

**Appendix E: Wetland Delineation and Preliminary
Jurisdictional Determination**



DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, U.S. ARMY CORPS OF ENGINEERS
1455 MARKET STREET, 16TH FLOOR
SAN FRANCISCO, CALIFORNIA 94103-1398

DEC 28 2015

Regulatory Division

Subject: File No. 2013-00173S

Ms. Judy Bendix
Mosaic Associates, LLC
1690 San Pablo Avenue, Suite D
Pinole, California 94564

Dear Ms. Bendix:

This correspondence is in reference to your submittal of April 4, 2012, and revised submittal of June 27, 2014, on behalf of Ms. Ann Curtis, Camille Ironwood Properties, LLC, requesting a preliminary jurisdictional determination of the extent of navigable waters of the United States (U.S.) and waters of the U.S. occurring on the Ball Property. The Ball Property is located at 333 Camille Avenue, Alamo, Contra Costa County, California (lat: 37.83365° N, long: -122.0275° W).

All proposed discharges of dredged or fill material occurring below the plane of ordinary high water in non-tidal waters of the U.S.; or below the high tide line in tidal waters of the U.S.; and within the lateral extent of wetlands adjacent to these waters, typically require Department of the Army authorization and the issuance of a permit under Section 404 of the Clean Water Act of 1972, as amended (33 U.S.C. § 1344 *et seq.*). Waters of the U.S. generally include the territorial seas; all traditional navigable waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including waters subject to the ebb and flow of the tide; wetlands adjacent to traditional navigable waters; non-navigable tributaries of traditional navigable waters that are relatively permanent, where the tributaries typically flow year-round or have continuous flow at least seasonally; and wetlands directly abutting such tributaries. Where a case-specific analysis determines the existence of a "significant nexus" effect with a traditional navigable water, waters of the U.S. may also include non-navigable tributaries that are not relatively permanent; wetlands adjacent to non-navigable tributaries that are not relatively permanent; wetlands adjacent to but not directly abutting a relatively permanent non-navigable tributary; and certain ephemeral streams in the arid West.

The enclosed delineation map entitled, "Preliminary Jurisdictional Determination SPN-2013-00173S, Ball Property - 333 Camille Avenue, Alamo, Contra Costa County, California (37.83365° N, -122.0275° W)," in one sheet and date certified November 30, 2015, depicts the extent and location of wetlands and other waters of the U.S., within the boundary area of the site that **may be** subject to U.S. Army Corps of Engineers' regulatory authority under Section 404 of the Clean Water Act. This preliminary jurisdictional determination is based on the current conditions of the site, as verified during a field investigation of July 19, 2013, a review of available digital photographic imagery, and a review of other data included in your

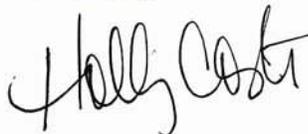
submittals. While this preliminary jurisdictional determination was conducted pursuant to Regulatory Guidance Letter No. 08-02, *Jurisdictional Determinations*, it may be subject to future revision if new information or a change in field conditions becomes subsequently apparent. The basis for this preliminary jurisdictional determination is fully explained in the enclosed *Preliminary Jurisdictional Determination Form*. You are requested to sign and date this form and return it to this office within two weeks of receipt.

You are advised that the preliminary jurisdictional determination may **not** be appealed through the U.S. Army Corps of Engineers' *Administrative Appeal Process*, as described in 33 C.F.R. Part 331 (65 Fed. Reg. 16,486; Mar. 28, 2000). Under the provisions of 33 C.F.R. § 331.5(b)(9), non-appealable actions include preliminary jurisdictional determinations since they are considered to be only advisory in nature and make no definitive conclusions on the jurisdictional status of the water bodies in question. However, you may request this office to provide an approved jurisdictional determination that precisely identifies the scope of jurisdictional waters on the site; an approved jurisdictional determination may be appealed through the *Administrative Appeal Process*. If you anticipate requesting an approved jurisdictional determination at some future date, you are advised not to engage in any on-site grading or other construction activity in the interim to avoid potential violations and penalties under Section 404 of the Clean Water Act. Finally, you may provide this office new information for further consideration and request a reevaluation of this preliminary jurisdictional determination.

You may refer any questions on this matter to Katerina Galacatos of my Regulatory staff by telephone at 415-503-6778 or by e-mail at Katerina.Galacatos@usace.army.mil. All correspondence should be addressed to the Regulatory Division, South Branch, referencing the file number at the head of this letter.

The San Francisco District is committed to improving service to our customers. My Regulatory staff seeks to achieve the goals of the Regulatory Program in an efficient and cooperative manner, while preserving and protecting our nation's aquatic resources. If you would like to provide comments on our Regulatory Program, please complete the Customer Service Survey Form available on our website:
<http://www.spn.usace.army.mil/Missions/Regulatory.aspx>.

Sincerely,



Tori White
Acting Chief, Regulatory Division

Enclosures

Copy Furnished (w/ encls):

Camille Ironwood Properties, LLC Danville, CA (Attn. Ann Curtis)

Copy Furnished (w/map only):

CA RWQCB, Oakland, CA

PRELIMINARY JURISDICTIONAL DETERMINATION FORM
San Francisco District

This Preliminary Jurisdictional Determination finds that there "may be" waters of the United States in the subject review area and identifies all such aquatic features, based on the following information:

Regulatory Division: South Branch **File Number:** 2013-00173S **PJD Completion Date:** 11-30-2015

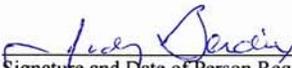
<p>Review Area Location City/County: Alamo, Contra Costa County State: California Nearest Named Waterbody: San Ramon Creek Approximate Center Coordinates of Review Area Latitude (degree decimal format): 37.83365°N Longitude (degree decimal format): -122.0275°W Approximate Total Acreage of Review Area: 26 acres</p>	<p>File Name: Ball Property - 333 Camille Avenue Alamo</p> <p>Applicant or Requestor Information Name: Ann Curtis Company Name: Camille Ironwood Properties, LLC Street/P.O. Box: P.O. Box 67 City/State/Zip Code: Danville, CA 94526</p>
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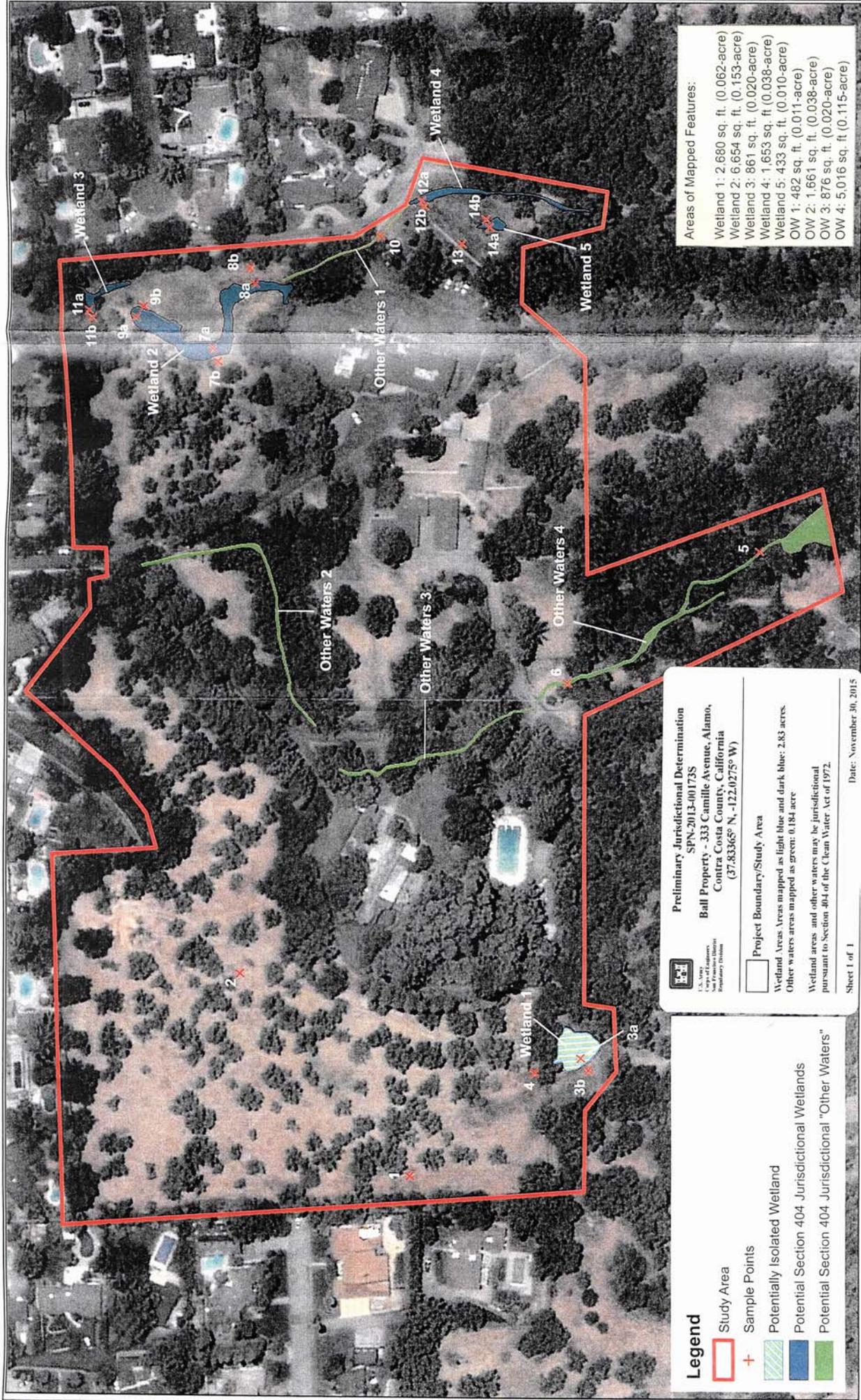
<p>Estimated Total Amount of Waters in Review Area</p> <p>Non-Wetland Waters: lineal feet feet wide and/or 0.184 acre(s) Flow Regime: Seasonal</p> <p>Wetlands: lineal feet feet wide and/or 0.283 acre(s) Cowardin Class: Select</p>	<p>Name of Section 10 Waters Occurring in Review Area Tidal: Non-Tidal:</p> <p><input type="checkbox"/> Office (Desk) Determination <input checked="" type="checkbox"/> Field Determination: Date(s) of Site Visit(s): 07-15-2013</p>
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SUPPORTING DATA: Data reviewed for Preliminary JD (check all that apply – checked items should be included in case file and, where checked and requested, appropriately reference sources below)

- Maps. Plans, plots or plat submitted by or on behalf of applicant/requestor (specify): Revised delineation dated June 27, 2014
- Data sheets submitted by or on behalf of applicant/requestor (specify): Revised delineation dated June 27, 2014
- Corps concurs with data sheets/delineation report.
- Corps does not concur with data sheets/delineation report.
- Data sheets prepared by the Corps.
- Corps navigable waters' study (specify):
- U.S. Geological Survey Hydrologic Atlas:
 - USGS NHD data.
 - USGS HUC maps.
- U.S. Geological Survey map(s) (cite quad name/scale):
- USDA Natural Resources Conservation Service Soil Survey.
- National wetlands inventory map(s) (specify):
- State/Local wetland inventory map(s) (specify):
- FEMA/FIRM maps.
- 100-year Floodplain Elevation (specify, if known):
- Photographs: Aerial (specify name and date):
- Other (specify name and date):
- Previous JD determination(s) (specify File No. and date of response letter):
- Other information (specify):

IMPORTANT NOTE: If the information recorded on this form has not been verified by the Corps, the form should not be relied upon for later jurisdictional determinations.

Signature and Date of Regulatory Project Manager (REQUIRED)	 1-8-2016 Signature and Date of Person Requesting Preliminary JD (REQUIRED, unless obtaining the signature is impracticable)
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Areas of Mapped Features:

Wetland 1:	2,680 sq. ft. (0.062-acre)
Wetland 2:	6,654 sq. ft. (0.153-acre)
Wetland 3:	861 sq. ft. (0.020-acre)
Wetland 4:	1,653 sq. ft. (0.038-acre)
Wetland 5:	433 sq. ft. (0.010-acre)
OW 1:	482 sq. ft. (0.011-acre)
OW 2:	1,661 sq. ft. (0.038-acre)
OW 3:	876 sq. ft. (0.020-acre)
OW 4:	5,016 sq. ft. (0.115-acre)

Preliminary Jurisdictional Determination
 SPN-2013-001735
 Ball Property - 333 Camille Avenue, Alamo,
 Contra Costa County, California
 (37.83365° N, -122.0275° W)

Project Boundary/Study Area
 Wetland Areas mapped as light blue and dark blue: 2.83 acres.
 Other waters areas mapped as green: 0.184 acre
 Wetland areas and other waters may be jurisdictional pursuant to Section 404 of the Clean Water Act of 1972.

Date: November 30, 2015

Legend

- Study Area
- Sample Points
- Potentially Isolated Wetland
- Potential Section 404 Jurisdictional Wetlands
- Potential Section 404 Jurisdictional "Other Waters"

**DELINEATION AND PRELIMINARY
JURISDICTIONAL DETERMINATION OF WETLANDS AND OTHER WATERS OF
THE U.S. UNDER SECTION 404 OF THE CLEAN WATER ACT**

**FOR THE
BALL PROPERTY
ALAMO, CONTRA COSTA COUNTY, CALIFORNIA**

April 4, 2012

Revised June 27, 2014

Prepared for:

Ann Curtis
Camille Ironwood Properties, LLC
P.O. Box 67
Danville, CA 94526

Prepared by:



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Introduction

Mosaic Associates conducted a wetland delineation study to determine the existence and extent of waters, including wetlands, potentially subject to the U.S. Army Corps of Engineers jurisdiction under §404 of the 1972 Clean Water Act (CWA). The CWA regulates activities that result in the discharge of dredged or fill material into waters of the U.S., including wetlands. Waters of the U.S. include all traditional navigable waters, such as rivers and tidally influenced watercourses; and other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds. The U.S. Army Corps of Engineers (Corps) has the principal authority to regulate discharges of dredge or fill material into waters of the U.S.

This report details our analysis of the presence of potentially jurisdictional wetlands and other waters within the approximately 26-acre Study Area (Figures 1 and 2) west of Camille Avenue, in Alamo, Contra Costa County, California.

Methods

Tom Mahony of Coast Range Biological and Judy Bendix of Mosaic Associates visited the Study Area on February 15, 2012. A repeat visit was made by Tom Mahony on March 30, 2012. On May 22, 2014, an additional site visit was made by Tom Mahony to map waters of the U.S. in an expansion of the original Study Area southwest of the existing office. The Study Area has been revised for this report and the map in Appendix B to include both the original and the expanded Study Area. We examined the Study Area for indicators of hydrophytic vegetation, hydric soils, and wetland hydrology. A total of 21 sample points were taken within the Study Area and recorded on Corps data forms provided in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* (“Arid West Manual”) (USACE 2008). The data forms are presented in Appendix A.

This wetland delineation and preliminary jurisdictional determination followed the guidelines provided in the Arid West Manual and the *Corps of Engineers Wetlands Delineation Manual* (“Corps Manual”) (Environmental Laboratory 1987). Based on topography and the presence or absence of field indicators including vegetation, hydrology and soils, the limits of potential jurisdictional wetlands and other waters of the U.S. was determined. The extent of potential wetlands and waters of the U.S. was mapped in the field with the use of a Trimble GPS unit (sub-meter accuracy). In the office, the field data was differentially corrected in Trimble Pathfinder software, imported into ArcGIS mapping software, and overlain onto a 2010 geo-rectified aerial map.

The Corps and Arid West Manuals recommend a three parameter approach to determining the presence of jurisdictional wetlands based on the presence of 1) hydrophytic vegetation, 2) wetland hydrology, and 3) hydric soils. In normal circumstances and in unproblematic areas, potential jurisdictional wetlands must display at least one positive indicator from each of the three parameters. Criteria to determine the presence of vegetation, hydrology, and soil indicators are discussed in detail below.

Wetlands are defined as "those 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" (§404 Clean Water Act). Indicators of all three wetlands parameters (hydric soils, hydrophytic vegetation, wetlands hydrology) must be present for a site to be classified as a wetland (Environmental Laboratory 1987).

Waters of the U.S. are defined as 1) waters used in interstate or foreign commerce, 2) waters subject to the ebb and flow of tide, 3) all interstate waters including interstate wetlands, interstate lakes, rivers, streams, mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, natural ponds, the use, degradation, or destruction of which could affect interstate or foreign commerce, and 4) areas that are or could be used for recreation by interstate or foreign travelers, fish or shellfish that is sold in interstate or foreign commerce, or industrial purposes in interstate commerce (§328.3(a)). Decisions by the U.S. Supreme Court have narrowed the definition of waters of the U.S. to exclude "isolated" wetlands (*Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers et al.*, 2001) and wetlands adjacent to non-navigable and not relatively permanent tributaries where there is no "significant nexus" in hydrologic or ecologic terms (*Rapanos v. United States* and *Carabell v. United States*, 2006).

Hydrophytic vegetation includes those plant species that possess physiological features or reproductive adaptations that allow them to persist in soils subject to prolonged inundation and anaerobic soil conditions. Plant species are classified by their probability of being associated with wetlands or uplands (see Table 1). Dominant species are selected using the "50/20 rule", in which any species in a given stratum that occupies $\geq 20\%$ cover is considered a dominant species; or, when no species makes up 20% cover, then each species required to make up 50% of the cover is considered dominant. For a sample point to meet this criterion, more than 50 percent of the dominant plant species in each of the strata must be OBL, FACW, or FAC indicator species.

Nomenclature used in this report conforms to *The Jepson Manual* (Hickman, 1993) for plants. Plant community names conform to Holland (1986) and Sawyer, Keeler-Wolf and Evens (2009); wetland community names conforming to Cowardin, et al. (1979) are also given. The wetland indicator status of plant species conforms to Reed (1988) and, for data gathered in the additional Study Area in May 2014, Lichvar (2013) (see Table 1).

TABLE 1. WETLAND PLANT INDICATOR STATUS

Indicator Status	Description	Est. Frequency of Occurrence in Wetlands
OBL	Obligate wetland, almost always found in wetlands	>99%
FACW(+/-)	Facultative wetland, usually found in wetlands	67-99%
FAC	Facultative, equal occurrence in wetlands or non-wetlands	34-66%
FACU	Facultative upland, usually found in non-wetlands	1-33%
UPL / NL	Obligate upland/Not listed, almost always found in non-wetlands	<1%
NI	No Indicator (insufficient information available to determine an indicator status)	Unknown

Hydric soils include non-drained organic soils, mineral soils with a high water table, ponded soils, and flooded soils. Characteristic field indicators of hydric soils include the presence of a histic epipedon, the presence of sulfidic material, the presence of an aquic or peraquic moisture regime, reducing soil conditions, soil color (including gleyed soils or soils with a low matrix chroma, with or without bright mottles), iron or manganese concretions, and soils listed as hydric by the USDA.

For the hydrology parameter to be met, a site must be seasonally inundated or saturated for at least 12.5 percent of the growing season; areas inundated or saturated for 5-12.5 percent of the growing season might or might not meet the parameter. The growing season in the location of the Study Area is 342 days in length (NRCS 2008, see Appendix D); thus, this particular site would need to be inundated or saturated to within 12 inches of the soil surface for around 17-43 consecutive days during the growing season to meet the wetland hydrology criterion (17-43 days = 5% x 342, 12.5% x 342 frost free days).

Limitations

This document is intended as a wetland delineation and preliminary jurisdictional determination based on the Corps' guidelines. Wetlands and other waters within the Study Area covered herein may be considered potentially jurisdictional by the Corps. The definitive judgment of the location and extent of potentially jurisdictional wetlands and waters, is however, confirmed by the appropriate agency(s).

Vegetation communities may vary depending on weather conditions and the time of year. Plants that are dominant at the time of this survey may shift in importance depending on rainfall conditions and the season of the survey, or population shifts over time. Certain plant species, especially annuals, may not be present in a given year. In some cases, plant identifications in the report are tentative due to the absence of morphological characters present only at certain times of year. Plants which have a provisional identification, based on vegetative morphology, gestalt, or species range, are identified with a *cf* in the species table provided below.

The conclusions of this delineation are based on conditions observed at the time of the field survey. The results of the delineation are preliminary, pending verification by the Corps.

Existing Conditions

SETTING

The Study Area is located in Alamo, California (APN 198-170-008, 198-170-007, 201-070-015). It is located west of Danville Boulevard, and east of Las Trampas Regional Park. It can be accessed from Highway 680 by taking the Stone Valley Road exit and proceeding west to Danville Blvd., continuing south on Danville Blvd, the turning west (right) on Camille Avenue. The property is located at 333 Camille Avenue (see Figures 1-3). The Study Area is located in the eastern portion of the property, and contains a

house, a barn and outbuildings, and office building, as well as a small area owned by the East Bay Regional Park District (EBRPD) located southeast of the existing office building. Surrounding land use is single family residential and park land.

The boundaries of the Study Area for this preliminary wetland delineation encompass a preliminary development envelope as well as a portion of the ownership that will remain in open space. Development of the site for single-family residences is planned. A new staging area is proposed for the EBRPD property. Elevations at the Study Area range from 359 to 407 feet. Annual average precipitation is approximately 24 inches per year, and occurs mostly in the winter months.

CHARACTERIZATION OF THE VEGETATION

The Study Area consists of developed and landscaped areas, two old walnut orchards, remnant valley oak woodland and a grove of blue-gum eucalyptus. The Study Area has been modified from its original state by earthwork to create three developed pads, landscaping, and the placement of a bridge and retaining walls along the banks of an unnamed tributary to San Ramon Creek.

LANDSCAPED AREAS

Landscaped areas are those from which the native vegetation has been completely removed by cultivation or other surface disturbances. Landscaped areas are typical of suburban developments, where a suite of mostly non-native plants are installed and maintained mainly for their aesthetic value. If abandoned, such areas are typically recolonized by invasive exotic species. Native vegetation may ultimately become at least partially restored if the soils are left intact and there is no further disturbance.

Large portions of the Study Area contain formerly cultivated lands that had been planted as walnut orchard. These areas dominate the northern and eastern portions of the Study Area. Coast live oaks (*Quercus agrifolia*) are located around the eastern perimeter of the Study Area. Mature landscaping surrounds the single residence, located west of the entry drive, the barn and outbuildings in the center of the property, and the office building in the eastern portion of the site. The landscaped and grassy areas surrounding the residence receive regular maintenance, watering and weeding. Vegetation in the former orchards is mowed or disked routinely. Dominant trees in the landscaped areas are western sycamore (*Platanus racemosa*) and coast redwood (*Sequoia sempervirens*). Landscaped habitat is not specifically described by Sawyer et al. (2009). This type would be classified as upland following Cowardin, et al. (1979).

EUCALYPTUS SEMI-NATURAL WOODLAND

A grove of mature blue-gum eucalyptus trees (*Eucalyptus globulus*) is located in the southwest portion of the Study Area, and additional eucalyptus trees are located east and south of the office building. These stands would be classified as *Eucalyptus (globulus, camaldulensis)* semi-natural Woodland Stands in Sawyer et al. (2009), as Eucalyptus Groves (11300) by Holland (1986), and as an upland following Cowardin et al. (1979).

Eucalyptus groves have been extensively planted throughout California since their introduction in 1865. Overstory composition is typically limited to one, or sometimes a few, species of the genus; few native overstory species are present within eucalyptus planted areas. Eucalyptus trees emit oils that deter the growth of competing plants and there is typically little understory growth beneath these stands. Eucalyptus occurs in California from San Diego and Imperial counties in the south, usually at elevations below 500 m, to Shasta in the north. Most eucalyptus, however, is found around populated areas of southern and central California.

FRESHWATER WETLAND AND SEEP

There are five areas of freshwater wetland within the Study Area. Wetland 1 is located west of the residence (Wetland 1), and appears to be “isolated”. Wetland 2, located in the eastern portion of the Study Area, is associated with culverted discharge from a tributary swale (Other Waters 1) and may also be associated with a seep, possibly resulting from the earthwork to create the pad for the office building. The dominant plant in Wetland 1 is spreading rush (*Juncus patens*), while umbrella sedge (*Cyperus eragrostis*), spiny cocklebur (*Xanthium spinosum*), and Mediterranean barley (*Hordeum marinum*) are dominant in Wetland 2. Wetland 3 is located just east of Wetland 2, and is situated in a low-lying portion of the Study Area next to a culvert that conveys runoff from this area beneath a road and eventually to San Ramon Creek. Dominant plants in Wetland 3 are Italian ryegrass (*Festuca perennis*) and Mediterranean barley (*Hordeum marinum*). Wetlands 4 and 5 are located south of the office building on land owned by EBRPD. Wetland 4 is situated in a tributary swale, draining to Other Waters 1. The dominant plant in Wetland 4 is Italian ryegrass. Wetland 5 is situated in an opening surrounded by eucalyptus trees, just west of Wetland 4. Spreading rush is the dominant plant species in Wetland 5.

Freshwater Wetlands 1 and 5 would most closely conform to the *Juncus patens* Provisional Herbaceous Alliance in Sawyer et al. (2009), while Wetlands 2-4 do not conform specifically to any vegetation alliance in Sawyer et al. (2009). All wetlands would be classified as Freshwater Seep (45400) as described by Holland (1986); and as riverine emergent wetland by Cowardin et al. (1979).

Seeps can be located in the margins of channels, lakes, ponds, overflow areas, reservoir, rivers, streams, depressions, and swales. The vegetation in freshwater seeps typically consists of mostly perennial herbs, especially sedges and grasses, usually forming complete cover, often low-growing but sometimes taller, growing throughout the year in areas with mild winters. Sedges are an important herb in this vegetation type. This vegetation type requires permanently moist or wet soil conditions and is often associated with grasslands or meadows. Distribution in California is scattered throughout most regions, most common in grasslands or meadows.

VALLEY OAK WOODLAND/SAVANNA

Much of the tree canopy on the slopes surrounding the developed portions of the Study Area would conform most closely to the Valley Oak Woodland (*Quercus lobata* Woodland Alliance) described in Sawyer et al. (2009), and a combination of California

Bay Forest (81200) and Valley Oak Woodland (71130) as described in Holland (1986); it would be classified as an upland following Cowardin et al. (1979).

Valley oak woodland is a native plant community where the dominant tree is the valley oak (*Quercus lobata*). This series typically has an open structure, seldom exceeding 30-40% absolute cover, but can form continuous stands. A native or non-native herbaceous layer, including grasses, and chaparral vegetation types where the canopy is open is often also present. This series is formed on deep, well-drained alluvial soils. It is also found on nonalluvial settings in the South Coast and Transverse ranges. This series is distributed from the Sacramento and San Joaquin valleys adjacent to the Sierra Nevada foothills, to valleys of the Coast Ranges from Lake County to western Los Angeles County; usually below 2,000 feet (610m).

This cover type occurs on hillslopes within Study Area. Other tree species present include California bay laurel (*Umbellularia californica*), buckeye (*Aesculus californica*), coast live oak (*Quercus agrifolia*) and flowering plum (*Prunus* sp.).

CHARACTERIZATION OF THE SOILS

Underlying geology in the area is made up of three units: 1) undivided, quaternary surficial deposits (Qu); 2) Neroly Sandstone (Tu), and 3) the Briones Formation (Graymer et al. 1994, see Figure 5). Two soil units, the Garretson series, and the Millsholm series (see Figure 4), are mapped as occurring within the Study Area (USDA 2012). Descriptions of these series are presented below, and the full USDA soils description is provided in Appendix C.

GARRETSON SERIES

The Garretson series consists of gravelly, very fine sandy loam and formed dominantly from sedimentary formations (NCSS 2003). Garretson soils are in valleys on nearly level to strongly sloping fans and floodplains. The mean annual precipitation is about 12 to 25 inches and the mean annual air temperature is about 61 degrees F. The average frost-free season is 250 to 350 days. The climate is subhumid mesothermal, with hot dry summers and cool moist winters. It is classified in the fine-loamy, mixed, nonacid, thermic family of Typic Xerorthent. This extensive soil type is well drained; slow to medium runoff; with moderate permeability. These soils are often used to cultivate citrus or other deciduous fruits, alfalfa, and for home sites.

MILLSHOLM SERIES

The Millsholm series consists of shallow, well drained soils that weathered from sandstone, mudstone, and shale (NCSS 2003a). Millsholm soils are on hills and mountains and have slopes of 5 to 75%. The Millsholm Loams mapped on site are comprised of 85% Millsholm, with minor components of 5% Los Osos, and 3% Los Gatos complex series. The mean annual precipitation is about 14 to 24 inches and the mean annual air temperature is about 59 degrees F. The average frost-free season is 250 to 300 days. The climate is subhumid with hot dry summers and cool moist winters.

It is classified as a loamy, mixed, superactive, thermic Lithic Haploxerept. This extensive soil type is well drained; low to very high runoff; with moderate permeability. These soils are often used for rangeland purposes.

CHARACTERIZATION OF THE HYDROLOGY

The dominant hydrologic features on site consist of two seasonal channels, both tributaries to San Ramon Creek; and five seep wetlands. The principal hydrologic sources for the Study Area are direct precipitation, surface runoff from surrounding uplands, and channelized flow through the seasonal channels.

CONNECTION TO TRADITIONAL NAVIGABLE WATERS

The tributaries to San Ramon Creek, first order streams, discharge to San Ramon Creek, then to Walnut Creek, and eventually to Suisun Bay. Wetlands 2 and 4 are connected to Other Waters 1, one of the first order streams. Wetland 5 is adjacent to Wetland 4. Wetland 3, while separated from Wetland 2 by an area of upland vegetation, lies down gradient from Wetland 2, and discharges directly into a culvert that eventually drains to San Ramon Creek. Wetland 1 appears to be an isolated wetland.

Preliminary Findings

WETLANDS AND OTHER WATERS OF THE U.S.

Potential jurisdictional “other waters” are typically delineated in the drainage channels where: (1) wetland hydrology is present but one or more of the other wetland parameters is absent, and (2) an ordinary high water mark (OHWM) was observed. This characterizes the other waters present in the Study Area.

Within the Study Area, potentially jurisdictional features consist of “other waters of the U.S.” associated with two minor tributary swales; and five wetlands. A map of these features is provided in Appendix B. Table 2 describes their extent. A total of 8,035 ft² (0.184 acre, 1,563 linear feet) of other waters of the U.S. potentially falling under the jurisdiction of the Corps were observed within the Study Area.

One tributary to San Ramon Creek (Other Waters 2, 3, 4, see Appendix B) in the Study Area is a non-navigable “water of the US” that is a Relatively Permanent Water (RPW), as defined in the Rapanos decision. RPWs occur where a tributary typically flows year-round or has continuous flow at least seasonally (e.g., typically three months) (EPA and USACE 2008).

An additional seasonal channel, also tributary to San Ramon Creek (Other Waters 1), contains a marginally defined bed and bank, with weak evidence of scour in isolated areas. It appears to convey only a low volume of surface flow on an infrequent basis. This non-RPW extends for approximately 217 linear feet within the Study Area. The other waters on site are described in data sheets 5, 6, and 10 (see Table 4. For data forms, see Appendix A).

Five wetland features are present within the Study Area. An area of 2,680 ft² (0.062 ac) of potentially isolated wetland is present within the Study Area in Wetland 1 (Table 2). This wetland feature is presumed to be isolated due to the absence of an adjacent tributary. It appears to be associated with a seep, but there is no channel or associated wetland downslope of this feature that is directly connected to a water of the U.S.

An area of 9,601 ft² (0.22 ac) of potential seasonal wetland is present within the Study Area in Wetlands 2-5. Wetlands 2 and 3 are adjacent to a minor tributary swale (non-RPW) that originates upslope on East Bay Regional Park District Property. Wetland 4 is located in and Wetland 5 is located adjacent to the minor tributary swale (non-RPW) on EBRPD property. Runoff from these features discharge into a downslope culvert just west of the property corner, which presumably discharges to San Ramon Creek, east of the Study Area. Wetland 1 is described in data sheets 3a, and 3b; Wetland 2 is described in data sheets 7a, 7b, 8a, 8b, 9a, and 9b; Wetland 3 is described in data sheets 11a and 11b; Wetland 4 is described in data sheets 12a and 12b, while Wetland 5 is described in data sheets 14a and 14b (For data forms, see Appendix A, for wetlands and waters map, see Appendix B).

TABLE 2. SUMMARY OF POTENTIALLY JURISDICTIONAL FEATURES

Habitat Type	Feature	Total Area
Other Waters of the US	OW1: 482 ft ² (0.011ac, 217 linear ft) Non-RPW OW2: 1,661 ft ² (0.038ac, 449 linear ft) RPW OW3: 876 ft ² (0.020ac, 311 linear ft) RPW OW4: 5,016 ft ² (0.115ac, 586 linear ft) RPW	8,035 ft ² (0.184ac, 1,563 linear ft)
Wetlands	W1: 2,680 ft ² (0.062ac) Potentially Isolated W2: 6,654 ft ² (0.153ac) Potentially Jurisdictional W3: 861 ft ² (0.020ac) Potentially Jurisdictional W4: 1,653 ft ² (0.038ac) Potentially Jurisdictional W5: 433 ft ² (0.010ac) Potentially Jurisdictional	12,281 ft ² (0.282ac)

HYDROPHYTIC VEGETATION

All plant species within the sample point were identified and their wetland indicator status recorded. Plant species and indicator status observed within the Study Area are listed in Table 3, below. Vegetation with hydrophytic indicators was observed in Wetlands 1-5 within the Study Area.

TABLE 3. WETLAND INDICATOR STATUS OF PLANT SPECIES OCCURRING IN THE STUDY AREA

Botanical Name	Common Name	Indicator Status*
<i>Avena sp. (cf)</i>	wild oat grass	UPL
<i>Bromus diandrus</i>	ripgut brome	UPL
<i>Bromus hordeaceus</i>	soft chess	UPL
<i>Bromus madritensis</i>	compact brome	UPL
<i>Cardamine oligosperma</i>	little western bitter cress	FACW
<i>Cirsium vulgare</i>	bull thistle	FACU

Botanical Name	Common Name	Indicator Status*
<i>Carduus pycnocephalus</i>	Italian thistle	UPL
<i>Chlorogalum pomeridianum</i>	California soaproot	UPL
<i>Cynosurus echinatus</i>	dogtail grass	UPL
<i>Cyperus eragrostis (cf)</i>	umbrella sedge	FACW
<i>Elymus glaucus</i>	blue wild rye	FACU
<i>Eucalyptus globulus</i>	blue gum	UPL
<i>Festuca perennis</i>	Italian ryegrass	FAC
<i>Geranium dissectum</i>	cutleaf geranium	UPL
<i>Hordeum marinum</i>	Mediterranean barley	FAC
<i>Juncus patens</i>	spreading rush	FACW
<i>Lactuca serriola</i>	Prickle lettuce	FACU
<i>Lupinus sp. (cf)</i>	lupine species	UPL
<i>Medicago polymorpha</i>	burr clover	UPL
<i>Poa annua</i>	annual bluegrass	FACW-
<i>Rubus discolor</i>	Himalayan blackberry	FACW
<i>Rumex crispus</i>	Curly dock	FAC
<i>Silybum marianum</i>	Milk thistle	UPL
<i>Sonchus asper</i>	spiny sowthistle	FAC
<i>Torilis arvensis</i>	hedge parsley	UPL
<i>Trifolium sp. (cf)</i>	clover species	UPL
<i>Umbellularia californica</i>	California bay laurel	FAC
<i>Vicia cf. benghalensis</i>	purple vetch	UPL
<i>Vicia sativa</i>	garden vetch	FACU
<i>Vinca major</i>	periwinkle	UPL
<i>Vulpia myuros</i>	foxtail fescue	FACU
<i>Xanthium spinosum</i>	spiny cocklebur	FAC+

* per Lichvar 2013

HYDRIC SOILS

One hydric soil indicator was observed on site, Redox dark surface (F6). Please see Appendix A for data forms, and Appendix B for the wetlands and waters delineation map.

WETLAND HYDROLOGY

The primary field indicators of wetland hydrology observed were surface water (A1), and Saturation (A3), Oxidized rhizospheres along living roots (C3), and Other (scour—evidence of channel bed and bank). Secondary indicators observed included Sediment deposits (**Riverine**) (B2), Drift deposits (**Riverine**) (B3), and Drainage patterns (B10). Wetland hydrology indicators were evident in the incised ephemeral channels and in wetland areas. Please see Appendix A for data forms, and Appendix B for the wetlands and waters delineation map.

TABLE 4. SUMMARY OF DATA POINTS DESCRIBING WETLANDS AND OTHER WATERS OCCURRING IN THE STUDY AREA

Data Form	Description	Wetland
1	Located in man-made swale. No hydrophytic vegetation or wetland hydrology indicators observed. Swale was created in Fall 2011, and seeded with non native plant species.	none
2	Located in man-made swale. No hydrophytic vegetation or wetland hydrology indicators observed. Swale was created in Fall 2011, and seeded with non native plant species.	none
3A, 3B	3a Located in shallow draw that appears to receive seep water. No apparent connection to other waters. 3b located outside of seep area.	W1
4	Located on disturbed, compacted road bed. Some wetland indicators present, but does not meet all three criteria.	none
5	Channel conveying ephemeral drainage. Has wetland hydrology but lacks wetland vegetation.	OW4
6	Channel conveying ephemeral drainage. Has wetland hydrology but lacks wetland vegetation.	OW4
7A, 7B	7a describes shallow swale located in east portion of site that meets all three wetland parameters, paired with upslope, upland point (7b)	W2
8A, 8B	8a located in a seep area associated with the swale described in 7a. 8b located upslope outside of wetland.	W2
9A, 9B	9a is a part of the seep/swale area described also in points 7a and 8a. Sheet flow drains to an offsite culvert. 9b is in an upland area outside of the seep/swale.	W2
10	Small (1-2ft in width) channel, marginal bed and bank. Drains to culvert above Wetland 2.	OW1
11A, 11B	11a is located in shallow basin that drains into offsite culvert, associated with OW1. 11b is located in the field above the basin in 11a.	W3
12A, 12B	12a is located in drainage channel upstream from Other Waters 1. 12b is located above the channel	W4
13	13 is located in a ditch that lacks bed, bank and OHWM.	none
14A, 14B	14a is located in a small depression adjacent to Wetland 4. 14b is located in the field above 14a.	W5

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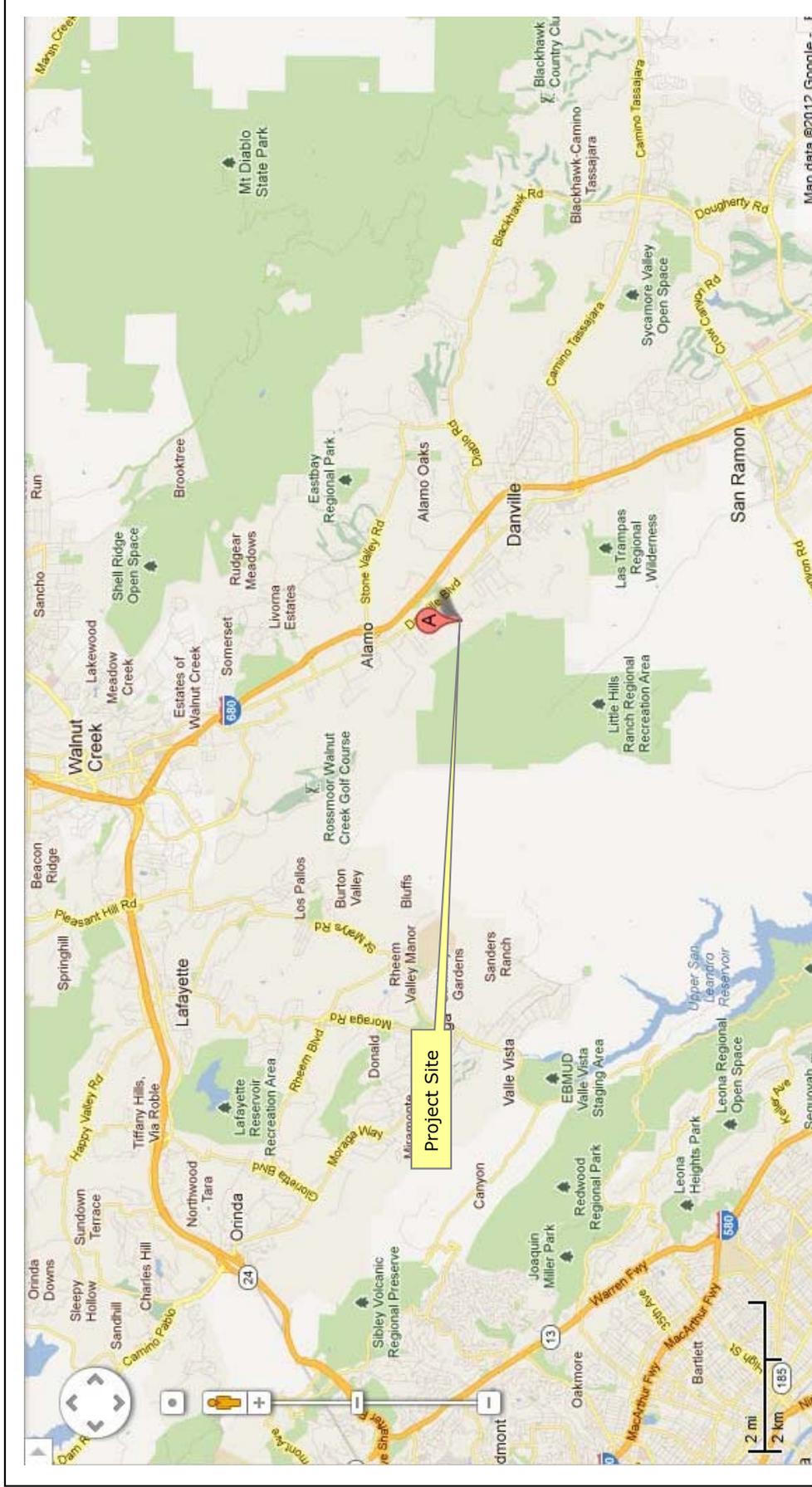
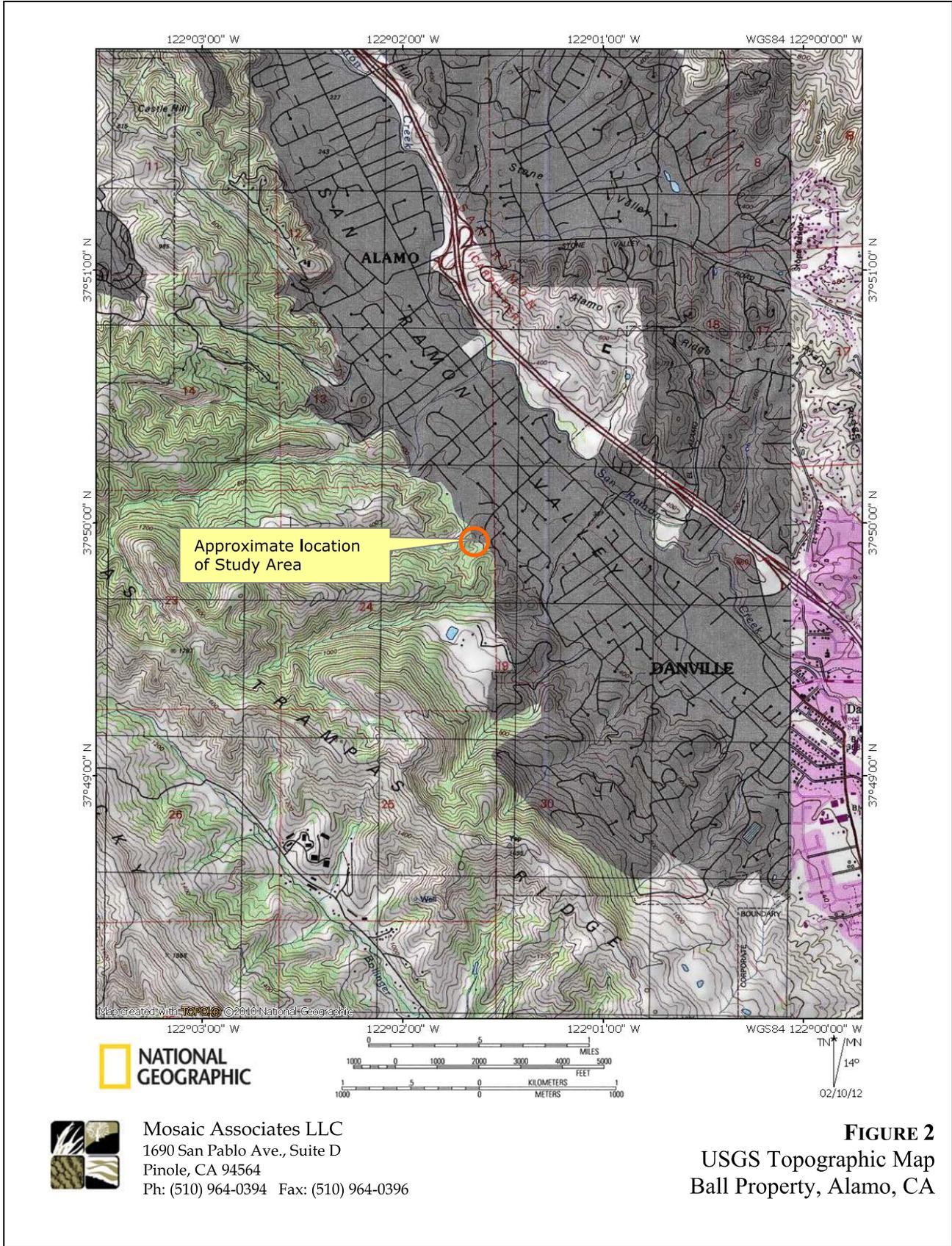


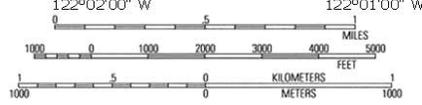
FIGURE 1
Regional Location Map
Ball Property, Alamo, CA

Mosaic Associates LLC
1690 San Pablo Ave., Suite D
Pinole, CA 94564
Ph: (510) 964-0394 Fax: (510) 964-0396





Approximate location of Study Area



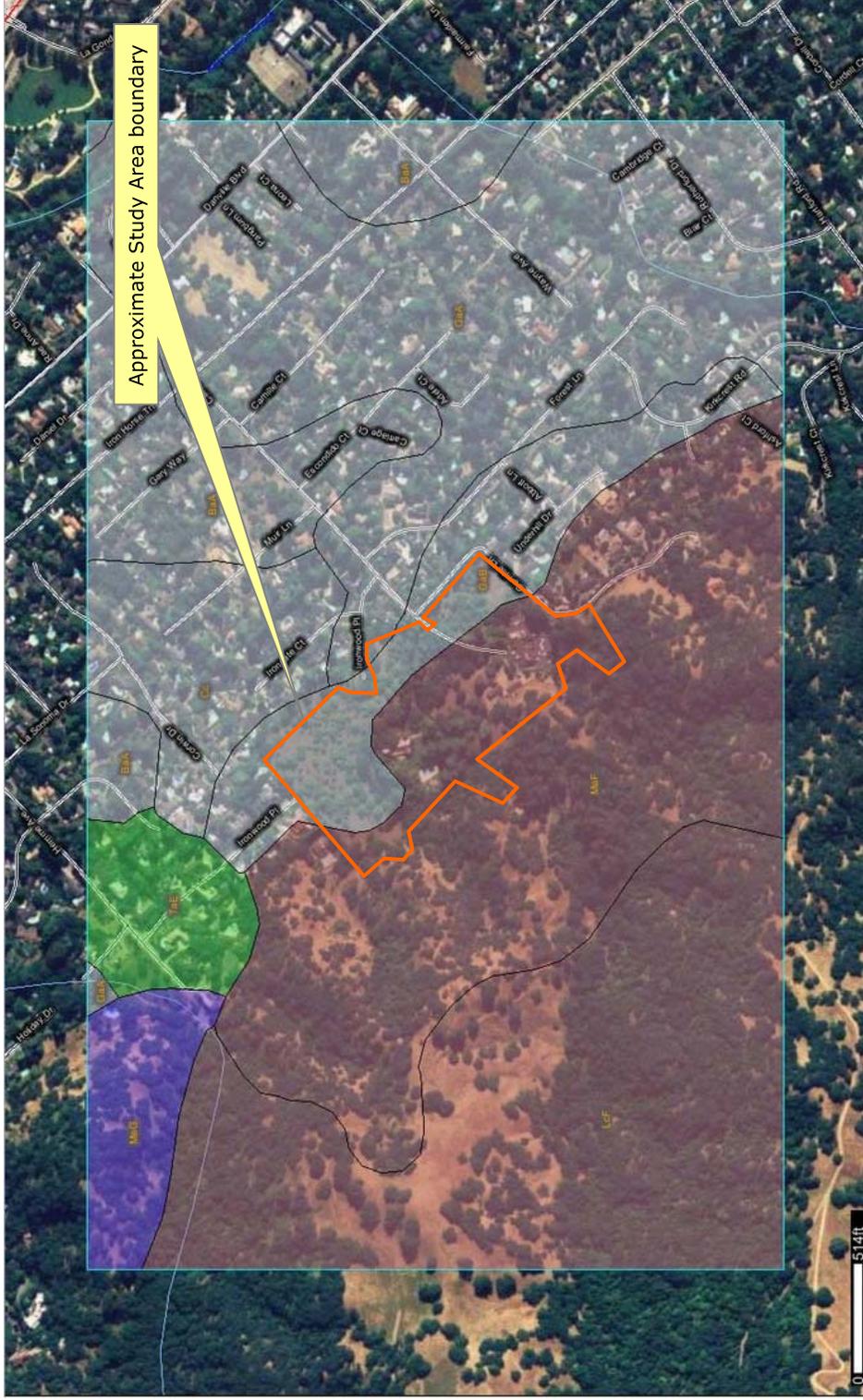
Mosaic Associates LLC
 1690 San Pablo Ave., Suite D
 Pinole, CA 94564
 Ph: (510) 964-0394 Fax: (510) 964-0396

FIGURE 2
 USGS Topographic Map
 Ball Property, Alamo, CA



FIGURE 3
Aerial photo of Project Area


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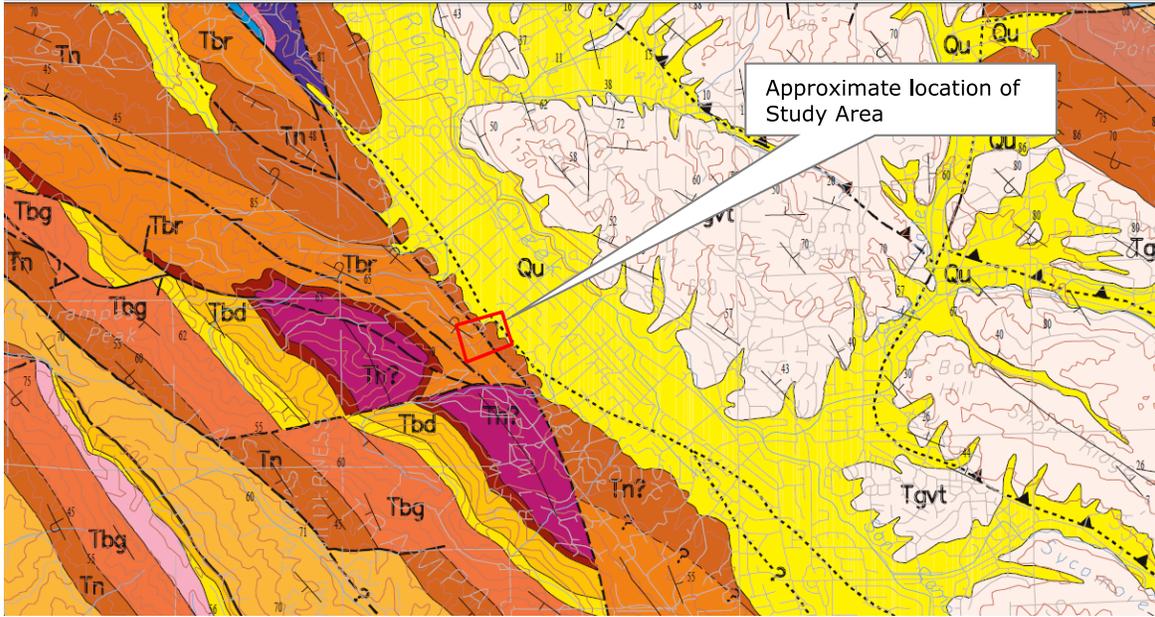


Map courtesy USDA



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FIGURE 4
 Soils Map of Ball Property and Vicinity, Alamo, Contra Costa County, CA



Map courtesy USGS

FIGURE 5
 Portion of *Preliminary geologic map emphasizing bedrock formations in Contra Costa County, California: A digital database: U.S. Geological Survey Open-File Report 94-622*. Graymer, R.W., Jones, D.L., and Brabb, E.E., 1994.



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Appendix A. WETLANDS DELINEATION FIELD DATA FORMS

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Ball Alamo City/County: Contra Costa County Sampling Date: 2/15/2012

Applicant/Owner: Camille Ironwood Properties, LLC State: CA Sampling Point: 1

Investigator(s): Coast Range Biological and Mosaic Associates Section, Township, Range: T15, R2W, Sect 24

Landform (hillslope, terrace, etc.): man-made swale Local relief (concave, convex, none): concave Slope (%): 5

Subregion (LRR): Mediterranean California Lat: 37.835 N Long: 122.029 W Datum: NAD 83

Soil Map Unit Name: Mittisholme loam, ~~Garretson~~ 5% slopes NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No X (If no, explain in Remarks.) Dry year

Are Vegetation X, Soil X, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology X naturally problematic? (If needed, explain any answers in Remarks.) seasonal hydro

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <u>X</u> Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u>
Remarks: <u>located in man-made swale. No hydrophytic vegetation or wetland hydrology indicators observed.</u>	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>3</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
4. _____	_____	_____	_____	
<u>0</u> = Total Cover				
Sapling/Shrub Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet:
1. _____	_____	_____	_____	Total % Cover of: _____ Multiply by: _____
2. _____	_____	_____	_____	OBL species <u>0</u> x 1 = <u>0</u>
3. _____	_____	_____	_____	FACW species <u>0</u> x 2 = <u>0</u>
4. _____	_____	_____	_____	FAC species <u>0</u> x 3 = <u>0</u>
5. _____	_____	_____	_____	FACU species <u>020</u> x 4 = <u>80</u>
<u>0</u> = Total Cover				UPL species <u>50</u> x 5 = <u>250</u>
				Column Totals: <u>70</u> (A) <u>330</u> (B) <u>330</u>
				Prevalence Index = B/A = <u>4.7</u>
Herb Stratum (Plot size: <u>5' radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <u>Vicia beatholensis sativa</u>	<u>20</u>	<u>Y</u>	<u>FACU</u>	___ Dominance Test is >50%
2. <u>Avena sp.</u>	<u>10</u>	<u>N</u>	<u>UPL</u>	___ Prevalence Index is ≤3.0 ¹
3. <u>Tribolium sp.</u>	<u>10</u>	<u>N</u>	<u>UPL</u>	___ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
4. <u>Lupinus sp.</u>	<u>5</u>	<u>N</u>	<u>UPL</u>	___ Problematic Hydrophytic Vegetation ¹ (Explain)
5. <u>Geranium dissectum</u>	<u>10</u>	<u>N</u>	<u>UPL</u>	
6. <u>Unknown grass</u>	<u>15</u>	<u>Y</u>	<u>UNK</u>	
7. <u>Bromus diandrus</u>	<u>15</u>	<u>N</u>	<u>UPL</u>	
8. _____	_____	_____	_____	
<u>85</u> = Total Cover				
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Footnote:
1. _____	_____	_____	_____	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. _____	_____	_____	_____	
<u>0</u> = Total Cover				
% Bare Ground in Herb Stratum <u>20</u> % Cover of Biotic Crust <u>0</u>		Hydrophytic Vegetation Present? Yes _____ No <u>X</u>		

Remarks: Early season vegetative growth. Grass not identifiable. No hydrophytic species observed. Seeded in Fall 2011 when swale created.

SOIL

Sampling Point: 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-20	10YR3/2	95	10YR5/6	5	C	or	clay	Disturbed by excavation of swale

Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Reduced Vertic (F18)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)		
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)		
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Vernal Pools (F9)		
<input type="checkbox"/> Sandy Gleyed Matrix (S4)			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: to clay

Depth (inches): 0

Hydric Soil Present? Yes No

Remarks: Heavy clay due to swale excavation. Some hydric soil indicators present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (2 or more required)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Water Marks (B1) (Riverine)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Drift Deposits (B3) (Riverine)	
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:

Surface Water Present? Yes No Depth (inches): NONE

Water Table Present? Yes No Depth (inches): NONE

Saturation Present? (includes capillary fringe) Yes No Depth (inches): NONE

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

None

Remarks: In man-made swale. No hydrology indicators observed.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Ball Alamo City/County: Contra Costa County Sampling Date: 2/15/2012

Applicant/Owner: Camille Ironwood Properties, LLC State: CA Sampling Point: 2

Investigator(s): Coast Range Biological and Mosaic Associates Section, Township, Range: T15, R2W, Sect 24

Landform (hillslope, terrace, etc.): Man-made swale Local relief (concave, convex, none): concave Slope (%): 5

Subregion (LRR): Mediterranean California Lat: 37.835N Long: 122.027W Datum: NAD 83

Soil Map Unit Name: Garretson loam, 2-5% slopes NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No X (If no, explain in Remarks.) Dry year

Are Vegetation X, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology X naturally problematic? (If needed, explain any answers in Remarks.) Seasonal wet

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <u>X</u> Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u>
Remarks: <u>Located in a man made swale. No wetland indicators observed.</u>	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>3</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
4. _____	_____	_____	_____	
<u>0</u> = Total Cover				
Sapling/Shrub Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet:
1. _____	_____	_____	_____	Total % Cover of: _____ Multiply by: _____
2. _____	_____	_____	_____	OBL species <u>0</u> x 1 = <u>0</u>
3. _____	_____	_____	_____	FACW species <u>0</u> x 2 = <u>0</u>
4. _____	_____	_____	_____	FAC species <u>0</u> x 3 = <u>0</u>
5. _____	_____	_____	_____	FACU species <u>20</u> x 4 = <u>80</u>
<u>0</u> = Total Cover				UPL species <u>340</u> x 5 = <u>1700</u>
				Column Totals: <u>60</u> (A) <u>1980</u> (B)
				Prevalence Index = B/A = <u>4.78</u>
Herb Stratum (Plot size: <u>5'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <u>Geranium dissectum</u>	<u>15</u>	<u>Y</u>	<u>UPL</u>	___ Dominance Test is >50%
2. <u>Vicia benthataensis sativa</u>	<u>20</u>	<u>Y</u>	<u>FACU</u>	___ Prevalence Index is ≤3.0 ¹
3. <u>Avena sp.</u>	<u>10</u>	<u>N</u>	<u>UPL</u>	___ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
4. <u>Unknown grass</u>	<u>10</u>	<u>N</u>	<u>UNK</u>	___ Problematic Hydrophytic Vegetation ¹ (Explain)
5. <u>Trifolium sp.</u>	<u>15</u>	<u>Y</u>	<u>UPL</u>	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
<u>70</u> = Total Cover				
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Present?
1. _____	_____	_____	_____	Yes _____ No <u>X</u>
2. _____	_____	_____	_____	
<u>0</u> = Total Cover				
% Bare Ground in Herb Stratum <u>30</u> % Cover of Biotic Crust <u>0</u>				
Remarks: <u>Located in man-made swale seeded w/ non-native species.</u>				

SOIL

Sampling Point: 2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-20	10YR3/2	98	10YR5/6	2	C	m	clay	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Vernal Pools (F9)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):
 Type: clay
 Depth (inches): 0

Hydric Soil Present? Yes No

Remarks: Scattered redox present, but insufficient to meet F6.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Other (Explain in Remarks)
	<input type="checkbox"/> Water Marks (B1) (Riverine)
	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)
	<input type="checkbox"/> Drift Deposits (B3) (Riverine)
	<input type="checkbox"/> Drainage Patterns (B10)
	<input type="checkbox"/> Dry-Season Water Table (C2)
	<input type="checkbox"/> Crayfish Burrows (C8)
	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
	<input type="checkbox"/> Shallow Aquitard (D3)
	<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes No Depth (inches): NONE

Water Table Present? Yes No Depth (inches): ↓

Saturation Present? (includes capillary fringe) Yes No Depth (inches): ↓

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
NONE

Remarks: Soils moist but not saturated. No wetland hydrology indicators observed.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Ball Alamo City/County: Contra Costa County Sampling Date: 2/15/2012
 Applicant/Owner: Camille Ironwood Properties, LLC State: CA Sampling Point: 3a
 Investigator(s): Coast Range Biological and Mosaic Associates Section, Township, Range: T15, R2W, Sect 24
 Landform (hillslope, terrace, etc.): Slope Local relief (concave, convex, none): concave Slope (%): 10
 Subregion (LRR): Mediterranean California Lat: 37.8343 N Long: 122.0295 W Datum: NAD 83
 Soil Map Unit Name: Millsholm loam, 30-50% slopes NWI classification: _____
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No X (If no, explain in Remarks.) Dry year
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No X
 Are Vegetation _____, Soil _____, or Hydrology X naturally problematic? (If needed, explain any answers in Remarks.) seasonal hydro

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____
---	---

Remarks: Located in shallow draw that appears to receive seep water. Drains downslope via sheet flow + man-made ditch, onto compacted road, then sheets into field. No culvert or other outle observa

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>1</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
4. _____	_____	_____	_____	
<u>0</u> = Total Cover				
Sapling/Shrub Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet:
1. _____	_____	_____	_____	Total % Cover of: Multiply by:
2. _____	_____	_____	_____	OBL species <u>0</u> x 1 = <u>0</u>
3. _____	_____	_____	_____	FACW species <u>0</u> x 2 = <u>0</u>
4. _____	_____	_____	_____	FAC species <u>60</u> x 3 = <u>180</u>
5. _____	_____	_____	_____	FACU species <u>10</u> x 4 = <u>40</u>
<u>0</u> = Total Cover				UPL species <u>10</u> x 5 = <u>50</u>
				Column Totals: <u>80</u> (A) <u>270</u> (B)
				Prevalence Index = B/A = <u>3.4</u>
Herb Stratum (Plot size: <u>5 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <u>Juncus patens</u>	<u>60</u>	<u>Y</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Vicia sativa</u>	<u>5</u>	<u>N</u>	<u>FACU</u>	Prevalence Index is ≤3.0 ¹
3. <u>Bromus diandrus</u>	<u>5</u>	<u>N</u>	<u>UPL</u>	Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
4. <u>Lolium multiflorum</u>	<u>5</u>	<u>N</u>	<u>FAC</u>	Problematic Hydrophytic Vegetation ¹ (Explain)
5. <u>Cynosuroides echinatus</u>	<u>5</u>	<u>N</u>	<u>UPL</u>	
6. <u>Bromus hordeaceus</u>	<u>5</u>	<u>N</u>	<u>FACU</u>	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
<u>85</u> = Total Cover				
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Present?
1. _____	_____	_____	_____	Yes <u>X</u> No _____
2. _____	_____	_____	_____	
<u>0</u> = Total Cover				
% Bare Ground in Herb Stratum <u>15</u> % Cover of Biotic Crust <u>0</u>				

Remarks: Dense cover of Juncus patens.

SOIL

Sampling Point: 3a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-20	10YR 3/1	90	10YR 5/6	10	C	M	loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Reduced Vertic (F18)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)		
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)		
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Vernal Pools (F9)		
<input type="checkbox"/> Sandy Gleyed Matrix (S4)			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):
 Type: None
 Depth (inches): 0

Hydric Soil Present? Yes No

Remarks: Redox features present

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input checked="" type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Other (Explain in Remarks)
	<input type="checkbox"/> Water Marks (B1) (Riverine)
	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)
	<input type="checkbox"/> Drift Deposits (B3) (Riverine)
	<input type="checkbox"/> Drainage Patterns (B10)
	<input type="checkbox"/> Dry-Season Water Table (C2)
	<input type="checkbox"/> Crayfish Burrows (C8)
	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
	<input type="checkbox"/> Shallow Aquitard (D3)
	<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes No Depth (inches): NONE

Water Table Present? Yes No Depth (inches): ↓

Saturation Present? (includes capillary fringe) Yes No Depth (inches): ↓

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
None

Remarks: Located in shallow draw, appears to receive some seep water from upslope. Drains downslope via sheet flow + man-made ditch, onto roadway, then sheets into field. No obvious hydro connection w/ other waters. No culvert observed.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Ball Alamo City/County: Contra Costa County Sampling Date: 2/15/2012
 Applicant/Owner: Camille Ironwood Properties, LLC State: CA Sampling Point: 3b
 Investigator(s): Coast Range Biological and Mosaic Associates Section, Township, Range: T1S, R2W, Sect 24
 Landform (hillslope, terrace, etc.): slope Local relief (concave, convex, none): none Slope (%): _____
 Subregion (LRR): Mediterranean California Lat: 37.8343 N Long: 122.0295 W Datum: NAD 83
 Soil Map Unit Name: Millsholm loam, 30-50% slopes NWI classification: _____
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No X (If no, explain in Remarks.) Dry year
 Are Vegetation _____, Soil _____, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology X naturally problematic? (If needed, explain any answers in Remarks.) Seasonal hydro

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <u>X</u> Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u>
Remarks: <u>located on slope outside of seep area. No wetland indicators observed.</u>	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>4</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>25</u> (A/B)
4. _____	_____	_____	_____	
<u>0</u> = Total Cover				
Sapling/Shrub Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet:
1. _____	_____	_____	_____	Total % Cover of: _____ Multiply by: _____
2. _____	_____	_____	_____	OBL species <u>0</u> x 1 = <u>0</u>
3. _____	_____	_____	_____	FACW species <u>0</u> x 2 = <u>0</u>
4. _____	_____	_____	_____	FAC species <u>15</u> x 3 = <u>45</u>
5. _____	_____	_____	_____	FACU species <u>20</u> x 4 = <u>80</u>
<u>0</u> = Total Cover				UPL species <u>55</u> x 5 = <u>275</u>
				Column Totals: <u>90</u> (A) <u>340</u> (B)
				Prevalence Index = B/A = <u>4.4</u>
Herb Stratum (Plot size: <u>5' rad</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <u>Cynosurus echinatus</u>	<u>20</u>	<u>Y</u>	<u>VPL</u>	___ Dominance Test is >50%
2. <u>Sarcobatus dissectus</u>	<u>20</u>	<u>Y</u>	<u>VPL</u>	___ Prevalence Index is ≤3.0 ¹
3. <u>Hordeum marianum</u>	<u>15</u>	<u>Y</u>	<u>FAC</u>	___ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
4. <u>Bromus hordeaceus</u>	<u>15</u>	<u>Y</u>	<u>FACU</u>	___ Problematic Hydrophytic Vegetation ¹ (Explain)
5. <u>Bromus diandrus</u>	<u>10</u>	<u>N</u>	<u>VPL</u>	
6. <u>Chlorogalum pumilum</u>	<u>5</u>	<u>N</u>	<u>VPL</u>	
7. <u>Vicia sativa</u>	<u>5</u>	<u>N</u>	<u>FACU</u>	
8. _____	_____	_____	_____	
<u>90</u> = Total Cover				
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Present?
1. _____	_____	_____	_____	Yes _____ No <u>X</u>
2. _____	_____	_____	_____	
<u>0</u> = Total Cover				
% Bare Ground in Herb Stratum <u>10</u> % Cover of Biotic Crust <u>0</u>				
Remarks: <u>Located on slope, not dominated by hydrophytic veg. Some grasses unidentifiable due to season.</u>				

SOIL

Sampling Point: 3b

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-20	10YR2/2	98	10YR5/6	2	C	m	loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)	Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	
<input type="checkbox"/> Thick Dark Surface (A12)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	
<input type="checkbox"/> Sandy Redox (S5)	
<input type="checkbox"/> Stripped Matrix (S6)	
<input type="checkbox"/> Loamy Mucky Mineral (F1)	
<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> Vernal Pools (F9)	

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):
 Type: None
 Depth (inches): —

Hydric Soil Present? Yes No

Remarks: Some redox present, but insufficient for F6

HYDROLOGY

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Other (Explain in Remarks)
	<input type="checkbox"/> Water Marks (B1) (Riverine)
	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)
	<input type="checkbox"/> Drift Deposits (B3) (Riverine)
	<input type="checkbox"/> Drainage Patterns (B10)
	<input type="checkbox"/> Dry-Season Water Table (C2)
	<input type="checkbox"/> Crayfish Burrows (C8)
	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
	<input type="checkbox"/> Shallow Aquitard (D3)
	<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes No Depth (inches): None

Water Table Present? Yes No Depth (inches): ↓

Saturation Present? (includes capillary fringe) Yes No Depth (inches): ↓

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
None

Remarks: No hydro indicators observed

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Ball Alamo City/County: Contra Costa County Sampling Date: 2/15/2012
 Applicant/Owner: Camille Ironwood Properties, LLC State: CA Sampling Point: 4
 Investigator(s): Coast Range Biological and Mosaic Associates Section, Township, Range: T15, R2W, Sect 24
 Landform (hillslope, terrace, etc.): roadbed Local relief (concave, convex, none): concave Slope (%): 1
 Subregion (LRR): Mediterranean California Lat: 37.8345 N Long: 122.0294 W Datum: NAD 83
 Soil Map Unit Name: Millsholm loam, 30-50% slopes NWI classification: _____
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No (If no, explain in Remarks.) Dry year
 Are Vegetation _____, Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology naturally problematic? (If needed, explain any answers in Remarks.) Seasonal hydro

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc. hydro

Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Remarks: <u>Located on disturbed, compacted road bed. Some redox observed but strongly upland vegetation.</u>	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____				Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A)
2. _____				Total Number of Dominant Species Across All Strata: <u>4</u> (B)
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
4. _____				
<u>0</u> = Total Cover				
Sapling/Shrub Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet:
1. _____				Total % Cover of: _____ Multiply by: _____
2. _____				OBL species <u>0</u> x 1 = <u>0</u>
3. _____				FACW species <u>5</u> x 2 = <u>10</u>
4. _____				FAC species <u>0</u> x 3 = <u>0</u>
5. _____				FACU species <u>30</u> x 4 = <u>120</u>
				UPL species <u>65</u> x 5 = <u>325</u>
				Column Totals: <u>100</u> (A) <u>455</u> (B)
<u>0</u> = Total Cover				Prevalence Index = B/A = <u>4.6</u>
Herb Stratum (Plot size: <u>5' rad</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <u>Medicago polymorpha</u>	<u>20</u>	<u>Y</u>	<u>UPL</u>	<input type="checkbox"/> Dominance Test is >50%
2. <u>Geranium dissectum</u>	<u>20</u>	<u>Y</u>	<u>UPL</u>	<input type="checkbox"/> Prevalence Index is ≤3.0 ¹
3. <u>Vicia sativa</u>	<u>30</u>	<u>Y</u>	<u>FACW</u>	<input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
4. <u>Tribolium sp.</u>	<u>20</u>	<u>Y</u>	<u>UPL</u>	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
5. <u>Avena sp.</u>	<u>5</u>	<u>N</u>	<u>UPL</u>	
6. <u>Unknown grass</u>	<u>5</u>	<u>N</u>	<u>UNK</u>	
7. <u>Poa annua</u>	<u>5</u>	<u>N</u>	<u>FACW</u>	
8. _____				
<u>105</u> = Total Cover				
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Present?
1. _____				Yes _____ No <input checked="" type="checkbox"/>
2. _____				
<u>0</u> = Total Cover				
% Bare Ground in Herb Stratum <u>5</u> % Cover of Biotic Crust <u>0</u>				
Remarks: <u>sample point not dominated by hydrophytic veg.</u>				

SOIL

Sampling Point: 4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-16	10YR3/1	95	10YR5/6	5	C	m	clay	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) (LRR C)
- 1 cm Muck (A9) (LRR D)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)

- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Vernal Pools (F9)

- 1 cm Muck (A9) (LRR C)
- 2 cm Muck (A10) (LRR B)
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: clay
 Depth (inches): 0

Hydric Soil Present? Yes No

Remarks: Compacted road bed. Some hydro indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water Marks (B1) (Riverine)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Drift Deposits (B3) (Riverine)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Salt Crust (B11)	
<input type="checkbox"/> Biotic Crust (B12)	
<input type="checkbox"/> Aquatic Invertebrates (B13)	
<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	
<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	
<input type="checkbox"/> Thin Muck Surface (C7)	
<input type="checkbox"/> Other (Explain in Remarks)	

Field Observations:

Surface Water Present? Yes No Depth (inches): None
 Water Table Present? Yes No Depth (inches): ↓
 Saturation Present? Yes No Depth (inches): ↓
 (includes capillary fringe)

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
None

Remarks: Scattered ponding in area on compacted road bed due to recent rain. Receives some sheetflow from wetland upslope at

S.P. 3a.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Ball Alamo City/County: Contra Costa County Sampling Date: 2/15/2012

Applicant/Owner: Camille Ironwood Properties, LLC State: CA Sampling Point: 5

Investigator(s): Coast Range Biological and Mosaic Associates Section, Township, Range: T15, R2W, Sect 24

Landform (hillslope, terrace, etc.): channel Local relief (concave, convex, none): concave Slope (%): 10

Subregion (LRR): Mediterranean California Lat: 37.8323 N Long: 122.0285 W Datum: NAD 83

Soil Map Unit Name: Millsholm loam, 30-50% slopes NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No (If no, explain in Remarks.) Dry year

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No _____

Are Vegetation _____, Soil _____, or Hydrology naturally problematic? (If needed, explain any answers in Remarks.) Seasonal hydro

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes _____	No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes _____	No <input checked="" type="checkbox"/>			
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No _____			
Remarks: <u>Located in ephemeral drainage channel. Lacks hydrophytic veg but has wetland hydrology + hydric soils</u> <u>other waters</u>					

VEGETATION – Use scientific names of plants. potential "other waters"

Tree Stratum (Plot size: <u>20'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:	
1. <u>Umbellularia californica</u>	<u>60</u>	<u>Y</u>	<u>FAC</u>	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A)	
2. <u>Eucalyptus globulus</u>	<u>40</u>	<u>Y</u>	<u>UPL</u>	Total Number of Dominant Species Across All Strata: <u>3</u> (B)	
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>33</u> (A/B)	
4. _____	_____	_____	_____		
<u>100</u> = Total Cover					
Sapling/Shrub Stratum (Plot size: _____)				Prevalence Index worksheet:	
1. _____	_____	_____	_____	Total % Cover of: _____ Multiply by: _____	
2. _____	_____	_____	_____	OBL species <u>0</u> x 1 = <u>0</u>	
3. _____	_____	_____	_____	FACW species <u>0</u> x 2 = <u>0</u>	
4. _____	_____	_____	_____	FAC species <u>60</u> x 3 = <u>180</u>	
5. _____	_____	_____	_____	FACU species <u>0</u> x 4 = <u>0</u>	
<u>0</u> = Total Cover				UPL species <u>65</u> x 5 = <u>325</u>	
				Column Totals: <u>125</u> (A) <u>505</u> (B)	
				Prevalence Index = B/A = <u>4</u>	
Herb Stratum (Plot size: <u>5'</u>)				Hydrophytic Vegetation Indicators:	
1. <u>Carduus pycnocephalus</u>	<u>5</u>	<u>N</u>	<u>UPL</u>	___ Dominance Test is >50%	
2. <u>Vilca major</u>	<u>20</u>	<u>Y</u>	<u>UPL</u>	___ Prevalence Index is ≤3.0 ¹	
3. _____	_____	_____	_____	___ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)	
4. _____	_____	_____	_____	___ Problematic Hydrophytic Vegetation ¹ (Explain)	
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
8. _____	_____	_____	_____		
<u>25</u> = Total Cover					
Woody Vine Stratum (Plot size: _____)				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
1. _____	_____	_____	_____		
2. _____	_____	_____	_____		
<u>0</u> = Total Cover					
% Bare Ground in Herb Stratum <u>60</u>		% Cover of Biotic Crust <u>0</u>		Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>	

Remarks: Located in channel, ~3' wide

SOIL

Sampling Point: 5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-20	10YR 7/3	100	—	—	—	—	loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Vernal Pools (F9)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):
 Type: none
 Depth (inches):

Hydric Soil Present? Yes No

Remarks: located in channel. soils weakly consolidated.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)
Primary Indicators (minimum of one required; check all that apply)		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Water Marks (B1) (Riverine)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)	<input checked="" type="checkbox"/> Sediment Deposits (B2) (Riverine)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input checked="" type="checkbox"/> Drift Deposits (B3) (Riverine)
<input checked="" type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input checked="" type="checkbox"/> Drainage Patterns (B10)
<input checked="" type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input checked="" type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes No Depth (inches): None

Water Table Present? Yes No Depth (inches):

Saturation Present? (includes capillary fringe) Yes No Depth (inches):

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
None

Remarks: Located in ephemeral channel. Evidence of scour present. OTHWM present.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Ball Alamo City/County: Contra Costa County Sampling Date: 2/15/2012

Applicant/Owner: Camille Ironwood Properties, LLC State: CA Sampling Point: 6

Investigator(s): Coast Range Biological and Mosaic Associates Section, Township, Range: T15, R2W, S22Z4

Landform (hillslope, terrace, etc.): Channel Local relief (concave, convex, none): CONCAVE Slope (%): 2

Subregion (LRR): Mediterranean California Lat: 37.8333 N Long: 122.0282 W Datum: NAD 83

Soil Map Unit Name: Millsholm loam, 30-50% slopes NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No (If no, explain in Remarks.) Dry year

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No _____

Are Vegetation _____, Soil _____, or Hydrology naturally problematic? (If needed, explain any answers in Remarks.) Seasonal hydro

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Remarks: <u>Located in ephemeral drainage channel, ~5' wide, w/ hydric soil indicators, wetland hydro, and OH water. Potential "other waters"</u>	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>20'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>Umbellularia californica</u>	<u>50</u>	<input checked="" type="checkbox"/>	<u>FAC</u>	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>1</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
4. _____	_____	_____	_____	
<u>50</u> = Total Cover				
Sapling/Shrub Stratum (Plot size: _____)				Prevalence Index worksheet:
1. _____	_____	_____	_____	Total % Cover of: _____ Multiply by: _____
2. _____	_____	_____	_____	OBL species <u>0</u> x 1 = <u>0</u>
3. _____	_____	_____	_____	FACW species <u>1</u> x 2 = <u>2</u>
4. _____	_____	_____	_____	FAC species <u>50</u> x 3 = <u>150</u>
5. _____	_____	_____	_____	FACU species <u>0</u> x 4 = <u>0</u>
<u>0</u> = Total Cover				UPL species <u>1</u> x 5 = <u>5</u>
				Column Totals: <u>52</u> (A) <u>157</u> (B)
				Prevalence Index = B/A = <u>3</u>
Herb Stratum (Plot size: <u>5'</u>)				Hydrophytic Vegetation Indicators:
1. <u>Cardamine oligosperma</u>	<u>1</u>	<u>N</u>	<u>FACW</u>	<input checked="" type="checkbox"/> Dominance Test is >50%
2. <u>Toxilis arvensis</u>	<u>1</u>	<u>N</u>	<u>UPL</u>	<input checked="" type="checkbox"/> Prevalence Index is ≤3.0 ¹
3. _____	_____	_____	_____	____ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
4. _____	_____	_____	_____	____ Problematic Hydrophytic Vegetation ¹ (Explain)
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
<u>2</u> = Total Cover				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Woody Vine Stratum (Plot size: _____)				Hydrophytic Vegetation Present?
1. _____	_____	_____	_____	Yes _____ No <input checked="" type="checkbox"/>
2. _____	_____	_____	_____	
<u>0</u> = Total Cover				
% Bare Ground in Herb Stratum <u>95</u> % Cover of Biotic Crust <u>0</u>				

Remarks: Cover of Umbellularia comes from tree rooted above channel and overhanging channel. Channel is mostly bare ground from scour and is considered here to lack hydrophytic vegetation.

SOIL

Sampling Point: 6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
	10YR 3/2	75	10YR 5/6	5	C		loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) (LRR C)
- 1 cm Muck (A9) (LRR D)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)

- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Vernal Pools (F9)

- 1 cm Muck (A9) (LRR C)
- 2 cm Muck (A10) (LRR B)
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: none
Depth (inches): —

Hydric Soil Present? Yes No

Remarks: Redox features observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

Secondary Indicators (2 or more required)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1) (Nonriverine)
- Sediment Deposits (B2) (Nonriverine)
- Drift Deposits (B3) (Nonriverine)
- Surface Soil Cracks (B6)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)

- Salt Crust (B11)
- Biotic Crust (B12)
- Aquatic Invertebrates (B13)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres along Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

- Water Marks (B1) (Riverine)
- Sediment Deposits (B2) (Riverine)
- Drift Deposits (B3) (Riverine)
- Drainage Patterns (B10)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes No Depth (inches): none
 Water Table Present? Yes No Depth (inches): ↓
 Saturation Present? Yes No Depth (inches): ↓
 (includes capillary fringe)

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Located in ephemeral channel, drains into culvert under road.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Ball Alamo City/County: Contra Costa County Sampling Date: 2/15/2012

Applicant/Owner: Camille Ironwood Properties, LLC State: CA Sampling Point: 7a

Investigator(s): Coast Range Biological and Mosaic Associates Section, Township, Range: T15, R2W, Sec 24

Landform (hillslope, terrace, etc.): slope Local relief (concave, convex, none): concave Slope (%): 5

Subregion (LRR): Mediterranean California Lat: 37.8331N Long: 122.0258W Datum: NAD 83

Soil Map Unit Name: Garretson loamy, 2-5% slopes NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No (If no, explain in Remarks.) Dry season

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.) Seasonal hydro

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Remarks: <u>Located on swale w/ all three wetland parameters met. Drains downslope along tree line.</u>	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>1</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
4. _____	_____	_____	_____	
<u>0</u> = Total Cover				
Sapling/Shrub Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet:
1. _____	_____	_____	_____	Total % Cover of: _____ Multiply by: _____
2. _____	_____	_____	_____	OBL species <u>0</u> x 1 = <u>0</u>
3. _____	_____	_____	_____	FACW species <u>75</u> x 2 = <u>150</u>
4. _____	_____	_____	_____	FAC species <u>15</u> x 3 = <u>45</u>
5. _____	_____	_____	_____	FACU species <u>0</u> x 4 = <u>0</u>
<u>0</u> = Total Cover				UPL species <u>5</u> x 5 = <u>25</u>
				Column Totals: <u>85</u> (A) <u>220</u> (B)
				Prevalence Index = B/A = <u>2.5</u>
Herb Stratum (Plot size: <u>5'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <u>Cyperus eragrostis</u>	<u>75</u>	<u>Y</u>	<u>FACW</u>	<input checked="" type="checkbox"/> Dominance Test is >50%
2. <u>Geranium dissectum</u>	<u>5</u>	<u>N</u>	<u>UPL</u>	<input checked="" type="checkbox"/> Prevalence Index is ≤3.0 ¹
3. <u>unknown grass</u>	<u>10</u>	<u>N</u>	<u>UNK</u>	____ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
4. <u>Sparganium angustifolium</u>	<u>5</u>	<u>N</u>	<u>FAC</u>	____ Problematic Hydrophytic Vegetation ¹ (Explain)
5. <u>Bromus diandrus</u>	<u>10</u>	<u>N</u>	<u>UPL</u>	
6. <u>Lolium multiflorum</u>	<u>10</u>	<u>N</u>	<u>FAC</u>	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
<u>105</u> = Total Cover				
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Present?
1. _____	_____	_____	_____	Yes <input checked="" type="checkbox"/> No _____
2. _____	_____	_____	_____	
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>5</u> % Cover of Biotic Crust <u>0</u>				

Remarks: sample point dominated by hydrophytic veg. some grasses not identifiable due to early season. - Vegetation identified in subsequent visit on 3/30/12.

SOIL

Sampling Point: 7a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features			Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹		
0-20	10YR5/1	90	10YR5/6	10	C	m	clay loam

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Vernal Pools (F9)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): 0

Hydric Soil Present? Yes No

Remarks: Hydric indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (2 or more required)
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input checked="" type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Other (Explain in Remarks)
	<input type="checkbox"/> Water Marks (B1) (Riverine)
	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)
	<input type="checkbox"/> Drift Deposits (B3) (Riverine)
	<input type="checkbox"/> Drainage Patterns (B10)
	<input type="checkbox"/> Dry-Season Water Table (C2)
	<input type="checkbox"/> Crayfish Burrows (C8)
	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
	<input type="checkbox"/> Shallow Aquitard (D3)
	<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes No Depth (inches): 1"

Water Table Present? Yes No Depth (inches):

Saturation Present? Yes No Depth (inches): 0

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

None

Remarks: Located in shallow swale w/ surface saturation and ponding.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Ball Alamo City/County: Contra Costa County Sampling Date: 2/15/2012

Applicant/Owner: Camille Ironwood Properties, LLC State: CA Sampling Point: 7b

Investigator(s): Coast Range Biological and Mosaic Associates Section, Township, Range: T15, R2W, S224

Landform (hillslope, terrace, etc.): gentle slope Local relief (concave, convex, none): none Slope (%): 3

Subregion (LRR): Mediterranean California Lat: 37.8331N Long: 122.0258W Datum: NAD 83

Soil Map Unit Name: Garretson loam, 2-5% slopes NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No (If no, explain in Remarks.) Dry season

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No _____

Are Vegetation _____, Soil _____, or Hydrology naturally problematic? (If needed, explain any answers in Remarks.) Seasonal hydro

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/> Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Remarks: <u>located in field above 7a. Some grasses not identifiable due to the season. No wetland parameters observed.</u>	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____				Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A)
2. _____				Total Number of Dominant Species Across All Strata: <u>4</u> (B)
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
4. _____				
<u>0</u> = Total Cover				
Sapling/Shrub Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet:
1. _____				Total % Cover of: _____ Multiply by: _____
2. _____				OBL species <u>0</u> x 1 = <u>0</u>
3. _____				FACW species <u>0</u> x 2 = <u>0</u>
4. _____				FAC species <u>0</u> x 3 = <u>0</u>
5. _____				FACU species <u>5</u> x 4 = <u>20</u>
<u>0</u> = Total Cover				UPL species <u>100</u> x 5 = <u>500</u>
				Column Totals <u>105</u> (A) <u>370</u> (B)
				Prevalence Index = B/A = <u>4.9</u> 4.9
Herb Stratum (Plot size: <u>5'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <u>Geranium dissectum</u>	<u>20</u>	<u>Y</u>	<u>VPL</u>	<input type="checkbox"/> Dominance Test is >50%
2. <u>Medicago polymorpha</u>	<u>20</u>	<u>Y</u>	<u>VPL</u>	<input type="checkbox"/> Prevalence Index is ≤3.0 ¹
3. <u>Avena sp.</u>	<u>20</u>	<u>Y</u>	<u>VPL</u>	<input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
4. <u>Unknown grass</u>	<u>30</u>	<u>Y</u>	<u>VNK</u>	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
5. <u>Vicia sativa</u>	<u>5</u>	<u>N</u>	<u>FACU</u>	
6. <u>Bromus diandrus</u>	<u>30</u>	<u>Y</u>	<u>VPL</u>	
7. _____				
8. _____				
<u>105</u> = Total Cover				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Present?
1. _____				Yes _____ No <input checked="" type="checkbox"/>
2. _____				
<u>0</u> = Total Cover				
% Bare Ground in Herb Stratum <u>5</u> % Cover of Biotic Crust <u>0</u>				

Remarks: Some grasses not identifiable due to season. No hydrophytic species observed. -Vegetation identified in subsequent visit on 3/30/12

SOIL

Sampling Point: 76

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-20	10YR3/2	99	10YR5/6	1	C	m	clay loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Vernal Pools (F9)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):
 Type: None
 Depth (inches): _____

Hydric Soil Present? Yes _____ No

Remarks: redox not sufficient for F6

HYDROLOGY

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Other (Explain in Remarks)
	<input type="checkbox"/> Water Marks (B1) (Riverine)
	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)
	<input type="checkbox"/> Drift Deposits (B3) (Riverine)
	<input type="checkbox"/> Drainage Patterns (B10)
	<input type="checkbox"/> Dry-Season Water Table (C2)
	<input type="checkbox"/> Crayfish Burrows (C8)
	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
	<input type="checkbox"/> Shallow Aquitard (D3)
	<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No Depth (inches): None

Water Table Present? Yes _____ No Depth (inches): 1

Saturation Present? Yes _____ No Depth (inches): 1

(includes capillary fringe)

Wetland Hydrology Present? Yes _____ No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
None

Remarks: No wetland hydrology indicators observed.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Ball Alamo City/County: Contra Costa County Sampling Date: 2/15/2012

Applicant/Owner: Camille Ironwood Properties, LLC State: CA Sampling Point: 8a

Investigator(s): Coast Range Biological and Mosaic Associates Section, Township, Range: T1S, R2W, S22 24

Landform (hillslope, terrace, etc.): gentle slope Local relief (concave, convex, none): concave Slope (%): 5

Subregion (LRR): Mediterranean California Lat: 37.8328 N Long: 122.0257 W Datum: NAD 83

Soil Map Unit Name: Garretson loam, 2-5% slopes NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No (If no, explain in Remarks.) dry season

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No _____

Are Vegetation _____, Soil _____, or Hydrology naturally problematic? (If needed, explain any answers in Remarks.) seasonal hydro

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Remarks: <u>located in small seep area, all three parameters met</u>	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____				Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)
2. _____				Total Number of Dominant Species Across All Strata: <u>3</u> (B)
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>66</u> (A/B)
4. _____				
<u>0</u> = Total Cover				
Sapling/Shrub Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet:
1. _____				Total % Cover of: Multiply by:
2. _____				OBL species <u>0</u> x 1 = <u>0</u>
3. _____				FACW species <u>65</u> x 2 = <u>130</u>
4. _____				FAC species <u>20</u> x 3 = <u>60</u>
5. _____				FACU species <u>0</u> x 4 = <u>0</u>
<u>0</u> = Total Cover				UPL species <u>25</u> x 5 = <u>125</u>
				Column Totals: <u>90</u> (A) <u>315</u> (B)
				Prevalence Index = B/A = <u>3.5</u>
Herb Stratum (Plot size: <u>5'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <u>Cyperus eragrostis</u>	<u>60</u>	<u>Y</u>	<u>FACW</u>	<input checked="" type="checkbox"/> Dominance Test is >50%
2. <u>Xanthium spinosum</u>	<u>20</u>	<u>Y</u>	<u>FAC+</u>	<input checked="" type="checkbox"/> Prevalence Index is ≤3.0 ¹
3. <u>Geranium dissectum</u>	<u>5</u>	<u>N</u>	<u>VPL</u>	<input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
4. <u>Rubus discolor</u>	<u>2</u>	<u>N</u>	<u>FACW</u>	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
5. <u>Unknown grass Bromus diandrus</u>	<u>20</u>	<u>Y</u>	<u>UPL</u>	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
6. <u>Rumex crispus</u>	<u>5</u>	<u>N</u>	<u>FACW</u>	
7. _____				
8. _____				
<u>110</u> = Total Cover				
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Present?
1. _____				Yes <input checked="" type="checkbox"/> No _____
2. _____				
<u>0</u> = Total Cover				
% Bare Ground in Herb Stratum <u>0</u>	% Cover of Biotic Crust <u>0</u>			

Remarks: Sample point dominated by hydrophytic veg. Some grasses not identifiable due to season. -Vegetation identified in subsequent visit on 3/30/12

SOIL

Sampling Point: 8a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-20	10YR3/1	90	10YR5/6	10	C	v	clay/loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Vernal Pools (F9)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):
 Type: None
 Depth (inches): —

Hydric Soil Present? Yes No

Remarks: Hydric indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)
Primary Indicators (minimum of one required; check all that apply)		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Water Marks (B1) (Riverine)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Drift Deposits (B3) (Riverine)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input checked="" type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes No Depth (inches): None

Water Table Present? Yes No Depth (inches): 1

Saturation Present? (includes capillary fringe) Yes No Depth (inches): 1

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
None

Remarks: Wetland hydro indicators observed.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Ball Alamo City/County: Contra Costa County Sampling Date: 2/15/2012

Applicant/Owner: Camille Ironwood Properties, LLC State: CA Sampling Point: 8b

Investigator(s): Coast Range Biological and Mosaic Associates Section, Township, Range: T15, R2W, S22 24

Landform (hillslope, terrace, etc.): slope Local relief (concave, convex, none): convex Slope (%): 10

Subregion (LRR): Mediterranean California Lat: 37.8328 N Long: 122.0257 W Datum: NAD 83

Soil Map Unit Name: Garretson loam, 2-5% slopes NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No (If no, explain in Remarks.) Dry year

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No _____

Are Vegetation _____, Soil _____, or Hydrology naturally problematic? (If needed, explain any answers in Remarks.) seasonal hydro

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Remarks: <u>Only one parameter met. Some grasses not identifiable due to season.</u>	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>3</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
4. _____	_____	_____	_____	
<u>0</u> = Total Cover				
Sapling/Shrub Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet:
1. _____	_____	_____	_____	Total % Cover of: _____ Multiply by: _____
2. _____	_____	_____	_____	OBL species <u>0</u> x 1 = <u>0</u>
3. _____	_____	_____	_____	FACW species <u>0</u> x 2 = <u>0</u>
4. _____	_____	_____	_____	FAC species <u>0</u> x 3 = <u>0</u>
5. _____	_____	_____	_____	FACU species <u>20</u> x 4 = <u>80</u>
<u>0</u> = Total Cover				UPL species <u>7050</u> x 5 = <u>350</u>
				Column Totals: <u>90</u> (A) <u>430</u> (B)
				Prevalence Index = B/A = <u>4.7</u>
Herb Stratum (Plot size: <u>5'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <u>Cirsium vulgare</u>	<u>10</u>	<u>N</u>	<u>FACU</u>	<input type="checkbox"/> Dominance Test is >50%
2. <u>Geranium dissectum</u>	<u>20</u>	<u>Y</u>	<u>VPL</u>	<input type="checkbox"/> Prevalence Index is ≤3.0 ¹
3. <u>Avena sp.</u>	<u>20</u>	<u>Y</u>	<u>VPL</u>	<input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
4. <u>brakegrass</u>	<u>20</u>	<u>Y</u>	<u>VNK</u>	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
5. <u>Vicia sativa</u>	<u>10</u>	<u>N</u>	<u>FACU</u>	
6. <u>Bromus diandrus</u>	<u>30</u>	<u>NY</u>	<u>VPL</u>	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
<u>110</u> = Total Cover				
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Present?
1. _____	_____	_____	_____	Yes _____ No <input checked="" type="checkbox"/>
2. _____	_____	_____	_____	
<u>0</u> = Total Cover				
% Bare Ground in Herb Stratum <u>10</u>		% Cover of Biotic Crust <u>0</u>		

Remarks: Some grasses not identifiable due to season - Vegetation identified during subsequent visit on 3/30/12

SOIL

Sampling Point: 85

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-20	10YR2/1	95	10YR5/6	5	C	m	clay lo	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils³:
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Vernal Pools (F9)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):
 Type: none
 Depth (inches): —

Hydric Soil Present? Yes No

Remarks: Hydric indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Other (Explain in Remarks)
	<input type="checkbox"/> Water Marks (B1) (Riverine)
	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)
	<input type="checkbox"/> Drift Deposits (B3) (Riverine)
	<input type="checkbox"/> Drainage Patterns (B10)
	<input type="checkbox"/> Dry-Season Water Table (C2)
	<input type="checkbox"/> Crayfish Burrows (C8)
	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
	<input type="checkbox"/> Shallow Aquitard (D3)
	<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes No Depth (inches): none

Water Table Present? Yes No Depth (inches): ↓

Saturation Present? (includes capillary fringe) Yes No Depth (inches): ↓

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
None

Remarks: No hydro indicators

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Ball Alamo City/County: Contra Costa County Sampling Date: 2/15/2012

Applicant/Owner: Camille Ironwood Properties, LLC State: CA Sampling Point: 9a

Investigator(s): Coast Range Biological and Mosaic Associates Section, Township, Range: T1S, R2W, S224

Landform (hillslope, terrace, etc.): level field Local relief (concave, convex, none): concave Slope (%): 2

Subregion (LRR): Mediterranean California Lat: 37.8332 N Long: 122.0254 W Datum: NAD 83

Soil Map Unit Name: Garretson loam, 2-5% slopes NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No (If no, explain in Remarks.) Dry year

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No _____

Are Vegetation _____, Soil _____, or Hydrology naturally problematic? (If needed, explain any answers in Remarks.) Seasonal hydro

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Remarks: <u>Seep area that starts upslope and drains in a very shallow swale, drains via sheet flow into a culvert offsite.</u>	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>3</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>66</u> (A/B)
4. _____	_____	_____	_____	
<u>0</u> = Total Cover				
Sapling/Shrub Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet:
1. _____	_____	_____	_____	Total % Cover of: _____ Multiply by: _____
2. _____	_____	_____	_____	OBL species <u>0</u> x 1 = <u>0</u>
3. _____	_____	_____	_____	FACW species <u>0</u> x 2 = <u>0</u>
4. _____	_____	_____	_____	FAC species <u>70/100</u> x 3 = <u>210</u> 300
5. _____	_____	_____	_____	FACU species <u>5</u> x 4 = <u>20</u>
<u>0</u> = Total Cover				UPL species <u>0</u> x 5 = <u>0</u>
				Column Totals: <u>105</u> (A) <u>230</u> (B)
				Prevalence Index = B/A = <u>3</u>
Herb Stratum (Plot size: <u>5'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <u>Xanthoxylum spinosum</u>	<u>30</u>	<u>Y</u>	<u>FAC+</u>	<input checked="" type="checkbox"/> Dominance Test is >50%
2. <u>Hordeum marianum</u>	<u>30</u>	<u>Y</u>	<u>FAC</u>	<input checked="" type="checkbox"/> Prevalence Index is ≤3.0 ¹
3. <u>Unknown grass</u>	<u>30</u>	<u>Y</u>	<u>UNK</u>	____ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
4. <u>Vicia sativa</u>	<u>5</u>	<u>N</u>	<u>FACU</u>	____ Problematic Hydrophytic Vegetation ¹ (Explain)
5. <u>Colium multiflorum</u>	<u>35</u>	<u>Y/N</u>	<u>FAC</u>	
6. <u>Avena</u>	<u>5</u>	<u>N</u>	<u>FAC</u>	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
<u>105</u> = Total Cover				
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Present?
1. _____	_____	_____	_____	Yes <input checked="" type="checkbox"/> No _____
2. _____	_____	_____	_____	
<u>0</u> = Total Cover				
% Bare Ground in Herb Stratum <u>2</u> % Cover of Biotic Crust <u>0</u>				

Remarks: Some grasses unidentifiable due to season. Repeat visit on 3/30/12 yielded positive I.D. on grasses

SOIL

Sampling Point: 9a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-20	10YR5/1	90	10YR5/6	10	C	✓	clay loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Vernal Pools (F9)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		

Indicators for Problematic Hydric Soils³:

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):
 Type: None
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks: Hydric indicators observed

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input checked="" type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Other (Explain in Remarks)
	<input type="checkbox"/> Water Marks (B1) (Riverine)
	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)
	<input type="checkbox"/> Drift Deposits (B3) (Riverine)
	<input type="checkbox"/> Drainage Patterns (B10)
	<input type="checkbox"/> Dry-Season Water Table (C2)
	<input type="checkbox"/> Crayfish Burrows (C8)
	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
	<input type="checkbox"/> Shallow Aquitard (D3)
	<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes No Depth (inches): _____

Water Table Present? Yes No Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes No Depth (inches): 0

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
None

Remarks: In shallow swale that drains toward corner of property, into small channel, and culvert, then opposite.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Ball Alamo City/County: Contra Costa County Sampling Date: 2/15/2012

Applicant/Owner: Camille Ironwood Properties, LLC State: CA Sampling Point: 9b

Investigator(s): Coast Range Biological and Mosaic Associates Section, Township, Range: T15, R2W, S22 24

Landform (hillslope, terrace, etc.): slope, gentle Local relief (concave, convex, none): convex Slope (%): 5

Subregion (LRR): Mediterranean California Lat: 37.8332N Long: 122.0254W Datum: NAD 83

Soil Map Unit Name: Garretson loam, 2-5% slopes NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No (If no, explain in Remarks.) Dry year

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No _____

Are Vegetation _____, Soil _____, or Hydrology naturally problematic? (If needed, explain any answers in Remarks.) seasonal hydro

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Remarks: <u>only one parameter met. Sample point not located in wetland.</u>	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____				Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A)
2. _____				Total Number of Dominant Species Across All Strata: <u>2</u> (B)
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
4. _____				
<u>0</u> = Total Cover				
Sapling/Shrub Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet:
1. _____				Total % Cover of: _____ Multiply by: _____
2. _____				OBL species <u>0</u> x 1 = <u>0</u>
3. _____				FACW species <u>0</u> x 2 = <u>0</u>
4. _____				FAC species <u>15</u> x 3 = <u>45</u>
5. _____				FACU species <u>20</u> x 4 = <u>80</u>
<u>0</u> = Total Cover				UPL species <u>55</u> x 5 = <u>275</u>
				Column Totals: <u>95</u> (A) <u>370</u> (B)
				Prevalence Index = B/A = <u>3.89</u>
Herb Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <u>Vicia sativa</u>	<u>15</u>	<u>N</u>	<u>FACU</u>	<input type="checkbox"/> Dominance Test is >50%
2. <u>Geranium dissectum</u>	<u>15</u>	<u>N</u>	<u>UPL</u>	<input type="checkbox"/> Prevalence Index is ≤3.0 ¹
3. <u>Avena</u>	<u>30</u>	<u>Y</u>	<u>UPL</u>	<input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
4. Unknown grass <u>Bromus diandrus</u>	<u>30</u>	<u>Y</u>	<u>UNK UPL</u>	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
5. _____				
6. <u>Bromus hordeaceus</u>	<u>10</u>	<u>N</u>	<u>UPL</u>	
7. <u>Hordeum marinum</u>	<u>5</u>	<u>N</u>	<u>FAC</u>	
8. <u>Vulpia myuros</u>	<u>5</u>	<u>N</u>	<u>FACU</u>	
<u>90</u> = Total Cover				
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Footnote:
1. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. _____				
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>10</u> % Cover of Biotic Crust _____				Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>

Remarks: Can't determine some grasses due to season. Repeat visit 3/30/12 revealed I.D. of grasses.

SOIL

Sampling Point: 9b

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-20	10YR3/1	98	10YR5/6	2	re	m	clay loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

- Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**
- | | | |
|--|---|---|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> 1 cm Muck (A9) (LRR C) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> 2 cm Muck (A10) (LRR B) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) | <input type="checkbox"/> Reduced Vertic (F18) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) | <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> Stratified Layers (A5) (LRR C) | <input type="checkbox"/> Depleted Matrix (F3) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR D) | <input checked="" type="checkbox"/> Redox Dark Surface (F6) | |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Dark Surface (F7) | |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Redox Depressions (F8) | |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Vernal Pools (F9) | |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | | |
- ³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):
 Type: none
 Depth (inches): —

Hydric Soil Present? Yes No

Remarks: Hydric indicators observed.

HYDROLOGY

- Wetland Hydrology Indicators:**
- | | |
|---|--|
| <u>Primary Indicators (minimum of one required; check all that apply)</u> | <u>Secondary Indicators (2 or more required)</u> |
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Salt Crust (B11) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Biotic Crust (B12) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Aquatic Invertebrates (B13) |
| <input type="checkbox"/> Water Marks (B1) (Nonriverine) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) |
| <input type="checkbox"/> Sediment Deposits (B2) (Nonriverine) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) |
| <input type="checkbox"/> Drift Deposits (B3) (Nonriverine) | <input type="checkbox"/> Presence of Reduced Iron (C4) |
| <input type="checkbox"/> Surface Soil Cracks (B6) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | <input type="checkbox"/> Thin Muck Surface (C7) |
| <input type="checkbox"/> Water-Stained Leaves (B9) | <input type="checkbox"/> Other (Explain in Remarks) |
| | <input type="checkbox"/> Water Marks (B1) (Riverine) |
| | <input type="checkbox"/> Sediment Deposits (B2) (Riverine) |
| | <input type="checkbox"/> Drift Deposits (B3) (Riverine) |
| | <input type="checkbox"/> Drainage Patterns (B10) |
| | <input type="checkbox"/> Dry-Season Water Table (C2) |
| | <input type="checkbox"/> Crayfish Burrows (C8) |
| | <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| | <input type="checkbox"/> Shallow Aquitard (D3) |
| | <input type="checkbox"/> FAC-Neutral Test (D5) |

Field Observations:

Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): <u>None</u>	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): <u>—</u>	
Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): <u>—</u>	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
None

Remarks: No wetland hydro observed.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Ball Alamo City/County: Contra Costa County Sampling Date: 2/15/2012

Applicant/Owner: Camille Ironwood Properties, LLC State: CA Sampling Point: 10

Investigator(s): Coast Range Biological and Mosaic Associates Section, Township, Range: T15, R2W, S22 24

Landform (hillslope, terrace, etc.): ditch Local relief (concave, convex, none): concave Slope (%): 2

Subregion (LRR): Mediterranean California Lat: 37.8323 N Long: 122.0261 W Datum: NAD 83

Soil Map Unit Name: Millsholm loam, 30-50% slopes NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No X (If no, explain in Remarks.) Dry year

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology X naturally problematic? (If needed, explain any answers in Remarks.) seasonal hydro

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u> "other waters"
Hydric Soil Present?	Yes <u>X</u>	No _____	
Wetland Hydrology Present?	Yes <u>X</u>	No _____	
Remarks: <u>Small (1-2' wide) channel w/ marginal bed/bank, drains into culvert above seep wetland. Potential "other waters"</u>			

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>Eucalyptus globulus</u>	<u>80</u>	<u>Y</u>	<u>UPL</u>	Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>2</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
4. _____	_____	_____	_____	
<u>80</u> = Total Cover				
Sapling/Shrub Stratum (Plot size: _____)				Prevalence Index worksheet:
1. _____	_____	_____	_____	Total % Cover of: _____ Multiply by: _____
2. _____	_____	_____	_____	OBL species <u>0</u> x 1 = <u>0</u>
3. _____	_____	_____	_____	FACW species <u>0</u> x 2 = <u>0</u>
4. _____	_____	_____	_____	FAC species <u>0</u> x 3 = <u>0</u>
5. _____	_____	_____	_____	FACU species <u>0</u> x 4 = <u>0</u>
<u>0</u> = Total Cover				UPL species <u>135</u> x 5 = <u>675</u>
				Column Totals: <u>135</u> (A) <u>675</u> (B)
				Prevalence Index = B/A = <u>5</u>
Herb Stratum (Plot size: _____)				Hydrophytic Vegetation Indicators:
1. <u>Vinca major</u>	<u>50</u>	<u>Y</u>	<u>UPL</u>	<input type="checkbox"/> Dominance Test is >50%
2. <u>Azorella sp.</u>	<u>5</u>	<u>N</u>	<u>UPL</u>	<input type="checkbox"/> Prevalence Index is ≤3.0 ¹
3. _____	_____	_____	_____	<input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
4. _____	_____	_____	_____	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
<u>55</u> = Total Cover				
Woody Vine Stratum (Plot size: _____)				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
<u>0</u> = Total Cover				
% Bare Ground in Herb Stratum <u>45</u>		% Cover of Biotic Crust <u>0</u>		Hydrophytic Vegetation Present? Yes _____ No <u>X</u>
Remarks: <u>No hydrophytic veg observed.</u>				

SOIL

Sampling Point: 10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-20	10YR2/2	95	10YR5/6	10	C	u	loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Vernal Pools (F9)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):
 Type: None
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks: Hydric indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input checked="" type="checkbox"/> Other (Explain in Remarks) <u>Scour</u>
	<input type="checkbox"/> Water Marks (B1) (Riverine)
	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)
	<input type="checkbox"/> Drift Deposits (B3) (Riverine)
	<input type="checkbox"/> Drainage Patterns (B10)
	<input type="checkbox"/> Dry-Season Water Table (C2)
	<input type="checkbox"/> Crayfish Burrows (C8)
	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
	<input type="checkbox"/> Shallow Aquitard (D3)
	<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes No Depth (inches): None

Water Table Present? Yes No Depth (inches): 1

Saturation Present? (includes capillary fringe) Yes No Depth (inches): 0

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
None

Remarks: Small channel w/ evidence of scour, bed and bank, oltm, very weak incision

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Ball Alamo City/County: Contra Costa County Sampling Date: 3/30/12

Applicant/Owner: Camille Ironwood Properties, LLC State: CA Sampling Point: 11a

Investigator(s): Coast Range Biological and Mosaic Associates Section, Township, Range: T15, R2W, S224

Landform (hillslope, terrace, etc.): basin Local relief (concave, convex, none): concave Slope (%): 0

Subregion (LRR): Mediterranean California Lat: 37.8333 Long: -122.0252 Datum: NAD 83

Soil Map Unit Name: Garretson loam, 2-5% slopes NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No _____

Are Vegetation _____, Soil _____, or Hydrology naturally problematic? (If needed, explain any answers in Remarks.) Seasonal wetland

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Remarks: <u>Located in shallow basin that drains into culvert offsite. All three wetland parameters met.</u>	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>2</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
4. _____	_____	_____	_____	
<u>0</u> = Total Cover				
Sapling/Shrub Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet:
1. _____	_____	_____	_____	Total % Cover of: _____ Multiply by: _____
2. _____	_____	_____	_____	OBL species _____ x 1 = _____
3. _____	_____	_____	_____	FACW species _____ x 2 = _____
4. _____	_____	_____	_____	FAC species _____ x 3 = _____
5. _____	_____	_____	_____	FACU species _____ x 4 = _____
<u>0</u> = Total Cover				UPL species _____ x 5 = _____
				Column Totals: _____ (A) _____ (B)
				Prevalence Index = B/A = _____
Herb Stratum (Plot size: <u>5' radii</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <u>Colium multiflorum</u>	<u>40</u>	<u>Y</u>	<u>FAC</u>	<input checked="" type="checkbox"/> Dominance Test is >50%
2. <u>Hordeum marianum</u>	<u>40</u>	<u>Y</u>	<u>FAC</u>	<input type="checkbox"/> Prevalence Index is ≤3.0 ¹
3. <u>Vicia sativa</u>	<u>10</u>	<u>N</u>	<u>FACU</u>	<input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
4. <u>Avena sp.</u>	<u>5</u>	<u>N</u>	<u>UPL</u>	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
5. <u>Bromus diandrus</u>	<u>5</u>	<u>N</u>	<u>UPL</u>	
6. <u>Geranium dissectum</u>	<u>5</u>	<u>N</u>	<u>UPL</u>	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
<u>115</u> = Total Cover				
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Footnote:
1. _____	_____	_____	_____	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. _____	_____	_____	_____	
<u>0</u> = Total Cover				
% Bare Ground in Herb Stratum <u>0</u> % Cover of Biotic Crust <u>0</u>				
Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____				
Remarks: <u>Sample point dominated by hydrophytic vegetation.</u>				

SOIL

Sampling Point: 11a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-20	10YR3/2	90	10YR5/6	10	C	M	clay loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Vernal Pools (F9)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):
 Type: None
 Depth (inches): —

Hydric Soil Present? Yes No

Remarks: Hydric indicators present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Water Marks (B1) (Riverine)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Drift Deposits (B3) (Riverine)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): <u>3"</u>	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): <u>0"</u>	
Saturation Present? (includes capillary fringe) Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): <u>0"</u>	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
None

Remarks: In shallow basin w/ ponded water. Drains into culvert offsite.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Ball Alamo City/County: Contra Costa County Sampling Date: 3/30/12
 Applicant/Owner: Camille Ironwood Properties, LLC State: CA Sampling Point: 11b
 Investigator(s): Coast Range Biological and Mosaic Associates Section, Township, Range: T15, R2W, S22N
 Landform (hillslope, terrace, etc.): gentle slope Local relief (concave, convex, none): convex Slope (%): 5
 Subregion (LRR): Mediterranean California Lat: 37.8333 Long: -122.0252 Datum: NAD 83
 Soil Map Unit Name: Garretson loam, 2-5% slopes NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation _____, Soil _____, or Hydrology naturally problematic? (If needed, explain any answers in Remarks.) seasonal wetland

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Remarks: <u>Located in field above small basin. Hydric soils present, but sample point has strongly upland veg and lack of wetland hydrology indicators.</u>	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>3</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>33</u> (A/B)
4. _____	_____	_____	_____	
Sapling/Shrub Stratum (Plot size: _____) <u>0</u> = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>0</u> x 2 = <u>0</u> FAC species <u>30</u> x 3 = <u>90</u> FACU species <u>10</u> x 4 = <u>40</u> UPL species <u>75</u> x 5 = <u>375</u> Column Totals: <u>115</u> (A) <u>505</u> (B) Prevalence Index = B/A = <u>4.4</u>
Herb Stratum (Plot size: <u>5' radius</u>) <u>0</u> = Total Cover				Hydrophytic Vegetation Indicators: ___ Dominance Test is >50% ___ Prevalence Index is ≤3.0 ¹ ___ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation ¹ (Explain)
1. <u>Bromus diandrus</u>	<u>50</u>	<u>Y</u>	<u>UPL</u>	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>
2. <u>Lolium multiflorum</u>	<u>30</u>	<u>Y</u>	<u>FAC</u>	
3. <u>Avena sp.</u>	<u>20</u>	<u>Y</u>	<u>UPL</u>	
4. <u>Vicia sativa</u>	<u>10</u>	<u>N</u>	<u>FACW</u>	
5. <u>Brassica rapa</u>	<u>5</u>	<u>N</u>	<u>UPL</u>	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
Woody Vine Stratum (Plot size: _____) <u>115</u> = Total Cover				
% Bare Ground in Herb Stratum <u>0</u> % Cover of Biotic Crust <u>0</u>				
Remarks: <u>sample point dominated by upland vegetation.</u>				

SOIL

Sampling Point: 115

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-20	10YR 3/2	90	10YR 5/6	10	C	M	clay loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)	Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) (LRR C) <input type="checkbox"/> 1 cm Muck (A9) (LRR D) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C) <input type="checkbox"/> 2 cm Muck (A10) (LRR B) <input type="checkbox"/> Reduced Vertic (F18) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input checked="" type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Vernal Pools (F9)	<p>³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.</p>

Restrictive Layer (if present):
 Type: None
 Depth (inches): —

Hydric Soil Present? Yes No

Remarks: Hydric soil indicators present.

HYDROLOGY

Wetland Hydrology Indicators:	Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) (Nonriverine) <input type="checkbox"/> Sediment Deposits (B2) (Nonriverine) <input type="checkbox"/> Drift Deposits (B3) (Nonriverine) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Biotic Crust (B12) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Water Marks (B1) (Riverine) <input type="checkbox"/> Sediment Deposits (B2) (Riverine) <input type="checkbox"/> Drift Deposits (B3) (Riverine) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes No Depth (inches): None

Water Table Present? Yes No Depth (inches): ↓

Saturation Present? (includes capillary fringe) Yes No Depth (inches): ↓

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
None

Remarks: soils dry despite ponding in adjacent basin. No wetland hydro indicators observed.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Ball Alamo City/County: Contra Costa County Sampling Date: 5/22/14
 Applicant/Owner: Camille Ironwood Properties, LLC State: CA Sampling Point: 12a
 Investigator(s): Coast Range Biological and Mosaic Associates Section, Township, Range: T1S,R2W,sec24, Mt. Diablo Meridian
 Landform (hillslope, terrace, etc.): drainage Local relief (concave, convex, none): concave Slope (%): 5
 Subregion (LRR): Mediterranean California Lat: 37.832132 Long: -122.026116 Datum: NAD 83
 Soil Map Unit Name: Millsholm loam, 30 to 50 percent slopes NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation _____, Soil _____, or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Remarks: Drier than normal year. Sample point located in a drainage swale that empties into a narrow ditch. All three wetland parameters met.	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				
Sapling/Shrub Stratum (Plot size: _____)				
1. _____	_____	_____	_____	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
Herb Stratum (Plot size: <u>5'</u>)				
1. <u>Festuca perennis</u>	<u>60</u>	<u>Y</u>	<u>FAC</u>	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
2. <u>Torilis arvensis</u>	<u>10</u>	<u>N</u>	<u>UPL</u>	
3. <u>Carduus pycnocephalus</u>	<u>10</u>	<u>N</u>	<u>UPL</u>	
4. <u>Silybum marianum</u>	<u>5</u>	<u>N</u>	<u>UPL</u>	
5. <u>Bromus diandrus</u>	<u>5</u>	<u>N</u>	<u>UPL</u>	
6. <u>Rumex crispus</u>	<u>5</u>	<u>N</u>	<u>FAC</u>	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
<u>95</u> = Total Cover				
Woody Vine Stratum (Plot size: _____)				
1. _____	_____	_____	_____	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. _____	_____	_____	_____	
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>5</u> % Cover of Biotic Crust <u>0</u>				
Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____				

Remarks:
 Sample point dominated by hydrophytic vegetation.

SOIL

Sampling Point: 12a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-20	10YR 3/2	95	10YR 5/6	5	C	M	clay loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) **(LRR C)**
- 1 cm Muck (A9) **(LRR D)**
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)

- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Vernal Pools (F9)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) **(LRR C)**
- 2 cm Muck (A10) **(LRR B)**
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: none
 Depth (inches): none

Hydric Soil Present? Yes No

Remarks:

Soil has low chroma matrix with redoximorphic mottles.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1) **(Nonriverine)**
- Sediment Deposits (B2) **(Nonriverine)**
- Drift Deposits (B3) **(Nonriverine)**
- Surface Soil Cracks (B6)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)

- Salt Crust (B11)
- Biotic Crust (B12)
- Aquatic Invertebrates (B13)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres along Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- Water Marks (B1) **(Riverine)**
- Sediment Deposits (B2) **(Riverine)**
- Drift Deposits (B3) **(Riverine)**
- Drainage Patterns (B10)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes No Depth (inches): none
 Water Table Present? Yes No Depth (inches): none
 Saturation Present? Yes No Depth (inches): none
 (includes capillary fringe)

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

None

Remarks:

Wetland hydrology indicators observed.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Ball Alamo City/County: Contra Costa County Sampling Date: 5/22/14
 Applicant/Owner: Camille Ironwood Properties, LLC State: CA Sampling Point: 12b
 Investigator(s): Coast Range Biological and Mosaic Associates Section, Township, Range: T1S,R2W,sec24, Mt. Diablo Meridian
 Landform (hillslope, terrace, etc.): slope Local relief (concave, convex, none): convex Slope (%): 30
 Subregion (LRR): Mediterranean California Lat: 37.832132 Long: -122.026116 Datum: NAD 83
 Soil Map Unit Name: Millsholm loam, 30 to 50 percent slopes NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation _____, Soil _____, or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/> Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Remarks: Drier than normal year. Sample point located on a slope above drainage swale. No wetland parameters met.	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
				_____ = Total Cover
Sapling/Shrub Stratum (Plot size: _____)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
				_____ = Total Cover
Herb Stratum (Plot size: <u>5'</u>)				
1. <u>Bromus diandrus</u>	<u>80</u>	<u>Y</u>	<u>UPL</u>	
2. <u>Lactuca serriola</u>	<u>10</u>	<u>N</u>	<u>FACU</u>	
3. <u>Carduus pycnocephalus</u>	<u>10</u>	<u>N</u>	<u>UPL</u>	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
				<u>100</u> = Total Cover
Woody Vine Stratum (Plot size: _____)				
1. _____				
2. _____				
				_____ = Total Cover
% Bare Ground in Herb Stratum <u>0</u> % Cover of Biotic Crust <u>0</u>				

Dominance Test worksheet:
 Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
 Total Number of Dominant Species Across All Strata: 1 (B)
 Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:
 Total % Cover of: _____ Multiply by: _____
 OBL species _____ x 1 = _____
 FACW species _____ x 2 = _____
 FAC species _____ x 3 = _____
 FACU species 10 x 4 = 40
 UPL species 90 x 5 = 450
 Column Totals: 100 (A) 490 (B)
 Prevalence Index = B/A = 4.9

Hydrophytic Vegetation Indicators:
 ___ Dominance Test is >50%
 ___ Prevalence Index is ≤3.0¹
 ___ Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 ___ Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No

Remarks:
 Sample point not dominated by hydrophytic vegetation.

SOIL

Sampling Point: 12b

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-20	10YR 3/2	100	none				loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)	Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) (LRR C) <input type="checkbox"/> 1 cm Muck (A9) (LRR D) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Vernal Pools (F9)
	<input type="checkbox"/> 1 cm Muck (A9) (LRR C) <input type="checkbox"/> 2 cm Muck (A10) (LRR B) <input type="checkbox"/> Reduced Vertic (F18) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present): Type: <u>none</u> Depth (inches): <u>none</u>	Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
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Remarks:
 No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) (Nonriverine) <input type="checkbox"/> Sediment Deposits (B2) (Nonriverine) <input type="checkbox"/> Drift Deposits (B3) (Nonriverine) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Biotic Crust (B12) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)
	<input type="checkbox"/> Water Marks (B1) (Riverine) <input type="checkbox"/> Sediment Deposits (B2) (Riverine) <input type="checkbox"/> Drift Deposits (B3) (Riverine) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>none</u> Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>none</u> Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>none</u>	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
 None

Remarks:
 No wetland hydrology indicators observed.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Ball Alamo City/County: Contra Costa County Sampling Date: 5/22/14
 Applicant/Owner: Camille Ironwood Properties, LLC State: CA Sampling Point: 13
 Investigator(s): Coast Range Biological and Mosaic Associates Section, Township, Range: T1S,R2W,sec24, Mt. Diablo Meridian
 Landform (hillslope, terrace, etc.): ditch Local relief (concave, convex, none): concave Slope (%): 5
 Subregion (LRR): Mediterranean California Lat: 37.832159 Long: -122.026413 Datum: NAD 83
 Soil Map Unit Name: Millsholm loam, 30 to 50 percent slopes NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation _____, Soil _____, or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Remarks: Drier than normal year. Sample point located in a narrow ditch that lacks bed/bank, OHWM, and hydrophytic vegetation. Only one wetland parameter met.	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				
Sapling/Shrub Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				
Herb Stratum (Plot size: <u>5'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Bromus madritensis</u>	<u>Y</u>	<u>50</u>	<u>UPL</u>	
2. <u>Bromus diandrus</u>	<u>Y</u>	<u>20</u>	<u>UPL</u>	
3. <u>Vicia cf. benghalensis</u>	<u>Y</u>	<u>20</u>	<u>UPL</u>	
4. <u>Festuca perennis</u>	<u>N</u>	<u>5</u>	<u>FAC</u>	
5. <u>Elymus glaucus</u>	<u>N</u>	<u>5</u>	<u>FACU</u>	
6. <u>Juncus patens</u>	<u>N</u>	<u>5</u>	<u>FACW</u>	
7. <u>Cynosurus echinatus</u>	<u>N</u>	<u>5</u>	<u>UPL</u>	
8. _____	_____	_____	_____	
<u>110</u> = Total Cover				
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>0</u> % Cover of Biotic Crust <u>0</u>				

Dominance Test worksheet:
 Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
 Total Number of Dominant Species Across All Strata: 3 (B)
 Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:
 Total % Cover of: _____ Multiply by: _____
 OBL species _____ x 1 = _____
 FACW species 5 x 2 = 10
 FAC species 5 x 3 = 15
 FACU species 5 x 4 = 20
 UPL species 95 x 5 = 475
 Column Totals: 110 (A) 520 (B)
 Prevalence Index = B/A = 4.7

Hydrophytic Vegetation Indicators:
 ___ Dominance Test is >50%
 ___ Prevalence Index is ≤3.0¹
 ___ Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 ___ Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No

Remarks:
 Sample point not dominated by hydrophytic vegetation.

SOIL

Sampling Point: 13

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-20	10YR 3/2	80	10YR 5/6	20	C	M	clay loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) **(LRR C)**
- 1 cm Muck (A9) **(LRR D)**
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)

- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Vernal Pools (F9)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) **(LRR C)**
- 2 cm Muck (A10) **(LRR B)**
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: none
 Depth (inches): none

Hydric Soil Present? Yes No

Remarks:

Soil has low chroma matrix with redoximorphic mottles.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1) **(Nonriverine)**
- Sediment Deposits (B2) **(Nonriverine)**
- Drift Deposits (B3) **(Nonriverine)**
- Surface Soil Cracks (B6)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)

- Salt Crust (B11)
- Biotic Crust (B12)
- Aquatic Invertebrates (B13)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres along Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- Water Marks (B1) **(Riverine)**
- Sediment Deposits (B2) **(Riverine)**
- Drift Deposits (B3) **(Riverine)**
- Drainage Patterns (B10)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes No Depth (inches): none
 Water Table Present? Yes No Depth (inches): none
 Saturation Present? Yes No Depth (inches): none
 (includes capillary fringe)

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

None

Remarks:

Located in narrow ditch (1' wide) that lacks bed, bank, and OHWM. Possibly holds water during rain events but drains quickly. No wetland hydrology indicators observed.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Ball Alamo City/County: Contra Costa County Sampling Date: 5/22/14
 Applicant/Owner: Camille Ironwood Properties, LLC State: CA Sampling Point: 14a
 Investigator(s): Coast Range Biological and Mosaic Associates Section, Township, Range: T1S,R2W,sec24, Mt. Diablo Meridian
 Landform (hillslope, terrace, etc.): swale Local relief (concave, convex, none): concave Slope (%): 5
 Subregion (LRR): Mediterranean California Lat: 37.832027 Long: -122.026453 Datum: NAD 83
 Soil Map Unit Name: Millsholm loam, 30 to 50 percent slopes NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation _____, Soil _____, or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Remarks: Drier than normal year. Located in a shallow concave area. All three wetland parameters met.	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				
Sapling/Shrub Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				
Herb Stratum (Plot size: <u>5'</u>)				
1. <u>Juncus patens</u>	<u>80</u>	<u>Y</u>	<u>FACW</u>	
2. <u>Torilis arvensis</u>	<u>2</u>	<u>N</u>	<u>UPL</u>	
3. <u>Carduus pycnocephalus</u>	<u>2</u>	<u>N</u>	<u>UPL</u>	
4. <u>Bromus madritensis</u>	<u>2</u>	<u>N</u>	<u>UPL</u>	
5. <u>Elymus glaucus</u>	<u>5</u>	<u>N</u>	<u>FACU</u>	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
<u>91</u> = Total Cover				
Woody Vine Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>10</u> % Cover of Biotic Crust <u>0</u>				

Dominance Test worksheet:
 Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
 Total Number of Dominant Species Across All Strata: 1 (B)
 Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:
 Total % Cover of: _____ Multiply by: _____
 OBL species _____ x 1 = _____
 FACW species _____ x 2 = _____
 FAC species _____ x 3 = _____
 FACU species _____ x 4 = _____
 UPL species _____ x 5 = _____
 Column Totals: _____ (A) _____ (B)
 Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
 Dominance Test is >50%
 Prevalence Index is ≤3.0¹
 Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes No _____

Remarks:
 Sample point dominated by hydrophytic vegetation.

SOIL

Sampling Point: 14a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-20	10YR 3/2	95	10YR 5/6	5	C	M	clay loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)	Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) (LRR C) <input type="checkbox"/> 1 cm Muck (A9) (LRR D) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input checked="" type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Vernal Pools (F9)
	<input type="checkbox"/> 1 cm Muck (A9) (LRR C) <input type="checkbox"/> 2 cm Muck (A10) (LRR B) <input type="checkbox"/> Reduced Vertic (F18) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present): Type: <u>none</u> Depth (inches): <u>none</u>	Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
--	---

Remarks:
Soil has low chroma matrix with redoximorphic mottles.

HYDROLOGY

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) (Nonriverine) <input type="checkbox"/> Sediment Deposits (B2) (Nonriverine) <input type="checkbox"/> Drift Deposits (B3) (Nonriverine) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Biotic Crust (B12) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)
	<input type="checkbox"/> Water Marks (B1) (Riverine) <input type="checkbox"/> Sediment Deposits (B2) (Riverine) <input type="checkbox"/> Drift Deposits (B3) (Riverine) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>none</u> Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>none</u> Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>none</u>	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
---	---

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
None

Remarks:
Wetland hydrology indicators observed. Located in a narrow concave area that receives water via sheet flow and narrow (1' wide) drainage. Discharges via sheet flow and narrow drainage to Wetland 4.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Ball Alamo City/County: Contra Costa County Sampling Date: 5/22/14
 Applicant/Owner: Camille Ironwood Properties, LLC State: CA Sampling Point: 14b
 Investigator(s): Coast Range Biological and Mosaic Associates Section, Township, Range: T1S,R2W,sec24, Mt. Diablo Meridian
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): convex Slope (%): 2
 Subregion (LRR): Mediterranean California Lat: 37.832027 Long: -122.026453 Datum: NAD 83
 Soil Map Unit Name: Millsholm loam, 30 to 50 percent slopes NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation _____, Soil _____, or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/> Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Remarks: Drier than normal year. Sample point located on a terrace above wetland. No wetland parameters met.	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>3</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
4. _____	_____	_____	_____	
_____ = Total Cover				
Sapling/Shrub Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet:
1. _____	_____	_____	_____	Total % Cover of: _____ Multiply by: _____
2. _____	_____	_____	_____	OBL species _____ x 1 = _____
3. _____	_____	_____	_____	FACW species _____ x 2 = _____
4. _____	_____	_____	_____	FAC species _____ x 3 = _____
5. _____	_____	_____	_____	FACU species <u>2</u> x 4 = <u>8</u>
_____ = Total Cover				UPL species <u>95</u> x 5 = <u>475</u>
				Column Totals: <u>97</u> (A) <u>483</u> (B)
				Prevalence Index = B/A = <u>5.0</u>
Herb Stratum (Plot size: <u>5'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <u>Bromus diandrus</u>	<u>30</u>	<u>Y</u>	<u>UPL</u>	<input type="checkbox"/> Dominance Test is >50%
2. <u>Bromus madritensis</u>	<u>30</u>	<u>Y</u>	<u>UPL</u>	<input type="checkbox"/> Prevalence Index is ≤3.0 ¹
3. <u>Avena sp.</u>	<u>20</u>	<u>Y</u>	<u>UPL</u>	<input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
4. <u>Carduus pycnocephalus</u>	<u>10</u>	<u>N</u>	<u>UPL</u>	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
5. <u>Torilis arvensis</u>	<u>5</u>	<u>N</u>	<u>UPL</u>	
6. <u>Elymus glaucus</u>	<u>2</u>	<u>N</u>	<u>FACU</u>	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
_____ = Total Cover				
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>5</u> % Cover of Biotic Crust <u>0</u>				

Remarks:
 Sample point not dominated by hydrophytic vegetation.

SOIL

Sampling Point: 14b

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-20	10YR 3/2	100	none				clay loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) **(LRR C)**
- 1 cm Muck (A9) **(LRR D)**
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)

- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Vernal Pools (F9)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) **(LRR C)**
- 2 cm Muck (A10) **(LRR B)**
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: none
 Depth (inches): none

Hydric Soil Present? Yes No

Remarks:

No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1) **(Nonriverine)**
- Sediment Deposits (B2) **(Nonriverine)**
- Drift Deposits (B3) **(Nonriverine)**
- Surface Soil Cracks (B6)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)

- Salt Crust (B11)
- Biotic Crust (B12)
- Aquatic Invertebrates (B13)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres along Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- Water Marks (B1) **(Riverine)**
- Sediment Deposits (B2) **(Riverine)**
- Drift Deposits (B3) **(Riverine)**
- Drainage Patterns (B10)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes No Depth (inches): none
 Water Table Present? Yes No Depth (inches): none
 Saturation Present? Yes No Depth (inches): none
 (includes capillary fringe)

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

None

Remarks:

No wetland hydrology indicators observed.



Areas of Mapped Features:

Wetland 1:	2,680 sq. ft. (0.062-acre)
Wetland 2:	6,654 sq. ft. (0.153-acre)
Wetland 3:	861 sq. ft. (0.020-acre)
Wetland 4:	1,653 sq. ft. (0.038-acre)
Wetland 5:	433 sq. ft. (0.010-acre)
OW 1:	482 sq. ft. (0.011-acre)
OW 2:	1,661 sq. ft. (0.038-acre)
OW 3:	876 sq. ft. (0.020-acre)
OW 4:	5,016 sq. ft. (0.115-acre)

Legend

	Study Area
+	Sample Points
	Potentially Isolated Wetland
	Potential Section 404 Jurisdictional Wetlands
	Potential Section 404 Jurisdictional "Other Waters"

Appendix B. Delineation Map of the Study Area.
 Basemap: Terraserver (5/23/10 photo date).
 Mapscale: 1:1,500
 0 50 100 200 300 400 Feet
 Mosaic Associates LLC
 10000 Wilshire Avenue, Suite D
 Northridge, CA 91324
 Ph: (910) 884-0384 Fax: (910) 884-0386

Appendix C. SOILS MAP AND INFORMATION

The following is a custom report generated by the USDA Web Soil Survey. It contains information on the entire user-defined "Area of Interest", of which the Study Area is only a part. The Study Area only contains one of the soil types in the report, Millsholm Loam.



A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Contra Costa County, California

Ball Property



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://soils.usda.gov/sqi/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<http://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://soils.usda.gov/contact/state_offices/).

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 Soil Data Mart Web site or the NRCS Web Soil Survey. The Soil Data Mart is the data storage site for the 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

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GaA—GARRETSON LOAM, 0 TO 2 PERCENT SLOPES.....	14
GaB—GARRETSON LOAM, 2 TO 5 PERCENT SLOPES.....	15
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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the

Custom Soil Resource Report

individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

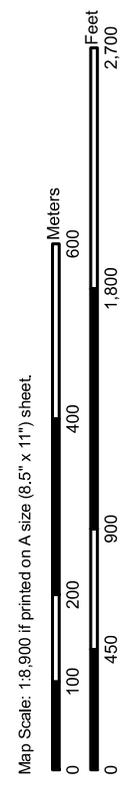
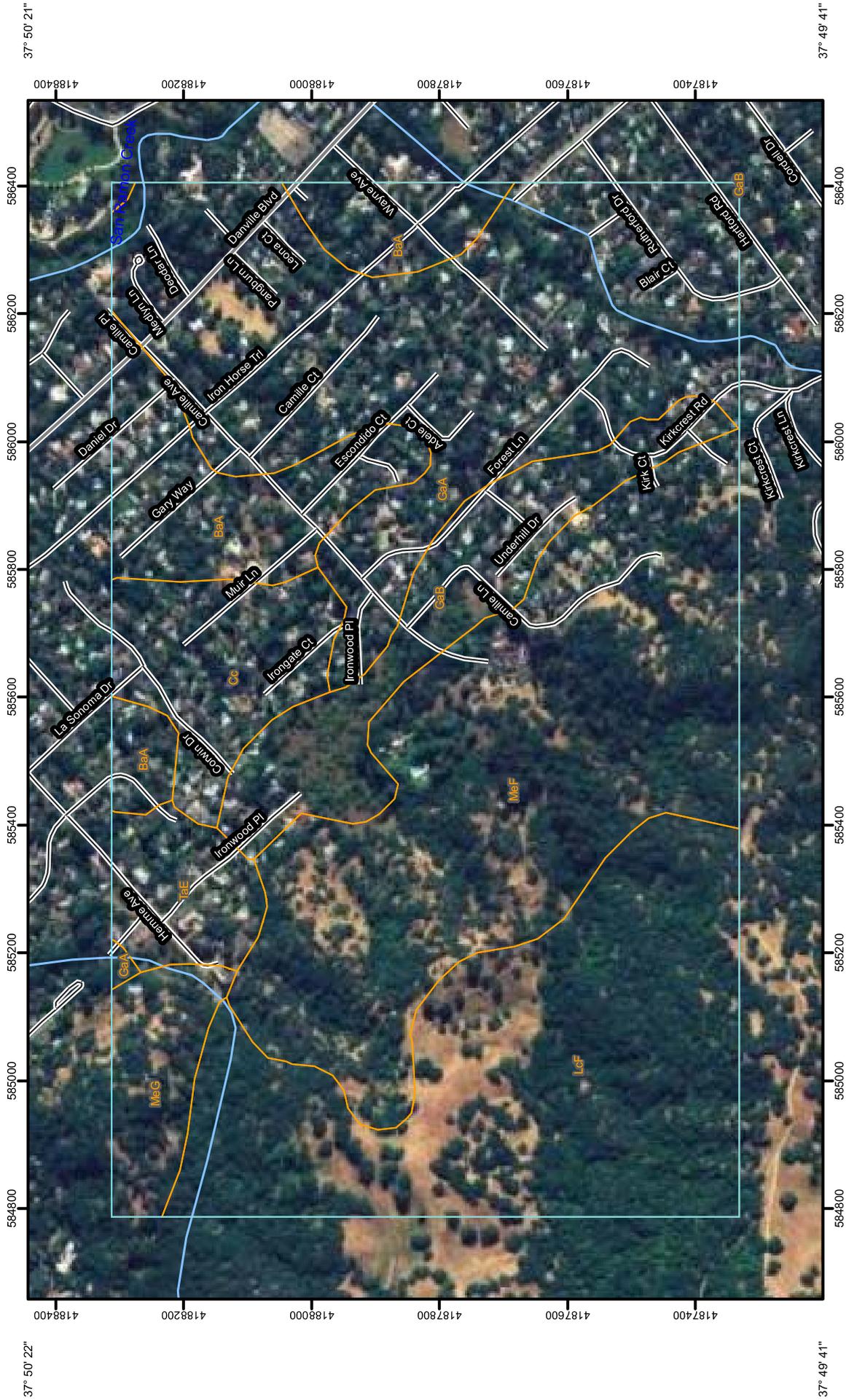
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

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

122° 2' 16" 37° 50' 22" 122° 0' 59" 37° 49' 41"



MAP LEGEND

- Area of Interest (AOI)**
 -  Area of Interest (AOI)
- Soils**
 -  Soil Map Units
- 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
- Special Line Features**
 -  Gully
 -  Short Steep Slope
 -  Other
- Political Features**
 -  Cities
- Water Features**
 -  Streams and Canals
- Transportation**
 -  Rails
 -  Interstate Highways
 -  US Routes
 -  Major Roads
 -  Local Roads
-  Very Stony Spot
-  Wet Spot
-  Other

MAP INFORMATION

Map Scale: 1:8,900 if printed on A size (8.5" x 11") sheet.

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 accurate map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
 Coordinate System: UTM Zone 10N NAD83

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

Soil Survey Area: Contra Costa County, California
 Survey Area Data: Version 8, Jul 22, 2008

Date(s) aerial images were photographed: 6/13/2005

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

Contra Costa County, California (CA013)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BaA	BOTELLA CLAY LOAM, 0 TO 2 PERCENT SLOPES	36.9	9.4%
Cc	CLEAR LAKE CLAY	21.5	5.5%
GaA	GARRETSON LOAM, 0 TO 2 PERCENT SLOPES	97.2	24.8%
GaB	GARRETSON LOAM, 2 TO 5 PERCENT SLOPES	28.7	7.3%
LcF	LODO CLAY LOAM, 30 TO 50 PERCENT SLOPES	83.7	21.3%
MeF	MILLSHOLM LOAM, 30 TO 50 PERCENT SLOPES	99.1	25.3%
MeG	MILLSHOLM LOAM, 50 TO 75 PERCENT SLOPES	12.6	3.2%
TaE	TIERRA LOAM, 15 TO 30 PERCENT SLOPES	12.4	3.2%
Totals for Area of Interest		392.2	100.0%

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

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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 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.

Contra Costa County, California

BaA—BOTELLA CLAY LOAM, 0 TO 2 PERCENT SLOPES

Map Unit Setting

Elevation: 300 to 700 feet

Mean annual precipitation: 15 to 25 inches

Mean annual air temperature: 59 degrees F

Frost-free period: 260 to 290 days

Map Unit Composition

Botella and similar soils: 85 percent

Minor components: 15 percent

Description of Botella

Setting

Landform: Alluvial fans, flood plains

Landform position (three-dimensional): Tread, talf

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Alluvium derived from sedimentary rock; alluvium derived from sedimentary rock

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Moderately 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

Frequency of flooding: None

Frequency of ponding: None

Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)

Available water capacity: High (about 11.4 inches)

Interpretive groups

Land capability classification (irrigated): 1

Land capability (nonirrigated): 4c

Typical profile

0 to 3 inches: Clay loam

3 to 68 inches: Silty clay loam

Minor Components

Unnamed

Percent of map unit: 3 percent

Landform: Depressions

Clear lake

Percent of map unit: 3 percent

Landform: Depressions

Conejo

Percent of map unit: 3 percent

Garretson

Percent of map unit: 3 percent

Unnamed

Percent of map unit: 3 percent

Cc—CLEAR LAKE CLAY

Map Unit Setting

Elevation: 100 to 1,000 feet

Mean annual precipitation: 14 to 25 inches

Mean annual air temperature: 59 degrees F

Frost-free period: 260 to 300 days

Map Unit Composition

Clear lake and similar soils: 85 percent

Minor components: 15 percent

Description of Clear Lake

Setting

Landform: Basin floors

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Talf

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Alluvium

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Poorly drained

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: Occasional

Frequency of ponding: None

Calcium carbonate, maximum content: 2 percent

Maximum salinity: Nonsaline to slightly saline (2.0 to 8.0 mmhos/cm)

Available water capacity: High (about 9.6 inches)

Interpretive groups

Land capability classification (irrigated): 2w

Land capability (nonirrigated): 4w

Typical profile

0 to 30 inches: Clay

30 to 60 inches: Clay

Minor Components

Pescadero

Percent of map unit: 4 percent
Landform: Depressions

Cropley

Percent of map unit: 4 percent

Conejo

Percent of map unit: 4 percent

Unnamed

Percent of map unit: 3 percent
Landform: Strand plains

GaA—GARRETSON LOAM, 0 TO 2 PERCENT SLOPES

Map Unit Setting

Elevation: 100 to 500 feet
Mean annual precipitation: 14 to 20 inches
Mean annual air temperature: 59 degrees F
Frost-free period: 250 to 300 days

Map Unit Composition

Garretson and similar soils: 85 percent
Minor components: 15 percent

Description of Garretson

Setting

Landform: Flood plains
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from sedimentary rock

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
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
Available water capacity: High (about 9.6 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability (nonirrigated): 4c

Typical profile

*0 to 25 inches: Loam
25 to 60 inches: Loam*

Minor Components

Conejo

Percent of map unit: 10 percent

Botella

Percent of map unit: 5 percent

GaB—GARRETSON LOAM, 2 TO 5 PERCENT SLOPES

Map Unit Setting

*Elevation: 100 to 500 feet
Mean annual precipitation: 14 to 20 inches
Mean annual air temperature: 59 degrees F
Frost-free period: 250 to 300 days*

Map Unit Composition

*Garretson and similar soils: 85 percent
Minor components: 15 percent*

Description of Garretson

Setting

*Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from sedimentary rock*

Properties and qualities

*Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
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
Available water capacity: High (about 9.6 inches)*

Interpretive groups

*Land capability classification (irrigated): 2e
Land capability (nonirrigated): 4e*

Typical profile

*0 to 25 inches: Loam
25 to 60 inches: Loam*

Minor Components

Conejo

Percent of map unit: 10 percent

Briones

Percent of map unit: 5 percent

LcF—LODO CLAY LOAM, 30 TO 50 PERCENT SLOPES

Map Unit Setting

Elevation: 300 to 3,000 feet

Mean annual precipitation: 14 to 25 inches

Mean annual air temperature: 59 degrees F

Frost-free period: 260 to 300 days

Map Unit Composition

Lodo and similar soils: 85 percent

Minor components: 15 percent

Description of Lodo

Setting

Landform: Hills

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Residuum weathered from sandstone and shale

Properties and qualities

Slope: 30 to 50 percent

Depth to restrictive feature: 10 to 20 inches to lithic bedrock

Drainage class: Somewhat excessively drained

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water capacity: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): 6e

Land capability (nonirrigated): 6e

Ecological site: STEEP SHALLOW FINE LOAMY (R015XD072CA)

Typical profile

0 to 18 inches: Clay loam

18 to 22 inches: Unweathered bedrock

Minor Components

Milsholm

Percent of map unit: 10 percent

Rock outcrop

Percent of map unit: 3 percent

Gaviota

Percent of map unit: 2 percent

MeF—MILLSHOLM LOAM, 30 TO 50 PERCENT SLOPES

Map Unit Setting

Elevation: 300 to 2,000 feet

Mean annual precipitation: 14 to 24 inches

Mean annual air temperature: 59 degrees F

Frost-free period: 250 to 300 days

Map Unit Composition

Millsholm and similar soils: 85 percent

Minor components: 8 percent

Description of Millsholm

Setting

Landform: Upland slopes

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Residuum weathered from sandstone and shale

Properties and qualities

Slope: 30 to 50 percent

Depth to restrictive feature: 12 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water capacity: Very low (about 2.4 inches)

Interpretive groups

Land capability classification (irrigated): 6e

Land capability (nonirrigated): 6e

Ecological site: STEEP SHALLOW FINE LOAMY (R015XD072CA)

Typical profile

0 to 12 inches: Loam

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12 to 16 inches: Unweathered bedrock

Minor Components

Los osos

Percent of map unit: 5 percent

Los gatos

Percent of map unit: 3 percent

MeG—MILLSHOLM LOAM, 50 TO 75 PERCENT SLOPES

Map Unit Setting

Elevation: 300 to 2,000 feet

Mean annual precipitation: 14 to 24 inches

Mean annual air temperature: 59 degrees F

Frost-free period: 250 to 300 days

Map Unit Composition

Millsholm and similar soils: 85 percent

Minor components: 8 percent

Description of Millsholm

Setting

Landform: Upland slopes

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Residuum weathered from sandstone and shale

Properties and qualities

Slope: 50 to 75 percent

Depth to restrictive feature: 12 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water capacity: Very low (about 2.4 inches)

Interpretive groups

Land capability classification (irrigated): 7e

Land capability (nonirrigated): 7e

Ecological site: VERY STEEP SHALLOW FINE LOAMY (R015XD120CA)

Typical profile

0 to 12 inches: Loam

12 to 16 inches: Unweathered bedrock

Minor Components

Los osos

Percent of map unit: 3 percent

Los gatos

Percent of map unit: 3 percent

Felton

Percent of map unit: 2 percent

TaE—TIERRA LOAM, 15 TO 30 PERCENT SLOPES

Map Unit Setting

Elevation: 150 to 1,200 feet

Mean annual precipitation: 12 to 25 inches

Mean annual air temperature: 59 degrees F

Frost-free period: 270 to 300 days

Map Unit Composition

Tierra and similar soils: 85 percent

Minor components: 15 percent

Description of Tierra

Setting

Landform: Fan terraces

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Alluvium derived from sedimentary rock

Properties and qualities

Slope: 15 to 30 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Moderately well drained

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

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 10 percent

Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)

Available water capacity: Low (about 5.8 inches)

Interpretive groups

Land capability classification (irrigated): 4e

Land capability (nonirrigated): 4e

Ecological site: CLAYPAN (R015XD115CA)

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Typical profile

0 to 25 inches: Loam

25 to 59 inches: Clay

59 to 71 inches: Silty clay loam

Minor Components

Millsholm

Percent of map unit: 8 percent

Los osos

Percent of map unit: 7 percent

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Appendix D. WETS TABLES FOR CLIMATE INFORMATION

The following contains tables of precipitation and growing season information for the four weather stations nearest to the Study Area.

WETS Station : ANTIOCH PUMP PLANT 3, CA0232 Creation Date: 08/29/2002
 Latitude: 3759 Longitude: 12144 Elevation: 00060
 State FIPS/County(FIPS): 06013 County Name: Contra Costa
 Start yr. - 1971 End yr. - 2000

Month	Temperature (Degrees F.)			Precipitation (Inches)				
	avg daily max	avg daily min	avg	avg	30% chance will have		avg	avg
					less than	more than	# of days or more	total snow fall
January	53.6	37.6	45.6	2.61	1.05	3.17	5	0.0
February	60.2	41.3	50.7	2.51	1.06	3.06	5	0.0
March	64.9	44.3	54.6	2.21	1.00	2.70	6	0.0
April	71.6	47.2	59.4	0.70	0.31	0.88	2	0.0
May	78.9	51.9	65.4	0.45	0.00	0.50	1	0.0
June	86.0	56.5	71.2	0.09	0.00	0.11	0	0.0
July	90.8	58.1	74.5	0.03	0.00	0.00	0	0.0
August	89.9	57.5	73.7	0.03	0.00	0.00	0	0.0
September	86.0	56.0	71.0	0.24	0.00	0.22	0	0.0
October	77.5	51.1	64.3	0.72	0.15	0.85	1	0.0
November	63.9	43.5	53.7	1.71	0.55	2.10	4	0.0
December	54.6	37.1	45.9	1.84	0.76	2.28	4	0.0
Annual	-----	-----	-----	-----	9.97	14.77	--	----
Average	73.1	48.5	60.8	-----	-----	-----	--	----
Total	-----	-----	-----	13.14	-----	-----	28	0.0

GROWING SEASON DATES

Probability	Temperature		
	24 F or higher	28 F or higher	32 F or higher
	Beginning and Ending Dates Growing Season Length		
50 percent *	12/25 to 12/25 > 365 days	1/ 1 to 12/31 365 days	2/ 5 to 12/ 7 306 days
70 percent *	12/25 to 12/25 > 365 days	12/31 to 12/31 > 365 days	1/15 to 12/28 349 days

* Percent chance of the growing season occurring between the Beginning

and Ending dates.

total 1955-2002 prcp

Station : CA0232, ANTIOCH PUMP PLANT 3

----- Unit = inches

yr	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	annl
55			0.51	1.32	0.64	0.00	0.00	0.00	0.02	0.08	0.92	7.14	10.63
56	4.67	0.72	0.04	1.92	0.37	0.00	0.01	0.00	0.78	0.47	0.01	0.15	9.14
57	1.67	3.31	1.61	0.82	1.15	0.00	0.00	0.00	0.02	1.31	0.16	2.40	12.45
58	3.21	5.57	4.17	3.97	0.60	0.26	0.00	0.00	0.03	0.07	0.00	0.50	18.38
59	2.96	3.36	0.27	0.40	0.00	0.00	0.00	0.00	1.75	0.00	0.01	1.28	10.03
60	2.51	2.80	1.40	0.97	0.35	0.00	0.03	0.00	0.00	0.02	2.76	0.60	11.44
61	2.33	0.73	1.56	0.66	0.43	0.04	0.00	0.00	0.24	0.04	2.33	1.11	9.47
62	0.59	6.08	0.92	0.02	0.00	0.00	0.00	0.05	0.00	4.85	0.23	1.52	14.26
63	1.83	2.76	2.55	3.50	0.41	0.03	0.00	0.00	0.10	0.54	2.65	0.22	14.59
64	2.80	0.01	1.21	0.14	0.07	0.80	0.00	0.15	0.00	1.34	1.87	2.87	11.26
65	2.10	0.63	1.04	1.83	0.04	0.00	0.03	0.28	0.00	0.05	3.14	2.57	11.71
66	1.56	1.10	0.25	0.40	0.31	0.06	0.20	0.03	0.08	0.00	3.26	2.53	9.78
67	5.25	0.29	3.49	2.61	0.06	0.61	0.00	0.00	0.01	0.12	0.76	0.85	14.05
68	3.40	1.25	1.44	0.38	0.10	0.00	0.00	0.45	0.00	0.13	2.16	2.41	11.72
69	6.31	4.71	1.14	0.68	0.01	0.00	0.00	0.00	0.00	1.25	0.51	2.85	17.46
70	4.71	0.45	1.27	0.40	0.00	0.17	0.00	0.00	0.05	0.33	4.83	3.83	16.04
71	0.61	0.32	1.92	0.69	0.73	0.00	0.00	0.00	0.02	0.03	0.59	2.96	7.87
72	0.60	1.90	0.06	0.44	0.10	0.12	0.00	0.00	0.52	4.17	4.56	1.44	13.91
73		3.97	2.49	0.16	0.00	0.00	0.00	0.00	0.05	1.89	3.33	3.28	15.17
74	1.14	0.45	2.11	1.61	0.00	0.07	0.09	0.00	0.00	0.68	0.25	1.92	8.32
75	0.80	2.84	4.29	0.85	0.00	0.03	0.17	0.06	0.00	1.40	0.07	0.18	10.69
76	0.26	0.93	0.80	0.29	0.00	0.07	0.00	0.74	0.90	0.48	0.44	0.96	5.87
77	0.71	0.79	1.21	0.23	2.03	0.00	0.00	0.00	0.28	0.03	0.91	2.55	8.74
78	6.07	3.19	3.43	1.52	0.00	0.00	0.00	0.00	0.05	0.01	1.89	0.18	16.34
79	4.63	2.68	1.90	0.98	0.00	0.00	0.11	0.00	0.00	M0.00	1.09	3.84	15.23
80	3.26	5.03		0.70	M0.00	0.00	0.46	0.00	0.00	0.00	0.14	1.09	10.68
81	2.88	0.68	2.22	M0.00	0.04	0.00	0.00	0.00	0.04	1.07	4.35	0.01	11.29
82	5.03	1.57	3.82	1.69	0.00	0.00	0.00	0.00	1.22	1.31	4.22	1.96	20.82
83	5.20	3.76	6.26	3.31	0.38	0.00	0.00	0.06	0.63	0.06	3.99	4.10	27.75
84	0.13	1.00	0.86	0.19	0.01	0.00	0.00	0.01	0.04	1.75	3.82	0.85	8.66
85	0.44	0.84	1.90	0.22	0.00	0.22	0.00	0.00	0.16	0.54	2.23	2.02	8.57
86M	1.85	7.30	3.71	0.69	0.18	0.00	0.02	0.00	0.71	0.05	0.00	0.52	15.03
87	1.74	3.04	1.89	0.16	0.06	0.00	0.00	0.00	0.00	0.42	1.31	3.55	12.17
88	2.47	0.49	0.35	0.44	0.67	0.44	0.00	0.00	0.00	0.45	1.32	1.86	8.49
89	0.86	1.00	2.40	M0.24	0.14	0.20	0.00	0.04	1.84	1.33	1.02	0.00	9.07
90	1.22	1.69	0.66	0.34	1.92	0.00	0.00	0.00	0.00	0.09	0.29	1.61	7.82
91	0.18	2.16	4.39	0.17	0.25		0.00	0.04	0.00	1.29	0.11	1.16	9.75
92	0.93	3.95	1.86	0.47	0.00	0.22	0.00	0.00	0.00	0.46	0.12	3.76	11.77
93	6.97	3.76	1.98	0.19	0.50	0.10	0.00	0.00	0.00	0.23	1.86	1.30	16.89
94	0.92	2.65	0.13	0.54	1.06	0.00	0.00	0.00	0.01	0.42	3.50	1.24	10.47
95M	6.70	0.06	5.74	0.27	1.21	0.64	0.00	0.00	0.00	0.00	0.00	5.05	19.67
96	2.77	3.32	1.94	1.16	1.23	0.00	0.00	0.00	0.00	0.89	2.65	3.47	17.43
97	6.01	0.12	0.16	M0.00	0.32	0.31	0.00	M0.01	0.00	0.44	3.35	1.47	12.19
98	4.92	9.03	1.63	1.31	2.09	0.07	0.00	0.00	0.48	0.58	1.57	0.61	22.29
99	1.76	2.41	1.72	0.84	0.00	0.00	0.00	0.00	0.16	0.10		0.55	7.54
0	4.68	4.46		1.25	0.59	0.07		0.00	0.08	1.28	0.62		13.03
1									M0.00	0.00			0.00
2													

WETS Station : MARTINEZ WATER PLANT, CA5378 Creation Date: 08/29/2002
 Latitude: 3801 Longitude: 12207 Elevation: 00040
 State FIPS/County(FIPS): 06013 County Name: Contra Costa
 Start yr. - 1971 End yr. - 2000

Month	Temperature (Degrees F.)			Precipitation (Inches)				
	avg daily max	avg daily min	avg	avg	30% chance will have		avg	avg
					less than	more than	# of days w/.1 or more	total snow fall
January	55.0	39.1	47.0	4.25	1.98	5.19	7	0.0
February	61.0	42.0	51.5	3.80	1.55	4.62	6	0.0
March	65.9	44.4	55.1	3.24	1.55	4.02	6	0.0
April	72.4	46.3	59.3	1.04	0.37	1.25	3	0.0
May	78.9	49.8	64.3	0.46	0.03	0.53	1	0.0
June	85.2	53.6	69.4	0.12	0.00	0.11	0	0.0
July	89.0	54.9	71.9	0.02	0.00	0.00	0	0.0
August	88.3	55.0	71.7	0.08	0.00	0.00	0	0.0
September	84.8	53.9	69.4	0.24	0.00	0.27	0	0.0
October	76.8	49.6	63.2	0.94	0.33	1.16	2	0.0
November	63.9	43.6	53.8	2.59	0.80	3.08	5	0.0
December	55.5	38.7	47.1	2.79	1.60	3.44	5	0.0
Annual					15.39	22.56	--	--
Average	73.1	47.6	60.3				--	--
Total				19.57			35	0.0

GROWING SEASON DATES

Probability	Temperature		
	24 F or higher	28 F or higher	32 F or higher
	Beginning and Ending Dates Growing Season Length		
50 percent *	> 365 days	> 365 days	1/27 to 12/13 322 days
70 percent *	> 365 days	> 365 days	1/17 to 12/23 342 days

* Percent chance of the growing season occurring between the Beginning and Ending dates.

total 1970-2002 prcp

Station : CA5378, MARTINEZ WATER PLANT
 ----- Unit = inches

yr	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	annl
70		1.43	1.41	0.20	0.00	0.07	0.00	0.00	0.00	0.45	5.82	6.37	15.75
71	1.96	0.16	2.62	0.81	0.27	0.00	0.00	0.00	0.08	0.01	0.88	3.84	10.63
72	1.00	1.66	0.32	0.79	0.00	0.14	0.00	0.00	0.43	2.99	5.16	2.21	14.70
73	9.31	5.11	1.76	0.14	0.00	0.00	0.00	0.00	0.21	1.58	5.73	4.05	27.89
74	2.39	1.09	5.02	1.80	0.00	0.00	0.28	0.00	0.00	0.89	0.64	2.06	14.17
75	1.40	4.89	5.90	1.71	0.00	0.02	0.16	0.03	0.00	1.57	0.18	0.52	16.38
76	0.35	2.02	0.92	0.46	0.00	0.00	0.00	0.58	0.76	0.48	0.70	1.53	7.80
77	1.57	1.20	1.63	0.05	0.61	0.00	0.00	0.00	0.64	0.08	2.72	4.63	13.13
78	8.03	3.72	5.73	2.67	0.08	0.00	0.00	0.00	0.13	0.00	1.14	0.68	22.18
79	5.90	4.50	3.62	1.16	0.46	0.00	0.00	0.00	0.00	1.20	2.58	4.86	24.28
80	5.18	7.51	2.55	1.23	0.17	0.02	0.18	0.00	0.00	0.20	0.06	1.94	19.04
81	4.97	1.00	3.45	0.20	0.11	0.00	0.00	0.00	0.18	2.05	6.42	3.77	22.15
82	8.51	2.33	5.55	4.10	0.00	0.03	0.00	0.02	1.00	2.19	5.51	3.00	32.24
83	6.40	6.09	9.10	2.72	0.25	0.00	0.00	0.71	0.95	0.62	6.65	5.60	39.09
84	0.33	1.74	1.18	0.64	0.01	0.05	0.00	0.11	0.15	1.63	6.01	1.37	13.22
85	0.76	2.10	3.68	0.04	0.03	0.08	0.02	0.00	0.28	0.90	3.67	2.67	14.23
86	3.83	11.70	5.66	0.78	0.38	0.00	0.04	0.00	0.75	0.03	0.11	1.56	24.84
87	2.46	3.33	2.11	0.06	0.04	0.00	0.00	0.00	0.00	1.46	1.29	3.91	14.66
88	4.62	0.37	0.00	2.65	0.40	0.44	0.00	0.00	0.00	0.32	2.54	3.06	14.40
89	1.18	1.23	4.97	0.41	0.05	0.11	0.00	0.11	1.23	1.56	1.80	0.00	12.65
90	3.18	3.36	1.35	0.30	1.81	0.00	0.00	0.00	0.15	0.18	0.34	1.35	12.02
91	0.41	3.16	6.82	0.36	0.12	0.35	0.00	0.05	0.02	2.00	0.65	2.01	15.95
92	1.69	6.39	2.83	0.18	0.00	0.22	0.00	0.00	0.00	1.12	0.13	6.29	18.85
93	9.67	4.19	1.85	0.62	0.57	0.44	0.00	0.00	0.00	0.28	2.50	2.32	22.44
94	1.98	3.80	0.27	0.86	1.47	0.06	0.00	0.00	0.00	0.80	6.86	2.40	18.50
95	10.38	0.13	10.00	0.83	1.08	1.37	0.00	0.00	0.00	0.00	0.04	5.91	29.74
96	5.55	5.93	2.24	1.37	1.76	0.00	0.00	0.00	0.00	0.67	2.22	6.82	26.56
97	8.14	0.19	0.28	0.07	0.40	0.19	0.00	0.65	0.05	0.81	6.32	2.46	19.56
98	7.19	12.18	2.03	1.31	2.66	0.00	0.00	0.00	0.12	0.43	2.35	1.60	29.87
99	2.72	5.31	1.92	1.94	0.07	0.00	0.00	0.00	0.01	0.42	1.41	0.37	14.17
0	6.55	7.75	1.91	0.86	1.10	0.12	0.00	0.00	0.07	1.74	1.04	0.77	21.91
1	2.82	7.21	1.13	1.07	0.00	0.20	0.00	0.00	0.21	0.25	3.77	7.04	23.70
2													

WETS Station : MOUNT DIABLO JUNCTION, CA5915 Creation Date: 08/29/2002
 Latitude: 3752 Longitude: 12156 Elevation: 02170
 State FIPS/County(FIPS): 06013 County Name: Contra Costa
 Start yr. - 1971 End yr. - 2000

Month	Temperature (Degrees F.)			Precipitation (Inches)				
	avg daily max	avg daily min	avg	avg	30% chance will have less than	avg more than	avg # of days w/.1 or more	avg total snow fall
January	55.6	39.2	47.4	4.76	2.07	5.81	7	0.3
February	57.2	40.4	48.8	4.49	1.97	5.47	7	0.0

March	59.0	40.6	49.8	3.95	2.05	4.83	7	0.4
April	64.8	43.1	53.9	1.45	0.72	1.77	3	0.6
May	70.7	47.4	59.0	0.85	0.06	0.98	1	0.0
June	78.6	53.1	65.9	0.15	0.00	0.17	0	0.0
July	85.2	59.4	72.3	0.05	0.00	0.00	0	0.0
August	85.3	59.6	72.5	0.09	0.00	0.02	0	0.0
September	82.2	57.4	69.8	0.36	0.00	0.42	1	0.0
October	74.1	51.5	62.8	1.36	0.60	1.74	2	0.0
November	61.7	43.6	52.7	3.41	1.43	4.14	5	0.1
December	56.2	39.6	47.9	3.35	1.78	4.15	6	0.1
Annual					18.53	27.46	--	----
Average	69.2	47.9	58.6				--	----
Total				24.27			39	1.5

GROWING SEASON DATES

Temperature			
Probability	24 F or higher	28 F or higher	32 F or higher
Beginning and Ending Dates			
Growing Season Length			
50 percent *	> 365 days	> 365 days	3/11 to 12/14
	> 365 days	> 365 days	277 days
70 percent *	> 365 days	> 365 days	2/28 to 12/26
	> 365 days	> 365 days	302 days

* Percent chance of the growing season occurring between the Beginning and Ending dates.

total 1952-2002 prcp

Station : CA5915, MOUNT DIABLO JUNCTION

----- Unit = inches

yr	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	annl
52				1.94	0.41	0.47	0.00	0.00	0.00	0.00	3.54	M8.78	15.14
53	3.80	0.00	2.27	2.28	0.88	0.47	0.00	0.26	0.00	0.54	2.14	0.99	13.63
54	4.40	3.98	M3.54	2.05	0.26	0.57	0.00	0.03	0.03	0.00	2.74	5.55	23.15
55	3.92	1.66	0.38	2.12	0.64	0.00	0.00	0.00	0.05	0.10	1.86	15.38	26.11
56	8.79	2.77	0.09	2.29	0.87	0.00	0.00	0.00	0.42	2.14	0.09	0.79	18.25
57	3.51	4.87	2.40	1.62	4.01	0.05	0.00	0.00	0.48	2.70	0.80	4.62	25.06
58	6.11	9.82	7.43	6.08	0.86	0.29		0.00	0.10	0.18	0.34	1.28	32.49
59	5.54	5.04	0.50	0.36	0.04	0.00	0.00	0.00	2.79	0.00	0.00	2.02	16.29
60	5.46	5.75	2.92	1.30	0.98	0.00	0.00	0.00	0.00	0.55	4.91	1.05	22.92
61	3.16	1.24	3.62	1.12	0.98	M0.15	0.00	0.28	0.29	0.35	3.29	2.45	16.93
62	1.74	9.51	2.15	0.52	0.01	0.00	0.00	0.00	0.00	10.67	0.65	2.16	27.41
63	3.62	7.09	3.64	5.38	0.99	0.00	0.00	0.00	0.20	1.80	4.95	0.48	28.15
64	5.17	0.00	1.85	0.29	0.59	0.91	0.02	0.14	0.00	1.52	4.03	9.13	23.65
65M4	2.20	0.83	2.23	4.45	0.00	0.00	0.00	0.00	0.02	0.04	5.15	4.07	20.99
66	2.10	2.25	0.64	0.86	0.41	0.03	0.20	0.05	0.17	0.00	5.30	4.01	16.02

October	72.3	53.3	62.8	1.40	0.45	1.71	2	0.0
November	64.4	47.9	56.2	3.31	1.15	3.98	5	0.0
December	58.1	42.9	50.5	3.35	1.85	4.16	6	0.0
Annual					16.80	26.21	--	----
Average	67.0	50.3	58.7				--	----
Total				23.07			37	0.0

GROWING SEASON DATES

Probability	Temperature		
	24 F or higher	28 F or higher	32 F or higher
Beginning and Ending Dates			
Growing Season Length			
50 percent *	> 365 days	> 365 days	> 365 days
70 percent *	> 365 days	> 365 days	> 365 days

* Percent chance of the growing season occurring between the Beginning and Ending dates.

total 1951-2002 prcp

Station : CA7414, RICHMOND
 ----- Unit = inches

yr	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	annl
51	M4.56	2.53	1.08	0.86	0.90	0.00	0.00	0.10	0.00	0.95	M3.34	8.80	23.12
52	9.79	2.22	3.77	0.96	0.18	0.63	0.00	0.00	0.00	0.06	2.68	10.35	30.64
53	4.60	0.00	2.32	3.62	0.30	0.00	0.00	0.12	0.00	0.45	M2.08	0.39	13.88
54	4.57	2.60	4.58	1.46	0.07	0.16	0.00	0.15	0.00	0.07	2.81	5.86	22.33
55	4.19	1.29	0.42	1.96	0.07	0.00	0.00	0.00	0.00	0.02	2.18	14.25	24.38
56	M7.45	2.77	M0.04	1.42	0.69	0.02	0.00	0.00	0.54	M1.88	0.09	0.18	15.08
57	2.87	4.73	M2.02	1.87	3.16	0.02	M0.00	M0.00	M1.71	3.32	0.33	3.72	23.75
58	6.19	10.39	6.89	5.54	0.81	0.40	0.03	0.00	0.04	0.16	0.03	1.74	32.22
59	4.15	5.39	0.77	M0.51	M0.00	0.00	0.00	0.00	2.74	0.00	0.00	1.93	15.49
60	4.32	4.14	2.55	1.29	0.37	0.00	0.00	0.00	0.00	0.26	3.43	2.61	18.97
61	1.91	1.51	2.79	1.14	0.35	0.00	0.00	0.05	0.29	0.05	4.20	2.32	14.61
62	1.39	7.18	3.76	0.24	0.00	0.00	0.00	0.10	0.08	7.38	0.99	3.48	24.60
63	4.20	3.47	4.20	5.14	0.50	0.00	0.00	0.03	0.13	1.82	3.81	0.49	23.79
64	3.90	0.23	1.40	0.37	0.22	0.79	0.00	0.01	0.00	1.60	4.10	6.93	19.55
65	4.53	1.24	1.61	3.47	0.00	0.00	0.00	0.36	0.00	0.10	4.99	3.70	20.00
66	4.76	3.01	0.51	0.37	0.17	0.06	0.05	0.08	0.14	0.00	5.93	4.64	19.72
67	8.21	0.38	5.32	5.14	0.07	1.15	0.00	0.00	0.02	0.38	1.02	2.40	24.09
68	5.20	3.21	3.60	0.46	0.18	0.00	0.00	0.13	0.00	1.07	3.05	5.69	22.59
69	8.19	6.53	1.50	2.05	0.00	0.00	0.00	0.00	0.00	2.44	0.67	7.63	29.01
70	10.72	1.75	1.89	0.29	0.01	0.44	0.00	0.00	0.00	1.00	7.01	6.29	29.40
71	2.19	0.23	2.26	0.88	0.08	0.00	0.00	0.00	0.15	0.03	1.83	4.41	12.06
72	1.18	1.79	0.26	1.38	0.00	0.18	0.00	0.00	0.66	4.57	6.48	3.37	19.87
73	11.68	6.58	2.53	0.14	0.02	0.00	0.00	0.00	0.30	1.79	10.55	3.92	37.51

74	3.75	2.01	4.67	2.62	0.00	0.04	1.41	0.00	0.00	1.11	0.67	2.06	18.34
75	1.71	5.27	6.49	2.00	0.01	0.01	0.18	0.04	0.00	3.09	0.56	0.71	20.07
76	0.31	2.04	1.07	1.05	0.00	0.00	0.00	0.94	0.57	0.55	0.92	2.43	9.88
77	1.50	0.94	2.03	0.35	0.59	0.00	0.00	0.00	1.27	0.30	3.66	5.26	15.90
78	8.23	4.42	6.01	3.39	0.01	0.00	0.00	0.00	0.50	0.00	1.82	0.74	25.12
79	7.00	5.49	2.30	0.87	0.30	0.00	0.20	0.00	0.01	2.07	4.53	6.33	29.10
80	5.69	7.40	1.20	1.51	0.11	0.03	0.18	0.00	0.00	0.12	0.23	2.43	18.90
81	5.75	1.68	4.04	0.18	0.31	0.00	0.00	0.00	0.15	2.08	8.38	6.32	28.89
82	11.23	3.47	6.60	4.98	0.00	0.11	0.00	0.00	0.63	3.52	7.17	3.11	40.82
83	6.42	8.81	12.24	3.41	0.46	0.00	0.00	0.22	0.83	0.45	7.16	7.49	47.49
84	0.30	1.65	2.29	1.18	0.01	0.12	0.00	0.16	0.05	1.81	7.26	1.97	16.80
85	0.80	2.29	4.37	0.10	0.02	0.10	0.08	0.00	0.35	1.23	4.85	3.49	17.68
86	5.56	10.17	5.84	1.25	0.16	0.00	0.04	0.00	0.59	0.11	0.12	1.07	24.91
87	3.01	4.56	2.37	0.10	0.00	0.00	0.00	0.00	0.00	1.28	2.41	3.25	16.98
88	3.89	0.36	0.01	1.61	0.42	0.71	0.00	0.00	0.00	0.28	2.42	3.32	13.02
89	1.04	0.70	5.17	0.48	0.03	0.04	0.00	0.00	1.65	1.42	2.24	0.00	12.77
90	3.65	3.14	1.05	0.15	2.70	0.00	0.00	0.00	0.12	0.16	0.44	1.68	13.09
91	0.47	4.05	7.77	0.46	0.10	0.16	0.00	0.24	0.03	1.41	0.86	1.91	17.46
92	1.75	6.50		0.67	0.00	0.56	0.00		0.00	1.97	0.22	5.92	17.59
93	9.47	4.33	M0.97	0.85	0.68	1.46	0.00	0.00	0.00	M0.42	1.81	2.82	22.81
94	1.79	4.13	0.24	1.10	1.21	0.00	0.00	0.00	0.00	0.50	M7.98	M1.73	18.68
95	10.67	M0.17	M11.31	M0.91	M0.28	1.03	0.00		0.00	0.00	0.12	8.02	32.51
96	7.76	6.90	2.12	2.19	3.38	0.00	0.00	0.00	0.00	2.07	3.25	9.71	37.38
97	9.39	0.29	0.42	0.26	0.42	0.38	0.00	1.10	0.00	1.92	7.48	2.78	24.44
98	11.26	16.40	2.52	2.14	3.74	0.02	0.00	0.00	0.10	0.75	4.97	1.03	42.93
99	3.76	7.30	2.56	2.60	0.00	0.02	0.00	0.00	0.09	0.56	2.84	M0.95	20.68
	OM6.13		2.34	1.58	1.27	0.20	0.00	0.00	0.04	6.29	0.77	0.78	19.40
1	7.10	8.27	1.43	1.10	0.00	0.26	0.00	0.00	0.00	0.60	6.70	11.86	37.32

2