pool	WF11	n/a	1006.554	0.023
Vernal Pool	WF13	n/a	1158.663	0.027
Vernal Pool	WF17	n/a	3614.318	0.083
Vernal Pool	WF18	n/a	750.412	0.017
Vernal Pool	WF23	n/a	840.001	0.019
Vernal Pool	WF24	n/a	429.172	0.010
Vernal Pool	WF25	n/a	357.459	0.008
Vernal Pool	WF26	n/a	364.033	0.008
Vernal Pool	WF27	n/a	338.625	0.008
Vernal Pool	WF28	n/a	152.622	0.004
Vernal Pool	WF29	n/a	166.365	0.004
Vernal Pool	WF30	n/a	664.426	0.015
Vernal Pool	WF31	n/a	743.744	0.017
Vernal Pool	WF33	n/a	199.409	0.005
Vernal Pool	WF34	n/a	256.824	0.006
Vernal Pool	WF36	n/a	783.634	0.018
Vernal Pool	WF37	n/a	1245.606	0.029
Vernal Pool	WF38	n/a	156.251	0.004
Vernal Pool	WF39	n/a	1329.911	0.031
Vernal Pool	WF41	n/a	144.529	0.003
Vernal Pool	WF42	n/a	4371.291	0.100
Vernal Pool	WF43	n/a	1699.488	0.039
Vernal Pool	WF44	n/a	1993.696	0.046
Vernal Pool	WF45	n/a	862.207	0.020
Vernal Pool	WF46	n/a	602.155	0.014
Vernal Pool	WF51	n/a	697.778	0.016
Vernal Pool	WF52	n/a	890.165	0.020
Vernal Pool	WF54	n/a	280.123	0.006
Vernal Pool	WF20	n/a	834.219	0.019
Vernal Pool	WF21	n/a	272.342	0.006
Vernal Pool	WF55	n/a	164.163	0.004
Vernal Pool	WF57	n/a	529.331	0.012
Vernal Swale	WF12	n/a	31628.458	0.726

Wetland Features & OWOTUS Data Table

Vernal Swale	WF19	n/a	11781.910	0.270
Vernal Swale	WF22	n/a	4694.402	0.108
Vernal Swale	WF32	n/a	3283.162	0.075
Vernal Swale	WF35	n/a	3790.974	0.087
Vernal Swale	WF40	n/a	45.496	0.001
Vernal Swale	WF49	n/a	1287.259	0.030
Vernal Swale	WF50	n/a	71.979	0.002
Vernal Swale	WF53	n/a	5930.495	0.136
Vernal Swale	WF56	n/a	23746.184	0.545
Vernal Swale	WF58	n/a	7428.757	0.171
Vernal Swale	WF59	n/a	526.569	0.012
Vernal Swale	WF60	n/a	0.003	0.000
Vernal Swale	WF61	n/a	99.492	0.002
Vernal Swale	WF62	n/a	2673.486	0.061
Other Waters				
Intermittent Stream	OW01	1235.321	12669.103	0.291
	Intermittent Stream Total =	1235.321	12669.103	0.291
	Other Waters Total =	1235.321	12669.103	0.291
	Vernal Swale Total =	n/a	115396.962	2.649
	Vernal Pool Total =	n/a	29339.477	0.674
	Seasonal Wetland Total =	n/a	3869.957	0.089
	Total of All Wetland Features =	n/a	148606.396	3.412
	Total of Jurisdictional Features =	1235.321	161275.499	3.702

