

Resource Management Plan

The Ranch in Antioch

City of Antioch
24 June 2020



Prepared for:

Richland Planned Communities, Inc.
3000 Lava Ridge Court, Suite 115
Roseville, CA 95661

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1.0 INTRODUCTION/APPLICABILITY

Madrone Ecological Consulting, LLC., on behalf of Richland Planned Communities, Inc., has prepared this Resource Management Plan (RMP) in order to comply with the City of Antioch's General Plan Section 10.0 (Resource Management), which outlines objectives and policies as they relate to biological resources. The overall objective is to preserve natural streams and other habitats that support special-status plant and animal species. While it is preferred to preserve these resources in-situ, the General Plan allows for mitigation off-site within eastern Contra Costa County, if sufficient on-site preservation is not feasible. Whether such resources are preserved on-site within natural open space areas, or are mitigated off-site, the General Plan requires that such preserved areas are managed and maintained pursuant to a Resource Management Plan (RMP) (Section 10.3.2e and Section 10.4.2d of the General Plan, respectively) (LSA 2003). Richland Planned Communities, Inc., currently plans to preserve lands on-site, as well as at two off-site properties, in order to meet the mitigation requirements of the state and federal resource agencies as well as the City. If the long-term preservation of the off-site mitigation lands currently controlled is not feasible, at the reasonable discretion of the Community Development Director or other branch of the City, off-site mitigation may also occur at an established mitigation bank that includes Antioch in its service area, or that occurs within an area that the East Contra Costa County Multi-Species Habitat Conservation Plan/Natural communities Conservation Plan (HCP/NCCP) identifies as having good conservation value, or as otherwise approved by the City and resource agencies.

This RMP mimics the environmental mitigation measures identified in the Draft Environmental Impact Report (Draft EIR) for The Ranch Project (SCH No. 2019-060012). To the extent the EIR is revised to reduce or increase mitigation requirements, those revisions shall prevail over any mitigation included in this RMP.

2.0 PROJECT DESCRIPTION

Introduction

The Ranch is an approximately 551.5-acre comprehensive master planned community in the City of Antioch. The proposed community is planned to include residential neighborhoods of varying densities, a Village Center, a fire station, parks, and an open space and trail system (the "Project"). The land uses are carefully arranged to respond to the natural features of the property and to be compatible and complementary with the abutting neighborhoods and uses.

Project Location

The Project site is located at 6275 Deer Valley Road, in the southeastern portion of the City of Antioch, within the Sand Creek Focus Area. The Project site is bounded on the north by existing single-family homes, on the east by Deer Valley Road and (across the road) a new Kaiser Hospital, on the south by undeveloped grazing lands, and on the west by Empire Mine Road, Black Diamond Mine Preserve and undeveloped grazing lands (See Figure 1).

Existing Land Use

The Project site currently supports cattle ranching, one residential structure, and various barns and outbuildings located in the eastern portion of the site. Historical land uses include grazing, cattle operations and some natural gas exploration.

The Project site is bisected by Sand Creek, which is a deeply incised seasonal creek which flows from west to east. The topography of the site ranges from fairly level along the eastern and central portions, gently sloping areas on either side of the creek, with more moderate to steep slopes in the western portion of the site. Riparian vegetation occurs primarily along the creek banks and several mature oak trees are located on the Project site along Sand Creek. A large stockpile of soil and large boulders exist on the northwestern portion of the Project site, near the terminus of Dallas Ranch Road, likely as the result of the construction of Dallas Ranch Road and the neighborhood located immediately north of the Project site.

Project Description

As an overview, the proposed Project contemplates 1,177 new homes, including a mix of low density, medium density, including age-restricted units, in two development areas - one north of Sand Creek and the other south of it, to be constructed in three phases. An expansive open space corridor oriented along the Sand Creek corridor would be a dominant central feature of the community. In addition, the Village Center, a fire station site, numerous parks and linear parkways complete the overall master plan concept. The scale of the proposed Project provides an opportunity to include housing options that provide greater product diversification to meet the varied demand for housing in the Antioch area. Housing diversity is achieved by offering neighborhood types that fit a range of household types, income levels, ages and lifestyles. Each of these components is discussed below in more detail. An overview of the proposed conceptual plan can be found in Attachment A.

On-Site Open Space

The proposed Project will include a minimum 50-foot setback from the centerline of Sand Creek and between a minimum 250-foot and over 1,000-foot (average of approximately 450-foot) buffer preserve corridor along Sand Creek as shown in Attachment B. The Project also proposes 36.8 acres of passive open space, and 192.7 acres of preserve open space, for a total of 229.5 acres of open space, also shown in Attachment B. In sum, the Project's land plan is fully consistent with the Western Sand Creek Initiative and proposes over 40 percent of total area for open space.

Off-Site Infrastructure Improvements

Some permanent and temporary Project-related impacts will occur on adjacent parcels as a result of construction of required utilities and roads. These improvements will occur within the Offsite Infrastructure Improvement Area as shown on Figure 2, although the impact area will likely be much smaller than the study area following detailed design.

3.0 SENSITIVE BIOLOGICAL RESOURCES THAT MAY BE AFFECTED

The proposed Project has the potential to impact biological resources consisting of Waters of the U.S., Waters of the State, sensitive species habitat, sensitive plant and animal species, and protected trees. The proposed Project will result in the permanent loss of approximately 322 acres of non-native annual grasslands. On-site, the Project contains a total of 5.059-acres of habitat under the jurisdiction of the U. S. Army Corps of Engineers (USACE) (Waters of the U.S.) and/or the Regional Water Quality Control Board (RWQCB)(Waters of the State) (**Attachment C**). On-site, the Project will impact a total of 1.038-acres of Waters of the U.S. and State. These on-site impacts include 0.025-acre to Sand Creek (primarily for the construction of vehicular crossing and two outfalls), 0.079-acre to ephemeral tributaries, and 0.934-acre to seasonal wetland, wetland drainage, and non-wetland seasonal pool; all of which provide known or potential habitat for several special-status grassland, vernal pool, and riparian wildlife species. The remaining 4.021-acres of Waters of the U.S. and State, including the remainder of the Sand Creek corridor and preserved annual grassland habitat within the Project will be permanently protected within the on-site open space areas which total approximately 229.5 acres. Additionally, there will be limited impacts to approximately 0.021-acre of ephemeral drainage and seasonal wetland from the off-site infrastructure improvements.

The Project proposes to remove approximately six trees. Trees planned for removal include two non-native blue gum eucalyptus (*Eucalyptus globulus*), two non-native almond (*Prunus dulcis*), one native blue oak (*Quercus douglasii*), and one native valley oak (*Quercus lobata*). The eucalyptus windrow located on the western boundary of the Project site will remain intact, and should not be impacted by development.

3.1 Sand Creek

Sand Creek is an intermittent stream that flows from west to east bisecting the Project site. Sand Creek conveys precipitation runoff during and shortly after rain events with the duration of water flow ranging from a few days to several weeks. Approximately 1.901 acres of Sand Creek lies within the Project site.

Sand Creek is highly incised and contains a primary low-flow channel that ranges from 8 to 10 feet deep and averages 12 feet in width, as well as a secondary flood-plain terrace that ranges from approximately 30 to 70 feet in depth and 30 to 70 feet in width. Banks of Sand Creek are generally steep and range from 15 to 60 percent gradient. The bed of Sand Creek is generally unvegetated due to high-volume and high-velocity flows. These flows tend to scour vegetation and soil from the primary channel. As another indicator of the generally flashy flow regime of Sand Creek, rack lines located within the channel were observed as high as 12 to 15 feet above the bed of the creek.

Limited riparian vegetation is present along Sand Creek, consisting mostly of scattered valley oak (*Quercus lobata*) California buckeye (*Aesculus californicus*) California rose (*Rosa californica*), California sagebrush (*Artemisia californica*), and California mugwort (*Artemisia douglasiana*). Due of the open canopy, the understory in this habitat is largely undifferentiated from the surrounding non-native grasslands, supporting primarily the same non-native annual grasses and forbs. A shrub understory is generally lacking on the site

(ECORP 2017a). Approximately 1.876 acres of Sand Creek will be preserved on-site in the open space. Approximately 0.005 acres of stream channel will be impacted by the construction of two storm drain outfalls, and two bridges.

3.2 Ephemeral Tributaries

There are several small ephemeral tributaries to Sand Creek that would be impacted by the proposed Project. These tributaries are highly ephemeral in nature and only flow during and immediately after precipitation events. These tributaries are generally moderately to highly incised and do not contain hydrophytic vegetation. The banks of these drainages are highly erosive. Filling of portions of the highly erosive ephemeral tributaries will eliminate a source of sediment to Sand Creek and downstream Marsh Creek and San Joaquin River delta (Monk and Associates 2015). Approximately 0.397 acres of the on-site ephemeral tributaries will be preserved on-site in the open space, and approximately 0.076 acres of ephemeral tributaries will be impacted by the grading of the site.

3.3 Seasonal Wetlands, Seeps, Wetland Drainages, and Non-Wetland Seasonal Pools

The Project site supports a variety of categories of wetlands and other jurisdictional features. Many of these features are considered Waters of the U.S. while all are considered Waters of the State. Most of these features are depressional, while some are of low gradient. Many of these features represent potential habitat for special-status sensitive plant and wildlife species. Approximately 0.369 acres of these features will be preserved within the on-site open space, and approximately 0.960 acres will be impacted by the grading of the site. All impacts to Waters of the U.S. and Waters of the State, as well as any special status plants and species will be mitigated as outlined below in Section 5.0, as a result of consultations under Section 7 of the federal Endangered Species Act (FESA), and Section 2081 of the California Endangered Species Act (CESA).

3.4 Impoundments (Stock Ponds)

The Project site supports two impoundments or man-made livestock ponds. These features are located within the northwest portion of the Project and will be located entirely within the on-site open space preserve area. These ponds represent aquatic habitat for several sensitive plant and wildlife species, including California tiger salamander and California red-legged frog. Approximately 1.373 acres of impoundments will be preserved on-site in the open space.

3.5 Protected Trees

An on-site tree survey was conducted in 2015, which identified 16 tree species and 255 individual trees. There are no trees located within the offsite improvement areas. (See Attachment D.)

Approximately 181 of the 255 trees identified within the Project site are indigenous trees as identified in the City of Antioch Tree Ordinance. The indigenous trees in the Project site consist of native oaks (coast live oak, blue oak, valley oak, and interior live oak) and California buckeye. Various planted and ornamental

trees such as blue gum eucalyptus, manna gum (*Eucalyptus viminalis*), black locust (*Robinia pseudoacacia*), and others also exist in the Project site. Some of the planted and ornamental trees are protected under the City of Antioch Tree Ordinance as “mature trees” or “landmark trees” because the trees exceed the 26 inches diameter at breast height (DBH) or 48 inches DBH respective thresholds.

The Project proposes to remove approximately six trees. Trees planned for removal include two non-native blue gum eucalyptus totaling 143 inches, two non-native almond totaling 45 inches, one native blue oak 35 inches in diameter, and one native valley oak of 42 inches in diameter. A tree permit/authorization will be required to be obtained from the City of Antioch prior to removal of these trees. Mitigation for the removal of trees may include on-site planting, off-site planting, or payment into a native tree fund.

3.6 Special-Status Plants

Special-status plant surveys were first conducted on-site between 2013 and 2015. Three special-status plant species were documented within the Project site during those earlier plant surveys (ECORP 2017, Madrone 2019a). These species include crownscale (*Atriplex coronata*)(not FESA or CESA listed, CRPR 4.2), San Joaquin spearscale (*Extriplex joaquinana*)(not FESA or CESA listed, CRPR 1B.2), and shining navarretia (*Navarretia nigelliformis radians*)(not FESA or CESA listed, CRPR 1B.2). Additional protocol special-status plant surveys were conducted in 2018 and 2019 for the entire Project as well as the offsite infrastructure areas. No special status plant species were identified within the offsite infrastructure areas. Three special-status plant species were documented within the Project site during the 2018 and 2019 surveys (Madrone 2019a), including crownscale (*Atriplex coronata*)(not FESA or CESA listed, CRPR 4.2), big tarplant (*Blepharizonia plumosa*)(not FESA or CESA listed, CRPR 1B.1) and shining navarretia (*Navarretia nigelliformis radians*)(not FESA or CESA listed, CRPR 1B.2). Additionally, a locally rare species, angle-stem buckwheat, was present during the 2018 and 2019 plant surveys. San Joaquin spearscale was determined to be absent from the Project site during the 2018 and 2019 plant surveys, although the marginal habitat for this species would be located within the open space preserve area on the Project site, and not directly impacted by development. Locations of the documented special-status plant populations are shown on Figure 3. The proposed project could result in adverse effects to on-site populations of crownscale, big tarplant, and angel-stem buckwheat, and shining navarretia; thus, mitigation is required. Mitigation measures have been outlined in Section 3.0 (Biological Resources) of the EIR, which have been included in this RMP in Section 5.0, below.

3.7 Invertebrates

3.7.1 Crotch Bumble Bee and Western Bumble Bee

Crotch bumble bee (*Bombus crotchii*) and Western bumble bee (*Bombus occidentalis occidentalis*) are both candidates for state listing. These species inhabit open grasslands and scrub habitats, meadows, and grasslands with blended floral resources. The hills and areas along Sand Creek within the Study Area represent suitable habitat for crotch bumble bee and western bumble bee. These areas contain abundant flowering plants for much of the year and contain abundant ground squirrel burrows in which the species

can nest and overwinter. Due to the fact that both species are currently absent from most of the Central Valley of California, there is a low potential for them to be present within the Study Area.

3.7.2 Valley Elderberry Longhorn Beetle

The Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) (VELB) is listed as threatened in accordance with the FESA. One elderberry shrub, the sole host plant for this species, was observed in the west-central portion of the Project site along Sand Creek. This shrub will be avoided as it will be protected within the open space preserve corridor along Sand Creek. No elderberry shrubs were observed within the off-site improvement areas; therefore, this species is absent from the off-site improvement areas. Based on the foregoing, the VELB will not be impacted by the Project.

3.7.3 Vernal Pool Crustaceans

Vernal pool fairy shrimp (*Branchinecta lynchi*)(VPFS) and vernal pool tadpole shrimp (*Lepidurus packardii*)(VPTS) have been observed on the site. There is approximately 1.019 acre of suitable habitat for these species, consisting of Waters of the U.S. and State within the site. Approximately 0.648 acre of suitable habitat will be impacted by the grading of the Project. The remaining 0.371 acre of VPFS and VPTS habitat will be preserved on-site within the open space areas.

3.8 Amphibians

3.8.1 California Red-legged Frog

California red-legged frog (*Rana draytonii*) (CRLF) have been identified within Sand Creek along the far western boundary of the site. The two impoundments (stock ponds) and Sand Creek within the site represent aquatic habitat for CRLF totaling 3.273 acres. Approximately 0.005 acre of CRLF aquatic habitat will be impacted by the construction of bridges and utility crossings over Sand Creek. The remaining aquatic habitat is proposed to be preserved on-site within the open space preserve area. Uplands within 300 feet of the two impoundments and Sand Creek may represent potential upland habitat for CRLF. Impacts to CRLF upland habitat will be minimal and the majority is proposed to be preserved on-site within the open space preserve area.

3.8.2 California Tiger Salamander

California tiger salamander (*Ambystoma californiense*) (CTS) have been observed on-site. There is approximately 2.128 acres of potential breeding habitat for CTS within the Project. Approximately 0.423 acres will be impacted by the grading of the Project. The remaining CTS breeding habitat is proposed to be preserved on-site within open space preserve area. Ground squirrel burrows on-site provide potential upland habitat for this species. It is assumed that both breeding and upland habitat for CTS occurs on the site.

3.8.3 Western Spadefoot

The western spadefoot (*Spea hammondi*) has been observed breeding in Sand Creek within the Project and is a CDFW species of special concern. Suitable aquatic habitat for western spadefoot within the Study Area consists of the large plunge pool within Sand Creek, the two ponds, and deeper seasonal wetlands.

3.9 Reptiles

3.9.1 Alameda Whipsnake

The non-native annual grassland within the Project site represents low quality foraging and dispersal habitat for Alameda whipsnake (*Masticophis lateralis euryxanthus*). The species has not been identified on-site. While protocol surveys for the species have not been conducted to date, there is a low possibility that the species may occur on-site due to the lack of quality habitat. The nearest suitable habitat for this species is approximately 1 mile southwest of the Project site.

3.9.2 Blainville's Horned Lizard

The non-native annual grassland within the Project site represents low quality habitat for Blainville's horned lizard (*Phrynosoma blainvillii*). The species has not been identified on-site. While surveys for the species have not been conducted to date, there is a low possibility that the species may occur on-site due to lack of quality habitat.

3.9.3 Northwestern Pond Turtle

Sand Creek and the two impoundments (stock ponds) within the Project site represent potential habitat for northwestern pond turtle (*Actinemys marmorata*). The species has not been identified on-site. However, surveys for the species have not been conducted to date and there is a possibility that the species may occur on-site.

3.9.4 Silvery Legless Lizard

The non-native annual grassland within the Project site represents low quality habitat for silvery legless lizard (*Anniella pulchra pulchra*). The species has not been identified on-site. While surveys for the species have not been conducted to date, there is a low possibility that the species may occur on-site.

3.10 Birds

3.10.1 Western Burrowing Owl

Burrows within the non-native grassland and ruderal habitats within the Project site represent potential nesting and overwintering habitat for western burrowing owl (*Athene cunicularia*)(BUOW), a state species

of special concern. No BUOW have been observed on-site. However, sign of BUOW (pellet and whitewash) were observed during the 2018 special-status plant surveys near Seasonal Wetland Pools 1 and 2. Protocol surveys for the species have not been conducted to date, however, it is assumed that this species is present on-site.

3.10.2 California Horned Lark

The non-native grassland within the Project site represent potential nesting habitat for the California horned lark (*Eremophila alpestris actia*). California horned lark have not been identified on-site. However, surveys for the species have not been conducted to date and it is assumed that the species is present on-site.

3.10.3 Ferruginous Hawk

The non-native grassland within the Project site represent nonbreeding season (September through March) foraging habitat for the ferruginous hawk (*Buteo regalis*). No ferruginous hawk have been identified on-site. However, surveys for the species have not been conducted to date and it is assumed that the species is present on-site during the nonbreeding season.

3.10.4 Golden Eagle

The non-native grassland within the Project site represent foraging habitat for golden eagle (*Aquila chrysaetos*). Golden eagles have been identified foraging on-site. There is a low potential for the species to nest on-site.

3.10.5 Grasshopper Sparrow

The non-native grassland within the Project site represent potential nesting habitat for grasshopper sparrow (*Ammodramus savannarum*). Grasshopper sparrow have not been identified on-site. However, surveys for the species have not been conducted to date and it is assumed that the species is present on-site.

3.10.6 Loggerhead Shrike

The trees and shrubs within the Project site represent potential nesting habitat for loggerhead shrike (*Lanius ludovicianus*). Loggerhead shrike have not been identified on-site. However, surveys for the species have not been conducted to date and it is assumed that the species is present on-site.

3.10.7 Northern Harrier

The non-native grassland within the Project site represent potential nesting habitat for northern harrier (*Circus cyaneus*). No Northern harrier have been identified on-site. However, surveys for the species have not been conducted to date and it is assumed that the species is present on-site.

3.10.8 Prairie Falcon

The non-native grassland within the Project site represent nonbreeding season (September through March) foraging habitat for prairie falcon (*Falco mexicanus*). Prairie falcons were observed foraging on-site in March 2017.

3.10.9 Short-Eared Owl

The non-native grassland within the Project site represent nonbreeding season (September through March) foraging habitat for short-eared owl (*Asio flammeus*). Short-eared owl have not been identified on-site. However, surveys for the species have not been conducted to date and it is assumed that the species is present on-site during the nonbreeding season.

3.10.10 Swainson's Hawk

The large trees on-site represent suitable nesting habitat and the non-native grassland on-site represent breeding season (March through August) foraging habitat for the Swainson's hawk (*Buteo swainsoni*). Swainson's Hawk have been identified foraging within the site. Protocol surveys for the species have not been conducted to date and it is possible that the species is nesting on-site.

3.10.11 Tricolored Blackbird

The non-native annual grassland within the Project site represent potential foraging habitat for tricolored blackbird (*Agelaius tricolor*). However, no breeding habitat for the species occurs on-site. Surveys for the species have not been conducted to date and it is assumed that the species forages on-site during migration.

3.10.12 White-Tailed Kite

The large trees within the Project site represent potential nesting habitat for white-tailed kite (*Elanus leucurus*). White-tailed kites have not been identified on-site. However, surveys for the species have not been conducted to date and it is assumed that the species is present on-site.

3.11 Mammals

3.11.1 American Badger

The grasslands of the site also support suitable habitat for the American badger (*Taxidea taxus*). There are five documented occurrences of this species within 10 miles of the Project site. Surveys to confirm the absence of this species on the site have not been conducted; therefore, it is assumed that this species may occur on the site.

3.11.2 San Joaquin Kit Fox

The grasslands of the site support suitable habitat for the San Joaquin kit fox (*Vulpes macrotis mutica*)(SJKF), this species has not been observed within a 10-mile radius of the site since 1997. Surveys for SJKF were conducted by trained SJKF scent dogs for the entire Project site in February of 2019. During the surveys no positive detections of SJKF were observed. Based on the lack of occurrences on and around the Project site, and the project-specific surveys in 2019, it is assumed that this species is not present within the Project site or the offsite infrastructure areas.

3.11.3 Roosting Bats

The trees and structures within the site support suitable habitat for Pallid bat (*Antrozous pallidus*), Townsend's big-eared bat (*Corynorhinus townsendii*), greater mastiff bat (*Eumops perotis californicus*), and western red bat (*Lasiurus blossevillii*). Surveys to confirm the absence of these species on the site have not been conducted; therefore, it is assumed that these species may occur on the site.

4.0 PRESERVED LANDS AND SENSITIVE BIOLOGICAL RESOURCES COVERED UNDER THE RMP

This section describes both on-site and off-site lands that will be set-aside and managed for the benefit of sensitive biological resources to mitigate for Project effects under this RMP. Hereafter, these lands will collectively be referred to as "RMP lands". This section further describes the individual sensitive biological resources that will be preserved and managed for under the RMP on these lands.

4.1 On-site Open Space

The Project Applicant has designed the Project to accommodate approximately 229.5 acres, or over approximately 40% of the total Project site, as open space. This acreage includes the Sand Creek riparian corridor averaging over 450 feet in width, and approximately 192.7 acres of open space preserve and 36.8 acres of passive open space, which includes mainly detention basin areas. These open space preserve areas support predominantly non-native annual grassland and impoundments which represent suitable CTS, CRLF, and other sensitive species habitat. The on-site open space preserve will be managed to protect all of the species included in Section 3 and for passive human recreation as approved by the City and resource agencies.

4.2 Offsite Mitigation Properties

In addition to the on-site open space preserve area, the Project Applicant controls two nearby parcels in eastern Contra Costa County which total 955.6 acres in size¹ (See Figure 4) (herein referred to as the "mitigation properties"). The mitigation properties correspond to a portion of Sections 13, 14, 15, and 23, Township 1 North, and Range 1 East (Mount Diablo Base Meridian) of the "Antioch South, California" 7.5-minute quadrangle (U.S. Geological Survey [USGS] 1978). The approximate center of the mitigation

properties is located at latitude 37.923814° and longitude -121.839026° within the San Joaquin Delta Watershed (Hydrologic Unit Code #18040003).

It is anticipated that all or portions of the 955.6-acre offsite mitigation properties may be required as mitigation for Project impacts, and these portions of the properties will be deeded to a third-party land trust or other qualified entity and preserved and managed in perpetuity as mitigation for Waters of the U.S. and State, as well as the habitat types and species included in Section 3.0. These mitigation properties consist primarily of non-native annual grassland, including slender wild oat (*Avena barbata*), medusahead grass (*Elymus caput-medusae*), soft brome (*Bromus hordeaceus*), and rose clover (*Trifolium hirtum*). A large portion of the mitigation properties is composed of blue oak woodland. This vegetation community is characterized by an intermittent to dense tree canopy dominated primarily by blue oak (*Quercus douglasii*). Other tree species present in the canopy of the on-site blue oak woodlands include California buckeye and interior live oak (*Quercus wislizeni*). The understory of this vegetation community is dominated by nonnative annual grasses and forbs, including slender wild oat and rose clover. Ridgelines and other steep portions of the Properties are composed of chamise chaparral. This vegetation community is characterized by a low, dense shrub canopy dominated almost exclusively by chamise (*Adenostoma fasciculatum*).

A total of 15.097 acres of potential Waters of the U.S. and State have been mapped within the mitigation properties (ECORP 2017b) (Figure 5). See **Table 1** below.

Table 1. Potential Waters of the U.S. and State Within the Offsite Mitigation Properties	
Type	Acreage¹
Wetlands	
Seasonal Wetland	0.238
Seasonal Wetland Swale	4.084
Vernal Pool	0.160
Seep	1.340
Other Waters	
Intermittent Drainage	3.789
Ephemeral Drainage	2.397
Pond	3.089
Total	15.097

¹Acreages represent a calculated estimation and are subject to modification following the USACE verification process.

The mitigation properties each contain approximately 14 potential breeding ponds for CTS and approximately 11 potential CRLF breeding ponds. In 2019, assessment-level CRLF and CTS surveys were conducted within the mitigation properties and documented four populations of CTS and five populations of CRLF (Figure 6) (Madrone 2019b). The mitigation properties also provide high quality potential habitat for VPFS and VPTS well as aquatic, upland/foraging, and nesting habitat for the rest of the species discussed in Section 3.0.

Adding to the resource value of the sites, the mitigation properties are located immediately adjacent to several East Bay Regional Park District (EBRPD) properties and will add to a contiguous, vast landscape of

open space which will provide habitat connectivity for sensitive species in perpetuity. The mitigation properties, along with adjacent conservation lands, will be preserved in perpetuity and will be managed for the benefit of the native species and aquatic resources as described in Section 3.0.

Based on information provided by Monk and Associates, ECORP Consulting, Inc., and Madrone Ecological, LLC, the mitigation properties provide much higher habitat values for special-status plants and animals than the Project site itself, and preservation and management of these RMP lands in perpetuity would be a net benefit to these species. In addition, as stated above they are adjacent to a vast network of conservation lands, while the Project site is surrounded by roadways, residential and commercial developments, and active farm and ranch lands. Any portions of these properties not required as mitigation for the Project may be utilized as mitigation for other projects in the future. To the extent the mitigation properties are unavailable for mitigation, the Project Applicant will be required to provide alternative mitigation deemed acceptable by all applicable regulatory agencies and the City.

5.0 MITIGATION FOR IMPACTS TO SENSITIVE BIOLOGICAL RESOURCES

The following section includes a discussion of Project impacts to sensitive biological resources within the Project site as well as a discussion of the proposed mitigation for these impacts.

5.1 Waters of the U.S. and Waters of the State

The proposed Project will impact a total of 1.038-acres of Waters of the U.S. and State. These on-site impacts include 0.025-acres to Sand Creek (primarily for the construction of vehicular crossings), 0.079-acres to ephemeral tributaries, and 0.934-acre to seasonal wetland, non-wetland seasonal pool, wetland drainage, and seeps (Attachment B). Additionally, there will be 0.016-acre of impacts to seasonal wetland, and 0.005-acre of impacts to ephemeral drainage from the off-site infrastructure improvements (Figure 2).

The Sand Creek riparian corridor will be preserved on-site in the open space, with an average set-back of 50 feet. Mitigation for the impacts to Waters of the U.S. and Waters of the State will be determined in consultation with the resource agencies during permit negotiations.

5.2 Special-status Plants

Three special-status species, including shining navarretia, crownscale, and big tarplant, and a locally rare species, angle-stem buckwheat, were present during the 2018 and 2019 protocol-level plant surveys and are known to occur on-site. All of the known on-site populations of crownscale, big tarplant, and angle-stem buckwheat will be preserved within the Project's open space preserve areas; however, it is possible that construction activities could impact these special-status plant species indirectly. Additionally, some of the shining navarretia populations will be directly and indirectly impacted by development of the Project. Mitigation for impacts shall include the following:

MM BIO-1a: *The project Applicant hired a qualified Biologist to conduct protocol surveys of the shining navarretia, crownscale, and big tarplant, and the locally rare species, angle-stem buckwheat, in 2018-2019 and submitted them to the City for independent peer review. (See Appendix D) To the extent construction occurs within 5 years of these surveys, they shall be deemed valid and no further surveys shall be required. However, if construction does not occur on affected areas within 5 years of the protocol surveys, the project Applicant shall hire a qualified Biologist to survey the project area or phase prior to construction. All survey results shall be submitted to the City of Antioch Planning Division prior to approval of grading permits.*

Where populations are outside of the project footprint, a qualified Biologist shall demarcate an appropriate avoidance zone sufficient to completely avoid impacts to any individual plants. If the project will avoid the mapped populations, but will impact a portion of the avoidance zone, that shall be considered an indirect impact and the project Applicant shall ensure the plants are protected during construction by installing protective buffers such as orange exclusionary fencing and/or any necessary erosion controls methods such as the placement of straw waddles around the plants, in accordance with permits issued by the CDFW and/or USFWS.

Where populations of special-status plant species are located within the project footprint, this shall be considered a direct impact. If the project will avoid the mapped populations, but will impact a portion of the avoidance zone, then that will be considered an indirect impact. If the project will avoid the mapped populations, but will impact a portion of the avoidance zone, then that shall be considered an indirect impact. For impacts to the crownscale, big tarplant and the locally rare angle-stem buckwheat, the project Applicant shall comply with MM BIO-3.

The project Applicant shall have the following options to mitigate for impacts to the shining navarretia. Options one and two are listed by order of effectiveness:

Option 1. *The project Applicant shall identify one or more existing, unprotected populations of shining navarretia in Contra Costa County (or nearest other jurisdiction) and acquire land that supports those populations. Under this Option, once the proposed mitigation area is approved by the City of Antioch Planning Division, the mitigation habitat shall be protected by a recorded conservation easement and managed in accordance with a long-term management plan, the goal of which is to maintain the shining navarretia population and its habitat. The project Applicant shall provide an endowment in favor of the conservation easement holder to fund the long-term management outlined in the long-term management plan. As this option would preserve an existing, established population, there would be no temporal loss, and no risk of failure. As a result, the mitigation ratio for this option would be 1:1. Alternatively, the project Applicant may purchase mitigation credits (at a 1:1 ratio) from an established mitigation bank for all directly impacted shining navarretia locations.*

Option 2. *The project Applicant shall mitigate for any direct impacts at a ratio of 3:1 (preserved habitat: impacted habitat), and for any indirect impacts at a 1:1 ratio. The ratio shall be reduced to 1.5:1 if the project Applicant chooses to develop a monitoring plan, monitor the relocated seeds/plants in accordance with that plan, and meet established success criteria for successful establishment of a new population of the impacted*

special-status plant. The success criterion for Option 2 would be 1:1 replacement of special-status plants by Year 5 or later following transplantation. This would require documentation of the number of plants within the proposed impact area such that the number of impacted plants could be compared to the number of established plants at the mitigation site. The monitoring plan and monitoring reports shall be submitted to the City of Antioch Planning Division for review and approval. If the success criteria are not met, additional habitat shall be set aside as set forth under Option 1. As population sizes for annual plants can vary widely from year to year, population counts shall be conducted in the last 3 years of monitoring, and the highest count shall be at least equivalent to the number of impacted plants.

Option 3. *As an alternative Options 1 and 2, the project Applicant shall comply with a habitat conservation plan and/or natural community conservation plan if developed and adopted by the City, to the extent that all project impacts to the shining navaretia would be fully mitigated, including payment of applicable fees, provided that the California Department of Fish and Wildlife (CDFW) and United States Fish and Wildlife Service (USFWS) have approved the conservation plan.*

5.3 Invertebrates

5.3.1 Crotch and Western Bumble Bee

MM BIO-2a: To avoid take of crotch and western bumblebee species the project Applicant shall implement one of the following options:

Option 1. *Prior to each phase of construction, a qualified Biologist shall conduct a take avoidance survey for active bumblebee colony nesting sites. In order to maximize detection of active bee colonies, the take avoidance survey shall be conducted during the spring, summer, or fall during appropriate weather (not during cool overcast, rainy, or windy days). The Biologist shall walk the entire area proposed for grading and inspect all ground squirrel burrows for bumblebee activity. The survey shall specifically target the slopes that face west to southwest as these areas are specifically utilized by western bumblebee. If any bumblebees are identified during the survey, they shall be identified to species.*

All active colonies of crotch bumblebee or western bumblebee shall be avoided and no work shall occur within 50-feet of the colony, unless pursuant to consultation with the California Department of Fish and Wildlife (CDFW) an Incidental Take Permit is obtained prior to disturbance. If a colony can be fully avoided and work will not occur within 50 feet of the colony, no mitigation shall be required.

Option 2. *The project Applicant shall comply with the habitat conservation plan and/or natural community conservation plan developed and adopted by the City, to the extent that all project impacts are fully mitigated, including payment of applicable fees, provided that California Department of Fish and Wildlife (CDFW) and United States Fish and Wildlife Service (USFWS) have approved the conservation plan.*

5.3.2 Valley Elderberry Longhorn Beetle

MM BIO-1d: *The project Applicant shall implement one of the following options regarding mitigation for the VELB:*

Option 1. *The elderberry shrub within the project site shall be avoided. Although there were no signs of the valley elderberry longhorn beetle, the following measures will ensure that there are no significant impacts to valley elderberry longhorn beetle:*

All elderberry shrubs (which are defined for the purposes of this section as those with stems greater than 1 inch in diameter) shall be avoided completely during project construction with a buffer of at least 20 feet, and the following avoidance and minimization measures [as outlined in the Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle] shall be implemented for all work within 165 feet of a shrub:

- *All areas to be avoided during construction activities shall be fenced and/or flagged as close to construction limits as feasible.*
- *Activities that could damage or kill an elderberry shrub (e.g., trenching, paving, etc.) shall receive an avoidance area of at least 20 feet from the drip-line.*
- *A qualified Biologist shall provide training for all contractors, work crews, and any on-site personnel on the status of the valley elderberry longhorn beetle, its host plant and habitat, the need to avoid damaging the elderberry shrubs, and the possible penalties for noncompliance, prior to the commencement of work.*
- *A qualified Biologist shall monitor the work area at project appropriate intervals to assure that all avoidance and minimization measures are implemented.*
- *As much as feasible, all activities within 165 feet of an elderberry shrub shall be conducted between August and February.*
- *Elderberry shrubs shall not be trimmed.*
- *Herbicides shall not be used within the drip-line of the shrub. Insecticides shall not be used within 100 feet of an elderberry shrub.*
- *Mechanical weed removal within the drip-line of the shrub shall be limited to the season when adults are not active (August–February) and shall avoid damaging the elderberry shrub.*

If either a 20-foot diameter avoidance area around the elderberry shrub is found later to not be feasible or an elderberry shrub must be removed to accommodate construction, then the project Applicant shall notify the City and implement additional mitigation measures required by the Framework after consultation with the United States Fish and Wildlife Service (USFWS).

Option 2. *The project Applicant shall comply with a habitat conservation plan and/or natural community conservation plan if developed and adopted by the City, to the extent that all project impacts on the elderberry beetle would be fully mitigated, including payment of applicable fees, provided that the California Department of Fish and Wildlife (CDFW) and USFWS have approved the conservation plan.*

5.3.3 Vernal Pool Crustaceans

The Project will result in the loss of approximately 0.687 acre of potential habitat for VPFS and VPTS. To mitigate for this loss of potential habitat for vernal pool crustaceans on the Project site, the Project Applicant will do the following:

MM BIO-1c: Prior to the issuance of any grading permit, the project Applicant shall implement one of the following options:

Option 1. Consult with the United States Fish and Wildlife Service (USFWS) regarding impacts of the project on vernal pool fairy shrimp and vernal pool tadpole shrimp. The project Applicant shall obtain the appropriate take authorization (Section 7 or 10 of the Federal Endangered Species Act [FESA], as appropriate) from the USFWS prior to issuance of grading permits. The project Applicant shall comply with all terms of the endangered species permits, including any mitigation requirements, which shall be determined during consultation with USFWS.

Mitigation may be accomplished through permittee-responsible mitigation and/or through the preservation of vernal pool fairy shrimp habitat at USFWS-approved ratios at a USFWS-approved mitigation bank. A minimum ratio of 1:1 mitigation shall be required.

Option 2. The project Applicant shall demonstrate compliance with a habitat conservation plan and/or natural community conservation plan if developed and adopted by the City, to the extent that all project impacts on the fairy and tadpole shrimp would be fully mitigated, including payment of applicable fees, provided that the California Department of Fish and Wildlife (CDFW) and USFWS have approved the conservation plan.

5.4 Amphibians

5.4.1 California Red-legged Frog

While the majority of the on-site aquatic and upland CRLF habitat will be preserved, approximately 0.025 acre of CRLF aquatic habitat will be impacted by the construction of bridges and utility crossings over Sand Creek. Additionally, impacts to uplands within 300 feet of Sand Creek may represent potential upland habitat for CRLF. To mitigate the loss of aquatic and upland habitat for this species, the Project Applicant shall do the following:

MM BIO-1f: Prior to issuance of any grading permits, the project Applicant shall implement one of the following options:

Option 1. The project Applicant shall consult with the United States Fish and Wildlife Service (USFWS) and the California Department of Fish and Wildlife (CDFW) regarding impacts to California red-legged frog from the proposed project. The project Applicant shall obtain the appropriate take authorization from the USFWS (Section 7 or 10 of the Federal Endangered Species Act [FESA]) and/or from the CDFW (Section 2081 of the California Fish and Game Code). The project Applicant shall comply with all required compensatory mitigation determined during consultation with the USFWS and CDFW, and provide proof of compliance to the City of Antioch Planning Division.

Should consultation with the USFWS result in required mitigation measures in conflict with the measures included here, USFWS measures shall take precedence.

Approximately 1.40 acres of California red-legged frog aquatic habitat shall be preserved on-site as part of the proposed project.

Prior to the start of construction, a qualified Biologist shall conduct a training program for all construction personnel including contractors and subcontractors. The training shall include, at a minimum, a description of the California red-legged frog and their habitats within the project site; an explanation of the species status and protection under State and federal laws; the avoidance and minimization measures to be implemented to reduce take of this species; communication and work stoppage procedures in case a listed species is observed within the project site; and an explanation of the importance of the Environmentally Sensitive Areas (ESAs) and Wildlife Exclusion Fencing (WEF). A fact sheet conveying this information shall be prepared and distributed to all construction personnel. The training shall provide interpretation for non-English speaking workers. The same instruction shall be provided to any new workers before they are authorized to perform project work.

Prior to the start of each phase of construction, ESAs (defined as areas containing sensitive habitats adjacent to or within construction work areas for which physical disturbance is not allowed) shall be construction activities are ongoing, and shall be regularly inspected and fully maintained at all times.

A qualified Biologist shall be on-site during all activities that may result in take of the California red-legged frog. The qualifications of the Biologist(s) shall be submitted to the USFWS for review and approval at least 30 calendar days prior to the date earthmoving is initiated at the project site.

Prior to the start of each phase of construction, WEF shall be installed at the edge of the project footprint in all areas where sensitive species could enter the construction area. The location of the fencing shall be determined by the contractor and the qualified Biologist prior to the start of staging or ground disturbing activities. The WEF shall remain in place throughout the duration of the project and shall be regularly inspected and fully maintained. Repairs to the WEF shall be made within 24 hours of discovery. Upon project completion, the WEF shall be completely removed and the area cleaned of debris and trash and returned to natural conditions. An exception to the foregoing fencing measures is that for work sites where the duration of work activities is very short (e.g., 3 days or less) and that occur during the dry season, and the installation of exclusion fencing will result in more ground disturbance than from project activities. In this case, the boundaries and access areas and sensitive habitats may be staked and flagged (as opposed to fenced) by the qualified Biologist prior to disturbance and species monitoring would occur during all project activities at that site.

No more than 24 hours prior to the date of initial ground disturbance, a preconstruction survey for the California red-legged frog shall be conducted by the qualified Biologist at the project site. The results shall be provided to the City of Antioch Planning Division. The survey shall consist of walking the project limits and within the project site to ascertain the possible presence of the species. The Biologist shall investigate all potential areas that could be used by the California red-legged frog for feeding, breeding, sheltering, movement, and other essential behaviors. This includes an adequate examination of mammal burrows, such as California ground squirrels or gophers. If any adults, subadults, juveniles, tadpoles, or eggs are found, the Biologist shall contact the USFWS to determine if moving any of the individuals is appropriate. In making this

determination, the USFWS shall consider if an appropriate relocation site exists. Only USFWS-approved Biologists may capture, handle, and monitor the California red-legged frog.

To the extent practicable, initial ground-disturbing activities shall be avoided between November 1 and March 31 because that is the time period when the California red-legged frog are most likely to be moving through upland areas. When ground-disturbing activities must take place between November 1 and March 31, the project Applicant shall ensure that daily monitoring by the USFWS-approved Biologist is completed.

Option 2. *The project Applicant shall comply with a habitat conservation plan and/or natural community conservation plan if developed and adopted by the City, to the extent that all project impacts to the California red-legged frog would be fully mitigated, including payment of applicable fees, provided that CDFW and USFWS have approved the conservation plan.*

5.4.2 California Tiger Salamander

The Project and offsite infrastructure areas will result in the loss of 0.423 acres of potential breeding habitat for CTS and approximately 356 acres of potential upland habitat. Approximately 230 acres of grassland habitat will be preserved on-site. The on-site preserve areas will be connected to additional offsite open space containing CTS breeding ponds to the west and south of the Project site.

To mitigate for the loss of 0.423 acres of potential CTS breeding habitat and 356 acres of potential upland habitat on-site, the Project Applicant will be preserving wetlands that are either known to be CTS breeding habitat, or which have the proper hydrology to support breeding CTS, on the mitigation properties and within the on-site open space preserve areas. To mitigate for the total loss of potential breeding and upland habitat combined as a result of the Project, the Project Applicant shall do the following:

MM BIO-1e: *Prior to the commencement of construction activities, the project Applicant shall implement one of the following options:*

Option 1. *The project Applicant shall obtain take coverage from the United States Fish and Wildlife Service (USFWS) under Sections 7 or 10 of the Federal Endangered Species Act (FESA) for any impacts to the California tiger salamander and/or its habitat. In addition, the project Applicant shall obtain take coverage from the California Department of Fish and Wildlife (CDFW) under Section 2081 of the California Fish and Game Code for any impacts to the California tiger salamander and/or its habitat. Any required compensatory mitigation shall be determined during consultation with USFWS and CDFW and may include permittee-responsible mitigation and/or the purchase of mitigation credits from a USFWS- and CDFW-approved mitigation bank. Should consultation with the USFWS and CDFW result in required mitigation measures in conflict with the measures included here, USFWS and CDFW measures shall take precedence. A minimum ratio of 1:1 shall apply.*

The project Applicant shall preserve both aquatic habitat and upland habitat that are either known to be California tiger salamander breeding habitat and upland habitat, or which have the proper hydrology to

support breeding California tiger salamander, on off-site mitigation properties and within the on-site open space or as otherwise required as a result of consultation with the USFWS.

Project activities shall occur during the dry season (May 1 through October 15) unless otherwise authorized by the CDFW and USFWS.

Prior to the start of construction, a qualified Biologist shall conduct a training program for all construction personnel including contractors and subcontractors. The training shall include, at a minimum, a description of the California tiger salamander and its habitat within the project area; an explanation of the species status and protection under State and federal laws; the avoidance and minimization measures to be implemented to reduce take of this species; communication and work stoppage procedures in case a listed species is observed within the project site; and an explanation of the importance of the Environmentally Sensitive Areas (ESAs) and Wildlife Exclusion Fencing (WEF). A fact sheet conveying this information shall be prepared and distributed to all construction personnel by the Biologist. The training shall provide interpretation for non-English speaking workers. The same instruction shall be provided to any new workers before they are authorized to perform project work.

Prior to the start of each phase of construction, ESAs (defined as areas containing sensitive habitats adjacent to or within construction work areas for which physical disturbance is not allowed) shall be clearly delineated using high visibility orange fencing. The ESA fencing shall remain in place throughout the duration of the construction and shall be regularly inspected and fully maintained at all times by the project Applicant's contractor.

A qualified Biologist shall be on-site during all activities that may result in take of California tiger salamander. The qualifications of the Biologist(s) shall be submitted to the USFWS and CDFW for review and approval at least 30 calendar days prior to the date earthmoving is initiated at the project site.

Prior to the start of each phase of construction, WEF shall be installed at the edge of the project footprint in all areas where sensitive species could enter the construction area. The location of the fencing shall be determined by the contractor and the qualified Biologist. The WEF shall remain in place throughout the duration of the project phase and shall be regularly inspected and fully maintained by the project Applicant's contractor. Repairs to the WEF shall be made within 24 hours of discovery. Upon project completion, the WEF shall be completely removed and the area cleaned of debris and trash and returned to natural conditions. Exceptions to the foregoing fencing measures include work sites where the duration of work activities is very short (e.g., 3 days or less) occur during the dry season, and the installation of exclusion fencing will result in more ground disturbance than from project activities. In this case, the boundaries and access areas and sensitive habitats may be staked and flagged (as opposed to fully fenced) by the qualified Biologist prior to disturbance and species monitoring would occur during all project activities.

If a water body is to be temporarily dewatered by pumping, intakes shall be completely screened with wire mesh no larger than 5 millimeters and the intake shall be placed within a perforated bucket or other method to attenuate suction to prevent California tiger salamander from entering the pump system. Pumped water

shall be managed in a manner that does not degrade water quality and then upon completion released back into the water body, or at an appropriate location in a manner that does not cause erosion. No rewatering of the water body is necessary if sufficient surface or subsurface flow exists to fill it within a few days, or if work is to be completed during the time of year the water body would have dried naturally.

When constructing a road improvement within California tiger salamander habitat, the project Applicant shall enhance or establish wildlife passage for the California tiger salamander across roads, highways, or other anthropogenic barriers. This may include upland culverts, tunnels, and other crossings designed specifically for wildlife movement, as well as making accommodations in curbs (no vertical faced curbs), median barriers, and other impediments to terrestrial wildlife movement at locations most likely to be beneficial to the California tiger salamander.

Preconstruction surveys shall be provided to the City of Antioch Planning Division, and shall be conducted by a USFWS or CDFW approved Biologist within 72 hours of the initiation of any ground disturbing activities and vegetation clearing that may result in take of the California tiger salamander. All suitable aquatic and upland habitat, including refugia habitat such as small woody debris, refuse, burrow entries, etc., shall be duly inspected. The approved Biologist(s) shall conduct clearance surveys at the beginning of each day and regularly throughout the workday when construction activities are occurring that may result in take of the California tiger salamander. Where feasible and only on a case-by-case basis, rodent burrows and other ground openings suspected to contain Central California tiger salamanders that would be destroyed from project activities may be carefully excavated under supervision of the Biologist. If the California tiger salamander is observed, the approved Biologist shall implement the species observation and handling protocol outlined below.

At least 15 days prior to initiation of ground disturbance activities the project Applicant's Biologist shall prepare and submit a Relocation Plan for the California tiger salamander for the USFWS and CDFW written approval. The plan shall include protocol to be followed should a California tiger salamander be encountered during project activities. The Relocation Plan shall contain the name(s) of the approved Biologist(s) to relocate the California tiger salamander, method of relocation, a map, and description of the proposed release site(s) within 300 feet from the project, unless at a distance otherwise agreed to by the USFWS and CDFW, and written permission from the landowner to use their land as a relocation site.

Option 2. *The project Applicant shall comply with a habitat conservation plan and/or natural community conservation plan if developed and adopted by the City, to the extent that all project impacts to the California tiger salamander would be fully mitigated, including payment of applicable fees, provided that the CDFW and USFWS have approved the conservation plan.*

5.4.3 Western Spadefoot

Approximately 0.423-acre of potential western spadefoot aquatic habitat will be directly impacted by the proposed project. To mitigate for this loss, the project Applicant shall comply with the following mitigation measure:

MM BIO-2f: Prior to initiation of construction activity, the project Applicant shall implement one of the following options:

Option 1. *The project Applicant shall retain a qualified Biologist to survey all suitable aquatic habitat within the project site (including features proposed for avoidance) by sampling the features thoroughly with dipnets during March or early April, when spadefoot tadpoles would be present. In addition, one nocturnal acoustic survey of all areas within 300 feet of suitable aquatic habitat shall be conducted. Acoustic surveys shall consist of walking through the area and listening for the distinctive snore-like call of this species. The results shall be provided to the City of Antioch Planning Division. Timing and methodology for the aquatic and acoustic surveys shall be based on those described in Distribution of the western spadefoot in the Northern Sacramento Valley of California, with Comments on Status and Survey Methodology.¹ If both the aquatic survey and the nocturnal acoustic survey are negative, further mitigation is not necessary.*

If western spadefoot are observed within aquatic habitat proposed for impact, the tadpoles shall be captured by a qualified Biologist and relocated either to aquatic habitat to be avoided on-site (and implement the fencing requirement outlined below), or to an off-site open space preserve with suitable habitat in the vicinity of the project site. If western spadefoot are observed within aquatic habitats proposed for avoidance, then the project Applicant shall install a keyed in silt fence along the edge of the proposed impact area within 300 feet of the occupied aquatic habitat to prevent metamorphose individuals from dispersing into the construction area.

Option 2. *The project Applicant shall comply with the habitat conservation plan and/or natural community conservation plan developed and adopted by the City, to the extent that all project impacts are fully mitigated, including payment of applicable fees, provided that the California Department of Fish and Wildlife (CDFW) and the United States Fish and Wildlife Service (USFWS) have approved the conservation plan.*

5.5 Reptiles

5.5.1 Alameda Whipsnake, Coast Horned Lizard, and northern California Legless Lizard

The Project and offsite infrastructure areas will permanently impact approximately 356 acres of annual grassland which represents low quality habitat for Alameda whipsnake, Coast horned lizard, and California legless lizard. To mitigate for the impacts to potential habitat for these species, the Project Applicant shall do one of the following:

MM BIO-1i: *Prior to construction, the project Applicant shall implement one of the following options:*

¹ Shedd, J.O. 2017. Distribution of the Western Spadefoot in the Northern Sacramento Valley of California, with Comments on Status and Survey Methodology (PDF Download Available). Website: https://www.researchgate.net/publication/312153742_Distribution_of_the_Western_Spadefoot_Spea_hammondii_in_the_Northern_Sacramento_Valley_of_California_with_Comments_on_Status_and_Survey_Methodology. Accessed February 14, 2018.

Option 1. *Within 14 days prior to the initiation of any construction activities for each phase of the project, a qualified Biologist shall conduct preconstruction surveys for northern California legless lizard, Alameda whipsnake, and coast horned lizard. The results shall be provided to the City of Antioch Planning Division. If Alameda whipsnake is identified during the survey, it will be allowed to leave the work area on its own, subject to confirmation by a qualified Biologist. If Northern California legless lizard or coast horned lizard are found during the survey, a qualified Biologist shall relocate them to suitable habitat outside of the project site, subject to review and approval by the appropriate resource agencies (i.e., California Department of Fish and Wildlife [CDFW] and/or the United States Fish and Wildlife Service [USFWS], and the City of Antioch Planning Division).*

Option 2. *The project Applicant shall comply with a habitat conservation plan and/or natural community conservation plan if developed and adopted by the City, to the extent that all project impacts to the lizards and whipsnake would be fully mitigated, including payment of applicable fees, provided that the CDFW and the USFWS have approved the conservation plan.*

5.5.2 Northwestern Pond Turtle

While the majority of the on-site northwestern pond turtle habitat will be preserved within the on-site open space, approximately 0.005 acre of northwestern pond turtle habitat will be impacted by the construction of bridges and utility crossings over Sand Creek. To mitigate for the impacts to aquatic habitat for this species, the Project Applicant shall do one of the following:

MM BIO-1h: *Prior to construction activities, the project Applicant shall implement one of the following options:*

Option 1. *Within 14 days prior to the initiation of any construction activities for each phase, a qualified Biologist shall conduct preconstruction surveys for northwestern pond turtles. The results shall be provided to the City of Antioch Planning Division. If northwestern pond turtles are found prior to the initiation of, and/or during, construction activities, a qualified Biologist shall relocate them outside of the project site, subject to review and approval by the appropriate resource agencies (i.e., California Department of Fish and Wildlife [CDFW]).*

Option 2. *The project Applicant shall comply with a habitat conservation plan and/or natural community conservation plan if developed and adopted by the City, to the extent that all project impacts to the western pond turtle would be fully mitigated, including payment of applicable fees, provided that the CDFW and the United States Fish and Wildlife Service (USFWS) have approved the conservation plan.*

5.6 Birds

5.6.1 Western Burrowing Owl

The Project will result in the loss of approximately 356 acres of nesting and/or foraging habitat for BUOW. Approximately 230 acres of potential habitat for BUOW will be preserved within the on-site open space. Additionally, BUOW have been observed within the offsite mitigation properties and the properties

represent high quality habitat for the species. In addition to preserving habitat for BUOW the Project Applicant shall do one of the following:

MM BIO-1k:

Option 1. *A targeted take avoidance burrowing owl nest survey shall be conducted of all accessible areas within 500 feet of the proposed construction area within 14 days prior to construction activities utilizing 60 foot transects as outlined in the Staff Report on Burrowing Owl Mitigation. The results shall be provided to the City of Antioch Planning Division.*

If an active burrowing owl nest burrow (i.e., occupied by more than one adult owl, and/or juvenile owls are observed) is found within 250 feet of a construction area either before or during construction, no construction shall occur within 250 feet of the nest burrow until a qualified Biologist determines that the young have fledged or it is determined that the nesting attempt has failed. If the project Applicant desires to work within 250 feet of the nest burrow, the project Applicant shall consult with the California Department of Fish and Wildlife (CDFW) to determine if the nest buffer can be reduced. During the non-breeding season (late September through the end of January), the project Applicant may choose to conduct a survey for burrows or debris that represent suitable nesting habitat for burrowing owls within areas of proposed ground disturbance, exclude any burrowing owls observed, and collapse any burrows or remove the debris in accordance with the methodology outlined by the CDFW.

If any nesting burrowing owl are found during the pre-construction survey, mitigation for the permanent loss of burrowing owl foraging habitat (defined as all areas of suitable habitat within 250 feet of the active burrow) shall be accomplished at a 1:1 ratio. The mitigation provided shall be consistent with recommendations in the 2012 CDFW Staff Report and may be accomplished within the Swainson's hawk foraging habitat mitigation area if burrowing owls have been documented utilizing that area, or if the Biologist, the City, and the CDFW collectively determine that the area is suitable.

Option 2. *The project Applicant shall comply with a habitat conservation plan and/or natural community conservation plan if developed and adopted by the City, to the extent that all project impacts to the burrowing owl would be fully mitigated, including payment of applicable fees, provided that the CDFW and the United States Fish and Wildlife Service (USFWS) have approved the conservation plan.*

MM BIO-1l: *Prior to construction activities, the project Applicant shall also prepare a survey report as follows: For any nesting raptor or songbird pre-construction survey conducted pursuant to Mitigation Measure (MM) BIO-2i through MM BIO-2k, a report summarizing the survey(s), including those for Swainson's hawk, shall be provided to the City and the California Department of Fish and Wildlife (CDFW) within 30 days of the completed survey. The survey report shall be valid for one construction season. If no nests are found, no further mitigation is required.*

Where birds are nesting during construction and construction activities cause a nesting bird do any of the following in a way that would be considered a result of construction activities: vocalize, make defensive flights

at intruders, get up from a brooding position, or fly off the nest, the exclusionary buffer shall be increased such that activities are far enough from the nest to stop this agitated behavior. The exclusionary buffer shall remain in place until the chicks have fledged or as otherwise determined by a qualified Biologist in consultation with the CDFW.

Construction activities may only resume within the buffer zone after a follow-up survey by the biologist has been conducted and a report has been prepared indicating that the nest (or nests) are no longer active, and no new nests have been identified.

5.6.2 Swainson's Hawk

The Project and offsite infrastructure improvements will result in impacts to vegetation and structures that provide potential nesting habitat to raptors including Swainson's hawk. Additionally, the Project will permanently impact approximately 352 acres of foraging habitat for Swainson's hawk. Approximately 230-acres of suitable Swainson's hawk foraging habitat will be preserved within the on-site open space preserve. Additionally, hundreds of acres of foraging habitat will also be preserved in perpetuity within the mitigation properties.

To mitigate for the impacts to nesting raptor potential habitat, the Project Applicant shall do one of the following:

MM BIO-1j:

Option 1. *Where construction activities will occur during nesting and breeding season (typically February 15 through September 1), the project Applicant shall conduct a targeted Swainson's hawk nest survey throughout all accessible areas within 0.25 mile of the proposed construction area no later than 14 days prior to construction activities. The results shall be provided to the City of Antioch Planning Division. If active Swainson's hawk nests are found within 0.25 mile of a construction area, construction shall cease within 0.25 mile of the nest until a qualified Biologist determines that the young have fledged, or it is determined that the nesting attempt has failed. If the project Applicant desires to work within 0.25 mile of the nest, the project Applicant shall consult with the California Department of Fish and Wildlife (CDFW) to determine if the nest buffer can be reduced. The project Applicant, the Biologist, and the CDFW shall collectively determine the nest avoidance buffer and what (if any) nest monitoring is necessary. If an active Swainson's hawk nest is found within the project site prior to construction and is in a tree that is proposed for removal, then the project Applicant shall implement additional mitigation recommended by a qualified Biologist based on CDFW Guidelines and obtain any required permits from the CDFW.*

Prior to project construction, a qualified Biologist shall conduct a review of Swainson's hawk nest data available in the California Natural Diversity Database (CNDDDB) and contact the CDFW to determine if they have any additional nest data. A Biologist shall conduct a survey of these nests to determine if they are still present and provide the City with a summary of the findings. If it is determined that the project site is within 10 miles of an active Swainson's hawk nest (an active nest is defined as a nest with documented Swainson's hawk use

within the past 5 years), the project Applicant shall mitigate for the loss of suitable Swainson's hawk foraging habitat by implementing one of the below measures:

Active nest identified within 1 mile of the project site: 1 acre of suitable foraging habitat shall be protected for each acre of suitable foraging habitat developed. Protection shall be via purchase of mitigation bank credits or other land protection mechanism acceptable to the City.

Active nest identified within 5 miles (but greater than 1 mile) of the project site: 0.75 acre of suitable foraging habitat shall be protected for each acre of suitable foraging habitat developed. Protection shall be via purchase of mitigation bank credits or other land protection mechanism acceptable to the City.

Active nest identified within 10 miles (but greater than 5 miles) of the project site: 0.5 acre of suitable foraging habitat shall be protected for each acre of suitable foraging habitat developed. Protection shall be via purchase of mitigation bank credits or other land protection mechanism acceptable to the City.

Option 2. *The project Applicant shall comply with a habitat conservation plan and/or natural community conservation plan if developed and adopted by the City, to the extent that all project impacts to the Swainson's hawk would be fully mitigated, including payment of applicable fees, provided that the CDFW and the United States Fish and Wildlife Service (USFWS) have approved the conservation plan.*

5.6.3 Nesting Songbirds and Raptors

The Project will impact vegetation and structures that provide habitat for nesting songbirds, including California horned lark, grasshopper sparrow, and loggerhead shrike among others. To mitigate for the impacts to nesting songbird habitat, the Project Applicant shall do one of the following:

MM BIO-1m: Option 1. *A pre-construction nesting bird survey shall be conducted by a qualified Biologist on the project site and within a 500-foot radius of proposed construction areas, where access is available, no more than 3 days prior to the initiation of construction. The results shall be provided to the City of Antioch Planning Division. If there is a break in construction activity of more than 2 weeks, subsequent surveys shall be conducted.*

If active raptor nests are found, no construction activities shall take place within 500 feet of the nest until the young have fledged. If active songbird nests are found, a 100-foot no disturbance buffer shall be established. These no-disturbance buffers may be reduced if a smaller buffer is proposed by the Biologist and approved by the City (and California Department of Fish and Wildlife (CDFW) if it is a tricolored blackbird nesting colony) after taking into consideration the natural history of the species of bird nesting, the proposed activity level adjacent to the nest, habituation to existing or ongoing activity, and nest concealment (are there visual or acoustic barriers between the proposed activity and the nest). A qualified Biologist shall visit the nest as needed to determine when the young have fledged the nest and are independent of the site or the nest can be left undisturbed until the end of the nesting season.

Option 2. *The project Applicant shall comply with a habitat conservation plan and/or natural community conservation plan if developed and adopted by the City, to the extent that all project impacts to raptors and songbirds would be fully mitigated, including payment of applicable fees, provided that the CDFW and the United States Fish and Wildlife Service (USFWS) have approved the conservation plan.*

5.7 Mammals

5.7.1 American Badger

The Project will permanently impact approximately 352 acres of grassland that represents potential habitat for American badger. Approximately 230 acres of potential habitat for American badger will be preserved within the on-site open space. Additionally, the offsite mitigation properties represent high quality habitat for the species. In addition to preserving habitat for American badger the Project Applicant shall do one of the following:

MM BIO-1a: Option 1. *Within 48 hours prior to the initiation of any construction activities for each Project phase, a qualified biologist shall conduct a preconstruction American badger survey within the Project area. If American badgers or burrows with American badger signs are found within the Project site or off-site improvement areas during the preconstruction surveys, consultation with CDFW shall occur prior to the initiation of any construction activities to determine an appropriate burrow excavation and/or relocation method. If American badgers are not found, further measures pertaining to American badgers are not necessary. All survey results shall be submitted to the City of Antioch Planning Division prior to the initiation of any construction activities or where construction has been halted for 30 days or more.*

Option 2. *The project Applicant shall comply with a habitat conservation plan and/or natural community conservation plan if developed and adopted by the City, to the extent that all project impacts to raptors and songbirds would be fully mitigated, including payment of applicable fees, provided that the CDFW and the United States Fish and Wildlife Service (USFWS) have approved the conservation plan.*

5.7.2 Roosting Bats

The Project will result in impacts to vegetation and structures that represent potential habitat for Pallid bat, Townsend's big-eared bat, greater mastiff bat, and western red bat. To mitigate for potential impacts to roosting bats, the Project Applicant shall do the following:

MM BIO-1n: *Prior to construction activities, the project Applicant shall implement one of the following options:*

Option 1. *A qualified Biologist shall conduct a bat habitat assessment of all potential roosting habitat features, including trees within the proposed development footprint. This habitat assessment shall identify all potentially suitable roosting habitat, and may be conducted up to 1 year prior to the start of construction. The results shall be provided to the City of Antioch Planning Division.*

If potential roosting habitat is identified (cavities in trees) within the areas proposed for development, the Biologist shall survey the potential roosting habitat during the active season (generally April through October or from January through March on days with temperatures in excess of 50°F (degrees Fahrenheit) to determine presence of roosting bats. These surveys are recommended to be conducted utilizing methods that are considered acceptable to the California Department of Fish and Wildlife (CDFW) and bat experts, including but not limited to evening emergence surveys, acoustic surveys, inspecting potential roosting habitat with fiber optic cameras or a combination thereof.

If roosting bats are identified within any of the trees planned for removal, or if presence is assumed, the trees shall be removed outside of pup season only on days when temperatures are in excess of 50°F. Pup season is generally during the months of May through August. Two-step tree removal shall be utilized under the supervision of the qualified Biologist. Two-step tree removal involves removal of all branches of the tree that do not provide roosting habitat on the first day, and then the next day cutting down the remaining portion of the tree.

Additionally, all other tree removal shall be conducted from January through March on days with temperatures in excess of 50°F to avoid potential impacts to foliage-roosting bat species.

Option 2. *The project Applicant shall comply with a habitat conservation plan and/or natural community conservation plan if developed and adopted by the City, including payment of applicable fees, to the extent that all project impacts to roosting bats would be fully mitigated, provided that the CDFW and United States Fish and Wildlife Service (USFWS) have approved the conservation plan.*

5.8 SUMMARY OF MITIGATION

In addition to the resource-specific measures discussed above to minimize and mitigate for Project effects, the Project Applicant proposes to preserve a substantial amount of high quality special-status species habitat both on-site and at the mitigation properties. As discussed in Section 4.0 above, the on-site open space preserves and the mitigation properties contain suitable upland/foraging and aquatic/breeding habitat for the species discussed in Section 3.0 that may be affected by Project activities.

The highest quality aquatic habitat and adjacent uplands within the Project site will be preserved on site, and all or portions of the mitigation properties utilized as mitigation will provide much higher habitat values for special-status plants and animals than the affected portions of the Project site itself. Preservation and management of these RMP lands in perpetuity would be a net benefit for special-status species and would contribute to the long-term survival and recovery of these species.

6.0 GENERAL PROVISIONS APPLICABLE TO BOTH ON-SITE AND OFF-SITE RMP LANDS

The following section provides general provisions which are applicable to all on-site and off-site preserved lands covered under this RMP, including, but not limited to, the mechanisms for in perpetuity conservation

of RMP lands; funding for on-going preservation; allowed and prohibited uses; weed and litter management; and fencing requirements.

6.1 Preservation and Management of On-site and Off-site Preserves in Perpetuity

The Project Applicant shall transfer fee title to both on-site and off-site preservation lands to a qualified conservation organization or government entity prior to the on-set of development activities on the Project site, as required by the mitigation measures provided in the Project EIR and/or the applicable resource agency permits issued for the project.

The Project Applicant will establish an endowment for the qualified conservation organization(s) or government entity (hereafter referred to as the "RMP land manager") that will be held in a permanent, non-wasting trust account by the RMP land manager, the interest from which shall be used by the RMP land manager to manage and maintain the on-site and offsite preserves as set forth in this RMP. The Project Applicant will further record a permanent conservation easement or deed restriction over the preserved lands in favor of the RMP land manager.

6.2 Allowed Activities

The following uses and activities are allowed on both on-site and offsite preserved lands covered by this RMP, unless expressly prohibited by resource agency permits, or the protection instrument recorded on the conservation lands as approved by the resource agencies:

1. Fences required for the management of grazing livestock and trail use management.
2. Grazing shall be allowed, provided that a Grazing Management Plan is prepared for each preserve site by a certified rangeland manager that specifies important grazing parameters including but not limited to stocking rates, residual dry matter, and timing of grazing. Monitoring methods will also be stipulated in the plan. The desired condition is as a short-grass preserve. This can be achieved by moderate grazing pressure.
3. The RMP land manager or its agents shall be entitled to conduct wildlife and plant monitoring activities, occasional maintenance activities associated with ranching including the distribution and collection of farm animals; for management and maintenance of the site in its naturalized condition; for passive recreational uses by the public; or for scientific study purposes.
4. The RMP land manager may access the property as necessary to manage and otherwise maintain the site in its naturalized condition.
5. The RMP land manager may grant permission to parties to access the site for scientific study purposes.
6. Existing pipelines and easements, if any, may continue to be maintained.
7. Wetlands may be created and maintained in a manner consistent with the mitigation requirements imposed in permits issued to the Project by USACE, RWQCB, and CDFW, and according to the terms of the Biological Opinion or 2081 permit issued for the Project.

8. Existing structures, fences, ditches, pumps, and other improvements may be maintained, repaired, and/or improved. Additional fencing or water troughs necessary to manage cattle as stipulated in the Grazing Management Plan may be installed and maintained. Such features will be installed in a way to prevent damaging or degrading of natural habitats on the site.
9. Feral horses or horses that have been retired from active human use are allowed to graze on the offsite mitigation properties, provided that the effects of their grazing have been factored into the terms of the Grazing Management Plan.
10. The offsite mitigation properties may be used for the conservation of wildlife or plant habitat, including the development or maintenance of wetland areas.

6.3 Prohibited Activities

The following activities are prohibited on both on-site and offsite preserved lands covered by this RMP, unless expressly allowed by resource agency permits, or the protection instrument recorded on the conservation lands as approved by the resource agencies:

1. Leveling, grading, landscaping, cultivation, or any other alterations of existing topography for any purposes (except public trails in existing roadways and/or culverts or other drainage implements), including the exploration for, or development of, mineral resources, except as required for permitted wetland or habitat creation as stipulated in permits from USACE, RWQCB, USFWS, and CDFW.
2. Placement or construction of any new structures, including: buildings; fences not required for management of grazing livestock in the Grazing Management Plan or human trespass and trail use management; and billboards.
3. Any agricultural, commercial, residential or industrial use or activity, except for grazing.
4. Discharge, dumping, burning, or storing of rubbish, garbage, grass clippings, dredge material, household chemicals, or any other wastes or fill materials.
5. The operation of any motorized vehicle for any purpose, except for emergency use, fire control, or for maintenance, repair and restoration of preserved lands or permitted facilities as set forth in the RMP or any Biological Opinion.
6. Activities that may alter the hydrology of the preserved lands and the associated watersheds (except as required for permitted wetland creation), including but not limited to: excessive pumping of groundwater, manipulation or blockage of natural drainages, inappropriate water application or placement of storm water drains, unless authorized in writing by the USFWS and CDFW.
7. The pruning, felling, or other destruction or removal of dead or living native vegetation, except as needed to control or prevent hazards, disease, fire, or the establishment of invasive species.
8. Conducting fire protection activities, including the creation of fire breaks, that may adversely impact preserved lands, unless the following criteria are satisfied:
 - i) The location of any fire break is approved by the USFWS, CDFW, RMP land manager, and fire department.
 - ii) The fire break does not exceed the minimum required width.
 - iii) Mowing (not discing) is used for fire break creation.

9. Use of pesticides, herbicides, or rodenticides by the Project Applicant on the preserved lands, except as authorized in writing by the USFWS and CDFW.
10. Introduction of any exotic species or species not native to the area, including aquatic species, except as authorized in writing by the USFWS and CDFW.

6.4 Weed Monitoring and Management

It is anticipated that a managed grazing regime as implemented by the RMP land manager will be adequate to curtail the growth of noxious invasive weeds such as yellow-star thistle (*Centaurea solstitialis*) and Italian thistle (*Carduus pycnocephalus*) on RMP lands. However, additional eradication methods may be required should noxious weed species become established on RMP lands and begin to threaten or displace the annual grasslands that support or have potential to support CTS upland habitat or BUOWs or their habitat.

The RMP lands will be monitored twice annually during April and June for the presence of noxious weed species, and appropriate additional measures will be taken to eradicate these species should they threaten to displace sensitive native plant species or habitat for sensitive wildlife species.

Appropriate weed eradication methods on RMP lands will be limited to hand pulling, the use of weed eaters, mowing, or goat grazing. Weed seedlings can often be hand pulled, but established plants may require alternate treatments. Hand pulling of many weed species is ineffective, due to their ability to regenerate from root fragments. Invasive exotics that are allowed to establish frequently require repeated control efforts. Control efforts should always be undertaken before the weeds can bloom and set seed, but if they have begun blooming, flowers and/or seeds should be carefully bagged and disposed of legally.

A wide array of treatments is available to control weeds, including manual methods and mechanical methods (e.g., pulling, mowing, weed-eaters). The use of chemical eradication methods shall not be permitted within the RMP lands unless other methods have been shown to be ineffective. The use of such chemical methods must be authorized in writing by USFWS and CDFW.

6.5 Fencing

To avoid inappropriate off-road vehicular use of RMP lands, fencing will be installed along the perimeters of RMP lands. Additional fencing may be required should it be determined that cattle are impacting sensitive resources on RMP lands such as rare plants, wetlands, or riparian areas; or to effectively manage grazing units as determined by a certified rangeland manager and described in the Grazing Management Plan. Fencing will be split-rail fencing, barbed wire, or other fencing that does not hinder wildlife from using or moving through the site.

The integrity of all fencing, and any other structures required on RMP lands under the RMP, a Biological Opinion and/or deed restriction, will be assessed no less than once annually by the RMP land manager or Project Applicant (whichever currently has responsibility for monitoring and reporting tasks on the site in question). Any necessary repairs will be carried out within 30 days by the responsible party.

6.6 Litter

RMP lands will be monitored no less than four times annually for accumulation of trash and litter by the RMP land manager or Project Applicant (whichever currently has responsibility for monitoring and management tasks on the site in question). All trash and litter shall be removed by the responsible party within 30 days.

7.0 GRASSLAND GRAZING MANAGEMENT PLAN

Management of grassland habitat on RMP lands will consist primarily of a predator-friendly, winter-spring grazing regime as practiced by East Bay Regional Parks. Grazing benefits a number of special-status species such as those targeted for conservation on both on-site and offsite RMP lands. Therefore, a moderate grazing regime is not only consistent with the objectives set forth in the City of Antioch's General Plan, but can be used to optimize the habitat value for the target species on preservation lands. Grasses must be kept short as CTS, BUOW and SJKF must be able to move freely and observe predators. A managed grazing regime (allowing a moderate level of grazing) will keep grasses at an optimal height to benefit these species. Managed grazing will also reduce the likelihood that invasive weeds will become established within RMP lands. As such, the Project Applicant shall hire a certified rangeland manager to develop a Grazing Management Plan for RMP lands that will be provided to and approved by the USFWS, CDFW, and City.

Objectives of the Grazing Management Plan shall include:

- Preservation of herbaceous cover at a density and height that promotes the establishment and maintenance of populations of ground squirrels necessary to support targeted special-status grassland animals. This will include keeping grasses at a minimum height of 3 inches and maximum height of 12 inches.
- Promote even grazing pressure over RMP grasslands so that there are no overgrazed and/or under-grazed areas.
- Discourage the growth of undesirable non-native invasive plants.
- Reduce fire hazards associated with excessive thatch cover.
- Minimize erosion potential of grazed areas by leaving ample vegetative cover.
- Reduce or eliminate grazing impacts to wetlands and most stream zone areas.
- Promote a cooperative working relationship between the RMP land manager and the grazing lessee/rancher implementing the grazing plan.

Required Elements of the Grazing Management Plan. The Project Applicant shall develop a Grazing Management Plan sufficient to meet the above objectives. A copy of the Plan shall be provided to the USFWS, CDFG, the RMP land manager, and the City of Antioch. At a minimum, this Plan shall include the following elements:

- Preparation of the Plan by a certified rangeland manager.
- The initial stocking rate for each RMP site, including a justification of the initial rate.

- The specific protocol for how RMP grasslands will be monitored to ensure the specified objectives of the grazing plan are met, including which parameters will be measured and how they will be measured.
- Preparation of an annual report with findings from the annual monitoring, including recommendations for adjustments to stocking rates and any need for additional fencing to exclude stock from sensitive habitats. The annual report will be provided to USFWS, CDFW, the RMP land manager, and the City of Antioch at their request.
- Approved actions should the monitoring indicate that the objectives of the Plan are not being met.

8.0 REFERENCES

- ECORP Consulting, Inc. 2017a. Biological Resources Assessment for the Ranch in Antioch, Contra Costa County, California. Prepared for Richland Planned Communities, Inc. Dated October 2017.
- ECORP Consulting, Inc. 2017b. Aquatic Resources Delineation for the Richland Mitigation Properties, Contra Costa County, California. Prepared for Richland Planned Communities, Inc. Dated 10 November 2017.
- LSA Associates, Inc. 2003. General Plan, City of Antioch, Contra Costa County, California. Prepared for the City of Antioch. Dated November 24, 2003.
- Madrone Ecological Consulting, LLC (Madrone). 2019. Biological Resources Assessment for The Ranch in Antioch. Prepared for Richland Planned Communities. Published on 23 September 2019.
- Madrone Ecological Consulting, LLC. 2019a. Special-Status Plant Survey Report. The Ranch in Antioch. Prepared for Richland Planned Communities. Published 19 September 2019.
- Madrone Ecological Consulting, LLC. 2020. Richland Mitigation Properties; Contra Costa County, California – 2019 California Red-legged Frog Visual Encounter Survey Results. Prepared for Richland Planned Communities. Published 28 January 2020.
- Monk & Associates, Inc. (M&A). 2015. DRAFT Biological Assessment for The Ranch, City of Antioch, Contra Costa County.
- Raney Planning and Management, Inc. 2018. Draft Environmental Impact Report The Ranch Project. Dated March 2018.

Figures

Figure 1. Project Site and Vicinity

Figure 2. Offsite Infrastructure Aquatic Resources

Figure 3. Special-Status Rare Plant Populations Map

Figure 4. Richland Mitigation Properties Location and Vicinity

Figure 5. Richland Mitigation Properties Aquatic Resources

Figure 6. California Tiger Salamander and California Red-legged Frog Survey Results for the Richland Mitigation Properties

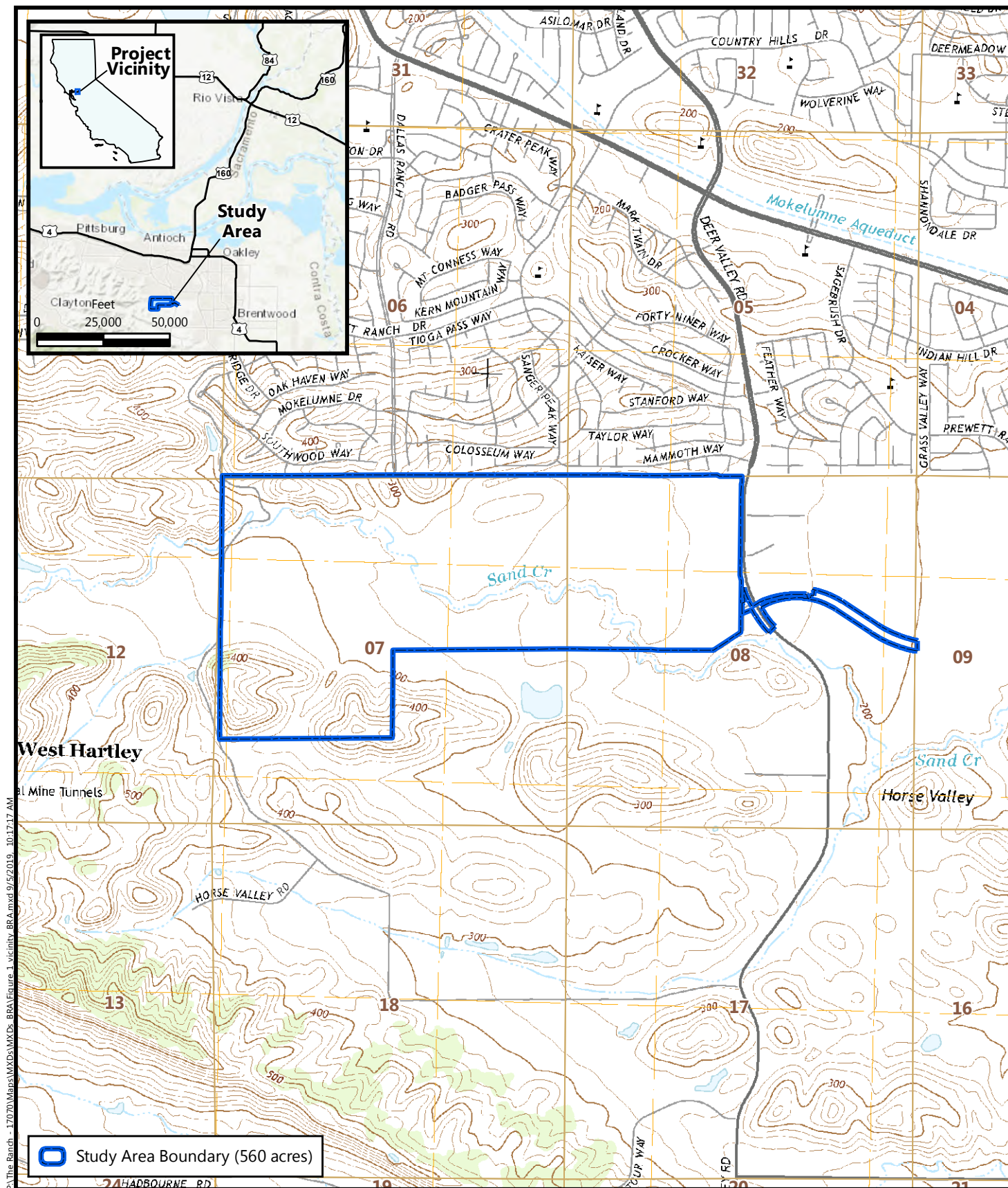
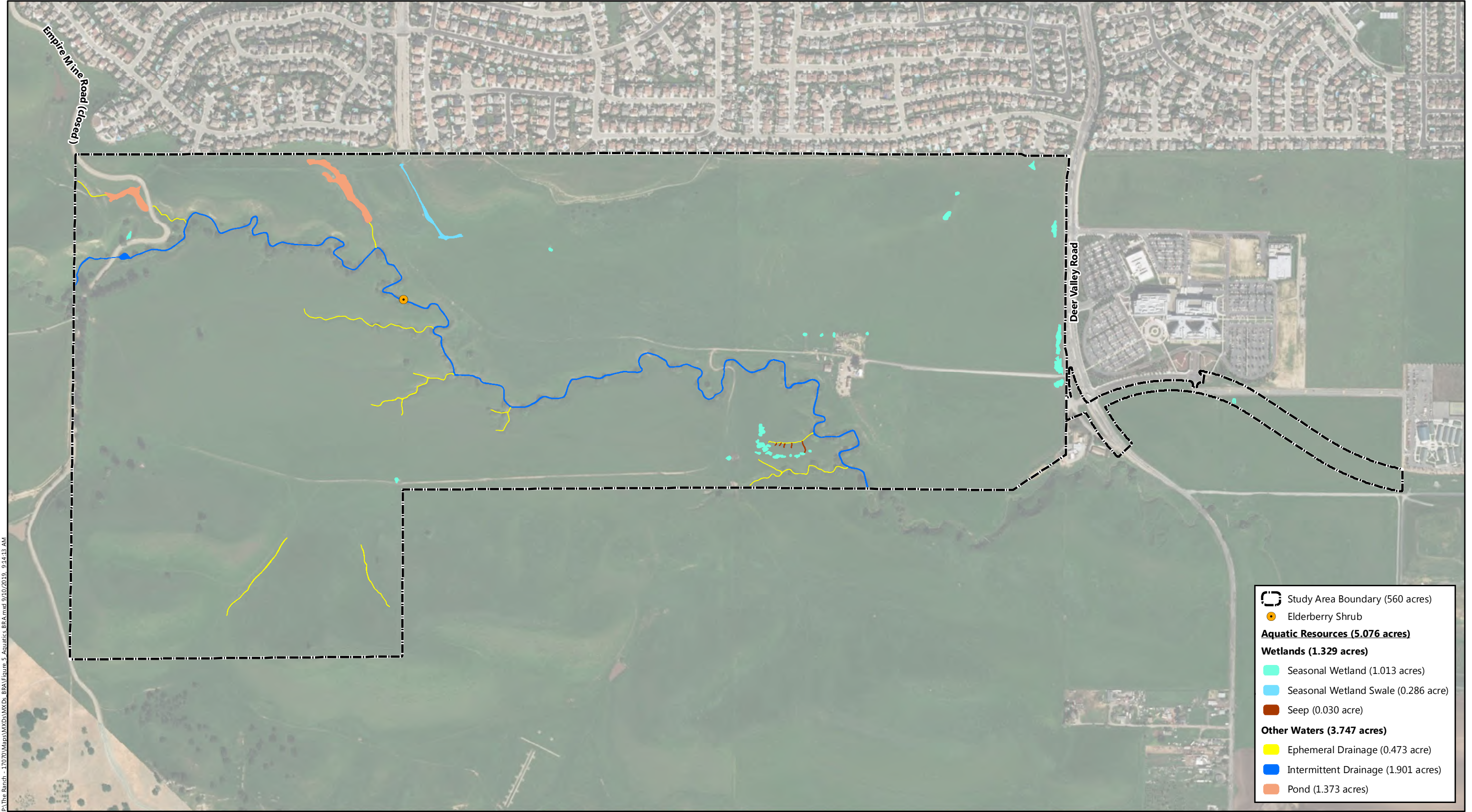


Figure 1
Site and Vicinity

Source: United States Geologic Survey, 2015
 Sections 5-9, Township 1 North, Range 2 East, MDB&M
 "Antioch South, California" 7.5-Minute Topographic Quadrangle
 Longitude -121.783351, Latitude 37.949083

The Ranch in Antioch
 Antioch, Contra Costa County, California



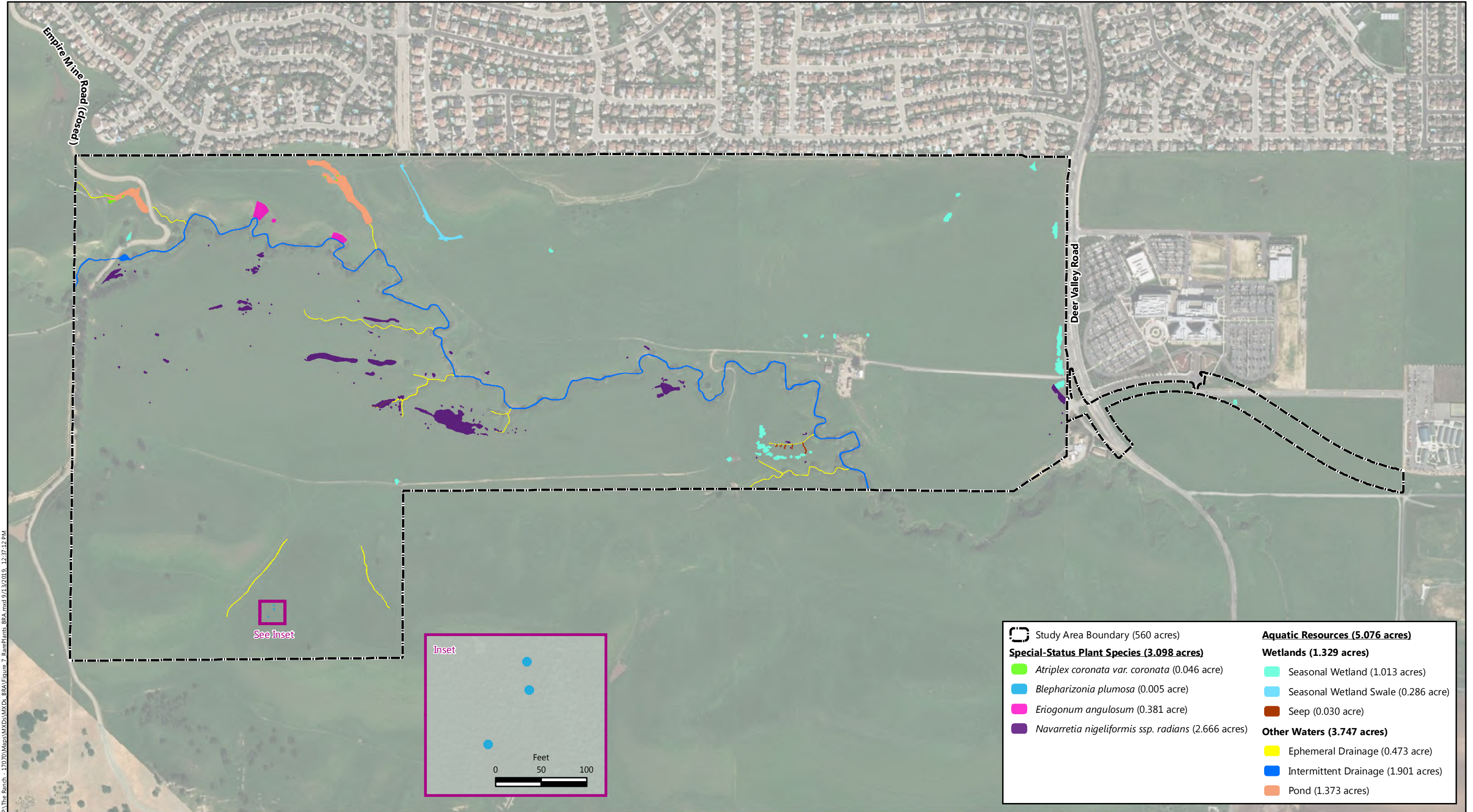


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- Study Area Boundary (560 acres)
- Elderberry Shrub
- Aquatic Resources (5.076 acres)**
- Wetlands (1.329 acres)**
- Seasonal Wetland (1.013 acres)
- Seasonal Wetland Swale (0.286 acre)
- Seep (0.030 acre)
- Other Waters (3.747 acres)**
- Ephemeral Drainage (0.473 acre)
- Intermittent Drainage (1.901 acres)
- Pond (1.373 acres)

Aquatic Resources Source: Live Oak Associates, Inc., March 2015,
Madrone Ecological Consulting, LLC, 2019
Aerial Source: DigitalGlobe, 19 and 25 August 2017



Aquatic Resources Source: Live Oak Associates, Inc., March 2015,
Madrone Ecological Consulting, LLC, 2019
Aerial Source: DigitalGlobe, 19 and 25 August 2017

Figure 3
Special-Status Plants Documented
within the Study Area During the
2018-2019 Field Surveys

The Ranch in Antioch
Antioch, Contra Costa County, California



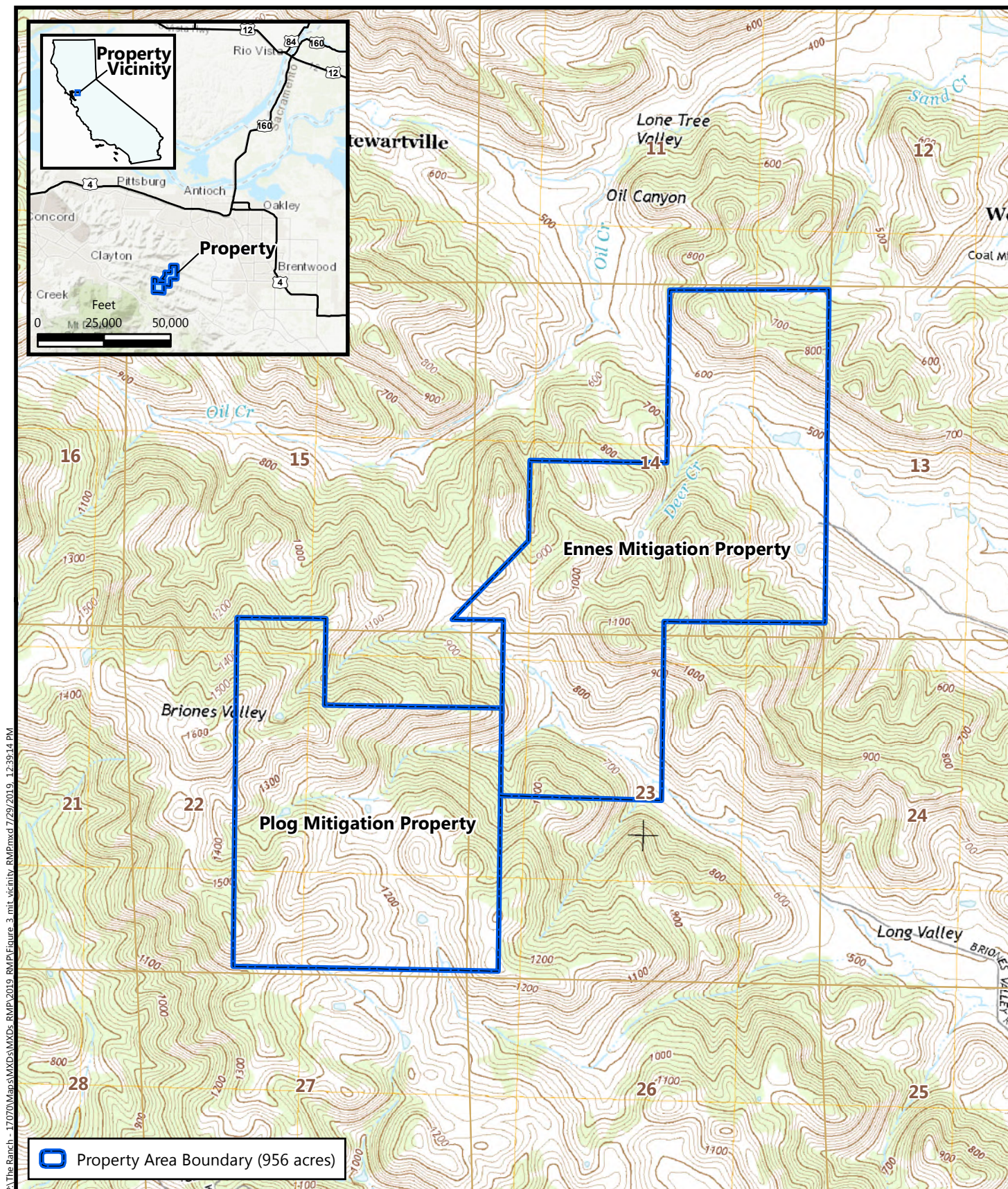
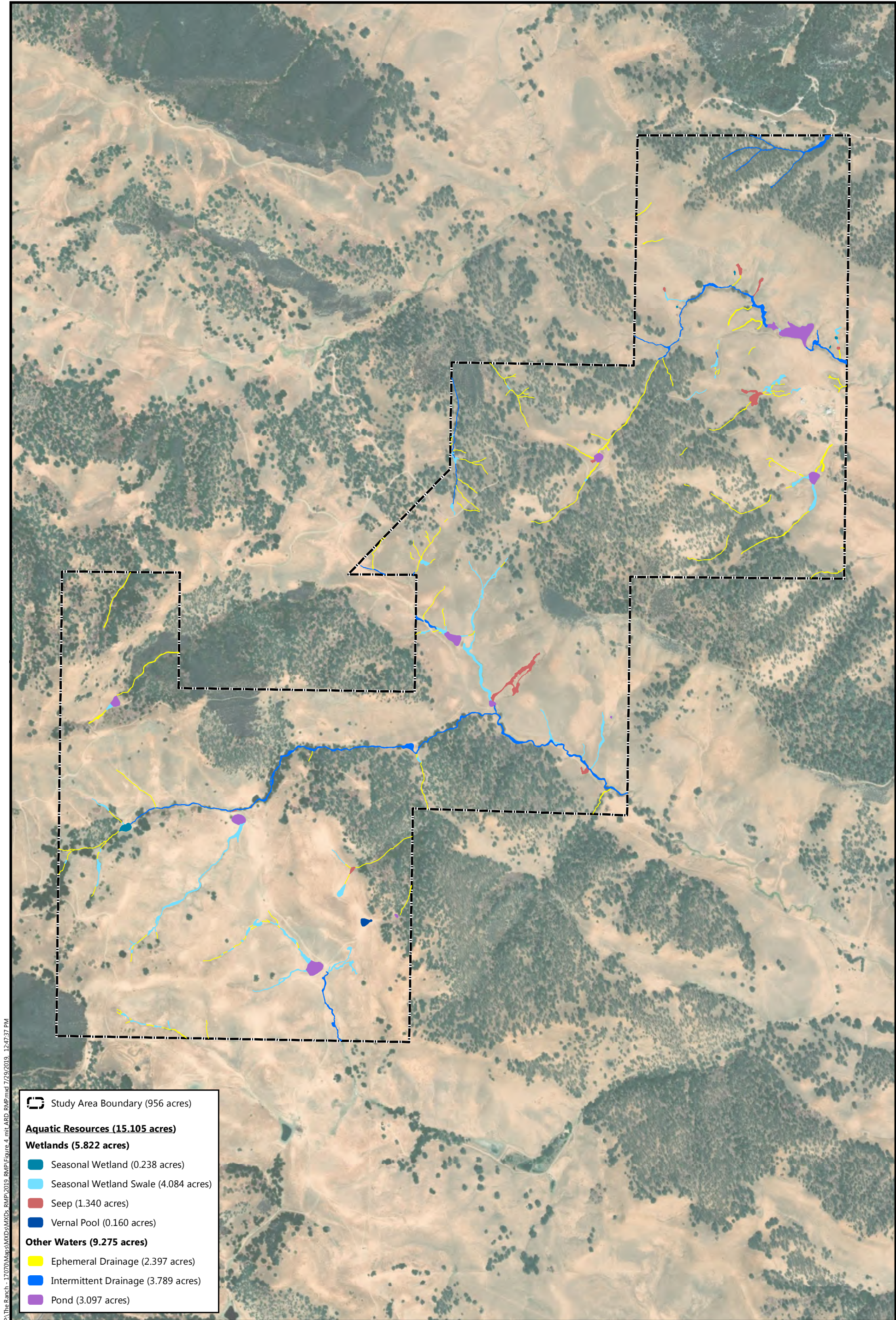


Figure 4
Richland Mitigation Properties
Site and Vicinity

Richland Mitigation Properties
Contra Costa County, California



Source: United States Geologic Survey, 2015.
Sections 14, 15, 22, and 23, Township 1 North, Range 1 East, MDB&M
"Antioch South, California" 7.5-Minute Topographic Quadrangle
Longitude -121.839026, Latitude 37.923814



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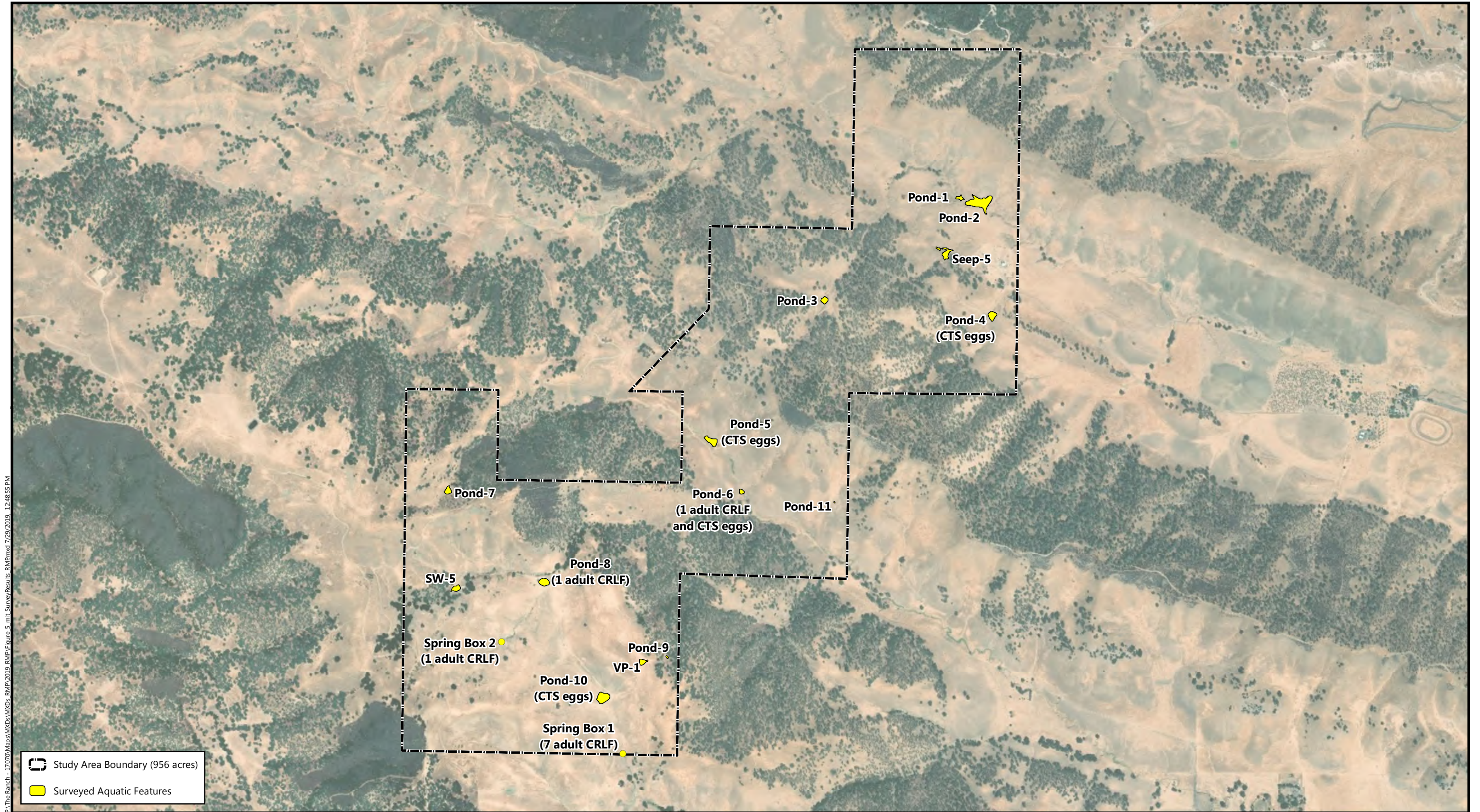


Aerial Source: Ditigal Globe, 1 and 18 August 2018

Figure 5
Richland Mitigation Properties
Aquatic Resources

Richland Mitigation Properties
Contra Costa County, California



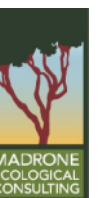


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Aerial Source: Digtal Globe, 1 and 18 August 2018

Figure 6
Richland Mitigation Properties
2019 California Red-Legged Frog and
California Tiger Salamander Survey Results
Richland Mitigation Properties
Contra Costa County, California



Attachments

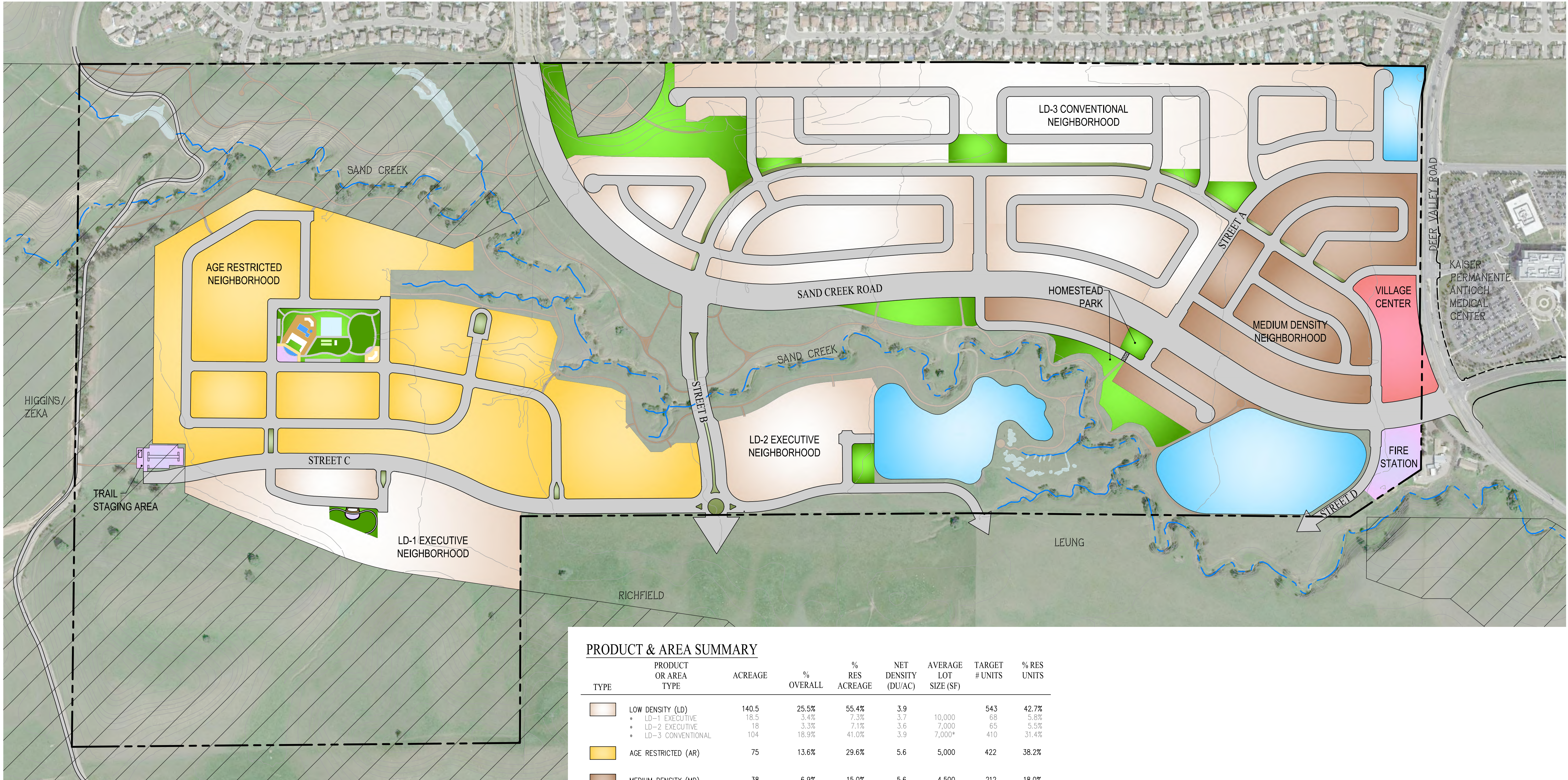
Attachment A. Project Conceptual Land Use Plan

Attachment B. Impacts to Aquatic Resources

Attachment C. Tree Survey Map

Attachment D. Verified Aquatic Resources

Project Conceptual Land Use Plan



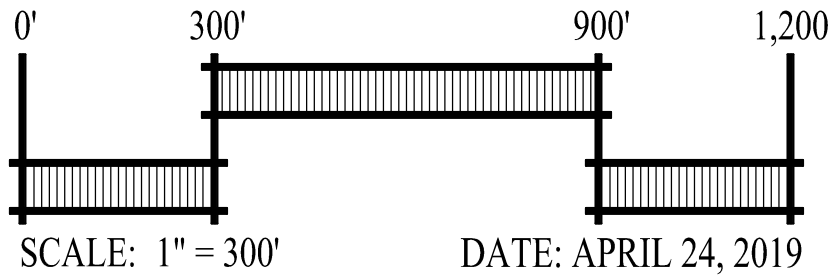
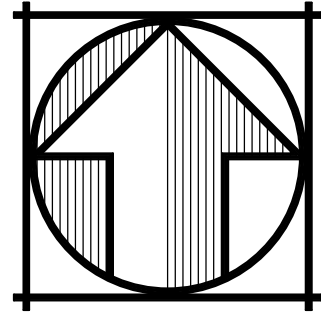
PRODUCT & AREA SUMMARY

TYPE	PRODUCT OR AREA TYPE	ACREAGE	% OVERALL	% RES ACREAGE	NET DENSITY (DU/AC)	AVERAGE LOT SIZE (SF)	TARGET # UNITS	% RES UNITS
	LOW DENSITY (LD)	140.5	25.5%	55.4%	3.9		543	42.7%
	• LD-1 EXECUTIVE	18.5	3.4%	7.3%	3.7	10,000	68	5.8%
	• LD-2 EXECUTIVE	18	3.3%	7.1%	3.6	7,000	65	5.5%
	• LD-3 CONVENTIONAL	104	18.9%	41.0%	3.9	7,000*	410	31.4%
	AGE RESTRICTED (AR)	75	13.6%	29.6%	5.6	5,000	422	38.2%
	MEDIUM DENSITY (MD)	38	6.9%	15.0%	5.6	4,500	212	18.0%
	RESIDENTIAL TOTAL	253.5	46.0%	100.0%	4.6		1,177	100.0%
	VILLAGE CENTER	5	0.9%					
	PUBLIC USE (PQ)	3	0.5%					
	• FIRE STATION (PQ-F)	2	0.4%					
	• TRAIL STAGING AREA (PQ-S)	1	0.2%					
	PARKS (P)	20	3.6%					
	LANDSCAPE (L)	2.5	0.5%					
	OPEN SPACE (OS)	229.5	41.6%					
	MAJOR ROADWAYS	38	6.9%					
	TOTAL	551.5	100%					

*NOTE: A ROW OF MINIMUM 8,000 SF LOTS IS REQUIRED WHERE ABUTTING EXISTING SINGLE FAMILY DEVELOPMENT TO THE NORTH.
AREA SUMMARY BASED ON THE RANCH AT ANTIOCH DEVELOPMENT STANDARDS AND DESIGN GUIDELINES, ASCENT ENVIRONMENTAL, OCTOBER 2018

ILLUSTRATIVE SITE PLAN
THE RANCH

CITY OF ANTIOCH CONTRA COSTA COUNTY CALIFORNIA



SCALE: 1" = 300'

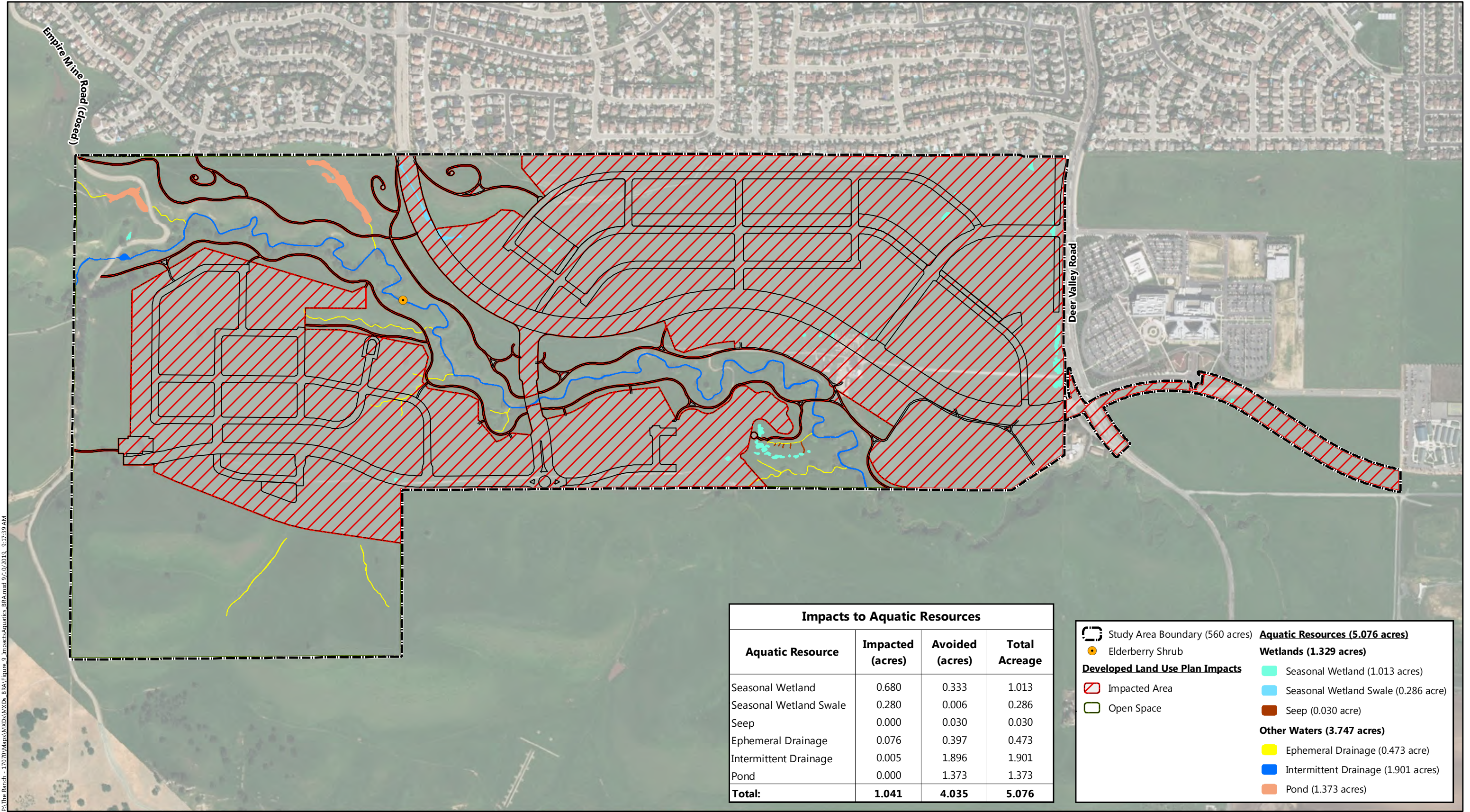
DATE: APRIL 24, 2019
REVISED: APRIL 25, 2019
REVISED: MAY 10, 2019
REVISED: JUNE 4, 2019



CIVIL ENGINEERS SURVEYORS PLANNERS

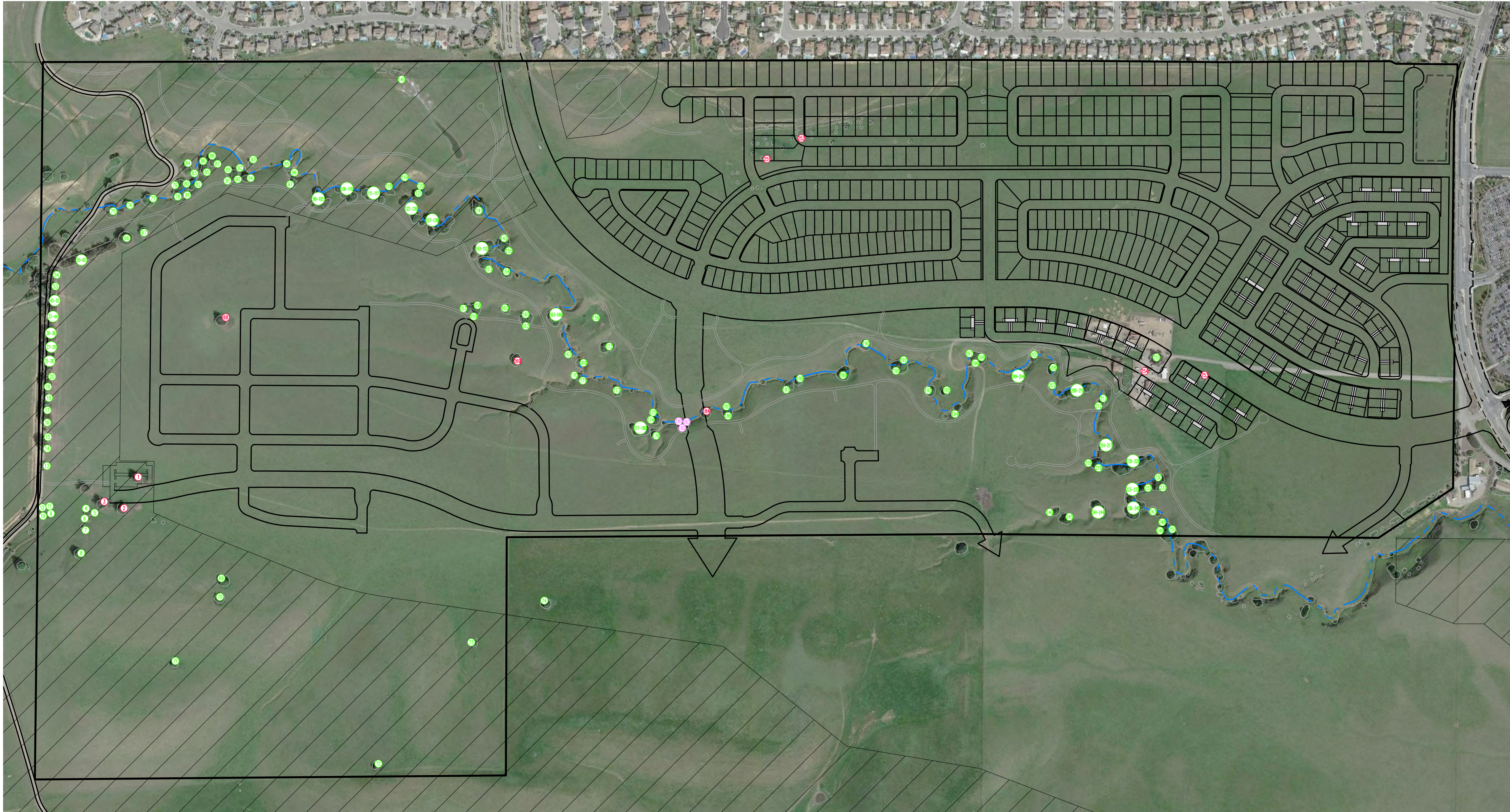
SAN RAMON (925) 866-0322
SACRAMENTO (916) 375-1877
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Impacts to Aquatic Resources



Aquatic Resources Source: Live Oak Associates, Inc., March 2015,
Madrone Ecological Consulting, LLC, 2019
Land Use Plan: CBG, Inc., March 2019
Aerial Source: DigitalGlobe, 19 and 25 August 2017

Tree Survey Map

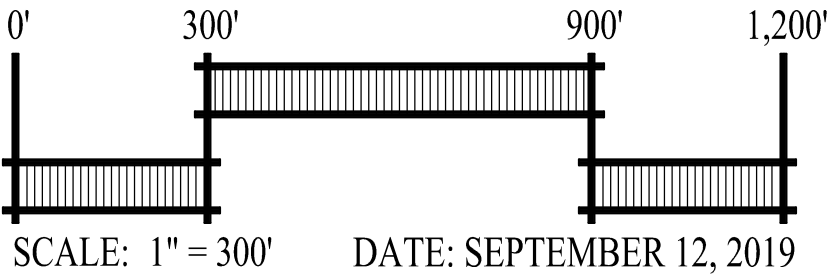
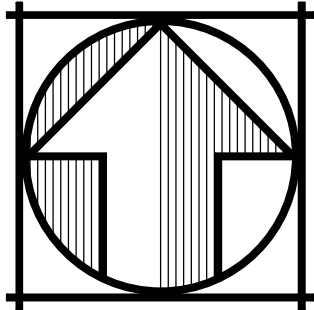


LEGEND

- ③ TREE TO BE REMOVED PER ARBORIST REPORT TABLE 3
- ⑯ TREE TO BE REMOVED PER SITE PLAN
- ④ TREE TO REMAIN / OUTSIDE DEVELOPMENT FOOTPRINT

TREE LOCATIONS
THE RANCH

CITY OF ANTIOCH CONTRA COSTA COUNTY CALIFORNIA



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Verified Aquatic Resources

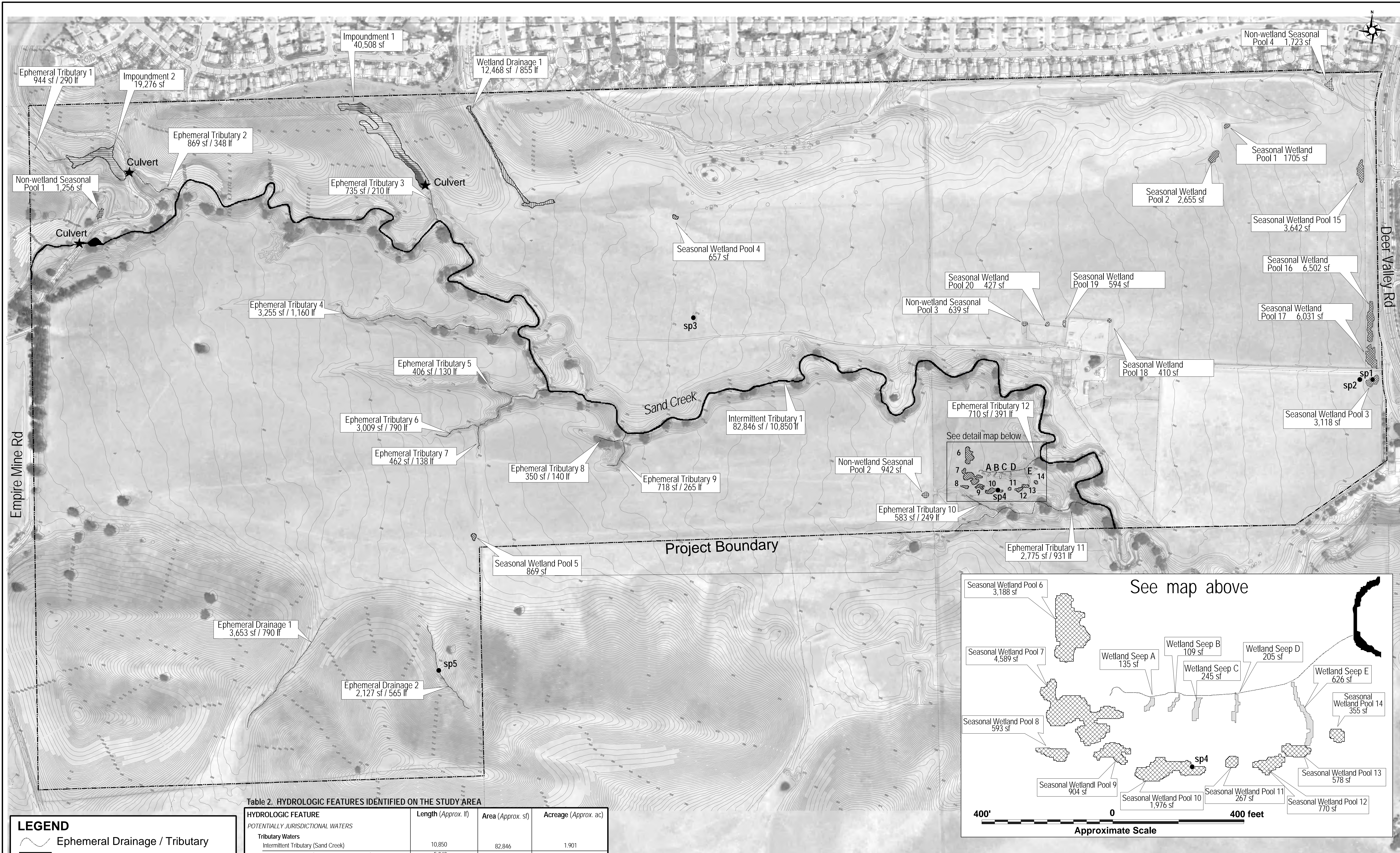


Table 2. HYDROLOGIC FEATURES IDENTIFIED ON THE STUDY AREA

HYDROLOGIC FEATURE	Length (Approx. lf)	Area (Approx. sf)	Acreage (Approx. ac)
POTENTIALLY JURISDICTIONAL WATERS			
Tributary Waters			
Intermittent Tributary (Sand Creek)	10,850	82,846	1.901
Ephemeral Tributary (Tributary to Sand Creek)	5,042	14,816	0.340
Impoundment	N/A	59,784	1.372
Adjacent Wetlands			
Seasonal Wetland Pool (6, 7, 8, 9, 10, 11, 12, 13, 14)	N/A	13,220	0.303
Wetland Seep	N/A	1,320	0.030
Sub-Total	15,892	171,986	3.948
POTENTIALLY NON-JURISDICTIONAL WATERS			
Non-Tributary Waters			
Ephemeral Drainage (1, 2)	1,355	5,780	0.132
Isolated Wetlands			
Wetland Drainage	855	12,468	0.286
Seasonal Wetland Pools (1, 2, 3, 4, 5, 15, 16, 17, 18, 19, 20)	N/A	25,609	0.588
Sub-Total	2,210	43,857	1.006
OTHER WATERS			
Non-wetland Seasonal Pool (1, 2, 3, 4)	N/A	4,559	0.105
Total	18,102	220,402	5.059

LEGEND

Ephemeral Drainage / Tributary

Intermittent Tributary (*Sand Creek*)

Wetland Seep

Impoundment

Wetland Drainage

Seasonal Wetland Pools

Non-wetland Seasonal Pools

Other Features

Project Boundary 546 Ac

Culvert

Sample Point

