APPENDIX H

BIOLOGICAL RESOURCES

Appendix H I:
USACE Jurisdictional Delineation for the Dog Park Site

U.S. ARMY CORPS OF ENGINEERS JURISDICTIONAL DELINEATION

FOR THE

AMD PROPERTY

CONTRA COSTA COUNTY, CALIFORNIA

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SEPTEMBER 2011

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This report should be cited as: Olberding Environmental, Inc. September 2011. *U.S. Army Corps of Engineers Jurisdictional Delineation for the AMD Property, Contra Costa County, California*. Prepared for O'Brien Land Company, LLC, Rocklin, California.

SUMMARY

Olberding Environmental, Inc. (Olberding Environmental) conducted an investigation of the geographic extent of areas potentially subject to US Army Corps of Engineers (Corps) jurisdiction under Section 404 of the Clean Water Act (wetlands and other waters) within the identified boundaries of the AMD Property (APN #s 232-14-0004, 232-14-0010, and 232-14-0016) (Property). The Property is located in the City of Lafeyette, Contra Costa County, California.

On July 13 and August 29, 2011, field surveys were conducted for the purpose of identifying the extent of Corps jurisdictional areas within the survey boundaries of the Property. The Property was investigated in order to make a technical evaluation as to the extent of Corps jurisdiction based on current and historic land use conditions. Visual observations as to the presence or absence of indicators of wetland soil, vegetation and hydrology conditions were made during the investigation and recorded on a topographical map of the Property. The boundary of potential jurisdictional areas was further defined in accordance with the Corps regulations and the required methodology described in the 1987 "Corps Wetlands Delineation Manual" and "Arid West Region" (Arid West Supplement).

Results of the jurisdictional delineation identified the presence of potentially regulated wetlands and waters within the Property boundaries. Two ephemeral drainage channels (eastern and western) capture precipitation runoff on the south facing slopes. The eastern channel also includes additional hydrology from two seep features. This channel flows through a grove of California bay and live oak trees behind the residential and ranch structures on the Property prior to entering a grassy swale feature which forms two seasonal wetlands on the flatter topography adjacent to Deer Hill Road and the driveway accessing the Property. The western drainage containes steeper topography resulting in a more defined (eroded) bed and bank. A single seep wetland is located adjacent to this channel.

Based on information obtained during the 2011 field surveys, it was determined that a total of **0.88** acres of potentially regulated wetlands/waters exist on the Property.

1.0 INTRODUCTION

1.1 Scope

Olberding Environmental, Inc. (Olberding Environmental) conducted an investigation of the geographic extent of areas potentially subject to US Army Corps of Engineers (Corps) jurisdiction under Section 404 of the Clean Water Act (wetlands and other waters) within the identified boundaries of the AMD Property. The placement of fill material in areas identified as jurisdictional waters is subject to the permit requirements of the Corps, under Section 404 of the Clean Water Act (1972).

On July 13, 2011 an initial field survey was conducted for the purpose of identifying the extent of Corps jurisdiction on the Property. An additional survey was performed on August 29 for the purpose of collecting additional field data and recording the locations of the potentially regulated features with a GPS unit. Visual observations as to the presence or absence of indicators of wetland soil, vegetation and hydrological conditions were made during the investigation. The boundaries of all potential wetland/water features observed were further defined in accordance with the Corps regulations and the required methodology described in the 1987 Corps Wetlands Delineation Manual (1987 Manual) and Arid West Supplement to the 1987 Manual (Arid West Supplement).

1.2 Location

The Property is located north of Highway 24 and west of Pleasant Hill Road in Contra Costa County, California (USGS Walnut Creek 7.5 minute quadrangle). Attachment 1, Figure 1 depicts the regional location of the Property in Contra Costa County and Figure 2 identifies the vicinity location. Figure 3 is a topographic map on the USGS 7.5 Quadrangle Map for Walnut Creek. An aerial photograph of the Property is provided in Figure 4.

From the Bay Area, access to the Property is attained by taking Highway 24 east towards the town of Lafayette. Take the Pleasant Hill Road exit north to the intersection of Pleasant Hill and Deer Hill Road/Stanley Boulevard. At the light, u-turn back onto Pleasant Hill Road south; day parking is available along the west side of Pleasant Hill Road. There is also open parking along some portions of Deer Hill Road.

1.3 Property Description

The majority of the Property is fallow rangeland supporting the following habitat types: annual grassland, ruderal, seasonal wetland, swale, seep, sage scrub, coast live oak woodland and valley oak woodland. An abandoned residence and outbuildings occur north of Deer Hill Road along the south-central boundary. Plant species observed during the July 13 field delineation (including reference to recent taxonomic name changes in *The Jepson Manual 2*), can be viewed in Attachment 2.

The Property is bordered by Briones Regional Park to the north, an Outdoor Educational facility (consisting of a farmhouse/residence and converted outbuildings) and single-family subdivisions

to the east, low-density residential subdivisions to the west and Deer Hill Road and State Highway 24 to the south. Slopes and drainages generally descend southward. Topography onsite consists of moderate to steeply sloping hills and small areas of level ground ranging in elevation from 330-705 feet above mean sea level (msl).

2.0 METHODOLOGY

2.1 Overview

Olberding Environmental completed a field delineation of the Property on July 13 and August 29, 2011. The existing landforms as well as associated vegetation, hydrology, and soil conditions were studied to identify areas that would likely contain wetland/waters and or aquatic habitats at the site. Potential jurisdictional areas were identified on field maps and compared to available aerial photography and topographical maps.

Prior to completing site surveys for this report, the previously prepared site surveys, site maps, topographic maps and aerial photographs of the Property were obtained from several sources and reviewed. This information was used in association with detailed delineation surveys to determine the extent and boundaries of wetland features. Resource materials used for the site analysis were as follows:

- U. S. Geological Survey Quadrangle Map for Walnut Creek, California;
- Soil map information contained in the Soil Survey of Contra Costa County, California (SCS 1977)

The extent or boundary of wetland habitats was further defined using the 1987 "Corps Wetlands Delineation Manual" (1987 Manual)[1], the "Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region" (Arid West Supplement)[2], routine on-site wetland determination protocol currently in use by the Corps, published Corps of Engineers regulatory guidance letters, and San Francisco District regulatory policy.

2.2 Corps Definition of Wetlands/Waters

Pursuant to the 1987 Manual, key criteria for determining the presence of wetlands are:

(a) the presence of inundated or saturated soil conditions resulting from permanent or periodic inundation by ground water or surface water; and

(b) a prevalence of vegetation typically adapted for life in saturated soil conditions (hydrophytic vegetation).

[1] Environmental Laboratory. 1987. "Corps of Engineers Wetlands Delineation Manual." U.S. Army Engineer Waterways Experiment Station, Vicksburg, Mississippi. 100 pp. plus appendices.

[2] Environmental Laboratory. 2006. "Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region." U.S. Army Engineer Research and Development Center. Vicksburg, Mississippi. 123 pp.

Explicit in the definition is the consideration of three environmental parameters: hydrology, soil, and vegetation. Positive wetland indicators of all three parameters are normally present in wetlands. The assessment of all three parameters enhances the technical accuracy, consistency, and credibility of wetland determination and is required per the1987 Corps Manual.

Aquatic habitats, other than wetlands, that are considered to be waters of the United States were also investigated as part of this study. Their landward extent was defined following the definitions provided in the Corps of Engineers regulations [33 CFR §328.4(a)(b) and (c)]:

(a) *Territorial Seas*. The limit of jurisdiction in the territorial seas is measured from the baseline in a seaward direction a distance of three nautical miles.

(b) *Tidal Waters of the United States*. The landward limits of jurisdiction in tidal waters:

(1) Extends to the high tide line, or
(2) When adjacent non-tidal waters of the United States are present, the jurisdiction extends to the limits identified in (c) below.

(c) *Non-Tidal Waters of the United States*. The limits of jurisdiction in non-tidal waters:

(1) In the absence of adjacent wetlands, the jurisdiction extends to the ordinary high water mark, or
(2) When adjacent wetlands are present, the jurisdiction extends beyond the ordinary high water mark to the limit of the adjacent wetlands.
(3) When the water of the United States consists only of wetlands, the jurisdiction extends to the limit of the wetlands.

Tributary waters and their impoundments are under the regulatory jurisdiction of the Corps and extend to the OHW mark on opposing channel banks. Tributary waters include rivers, streams and seasonal drainage channels. The OHW mark is typically indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in character of soil, destruction of vegetation, exposed roots on the bank, deposition of leaf litter and other debris materials or lower limit of moss growth on channel banks.

Areas meeting the regulatory definition of "Waters of the United States" (jurisdictional waters) are subject to the jurisdiction of the Corps. The Corps under provisions of Section 404 of the Clean Water Act (1972) has jurisdiction over "Waters of the U.S." These waters may include all waters used or potentially used for interstate commerce. This includes all waters subject to the ebb and flow of the tide, all interstate waters, all other waters (intrastate lakes, rivers, streams, mudflats, sandflats, playa lakes, natural ponds, etc.), all impoundments of waters otherwise defined as "Waters of the U. S.," tributaries of waters otherwise defined as "Waters of the U. S.," the territorial seas, and wetlands adjacent to "Waters of the U.S." (33 CFR, Part 328, Section 328.3).

Areas not considered to be jurisdictional waters include non-tidal drainage and irrigation ditches excavated on dry land, artificially-irrigated areas, artificial lakes or ponds used for irrigation or

stock watering, small artificial water bodies such as swimming pools, and water-filled depressions with no outlet for drainage (33 CFR, Part 328).

The Property was also reviewed to assess the potential for qualifying for Section 10 jurisdiction as a navigable water of the United States. Navigable waters of the U.S. are those waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce (33 CFR 329, Section 329.4). Section 10 jurisdiction extends to the lateral extent of the ordinary high water marks on opposing channel banks. Ultimately, the determination of navigability is made by the division engineer (33 CFR, Part 329, Section 329.14).

2.3 Data Collection for Potential Jurisdictional Wetlands/Waters

Data was collected for the determination of wetlands/waters on July 13, 2011 as outlined in the methods section. Specific data point information on vegetation, soils and hydrology was gathered by wetland scientist Mr. Christopher Bronny. The purpose of this investigation was to identify and delineate potential jurisdictional waters, including wetlands. Surveys were conducted within and adjacent to the specified survey boundaries. The Property was examined for topographic features, drainages, alterations to site hydrology and areas of recent disturbance in the refined survey area. All vascular plant species that were identifiable at the time of the survey were recorded and identified using keys and descriptions in Hickman (1993) and other sources (see Attachment 2).

Data was collected on vegetation, soils, and hydrology using wetland determination protocol as described in the 1987 Manual. Both upland and wetland data were collected to distinguish wetland boundaries from the adjacent upland. On paired transects, a sample point was sited in an area exhibiting wetland characteristics, while a second sample point was sited up slope of the first point in an upland position that defined the transitional break (i.e., ecotone) between wetland and upland. No soil test pits were taken within potential aquatic features that were confined to channels, thus conforming to the definition of “other waters” of the U.S. (i.e., exhibits a distinct bed and bank, with an ordinary high water mark (OHWM). GPS coordinates of each sample location were recorded in the field using a Trimble GEO XT.

A total of six transect sample points were established on three transect lines within the boundaries of the Property. All upland positions are distinguished by “a” and the wetland positions “b.”

The approximate location and extent of jurisdictional wetlands/waters as well as other relevant data, were transferred on to a 1”= 100’ scale topographical map of the surveyed area in the field. Information obtained at the sample point locations was recorded on modified Corps data sheets included in this report (Attachment 3). Photographs were also taken for selected sample points that represented the Property (Attachment 4).

3.0 TECHNICAL FINDINGS

The following discussion reports the vegetation, hydrology, and soil conditions observed at the Property during the course of the investigation.

3.1 Vegetation Conditions

The 1987 Manual states that the diagnostic environmental characteristics indicating wetland vegetation conditions are met when the prevalent vegetation (more than 50%) consists of macrophytes that are typically adapted to areas having hydrologic and soil conditions described above. In addition, hydrophytic species, due to morphological, physiological, and/or reproductive adaptation(s), have the ability to grow, effectively compete, reproduce, and/or persist in anaerobic soil conditions. Indicators of vegetation associated with wetlands include:

1. more than 50% of the dominant species are rated as Obligate ("OBL"), Facultative Wet ("FACW") or Facultative ("FAC") on lists of plant species that occur in wetlands;[3]

2. visual observations of plant species growing in areas of prolonged inundation or soil saturation; and

3. reports in the technical literature indicating the prevalent vegetation is commonly found in saturated soils" (1987 Manual).

In addition, hydrophytic indicators are applied to plant communities using the Arid West Supplement (December, 2006) in the following sequence:

1. Apply the dominance test – more than 50% of the dominant species are rated as OBL, FACW, or FAC on lists of plant species that occur in wetlands.
    a. If the plant community passes the dominance test, then the vegetation is hydrophytic and no further vegetation analysis is required.
    b. If the plant community fails the dominance test, but indicators of hydric soil and wetland hydrology are both present, proceed to step 2.

2. Apply the prevalence index – a weighted average wetland indicator status of all plant species (OBL=1, FACW=2, FAC=3, FACU=4, UPL=5). Weighting is by abundance (percent cover). A hydrophytic plant community will result in a prevalence index of 3.0 or less.

[3] Reed, P.B. 1988. National List of Plant Species That Occur in Wetlands: California (Region 0). Biological Report 88(26.10) May 1988. National Ecology Research Center, National Wetlands Inventory, U.S. Fish and Wildlife Service, St. Petersburg, FL.

a. If the plant community satisfies the prevalence index, then the vegetation is hydrophytic. No further vegetation analysis is required.
b. If plant community fails prevalence index, proceed to step 3.

3. Apply morphological adaptations – morphological features which help plants survive prolonged inundation or saturation in the root zone, must occur on more than 50% of the FACU species living in an area where indicators of hydric soil and wetland hydrology are present.

Table 1 contains the wetland plant indicator status categories used to determine if a particular plant species qualifies as a macrophyte which has adapted to areas having hydrologic and soil conditions.

It is important to note that, although there is a high probability that one would expect to find obligate, facultative wet and facultative plants growing in wetlands, there is also a significant possibility that the obligate, facultative wet, and facultative species will occur in areas that do not exhibit wetland soil and/or wetland hydrology conditions.

Table 1
Wetland Plant Indicator Status Categories

Indicator Category	Symbol	Frequency of Occurrence
OBLIGATE	OBL	greater than 99%
FACULTATIVE WETLAND	FACW	67 - 99%
FACULTATIVE	FAC	34 - 66%
FACULTATIVE UPLAND	FACU	1 - 33%
UPLAND	UPL	less than 1%

***** Based upon information contained in Corps of Engineers Wetland Delineation Manual (Environmental Laboratory 1987).

The Property is located in the *San Francisco Bay Area Subregion* of the greater *Central Western California Subdivision* of the California Floristic Province (Hickman 1993). In classifying the habitat types found in the Property, generalized plant community classification schema were used (Sawyer, Keeler-Wolf, and Evens 2009). The final classification and characterization of the habitat types of the Property were based on field observations.

The Property supports annual grassland, ruderal, seasonal wetland, swale, seep, sage scrub, coast live oak woodland, valley oak woodland and ephemeral drainage channel habitats. Each habitat is described in further detail below. A description of the plant species present within each habitat type is provided below. Dominant plant species are noted; for , along with their wetland indicator status.

3.1.1 Annual grassland

This semi-natural herbaceous stand consists of cool-season non-native annual grasses and broad-leaved plants that have largely replaced the original (i.e., presettlement) stands of native vegetation. Some shrubs may be present in low cover. Dominant and co-dominant grasses observed include bromes (*Bromus* spp.), oats (*Avena* spp.), hedge-hog dogtail (*Cynosurus echinatus*), hare barley (*Hordeum murinum* ssp. *leporinum*), and rattail fescue (*Festuca* [*Vulpia*] *myuros*); in slightly more moist areas, perennial ryegrass (*Festuca* [*Lolium multiflorum*] *perennis*) may be common. Non-native broad-leaved forbs (i.e., wildflowers) observed included wild geranium (*Geranium dissectum* and *G. molle*), red-stem filaree (*Erodium cicutarium*), spring vetch (*Vicia sativa*), black mustard (*Brassica nigra*), field hedge parsley (*Torilis arvensis*), Mediterranean linseed (*Bellardia trixago*), prickly lettuce (*Lactuca serriola*), California bur-clover (*Medicago polymorpha*), and rose clover (*Trifolium hirtum*).

While their frequency, density, and distribution of native grasses and forbs (i.e., wildflowers) within the herbaceous groundlayer is generally low, the following species were detected: blue wild rye (*Elymus glaucus*), creeping wild-rye (*Elymus* [*Leymus*] *triticoides*), fiddleneck (*Amsinckia* sp.), California poppy (*Eschscholzia californica*), soap plant (*Chlorogalum pomeridianum*), winecup fairy-fan (*Clarkia purpurea* ssp. *quadrivulnera*), slender tarweed (*Madia gracilis*), California mugwort (*Artemisia douglasiana*), annual fireweed (*Epilobium brachycarpum*), naked buckwheat (*Eriogonum nudum*), and stemless morning-glory (*Calystegia subacaulis*). Widely scattered shrub cover consisted of coyote brush (*Baccharis pilularis*), poison oak (*Toxicodendron diversilobum*), and common snowberry (*Symphoricarpos albus* var. *laevigatus*).

3.1.2 Ruderal

Ruderal habitats are found in areas of the Property (primarily around residences and edge of Deer Hill Road) where recent disturbances (e.g., grading, discing, spraying) to the groundlayer have occurred. These areas are largely dominated by short-lived non-native annuals such as black mustard, prickly lettuce, wild radish (*Raphanus sativus*), Italian thistle (*Carduus pycnocephalus*), yellow-star thistle (*Centaurea solstitialis*), and stinkweed (*Dittrichia graveolens*); native species include annual fireweed and telegraphweed (*Heterotheca grandiflora*).

3.1.3 Seasonal wetland

Two seasonal wetlands were mapped in the south-central portion of the Property. These features occurred on fairly level terrain to the east of the abandoned residence and were dominated by a nearly pure stand of perennial ryegrass (facultative – FAC), with bristly ox-tongue (*Picris echioides* - FAC) as a co-dominant.

3.1.4 Swale

A narrow grassy swale occurs east of the abandoned residence, and may have been manipulated in the past to convey standing water away from the residence during high-precipation events.

While mapped portions under the existing canopy of California bay laurel (*Umbellularia californica*-FAC) and valley oak (*Quercus lobata*-FAC) had little vegetative cover in the groundlayer, the southern portion was dominated by perennial fescue; curly dock (*Rumex crispus*-FACW) was infrequent along its length.

3.1.5 Seep

Three seeps were mapped on the Property: one to the south of the outdoor learning center, one in the central portion, and one in the northwestern portion. The second and third seeps appear to be sustained by groundwater upwelling, as they are sited on hillslopes. The majority of vegetation in these features are hydrophytes and include iris (*Iris* sp.), Baltic rush (*Juncus* balticus-OBL), annual beardgrass (*Polypogon monspeliensis*-FACW), and watercress (*Nasturtium officinale*-OBL); a colony of shining willow (*Salix lucida*-OBL) was observed growing on a benched terrace above the seep in the central portion of the Property.

3.1.6 Sage scrub

The vegetative stands classified as sage scrub occur primarily on steep south-facing slopes in the western portion of the Property. This habitat type is dominated by perennial shrubs and include coyote brush, California sagebrush (*Artemisia californica*), and bush monkeyflower (*Mimulus aurantiacus*); a herbaceous component was generally sparse on thin soil substrates and consisted of species such as foothill needlegrass (*Stipa* [*Nasella*] *pulchra*), climbing bedstraw (*Galium porrigens*), Kellogg's yampah (*Perideridia kelloggii*), and mule ears (*Wyethia glabra*).

3.1.7 Coast live oak woodland

The woody overstory of this habitat type is dominated by coast live oak (*Quercus agrifolia*) with a somewhat sparse herbaceous cover due to shading and build-up of leaf litter in the understory. Sub-dominant tree and shrub species include poison oak, California buckeye (*Aesculus californicus*), and California bay laurel (*Umbellularia californica*).

3.1.8 Valley oak woodland

This more savanna-like habitat type occurs along the margins of the denser coast live oak woodland in the northern and western portions of the Property and is dominated by valley oak (*Quercus lobata*). The groundlayer can be characterized as having a grassy understory dominated by non-native plants such as field hedge parsley and rip-gut brome (*Bromus diandrus*); native forbs are also present and include hedge nettle (*Stachys bullata*), common bedstraw (*Galium aparine*), and elegant clarkia (*Clarkia unguiculata*).

3.1.9 Ephemeral Drainage Channel

Two ephemeral drainage channels occur in the hilly topography of the Property. They contain a defined bed and bank approximately 2-4 in width assocated with scour from precipitation runoff. The embankments of the channel features are vegetated with a mix of annual grassland, scrub and woodland species described above.

3.2 Hydrology Conditions

The 1987 Manual states that the diagnostic environmental characteristics indicative of wetland hydrology conditions are: "the area is inundated either permanently or periodically at mean water depths less than or equal to 6.6 feet, or the soil is saturated to the surface at some time during the growing season of the prevalent vegetation" (1987 Manual, p. 14). According to the Manual, indicators of hydrologic conditions that occur in wetlands may include features in Table 2.

Table 2
Hydrology Indicators

Primary Indicators	Secondary Indicators
Inundation, Saturation	Oxidized Rhizospheres Associated with Living Roots
Watermarks	Water-Stained Leaves
Drift Lines	FAC-Neutral Test
Water-Borne Sediment Deposits	Local Soil Survey Data
Drainage Patterns Within Wetlands (With Caution)	

Department of the Army, U.S. Army Corps of Engineers, Washington, D.C., *Memorandum - Subject: Clarification and Interpretation of the 1987 Manual*, dated June 8, 1992 provides further clarification that:

> "Areas which are seasonally inundated and/or saturated to the surface for a consecutive number of days for more than 12.5 percent of the growing season are wetlands, provided the soil and vegetation parameters are met. Areas wet between 5 percent and 12.5 percent of the growing season in most years (see Table 5, page 36 of the 1987 Manual) may or may not be wetlands. Areas saturated to the surface for less than 5 percent of the growing season are non-wetlands. Wetland hydrology exists if field indicators are present as described herein and in the enclosed data sheet."

The presence of wetland hydrology using the Arid West Supplement (December, 2006) is dependent on the presence of any one primary indicator or two or more secondary indicators included in Table 3.

Table 3 Arid West Region - Hydrology Indicators	
Primary Indicators	**Secondary Indicators**
Surface Water	Water Marks (riverine)
High Water Table	Sediment Deposits (riverine)
Saturation	Drift Deposits (riverine)
Water Marks (nonriverine)	Drainage Patterns
Sediment Deposits (nonriverine)	Dry-Season Water Table
Drift Deposits (nonriverine)	Thin Muck Surface
Surface Soil Cracks	Crayfish Burrows
Inundation Visible on Aerial Imagery	Saturation Visible on Aerial Imagery
Water-Stained Leaves	Shallow Aquitard
Salt Crust	FAC-Neutral Test
Biotic Crust	
Aquatic Invertebrates	
Hydrogen Sulfide Odor	
Oxidized Rhizospheres along Living Roots	
Presence of Reduced Iron	
Recent Iron Reduction in Plowed Soils	

The wetland locations investigated on the Property exhibited hydrologic indicators such as saturated soils, surface water and drainage patterns. Hydrologic inputs included direct precipitation, sheetflow runoff from surrounding uplands (on-site and off-site), groundwater upwelling, and inputs from greater watershed sources.

Weather conditions observed during the July 13, 2011 field delineation were mostly sunny with temperatures around 70° F. Precipitation totals thus far for the 2010-2011 rainy season have been above-average.

3.3 Soils Conditions

The Corps' 1987 Manual states that the diagnostic environmental characteristics indicative of wetland soil conditions are met where "soils are present and have been classified as hydric, or they possess characteristics that are associated with reducing soil conditions" (1987 Manual, p. 14). According to the Manual, indicators of soils developed under reducing conditions may include:

1. Organic soils (Histosols);
2. Histic epipedons;
3. Sulfidic material;
4. Aquic or peraquic moisture regime;
5. Reducing soil conditions;
6. Soil colors (chroma of 2 or less);
7. Soil appearing on hydric soils list; and
8. Iron and manganese concretions.

According to the most recent version of the National Technical Committee for Hydric Soils, the criteria to be used by the Corps for what constitutes current hydric soil/wetland soil conditions for the soils found at the site are:

1. Minimum Saturation at 12" to the surface: 14 consecutive days during the growing season.

2. Minimum Inundation (Flooded or Ponded): Soils that are frequently "ponded" for long duration (~ 15 to 30 consecutive days) or very long duration (> 30 consecutive days) during the growing season, or soils that are frequently "flooded" for long duration or very long duration during the growing season.

According to the Arid West Supplement (December, 2006), indicators for hydric soils are presented in three groups. Indicators for “all soils” (A) are used in any soil regardless of texture. Indicators for “sandy soils” (S) are used in soil layers with USDA textures of loamy fine sand or coarser. Indicators for “loamy or clayey soils” (F) are used with soil layers of loamy very fine sand and finer (2006 Arid West Supplement, p.32). Hydric soils can be identified by the following indicators:

1. Histosol (A)
2. Histic Epipedon (A)
3. Black Histic (A)
4. Hydrogen Sulfide (A)
5. Stratified Layers (A)
6. 1 cm Muck (A)
7. Depleted Below Dark Surface (A)
8. Thick Dark Surface (A)
9. Sandy Mucky Mineral (S)
10. Sandy Gleyed Matrix (S)
11. Sandy Redox (S)
12. Stripped Matrix (S)
13. Loamy Mucky Mineral (F)
14. Loamy Gleyed Matrix (F)
15. Depleted Matrix (F)
16. Redox Dark Surface (F)
17. Depleted Dark Surface (F)
18. Redox Depressions (F)
19. Vernal Pools (F)

Where possible, the top 12 inches of the soil profile is examined for hydric characteristics. Such characteristics include the presence of organic soils (Histisols), histic epipedons, aquic or peraquic moisture regime, presence of soil on hydric soil list, mottling indicated by the presence of gleyed or bright spots of color within the soil horizons observed. Mottling of soils usually indicates poor aeration and lack of good drainage. A Munsell soil color charts (Kollmorgen Instr. Corp. 1990) were reviewed to obtain the soil color matrix for each soil sample. The last digit of the Munsell Soil Notation refers to the chroma of the sample. This notation consists of numbers

beginning with zero (0) for neutral grays and increasing at equal intervals to a maximum of about 20. Chroma values of the soil matrix which are one (1) or less, or of two (2) or less when mottling is present, are typical of soils which have developed under anaerobic conditions.

In sandy soils, such as alluvial deposits in the bottom of drainage channels, hydric soil indicators include high organic matter content in the surface horizon and streaking of subsurface horizons by organic matter.

3.3.1 Soil Analysis at Property

The USDA Natural Resources Conservation Service (formerly the Soil Conservation Service) mapped four soil types on the Property: Cropley clay, 2 to 5 percent slopes, Cut and fill land-Diablo complex, 9 to 30 percent slopes, Lodo clay loam, 30 to 50 percent slopes, and Lodo clay loam, 50 to 75 percent slopes (NRCS 2011). Soils were generally friable clay loams throughout the open hillslopes.

Cropley clay soils with unnamed inclusions occurring in depressions, are listed as hydric soils in Contra Costa County, California (NRCS). Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anoxic conditions in the upper part.

A detailed map of these soils for the Property can be found in Attachment 5. The soils mapped included the following types:

- **CkB: Cropley clay, 2 to 5 percent slopes –** The Cropley series consists of very deep, moderately well and well drained soils that formed in alluvium from mixed rock sources. Cropley soils occur on alluvial fans, floodplains and in small basins.

  In a representative profile the surface layer is dark-gray, slightly acid to moderately alkaline clay about 24 inches thick. Below that is dark-gray and dark-brown, calcareous clay about 10 inches thick. The substratum is dark grayish-brown and dark-brown, strongly calcareous heavy clay loam to a depth of 44 inches. Below this it is yellowish-brown and very pale brown, calcareous heavy clay loam that extends to a depth of more than 60 inches.

  Permeability is slow and is moderately well and well drained; medium to very high runoff.

- **CmE: Cut and fill land – Diablo complex, 9 to 30 percent slopes –** Cut and fill land is the result of mechanical manipulation of upland areas for urban use. In Contra Costa County, Cut and fill land is mapped in complexes with Diablo, Los Osos, and Millsholm soils.

  The **CmE** complex consists of 75 percent Cut and fill land, 15 percent Diablo clay, and 10 percent Altamont clay. Cut and fill land is the result of mechanical manipulation of strongly sloping to moderately steep soils on uplands. The earthy material is heavy clay loam, silty clay, and clay. As much as 20 percent, by volume, is

angular fragments of shale and sandstone. Colors are variable and have a hue of 10YR or 2.5Y. The material is mildly alkaline to moderately alkaline and is calcareous throughout. Exposed cuts consist of interbedded shale and fine-grained sandstone that contain varying amounts of lime. The bedrock can tilt as much as 50 to 80 degrees.

This complex is well-drained or somewhat excessively drained. Runoff is rapid and the hazard of erosion is high. Permeability is slow to very slow, depending upon compaction during construction.

LcF: Lodo clay loam, 30 to 50 percent slopes – The Lodo series consists of somewhat excessively drained soils underlain by soft sandstone and shale that occur on uplands.

In a representative profile the surface layer is dark-gray, slightly acid clay loam approximately 18 inches thick and underlain by fine-grained sandstone. Permeability is moderately slow.

The **LcF** soil unit occurs on steep uplands. Included with it are areas of Millsholm soils that make up about 10 percent of the mapping unit and areas of Gaviota sandy loam that make up 2 percent. Also included are rock outcrops that make up 3 percent.

Runoff is medium to rapid, and the hazard of erosion is moderate to high where the soil is exposed.

LcG: Lodo clay loam, 50 to 75 percent slopes – The Lodo series consists of somewhat excessively drained soils underlain by soft sandstone and shale that occur on uplands.

In a representative profile the surface layer is dark-gray, slightly acid clay loam approximately 18 inches thick and underlain by fine-grained sandstone. Permeability is moderately slow.

The **LcG** soil unit occurs on very steep uplands. Included with it are areas of rock outcrops that make up approximately 8 percent and Millsholm soils that make up about 7 percent of the mapping unit.

Runoff is rapid, and the hazard of erosion is high where the soil is bare.

A total of six soil pits were dug by shovel to a maximum depth of 18 inches at locations representative of various hydrogeomorphic surface conditions within the Property (Attachment 1, Figure 5).

Soils found in the upland positions exhibited the following moist soil matrix colors: 7.5YR2.5/2, 10YR3/1, 10YR3/2, and 10YR5/8 generally with silty clay loam textures; in some soil pits, redoximorphic (redox) conditions (e.g., mottles) were present.

Soils found in the mapped wetland position exhibited the following moist soil matrix colors: 5YR2.5/1, 7.5YR2.5/1, and 10YR3/1, generally with a higher percentage of clays with silty clay loam textures. Mottling was observed in all three soil pits and included the following moist colors: 5YR4/6, 7.5YR5/8, and 7.5YR6/8.

4.0 AREAS POTENTIALLY SUBJECT TO REGULATION BY THE CORPS OF ENGINEERS

The EPA and Corps regulations define wetlands as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas" (40 C.F.R. §230.3(t); 33 C.F.R. §328.3(b)).

The term "waters of the United States" are defined in 40 C.F.R. §328.3(a) as:

(1) All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;

(2) All interstate waters including interstate wetlands;

(3) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters:

(i) Which are or could be used by interstate or foreign travelers for recreational or other purposes; or
(ii) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
(iii) Which are used or could be used for industrial purpose by industries in interstate commerce.

(4) All impoundments of waters otherwise defined as waters of the United States under the definition;

(5) Tributaries of waters identified in paragraphs [1-4] of this section;

(6) The territorial sea; and

(7) Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs [1-6] of this section (40 CFR §230.3(s); 33 CFR §328.3(a)).

Based on information obtained during the field delineation, it was determined that a total of 0.3-acre of jurisdictional wetlands and 0.58-acre of “other waters” exist within the boundaries of the Property (see Attachment 1, Figure 5).

4.1 Potential Wetlands

The two mapped seasonal wetlands and swale in the south-central portion of the Property would be considered potentially jurisdictional wetlands. Absolute percent cover favored dominance by

hydrophytes, reducing conditions were present in the soil profile, and hydrologic indicators were present. The mapped swale intercepts runoff from surrounding hillslopes and drainages during the rainy season. There was no evidence of surface scour; runoff from this low-gradient feature is conveyed towards Deer Hill Road, where a storm drain intercepts this runoff.

The three seeps also would be considered potentially jurisdictional wetlands due to strong dominance by hydrophytic vegetation, the presence of hydric soil indicators, and strong hydrologic indicators, including the presence of surface water and saturated soils. All three seeps had saturated soils and surface water, indicating groundwater upwelling.

Table 4
Potentially Jurisdictional Wetlands

Type of Feature	Acreage
Seasonal Wetland	0.16
Swale	0.03
Seep	0.11
TOTAL	**0.3**

4.2 Potential Other Waters

Mapped ephemeral drainage channels in the western and eastern portion of the Property are unnamed tributaries of Lafayette Creek. Lafayette Creek is part of the greater Trampas Creek watershed (HUC #18050001).

Table 5
Potentially Jurisdictional "Other Waters of the U.S."

Type of Feature	Acreage
Unnamed Tributaries	0.58
TOTAL	**0.58/3,142.2 lf**

4.3 Section 10 Navigable Waters

The unnamed tributaries of Lafayette Creek were determined not to meet the parameters to be delineated as navigable waters.

5.0 AREAS POTENTIALLY EXCLUDED FROM REGULATION UNDER SECTION 404

5.1 Discretionary Exemptions

A number of exemptions from Section 404 Clean Water Act regulations exist for waters of the United States. These exemptions fall into two basic categories: (1) discretionary and (2) non-discretionary.

According to the preamble discussion of the Corps regulations in the November 19, 1986 *Federal Register*, certain areas which may meet the technical definition of a wetland are generally not regulated. Such areas include:

(a) Non-tidal drainage and irrigation ditches excavated on dryland.

(b) Artificially irrigated areas which would revert to upland if the irrigation ceased.

(c) Artificial lakes or ponds created by excavating and/or diking dryland to collect and retain water and which are used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing.

(d) Artificial reflecting or swimming pools or other small ornamental bodies of water created by excavating and/or diking dryland to retain water for primarily aesthetic reasons.

(e) Water filled depressions created in dryland incidental to construction activity and pits excavated in dryland for the purpose of obtaining fill, sand, or gravel unless and until the construction or excavation operation is abandoned and the resulting body of water meets the definition of waters of the United States (see 33 CFR 328.3(a)).

5.2 Application of Discretionary Exemptions

No portions of the Property were determined to meet the parameters of discretionary exemptions.

5.3 Isolated Waters

The U.S. Supreme Court has ruled that isolated, non-navigable wetlands and other waters are not subject to federal regulation even if they provide habitat for migratory birds and endangered species. Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers (hereinafter SWANCC) (No. 99-1178). The Corps has attempted to define isolated as "not having hydrological connectivity to other jurisdictional features." Based on this determination, the Court has eliminated the need to secure fill permits from the Corps under Section 404 of the Clean Water Act when isolated wetlands are encountered. Nevertheless, the decision is by no means a blanket repeal of Section 404. Every landowner's on-the-ground situation is unique, and must be analyzed individually. In the aftermath of this decision, each landowner must still carefully assess its situation to determine whether its survey area contains features which qualify as "waters of the U.S." It is therefore recommended that a jurisdictional delineation be verified

by the Corps rather than making an assumption regarding the potential regulation of a specific wetland/water feature.

The RWQCB has indicated that they intend to continue regulation of isolated wetlands under the Porter-Cologne Act (Water Code Section 13260). Their interpretation of the Court ruling indicates that the SWANCC decision has no bearing on the RWQCB's regulation of "waters of the state" and as such they will continue to issue waste discharge requirements (WDRs) in lieu of a Section 401 Certification which is required when the Corps issues a Section 404 permit.

5.4 Application of Isolated Waters Exemptions

All mapped wetland features appear to be hydrologically connected to their respective drainageways and would therefore not qualify as isolated wetlands on the Property.

5.5 Significant Nexus

The geographic extent of jurisdiction under the Clean Water Act was further refined based on the U.S. Supreme Court's interpretation of the Act in Rapanos v. United States, 126 S. Ct. 2208 (2006) (Rapanos Case). In the EPA and Corps joint guidance of the Rapanos Case, issued in December of 2008, it was determined that the Corps generally will not assert jurisdiction over (1) swales or erosional features (e.g. gullies, small washes characterized by low volume, infrequent, or short duration flow) and (2) ditches (including roadside ditches) excavated wholly in and draining only uplands and that do not carry a relatively permanent flow of water. Non-navigable tributaries that are not relatively permanent and wetlands adjacent to such tributaries will be assessed on a case-by-case basis to determine whether they have a "significant nexus" to a traditional navigable water. A "significant-nexus" will be determined through assessment of the flow characteristics and functions of the tributary itself and the functions performed by all wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of downstream traditional navigable waters.

According to the guidance, the Corps will continue to assert jurisdiction over traditional navigable waters; wetlands adjacent to traditional navigable waters; non-navigable tributaries of traditional navigable waters that are relatively permanent where the tributaries typically flow year-round or have continuous flow at least seasonally (e.g., typically three months); and wetlands that directly abut such tributaries.

5.6 Application of Significant Nexus

Sheetflow runoff and upstream hydrologic inputs are intercepted and conveyed by the mapped unnamed tributaries of Lafayette Creek, which is part of the greater Las Trampas Creek watershed. A significant nexus would apply.

6.0 CONCLUSIONS

Results of the field delineation conducted by Olberding Environmental on July 13 and August 29, 2011 identified the presence of potentially regulated wetlands/waters of the U.S. within the Property. Two unnamed ephemeral tributaries are part of the greater Las Trampas watershed. Two seasonal wetlands, a single swale, and three seeps occur as jurisdictional wetlands. The total potential Corps jurisdictional acreage on the AMD Property is 0.88-acre.

8.0 REFERENCES

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ATTACHMENTS

ATTACHMENT 1
FIGURES

Figure 1
Regional Map

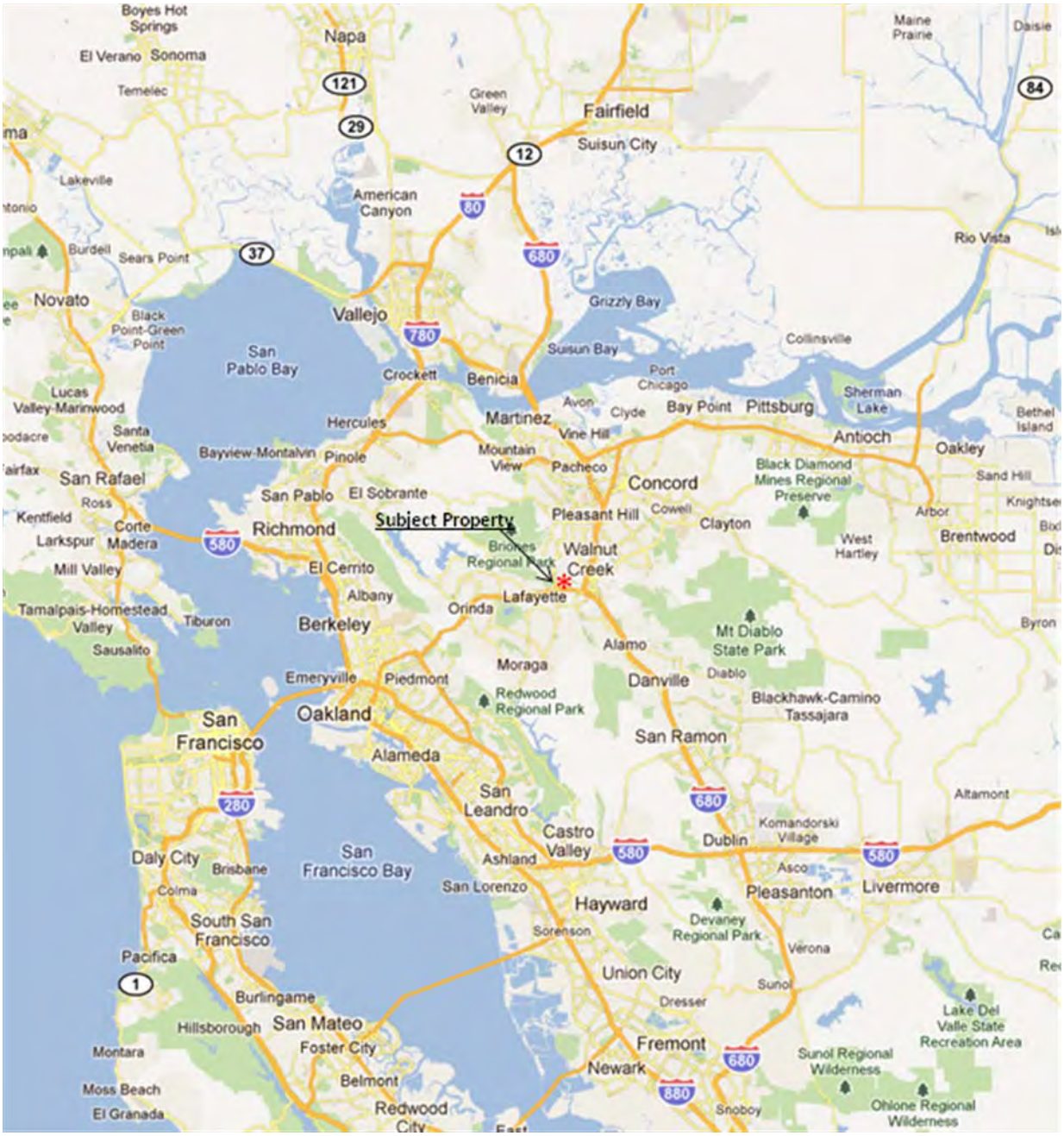

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Figure 1
Regional Map of the AMD Property
Contra Costa County, California

Figure 2
Vicinity Map

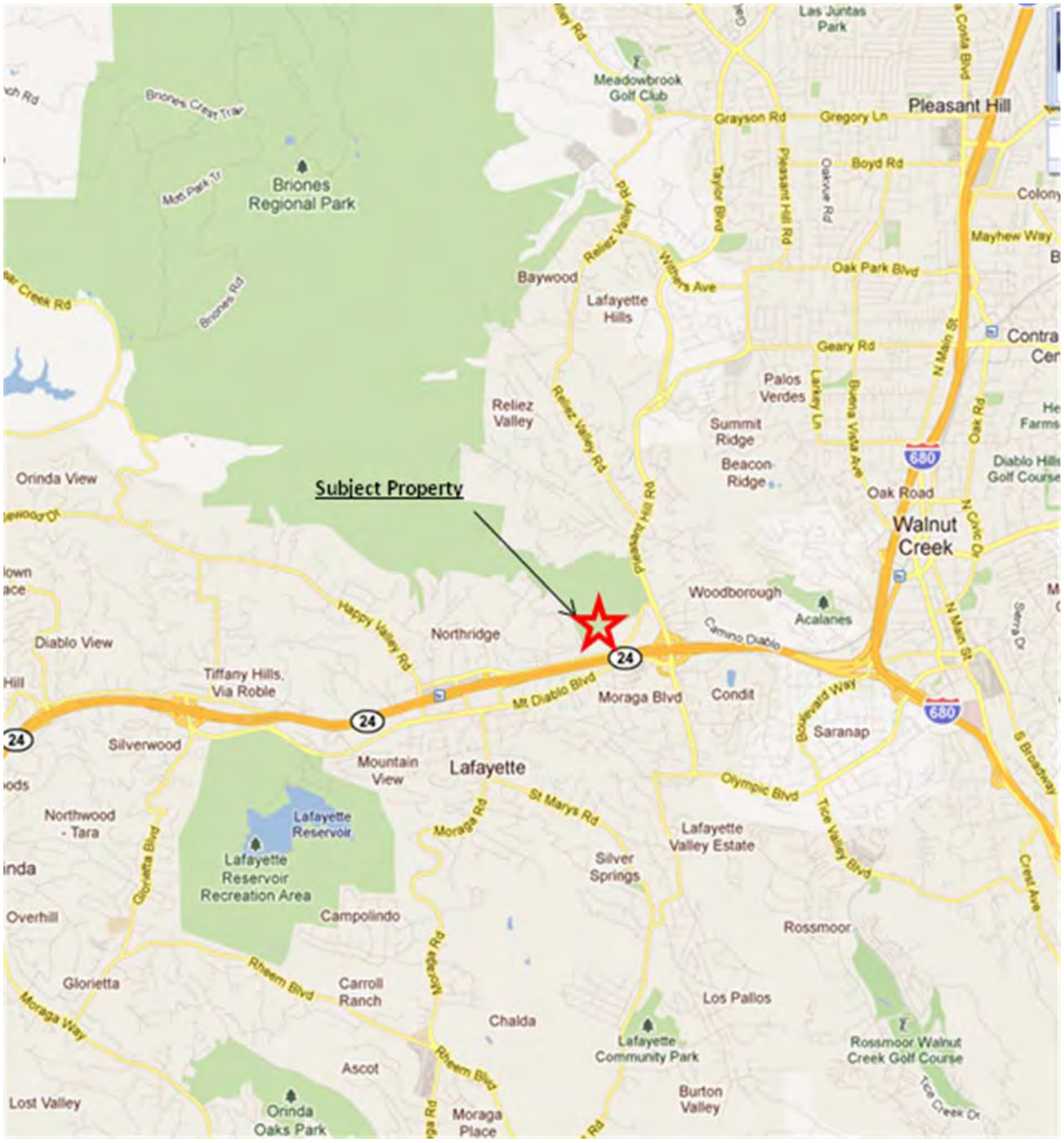

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Figure 2
Vicinity Map of the AMD Property
Contra Costa County, California

Figure 3
USGS Quadrangle Map

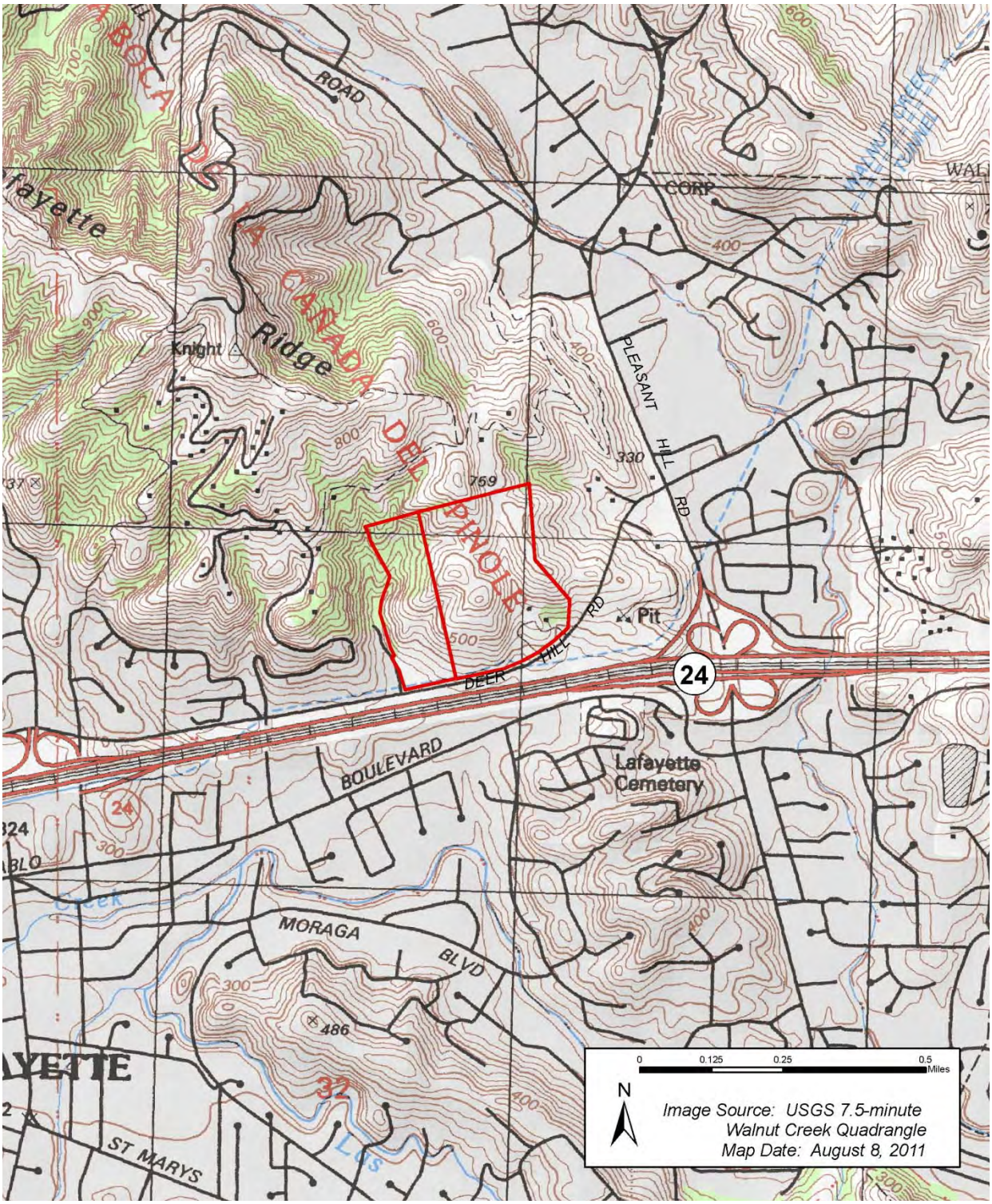

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Figure 3
USGS Quadrangle Map of the AMD Property
Walnut Creek Quadrangle
Contra Costa County, California

Figure 4
Aerial Photograph

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Figure 4
Aerial Photograph of the AMD Property
Contra Costa County, California

Figure 5
Corps Delineation Map

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Figure 5
Jurisdictional Waters Map of the AMD Property
Contra Costa County, California

Figure 6
Soils Map

Map Unit Symbol	Percentage within Property	Map Unit Name
CkB	0.7 %	Cropley clay, 2 to 5 percent slopes
CmE	10.0 %	Cut and fill land – Diablo complex, 9 to 30 percent slopes
LcF	58.6 %	Lodo clay loam, 30 to 50 percent slopes
LcG	30.7 %	Lodo clay loam, 50 to 75 percent slopes

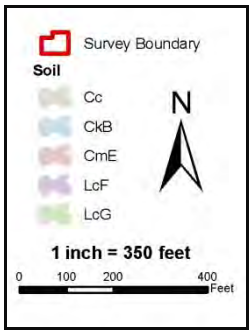

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Figure 6
Soils Map of the AMD Property
Contra Costa County, California

ATTACHMENT 2
PLANT LIST

Project: **AMD Property, Contra Costa County, California**

Date: **7/13/2011**

Investigators: **Mr. Christopher Bronny, Mr. Josh Goodwin**

*denotes naturalized species

[ ] denotes recent taxonomic name changes (TJM2)

Family	Scientific Name	Common Name
Section - Ferns		
Pteridaceae	*Pentagramma triangularis*	Gold-back fern
Section - Gymnosperms		
Pinaceae	*Pinus* sp.*	Pine
Section - Magnoliids		
Lauraceae	*Umbellularia californica*	California bay laurel
Section - Eudicots		
Anacardiaceae	*Schinus molle**	Peruvian peppertree
	Toxicodendron diversilobum	Poison oak
Apiaceae	*Conium maculatum**	Poison hemlock
	Perideridia kelloggii	Kellogg's yampah
	*Torilis arvensis**	Field hedge parsley
Asteraceae	*Artemisia douglasiana*	California mugwort
	Baccharis pilularis	Coyote brush
	*Carduus pycnocephalus**	Italian thistle
	*Centaurea solstitialis**	Yellow star-thistle
	*Cirsium vulgare**	Bull thistle
	*Cynara cardunculus**	Cardoon
	*Dittrichia graveolens**	Stinkweed
	Epilobium brachycarpum	Annual fireweed
	Heterotheca grandiflora	Telegraphweed
	*Lactuca serriola**	Prickly lettuce
	Madia gracilis	Slender tarweed
	*Picris echioides**	Bristly ox-tongue
	*Senecio vulgaris**	Common groundsel
	*Silybum marianum**	Milk thistle
	*Sonchus oleraceus**	Common sow-thistle
	*Tragopogon porrifolius**	Salsify
	Wyethia glabra	Mule ears
Boraginaceae	*Amsinckia* spp.	Fiddleneck
Brassicaceae	*Brassica nigra**	Black mustard
	Nasturtium officinale	Watercress
	*Raphanus sativus**	Wild radish
Caprifoliaceae	*Symphoricarpos albus* var. *laevigatus*	Common snowberry
Convolvulaceae	*Calystegia subacaulis*	Stemless morning-glory
	*Convolvulus arvensis**	Field bindweed
Euphorbiaceae	*Euphorbia crenulata*	Chinese caps
Fabaceae	*Lotus wrangelianus*	Calf lotus
	*Medicago polymorpha**	California bur-clover

	*Trifolium hirtum**	Rose clover
	Vicia sativa spp. *sativa**	Spring vetch
Fagaceae	*Quercus agrifolia*	Coast live oak
	Quercus lobata	Valley oak
Geraniaceae	*Erodium cicutarium**	Red-stem filaree
	*Geranium dissectum**	Cut-leaf geranium
Juglandaceae	*Juglans* sp.*	Walnut
Lamiaceae	*Stachys bullata*	Hedge nettle
Malvaceae	*Malva parviflora**	Cheeseweed
Montiaceae	*Claytonia perfoliata*	Miner's lettuce
Oleaceae	*Olea europaea**	Olive
Onagraceae	*Clarkia purpurea* ssp. *quadrivulnera*	Winecup fairy-fan
	Clarkia unguiculata	Elegant clarkia
	Epilobium brachycarpum	Annual fireweed
Orobanchaceae	*Bellardia trixago**	Mediterranean lineseed
Papaveraceae	*Eschscholzia californica*	California poppy
Phrymaceae	*Mimulus aurantiacus*	Sticky monkeyflower
Polygonaceae	*Eriogonum nudum*	Naked buckwheat
	*Rumex crispus**	Curly dock
	*Rumex pulcher**	Fiddle dock
Rosaceae	*Prunus cerasifera**	Cherry plum
	*Pyracantha sp.**	Firethorn
Rubiaceae	*Galium aparine*	Common bedstraw
	Galium porrigens	Climbing bedstraw
Salicaceae	*Salix lucida*	Shining willow
Sapindaceae	*Aesculus californica*	California buckeye
Section - Monocots		
Agavaceae	*Chlorogalum pomeridianum*	Soap plant
Cyperaceae	*Cyperus eragrostis*	Tall flatsedge
Iridaceae	*Iris* sp.	Iris
Juncaceae	*Juncus balticus*	Baltic rush
Poaceae	*Avena barbata**	Slender wild oat
	*Avena fatua**	Wild oat
	*Bromus catharticus**	Rescuegrass
	*Bromus diandrus**	Rip-gut brome
	*Bromus hordeaceus**	Soft chess
	*Bromus tectorum**	Downy brome
	Elymus glaucus	Blue wild rye
	Elymus [*Leymus*] *triticoides*	Creeping wild rye
	*Festuca arundinacea**	Tall fescue
	Festuca [*Lolium*] *perennis**	Perennial rye grass
	Festuca **[***Vulpia*] *myuros**	Rat-tail fescue
	Hordeum murinum ssp. *leporinum**	Hare barley
	*Polypogon monspeliensis**	Annual beardgrass
	Stipa [*Nasella*] *pulchra*	Purple needlegrass

ATTACHMENT 3
WETLAND DELINEATION DATA FORMS

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: AMD Property | City/County: Lafayette/Contra Costa | Sampling Date: 07/13/2011

Applicant/Owner: O'Brien Land Company, LLC | State: CA | Sampling Point: T-1a

Investigator(s): Christopher Bronny, Josh Goodwin | Section, Township, Range: _____

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

Subregion (LRR): LRR C | Lat: 37 53' 55.55"N | Long: 122 06' 05.45"W | Datum: _____

Soil Map Unit Name: Cut and fill land - Diablo complex, 9-30% slopes | NWI classification: _____

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

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

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

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

Hydrophytic Vegetation Present?	Yes ☐	No ☒	**Is the Sampled Area within a Wetland?**	**Yes ☐ No ☒**
Hydric Soil Present?	Yes ☐	No ☒		
Wetland Hydrology Present?	Yes ☐	No ☒		

Remarks: **Despite cut-and-fill mapped soil unit, existing soils within sample area do not appear disturbed. Precipitation totals thus far in the 2010-2011 rainy season above-average; sample point taken outside mapped boundary of seasonal wetland.**

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____			
2. _____			
3. _____			
4. _____			
50% = _____, 20% = _____		= Total Cover	
Sapling/Shrub Stratum (Plot size:_____)			
1. _____			
2. _____			
3. _____			
4. _____			
5. _____			
50% = _____, 20% = _____		= Total Cover	
Herb Stratum (Plot size:_____)			
1. *Festuca perennis*	5	no	FAC
2. *Carduus pycnocephalus*	20	yes	UPL
3. *Avena fatua*	40	yes	UPL
4. *Bromus diandrus*	10	no	UPL
5. _____			
6. _____			
7. _____			
8. _____			
50% = _____, 20% = _____	75	= Total Cover	
Woody Vine Stratum (Plot size:_____)			
1. _____			
2. _____			
50% = _____, 20% = _____		= Total Cover	
% Bare Ground in Herb Stratum 20	% Cover of Biotic Crust _____		

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of :		Multiply by:	
OBL species	_____	x1 =	_____
FACW species	_____	x2 =	_____
FAC species	_____	x3 =	_____
FACU species	_____	x4 =	_____
UPL species	_____	x5 =	_____
Column Totals:	_____ (A)		_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

☐ Dominance Test is >50%

☐ Prevalence Index is ≤3.0[1]

☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? **Yes ☐ No ☒**

Remarks: Dominance exhibited by upland species.

Project Site: Deer Hill Road Property

SOIL Sampling Point: T-1a

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (Moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-9"	7.5YR2.5/2	100					Silty clay loam	

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

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type:

Depth (Inches): 9"

Hydric Soils Present? **Yes** ☐ **No** ☒

Remarks: No evidence of reducing conditions in the soil profile - absence of hydric soil indicators.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) **(Nonriverine)**
- ☐ Sediment Deposits (B2) **(Nonriverine)**
- ☐ Drift Deposits (B3) **(Nonriverine)**
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):
Water Table Present?	Yes	☐	No	☒	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):

Wetland Hydrology Present? **Yes** ☐ **No** ☒

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

Remarks: Absence of hydrologic indicators.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: AMD Property | City/County: Lafayette/Contra Costa | Sampling Date: 07/13/2011

Applicant/Owner: O'Brien Land Company, LLC | State: CA | Sampling Point: T-1b

Investigator(s): Christopher Bronny, Josh Goodwin | Section, Township, Range: _____

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

Subregion (LRR): LRR C | Lat: 37 53' 55.55"N | Long: 122 06' 05.45"W | Datum: _____

Soil Map Unit Name: Cut and fill land - Diablo complex, 9-30% slopes | NWI classification: _____

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

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

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

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

Hydrophytic Vegetation Present?	Yes ☒	No ☐		
Hydric Soil Present?	Yes ☒	No ☐	**Is the Sampled Area within a Wetland?**	**Yes ☒ No ☐**
Wetland Hydrology Present?	Yes ☒	No ☐		

Remarks: **Despite cut-and-fill mapped soil unit, existing soils within sample area do not appear disturbed. Precipitation totals thus far in the 2010-2011 rainy season above-average; sample point taken inside mapped boundary of seasonal wetland.**

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____			
2. _____			
3. _____			
4. _____			
50% = _____, 20% = _____		= Total Cover	
Sapling/Shrub Stratum (Plot size:_____)			
1. _____			
2. _____			
3. _____			
4. _____			
5. _____			
50% = _____, 20% = _____		= Total Cover	
Herb Stratum (Plot size:_____)			
1. *Festuca perennis*	80	yes	FAC
2. *Avena fatua*	1	no	UPL
3. _____			
4. _____			
5. _____			
6. _____			
7. _____			
8. _____			
50% = _____, 20% = _____	81	= Total Cover	
Woody Vine Stratum (Plot size:_____)			
1. _____			
2. _____			
50% = _____, 20% = _____		= Total Cover	
% Bare Ground in Herb Stratum 20	% Cover of Biotic Crust _____		

Dominance Test Worksheet:

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

Prevalence Index worksheet:

Total % Cover of :		Multiply by:	
OBL species	_____	x1 =	_____
FACW species	_____	x2 =	_____
FAC species	_____	x3 =	_____
FACU species	_____	x4 =	_____
UPL species	_____	x5 =	_____
Column Totals:	_____ (A)		_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ☒ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? **Yes ☒ No ☐**

Remarks: Festuca forms nearly pure stand within entire mapped feature; Picris echioides is sub-dominant within stand.

Project Site: Deer Hill Road Property

SOIL

Sampling Point: T-1b

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (Moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12"	5YR2.5/1	98	5YR4/6	2	C	M	Silty clay loam	

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

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☒ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type:

Depth (Inches): 12"

Hydric Soils Present? **Yes** ☒ **No** ☐

Remarks: Presence of reducing conditions in the soil profile; mottles few/faint. Low chroma color of 1.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) **(Nonriverine)**
- ☒ Sediment Deposits (B2) **(Nonriverine)**
- ☐ Drift Deposits (B3) **(Nonriverine)**
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):
Water Table Present?	Yes	☐	No	☒	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):

Wetland Hydrology Present? **Yes** ☒ **No** ☐

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

Remarks: Presence of single primary hydrologic indicator.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: AMD Property | City/County: Lafayette/Contra Costa | Sampling Date: 07/13/2011

Applicant/Owner: O'Brien Land Company, LLC | State: CA | Sampling Point: T-2a

Investigator(s): Christopher Bronny, Josh Goodwin | Section, Township, Range: _____

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

Subregion (LRR): LRR C | Lat: 37 53' 56.59"N | Long: 122 06' 05.92"W | Datum: _____

Soil Map Unit Name: Lodo clay loam, 30-50% slopes | NWI classification: _____

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

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

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

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

Hydrophytic Vegetation Present?	Yes ☒	No ☐	**Is the Sampled Area within a Wetland?**	**Yes ☐ No ☒**
Hydric Soil Present?	Yes ☐	No ☒		
Wetland Hydrology Present?	Yes ☐	No ☒		

Remarks: **Sample area appears to be on boundary between two mapped soil units (Lodo and cut and fill). Defunct springbox located downslope from sample area. Precipitation totals thus far in the 2010-2011 rainy season above-average; sample point taken outside mapped boundary of swale.**

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Umbellularia californica*	60	yes	FAC
2. *Quercus lobata*	20	yes	FAC
3.			
4.			
50% = _____, 20% = _____	80	= Total Cover	
Sapling/Shrub Stratum (Plot size:_____)			
1.			
2.			
3.			
4.			
5.			
50% = _____, 20% = _____		= Total Cover	
Herb Stratum (Plot size:_____)			
1. *Bromus diandrus*	5	no	UPL
2. *Carduus pycnocephalus*	5	no	UPL
3.			
4.			
5.			
6.			
7.			
8.			
50% = _____, 20% = _____	10	= Total Cover	
Woody Vine Stratum (Plot size:_____)			
1.			
2.			
50% = _____, 20% = _____		= Total Cover	
% Bare Ground in Herb Stratum 90	% Cover of Biotic Crust _____		

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index worksheet:

Total % Cover of :		Multiply by:	
OBL species	_____	x1 =	_____
FACW species	_____	x2 =	_____
FAC species	_____	x3 =	_____
FACU species	_____	x4 =	_____
UPL species	_____	x5 =	_____
Column Totals:	_____ (A)		_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ☒ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? **Yes ☒ No ☐**

Remarks: Groundlayer very sparse/abundant leaf litter and bare ground.

Project Site: Deer Hill Road Property

SOIL Sampling Point: T-2a

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (Moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18"	10YR3/1	100					Silty clay loam	friable soils

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

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (Inches): _____

Hydric Soils Present? **Yes** ☐ **No** ☒

Remarks: No evidence of reducing conditions in the soil profile - absence of hydric soil indicators. No restrictive layer @ 18"

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) **(Nonriverine)**
- ☐ Sediment Deposits (B2) **(Nonriverine)**
- ☐ Drift Deposits (B3) **(Nonriverine)**
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): ____

Water Table Present? Yes ☐ No ☒ Depth (inches): ____

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

Wetland Hydrology Present? **Yes** ☐ **No** ☒

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

Remarks: Absence of hydrologic indicators.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: AMD Property | City/County: Lafayette/Contra Costa | Sampling Date: 07/13/2011

Applicant/Owner: O'Brien Land Company, LLC | State: CA | Sampling Point: T-2b

Investigator(s): Christopher Bronny, Josh Goodwin | Section, Township, Range: _____

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

Subregion (LRR): LRR C | Lat: 37 53' 56.59"N | Long: 122 06' 05.92"W | Datum: _____

Soil Map Unit Name: Lodo clay loam, 30-50% slopes | NWI classification: _____

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

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

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

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

Hydrophytic Vegetation Present?	Yes	☒	No	☐	
Hydric Soil Present?	Yes	☒	No	☐	**Is the Sampled Area within a Wetland?** **Yes** ☒ **No** ☐
Wetland Hydrology Present?	Yes	☒	No	☐	

Remarks: **Sample area appears to be on boundary between two mapped soil units (Lodo and cut and fill). Defunct springbox located downslope from sample area. Precipitation totals thus far in the 2010-2011 rainy season above-average; sample point taken inside mapped boundary of swale.**

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Umbellularia californica*	60	yes	FAC
2. *Quercus lobata*	20	yes	FAC
3.			
4.			
50% = _____, 20% = _____	80	= Total Cover	
Sapling/Shrub Stratum (Plot size:_____)			
1.			
2.			
3.			
4.			
5.			
50% = _____, 20% = _____		= Total Cover	
Herb Stratum (Plot size:_____)			
1. *Euphorbia crenulata*	2	no	UPL
2. *Rumex crispus*	5	no	FACW
3.			
4.			
5.			
6.			
7.			
8.			
50% = _____, 20% = _____	7	= Total Cover	
Woody Vine Stratum (Plot size:_____)			
1.			
2.			
50% = _____, 20% = _____		= Total Cover	
% Bare Ground in Herb Stratum 99	% Cover of Biotic Crust _____		

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index worksheet:

Total % Cover of :		Multiply by:	
OBL species	_____	x1 =	_____
FACW species	_____	x2 =	_____
FAC species	_____	x3 =	_____
FACU species	_____	x4 =	_____
UPL species	_____	x5 =	_____
Column Totals:	_____ (A)		_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ☒ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? **Yes** ☒ **No** ☐

Remarks: Some leaf litter in the groundlayer - herbaceous vegetation sparse.

Project Site: Deer Hill Road Property

SOIL Sampling Point: T-2b

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

Depth	Matrix		Redox Features				Texture	Remarks
(inches)	Color (moist)	%	Color (Moist)	%	Type[1]	Loc[2]		
0-12"	10YR3/1	90	7.5YR5/8	10	C	M	Silty clay loam	soils friable

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

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☒ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: ____

Depth (Inches): 12"

Hydric Soils Present? **Yes** ☒ **No** ☐

Remarks: Low chroma color of 1 with mottles; mottles common/distinct. Some gravel inclusions present.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☒ Water Marks (B1) **(Nonriverine)**
- ☒ Sediment Deposits (B2) **(Nonriverine)**
- ☐ Drift Deposits (B3) **(Nonriverine)**
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches): ____
Water Table Present?	Yes	☐	No	☒	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches): ____

Wetland Hydrology Present? **Yes** ☒ **No** ☐

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

Remarks: Soils slightly moist, but not saturated. Presence of hydrologic indicators.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: AMD Property | City/County: Lafayette/Contra Costa | Sampling Date: 07/13/2011

Applicant/Owner: O'Brien Land Company, LLC | State: CA | Sampling Point: T-3a

Investigator(s): Christopher Bronny, Josh Goodwin | Section, Township, Range: _____

Landform (hillslope, terrace, etc.): upland | Local relief (concave, convex, none): convex | Slope (%): 20

Subregion (LRR): LRR C | Lat: 37 54' 00.04"N | Long: 122 06' 10.58"W | Datum: _____

Soil Map Unit Name: Lodo clay loam, 30-50% slopes | NWI classification: _____

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

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

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

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

Hydrophytic Vegetation Present?	Yes ☒	No ☐		
Hydric Soil Present?	Yes ☒	No ☐	**Is the Sampled Area within a Wetland?**	**Yes ☐ No ☒**
Wetland Hydrology Present?	Yes ☐	No ☒		

Remarks: **Precipitation totals thus far in the 2010-2011 rainy season above-average; sample point taken outside mapped boundary of seep.**

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____			
2. _____			
3. _____			
4. _____			
50% = _____, 20% = _____		= Total Cover	
Sapling/Shrub Stratum (Plot size:_____)			
1. _____			
2. _____			
3. _____			
4. _____			
5. _____			
50% = _____, 20% = _____		= Total Cover	
Herb Stratum (Plot size:_____)			
1. *Brassica nigra*	15	no	UPL
2. *Elymus triticoides*	10	no	FAC
3. *Festuca perennis*	50	yes	FAC
4. _____			
5. _____			
6. _____			
7. _____			
8. _____			
50% = _____, 20% = _____	75	= Total Cover	
Woody Vine Stratum (Plot size:_____)			
1. _____			
2. _____			
50% = _____, 20% = _____		= Total Cover	
% Bare Ground in Herb Stratum 20	% Cover of Biotic Crust _____		

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of :	Multiply by:
OBL species _____	x1 = _____
FACW species _____	x2 = _____
FAC species _____	x3 = _____
FACU species _____	x4 = _____
UPL species _____	x5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

☒ Dominance Test is >50%

☐ Prevalence Index is ≤3.0[1]

☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? **Yes ☒ No ☐**

Remarks: Dominance exhibited by hydrophytic species.

Project Site: Deer Hill Road Property

SOIL Sampling Point: T-3a

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (Moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-9"	10YR3/2	60	7.5YR/5/8	10	C	M	Silty clay loam	
	10YR5/8	30						

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

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☒ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type:

Depth (Inches): 9"

Hydric Soils Present? **Yes** ☒ **No** ☐

Remarks: Two moist matrix colors present within soil sample. Presence of reducing conditions in the soil profile. Mottles common/faint to distinct.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) **(Nonriverine)**
- ☐ Sediment Deposits (B2) **(Nonriverine)**
- ☐ Drift Deposits (B3) **(Nonriverine)**
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):
Water Table Present?	Yes	☐	No	☒	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):

Wetland Hydrology Present? **Yes** ☐ **No** ☒

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

Remarks: Absence of hydrologic indicators.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: AMD Property | City/County: Lafayette/Contra Costa | Sampling Date: 07/13/2011

Applicant/Owner: O'Brien Land Company, LLC | State: CA | Sampling Point: T-3b

Investigator(s): Christopher Bronny, Josh Goodwin | Section, Township, Range: _____

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

Subregion (LRR): LRR C | Lat: 37 54' 00.04"N | Long: 122 06' 10.58"W | Datum: _____

Soil Map Unit Name: Lodo clay loam, 30-50% slopes | NWI classification: _____

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

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

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

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

Hydrophytic Vegetation Present?	Yes	☒	No	☐	
Hydric Soil Present?	Yes	☒	No	☐	**Is the Sampled Area within a Wetland?** **Yes** ☒ **No** ☐
Wetland Hydrology Present?	Yes	☒	No	☐	

Remarks: **Precipitation totals thus far in the 2010-2011 rainy season above-average; sample point taken inside mapped boundary of seep.**

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____			
2. _____			
3. _____			
4. _____			
50% = _____, 20% = _____		= Total Cover	
Sapling/Shrub Stratum (Plot size:_____)			
1. *Salix lucida*	10	no	OBL
2. _____			
3. _____			
4. _____			
5. _____			
50% = _____, 20% = _____	10	= Total Cover	
Herb Stratum (Plot size:_____)			
1. *Nasturtium officinale*	90	yes	OBL
2. *Polypogon monspeliensis*	10	no	FACW
3. _____			
4. _____			
5. _____			
6. _____			
7. _____			
8. _____			
50% = _____, 20% = _____	100	= Total Cover	
Woody Vine Stratum (Plot size:_____)			
1. _____			
2. _____			
50% = _____, 20% = _____		= Total Cover	
% Bare Ground in Herb Stratum 5	% Cover of Biotic Crust _____		

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of :		Multiply by:	
OBL species	_____	x1 =	_____
FACW species	_____	x2 =	_____
FAC species	_____	x3 =	_____
FACU species	_____	x4 =	_____
UPL species	_____	x5 =	_____
Column Totals:	_____ (A)		_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

☒ Dominance Test is >50%

☐ Prevalence Index is ≤3.0[1]

☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? **Yes** ☒ **No** ☐

Remarks: Dominance exhibited by hydrophytic species. Salix lucida occurs on benched terrace above seep feature.

Project Site: Deer Hill Road Property

SOIL Sampling Point: T-3b

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

Depth	Matrix		Redox Features				Texture	Remarks
(inches)	Color (moist)	%	Color (Moist)	%	Type[1]	Loc[2]		
0-14"	7.5YR2.5/1	95	7.5YR6/8	5	C	M	Silty clay loam	

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

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☒ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type:

Depth (Inches): 14"

Hydric Soils Present? **Yes** ☒ **No** ☐

Remarks: Low chroma color with reducing conditions in the soil profile; mottles common/faint.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☒ Surface Water (A1)
- ☒ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1) **(Nonriverine)**
- ☒ Sediment Deposits (B2) **(Nonriverine)**
- ☐ Drift Deposits (B3) **(Nonriverine)**
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes ☒ No ☐ Depth (inches): 0.5"

Water Table Present? Yes ☒ No ☐ Depth (inches):

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

Wetland Hydrology Present? **Yes** ☒ **No** ☐

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

Remarks: Soils saturated to surface; surface water present; groundwater upwelling. Strong hydrologic indicators present.

ATTACHMENT 4
SITE PHOTOGRAPHS

Photograph 1. Seasonal wetland in south-central portion of Property facing south towards Deer Hill Road showing the location of T-1. Shovel marks the location of sample point T-1b and field notebook the upland boundary (T-1a). Note the nearly pure stand of matted perennial ryegrass (FAC) in the mapped feature.

Photograph 2. Low-gradient swale in south-central portion of Property showing the location of T-2. Vegetation in the groundlayer was sparse; woody canopy dominated by California bay laurel (FAC) and valley oak (FAC). Shovel marks the location of sample point T-2b; field notebook the upland boundary (T-2a).

Photograph 3. Hillslope seep located in northwestern portion of property. Surface water was present at the time of the July 13 field delineation, indicating groundwater upwelling; the remnants of an old springbox were also found. The green hydrophytic vegetation in the photo supported by this feature include iris, Baltic rush, and annual beardgrass; valley oak occur along the perimeter.

Photograph 4. Location of T-3 at seep embedded within drainage in central portion of property. Shovel marks the location of T-3b; field notebook T-3a.

ATTACHMENT 5
SOILS DATA

CkB: Cropley clay, 2 to 5 percent slopes – The Cropley series consists of very deep, moderately well and well drained soils that formed in alluvium from mixed rock sources. Cropley soils occur on alluvial fans, floodplains and in small basins.

In a representative profile the surface layer is dark-gray, slightly acid to moderately alkaline clay about 24 inches thick. Below that is dark-gray and dark-brown, calcareous clay about 10 inches thick. The substratum is dark grayish-brown and dark-brown, strongly calcareous heavy clay loam to a depth of 44 inches. Below this it is yellowish-brown and very pale brown, calcareous heavy clay loam that extends to a depth of more than 60 inches.

Permeability is slow and is moderately well and well drained; medium to very high runoff.

CmE: Cut and fill land – Diablo complex, 9 to 30 percent slopes – Cut and fill land is the result of mechanical manipulation of upland areas for urban use. In Contra Costa County, Cut and fill land is mapped in complexes with Diablo, Los Osos, and Millsholm soils.

The **CmE** complex consists of 75 percent Cut and fill land, 15 percent Diablo clay, and 10 percent Altamont clay. Cut and fill land is the result of mechanical manipulation of strongly sloping to moderately steep soils on uplands. The earthy material is heavy clay loam, silty clay, and clay. As much as 20 percent, by volume, is angular fragments of shale and sandstone. Colors are variable and have a hue of 10YR or 2.5Y. The material is mildly alkaline to moderately alkaline and is calcareous throughout. Exposed cuts consist of interbedded shale and fine-grained sandstone that contain varying amounts of lime. The bedrock can tilt as much as 50 to 80 degrees.

This complex is well-drained or somewhat excessively drained. Runoff is rapid and the hazard of erosion is high. Permeability is slow to very slow, depending upon compaction during construction.

LcF: Lodo clay loam, 30 to 50 percent slopes – The Lodo series consists of somewhat excessively drained soils underlain by soft sandstone and shale that occur on uplands.

In a representative profile the surface layer is dark-gray, slightly acid clay loam approximately 18 inches thick and underlain by fine-grained sandstone. Permeability is moderately slow.

The **LcF** soil unit occurs on steep uplands. Included with it are areas of Millsholm soils that make up about 10 percent of the mapping unit and areas of Gaviota sandy loam that make up 2 percent. Also included are rock outcrops that make up 3 percent.

Runoff is medium to rapid, and the hazard of erosion is moderate to high where the soil is exposed.

LcG: Lodo clay loam, 50 to 75 percent slopes – The Lodo series consists of somewhat excessively drained soils underlain by soft sandstone and shale that occur on uplands.

In a representative profile the surface layer is dark-gray, slightly acid clay loam approximately 18 inches thick and underlain by fine-grained sandstone. Permeability is moderately slow.

The **LcG** soil unit occurs on very steep uplands. Included with it are areas of rock outcrops that make up approximately 8 percent and Millsholm soils that make up about 7 percent of the mapping unit.

Runoff is rapid, and the hazard of erosion is high where the soil is bare.

Appendix H2:
Bridge's Coast Shoulderband Snail Presence-Absence Survey Report

Richard A. Arnold, Ph.D.
President

Entomological Consulting Services, Ltd.

104 Mountain View Court, Pleasant Hill, CA 94523-2188 • (925) 825-3784 • FAX (925) 827-1809
bugdctr@comcast.net • www.ecsltd.com

28 May 2013

Marylee Guinon, Principal
Marylee Guinon LLC
354 Bohemian Highway
Freestone, CA 95472

Re: The Terraces of Lafayette
Presence-Absence Survey Report on the Bridge's Coast Range Shoulderband Snail

Dear Marylee:

This letter reports the findings of my presence-absence survey for the Bridge's Coast Range Shoulderband snail at the proposed Terraces of Lafayette project site. This site measures 22.27 acres and is located at the intersection of Pleasant Hill Road and Deer Hill Road in Lafayette (Contra Costa County), CA. I can briefly summarize my findings by stating that no snails of this taxon were observed during this survey. The remainder of this letter provides some background information on the snail and describes my survey methods and findings in more detail.

Background Information.

Helminthoglypta nickliniana bridgesii (Newcomb, 1861) is a terrestrial snail that was described from a specimen collected in San Pablo, Contra Costa County, California. It is a subspecies of *Helminthoglypta nickliniana* (Lea, 1838), a species which is found in the central Coast Range, from Sonoma County to Fresno County. This subspecies is commonly known as Bridge's Coast Range Shoulderband snail (hereafter "BCRSS).

BCRSS is similar in appearance to the introduced and more familiar Brown Garden Snail (*Helix aspersa*), but rather than having a cloudy-mottled color pattern, it has a golden-brown shell encircled by a neat single dark brown band. Under magnification, the shell surface resembles fine beadwork.

Several subspecies of *Helminthoglypta nickliniana* have been described within this species' geographic range. The BCRSS is distinguished from other subspecies by having a relatively large, depressed-globose shell with an open umbilicus half or less covered by the inner lip of the aperture. The fine sculpture of the shell surface consists of numerous close-set ridges parallel to the lip, which are cut into beads by diverging, diagonal, incised striations. This beaded sculpture is finer than in other subspecies.

In the East Bay region BCRSS ranges widely over the hills of Contra Costa and northern Alameda counties. Pilsbry (1939) quoted A. G. Smith (a longtime Berkeley resident and malacologist) as saying that it "ranges over the open hillsides of the west

slope of the Berkeley Hills in the suburbs of Berkeley known as Thousand Oaks ... and Kensington .... It is also found along San Pablo Creek, where it apparently gives way to [*Helminthoglypta] diabloensis* further into the hills. Also, I have a lot of 4 shells of this subspecies from Perkins Canyon on the east slope of Mt. Diablo." Additional historical localities based on specimens in museums and other reference collections include: San Pablo Ridge above Wildcat Creek; Point Isabel; near the eastern end of Caldecott Tunnel; Moraga Canyon; Coyote Gulch, Moraga; Marsh Creek Canyon, near Marsh Creek Springs; and Tilden Park (Dr. Barry Roth, personal communication). Since Pilsbry was writing in 1939, the "open hillsides of the west slope of the Berkeley Hills" are no longer so open, and the habitat available to BCRSS has been greatly reduced through urban and suburban development throughout this portion of its geographic range.

With respect to habitat, Pilsbry (1939) further quoted A. G. Smith as having "found it in tall grass and weeds, under patches of Canada thistle, and sometimes sparingly in rock piles. Colonies when found are in thistles or grass." Dr. Roth (personal communication) has found BCRSS under clumps of wild artichoke in former pasture and under woody debris on the ground under oaks along a stream. During a 1999 survey of Elworthy Ranch in Danville, Dr. Roth and I found the BCRSS in a tree-shaded (California bay and coast live oak), steep-banked gully further incised at the bottom by a 6-8 ft. wide stream channel. This location was also characterized by substantial leaf litter and considerable "branch-on-branch" wood.

Conservation Status.

BCRSS was formerly treated as a candidate species for endangered or threatened status by the U.S. Fish & Wildlife Service under the Endangered Species Act of 1973. Due to its limited range and occurrence, the BCRSS is currently monitored by the California Natural Diversity Data Base (CNDDB). For these reasons, BCRSS is also treated as a "rare species" under the California Environmental Quality Act (CEQA).

Survey Methods.

Surveys were conducted on four dates during the winter rainy season and spring: March 13 and 22, April 26, and May 23, 2013. Both diurnal and nocturnal surveys were conducted. The survey methods were standard for terrestrial snail detection: visual search of areas of promising vegetation cover, turning over debris and rocks on the ground, and probing around tree and shrub roots, probing and raking of leaf litter and leaf mold accumulations, and around the bases of known associated plants, such as milk thistle (*Silybum marianum*).

My surveys covered all portions of the proposed project site. The proposed project site includes several vegetation types, notably: ruderal, non-native grassland, coast live oak woodland, ornamental plantings, and riparian woodland and scrub along an intermittent drainage channel. A small seep is also present.

Results and Discussion.

No BCRSS were found during my surveys. Indeed, the only terrestrial mollusk observed was the introduced Brown Garden Snail, which was found in all portions of the project site.

Habitats and topography at the project site exhibit features of past disturbance by human activities, such a development and grading. Indeed, the draft EIR for the project notes that about 85% of the 22.27-acre site has been graded, quarried, developed, or otherwise disturbed. Portions of the grasslands are mowed for fire control purposes. Collectively, these activities have altered the former native plant species composition in the habitats on site so they now consist of a mixture of native and non-native plant taxa. According to the draft EIR, of the 80 plant taxa that were identified during botanical surveys at the project site, 49 (61%) are non-native.

My surveys were especially focused in the remnant oak woodland and in the riparian habitat growing along the intermittent drainage. Some branch on branch or solitary deadwood was evident on the ground in these areas beneath the trees and shrubs, but it was generally relatively fresh rather than in the advanced stages of decomposition, as is preferred by terrestrial snails. Similarly, some leaf litter had accumulated in these portions of the site.

Colonies and trails of the introduced Argentine ant (*Iridiomyrmex humilis*) were evident under turned-over woody debris and elsewhere on the site. The presence of this introduced ant is common at locations that have been heavily disturbed and are bordered by developed areas. Its presence is another indicator of past disturbance at the project site and diminishes the likelihood of occurrence by the BCRSS and other native snails.

In the grassland, the thistles or other rosette-forming herbs were of small extent. There were no large patches of milk thistle with deep crevices and layers of dead leaves. At other locations, *Helminthoglypta* have been found in similar habitat conditions. In contrast, the Terraces of Lafayette project site was characterized by solitary thistles or small groups of milk thistles.

Conclusions.

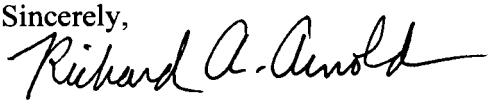
Since BCRSS was not found during my surveys at the site, I conclude that it does not occur there. Its absence can probably be explained by a combination of several factors, including disturbed habitat conditions, proximity of the project site to existing development, prevalence of non-native vegetation, and the presence of non-native snail and ant taxa. Because I could not find any evidence of the BCRSS at the project site, the project should not adversely impact this snail and no mitigation should be required.

Reference Cited.

Pilsbry, H. A. 1939. Land Mollusca of North America (north of Mexico). Academy of Natural Sciences of Philadelphia, Monograph 3, 1(1):I-xvii, 1-573.

If you have any questions about my report, please contact me.

Sincerely,



Richard A. Arnold, Ph.D.
President

Appendix H3:
Native Grassland Mitigation Plan

Native Grassland Mitigation Plan

The Homes at Deer Hill
Lafayette, California

Prepared for:

O'Brien Land Company
David R. Baker
3527 Mt. Diablo Blvd. #133
Lafayette, CA 94549

Prepared

By

Rana Creek

May 28, 2014

Rana Creek Habitat Restoration
10 Harris Court, Suite C-5, Monterey, California 93940 Tele.(831) 659 - 3820 Fax.(831) 646-2106

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FIGURES

1.0 INTRODUCTION

At the request of David R. Baker of O'Brien Land Company, Rana Creek has prepared this Native Grassland Mitigation Plan (Plan) for the Homes at Deer Hill project located in the City of Lafayette, Contra Costa County, California. The Homes at Deer Hill 2014 Plan involves impacts to 90,400 square feet (2.1 acres) and preservation of 6,400 square feet (0.1 acres) of the wildrye grassland association.

The Homes at Deer Hill 2014 Plan includes several public improvements including a sports field, dog park, and a parking lot. The public dog park supports a small stand of the native wildrye grassland, which can be preserved. To ensure the restoration success and long-term viability of the preservation and re-establishment program, the applicant has consulted with grassland specialists David Amme and Paul Kephart to determine an optimal approach to re-establish the native grassland on site. Plan Sheet 1 shows the Wildrye Native Grassland Avoidance and Replacement Plan (LCA Architects).

1.1 Background Regulatory Compliance

CEQA is in effect to ensure that projects with the potential to impact California habitats and species will be adequately reviewed and that impacts to the environment are addressed through avoidance and/or mitigation measures. CEQA applies to all projects proposed to be implemented or approved by a California public agency, including private projects requiring discretionary government approval. The CEQA process requires studies and surveys that must determine if and how a special status plant, animal, or sensitive natural community will be impacted by a proposed project. CEQA guidelines require a description of the project environment and specific knowledge of the regional setting, which is critical to the assessment of impacts to special status or sensitive biological resources. After environmental studies are complete, the lead agency has the discretion to approve appropriate avoidance and/or mitigation measures required to offset potential project impacts.

The *Elymus* x *gouldii* native perennial grassland present at the site has been previously surveyed and studied in connection with the proposed Terraces of Lafayette development project, now known as The Homes at Deer Hill. Initially, the grassland was misidentified as blue wildrye (*Elymus glaucus*) in a Plant Survey Report (Olberding Environmental, August 2011) and the Environmental Impact Report (EIR). Two acres of native grassland was mapped and occurs primarily as a larger polygon at a location that was not graded during quarry operations and also as isolated patches primarily near the creek drainage at Pleasant Hill and Deer Roads. Subsequent surveys by botanist and native grass expert David Amme identified the species as *Elymus* x *gouldii* (formerly *Leymus x multiflorus)*, a sterile hybrid of creeping ryegrass (*Elymus triticoides*) and giant wildrye (*Elymus condensatus*).

The California Department of Fish and Wildlife (CDFW) classifies terrestrial natural communities according to distinct vegetation alliances. Accepted vegetation alliances are based on the classification system presented in A Manual of California Vegetation, 2nd

Edition (Sawyer et. al., 2009). Natural communities are assigned a global and state rank (G1-G5 and S1-S5), which reflect the rarity and endangerment of a given community within its range and within the state, respectively (Table 1).

An *Elymus* x *gouldii* plant community or alliance is not specifically listed in the natural communities list maintained by CDFW. However, the *Elymus triticoides* (Creeping rye grass turfs) vegetation alliance and *Elymus condensatus* (Giant wildrye grassland) vegetation alliances are natural communities ranked by CDFW as G4/S3 and G3/S3, respectively. According to Evens (2011) and NatureServe (2009), a natural community ranked G3/S3 is "at moderate risk of extinction or elimination due to a restricted range, relatively few populations, recent and widespread declines, or other factors". According to CDFW, natural communities with rankings of G3/S3 or lower are considered to be of "special concern" and should be evaluated during a CEQA impact analysis. California native perennial grasslands in particular are at risk due to factors including invasive Mediterranean grasses, over grazing, and development.

The City of Lafayette as CEQA lead agency reviewed the proposed Homes at Deer Hill project and identified impacts to native ryegrass grassland. Although native ryegrass species and its hybrids are not listed as rare species, the native ryegrass grassland community on site was afforded consideration under CEQA during the environmental review process for the proposed project because of its natural plant community G3/S3 ranking.

Table 1 - CDFW Natural Community Ranking Summary

Global/State Rank	Definition	Evaluate during CEQA Analysis?
G1/S1 Critically imperiled	At very high risk of extinction due to extreme rarity, very steep declines, or other factors	Yes
G2/S2 Imperiled	At high risk of extinction or elimination due to very restricted range, very few populations, steep declines, or other factors	Yes
G3/S3 Vulnerable	At moderate risk of extinction or elimination due to a restricted range, relatively few populations, recent and widespread declines, or other factors	Yes
G4/S4 Apparently secure	Uncommon but not rare; some cause for long-term concern due to declines or other factors	No
G5/S5 Secure	Community secure due to common and widespread abundance	No

Mitigation will be accomplished with a combination of preservation and re-establishment approaches, and will reduce impacts to a less than significant level. Based on Mr. Amme's and Mr. Kephart's experience with establishing creeping wildrye, it is feasible that the existing stands of native grass can be readily salvaged and transplanted to a range of sites within the proposed development. Suitable mitigation areas within the development for the creeping wildrye could include cut and fill slopes, stormwater retention ponds or swales, understory components of oak woodlands, roadsides, and/or transition areas between traditional landscaping and adjacent native vegetation. With proper implementation, maintenance, and monitoring, such a native grass replacement strategy could reduce the impacts of the proposed project on the existing grasslands to a less than significant level. Suitable areas on the project site for native grass re-establishment and preservation have been identified on the proposed site plan prepared by the project landscape architect (Plan Sheet 2).

Re-establishment will involve on-site salvage of plants prior to grading, propagation, and planting creeping wildrye. Salvaged plant material will come from an area requiring remedial grading repairs. The native soils supporting the creeping wildrye will be excavated, stored on site, and utilized on the receiver sites. All mitigation planning and implementation will avoid impacts to sensitive biological resources. Because the salvage operation is optimal in fall or winter months when the plant is dormant, and remedial grading must take place at the re-establishment sites, the salvaged grass will be delivered to an off-site native plant nursery where it can be clonally divided and propagated until such time it is transplanted to the restoration receiver sites. A detailed approach for the implementation of the re-establishment and monitoring program is provided in Sections 3 and 4.

1.1.1 Mitigation Goals

- Minimize impacts to native grasslands where feasible.
- Develop and implement salvage and replacement program that provides for a minimum 1:1 replacement for any native grassland lost as a result of grading and development. All mitigation areas utilized for the minimum 1:1 replacement program were assessed for other sensitive biological resources, to ensure no net loss of sensitive plant species or communities lost as a result of implementing the replacement program.
- Provide permanent protection of preserved and restored native grasslands to be retained on site, and ensure they are successfully monitored and managed.

1.2 Project and Site Description

The Homes at Deer Hill site encompasses approximately 22 acres between Pleasant Hill Road and Deer Hill Road within the City of Lafayette just east of downtown. The southern property boundary is adjacent to Highway 24; 85 percent of the site was graded and terraced during a quarry operation from 1967 – 1970, and road construction, with cuts as much as 60-80 feet. Subsequently, Caltrans placed poorly compacted fill on the site during the construction of Highway 24. The project site reaches a maximum elevation of 462 feet along Deer Hill Road. The slopes between terraces generally range between 10-15 percent and eventually reach their lowest elevation of approximately 332 feet along Pleasant Hill Road. The project site includes a combination of existing land uses, including: office buildings, equipment storage, and staging area for a seasonal Christmas tree retail operation. There are approximately 5,000 square feet in structures and 27,000 square feet in paved surfaces.

Surrounding land uses include residential development and Acalanes High School to the east across Pleasant Hill Road and Highway 24 to the south. Residential parcels are present to the north/ northwest across Deer Hill Road, and beyond those parcels is Briones Park. An incised drainage occurs in the northwest corner and planted coast live oak woodland occurs along the eastern boundary of the Property. The grassland re-establishment receiver sites are located throughout the southern portion of this property (Plan Sheet 2).

2.0 MITIGATION PLAN

2.1 Background

As part of their environmental review process, the City of Lafayette requires that confirmation surveys be conducted on any mitigation properties prior to grading to determine whether any special-status plant species are present. The surveys shall be conducted by a qualified botanist and shall be appropriately timed to allow for detection of all species of concern (typically between March and July).

In the event that confirmation surveys identify any Federal- or State-listed plant species on the site that cannot be avoided, the applicant shall obtain all necessary permits and/or authorizations from CDFW and the U.S. Fish and Wildlife Service (USFWS) as required by Federal and State law for incidental take of those species. This shall include

preparation of a mitigation program acceptable to the respective agencies depending on the State and/or Federal-listing status of the species in question. The mitigation program shall define avoidance and long-term conservation measures to permanently protect and manage habitat around the occurrence(s), and provide for a minimum of three years of monitoring following installation of mitigation improvements to demonstrate that the occurrence(s) has not been adversely affected during construction. If a special-status species is encountered that is not a Federal- or State-listed species but is maintained on List 1B or List 2 of the California Native Plant Society's *Inventory of Rare and Endangered Plants of California* and the occurrence(s) cannot be avoided, a salvage/relocation plan shall be developed and approved by CDFW as part of the mitigation program prior to any disturbance in the vicinity.

Evidence that the applicant has secured any required authorization from these agencies shall be submitted to the City's Planning & Building Services Division prior to issuance of any grading or building permits for the Project. Direct and indirect impacts to sensitive resources can and will be avoided at the on-site mitigation area in compliance with the City's environmental review policy.

The applicant has fully complied with the above requirement. An April 2014 letter from Olberding Environmental summarizes the rare plant surveys conducted from 2011 to 2014 at the project site and the dog park located on the AMD property north of Deer Hill Road. No special status plant species were found within the project site nor the dog park during the rare plant surveys.

2.2 Mitigation Requirements

This mitigation plan complies with the following mitigation requirements for the proposed project:

- A Native Grassland Avoidance and Re-placement Program (Program) shall be developed by a qualified biologist to address the anticipated loss of native grasslands on the site, and ensure no native grasslands are destroyed or damaged as part of any off-site mitigation. The Program shall be subject to review and approval by the City, including peer-review by a qualified biologist selected by the City. The Program shall contain the following provisions during the required monitoring period. Performance standards, success criteria, and contingency measures shall be defined as part of the Program. Monitoring transects shall be established over each location to be vegetated as native grassland, and monitored on an annual basis. Within a three-year period, native grass shall be successfully established over all treatment areas and shall comprise a minimum 60 percent of the relative cover. Monitoring shall be extended where the success criteria are not met, and the minimum 1:1 replacement ratio is not reached. A total of 2.1 acres of native grassland shall be restored on receiver sites throughout the development. The Program and its requirements may be modified to require further measures if monitoring shows that performance standards are not being met.

2.3 Preservation Site Protection Measures

The 0.1-acre area of native grassland to be preserved shall be flagged in the field, and fenced with temporary orange construction fencing, prior to any equipment activities or site disturbance (Plan Sheet 2). A qualified biologist will oversee the protection of all areas to be preserved. The general contractor operating equipment and responsible for grading shall be trained by a qualified biologist regarding the identification and location of the native grasslands, the purpose of the temporary orange construction flagging/fencing, and the prohibition of ground disturbance within fenced exclusion areas. Permanent protection shall be accomplished by placement of interpretive signs placed around the perimeter of the native grassland indicating its protection status and ecological values.

3.0 SALVAGE AND REPLACEMENT PLAN

3.1 Plant Material Salvage

Plant material salvage will occur in areas identified for remedial grading and permanent impact. Approximately 10,000 live plant rootstock will be collected using a backhoe. Prior to salvage, plants will be mown to a height of 4-6 inches. Dead stems and clippings will be discarded. Live rootstock shall be transported to an off-site nursery and any soil, weeds, and dead materials cleaned from the rootstock. Rootstock shall be used for propagation and increase of approximately 40,000 live plants. Plants shall be grown in sterilized nursery growing media. Plants shall be grown in standard Dee pot (D16) cylindrical containers 2 inch diameter and 7 inches deep. The container has a very slight taper to the bottom and is rounded at the bottom.

3.2 Timing of Plant Material Salvage

Propagation of salvaged plant material is anticipated to require an approximately 8 to 12 month lead time from the date of salvage activities to the time of fall/winter planting. This lead time is required to ensure that salvaged plants are fully rooted in the nursery containers prior to out-planting on site.

3.3 Soil Salvage and Stockpiling

Topsoil from the area of impact shall be harvested and temporarily stockpiled on the site for re-soiling the receiver sites. Approximately 400 cubic yards of topsoil shall be salvaged for later application. By harvesting the top 6 inches of topsoil, the nutrients, fungi, and live rootstocks will be harvested and transplanted to the receiver sites. Prior to grading and soil harvesting all biomass in the soil salvage area shall be mown to a 4-6 inch height. Clippings shall be discarded. Soil shall be graded off in 3-6 inch lifts, hauled to a stockpile and covered with a tarp until re-soiling occurs. The qualified biologist will identify the soil salvage locations and the limit of work. The soil stockpiled shall be demarcated with orange construction fencing. The biologist and project planners will locate an appropriate stockpile area, which would occupy approximately 1,100 square feet and contain a stockpile approximately ten feet high.

3.4 Re-soiling

Re-soiling the receiver sites shall take place at least three weeks prior to October 15th site work and grading/soil movement limitations in order to provide adequate time to install a

permanent irrigation system and erosion control measures. Soil shall be transported from the stockpile to the receiver site and track walked into the roughened sub soil surface. Track walking with cleats from a bulldozer shall compress (not compact) harvested soils.

3.5 Erosion Control

Receiver site soils will require protection from erosion during the first winter following the final grading activities. Further, plant material plantings may be delayed due to project conditions, thus erosion control must be in place by October 15th. Temporary erosion control measures shall include the following:

- Installation of jute netting: On slopes, jute will be secured at top by laying at least 6 inches of material below grade at least 6 inches deep and secured with staples spacing staples every 18 to 24 inches On Center . The steeper the slope, the closer the staples should be placed. Jute netting will be applied by unrolling it down the slope and terminate at a 12-foot contour terrace and install 6 inches of netting under itself and secured with staples. All seams will overlap at least 2 to 6 inches.
- Straw wattles shall be placed along each 12-foot contour of the slope and anchored with 12-inch wooden stakes placed at 4-foot-intervals. One wattle shall be installed for every 20 feet of slope length and each shall be keyed in to a shallow trench in order to prevent water from flowing beneath. Wooden stakes shall extend above the top of the wattle by 2 inches. Metal spikes may be substituted for wooden stakes where the soil is rocky.

3.6 Mulch Top Dressing

The top 2 inches of planting area shall be top-dressed with organic sterile composted mulch. The top dressing will be hydraulically blown in place with a mulch blower truck. By placing this top dressing on the surface, any weeds in the harvested grassland soil will be adequately buried yet the profile will allow for remnant native grass rhizomes to emerge. The top dressing will also augment erosion control.

3.7 Planting

Planting shall occur prior to winter rain events so plants have a cool season to establish healthy thriving root systems. This timeframe typically occurs during late October to early December. Container plants shall be delivered to the site and installed in a grid pattern at 18 inches On Center. Planting holes shall be excavated through the jute net grid and planted 7 inches deep to the root crowns.

3.8 Fertilization

Each plant shall receive one slow release feeder fertilizer pack (RTI Leap Start 8-4-4 or equal) placed in the bottom of the planting hole. After planting, loose soil shall be compressed around each live plant.

3.9 Irrigation

New plantings will be established using supplemental irrigation during summer/spring periods of dry weather and especially during the first summer after installation. Irrigation events are anticipated to occur on a monthly basis during the summer and as needed during dry periods during the winter/spring. Plants will be watered by an overhead sprinkler system. Irrigation within areas where coast live oaks occur may alternatively be

provided by a drip system in order to avoid damage to oak trees. The wildrye should establish with minimal irrigation, however the permanent irrigation system will be installed to assure a self-sustaining planting in case of drought. The project irrigation plan will be provided as a future submittal.

3.10 Weed Control

Invasive non-native weeds will be controlled in both the preservation and receiver site areas. However, naturalized annual grasses will not be controlled. Because of its current presence on site, yellow star thistle (*Centaurea solstitialis*) will likely be the focus of weed control activities. Target weed species for control are those species that are rated by the California Invasive Plant Council (Cal-IPC) as "High". Weeds will be hand pulled in restoration areas before they are allowed to set viable seed.

3.11 Establishment and Long-term Maintenance

The restoration contractor will perform maintenance inspections and activities for two years following a 90-day plant establishment period. Maintenance visits will assess plant survival/growth and the presence of weeds. Weeds will continue to be controlled as described above. If installed plant material fails to become established in a given area, appropriately timed remedial planting at a rate of 1:1 shall be in accordance with the performance standards in this Plan. Maintenance will also inspect and maintain erosion control materials and the irrigation system including sprinkler heads, valves, and the controller. No other maintenance is recommended. Once the stand is established, it should thrive without significant on-going maintenance. The grassland specialist will prepare a maintenance manual and train landscaping staff in long-term maintenance for the preservation site and re-establishment receiver sites. The inspections and monitoring shall continue for three years and will be extended where success criteria have not met the 1:1 mitigation ratio or a net of 2.1-acres of native grassland. After the three-year monitoring is completed, a native grassland specialist will annually inspect the site in years four-ten to ensure compliance.

3.12 Plant Replacement

During a 90-day establishment period, dead plants shall be replaced at a 1:1 ratio, unless deemed unnecessary by the restoration biologist.

4.0 MONITORING

4.1 Requirements

The City of Lafayette requires that a Wildrye Native Grassland Avoidance and Replacement Plan be developed by a qualified biologist. The Plan shall contain the following provisions and performance standards related to monitoring:

- A monitoring program shall be implemented by the qualified biologist to oversee successful preservation and establishment of any native grasslands to be restored, on-site, and shall define both short-term and long-term requirements. Permanent monitoring transects shall be established as part of the program and vegetation data collected in the spring and summer months when plant identification is possible. Photo stations shall be established along each monitoring transect, and photographs taken every year during the required monitoring period. Performance standards, success criteria, and contingency measures are defined below. Monitoring transects shall be established over each location to be planted and maintained. Within a three-year period, native grass shall be successfully established over all receiver site areas and shall comprise a minimum 60 percent of the relative cover. Monitoring shall be extended where the success criteria are not met and the minimum 1:1 replacement ratio is not reached.

- Annual monitoring reports during a three-year monitoring period shall be prepared by the qualified biologist and submitted to the City's Planning & Building Services Division by December 31 of each monitoring year, for a minimum of three years or until the defined success criteria are met. The annual report shall summarize the results of the monitoring effort, performance standards, and any required contingency measures, and shall include photographs of the monitoring transects and Plan success. Maps shall be included in the monitoring report to show the location of monitoring transects and photo stations. After the three year monitoring period is completed, the grassland specialist will annually inspect compliance with the Plan in years four-ten. A brief letter report shall be submitted to the City of Lafayette summarizing findings and recommendations during years four-ten.

4.2 Photo-documentation

During the three-year monitoring period, digital photographs will be taken of the restoration areas from consistent locations and angles at 90-days post establishment and on an annual basis in both the receiver sites and preservation site. The monitoring biologist may increase frequency of photo-documentation if the 60 percent cover performance standard is not met at the 90-day milestone. Photo-documentation will provide a visual, qualitative assessment of the avoidance, preservation, maintenance, and re-establishment work.

4.3 Point Intercept Method

During the three-year monitoring period total percent cover (absolute) of native plants (grasses, forbs), non-native plants (grasses, forbs), bare soil/rock, gopher tailings, and dead plant litter will be measured using the point intercept method. This is a common

method of estimating percent cover in relatively low-lying vegetation types such as grasslands and scrubs where one can easily see over the major stand components (CNPS, 2004). Each distinct planting area should be sampled with a minimum of four transects

A 50-meter tape will be stretched between the endpoints of the transect and will be allowed to rest on the ground. The tape should be tightened enough so that it maintains a straight line. Beginning at the randomly selected starting point, vegetation (or bare ground, gopher tailings, plant litter) will be sampled at exactly 1.0 meter intervals along the entire length of the 50-meter transect (50 sampling points). The specific material (native plant, non-native plant, bare ground, gopher tailings, and dead plant litter) that occurs exactly at each sampling point will be recorded on a field form. Percent cover for each category along each transect will be determined as the percentage of points at which the species/category occurred. This method will also yield relative cover values for individual species. The average absolute percent cover for the sample area is simply calculated as the mean of the cover values of the four transects.

Prior to grading or any soil disturbance activity, point intercept method will be employed at no less than five transects within the existing wildrye stand order to establish minimum and maintainable baseline performance criteria. Measurements will be taken at the 90-day milestone and annually thereafter.

4.4 Frequency

Frequency can be defined as a percentage of possible plots within the sampling area that are occupied by the target native grass. Regardless of climatic or seasonal changes, frequency data will help determine if a species is increasing, relatively constant, or declining across the site. During the three-year monitoring period, frequency measurements will be collected from a 50 centimeter x 50 centimeter (cm) nested quadrat placed along the nine 50-meter transects at 2-meter intervals. The actual size of the sampling quadrat will be determined in the field and may be smaller or larger than 50 cm x 50 cm based on the size and density of the vegetation that is being sampled (i.e. smaller quadrat for higher density of plants). During the first year, the quadrat size should be selected so that a frequency value between approximately 30% and 70% is obtained. This practice will allow detection of upward and downward change in subsequent years, provided the same quadrat size is utilized. Regardless of size, quadrats used for measuring frequency should be square in shape. Frequency of native species will be collected as binary data (i.e. species either present or absent) from each quadrat with the transect serving as the sampling unit (n). Any target plants occurring along the edge of the quadrat frame will be counted as present if $\geq$ 50% of the base of the plant is rooted within the quadrat. Examples of monitoring data collection sheets are provided in Figures 1 and 2.

4.5 Reporting

Unless required by the City of Lafayette, reporting activities will be limited to one per the 90-day establishment period and subsequent reports submitted annually for a period of three years thereafter. Reports shall be prepared by a qualified biologist and submitted to the City of Lafayette. Reports will indicate maintenance activities performed, provide a list of planting replacements, if any, and include photo-documentation. After the three

year monitoring is completed, a native grassland specialist will annually inspect the site in years four-ten to ensure compliance and provide the City of Lafayette with a letter of findings and recommendations.

4.6 Long-term Management and Assurances

On-site preserved (0.1 acres) and re-established native grasslands (2.1 acres) will be protected in perpetuity through a deed restriction and Covenant with the City of Lafayette. The deed restriction will ensure the 2.1-acres are not converted to any other use other than the intended native grassland. The Covenant shall establish the applicant's financial responsibility to ensure the 2.1-acres of native grassland will be managed in perpetuity according to the Long-term Maintenance and Monitoring Plan.

The applicant retained Rana Creek to prepare this Plan and believes Rana Creek is the most suitable professional entity to conduct the planning, implementation, monitoring, and reporting. Rana Creek's owner, Paul Kephart, was a founder of the California Native Grass Association and brings over 20-years experience to the project. In the event the City requires another outside review of the Plan, David Amme is a grassland specialist who is familiar with the region.

The 2.1-acres of native grasslands shall be well established and thriving in the absence of any management measures, including irrigation, therefore significant management is not anticipated. However, a maintenance and management plan prepared by Rana Creek will be attached to the Covenant to ensure continuance and protection of this resource. The Long-term Maintenance and Management Plan will stress protection of this resource and will be incorporated into the apartment landscaping practices. It will anticipate and address unusual circumstances, such as mowing, fire, fire-protection, soil instability, and weed infestation, among others.

After completion of the three-year monitoring program and compliance with performance standards, a qualified biologist will inspect the preserved and re-established native grasslands at the project site annually for years four-ten to ensure compliance with the Covenant deed restriction protecting the grasslands in perpetuity. The grassland monitor will have authority to train and instruct the maintenance staff on cultural practices (such as irrigation or weeding) or specific remedial actions. If the monitor believes the maintenance staff is not qualified, he or she may contract with others and the applicant is contractually and financially responsible. If the grassland specialist determines after the ten-year monitoring period that no additional measures are necessary, the monitoring will cease.

5.0 REMEDIAL MEASURES

5.1 Replanting and Weed Controls

- If any plant fails to establish in the 90-day establishment period then all dead plants shall be replaced at a 1:1 ratio unless deemed unnecessary by the grassland specialist.
- If any weeds are found in the receiver site during the 90-day establishment period, then remedial weed control shall occur.
- In years 1-3, if weed cover and frequency exceeds that found during baseline sampling, then remedial weed control shall be conducted.
- In years 1-3, if creeping wild rye grass cover and frequency falls below that found during baseline sampling, then remedial planting shall be conducted in those areas failing to reach targeted performance.
- If any yellow star thistle is found in receiver sites, it shall be completely controlled.

6.0 REFERENCES

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NATIVE WILDRYE GRASSLAND TO BE IMPACTED BY PROJECT - 2.1 ACRES. GRASSES TO BE SALVAGED AND TRANSPLANTED AS SHOWN.

EXISTING NATIVE WILDRYE GRASSLAND TO REMAIN - 0.1 ACRE

PROPOSED MITIGATION GRASSLAND - 2.1 ACRES.

Wildrye Native Grassland Avoidance and Replacement Plan

1" = 80'

0 80 160

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THE HOMES AT DEER HILL
LAFAYETTE, CALIFORNIA

SCALE: AS SHOWN
DATE: MAY 29, 2014
REVISIONS:

PROJECT NO. 10050

M-1

SHEET OF

0 30 60 120

GATES +ASSOCIATES

HOMES AT DEER HILL LAFAYETTE, CALIFORNIA

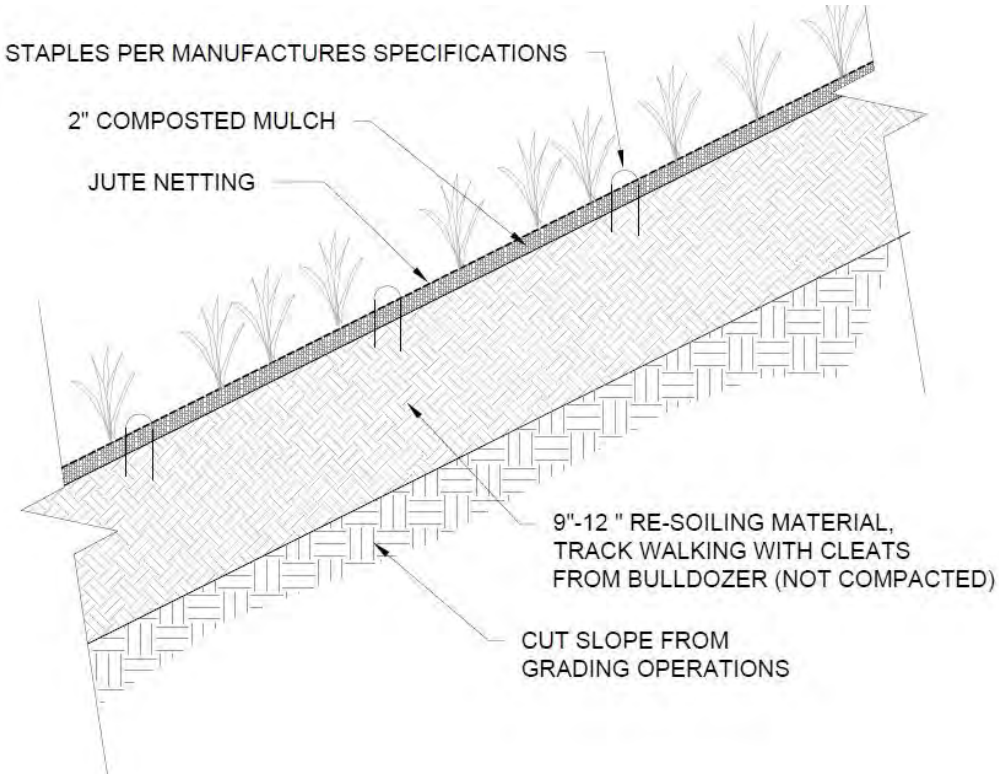
NATIVE GRASSLAND MITIGATION PLAN
MAY 28, 2014

ATTACHMENTS

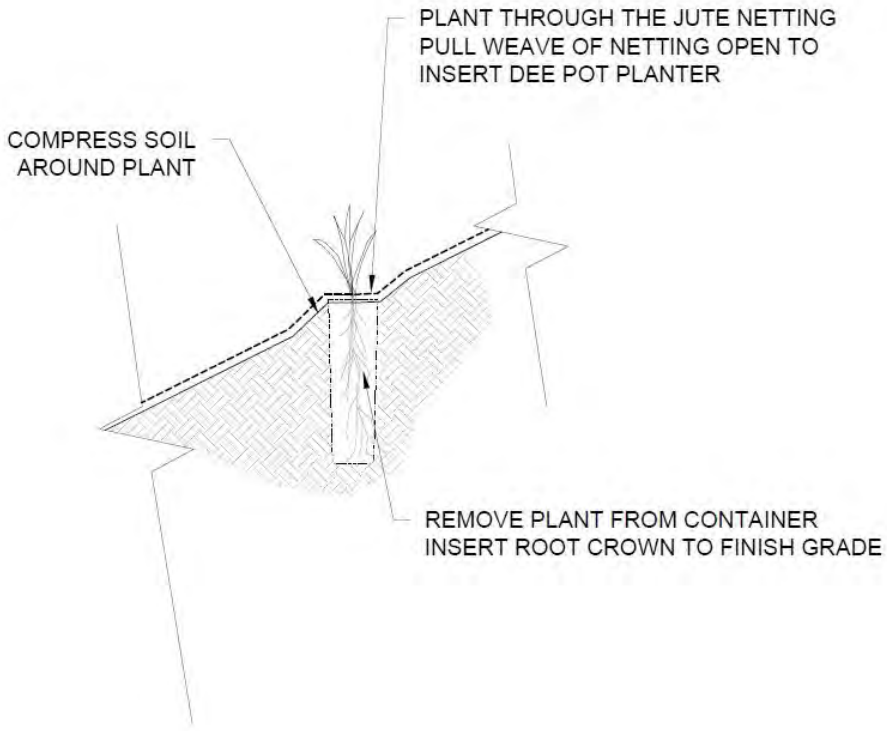
Figure 1 – Planting Details

Figure 2 – Example of Data Collection Sheets

EROSION CONTROL DETAIL



D-POT PLANTING DETAIL



Nested Frequency Field Data Sheet

Page____ of ____

Title/Description:		Date:
Location:		Species or community:
Transect or Macroplot#:	Treatment:	Field personnel:
Notes:	Nested quadrat sizes: 1 = 2 = 3 = 4 =	

CODE	Genus/species	Quad #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
		Quad #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

Cover—Point Intercept for Species Sampling

Study ID:	Species:	Observers:	Date:

Study Location:

Notes:

Transect #/coordinates	Plot number																																																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50

APPENDIX H4:
DOG PARK SITE RARE PLANT SURVEYS

OLBERDING ENVIRONMENTAL, INC.
Wetland Regulation and Permitting

April 15, 2014

Mr. Dave Baker
O'BRIEN LAND COMPANY, LLC
3031 Stanford Ranch Road, Suite 2-310
Rocklin, CA 95765

SUBJECT: Rare Plant Surveys Conducted on the AMD Property, Lafayette, CA

Dear Mr. Baker:

This memo is intended to provide you with the findings of protocol-level floristic surveys conducted in 2011, 2013 and 2014 on the AMD Property (Property) located near Lafayette, California.

LISTED SPECIES OF CONCERN

Olberding Environmental, Inc. has performed focused botanical surveys for special-status (those species identified as rare, threatened, or endangered) plants on the Property, located in the City of Lafayette, Contra Costa County, California. The following seven special-status plant species were identified by the California Natural Diversity Data Base (CNDDB) and California Native Plant Society's (CNPS) *Online Inventory of Rare and Endangered Plants* as having the potential to occur on the Property based on appropriate habitat types present: bent-flowered fiddleneck (*Amsinckia lunaris*), round-leaved filaree (*California macrophylla*), Mount Diablo fairy lantern (*Calochortus pulchellus*), fragrant fritillary (*Fritillaria liliacea*), Diablo helianthella (*Helianthella castanea*), Mt. Diablo cottonweed (*Micropus amphibolus*), and San Antonio Hills monardella (*Monardella antonina* ssp. *antonina*). The recognized bloom-period for these species occurs between March and June.

SURVEY METHODOLOGY

Olberding Environmental queried a literature review and special-status species databases in order to identify special-status plant species and sensitive habitat types with potential to occur in the study area. Sources reviewed include CNDDB occurrence records (CNDDB 2011) and the CNPS *Inventory* (Skinner and Pavlik 1994) for the Walnut Creek, Briones Valley, Benicia, Vine Hill, Honker Bay, Clayton, Diablo, Las Trampas Ridge, and Oakland East USGS 7.5-quadrangles; and standard flora (Hickman 1993). From the above sources, the following list of special-status plant species with potential to occur in the project vicinity was developed:

- Bent-flowered fiddleneck (*Amsinckia lunaris*) – CNPS List 1B.2;
- Round-leaved filaree (*California macrophylla*) – CNPS List 1B.1;
- Mount Diablo fairy lantern (*Calochortus pulchellus*) – CNPS List 1B.2;
- Fragrant fritillary (*Fritillaria liliacea*) – CNPS List 1B.2;
- Diablo helianthella (*Helianthella castanea*) – CNPS List 1B.2;

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Email: jeff@olberdingenv.com

- Mt. Diablo cottonweed (*Micropus amphibolus*) – CNPS List 3.2; and
- San Antonio Hills monardella (*Monardella antonina* ssp. *antonina*) – CNPS List 3.

Special-status plant surveys were conducted by Olberding Environmental botanist, Christopher Bronny on July 13 and October 20, 2011; additional surveys were conducted on March 16 and June 7, 2013, and March 31, 2014. The surveys followed the California Department of Fish and Game (CDFG) (2000) and CNPS (2001) published survey guidelines. These guidelines state that special-status surveys should be conducted at the proper time of year when special-status and locally significant plants are both evident and identifiable. These guidelines also state that the surveys be floristic in nature with every plant observed identified to the species, subspecies, or variety as necessary to determine their rarity status. Finally, these surveys must be conducted in a manner that is consistent with conservation ethics and accepted plant collection and documentation techniques.

Following these guidelines, surveys were conducted during the time period when special-status plant species from the region were known to be evident and flowering. Surveys were intuitively-controlled and consisted of walking meandering transects through upland and wetland areas of the Property were potentially suitable habitat for special-status species could occur; deviations were frequent, as emphasis was placed on assessing the oak woodland, coastal sage scrub, shallow soils around exposed bedrock, and least disturbed areas supporting the highest percentage of native taxa in terms of their overall frequency, density, and distribution throughout the Property. Focused efforts included hillslopes with flocculated clay soil substrates, edges of oak woodland, sage scrub and seeps.

A list of all vascular plant taxa encountered within the Property was recorded in the field (Attachment 2, Table 1). Nearly all species observed within the Property were identified to species; all were identified to the level needed to determine whether they qualify as special-status plants. Final determinations for collected plant material were made by keying using *The Jepson Manual* and other sources.

SURVEY RESULTS

The special-status plant species identified by the CNDDB as potentially occurring on the Property are known to grow from general habitat types similar to those encountered on the Property. We identified Diablo helianthella (*Helianthella castanea*; listed CNPS 1B) in the extreme northwestern corner of the Property (Attachment 1, 2011, 2013 and 2014 Plant Surveys, AMD Property). This species is a California endemic found in a variety of habitat types including broadleafed upland forest, chaparral, cismontane woodland, coastal scrub, riparian woodland, and valley and foothill grassland. It is a perennial member of the sunflower family with large yellow ray and disk flowers that bloom from March through June. It is known from a total of 97 occurrences in Contra Costa, Marin, Alameda, San Francisco, and San Mateo counties.

Diablo helianthella is the only protected species (listed CNPS 1B) found on the Property. Other species of interest that occur on the Property that are not protected include stands of wildrye (*Elymus triticoides* and *E. glaucus*), California brome (*Bromus carinatus*), needlegrass (*Stipa*

sp.), and many flowered wildrye (*Elymus x gouldii;* formerly *Leymus x multiflorus)*. The many flowered wildrye is a sterile hybrid of creeping ryegrass (*Elymus triticoides*) and giant wildrye (*Elymus condensatus*) and was detected along the extreme southeastern corner of the Property on March 31, 2014 (Attachment 1). Although the native grass species found on the Property are not listed as rare, native perennial grasslands are considered to be sensitive natural plant communities, and were therefore mapped. Several native plants were also identified and although not listed as rare and not afforded any protection, these were also mapped (Attachment 1).

If you have any questions, please feel free to contact me at (925) 866-2111 (office), (408) 472-4343, or jeff@olberdingenv.com.

Sincerely,

Jeff Olberding
Wetland Regulatory Scientist

ATTACHMENTS

Attachment 1: 2011, 2013 and 2014 Plant Surveys, AMD Property
Attachment 2: Plant List, AMD Property

References

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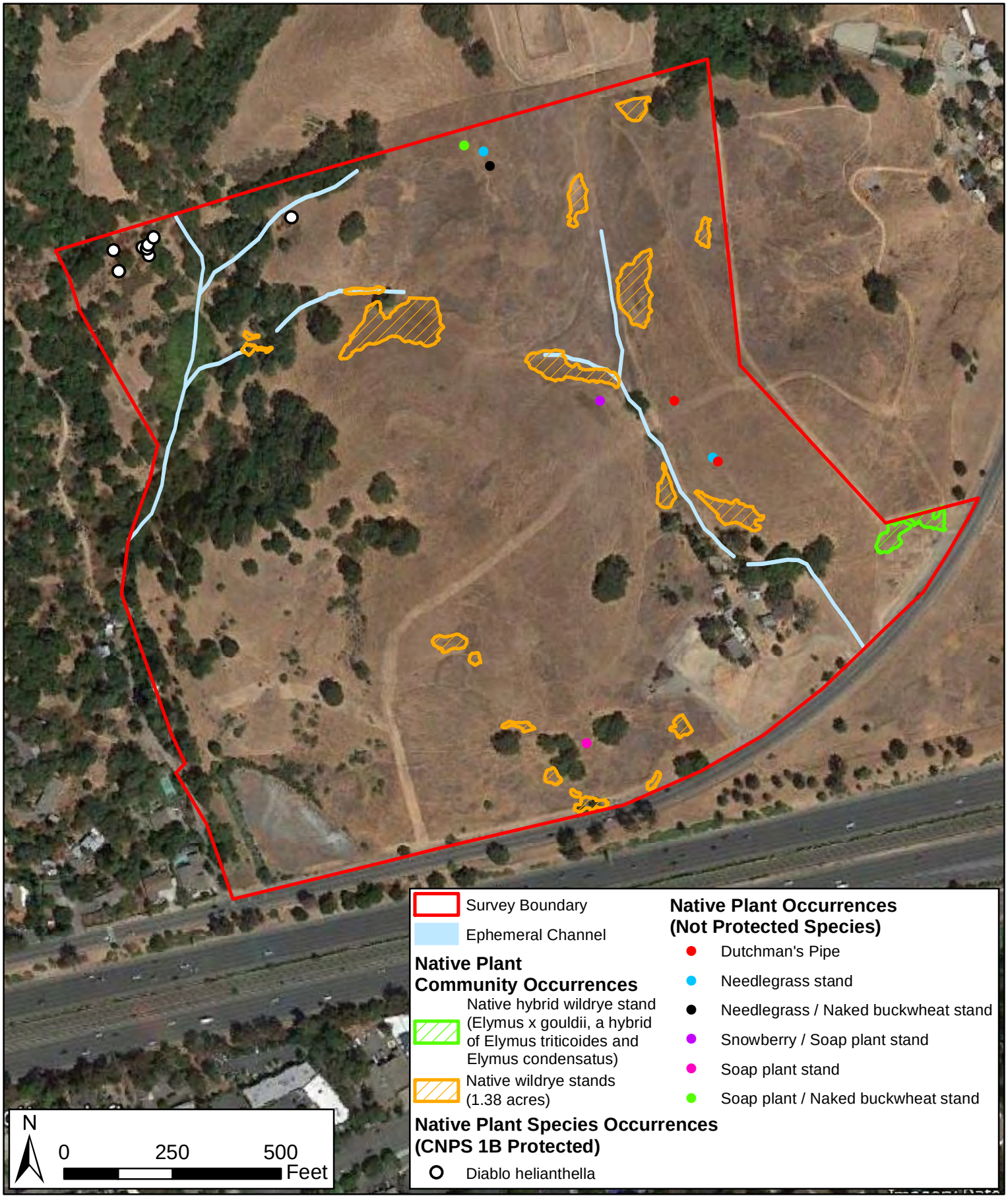

OBERDING ENVIRONMENTAL INC.
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Folsom, CA 95630
Phone: (916) 985-1188

2011, 2013 and 2014 Plant Surveys
AMD Property
Lafayette, California

Aerial Imagery: 08/28/2012

ATTACHMENT 2
PLANT LIST

Project: AMD Property, Contra Costa County, California
Dates: 7/13/2011; 10/20/2011
3/16/2013; 6/7/2013
3/31/2014

Botanist: Christopher Bronny
*denotes naturalized species

Family	Scientific Name	Common Name
Section - Gymnosperms		
Cupressaceae	*Calocedrus decurrens*	Incense cedar
Pinaceae	*Pinus* sp.*	Pine (seedlings)
Section - Magnoliids		
Lauraceae	*Umbellularia californica*	California bay laurel
Section - Eudicots		
Adoxaceae	*Sambucus mexicana*	Blue elderberry
Apiaceae	*Conium maculatum**	Poison hemlock
	*Scandix pecten-verenis**	Venus' needle
	*Torilis arvensis**	Field hedge parsley
Aristolochiaceae	*Aristolochia californica*	Dutchman's pipe
Asteraceae	*Artemisia douglasiana*	California mugwort
	Baccharis pilularis	Coyote brush
	*Carduus pycnocephalus**	Italian thistle
	*Centaurea solstitialis**	Yellow star-thistle
	*Cirsium vulgare**	Bull thistle
	*Cynara cardunculus**	Cardoon
	*Dittrichia graveolens**	Stinkweed
	Epilobium brachycarpum	Annual fireweed
	*Fillago gallica**	Narrowleaf cottonrose
	Helianthella castanea	Mt. Diablo helianthella
	Heterotheca grandiflora	Telegraphweed
	*Hypochaeris glabra**	Smooth cat's-ear
	*Hypochaeris radicata**	Rough cat's-ear
	*Lactuca serriola**	Prickly lettuce
	Madia gracilis	Slender tarweed
	*Picris echioides**	Bristly ox-tongue
	*Senecio vulgaris**	Common groundsel
	*Silybum marianum**	Milk thistle
	*Sonchus oleraceus**	Common sow-thistle
	Symphyotrichum chilense	Pacific aster
	*Tragopogon porrifolius**	Salsify

Boraginaceae	*Amsinckia menziesii*	Small-flowered fiddleneck
	Amsinckia intermedia	Common fiddleneck
	Phacelia imbricta var. *imbricata*	Imbricate scorpionweed
Brassicaceae	*Brassica nigra**	Black mustard
	*Brassica rapa**	Birdsrape mustard
	Cardamine oligosperma	Bitter-cress
	*Raphanus sativus**	Wild radish
Caprifoliaceae	*Symphoricarpos (albus)*	Snowberry
Caryophyllaceae	*Polycarpon tetraphyllum**	Four-leaved allseed
Convolvulaceae	*Calystegia subacaulis*	Stemless morning-glory
	*Convolvulus arvensis**	Field bindweed
Fabaceae	*Acacia dealbata**	Silver wattle
	Acmispon wrangelianus	Wrangel's lotus
	*Medicago polymorpha**	California bur-clover
	*Trifolium hirtum**	Rose clover
	Vicia sativa spp. *sativa**	Spring vetch
Fagaceae	*Quercus agrifolia*	Coast live oak
	Quercus lobata	Valley oak
Geraniaceae	*Erodium botrys**	Filaree
	*Erodium brachycarpum**	Shortfruit stork'sbill
	*Erodium cicutarium**	Red-stem filaree
	*Geranium dissectum**	Cut-leaf geranium
	*Geranium molle**	Dove geranium
Juglandaceae	*Juglans* sp.*	Walnut
Lamiaceae	*Monardella villosa* ssp. *villosa*	Coyote mint
Montiaceae	*Claytonia perfoliata*	Miner's lettuce
Onagraceae	*Clarkia purpurea* ssp. *quadrivulnera*	Clarkia
	Epilobium brachycarpum	Annual fireweed
Orobanchaceae	*Bellardia trixago**	Mediterranean lineseed
Oxalidaceae	*Oxalis pes-capre**	Bermuda buttercup
Papaveraceae	*Eschscholzia californica*	California poppy
Polygonaceae	*Eriogonum* sp. (likely *E. nudum* var. (?))	Buckwheat
	*Rumex crispus**	Curly dock
Rosaceae	*Prunus cerasifera**	Cherry plum
	*Prunus dulcis**	Almond
	*Pyracantha sp.**	Firethorn
Rubiaceae	*Galium aparine*	Common bedstraw
Salicaceae	*Salix laevigata*	Red willow
	Salix lasiolepis	Arroyo willow
Section - Monocots		
Agavaceae	*Chlorogalum pomeridianum*	Soap plant

Juncaceae	*Juncus balticus*	Baltic rush
	Juncus bufonius var. *congestus*	Toad rush
	Juncus xiphioides	Iris-leaved rush
Liliaceae	*Calochortus superbus*	Yellow mariposa
Poaceae	*Agrostis hallii*	Hall's bent grass
	*Avena barbata**	Slender wild oat
	*Avena fatua**	Wild oat
	Bromus carinatus	California brome
	*Bromus diandrus**	Rip-gut brome
	*Bromus hordeaceus**	Soft chess
	*Bromus tectorum**	Downy brome
	Elymus glaucus	Blue wild-rye
	Elymus triticoides	Creeping wild-rye
	Elymus x gouldii	Wild-rye (sterile hybrid)
	*Festuca perennis**	Perennial rye grass
	*Festuca myuros**	Rat-tail fescue
	*Hordeum marinum ssp. gussoneanum**	Mediterranean barley
	Hordeum murinum ssp. *leporinum**	Hare barley
	Stipa sp.	Needlegrass
Themidaceae	*Dichlostemma capitatum*	Blue dicks
	Triteleia laxa	Common triteleia

Appendix H5:
Grassland Reports for the Revised Project

rana creek

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March 27th, 2014

To: Marylee Guinon
Marylee Guinon LLC
354 Bohemian Highway
Freestone, CA 95472

RE: Protection Status *Elymus* x *gouldii* [*Leymus* x *multiflorus*]
Terraces of Lafayette Project and Homes at Deer Hill Alternative
Lafayette, Contra Costa County, California

Dear Marylee,

The purpose of this memo is to provide my opinion on what protection measures under the California Environmental Quality Act (CEQA) are afforded to the hybrid grass, many flowered wildrye (*Elymus* x *gouldii)* native perennial grassland found at the Terraces of Lafayette and Homes at Deer Hill, in Lafayette, Contra Costa County, California. There appears to be ambiguity about this species and its plant community association, which is currently not well defined, is unusual, and is locally unique.

Background
The *Elymus* x *gouldii* native perennial grassland present at the site has been previously surveyed and studied in connection with the proposed Terraces of Lafayette development project. Initially, the grassland was misidentified as blue wildrye (*Elymus glaucus*) in a Plant Survey Report (Olberding Environmental, August 2011) and the Environmental Impact Report (EIR). Two acres of native grassland was mapped and occurs primarily as a larger polygon at a location that was not graded during quarry operations and also as isolated patches primarily near the creek drainage at Pleasant Hill and Deer Roads. Subsequent surveys by botanist David Amme identified the species as *Elymus* x *gouldii (formerly Leymus x multiflorus)*, a sterile hybrid of creeping ryegrass (*Elymus triticoides*) and giant wildrye (*Elymus condensatus*).

The City of Lafayette as lead agency for CEQA, reviewed the proposed Terraces of Lafayette project and identified impacts to native ryegrass grassland. Although native ryegrass itself is not listed as rare, the native ryegrass grassland on site is considered to be a sensitive natural community and therefore was afforded consideration under CEQA. The City set forth compensatory mitigation measures because this sensitive plant community is considered a rare vegetation alliance. As a result, Rana Creek Habitat Restoration was retained by the project proponent to prepare the *Draft Lafayette Wildrye Native Grassland Avoidance and Replacement Plan* (Rana Creek, August 22, 2013) for the Terraces of Lafayette project in order to support compliance with project mitigation measure BIO-5. The mitigation measures to compensate for impacts to the creeping ryegrass grassland were identified as part of the CEQA review process in the project draft and final EIR.

Botanical Summary
Creeping Ryegrass Grassland – The many flowered wildrye grassland that is found on the Terraces of Lafayette and Homes at Deer Hill site is composed primarily of *Elymus* x *gouldii* [*Leymus* x *multiflorus*], which is a result of hybridization between *Elymus triticoides* and *Elymus condensatus*. The hybrid form is

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endemic to California (Calflora, 2014). It should be noted that the 2012 Jepson Manual treatment for many flowered wildrye is *Elymus* x *gouldii* (Baldwin et. al., 2012), which replaces the former name, *Leymus* x *multiflorus*.

"The wildrye stands on AMD Parcels 10 and 16 (north of Deer Hill Road) are typical Elymus triticoides which does not get much higher than three feet and is fairly thin. Elymus triticoides, a creeper, is common throughout interior and north coastal areas of the state. Elymus condensatus is a related larger wildrye form of creeping rye that works its way up the coast from Baja California to the Bay area. In southern California Elymus condensatus is extremely large/tall up to 15 feet in height. What we have on the Lafayette Terraces Project site is a hybrid form between the two and is officially called Leymus x multiflorus (now called Elymus x gouldii)," (Amme, pers. comm., 2013).

CEQA and Protection Status

CEQA is in effect to ensure that projects with the potential to impact California habitats and species will be adequately reviewed and that impacts to the environment are addressed through avoidance and/or mitigation measures. CEQA applies to all projects proposed to be implemented or approved by a California public agency, including private projects requiring discretionary government approval. The CEQA process requires studies and surveys that must determine if and how a special status plant, animal, or sensitive natural community will be impacted by a proposed project. CEQA guidelines require a description of the project environment and specific knowledge of the regional setting, which is critical to the assessment of impacts to special status or sensitive biological resources. After environmental studies are complete, the lead agency has the discretion to approve appropriate avoidance and/or mitigation measures required to offset potential project impacts.

The *Elymus triticoides* and *Elymus condensatus* vegetation alliances are considered sensitive natural communities by CDFW. CDFW classifies terrestrial natural communities according to distinct vegetation alliances. Accepted vegetation alliances are based on the classification system presented in A Manual of California Vegetation, 2nd Edition (Sawyer et. al., 2009). Natural communities are assigned a global and state rank (G1-G5 and S1-S5), which reflect the rarity and endangerment of a given community within its range and within the state, respectively. According to CDFW, natural communities with rankings of G3/S3 or lower are considered to be of "special concern" and should be evaluated during a CEQA impact analysis.

An *Elymus* x *gouldii* plant community or alliance is not specifically listed in the natural communities list maintained by CDFW. However, the *Elymus triticoides* (Creeping rye grass turfs) vegetation alliance and *Elymus condensatus* (Giant wildrye grassland) vegetation alliances are natural communities ranked by CDFW as G4/S3 and G3/S3, respectively. According to Evens (2011) and NatureServe (2009), a natural community ranked G3/S3 is "at moderate risk of extinction or elimination due to a restricted range, relatively few populations, recent and widespread declines, or other factors". California native perennial grasslands in particular are at risk due to factors including invasive Mediterranean grasses, over grazing, and development. The list of global and state rankings and definitions is summarized below:

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CDFW Natural Community Ranking Summary

Global/State Rank	Definition	Evaluate during CEQA Analysis?
G1/S1 Critically imperiled	At very high risk of extinction due to extreme rarity, very steep declines, or other factors	Yes
G2/S2 Imperiled	At high risk of extinction or elimination due to very restricted range, very few populations, steep declines, or other factors	Yes
G3/S3 Vulnerable	At moderate risk of extinction or elimination due to a restricted range, relatively few populations, recent and widespread declines, or other factors	Yes
G4/S4 Apparently secure	Uncommon but not rare; some cause for long-term concern due to declines or other factors	No
G5/S5 Secure	Community secure due to common and widespread abundance	No

Conclusion

Both *Elymus triticoides* and *Elymus condensatus* have naturally hybridized at the project site to form *Elymus* x *gouldii*. Although not specifically defined by Sawyer (2009) nor listed as a specific natural community by CDFW, a vegetation alliance of the endemic hybrid form of these two species is presumably equally unique to the region and would therefore be afforded at least the same level of protection as the *Elymus triticoides* and *Elymus condensatus* vegetation alliances under CEQA. Therefore, the City of Lafayette as lead agency has both the responsibility to evaluate project impacts to this natural community and the discretion to determine what degree of avoidance and/or mitigation will be necessary to reduce impacts to less than a significant level.

If you have further questions, please call 831-521-3729.

Paul Kephart

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California Natural Diversity Database, Biogeographic Data Branch, Department of Fish and Game.

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Sawyer, J.O., T. Keeler-Wolf, J.M. Evens. 2009. A manual of California vegetation. California Native Plant Society. Sacramento. 471 p.

To: Marylee Guinon
From: David Amme
May 28, 2014
Re: Identification of Native Rye Grasslands and Comments on Mitigation Replacement Program – for the Homes at Deer Hill and the Dog Park on AMD Property.

I walked the project site south of Deer Hill Road and the AMD property north of Deer Hill Road with you on June 24, 2013. Recently, we again walked these sites north and south of Deer Hill Road on May 20, 2014 to confirm my earlier identification of the ryegrass species and to again provide input on the Mitigation Replacement Program.

Identification of the Native Wildrye Grasslands

On my site visit June 24, 2013, I concluded the creeping ryegrass on the project site south of Deer Hill Road is a hybrid named *Elymus x multiflorus*, later renamed *Elymus x gouldii*, and not blue wildrye (*Elymus glaucus*). In the North Bay creeping wildrye species are extremely variable. The hybrid originates from the creeping wildrye *(Elymus triticoides*) and creeping giant wildrye (*Elymus condensatus*). The one parent of the hybrid (*Elymus triticoides*) was noted on the AMD property north of Deer Hill Road, and no pure giant wildrye (*Elymus condensatus)*, the second parent, was noted on either properties. The species giant wildrye is a large wildrye that works its way up the coast from Baja California to the Bay Area. In southern California pure giant wildrye is up to 15 feet in height. This beautiful hybrid, which is sterile, is quite common in the Bay Area. The hybrid here is almost pure giant wildrye (the second parent), though shorter and more of a spreader than the 15 foot southern California pure form. The reason we do not observe the pure giant wildrye and do observe the *Elymus triticoides*, is because the hybrid is almost pure *Elymus condensatus*. The hybrid favors the *Elymus condensatus* and co-evolved many years ago. The hybrid is simply the form the *Elymus condensatus* takes in many locations in northern California. Hybridization with a sterile outcome is very common in grasses.

The creeping ryegrass on the AMD property north of Deer Hill Road in the primary drainage is largely *Elymus triticoides*. The *Elymus triticoides* here is typical, common throughout interior and north costal areas of the state, thin, and does not grow much higher than three feet. It is quite variable, from blue to green, tall and short.

There is also a small stand of the hybrid ryegrass (*Elymus x gouldii)* at the eastern end of the proposed Dog Park site as shown on a April 2014 Plant Surveys Map by Olberding Environmental. On May 20, 2014 we were able to confirm the identification of native ryegrass species on the April 2014 Plant Surveys Map.

Mitigation Replacement Program

Based on my extensive experience with growing and establishing native grasses, I can provide the following comments to assist in their preparation of the Mitigation Replacement Program. My recommendation would be to salvage and transplant the hybrid wildrye grass from impact

sites into the landscape adjacent to and surrounding the housing development. There is plenty of capacity for this. The creeping ryegrass is known for its ability to provide slope stabilization. With some judicious soil treatment and amendments this large wildrye form would do well along the Deer Hill Road perimeter as well as on the south, southeast, and west side of the development.

These plants should be salvaged and transplanted, and can be held in a nursery until the season for transplanting is optimal and the receiver sites are prepared. Backhoe systems with wide buckets or clapper buckets can remove rows of this plant, which can then be taken to a nursery for holding. We discussed an on-site nursery but believe an off-site location is optimal. The best time to plant the salvaged grass is in late fall to early winter. The receiver sites should have some kind of above or below ground irrigation system to encourage the plants to establish after they are transplanted. The areas where the hybrid ryegrass (*Elymus x gouldii)* is to be moved will need to be amended with organic matter to promote establishment. Fertilizers should be used with caution because they may attract gophers and encourage rodents. Eventually, the stands will grow together and gradually become healthier and larger. Oaks, other hardwood trees, willows, Italian Stone pines, redwoods, elderberry, etc. will be compatible with the native grassland. While compacted locations will support the transplanted grass, these sites will require extra amendments.

The stands of native grass should establish quickly with minimal establishment maintenance within 2-3 years. While the grassland should not require permanent irrigation, I recommend a Point of Connection for temporary irrigation in the event of a prolonged drought. The key is to amend the soil properly using irrigation to get things going. Mowing will not be necessary. The stands should grow together or can be encouraged to nit together with judicious amendments. We need to let the grass establish itself and quickly the hybrid grass will dominate.

In conclusion, the idea to incorporate and mitigate the hybrid ryegrass within in development is both desirable and feasible. I believe the *Elymus x gouldii* will thrive and dominate the weeds. Once established in 2-3 years, I don't think you will need a lot of special monitoring or weeding.

This memo summarizes my observations of 2013 and 2014 and I hope that it addresses your questions. I believe the 2-acre grassland replacement program will be successful, and the native grassland and oaks will provide a beautiful native landscape.

Sincerely,

David Amme

APPENDIX H6:
TREE PRESERVATION REPORTS FOR THE REVISED PROJECT

TRAVERSO TREE SERVICE
WHEN IT HAS TO BE DONE RIGHT

Tree Preservation Report

August 4, 2014

"Homes At Deer Hill"
Lafayette, CA 94549

Prepared for:

David Baker
O'Brien Land Company, LLC

By

John C Traverso
BCMA Arborist #0206-B

Table of Contents

INTRODUCTION

The proposed improvements reviewed in this report consist of the removal of the existing structures on site, and developing a 44 unit subdivision, complete with soccer field, park, hiking and bike paths. There are many protected oaks on the site, including one very large over-mature valley oak, deemed "The Grand Oak" that the city of Lafayette has required to be retained. This report shall address the proposed improvements and make recommendations for tree preservation.

ASSIGNMENT

Per the City of Lafayette's Tree Protection Ordinance, this arborist report shall include the following**.**

1. Tag, identify, an measure trunk diameters at 4.5' above grade for all trees that are 6" and larger that are on or overhanging the site.
2. Locate driplines and tree #'s on the site map
3. Identify tree health and structural condition.
4. Based on age, condition, and proposed site improvements, make recommendations for tree preservation during construction.

SUMMARY

There were 117 trees inventoried at the start of this project in March of 2011 that fit the cities description as "Protected". Species diversity consisted of 77 coast live oaks, 11 black walnuts, 6 valley oaks, 6 cedar, 6 willows, 5 stone pine, and one each of Coulter pine, Monterey pine, iron bark eucalyptus, carob, plum, and blackwood acacia.

The proposed improvements will necessitate the removal of 48 trees. The remaining 69 trees, to include the "Grand Oak" can be retained given the protections measures recommended in this report are adhered to.

LIMITING FACTORS

This report is based on information gathered from several site visits ranging from March of 2011 to July of 2014, along with the Vesting Tentative Map & Grading Plans produced by BKF Engineering dated July 31st, 2014. It was assumed the trees and proposed improvements were accurately surveyed.

The health and structure of the trees were assessed visually from ground level. No drilling, root excavation, or aerial inspections were performed. Internal or non-detectable defects may exist, and could lead to part or whole tree failures. Due to the dynamic nature of trees and their environment, it is not possible for arborists to guarantee that trees will not fail in the future.

TREE INVENTORY & ASSESSMENT

The following tree inventory was taken in 2011 with key trees, such as the Grand Oak, looked at frequently over the recent months. Tree numbers and field tags are in sequential order from #1 - #118, with tags #26 & #75 omitted for a total of 116 trees.

Tree Assessment Table Legend

DBH = Trunk diameter based on circumference measured at 4.5' above grade.

Health & Structure

Poor Condition*:* Stunted or declining canopy, poor foliar color, possible disease or insect issues. Severe structural defects that may or may not be correctable. Usually not a reliable specimen for preservation.

Fair Condition*:* Fair to moderate vigor. Minor structural defects that can be correctable. More susceptible to construction impacts than a tree in good condition.

Good Condition*:* Good vigor, and color, with no obvious problems or defects. Generally more resilient to impacts.

Canopy Radius: Branch spread measured from the trunk to the furthest extension of the branch tips, also known as “Drip Line”.

Stand Structure “SS”

“D” = Dominant tree (open grown, or overpowering adjacent trees)
“CD” = Co-dominant tree (equally competing with adjacent tree(s)).
“SD” = Sub-dominant tree (overshadowed by a dominant tree).
“S” = Suppressed tree (completely under the cover of adjacent dominant trees, stunted growth).

Construction Impact “CI”

“H” - High Impact**:** Generally means the tree would not likely survive proposed encroachment

“M” - Moderate Impact: Generally means the tree dripline will be encroached, but could be retained with protection measures.

“L” - Low Impact: Generally means dripline encroachment can be avoided.

Note: Both Common & Latin names are listed the first time a new species appears in the table, otherwise only common names are used.

Tag #	Species	DBH	Health	Structure	Canopy Radius				SS	Comments	CI	Action
					N	*S*	*E*	*W*				
1	Coast Live Oak *Quercus agrifolia*	20 ½“, 15	Good	Fair	N W 25‘				CD	Existing asphalt removed with some grading at edge of dripline	L-M	Save
2	Coast Live Oak	15“, 16", 9", 13"	Good	Fair	25‘	25‘	25‘	25‘	CD	Co-dominant stems at base. Existing asphalt removed with some grading at edge of dripline	M	Save
3	Coast Live Oak	15“, 15½ “, 11½”, 20	Good	Fair			SE 30‘		CD	Co-dominant stems at base. Existing asphalt removed with some grading at edge of dripline	M	Save
4	Coast Live Oak	14½”, 22", 14.	Good	Fair	25‘	30‘ ‘	25‘	30‘	D	Co-dominant stems at base, trunk buried, possibly 2 trees	H	Remove
5	Coast Live Oak	9“, 5"	Fair	Fair	15‘	15‘	15‘	15‘	SD	Co-dominant stems at base, trunk buried.	H	Remove
6	Coast Live Oak	17“, 14½”	Good	Fair	20‘	20‘	20‘	20‘	D	Co-dominant stems at base. Within grade limits for soccer field.	H	Remove
7	Coast Live Oak	10“, 9½”, 6", 6"	Good	Fair	15‘	15‘	15‘	15‘	CD	Co-dominant stems at base. Existing asphalt removed with some grading at edge of dripline	M	Save
8	Coast Live Oak	8“	Good	Fair		12‘			S	Stunted under-story tree	L	Save
9	Coast Live Oak	6½“	Good	Fair		8‘			S	Stunted under-story tree	L	Save

Tag #	Species	DBH	Health	Structure	Canopy Radius				SS	Comments	CI	Action
					N	*S*	*E*	*W*				
10	Coast Live Oak	6½“, 8", 4"	Good	Fair	8‘	8‘	8‘	8‘	CD	Co-dominant stems at base. Existing asphalt removed with some grading at edge of dripline	M	Save
11	Coast Live Oak	5“, 6", 7"	Good	Fair	10‘	10‘	10‘	10‘	CD	Co- dominant stems at base. Existing asphalt removed with some grading at edge of dripline	M	Save
12	Coast Live Oak	7½“	Good	Good	8‘	8‘	8‘	8‘	CD	Within grade limits for soccer field.	H	Remove
13	Coast Live Oak	12“, 6", 8", 5", 7"	Good	Fair	N W 15‘				CD	Within grade limits for soccer field.	H	Remove
14	Coast Live Oak	12½”, 9	Good	Fair		SE 15‘		S W 15‘	CD	Within grade limits for soccer field.	H	Remove
15	Coast Live Oak	11“, 7½”, 11, 13½ “, 10	Good	Fair	20‘	20‘	20‘	20‘	D	Multiple co-dominant stems. Existing asphalt removed with some grading at edge of dripline	M	Save
16	Coast Live Oak	8“, 11½", 6	Good	Fair	NE 15‘		SE 15‘		SD	Existing asphalt removed with some grading at edge of dripline	M	Save

Tag #	Species	DBH	Health	Structure	Canopy Radius N	S	E	W	SS	Comments	CI	Action
17	Coast Live Oak	7", 5"	Good	Fair			SE 12‘		S	Stunted understory tree. Existing asphalt removed with some grading at edge of dripline.	L	Save
18	Coast Live Oak	6½“, 4, 3½”	Good	Fair	10‘	10‘	10‘	10‘	SD	Existing asphalt removed with some grading at edge of dripline.	M	Save
19	Coast Live Oak	7“	Good	Fair	8‘				S	Stunted understory tree.	L	Save
20	Valley Oak Quercus lobata	19“	Fair	Fair	18‘	18‘	18‘	18‘	D	Existing asphalt removed with some grading at edge of dripline.	M	Save
21	Coast Live Oak	11“, 13", 11", 14", 7"	Good	Fair	20‘	20‘	20‘	20‘	D	Within grade limits for soccer field.	H	Remove
22	Coast Live Oak	9“, 5", 5", 8"	Good	Fair			SE 15‘	S W 15‘	SD	Within grade limits for soccer field.	H	Remove
23	Coast Live Oak	9“	Good	Fair			SW 18‘		CD	Existing asphalt removed with some grading at edge of dripline.	M	Save
24	Coast Live Oak	8“, 4", 5", 10½”, 6"	Good	Fair			SE 18‘	S W 15‘	CD	Buried, multi trunk out of the ground. Existing asphalt removed with some grading at edge of dripline.	M	Save

Tag #	Species	DBH	Health	Structure	Canopy Radius				SS	Comments	CI	Action
					N	*S*	*E*	*W*				
25	Coast Live Oak	8“, 6", 7"	Good	Fair			SE 15‘		CD		L	Save
27	Coast Live Oak	7 ½“	Good	Fair	N W 12‘				S	Tree leans 30 degrees to the northwest	H	Remove
28	Valley Oak *Quercus lobata*	17“	Good	Good	22‘	22‘	22‘	22‘	D	Within grade limits for soccer field.	H	Remove
29	Coast Live Oak	7“, 8"	Good	Poor			SE 12 ‘		CD	Included crotch at base. 5" valley oak growing up through the middle of the tree	L	Save
30	Coast Live Oak	7“, 8", 4", 3", 3"	Good	Fair	12‘	12‘	12‘	12‘	CD	Existing asphalt removed with some grading at edge of dripline.	M	Save
31	Coast Live Oak	10“, 9", 9"	Fair	Fair	N W 18‘				SD	Within grade limits for soccer field.	H	Remove
32	Valley Oak	17"	Good	Good	NE 20'		15	15	D	Within grade limits for soccer field.	H	Remove
33	Coast Live Oak	7", 6½”, 9"	Good	Fair			SW 15"’		SD	Tree leans 30% to the southwest. Within grade limits for soccer field.	H	Remove
34	Coast Live Oak	6", 12", 11"	Good	Fair		20‘	15‘	15‘	CD	Within grade limits for soccer field.	H	Remove

Tag #	Species	DBH	Health	Structure	Canopy Radius				SS	Comments	CI	Action
					N	*S*	*E*	*W*				
35	Coast Live Oak	11“, 8½”	Good	Fair		20‘	10‘	15‘	CD	Within grade limits for soccer field.	H	Remove
36	Coast Live Oak	8 ½“, 6½	Good	Fair	15‘	S W 15r ‘			CD	Within grade limits for soccer field.	H	Remove
37	Coast Live Oak	7", 7", 6", 6"	Good	Fair	NE 18‘		SW 15‘		CD	Within grade limits for soccer field.	H	Remove
38	Coast Live Oak	8", 7 ½”, 13"	Good	Fair	NE 18‘		SE 18‘		CD	Within grade limits for soccer field.	H	Remove
39	Coast Live Oak	12", 10"	Good	Poor	NE 18‘		SE 15‘	15'	CD	Co-dominant stems, Included main crotch. Within grade limits for soccer field.	H	Remove
40	Coast Live Oak	11 ½“	Good	Fair			SW 15‘	‘		Within grade limits for soccer field.	H	Remove
41	Black Walnut *Juglans californica*	7“, 4", 4", 6", 5"	Good	Good	15‘	15‘	SW 10‘		D		L	Save
42	Coast Live Oak	8 ½“	Good	Fair	SE 12‘			8‘	SD		L	Save
43	Coast Live Oak	15“	Good	Good	18‘	12‘	8‘	20‘	CD		L	Save

Tag #	Species	DBH	Health	Structure	Canopy Radius				SS	Comments	CI	Action
					N	*S*	*E*	*W*				
44	Coast Live Oak	13“, 12"	Good	Poor	12‘	12‘		S W 20‘	CD	Co-dominant stems, included crotch. Existing asphalt removed with some grading at edge of dripline.	M	Save
45	Coast Live Oak	8“	Fair	Fair	NE 12‘			‘	SD		L	Save
46	Coast Live Oak	10“, 11	Good	Fair			18‘		CD	Existing asphalt removed with some grading at edge of dripline.	M	Save
47	Coast Live Oak	11“	Good	Fair	NE 15‘				CD		L	Save
48	Incense Cedar *Calocedrus decurrens*	10“	Good	Fair	NE 12‘				S	Leans out from under coast live oak	L	Save
49	Coast Live Oak	13 ½“	Good	Fair			22‘		CD	Existing asphalt removed with some grading at edge of dripline.	M	Save
50	Coast Live Oak	11“, 13", 9", 9"	Good	Fair	NE 22‘				CD		L	Save
51	Coast Live Oak	9“	Fair	Fair	NE 12‘				SD		L	Save
52	Coast Live Oak	16“, 14", 13"	Good	Fair	N W 20‘	15‘	SW 23‘		D	Existing asphalt removed with some grading at edge of dripline.	M	Save

Tag #	Species	DBH	Health	Structure	Canopy Radius				SS	Comments	CI	Action
					N	*S*	*E*	*W*				
53	Coast Live Oak	9“	Good	Fair	15‘				SD		L	Save
54	Incense Cedar	9“	Good	Fair	NE 8‘				SD		L	Save
55	Coast Live Oak	32“	Good	Fair	23‘	23‘	23‘	23‘	D	Very nice tree. Existing asphalt removed with some grading at edge of dripline.	M	Save
56	Incense Cedar	13“	Good	Good	15‘	15‘	15‘	6‘	SD		L	Save
57	Incense Cedar	11“, 5"	Good	Good	8‘	8‘	8‘	8‘	D		L	Save
58	Incense Cedar	15“	Good	Good	9‘	9‘	9‘	9‘	D		L	Save
59	Incense Cedar	13“	Good	Good	8‘	8‘	8‘	8‘	D	Grade changes	H	Remove
60	Coast Live Oak	6“, 19", 18", 9:	Fair	Fair	20‘	20‘	20‘	20‘	D	Grade changes	H	Remove
61	Coast Live Oak	10“, 10"	Good	Poor		12‘	12‘		SD	Co-dominant stems, Included main crotch. Remove S/W secondary competing leader to improve structure. Just outside P/L, 10' from bike path.	M	Save
62	Coast Live Oak	9“, 7", 8"	Good	Good	15‘	15‘	15‘	15‘	CD	Co-dominant stems, Included main crotch. Remove S/W secondary competing leader to improve structure. Just outside P/L, 10' from bike path.	M	Save

Tag #	Species	DBH	Health	Structure	Canopy Radius				SS	Comments	CI	Action
					N	*S*	*E*	*W*				
63	Valley Oak	10“	Good	Fair	12‘	12‘	12‘	12‘	D	Proposed abutment for take off of elevated portion of bike path, just a few feet from base of tree. Young tree could be saved with careful construction.	M	Save
64	Coast Live Oak	13“, 11"	Good	Good	15‘	15‘	15‘	15‘	D	Outside P/L. Grading just outside dripline.	L	Save
65	Coast Live Oak	4“, 7", 8", 4"	Fair	Fair	12‘	12‘	12‘	12‘	SD	Outside P/L. Grading just inside dripline.	M	Save
66	Italian Stone Pine *Pinus pinea*	16“	Good	Fair		15‘			D	Outside P/L. Grading just inside dripline. Topped by PG&E	M	Save
67	Coast Live Oak	5 ½“, 5", 4"	Fair	Fair	12‘	12‘	12‘	12‘	S	On P/L Grading just inside dripline. Stunted under-story tree.	M	Save
68	Coast Live Oak	6“, 12", 9"	Good	Fair			12‘	12‘	CD	On P/L Grading just inside dripline.	M	Save
69	Coast Live Oak	9“, 10", 10"	Fair	Fair		15‘	15‘		SD	Within grading limits.	H	Remove
70	Coast Live Oak	9“, 6", 5"	Good	Good	15‘	15‘	8‘	8‘	CD		L	Save
71	Coast Live Oak	7“	Good	Fair			8‘	8‘	SD		L	Save

Tag #	Species	DBH	Health	Structure	Canopy Radius				SS	Comments	CI	Action
					N	*S*	*E*	*W*				
72	Coast Live Oak	6“, 5½”, 5", 5"	Fair	Poor		15‘	8‘	8‘	SD	Included crotch	L	Save
73	Valley Oak	22 ½“	Good	Fair	22‘	22‘	22‘	22‘	D	Located 6' outside of property line- neighbors tree	L	Save
74	Coast Live Oak	9“	Good	Poor	8‘	8‘	8‘	8‘	CD	Co-dominant stems	L	Save
75	Coast Live Oak	8"	Fair	Fair	6'	8'	8'	6'	SD	Significant grading.	H	Remove
76	Coast Live Oak	8“	Fair	Fair	10‘	10‘			S	Significant grading.	H	Remove
77	Coast Live Oak	21“	Good	Good	12‘	12‘	20‘	20‘	D	Significant grading.	H	Remove
78	Coast Live Oak	12", 10", 14"	Good	Fair	10‘	20‘	15‘	15‘	SD	Significant grading. Co-dominant trunks	H	Remove
79	Coast Live Oak	8“, 6", 11", 12", 8", 5"“	Good	Fair	22‘	22‘	15‘		SD	Significant grading. Multiple inclusions at base	H	Remove
80	Coast Live Oak	7", 5"	Good	Fair	15‘				S	Significant grading.	H	Remove
81	Coast Live Oak	19“, 19", 17"	Good	Fair	25‘	25‘	25‘	25‘	D	Co-dominant stems	H	Remove
82	Coast Live Oak	8“	Fair	Poor			18‘	18‘	S	Significant grading. Tree leans at 40 degree angle, potential roof failure	H	Remove
83	Coast Live Oak	8", 8", 7"	Good	Fair		15‘	15‘		SD	Significant grading.	H	Remove

Tag #	Species	DBH	Health	Structure	Canopy Radius				SS	Comments	CI	Action
					N	*S*	*E*	*W*				
84	Coast Live Oak	13“, 14"	Good	Fair	15‘	15‘	15‘	15‘	D	Significant grading.	H	Remove
85	Coast Live Oak	14“, 13", 11", 7"	Good	Poor	15‘	25‘	25‘	25‘	D	Significant grading. Partially uprooted, large fractured limbs, metal stake in trunk	H	Remove
86	Coast Live Oak	9“	Good	Fair		15‘	15‘		SD	Significant grading.	H	Remove
87	Coast Live Oak	12 ½“, 14, 8½”, 13", 12", 6", 10½“	Good	Fair	25‘	25‘	25‘	25‘	D	Significant grading.	H	Remove
88	Coast Live Oak	21“	Good	Fair	25‘	25‘	25‘	25‘	D	Significant grading.	H	Remove
89	Coast Live Oak	16“, 17"	Good	Poor	15‘	20‘	20‘	20‘	SD	Significant grading.	H	Remove
90	Valley Oak	20“	Good	Good	20‘	20‘	20‘	20‘	D	Significant grading.	H	Remove
91	Valley Oak	58“	Fair	Fair- Poor	30‘	35‘	50‘	35‘	D	Over-mature (past 2/3's of expected life span. Estimate >200 yrs) Extensive branch elongation and decay, although still showing decent vigor for age, a portion of the S/W canopy appears drought stressed. Growing through existing house. Maybe 50 +- years left. Will need to consider a 75' radius for tree protection.	L	Save

Tag #	Species	DBH	Health	Structure	Canopy Radius				SS	Comments	CI	Action
					N	*S*	*E*	*W*				
92	Carob *Ceratonia siliqua*	10“, 7", 11", 9", 9", 10", 7", 9", 8", 8"	Poor	Fair	18‘	18‘	18‘	18‘	D	Under Grand Oak. Stunted growth, dieback in canopy. Rangy tree.	H	Remove
93	Stone Pine	25“	Good	Poor		25‘	25‘	20‘	D	Partially uprooting, old rotational soil failure. Saturated soils lost grip on roots.	H	Remove
94	Stone Pine	20“, 20"	Good	Poor		25	25'	20'	CD	Co-dominant, included trunks with a 20 degree lean	H	Remove
95	Stone Pine	20“	Good	Fair	20‘	20‘	20‘	20‘	CD	15 degree lean.	H	Remove
96	Stone Pine	20“, 11"	Good	Good	15‘	20‘	20‘	15‘	D	Only upright stone pine on site. Species typically develop leans, and eventually uproot.	H	Remove
97	Acacia Baileniana	7“, 6½”	Good	Poor	8‘	8‘	8‘	8‘	D	Included stems. Isolated on top of property by old storage containers.	H	Remove
98	Black Walnut	5", 4", 3", 4"	Good	Fair	10'	10'	10'	10'	CD	Trees #98 - #115 are all located along what appears to be a seasonal stream, and are riparian type species.	H	Remove
99	Arroyo Willow *Salix lasiolepis*	9“	Good	Fair	15‘				D	Grading for lower parking lot within dripline.	M	Save

Tag #	Species	DBH	Health	Structure	Canopy Radius				SS	Comments	CI	Action
					N	*S*	*E*	*W*				
100	Black Walnut	6“	Good	Good	8‘	8‘	8‘	8‘	D	Grading for lower parking lot within dripline.	M	Save
101	Purple Leaf Plum	6“, 5", 5", 4"	Fair	Fair	8‘	8‘	8‘	8‘	D	Grading for lower parking lot within dripline.	M	Save
102	Black Walnut	8 ½“	Good	Good	10‘	10‘	10‘	10‘		Falling apart in creek	M	Save
103	Arroyo Willow	8“, 3", 3", 3", 4"	Fair	o	10‘	10‘	10‘	15‘	CD	In creek. Grading for lower parking lot within dripline.	M-H	Save
104	Arroyo Willow	13"	Fair	Fair		15‘			CD	In Creek. Grading for lower parking lot within dripline.	M	Save
105	Arroyo Willow	15", 10"	Fair	Fair	15‘	15‘			DC	In creek. Grading for lower parking lot within dripline.	M	Save
106	Black Walnut	5“, 5", 4", 3"	Fair	Fair	15‘				SD	Conflicts with bridge from lower parking lot.	H	Remove
107	Black Walnut	7“, 10", 5", 4", 3", 6", 7", 6"	Good	Fair	18‘	18‘	18‘	18‘	D	Adjacent to proposed elevated walk abutment. Sensitive species.	H	Remove
108	Black Walnut	7“, 4", 6", 6"	Good	Fair	15‘				SD	Adjacent to bridge.	M-H	Save
109	Black Walnut	9“	Good	Fair		15‘	15‘		CD	Grading for lower parking lot within dripline.	M	Save
110	Coast Live Oak	7““	Good	Fair	6‘	6‘	6‘	6‘	CD		L	Save

Tag #	Species	DBH	Health	Structure	Canopy Radius				SS	Comments	CI	Action
					N	*S*	*E*	*W*				
111	Black Walnut	6“, 5", 3", 5", 6", 6", 5", 5"	Good	Fair	18‘	18‘	18‘	18‘	CD		L	Save
112	Black Walnut	4“,4“,4“, 5", 5", 5", 4“, 4“, 7", 6"	Good	Poor	15‘	15‘	20‘	20‘	D	Multiple poor attachments. Included crotches.	L	Save
113	Willow	12“	Good	Fair			20‘	20‘	CD	Grading for lower parking lot within dripline.	M	Save
114	Black Walnut	5“	Good	Fair			10‘	10‘	S	Grading for lower parking lot within dripline.	M	Save
115	Willow	10“, 18"	Fair	Fair	35‘			35‘		Grading for lower parking lot within dripline.	M	Save
116	Coulter Pine *Pinus coulteri*	30"	Good	Fair	14'	14'	14'	14'	D	Co-dominant leaders	M	Save
117	Monterey Pine *Pinus radiata*	20"	Good	Fair	20'	20'	20'	20'		On neighboring property - hangs 10' over the property	L	Save
118	Iron Bark Eucalyptus *Eucalyptus sideroxylon*	17"	Good	Fair	25'	25'	25'	25'		On neighboring property- 15' from the 2' retainer wall and fill. .	M	Save

TREE RECOMMENDED FOR REMOVAL
#'s 4-6, 12-14, 21, 22, 27, 28, 31-40, 59, 60, 69, 75-90, 93-98, 106, & 107 (48 total)

TREES RECOMMENDED FOR RETENTION
1-3, 7-11, 15-20, 23-26, 29, 30, 41-58, 61-68, 70-74, 99-105, & 108-118 (69 total)

TREES BEING RETAINED THAT WILL HAVE THEIR DRIPLINES ENCROACHED
By either demolition or construction: #'s 1-3, 7, 10, 11, 15, 16, 18, 20, 23, 24, 30, 44, 46, 49, 52, 55, 61-63, 64-68, 91, 100-105,108, 109, 113-116, & 118. (39 total)

DISCUSSION

General
With the exception of the "Grand Oak", most of the oaks being saved are fairly young and in good condition, making them more resilient to proposed encroachments. Approximately 50% of the 39 trees being encroached will be encroached during the demolition phase where existing asphalt or structures within driplines will be removed. Given this is done carefully under arborist supervision, the conditions will ultimately be improved for these trees. Protection fencing at driplines, and the presence of the *Project Arborist* "PA" when driplines must be encroached, shall be the required protocol.

Grand Oak
The Grand Oak is a 58" diameter valley oak that is probably in excess of 200 years old. This tree is unique in its age and structure, however, it is in its twilight years. I suspect the tree could have 50 years or more of life left in it given good cultural care is provided. One of the more structurally unique forms in the tree is that a large dominant westerly scaffold branch extends out a good 30 feet before dipping down to the ground in a self propping manner, and then continuing on another 20' or so. I believe the Native Indians used to call these "Pointer Branches" by which to navigate with.

Currently there is an old home occupying a large portion of the root zone under the north canopy, with the foundation and patio wrapping around the base of the tree. The tree has grown around portions of the structural wood from the eves of the home causing some wounding and decay in the lower crotches. Organic debris build up, critical to the health of mature oaks, has been limited due to the under-story structure and nearby parking lot, and has not been allowed to build up elsewhere to the extent that a healthy forest tree would enjoy.

The photo at the front of this report shows that the west canopy (to the right in the photo) is not as vigorous as the rest of the tree, and that there is some terminal growth that has started to dieback. I suspect the age, surroundings, and current historic drought conditions are all playing a part in the trees condition, not atypical for an over-mature tree.

For this tree to remain viable in the landscape, not only will an expansive protection zone be necessary, but improvements of the root zone through composting, top mulching, and judicial irrigating, will be needed to improve the trees current condition. I understand that the uniqueness of this tree make it a desirable location to visit and hold events, such as weddings

or parties, however, a design that avoids future soil compaction, and limits public liability will need to be employed to successfully protect the tree and those around it.

Great efforts have been made in creating a design that will improve conditions, while allowing some access near the oak without negative effects. My goal and recommendation have been to apply a 150' diameter protection zone or 75' radius around the Grand Oak where no negative impacts will occur, and a 50' radius where simply no encroachment, less demolition, would occur.

While it is critical to remove the existing structure, and concrete footings encompassing the trunk, removal of the remaining northerly foundations may not improve conditions, which has brought up an idea of using a portion of the existing foundation under the northern canopy to support new decking. This would allow access within the 50' range without additional encroachment.

In visually looking under the home, the closest east to west footing I would allow to be left is approximately 20' from the tree. There is a long gap between that footing and the north end of the home of just over 30', that would have to be bridged, however, there are several piers scattered throughout that could be utilized for support as well. All soil areas within and throughout the retained footings would need to be improved as well through composting, mulching, and irrigating prior to any deck work.

RECOMMENDATIONS FOR TREE PRESERVATION

Grand Oak Initial Maintenance ASAP

- I recommend as soon as possible, and well before construction, to irrigate the oak using a portable rotary or oscillating hose end sprinkler covering the entire area within the dripline as well as 20' beyond where soil access is available. Irrigate until the soil is wetted to a minimum depth of 24", and repeat in 6 week intervals until fall leaf drop. Note. A minimum radius of 10' out from the trunk must be kept dry.
- Immediately after the first watering, I recommend the same area be vertically mulched using a 5" drill auger to a depth of 15" on 3' centers and backfill holes with a registered compost such as "*Grover Wonder Grow"* from American Soils in Richmond.
- Follow vertical mulching with a top dressing of 4-5" of chipper mulch to complete the organic amending.
- Prune to clean crown of deadwood >2" in diameter, and selective crown reduction only where scaffolds are heavy and a risk of failing, to be directed by the project arborist.
- Aerial inspect for potential hidden weaknesses and address if necessary.
- Install three props under heavy laterals that extend horizontally off the self propping pointer branch. Propping to consist of 2 ½" diameter heavy guage galvanized piping on a concrete base, with the threaded end caps lagged into the branch. Recommend painting flat black for aesthetics and longevity.
- Assuming first irrigation occurs in August 2014 (recommended), 2nd follow-up irrigation should occur in September.

Pre-construction

- Prior to any construction, a Tree Protection Zone 'TPZ' shall be established around all trees being retained. TPZ's shall be established at or beyond driplines, for tree #91 the "Grand Oak", the TPZ shall be established at 75' from the base of the tree 1.5 x's the dripline. Where soil is available the fencing shall be attached to metal stakes driven firmly (18"+-) into the soil. Staking should be no more than 8' on center. Where asphalt or concrete currently exists, posts on portable stands would be acceptable to allow for asphalt removal and then adjust back to driplines. See Tree Preservation Map for general location of TPZ fencing. PA *Project Arborist* to work with developer for exact locations prior to installation. Fencing shall be posted with signs stating *Tree Protection Zone, Notify Project Arborist Before Encroaching*.
- Any necessary clearance pruning shall be directed by the PA and performed by ISA certified tree workers or certified arborists. All pruning shall comply with ISA Pruning Standards, and Best Management Practices.
- Tree removals #'s 4-6, 12-14, 21, 22, 27, 28, 31-40, 59, 60, 69, 75-90, 93-98, 106, & 107 (48 total), shall be done in a manner to avoid damage to adjacent trees, no ripping out of stumps with excavators where within the dripline of a tree to be retained. Those stumps must be ground out. Wood chips from removals shall be used as mulch under trees to be retained. Mulch thickness shall be 3-5" thick and kept at least 1ft. Clear of trunks.
- General, Demolition, and Grading contractors shall have an on site pre-construction meeting with PA to go over tree protection measures, and confirm TPZ's are in place.

Demolition Phase Grand Oak

- Demo contractor shall be required to have the Project Arborist on site when removing the existing structures, asphalt, and pathways under the tree canopy and out to a minimum radius of 75' out from the base of the oak.
- The foundation and patio around the base of tree will need to be broken up with jack hammers and carefully pulled away from the tree under the Project Arborist's supervision.
- All equipment access within 75' of the tree must operate over trench plates or 1" plywood sheeting (if light enough equipment) on top of the 4" layer of chipper mulch to avoid re-compaction of the soil.
- East-west cross footings and under-story piers beyond 20' from the base of the tree may be utilized for future decking to allow for access under the north canopy without having to increase impact to root zone.
- After home and all necessary foundation is removed, all of the newly accessible soil areas within footings and out to 75' from the base of the tree shall be irrigated, vertically composted and mulched as was done for the initial maintenance phase. Recommend top mulch be 6" thick in this area under the proposed decking to support workman activities, and for longevity.
- Other than the allowed decking that must be able to utilize existing footings and piers, no other encroachments shall be allowed within 50' of the tree. If existing footing cannot be used, then no decking will be allowed within 50' of the tree. Some new piers would be acceptable outside the 50' range only if N/W of the existing home foundation where root activity is likely to be minimal. Shall be supervised by PA>
- From 50' to 75' out from the Grand Oak, no grade changes, trenching or soil compaction is allowed. Section of bathroom pad on grade, and drilling for aerial bike path in this zone

is acceptable under arborist supervision.

General Site Grading & Construction

- Any adjustment of TPZ fencing, for asphalt & structure removal or grading, shall require confirmation with PA.
- To move forward without PA needed on site, TPZ fencing must be re-established at or outside the driplines, or at 75' for the Grand Oak.
- Peeling back asphalt over root zones of oaks along existing driveway shall be monitored by the PA, and done in a manner to avoid ripping or tearing shallow roots just under asphalt.
- Should any roots over 2" in diameter be damaged in the demolition or grading process, the project arborist shall be notified, and roots shall be cleanly pruned, covered and irrigated. If roots cannot be covered with soil, they shall be covered with burlap and wetted 2x's a day until they can be covered.
- TPZ's shall be kept clean and void of equipment, fuels and other toxic materials, with no storage of construction related items, fill soils, or supplies.
- TPZ fencing shall remain in an upright and sturdy manner at all times.
- Recommend having the PA monitor soil moisture and conditions around trees on a monthly basis.

Installation of Aerial Section of Bike Path Through TPZ for Grand Oak

- Installation of piers for bike bridge over TPZ for Grand Oak to be monitored by PA. Drilling equipment must be supported by plating over a bed of mulch when within TPZ, and kept as far from the tree as possible.
- Piers for bridge shall remain outside the primary 50' radius from the tree.

Installation of Storm Drain by Grand Oak

- Storm drain will be 50' from the oak at the closest point. Idealy I would recommend adjusting to outside the 75' perimeter if possible.
- If pipe depth is below 3', horizontal boring would be another low impact possibility.
- If open trenching is the only alterative, than a combination of closely monitored backhoe trenching that may require some hand or airspade digging to get around any roots over 2" in diameter. Must be monitored by the PA.

Installation of Decking Within TPZ for Grand Oak

- The only acceptable location for decking under the Grand Oak is where the existing home is currently located and at least 20 north of the tree. Extending the decking outside the dripline would only be acceptable to the north and west of the retained foundation. Must be monitored by project arborist is within 75' of oak.
- Utilize the two parallel east to west footings at approximately 20' and 50' from tree for decking support. Existing piers within those footings may be utilized as well. Additional footings are not advised. Unless beyond the 50' range and only North and West of the existing foundation.
- Decking crew must meet with project arborist prior to installation.
- Working area for decking crew must be mulched prior to construction.
- The completed decking shall have a perimeter fence on the oak side that connects to a

continual perimeter fence around the oak at the 75' radius to discourage activity off the decking and under the oak. A split rail fence would be acceptable

- **NOTE:** Portion of the canopy over decking seems to be less elongated and better structured for pedestrians to gather, however, other portions of the canopy to the southwest appear to be less reliable, making the perimeter fencing to control pedestrian traffic, not just for tree protection measures, but human protection as well. Tree will need to be monitored over decking periodically for maintenance.

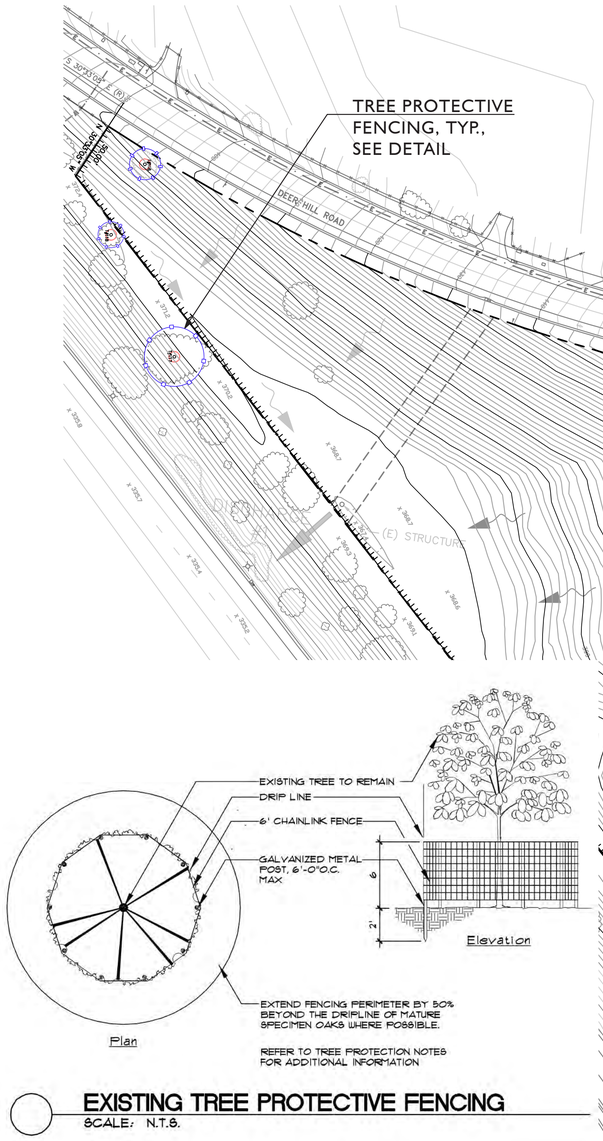
Landscaping Phase

- Landscape contractor shall meet with the project arborist prior to working on site.
- No landscaping or irrigation shall be allowed within 50' of Grand Oak. Only mulch.
- Planting within the 50-75' radius shall be “Oak Compatible”, consisting of natives, and drought tolerant plants. No ground covers, or turf. Planting in this zone should be well spaced and irrigated with a plant specific system such as drip or bubblers. Overhead spray nozzles are not recommended.
- For smaller oaks, recommend avoiding landscaping and irrigation within driplines.
- Pathways must be installed in a root friendly manner when within driplines. Consider using a fine DG like gravel as opposed to pavers or concrete to avoid needing to grade and cut roots.

Please feel free to contact me if there are any questions or concerns.

Respectfully,

John C Traverso
ISA Board Certified Master Arborist #0206-B
ISA Qualified Tree Risk Assessor #994
WCISA CTW #984



EXISTING TREE PROTECTIVE FENCING

SCALE: N.T.S.

LEGEND

- TREE PROTECTIVE FENCING, SEE DETAIL
- EXISTING TREE TO REMAIN
- EXISTING TREE TO BE REMOVED

TREE PROTECTIVE FENCING, TYP., SEE DETAIL

DEER HILL ROAD

TREE PROTECTIVE FENCING, TYP., SEE DETAIL

PLEASANT HILL ROAD

0 30 60 120

GATES +ASSOCIATES

HOMES AT DEER HILL LAFAYETTE, CALIFORNIA

TREE PROTECTION FENCING EXHIBIT
AUGUST 2014

TRAVERSO TREE SERVICE
WHEN IT HAS TO BE DONE RIGHT

Tree Preservation Report

August 12, 2014

Deer Hill Dog Park"
Lafayette, CA 94549

Prepared for:

David Baker
O'Brien Land Company, LLC

By

John C Traverso
BCMA Arborist #0206-B

3354 Freeman Rd, ·Walnut Creek, CA 94595, Telephone (925) 930-7901 · Fax (925) 930-0205

Table of Contents

INTRODUCTION

The proposed dog park, parking lot, and pathways, will necessitate the removal of the existing structures, along with the re-alignment of Deer Hill Rd. and a new access driveway to the proposed parking lot. These improvements will necessitate the removal of several trees. This report shall address the proposed tree encroachments, and make recommendations for tree preservation.

ASSIGNMENT

Per the City of Lafayette's Tree Protection Ordinance, this arborist report shall include the following**.**

1. Tag, identify, and measure trunk diameters of "Protected" trees at 4.5' above grade. Protected trees are all trees that are 6" and larger that are on or overhanging the site.
2. Locate driplines and tree #'s on the site map
3. Identify tree health and structural condition.
4. Based on age, condition, and proposed site improvements, make recommendations for tree preservation during construction.

SUMMARY

A total of 30 trees were inventoried in April of 2014 that fit the cities description as "Protected". Species diversity consisted of 7 valley oaks, 7 bays, 4 elm, 2 pine, 2 plum, and one each of the following: Monterey pine, coast live oak, cedar, pepper, apple, Tamarix, buckeye, redwood & London plane.

The proposed improvements will necessitate the removal of 14 trees, several of which are in poor condition, including one large valley oak that is completely dead. The remaining 16 trees will not have their driplines encroached, and can be retained given the protections measures recommended in this report are adhered to.

LIMITING FACTORS

This report is based on information gathered from my site visits in April and August of 2014, along with the attached site plan by BKF Engineering dated June 11th, 2014. It was assumed the trees and proposed improvements were accurately surveyed.

The health and structure of the trees were assessed visually from ground level. No drilling, root excavation, or aerial inspections were performed. Internal or non-detectable defects may exist, and could lead to part or whole tree failures. Due to the dynamic nature of trees and their environment, it is not possible for arborists to guarantee that trees will not fail in the future.

TREE INVENTORY & ASSESSMENT
The following tree inventory was taken in April of 2014. Tree numbers and field tags are in sequential order from #61 - #90.

Tree Assessment Table Legend
DBH = Trunk diameter based on circumference measured at 4.5' above grade.

Health & Structure
Poor Condition*:* Stunted or declining canopy, poor foliar color, possible disease or insect issues. Severe structural defects that may or may not be correctable. Usually not a reliable specimen for preservation.
Fair Condition*:* Fair to moderate vigor. Minor structural defects that can be correctable. More susceptible to construction impacts than a tree in good condition.
Good Condition*:* Good vigor, and color, with no obvious problems or defects. Generally more resilient to impacts.

Canopy Radius: Branch spread measured from the trunk to the furthest extension of the branch tips, also known as “Drip Line”.

Construction Impact “CI”
“H” - High Impact**:** Generally means the tree would not likely survive proposed encroachment
“M” - Moderate Impact: Generally means the tree dripline will be encroached, but could be retained with protection measures.
“L” - Low Impact: Generally means dripline encroachment can be avoided.

Tag #	Species	DBH	Health	Structure	Canopy Radius				Comments	CI	Action
					N	E	S	W			
61	Siberian Elm *Ulmus pumila*	23	Fair	Fair	25	25	25	25	Deer Hill Rd will be re-aligned slightly (4') closer to tree. Proposed grade will be slightly higher, 6" + or -. Extensive root loss anticipated. Tree has heavy elongated branches and is drought stressed.	H	Remove

Tag #	Species	DBH	Health	Structure	Canopy Radius N	E	S	W	Comments	CI	Action
62	Siberian Elm *Ulmus pumila*	22	Fair	Poor	25	25	25	25	Deer Hill Rd will be re-aligned slightly (4') closer to tree, and will be 6' from trunk. Proposed grade will be slightly higher, 6" + or -. Extensive root loss anticipated. Old failure on south side of tree. Needs pruning. Would benefit from some summer irrigation.	H	Remove
63	Coast Live Oak *Quercus agrifolia*	9	Good	Fair	10	10	10	10	Will be within re-alignment of Deer Hill Rd.. Low dense tree with foliage to the ground.	H	Remove
64	Valley Oak *Quercus lobata*	11	Fair	Good	12	12	12	12	Will be within re-alignment of Deer Hill Rd.. Stunted growth.	H	Remove
65	Valley Oak *Quercus lobata*	23. 20, 24, 22	Dead	Poor	-	-	-	-	Dead	N/A	Remove
66	California Bay Umbellularia *californica*	6.5	Good	Good	7	7	7	7	Proposed parking lot and grade limits 8' from base of tree. Nice young tree.	L-M	Save Fence off at dripline.

Tag #	Species	DBH	Health	Structure	Canopy Radius				Comments	CI	Action
					N	E	S	W			
67	Incense Cedar *Calocedrus decurrens*	10.5	Poor	Fair	8	8	8	8	Poor condition tree within proposed access to dog park. Drought stressed.	H	Remove
68	Valley Oak *Quercus lobata*	29	Good	Fair	18	30	25	25	Within “Big Dog” area. Root crown is buried, Heavy end weighted branches need pruning.	L	Save Uncover root crown, prune, and mulch.
69	Valley Oak *Quercus lobata*	23	Good	Fair	25	30	0	20	Within “Big Dog” area. Nice Tree.	L	Save
70	Valley Oak *Quercus lobata*	19	Fair	Fair	10	20	20	20	Within “Big Dog” area. Root crown is buried.	L	Save Uncover root crown.
71	Valley Oak *Quercus lobata*	24	Good	Fair	30	25	25	25	Within “Big Dog” area. Nice tree	L	Save
72	California Bay Umbellularia *californica*	27, 63	Good	Fair	55	60	20	40	Proposed parking lot 40' south of tree. One small Ganoderma conk on west side at base of trunk. Indicating some decay inside. Nice looking tree, however, I recommend further examination if targets are planned within the dripline. Parking lot 15-20' outside DL.	L	Save

Tag #	Species	DBH	Health	Structure	Canopy Radius				Comments	CI	Action
					N	E	S	W			
73	California Bay Umbellularia *californica*	20.5	Fair-poor	Fair	10	20	15	20	Proposed parking lot 40' south of tree. Large buttress root decayed. Dieback in canopy.	L	Save Prune to remove dieback.
74	California Bay Umbellularia *californica*	17.5, 17	Fair-poor	Fair-poor	0	30	0	0	Proposed parking lot 30' south of tree. Leaning horizontally to the east. Dieback in canopy.	L	Save Prune to remove dieback, and reduce end weight.
75	California Bay Umbellularia *californica*	24, 25	Fair-Poor	Poor	0	30	20	25	Proposed parking lot 25' south of tree. Over 20% of canopy has died back. Decay in main stems.	L	Save Prune to remove dieback and limit liability.
76	California Bay Umbellularia *californica,*	15	Poor	Poor	0	0	30	30	Proposed parking lot 14' south of tree. Over 30% of canopy has died back. Horizontal lean to the S/W.	M	Remove Liability to parking lot.
77	California Pepper *Schinus molle*	18, 14, 7, 14	Fair	Fair	10	20	22	15	Within proposed parking lot. Drought stressed. One 14" leader growing horizontally on ground.	H	Remove
78	Apple	15.5	Fair	Poor	12	12	12	12	Within proposed parking lot. Old tree in its twilight years.	H	Remove
79	Plum	12	Poor	Poor	6	6	6	6	Within proposed parking lot. In final stages of decline.	H	Remove

Tag #	Species	DBH	Health	Structure	Canopy Radius				Comments	CI	Action
					N	E	S	W			
80	Tamarix	5, 4, 4	Poor	Poor	8	8	5	10	Within proposed parking lot. Mostly sucker shoots from old stump.	H	Remove
81	California Bay Umbellularia *californica*	9	Good	Good	6	6	6	6	Well clear of construction. Nice young tree.	L	Save
82	California Buckeye *Aesculus californica*	4, 5, 5	Good	Good	10	0	15	12	Well clear of construction. Low branching, healthy tree.	L	Save
83	Coast Redwood *Sequoia sempervirens*	7, 18, 20, 18	Fair	Fair	12	12	12	12	Well clear of construction. Drought stressed. Needs irrigation.	L	Save
84	Monterey Pine *Pinus radiata*	30	Poor	Poor	25	25	25	25	Well clear of construction. Declining tree that is falling apart.	L	Save for now. Will likely die due to age in the next few years.
85	London Plane *Platanus acerifolia*	34	Good	Good	30	30	25	30	Well clear of construction. Nicely shaped tree.	L	Save
86	Siberian Elm *Ulmus pumila*	13, 8, 10, 4	Fair	Fair	15	15	15	15	Proposed grading limits approximately 10' outside dripline. Located just outside P/L. Drought stressed. Needs irrigation. Neighbors tree.	L	Save Needs irrigating.

Tag #	Species	DBH	Health	Structure	Canopy Radius N	E	S	W	Comments	CI	Action
87	Monterey Pine *Pinus radiata*	21	Fair-poor	Fair	15	20	15	15	Neighbors tree, well clear of construction. In declining years. Needs irrigation.	L	Save
88	Siberian Elm *Ulmus pumila*	5, 6, 7, 4, 3, 2	Good	Poor	12	12	12	12	Within proposed driveway. Poorly structured with multiple co-dominant stems at grade.	H	Remove
89	Valley Oak *Quercus lobata*	8, 4	Good	Fair	8	8	8	8	Within proposed driveway. Co-dominant leaders.	H	Remove
90	Plum	11	Dead	Dead	-	-	-	-	Dead	H	Remove

TREES RECOMMENDED FOR REMOVAL
#'s 61-65, 67, 76-80, & 88-90 (14 total)

TREES RECOMMENDED FOR RETENTION
#'s 66, 68-75, & 81-87 (16 total)

TREES BEING RETAINED THAT WILL HAVE THEIR DRIPLINES ENCROACHED
None

DISCUSSION

With the exception of tree #66 a 7" bay, the trees recommended for retention are well clear of improvements, and can be fenced off at their driplines for tree protection measures. Due to the steepness of the terrain, it is my opinion that only the downhill side driplines for trees #68-75 needs to be fenced off. Trees #81-85 are beyond the scope of potential encroachment and behind trees 68-75, and in my opinion, do not need tree protection fencing. Tree #86 appears to be on the neighbors property with a portion of the canopy extending over the project site. I'm not exactly sure to the extend of canopy over site, but that portion should be fenced off to prevent parking or other encroachments during construction.

Tree #66

The proposed parking lot is just outside the dripline and only 8' from the base of this tree. Although grade limits and construction are outside the dripline, root encroachment will likely occur. I recommend fencing off at dripline with chain-link fencing, mulching the tree protection zone within fence, and irrigate periodically during construction (monthly in summer months). This is a young healthy tree, which will give it more resiliency to construction impact.

RECOMMENDATIONS FOR TREE PROTECTION

Pre-construction

- Remove trees # 61-65, 67, 76-80, & 88-90, and spread chipper mulch under trees to be retained that are just outside the construction zone (#'s 66, & 68-75).
- An arborist shall Remove fill soil from buried crowns on trees #68 & 70.
- Project arborist shall direct pruning of trees #68, 73, 74 & 75 to remove deadwood & dieback over 2" in diameter, and to lighten end-weight of heavy elongated scaffolds on downhill side of canopies for public safety.
- Establish *Tree Protection Zones*, "TPZ's", by installing 6' high chain-link fencing completely around tree #66 at the dripline, and on the downhill side of trees 68-75 at their driplines. Install chain-link fencing around tree #86 to encompass the portion of the dripline that extends over the project site.

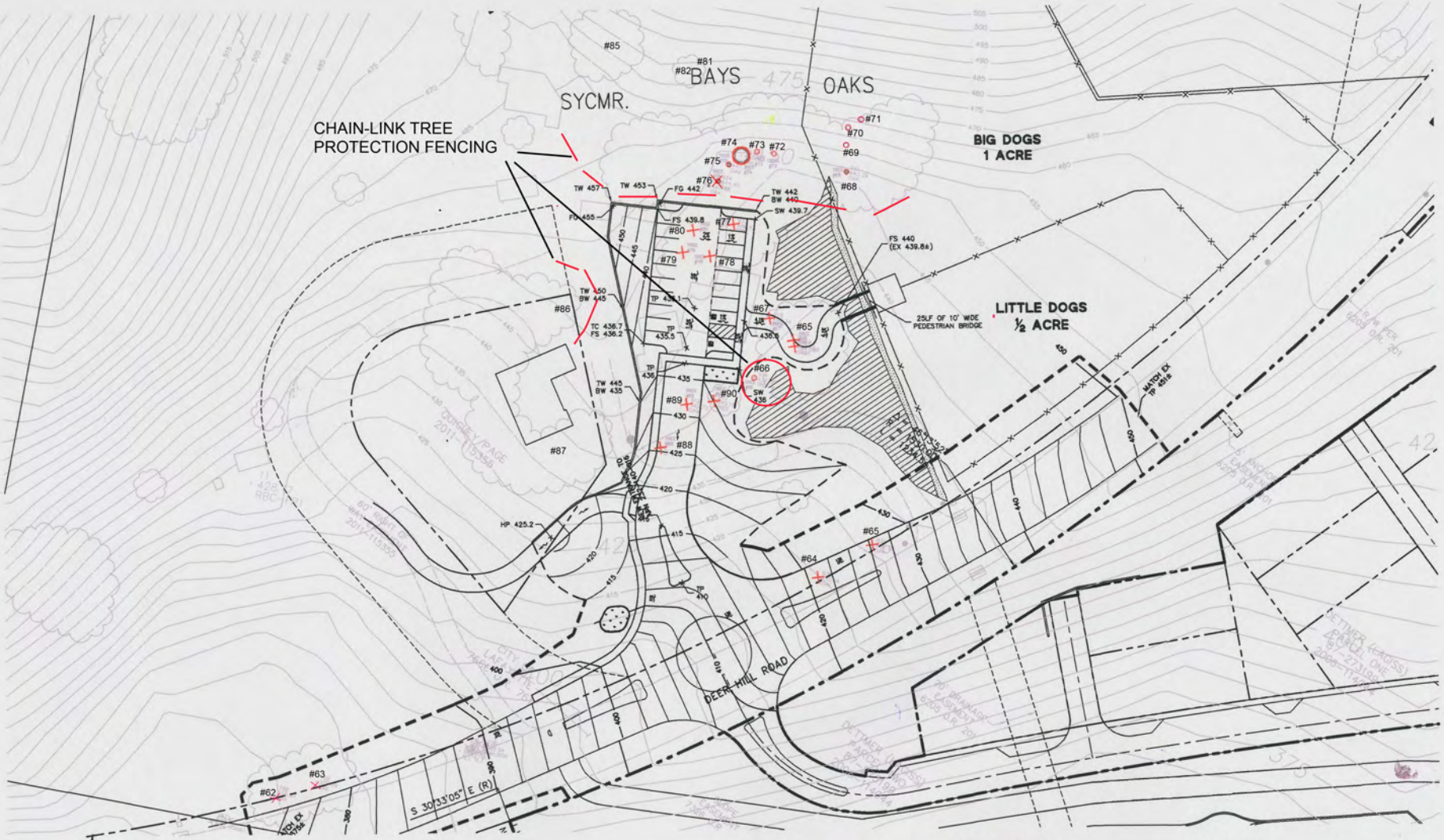
Construction Phase

- TPZ's shall be kept clean and void of equipment, fuels and other toxic materials, with no storage of construction related items, fill soils, or supplies.
- Any adjustment or encroachment of TPZ fencing, shall require confirmation with project arborist prior to action.
- Recommend irrigating bay tree #66, that's close to the parking lot, on a monthly basis during summer months when grading or construction are in process.
- TPZ fencing shall remain in an upright and sturdy manner at all times until improvements are completed and the project arborist has released it for removal.

Thank you for the opportunity to provide this assessment, and please feel free to contact me if there are any questions or concerns.

Respectfully,

John C Traverso
BCMA Arborist #0206-B



GRAPHIC SCALE

(IN FEET)
1 inch = 30 ft.

THE HOMES AT DEER HILL – LAFAYETTE
DOG PARK
6/11/14

ABBREVIATIONS

BW	BOTTOM OF WALL
EX	EXISTING
FG	FINISHED GRADE
FS	FINISHED SURFACE
HP	HIGH POINT
SW	SIDEWALK
TP	TOP OF PAVEMENT
TW	TOP OF WALL

LEGEND

- EXISTING WETLANDS
- EXISTING SWALE
- ⊗ EXISTING TREES TO BE REMOVED
- FLOWLINE
- PROPOSED BIORETENTION AREA

TRAVERSO TREE SERVICE
WHEN IT HAS TO BE DONE RIGHT

April 15, 2014

Norm Dyer
c/o LCA Architects
245 Ygnacio Valley Road
Walnut Creek, CA 94596

RE: The "Dog Park" Tree Inventory of Deer Hill Road

Dear Norm,

Per your request this tree inventory assessment for the Deer Hill Rd. Dog Park location, shall include the following:

- All trees with trunk diameters of 6" or greater were numerically tagged.
- Tagged numbers were applied to an overhead google site map, showing the general location and dripline of each tree.
- Each tree trunk diameter was measured at 4.5' above grade. If multiple trunks were originating at 4.5' and distorting the measurement, the diameter was taking below the crotch at the venturi point (per tree appraisal guidelines).
- Based on tree health & structure ratings, they were given a good, fair, or poor retention rating.

Introduction
The site contains 30 trees that were tagged with the number sequence of 61-91. Species diversity consisted of 8 native oaks, 6 California bay laurel, 4 Siberian elms, 2 Monterey pines, 2 plums, and 1 each - buckeye, liquidambar, incense cedar, apple, tamarix, coast redwood, and London plane.

Tree conditions varied from good to dead. Trees have been ignored for many years, which is clearly apparent by several of the planted non indigenous trees that are suffering of drought stress. In addition, one very large valley oak has been dead for years. I suspect due to past site use, and potentially grading activities.

3354 Freeman Rd. Walnut Creek, CA 94595, Telephone (925) 930-7901 · Fax (925) 930-0205

TREE INVENTORY & ASSESSMENT TABLE

DBH = Trunk diameter based on circumference measured at 4.5' above grade.
Poor Condition: Stunted or declining canopy, poor foliar color, possible disease or insect issues. Severe structural defects that may or may not be correctable. Usually not a reliable specimen for preservation.
Fair Condition: Fair to moderate vigor. Minor structural defects that can be correctable. More susceptible to construction impacts than a tree in good condition.
Good Condition: Good vigor, and color, with no obvious problems or defects. Generally more resilient to impacts.
Retention Rating:
Good - Natives or drought tolerant trees that are in fair to good condition.
Fair - Non natives that are in fair to good condition, but will need supplemental irrigation and pruning to thrive.
Poor - Trees in poor condition.

Tag #	Species	DBH	Health	Structure	Canopy Radius				Retention Rating	Comments
					N	E	S	W		
61	Siberian Elm *Ulmus pumila*	23	Good	Fair	25	25	25	25	Fair -Good	Heavy elongated branches that need pruning. Would benefit from some summer irrigation.
62	Siberian Elm *Ulmus pumila*	22	Good	Poor	25	25	25	25	Fair - good	Old failure on south side of tree. Needs pruning. Would benefit from some summer irrigation.
63	Coast Live Oak *Quercus agrifolia*	9	Good	Fair	10	10	10	10	Good	Low dense tree with foliage to the ground.
64	Valley Oak *Quercus lobata*	11	Fair	Good	12	12	12	12	Good	Stunted growth.

Tag #	Species	DBH	Health	Structure	Canopy Radius				Retention Rating	Comments
					N	E	S	W		
65	Valley Oak *Quercus lobata*	23. 20, 24, 22	Dead	Poor	-	-	-	-	Dead	Dead
66	California Bay Umbellularia *californica*	6.5	Good	Good	7	7	7	7	Good	Nice young tree.
67	Incense Cedar *Calocedrus decurrens*	10.5	Poor	Fair	8	8	8	8	Poor	Drought stressed.
68	Valley Oak *Quercus lobata*	29	Good	Fair	18	30	25	25	Good	Root crown is buried, Heavy end weighted branches need pruning.
69	Valley Oak *Quercus lobata*	23	Good	Fair	25	30	0	20	Good	Nice Tree.
70	Valley Oak *Quercus lobata*	19	Fair	Fair	10	20	20	20	Good	Root crown is buried.
71	Valley Oak *Quercus lobata*	24	Good	Fair	30	25	25	25	Good	Nice tree
72	California Bay Umbellularia *californica*	27, 63	Good	Fair	55	60	20	40	Good	One small Ganoderma conk on west side at base of trunk. Indicating some decay inside. Nice looking tree, however, I recommend further examination if targets are planned within the dripline.

Tag #	Species	DBH	Health	Structure	Canopy Radius N	E	S	W	Retention Rating	Comments
73	California Bay Umbellularia *californica*	20.5	Fair-poor	Fair	10	20	15	20	Fair-poor.	Large buttress root decayed. Dieback in canopy.
74	California Bay Umbellularia *californica*	17.5, 17	Fair-poor	Fair-poor	0	30	0	0	Poor	Leaning horizontally to the east. Dieback in canopy.
75	California Bay Umbellularia *californica*	24, 25	Poor	Poor	0	30	20	25	Poor	Over 20% of canopy has died back. Decay in main stems.
76	California Bay Umbellularia *californica,*	15	Poor	Poor	0	0	30	30	Poor	Over 30% of canopy has died back. Horizontal lean to the S/W.
77	California Pepper *Schinus molle*	18, 14, 7, 14	Fair	Fair	10	20	22	15	Fair	Drought stressed. One 14" leader growing horizontally on ground.
78	Apple	15.5	Fair	Poor	12	12	12	12	Fair-poor	Old tree in its twilight years.
79	Plum	12	Poor	Poor	6	6	6	6	Poor	In final stages of decline.
80	Tamarix	5, 4, 4	Poor	Poor	8	8	5	10	Poor	Mostly sucker shoots from old stump.
81	California Bay Umbellularia *californica*	9	Good	Good	6	6	6	6	Good	Nice young tree.

Tag #	Species	DBH	Health	Structure	Canopy Radius				Retention Rating	Comments
					N	E	S	W		
82	California Buckeye *Aesculus californica*	4, 5, 5	Good	Good	10	0	15	12	Good	Low branching, healthy tree.
83	Coast Redwood *Sequoia sempervirens*	7, 18, 20, 18	Fair	Fair	12	12	12	12	Fair	Drought stressed. Needs irrigation.
84	Monterey Pine *Pinus radiata*	30	Poor	Poor	25	25	25	25	Poor	Declining tree that is falling apart.
85	London Plane *Platanus acerifolia*	34	Good	Good	30	30	25	30	Good	Nicely shaped tree.
86	Siberian Elm *Ulmus pumila*	13, 8, 10, 4	Fair	Fair	15	15	15	15	Fair	Drought stressed. Needs irrigation.
87	Monterey Pine *Pinus radiata*	21	Fair-poor	Fair	15	20	15	15	Poor	In declining years. Needs irrigation.
88	Siberian Elm *Ulmus pumila*	5, 6, 7, 4, 3, 2	Good	Poor	12	12	12	12	Fair-poor	Poorly structured with multiple co-dominant stems at grade. Ok if clear of targets.
89	Valley Oak *Quercus lobata*	8, 4	Good	Fair	8	8	8	8	Good	Co-dominant leaders.
90	Plum	11	Dead	Dead	-	-	-	-	Dead	Dead

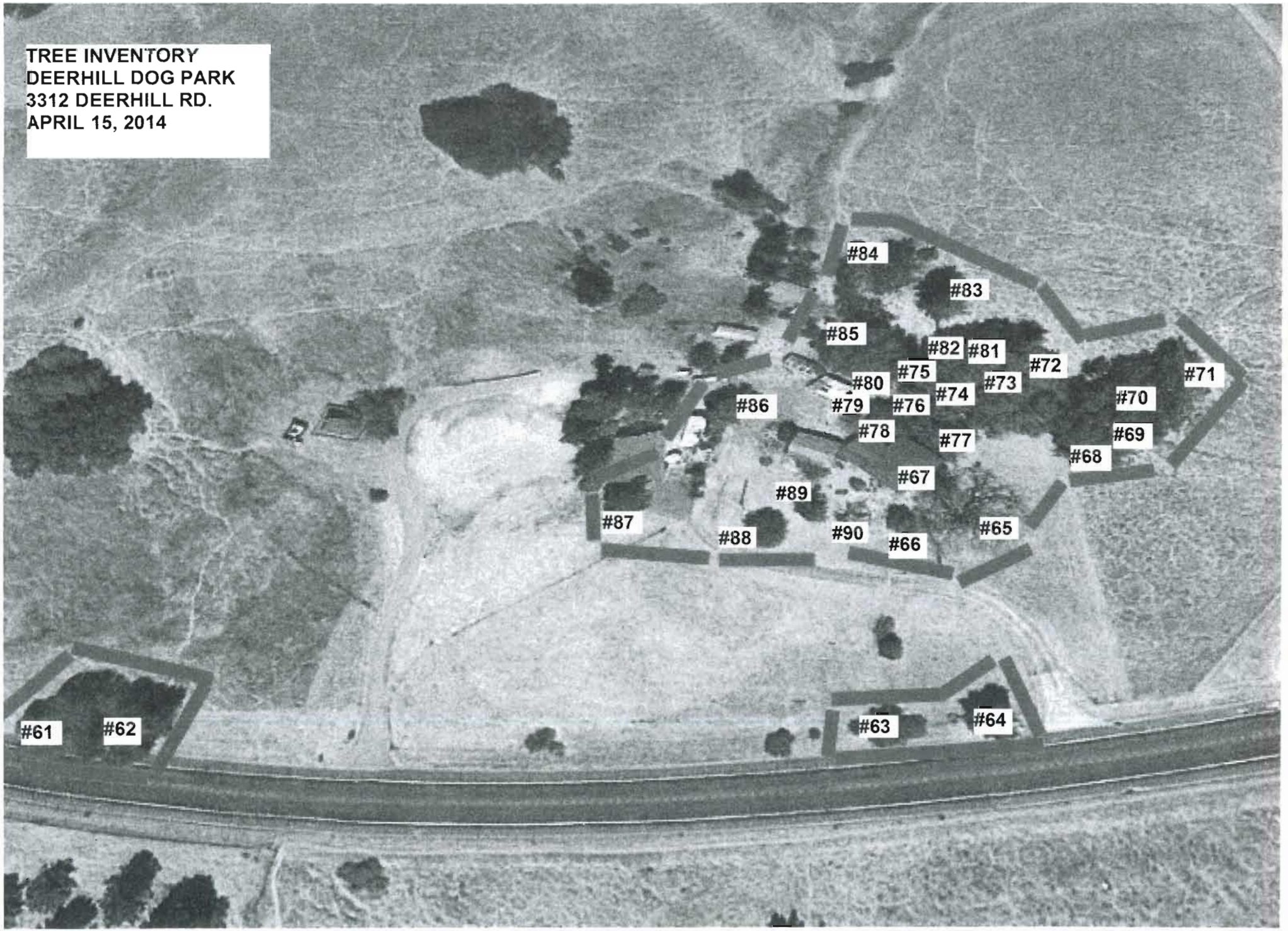
Trees Worthy of Preservation
#'s 63, 64, 66, 68, 69, 70, 71, 72, 81, 82, 85, & 89

Trees Worthy of Preservation but Would Need Supplemental Irrigation & Structural Pruning to Thrive
#'s 61, 62, 77, 83, 86, & 88

Trees Un-worthy of Preservation
#'s 65, 67, 73, 74, 75, 76, 78, 79, 80, 84, 87, & 90
Thank you for the opportunity to provide this assessment, and please feel free to contact me if you have any questions or concerns.

Sincerely,

John C Traverso
BCMA Arborist #0206-B
Tree Risk Assessor #994


TREE INVENTORY
DEERHILL DOG PARK
3312 DEERHILL RD.
APRIL 15, 2014
#84
#83
#85
#82
#81
#72
#71
#75
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#63
#64

TRAVERSO TREE SERVICE
WHEN IT HAS TO BE DONE RIGHT

June 12, 2014

David Baker
dave@obrienlc.com

Re: Deer Hill Homes Grand Oak Bridge

To whom it may concern,

This memo is a confirmation that I have reviewed the many changes and plans that have been proposed to safely encroach the large grand oak #61. The latest bridge proposal sent to me from Kevin Wong of BKF on 6/12/14 is by far the best option I've looked at, and I feel it is appropriate for tree preservation.

The bridge is located outside the primary protection zone of 50' and will bridge roots and be minimal encroachment in the secondary 50-70' protection radius.

I recommend mulching prior to bridge installation and to dig the first 3' for the piers by hand under an arborist supervision where within the protection zone. Should woody roots are encountered, piers shall be adjusted slightly to miss roots.

This is a brief assessment and I recommend a full tree protection plan for the Deer Hill development and Dog Park be produced by an arborist.

Respectfully,

John C Traverso
BCMA Arborist #0206-B