Appendix E

Biological Resources Assessment

E1

Special Status Plant Species Survey Report

Special Status Plant Species Survey Report

UC Berkeley Hill Campus Fire Hazard Reduction
University of California, Berkeley

October 2019

Prepared for:

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1.0 Introduction

On behalf of the University of California, Berkeley (UCB), Condor Country Consulting, Inc. (CCCI) performed focused rare plant surveys during three blooming season periods between March 4 and August 15, 2019 for the UC Berkeley Hill Campus Fire Hazard Reduction project. This survey and report was prepared in support of a California Environmental Quality Act (CEQA) document that UCB's Facilities Services is preparing for UC Berkeley Hill Campus Fire Hazard Reduction project. The botanical surveys found one species of plant, Western leatherwood (*Dirca occidentalis*) at 26 locations that is listed by the California Native Plant Society (CNPS) as rare in California and moderately threatened (CNPS 1B.2 ranking). No federally or State listed special status species were located. The term "special status species" includes species federally and State listed and proposed for listing as "Threatened or Endangered, Candidate, or Species of Concern". Nine vegetation communities were mapped within the Project Area.

1.1 Project Location and Description

The project is located in the East Bay Hills above the cities of Berkeley and Oakland, in the heavily vegetated 800-acre Hill Campus of the UCB. The project is primarily bounded by Grizzly Peak Road to the north and east, Centennial Drive to the west, and Claremont Avenue to the south. The UCB main campus and the Lawrence Berkeley National Lab (LBNL) are west of the Project Area (Figures 1 and 2).

The University of California Berkeley (UCB) proposes to treat vegetation in 250 acres of the Hill Campus to reduce wildfire hazard and potential damage to approximately 3,000 habitable structures and institutions of international importance as well as improved life safety for 3,000-plus residents and approximately 1,000 day-time users of the Hill Campus, and increasing the reliability of the 150 KV transmission line, the sole power source to the campus and Lawrence Berkeley National Laboratory. The campus will target areas forested with flammable eucalyptus and high fuel volume, and areas within 100 feet of roads, fire-trails and buildings. Area treatments will thin the forest to reduce fuel volume and fire hazard. Roadside treatments will both reduce fire intensity along the road and remove hazardous trees likely to block the road. Defensible space will be installed within 100 feet of buildings.

Vegetation will be treated through the combination of the use of machinery and hand labor. Trees would be cut using hand tools and a mechanized feller buncher. To prevent re-sprouting, an herbicide will be applied by a licensed California Qualified Applicator to the cambium ring of eucalyptus and acacia stumps. Felled trees will be skidded by rubber-tired or tracked vehicles along skid trails to landings. Selected tree trunks will be left on the slope. At the landings, trees

would be stored or chipped using a grapple-fed chipper or a tracked chipper. Whole trees will be fed into the chipper and pulled through the blades by a conveyor belt and feed wheel. Chips will be both spread on-site and transported to a gasifier to supply electricity directly to the campus. Along roads and buildings, lower limbs of trees will be pruned, understory vegetation shortened and grass mowed.

2.0 Environmental Setting

The Project Area is located in the East Bay Hills located above the University of California, Berkeley (UCB) campus and the Lawrence Berkeley National Lab (LBNL). Initial vegetation and aquatic community surveys were conducted in 2010 as part of the Federal Emergency Management Agency (FEMA) East Bay Hills Hazardous Fire Risk Reduction Project. Follow-up plant and vegetation surveys were conducted during the late winter, spring, and summer of 2019 in support for a California Environmental Quality Act (CEQA) document in preparation of the next phase of the UC Berkeley Hill Campus Fire Hazard Reduction grant from the California Department of Forestry and Fire Protection (Cal Fire). A total of nine vegetation communities were identified inside the Project Area and named according to the conventions used in the original FEMA biological assessment (FEMA 2012), as well as those described in *A Manual of California Vegetation* (Sawyer et al. 2009), *California Vegetation* (Holland 1995), *USFWS National Wetlands Inventory* (USFWS 2019b) and Cowardin (Cowardin et al., 1979). The vegetation communities include: coastal scrub (xeric), coniferous forest/non-native coniferous forest, coyote brush scrub, developed/disturbed/landscaped, eucalyptus forest, oak-bay woodland, riparian woodland, riverine features, and successional grassland.

3.0 Methods

3.1 Literature and Data Review

CCCI biologist Ted Robertson conducted a literature search prior to field visits. The literature search included a review of the CDFW California Natural Diversity Database (CNDDB) for records of special status plants species within ten miles of the project sites (CDFW 2019) and aerial imagery of the project location (Google Earth Pro 2019). The Biological Assessment (BA) and the Biological Opinion (BO) for the Project Area was referenced to insure that the focused plant searches included two key federally listed species that were identified to occur at adjacent FEMA- and UC-funded project sites, the pallid manzanita (*Arctostaphylos pallida*) and the Presidio clarkia (*Clarkia franciscana*). Mr. Robertson evaluated all species identified in the CNDDB search for their potential to occur within the Project Area, based on habitat suitability. Mr. Robertson compiled a list of all special status species with potential to occur within ten miles of the Project Area using the January 2019 California Natural Diversity Data Base (CNDDB) data using search parameters that included their regulatory status, local distribution and bloom

periods (Appendix A – Figures 3a and 3b, Appendix B, and Appendix C). In this report, "special- status" refers to species that meet one or more of the following criteria:

- species listed by the USFWS or CDFW as threatened or endangered, proposed for listing, or candidates for listing;
- plant species that qualify as rare, threatened, or endangered as defined in Section 15380 of the California Environmental Quality Act (CEQA) Guidelines; and
- plant species included on the CDFW Rare Plant Rank as 1A, 1B, or 2 (formerly the California Native Plant Society Rank).

3.2 Botanical Study Methods

CCCI botanist Ted Robertson conducted background literature research and led a team of biologists to perform field surveys of the entire Project Area (Table 1). Mr. Robertson holds a California Department of Fish and Wildlife (CDFW) Voucher Collecting Permit for special status plants (Permit Number 2081(a)-19-015-V). CCCI botanists conducted surveys in accordance with California Native Plant Society's Botanical Survey Guidelines (CNPS 2001), CDFW Protocol for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities (CDFW 2009), and U.S. Fish and Wildlife Service (USFWS) Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed and Candidate Plants (USFWS 1996).

Field surveys were conducted on foot and covered all areas within the Project Area except for areas with dense stands of poison oak or steep areas with slopes greater than 45 degrees. These areas were visually searched using binoculars along the perimeters of these inaccessible portions. All habitats were mapped and checked for special-status plant species (Figure 4). Focused botanical surveys consisted of walking meandering transects, up to 50 feet apart depending on the topography or subject plant communities throughout the project sites, and documenting all plants observed (Appendix D). Plant species in bloom or otherwise recognizable were identified to a level necessary to determine their regulatory status.

Teams of two CCCI botanists conducted botanical and vegetation surveys between March 2018 and August 2019, for all federally listed special-status plant species with the potential to occur in the project sites based upon the CNDDB data search using a 10-mile buffer radius from the project boundaries (Table 1). The surveys were floristic in nature because CCCI botanists identified all species present, not only dominant or rare species, and also inventoried every plant observed to genus, species, subspecies, or variety (Baldwin et al. 2012, Erter and Naumovich 2013). Three sets of survey periods were required to capture all of the blooming and fruiting seasons of special status species with the potential to occur within the project site (Appendix C). Woody perennial species such as the pallid manzanita, a shrub with distinctive bark and leaves, can be identified year-round, outside of their winter blooming period.

Table 1. Survey Areas and Dates, Personnel

Survey Bloom Period	Area Surveyed	Date	CCCI Personnel
Late winter blooming period	Campus Hill Area, Claremont Canyon	March 4, 12-13, 2019	Ted Robertson Grayson Sandy
Mid-spring blooming period	Campus Hill Area, Claremont Canyon	May 6-8, 2019	Ted Robertson Steven Cochrane
Mid-summer blooming period	Campus Hill Area, Claremont Canyon, Lower Centennial Drive	August 13-15, 2019	Ted Robertson Steven Cochrane

3.3 Vegetation Community and Wildlife Habitat Classification

Plant identification was based upon the *Second Edition of The Jepson Manual* (Baldwin et al. 2012). Vegetation communities were identified using a combination of the characterizations in *A Manual of California Vegetation* (Sawyer et al. 2009) and the land cover types identified by *California Vegetation* (Holland 1995). Final vegetation community types were aligned with those described in the 2012 Biological Assessment for the Hazardous Fire Risk Reduction for the East Bay Hills (FEMA 2012). Land cover types were classified by disturbance, dominant species, overall species composition, and affinity for water or various substrates. The minimum mapping unit for this project was defined as an area of 200 square feet. Wetlands and other aquatic habitats were classified using the USFWS National Wetlands Inventory (NWI) Classification System for Wetland and Deepwater Habitats, or "Cowardin class" (Cowardin et al., 1979 and USFWS 2019b).

3.4 Limitations

Seasonal variations in temperature and rainfall can affect botanical surveys. These environmental factors affect annual and biennial plant species that may not grow or flower every season. If a plant species does not grow or flower in a particular year, at a particular site, the ability to detect or identify it is compromised; therefore, botanical survey results may under-represent the suite of species that actually occur there. Those areas that were inaccessible by foot because of steep terrain or thick patches of poison oak (*Toxicodendron diversilobum*) were thoroughly scanned using binoculars.

4.0 Habitats Within the Project Area

As shown on Figure 4 (Appendix A), terrestrial habitat types within the study area include:

- Coastal scrub
- Coniferous forest/non-native coniferous forest
- Coyote brush scrub
- Developed/disturbed/landscaped
- Eucalyptus forest
- Oak-bay woodland
- Riparian woodland
- Riverine features
- Successional grassland.

A general discussion of each habitat type is provided below.

Coastal Scrub

Northern coastal scrub communities are characterized by relatively open to dense woody shrub cover and an absence of trees. Saplings of oak species (*Quercus* spp.), California bay (*Umbellularia californica*), and Monterey pine (*Pinus radiata*) trees sometimes emerge from the shrub canopy cover. The Project Area is dominated by shrubs and forbs adapted to relatively xeric conditions. Coyote brush (*Baccharis pilularis*) is the dominant shrub in xeric coastal scrub communities in the Project Area. Other shrub species present include California sagebrush (*Artemisia californica*), toyon (*Heteromeles arbutifolia*), silver bush lupine (*Lupinus albifrons*), poison oak (*Toxicodendron diversilobum*), and sticky monkey-flower (*Diplacus aurantiacus*). Scattered coast live oak (*Quercus agrifolia*), California bay, and Monterey pine trees also occur in this community. Non-native invasive species commonly observed in coastal scrub include French broom (*Genista monspessulana*), poison hemlock, and fennel (*Foeniculum vulgare*). Coastal scrub communities dominated by species adapted to more mesic (i.e., moist) conditions are also present in the Project Area, although less common than xeric coastal scrub communities. The dominant plant species observed in mesic coastal scrub include California blackberry (*Rubus ursinus*), thimbleberry (*Rubus parviflorus*), blue elderberry (*Sambucus nigra* ssp. *caerulea*), and California hazelnut (*Corylus cornuta*). Non-native invasive species in this community include poison hemlock, Italian thistle, and Himalayan blackberry (*Rubus armeniacus*). Scattered coast live oak and California bay, as well as madrone (*Arbutus menziesii*) and bigleaf maple (*Acer macrophyllum*) are also occasionally present in this community.

Coniferous Forest/Non-native Coniferous Forest

The coniferous forest community in the Project Area is dominated by Monterey pine, which is native only to San Cruz, Monterey, and San Luis Obispo counties and was planted in the East Bay Hills in the early 1900s. Similar to other woodland and forest communities, the understory is typically sparse, and the ground is covered mostly by pine needles. In more open canopied Monterey pine forests, native shrubs species such as California blackberry, coyote brush, and poison oak are common. Non-native species commonly observed in Monterey pine forests include erect veldt grass (*Ehrharta erecta*) and poison hemlock. Mature groves of varying densities of Monterey pine occur throughout the Project Area, often with eucalyptus (*Eucalyptus globulus*), coast live oak, and California bay trees.

Coyote Brush Scrub
Coyote brush scrub is a successional stage from grassland to scrub and commonly occurs where grazing or fire has been discontinued or suppressed. Coyote brush scrub is distinct from coastal scrub by the density of coyote brush and low cover of other shrubs species, such as California sagebrush and poison oak. In areas of dense coyote brush, little or no understory is present; however, herbaceous grass and forb species such as wild oats, blue wild rye, and bracken fern (*Pteridium aquilinum* var. *pubescens*) are along edges or in open areas. Non-native invasive species such as Italian thistle and French broom are also commonly present in disturbed areas in this community.

Developed/Disturbed/Landscaped
Developed, disturbed, and landscaped areas consist of land developed for residential and urban use, including landscaped and maintained residential and parkland, as well as areas used for road and trail construction and maintenance. Vegetation in these areas is predominantly planted trees, shrubs, and non-native herbaceous species. A large variety of ornamental trees and shrubs were observed in this community.

The action area includes; large buildings, structures, and parking lots, such as the UCB Mathematical Sciences Research Institute Building, and public roads. Landscaped areas include maintained yards associated with private residences and planted or maintained areas associated with public or University buildings, and botanical gardens such as the UCB Botanical Garden. Disturbed vegetation includes areas created by natural or human disturbance that may support early succession stages of adjacent habitats. Disturbed areas are often susceptible to invasion by non-native species, including weeds such as French broom, fennel, poison hemlock, and Italian thistle. Disturbed areas were identified in a variety of locations, including areas near new development, along road shoulders, or on hillsides, such as the hillsides along portions of Grizzly Peak Blvd.

Eucalyptus Forest
Eucalyptus trees were introduced from Australia and were widely planted throughout the East Bay Hills in the early 1900s. Eucalyptus trees are capable of rapid growth and prolific reproduction. A rapid growth rate and the production of allelopathic oils, which inhibit establishment of other species, have helped eucalyptus forests invade large areas of the Project Area.

Eucalyptus stands in the Project Area range between young stands (i.e., less than 40 years old) of recently colonized saplings to mature stands (i.e., over 40 years old) including some stands that have never been logged. Blue-gum eucalyptus is the dominant species. The understory of these young stands usually supports a more diverse mix of native and non-native shrubs and herbaceous plants when compared to those in the mature stands. Native species in this community include California blackberry, poison oak, toyon, and coyote brush; non-native invasive species include cotoneaster (*Cotoneaster* sp.), French broom, erect veldtgrass, and the non-native oblong spurge (*Euphorbia oblongata*). Mature eucalyptus forests characterized by a closed-canopy and sparse shrub and forb understory. Scattered coast live oak and California bay

trees are present in both young and mature eucalyptus stands. Additionally, redwood trees (*Sequoia sempervirens*) are occasionally present in stands of eucalyptus.

Oak-Bay Woodland

The oak-bay woodland community consists of a mix of predominantly coast live oak and California bay trees. Other native trees found in this vegetation community in the Project Area include California buckeye, bigleaf maple, and madrone. Understory species may contain poison oak, woodfern (*Dryopteris arguta*), Swordfern (*Polystichum* sp.), California blackberry, coyote brush, California hazelnut, toyon, and currants (*Ribes* spp.).

Riparian Woodland

Riparian woodland communities are located along streams and on the edges of seeps and ponds. Arroyo willow (*Salix lasiolepis*) is the dominant species in this community in the Project Area. Scattered California bay and coast live oak trees were also identified adjacent to riparian woodland communities. California blackberry, thimbleberry, sword fern, blue gum eucalyptus, and poison oak are commonly found in the understory. The most common non-native species identified in the action area's riparian woodland communities are English ivy (*Hedera helix*) and poison hemlock.

Riverine Features

Riverine features in the action area and vicinity include several unnamed intermittent drainages. There are two perennial creeks in the Project Area: Strawberry and Claremont Creeks. Strawberry and Claremont Creeks originate in the action area in Strawberry Canyon and Claremont Canyon Regional Preserve, respectively. These creeks run westward from the Project Area and become channelized and are diverted in culverts underground through the cities of Berkeley and Oakland before draining into San Francisco Bay.

Successional Grassland

The successional grassland community is characterized by grassland areas that appear to be in the process of transitioning into shrub-dominated communities. Vegetation consists primarily of non-native annual grasses and forb species found in California annual grasslands but with a higher cover of shrub species, typically coyote brush, than typically occurs in California annual grassland communities. In some areas, fire suppression and cessation of livestock grazing in the East Bay Hills have resulted in the succession of California annual grasslands into coyote brush scrub and coastal scrub communities (Stromberg et al. 2007). Vegetation management practices, including clearing eucalyptus stands, have also produced areas of successional grassland as shrubs have recolonized the area. Although coyote brush is the dominant shrub, other species such as sticky monkey-flower, poison oak, and occasional immature coast live oak, California bay, and other saplings were also observed. Successional grassland community present in the Project Area is found along the west side of Grizzly Peak Road.

5.0 Results

The following summarizes the results of CCCI's botanical surveys in the Project Area.

Floristic Survey
During the floristic surveys, 193 plant species were observed inside the Project Area (Appendix D).

Special Status Plants
Based on a literature review, available database resources, and familiarity of flora within the region, a total of 49 special status species (Appendix A, Figure 3a) are known to occur within 10 miles of the Project Area. Appendix B contains a table of the 49 special status plant species potentially occurring within a 10-mile radius of the CNDBB search area as shown in Figure 3a, in Appendix A.

Only one species of a CNPS listed plant was observed, the Western leatherwood. Twenty-six specimens of the western leather wood plants were located and mapped with a GPS unit. Twenty-five of the plants were located along the southeastern portion of the Upper Fire Road. A single western leatherwood was located along the access dirt road, opposite a site slated to be logged (Appendix A, Figure 5). All 26 of these specimens were not located under or near any eucalyptus, Monterey pine or acacia trees, the tree species targeted for removal. No federal or state listed endangered or threatened plant species were observed in any portion of the Project Area.

Critical Habitat
The Project Area is not located within any federally listed special status plant critical habitat units.

6.0 Recommendations

To prevent impacts to listed plant species, erect bright orange ESA fence along edges of the dirt road that borders known locations of Western leatherwood. Include mention of this plant in any environmental awareness material used for training future work/logging crews. If future brush clearance could occur along this portion of the fire road after all of the tree removal is complete, more permanent signage should be erected along the edge of the road bordering the leatherwood locations. Signage should include information for contacting the UCB office that will have primary jurisdiction for this section of the road shoulders. Any mulching of the felled trees should not cover native vegetation. During the past chipping operations, deep piles of mulch in the Frowning Ridge area have impacted stands of native plants such as annual hairgrass (*Deschampsia danthonioides*) and bull clover (*Trifolium fucatum*). As much as practicable, access routes to trees slated for removal should stay within or under non-native tree habitats.

7.0 References

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Appendix A

List of Figures

UC Berkeley Hill Campus Fire Hazard Reduction
University of California, Berkeley

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S:\GIS_Projects\00346 - UCB_Fire_Mitigation\MXD\Fig. 1 UCB Regional Location_Apr2019.mxd

Ted Robertson April 23, 2019

FIGURE 1

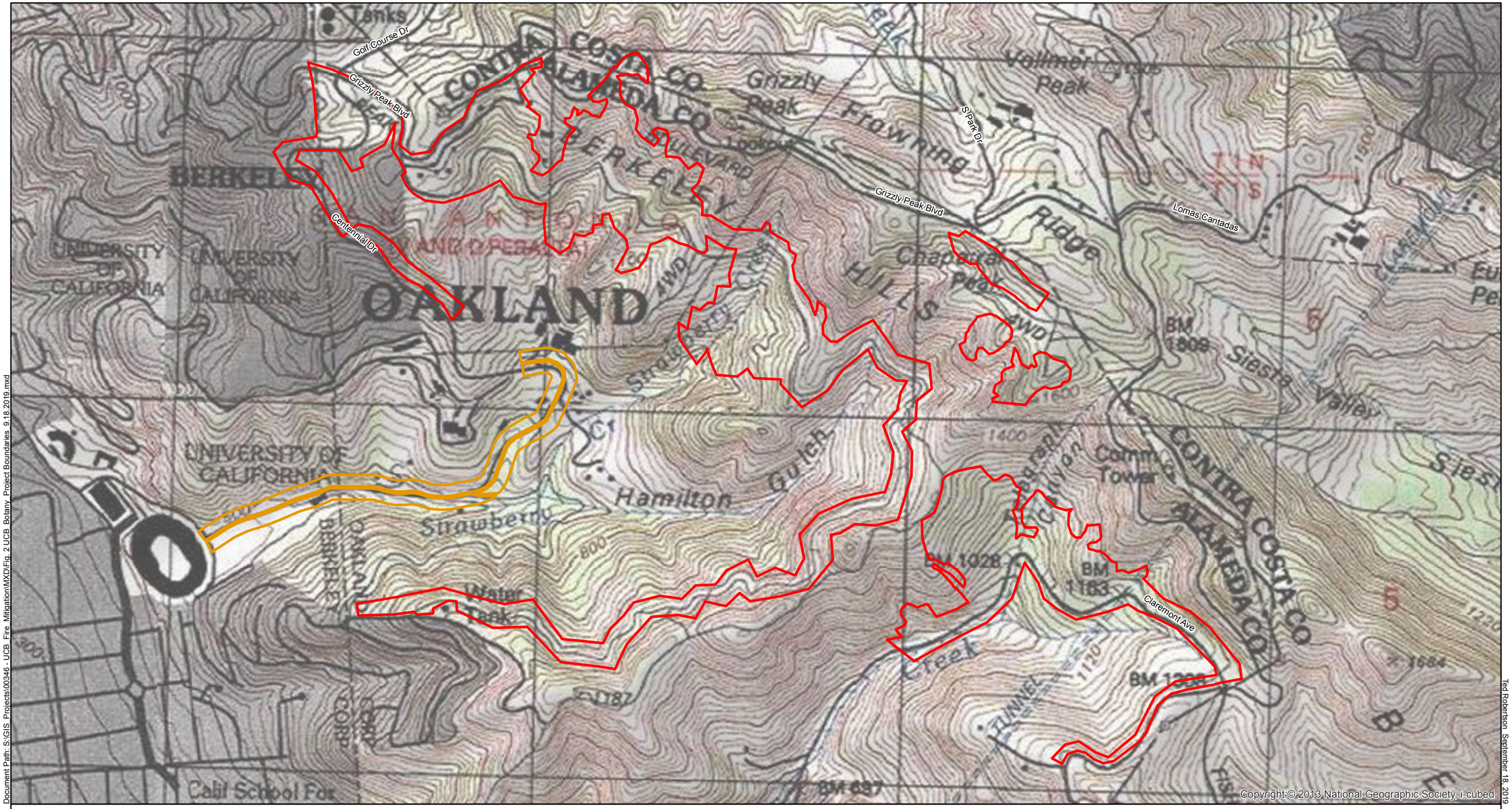
Regional Location of UC Berkeley Hill Campus Fire Hazard Reduction Project

City of Berkeley, CA

N
W E
S

0 1 2 3 4 Miles

CONDOR COUNTRY CONSULTING, INC.



Project Area

Lower Centennial Drive Project Area

Project Boundaries

UC Berkeley Hill Campus Fire Hazard Reduction Project

Alameda and Contra Costa Counties, California

N W E S

0 0.1 0.2 0.3 0.4 Miles

FIGURE 2

CONDOR COUNTRY CONSULTING, INC.

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Ted Robertson September 18, 2019

UCB Fire Mitigation Project Area
Lower Centennial Drive Project Area
5 Mile Buffer
10 Mile Buffer

SNAME

- Amsinckia lunaris
- Arctostaphylos pallida
- Astragalus tener var. tener
- Blepharizonia plumosa
- Calochortus pulchellus
- Calystegia purpurata ssp. saxicola
- Carex comosa
- Carex praticola
- Centromadia parryi ssp. congdonii
- Chloropyron maritimum ssp. palustre
- Chloropyron molle ssp. molle
- Chorizanthe cuspidata var. cuspidata
- Chorizanthe robusta var. robusta
- Cicuta maculata var. bolanderi
- Cirsium andrewsii
- Clarkia franciscana
- Collinsia multicolor
- Dirca occidentalis
- Eriogonum luteolum var. caninum
- Eryngium jepsonii
- Extriplex joaquinana
- Fissidens pauperculus
- Fritillaria liliacea
- Gilia capitata ssp. chamissonis
- Gilia millefoliata
- Helianthella castanea
- Hemizonia congesta ssp. congesta
- Heteranthera dubia
- Hoita strobilina
- Holocarpha macradenia
- Horkelia cuneata var. sericea
- Isocoma arguta
- Juglans hindsii
- Lasthenia conjugens
- Layia carnosa
- Leptosiphon rosaceus
- Meconella oregana
- Monolopia gracilens
- Plagiobothrys chorisianus var. chorisianus
- Plagiobothrys diffusus
- Polemonium carneum
- Sanicula maritima
- Spergularia macrotheca var. longistyla
- Stebbinsoseris decipiens
- Streptanthus albidus ssp. peramoenus
- Stuckenia filiformis ssp. alpina
- Suaeda californica
- Trifolium hydrophilum
- Viburnum ellipticum

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

CNDDB Occurrences
UCB Hazardous Fire Risk Reduction Project
Alameda and Contra Costa Counties, California

N
W E
S

0 1 2 3 4 5 Miles

FIGURE 3a

CONDOR COUNTRY CONSULTING, INC.

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Ted Robertson, September 3, 2019

UCB Fire Mitigation Project Area
Lower Centennial Drive Project Area
5 Mile Buffer

SNAME

- Amsinckia lunaris
- Arctostaphylos pallida
- Astragalus tener var. tener
- Calochortus pulchellus
- Calystegia purpurata ssp. saxicola
- Chloropyron maritimum ssp. palustre
- Chorizanthe cuspidata var. cuspidata
- Cirsium andrewsii
- Dirca occidentalis
- Eriogonum luteolum var. caninum
- Eryngium jepsonii
- Extriplex joaquinana
- Fissidens pauperculus
- Fritillaria liliacea
- Gilia millefoliata
- Helianthella castanea
- Hoita strobilina
- Holocarpha macradenia
- Horkelia cuneata var. sericea
- Meconella oregana
- Monolopia gracilens
- Plagiobothrys chorisianus var. chorisianus
- Streptanthus albidus ssp. peramoenus
- Stuckenia filiformis ssp. alpina
- Suaeda californica
- Trifolium hydrophilum
- Viburnum ellipticum

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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Ted Robertson September 3, 2019

CNDDB Occurrences
UCB Hazardous Fire Risk Reduction Project
Alameda and Contra Costa Counties, California

N
W E
S

0 0.5 1 1.5 2 2.5 Miles

FIGURE 3b

CONDOR COUNTRY CONSULTING, INC.

UCB Fire Mitigation Project Area
Lower Centennial Drive Project Area
NWI Riverine Features

Habitat Types

- Coastal Scrub
- Coniferous Forest/Non-native Coniferous Forest
- Coyote Brush Scrub
- Developed/Disturbed/Landscaped
- Eucalyptus Forest
- Oak-Bay Woodland
- Riparian Woodland
- Successional grassland

HABITATS

UC Berkeley Hill Campus Fire Hazard Reduction Project

Alamedа and Contra Costa County, California

FIGURE 4

N
W E
S

0 0.1 0.2 0.3 0.4 Miles

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Ted Robertson October 14, 2019

Grizzly Peak Blvd

Upper Jordan Fire Trail

UCB Botanical Gardens

Grizzly Peak Blvd

Document Path: S:\GIS_Projects\00346 - UCB_Fire_Mitigation\MXD\Fig 5_UCB Fire Hazard Dirca Locations March 2019.mxd

Ted Robertson October 14, 2019

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

UCB Biological Sudy Area - 2019

Lower Centennial Drive Project Area

NWI Riverine Features

Rare Plants

Dirca occidentalis - Western leatherwood

RARE PLANTS

UC Berkeley Hill Campus Fire Hazard Reduction Project

Alameda and Contra Costa County, California

N

W E

S

0 200 400 600 800 1,000 Feet

Figure 5

CONDOR COUNTRY CONSULTING, INC.

Appendix B

Appendix B: Special Status Plant Species Potentially Occurring within a 10-Mile Radius CNDDB Search Area

UC Berkeley Hill Campus Fire Hazard Reduction
University of California, Berkeley

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Appendix B: Special Status Plant Species within the CNDDB Search Area Potentially Occurring within 10 miles of the Project Boundaries.

Highlighted rows indicate required habitat not present withing the Project Area.

Scientific Name	Common Name	Fed/State/CNPS	General Habitat Description	Habitat Present?	Local Distribution Search Results
Amsinckia lunaris	bent-flowered fiddleneck	CNPS 1B.2	Damp rock and soil on outcrops and cliffs within broadleaved upland forest, lower montane coniferous forest and north coast coniferous forest; often on acidic substrates; from 100-1000 m (325-3280 ft) elevation; blooms March - June. Herbarium collections March - May.	Yes	26 occurrences exist within 10 miles of the project. Closest occurrence (Occ.# 8) is 0.2 mi east of the Claremont Canyon project area. It was sited in 2006 and is potentially extant.
Arctostaphylos pallida	pallid manzanita	FT/SE/ CNPS 1B.1	Occurs on siliceous shale, sandy or gravel within chaparral, cismontane woodland, coastal scrub, and broadleafed upland or closed-cone coniferous forest within the Diablo Range from 185 - 465 m (605-1525 ft) elevation; blooms December - March. Herbarium collections January - December.	Yes	9 occurrences within 10 miles of the project. Closest occurrence (Occ.# 2) is 0.46 mi north in Tilden Regional Park.
Astragalus tener var. *tener*	alkali milk-vetch	CNPS 1B.2	Occurs on alkaline substrates in playas, valley and foothill grassland on adobe clay, and vernal pools between 1-60 m (3-195 ft) elevation; blooms March - June. Herbarium collections March - mid-June.	Possible	4 occurrences within 10 miles of the project. Nearest occurrence (Occ.# 67, yr: 1900) is 4 mi northwest, and possibly extirpated.
Blepharizonia plumosa	big tarplant	CNPS 1B.1	Occurs on clay substrates in valley and foothill grassland between 30-505 m (100-1650 ft) elevation; blooms July - October. Herbarium collections mid-July - October.	Yes	Only 1 occurrence within 10 miles of the project. Occurs 7.5 miles east (Occ.#10, yr: 1937), presumed extant.
Calochortus pulchellus	Mt. Diablo fairy-lantern	CNPS 1B.2	Found on north-facing wooded slopes, rarely within chaparral, riparian woodland, and valley and foothill grassland; between 30-840 m (100-2755 ft) elevation; blooms April - June. Herbarium collections April - June.	Yes	7 occurrences within 10 miles of the project. Closest is 5.6 miles to the east (Occ.#22, yr: 1970), Presumed extant.
Calystegia purpurata ssp. saxicola	coastal bluff morning-glory	CNPS 1B.2	Coastal dunes and coastal scrub from 15-105 m (50-345 ft) elevation; blooms May - September. Herbarium collections May - mid-August.	No	Only 1 occurrence within 10 miles of the project on Brooks Island, 5.8 miles west (Occ.#31, yr: 1893).
Carex comosa	bristly sedge	CNPS 2B.1	Coastal prairies, marshes and swamps (lake margins), valley and foothill grassland from 0-425 m (0-1400 ft) elevation; blooms July - September, perennial herb. Herbarium collections May - Sept.	Yes	Only 1 occurrence within 10 miles of the project in a San Francisco swamp, 8.7 miles southwest (Occ.#10, yr: 1866). Possibly extirpated.
Carex praticola	northern meadow sedge	CNPS 2B.2	Occurs in meadows and seeps (mesic); between 0-3200 m (0-10,500 ft) elevation; blooms May-July; perennial herb. Herbarium collections May - Aug.	Possible	Only 1 occurrence within 10 miles of the project on Angel Island, 9.6 miles west (Occ.#16, yr: 1967).
Centromadia parryi ssp. *congdonii*	Congdon's tarplant	CNPS 1B.1	Occurs in alkaline valley and foothill grassland between 1-230 m (3-750 ft) of elevation; blooms May - October. Herbarium collections June - mid-Nov.	Possible	Only 1 occurrence within 10 miles of the project, 8.8 miles northeast (Occ.#2, yr: 1933).
Chloropyron maritimum ssp. *palustre*	Point Reyes salty bird's-beak	CNPS 1B.2	Coastal salt marshes and swamps from 0-10 m (0-30 ft) elevation; blooms from May - October. Herbarium collections mid-May - Oct. 15.	No	3 occurrences within 10 miles of the project. Nearest occurrence (Occ.# 21, yr: 1990) is 3 mi west along Berkeley shoreline.
Chloropyron molle ssp. *molle*	soft salty bird's-beak	FE/SR/CNPS 1B.2	Coastal saline or brackish marsh and swamp from 0-3 m (0-10 ft) elevation; blooms July - November. Herbarium collections mid-June - mid-Oct.	No	Only 1 occurrence within 10 miles of the project, 9.9 miles northwest (Occ.#1, yr: 2009). Presumed extant.
Chorizanthe cuspidata var. cuspidata	San Francisco Bay spineflower	CNPS 1B.2	Occurs on coastal bluff scrub, coastal dunes, coastal prairie, on sandy soils; between 3-215 m (10-705 ft) elevation; blooms April-July. Herbarium collections Apr. - July.	Not likely	Only 1 occurrence within 10 miles of the project, from an Oakland location west of Lake Merritt, 3.6 miles southwest (Occ.#16, yr: 1881). Presumed extirpated.
Chorizanthe robusta var. *robusta*	robust spineflower	FE/CNPS 1B.1	Occurs on sandy or gravelly substrates within maritime chaparral, openings in cismontane woodland, coastal dunes and coastal scrub from 3-300 m (10-985 ft) elevation; blooms May - September. Herbarium collections May - mid-Sept.	Not likely	One occurrence, possible extirpated, dated 1894 in the city of Alameda (Occ.# 1), 6.2 miles south of the project site.

Scientific Name	Common Name	Fed/State/CNPS	General Habitat Description	Habitat Present?	Local Distribution Search Results
Cicuta maculata var. *bolanderi*	Bolander's water-hemlock	CNPS 2B.1	Occurs in coastal, brackish or fresh marshes and swamps between 0-200 m (0-655 ft) elevation; blooms July - September. Herbarium collections June - Sept.	No	Three occurrences within 10 miles of the project, all northeast of the project area. Closest (Occ.#4, yr: 1900) is 9.6 miles to the northeast near Martinez, presumed extant.
Cirsium andrewsii	Franciscan thistle	CNPS 1B.2	Occurs in mesic, and sometimes serpentine, substrate within broadleafed upland forest, coastal bluff scrub, coastal prairie and coastal scrub from 0-150 m (0-490 ft) elevation; blooms May - Sept. Herbarium collections mid-May - July.	Yes	2 occurrences within 10 miles of the project. Nearest occurrence (Occ.# 14, yr: 2006) is 1.2 mi north in Tilden Regional Park.
Clarkia franciscana	Presidio clarkia	FE/SE/ CNPS 1B.1	Occurs within coastal scrub and valley and foothill grassland on serpentine soils between 25 - 335 m (80-1100 ft) elevation; blooms May - June. Herbarium collections May - June.	Not likely. No serpentine soils present.	One occurrence (Occ.#4, yr: 2010), 4.8 miles southeast of the project area in Oakland Hills, presumed extant.
Collinsia multicolor	San Francisco collinsia	CNPS 1B.2	Closed-cone coniferous forest, coastal scrub, occasionally on serpentine soils, between 30-250 m (100-820 ft) elevation; blooms March - May. Annual herb. Herbarium collections Mar. - May.	Yes	Only 1 occurrence within 10 miles of the project on Angel Island, 9.5 miles west (Occ.#26, yr: 1993).
Dirca occidentalis	western leatherwood	CNPS 1B.2	Occurs in broadleafed upland forest, closed-cone coniferous forest, chaparral, cismontane woodland, North Coast coniferous forest, riparian forest, and riparian woodland, often on brushy slopes and mesic sites between 50-400 m (165-1310 ft) elevation; blooms Nov. - March. Herbarium collections Jan. - Apr.	Yes. Species present.	26 occurrences within 10 miles of the project. This shrub is known to exist within the project area (Occ.#22, yr: 2017) New occurrence locations were found during the early spring surveys.
Eriogonum luteolum var. *caninum*	Tiburon buckwheat	CNPS 1B.2	Occurs on sandy to gravelly serpentine soils in chaparral, valley and foothill woodland, cismontane woodland and coastal prairie, at elevations from 0-700 m (0-2300 ft) elevation; blooms May - Oct. Herbarium collections mid-May - mid-Oct.	Not likely. No serpentine soils present.	3 occurrences within 10 miles of the project. Nearest occurrence (Occ.# 20, yr: 2009) is 4 mi south in Oakland hills.
Eryngium jepsonii	Jepson's coyote-thistle	CNPS 1B.2	Occurs in wetlands below 500 m (1,640 ft) elevation on moist clay soil; blooms April - August. Herbarium April - July. Perennial herb.	Not likely.	3 occurrences within 10 miles of the project. Nearest occurrence (Occ.# 20, yr: 2009) is 4 mi south in Oakland hills.
Extriplex (Atriplex) joaquinana	San Joaquin spearscale	CNPS 1B.2	Occurs in chenopod scrub, meadows and seeps, playas, and valley and foothill grassland on alkaline substrates between 1-835 m (3-2750 ft) elevation; blooms April - Sept. Herbarium collections Apr. - Sept.	Not likely. Alkaline soils not present.	Only 1 old occurrence within 10 miles of the project, 2 miles east (Occ.#7, yr: 1895). Presumed extant.
Fissidens pauperculus	minute pocket moss	CNPS 1B.2	Occurs in coniferous forest on damp coastal soil between 10-100 m (33 - 330 ft) elevation. Moss.	Yes	One known occurrence along Strawberry Canyon, about 1/2 mile above the UCB Botanical Garden, at 985 ft elevation (Occ.#15, yr: 1994).
Fritillaria liliacea	fragrant fritillary	CNPS 1B.2	Occurs often on serpentine soils in cismontane woodland, coastal prairie, coastal scrub, and valley and foothill grassland between 3-410 m (10-1345 ft) elevation; blooms February - April. Herbarium collections Feb. - Apr.	Not likely. No serpentine soils present.	Four occurrences in surrounding quads, two in Mt. Diablo State Park and two in the Oakland Area. Closest (Occ.#74) is ~6.5 miles to the south, presumed extant.
Gilia capitata ssp. chamissonis	blue coast gilia	CNPS 1B.1	Coastal dunes and coastal scrub from 2-200 m (7-656 ft) elevation; blooms April - July. Annual herb. Herbarium collections mid-Apr. - July.	No. No habitat or low elevation present.	One occurrence (Occ.#3, yr: 1996) 8 miles southwest of the project area on Treasure Island.
Gilia millefoliata	dark-eyed gilia	CNPS 1B.2	Coastal dunes from 2-20 m (7-66 ft) elevation; blooms Mar.-July. Annual herb. Herbarium collections Apr. - July.	No. No habitat or low elevation present.	Only 1 old occurrence within 10 miles of the project (Occ.#43, year: 1863), 4 to 8 miles southwest of the project area from the coastal area of Oakland. Extirpated
Helianthella castanea	Diablo helianthella	CNPS 1B.2	Occurs in broadleaved upland forest, chaparral cismontane woodland, coastal scrub, riparian woodland, and valley and foothill grassland between 60-1300 m (195-4265 ft) elevation; blooms Apr. - June. Herbarium collections mid-Mar. - mid-June.	Yes	More than 43 occurrences occur spread out throughout the 10 mile project buffer. The two closest occurrences are just west of project area (Occ.#84, yr: 2001) on hill west of the Lawrence Hall of Science parking lot (observed by author between 1990 and 2009), and an occurrence (Occ.#6, yr: 2003) just east of the project area near Grizzly Peak Blvd. Presumed extant.

Scientific Name	Common Name	Fed/State/CNPS	General Habitat Description	Habitat Present?	Local Distribution Search Results
Hemizonia congesta ssp. congesta	congested-headed hayfield tarplant	CNPS 1B.2	Grasslands and along edges of marshes, between 0- 100 m (0 - 330 ft) elevation; blooms May -November. Annual herb. Herbarium: May - early Nov.	No. Low elevation not present.	Only 1 old occurrence within 10 miles of the project (Occ.#2), from an old botanical collection from San Francisco sometime in the 1890s. Greater than 10 miles southwest of the project area. Presumed extirpated.
Heteranthera dubia	water star-grass	CNPS 2B.2	Occurs in wetlands and generally submersed, between 0 - 1500 m (0-4,920 ft) elevation; blooms July - August. Perennial herb. Herbarium collections between May - Nov.	No. Habitat not present.	Only 1 old occurrence within 10 miles of the project (Occ.#1, yr: 1879), from an old botanical collection from San Francisco, over 10 miles southwest of the project area. Presumed extirpated.
Hoita strobilina	Loma Prieta hoita	CNPS 1B.1	Usually found on serpentinite substrates within mesic chaparral, cismontane woodland and riparian woodland between 30 - 860 m (100-2820 ft) elevation; blooms June - Aug. Herbarium collections mid-May - mid-Aug.	Not likely. No serpentine soils present.	Two occurrences within 10 miles of the project. Nearest (Occ.#15, yr: 2004) in the Richmond Hills. ~6 miles northwest, presumed extant.
Holocarpha macradenia	Santa Cruz tarplant	FT/SE/ CNPS 1B.1	Occurs in coastal prairie, coastal scrub and valley and foothill grasslands, in areas with light sandy soil, or sandy clay, often with non-natives, between 10 - 220 m (30-720 ft) elevation; blooms June - Nov. Herbarium collections June - Nov.	No. Low elevation not present.	14 occurrences within 10 miles of the project, many in the Richmond hills. All possibly extirpated. All extant Contra Costa County occurrences are introduced; nearly half have failed. Last remaining natural population in the S.F. Bay Area extirpated by development in 1993.
Horkelia cuneata var. *sericea*	Kellogg's horkelia	CNPS 1B.1	Found on sandy or gravelly openings in closed-cone coniferous forest, chaparral, coastal dunes and coastal scrub between 10 - 200 m (30-650 ft) elevation; blooms April - September. Herbarium collections Apr. - Aug.	Not likely. Low elevation not present.	One occurrence (Occ.#35, yr: 1863) in Oakland, ~5 miles southwest of the project. Nearest occurrences (Alameda County) are presumed extirpated.
Isocoma arguta	Carquinez goldenbush	CNPS 1B.1	Generally found in wetlands within valley and foothill grassland between 1 - 20 m (3-65 ft) elevation; blooms August - December; often within alkali flats or other mineral-rich soils of the Suisun Slough. Herbarium collections mid-Aug - mid-Nov.	No. Habitat and low elevation not present.	One occurrence (Occ.#14) near Carquinez Strait. ~10 miles northeast of the project, presumed extant. Mentioned in an old flora (Munz) from 1968.
Juglans hindsii	Northern California black walnut	CNPS 1B.1	Occurs in riparian forest and woodlands in areas with deep alluvial soils associated with creeks or streams. Found between 0-440 m (0-1445 ft) elevation; blooms April - May. Herbarium collections Apr - Nov.	Yes	One occurrence (Occ.#2, yr: 2011) located near Moraga ~7 miles east of the project area.
Lasthenia conjugens	Contra Costa goldfields	FE/ CNPS 1B.1	Occurs in vernal pools, alkaline playas, mesic valley and foothill grassland, between 0-470 m (0-1540 ft) elevation; blooms March - June. Herbarium collections mid-Mar - May.	Not likely. Preferred habitat not present.	Two occurrences within 10 miles of project area. Only extant species is near Hercules (Occ.#23, yr: 2017) ~9 miles north of the project.
Layia carnosa	beach layia	FE/SE/ CNPS 1B.1	Occurs in coastal dunes and coastal scrub with sandy soils, between 0-60 m (0-200 ft) elevation; blooms March-July. Herbarium collections between mid-March - July.	No. No habitat or low elevation present.	Only 1 old occurrence within 10 miles of the project (Occ.#6, yr: 1904), from an old botanical collection from San Francisco sand dunes, over 10 miles southwest of the project area. Presumed extirpated.
Leptosiphon rosaceus	rose leptosiphon	1B.1	Occurs on open, grassy slopes along coastal bluffs, between 0 - 70 m (0-230 ft) elevation; blooms April - June. Annual herb. Herbarium collections May - June.	No. No habitat or low elevation present.	Only 1 old occurrence within 10 miles of the project (Occ.#6, yr: 1885), from an old field collection from San Francisco, over 10 miles southwest of the project area. Presumed extirpated.
Meconella oregana	Oregon meconella	CNPS 1B.1	Found in coastal prairie and scrub between 250 - 620 m (820-2035 ft) elevation; blooms March - May; known in CA only from five occurrences. Herbarium collections Mar - Apr.	Possible	Four occurrences, all in the Oakland/Berkeley hills, all presumed extant. Closest occurrence (Occ.#5, yr: 1994) is ~5 miles to the east.
Monolopia gracilens	woodland woollythreads	CNPS 1B.2	Serpentine grassy openings of mixed evergreen forest, redwood forest, broadleaf upland forest, oak woodland and chaparral between 100 – 1200 m (325-3935 ft) elevation; blooms March - July. Herbarium collections mid-Mar. - mid-July.	Not likely. Serpentine soils not present.	Only 1 occurrence within 10 miles of the project. The closest (Occ.#45, yr: 1888) is ~6-8 miles southeast and presumed extant.

Scientific Name	Common Name	Fed/State/CNPS	General Habitat Description	Habitat Present?	Local Distribution Search Results
Plagiobothrys chorisianus var. chorisianus	Choris' popcornflower	CNPS 1B.2	Chaparral, coastal prairie, coastal scrub, in mesic conditions between 15-100 m (50-330 ft) elevation; blooms March-June. Herbarium collections Apr. - June.	Not likely. Low elevation not present.	Only 1 old occurrence within 10 miles of the project (Occ.#11, yr: 1890), ~5 miles southwest of the project area. Presumed extirpated.
Plagiobothrys diffusus	San Francisco popcornflower	SE/ CNPS 1B.1	Found in seeps and moist places within coastal prairie and valley and foothill grassland between 60 - 360 m (195-1180 ft) elevation; blooms Apr. - June. Herbarium collections Apr. - June.	Possible.	One occurrence (Occ.#13, yr: 1997) ~5.5 miles east in the Oakland hills, presumed extant.
Polemonium carneum	Oregon polemonium	CNPS 2B.2	Occurs in coastal scrub, coastal prairie and yellow pine forest, in open habitat, between 0 - 1,800 m (0-5,910 ft) elevation; blooms April - June. Perennial herb. Herbarium collections April-June, mostly in May.	Possible.	Only 1 occurrence within 10 miles of the project on Angel Island, ~10 miles west (Occ.#3). Location mentioned in Howell's Marin Flora from 1949.
Sanicula maritima	adobe sanicle	SR/ CNPS 1B.1	Found on clay and serpentinite soils within chaparral, coastal prairie, meadows and seeps, and valley and foothill grassland between 30 - 240 m (100-785 ft) elevation; blooms February - May; apparently extirpated from the San Francisco Bay Area. Herbarium collections mid-Mar. - mid-May.	Not likely. Site just above known elevation range.	One occurrence (Occ. #6, yr: 1936) in Alameda ~7 miles south of the project, extirpated.
Spergularia macrotheca var. longistyla	long-styled sand-spurrey	CNPS 1B.2	Occurs in alkaline marshes, mud flats, meadows, and hot springs between 0 - 200 m (0-670 ft) elevation; blooms February - May. Perennial herb. Herbarium collections March - mid-June.	No. Habitat not present.	Three occurrences within 10 miles of the project. Closest occurrence (Occ.#15, yr: 1989) is ~9 miles to the northwest in a Richmond salt marsh. Presumed extant.
Stebbinsoseris decipiens	Santa Cruz microseris	CNPS 1B.2	Occurs in broadleaved upland forest, closed-cone coniferous forest, chaparral, coastal prairie, coastal scrub, valley and foothill grasslands, between 10 - 500 m (33-1,640 ft) elevation; blooms April - May. Annual herb. Herbarium collections Apr. - May.	Yes.	Only 1 occurrence within 10 miles of the project on Angel Island, ~10 miles west (Occ.#18, yr: 1968). From a botanical field collection. Presumed extant.
Streptanthus albidus ssp. *peramoenus*	most beautiful jewelflower	CNPS 1B.2	Ultramafic substrate within chaparral, cismontane woodland, valley and foothill grassland between 95 - 1000 m (310-3280 ft) elevation; blooms Apr. - Sept. No herbarium collection info.	Yes.	Five occurrences exist in the Oakland Hills. The closest (Occ.#65, yr: 1893), is from an old botanical collection made along Claremont Canyon Road and Grizzly Peak Blvd.
Stuckenia filiformis ssp. *alpina*	slender-leaved pondweed	CNPS 2B.2	Occurs in assorted shallow freshwater systems such as marsh, swamp and slow drainages between 300 – 2150 m (980-7050 ft) elevation; blooms May - July. Herbarium collections July only.	No. Habitat not present.	Only one nearby occurrence, 1.8 mi southeast in a quarry pond east of Round Top (Occ. #7, yr: 1992).
Suaeda californica	California sea blite	FE/CNPS 1B.1	A perennial evergreen shrub found within coastal salt marsh and swamp habitat, between 0 - 15 m (0-50 ft) elevation; blooms July - October. Herbarium collections Jan. - Dec.	No	Three occurrences introduced in an Emeryville marsh. Nearest (Occ.#23, yr: 2008) ~4 miles southwest.
Trifolium hydrophilum	saline clover	CNPS 1B.2	Salt marsh and swamp, vernal pool or other wetlands within valley and foothill grassland on alkaline soils between 0 - 300 m (0-985 ft) elevation; blooms April - June. Herbarium collections mid-Mar. - mid-June.	No	Four occurrences within 10 miles of the project. Nearest extent occurrence (Occ.#31, 1900) ~ 7-8 miles northwest in in Point Richmond.
Viburnum ellipticum	oval-leaved viburnum	CNPS 2B.3	Generally on north-facing slopes within chaparral, cismontane woodland and lower montane coniferous forest between 215 - 1400 m (705-4595 ft) elevation; blooms June - Aug. Herbarium collections May - Aug.	Yes.	Three occurrences within 10 miles of the project. Closest (Occ.#28, yr: 2002) ~7.8 miles east of the project, presumed extant.

FE = Federally Endangered
FT = Federally Threatened
SE = State Endangered
ST = State Threatened

CNPS = California Native Plant Society
1 = Rare in California and elsewhere
2 = Rare in California, but not elsewhe
A = Presumed extirpated or extinct
B = Rare, threatened, or endangered

0.1 = Seriously threatened in California
0.2 = Moderately threatened in California
0.3 = Not very threatened in California

Appendix C

Bloom Periods and Herbarium Collecting Dates

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Appendix C

UCB Hill Campus Fire Hazard Reduction Project - Bloom Periods and Herbarium Collecting Dates

Yellow = No habitat present; Blue = Survey Dates; Green = Blooming Period; Brown = Herbarium collecting dates

Common Name *Scientific name*	Life Form	Blooming Period and Herbarium Collecting Dates											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
bent-flowered fiddleneck *Amsinckia lunaris*	Annual herb												
pallid manzanita *Arctostaphylos pallida*	Shrub												
alkali milk-vetch *Astragalus tener var. tener*	Annual herb												
big tarplant *Blepharizonia plumosa*	Annual herb												
Mt. Diablo fairy-lantern *Calochortus pulchellus*	Perennial herb (bulb)												
coastal bluff morning-glory *Calystegia purpurata ssp. saxicola*	Annual herb												
bristly sedge *Carex comosa*	Perennial herb												
Northern meadow sedge *Carex praticola,*	Perennial herb												
Congdon's tarplant *Centromadia parryi ssp. congdonii*	Annual herb												
Point Reyes salty bird's-beak *Chloropyron maritimum ssp. palustre*	Annual herb												
soft bird's-beak *Chloropyron molle ssp. molle*	Annual herb												
San Francisco Bay spineflower *Chorizanthe cuspidata var. cuspidata*	Annual herb												
robust spineflower *Chorizanthe robusta var. robusta*	Annual herb												
Bolander's water-hemlock *Cicuta maculata var. bolanderi*	Perennial herb												
Franciscan thistle *Cirsium andrewsii*	Perennial herb												
Presidio clarkia *Clarkia franciscana*	Annual herb												
San Francisco collinsia *Collinsia multicolor*	Annual herb												
Western leatherwood *Dirca occidentalis*	Shrub												

Appendix C

UCB Hill Campus Fire Hazard Reduction Project - Bloom Periods and Herbarium Collecting Dates

Yellow = No habitat present; Blue = Survey Dates; Green = Blooming Period; Brown = Herbarium collecting dates

Common Name *Scientific name*	Life Form	Blooming Period and Herbarium Collecting Dates											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Tiburon buckwheat *Eriogonum luteolum var. caninum*	Annual herb												
Jepson's coyote-thistle *Eryngium jepsonii*	Perennial herb												
San Joaquin spearscale *Extriplex joaquinana*	Annual herb												
minute pocket moss *Fissidens pauperculus*	Moss												
fragrant fritillary *Fritillaria liliacea*	Perennial herb (bulb)												
blue coast gilia *Gilia capitata* ssp. *chamissonis*	Annual herb												
dark-eyed gilia *Gilia millefoliata*	Annual herb												
Diablo helianthella *Helianthella castanea*	Perennial herb												
congested-headed hayfield tarplant *Hemizonia congesta ssp. congesta*	Annual herb												
water star-grass *Heteranthera dubia*	Perennial herb												
Loma Prieta hoita *Hoita strobilina*	Perennial herb												
Santa Cruz tarplant *Holocarpha macradenia*	Annual herb												
Kellogg's horkelia *Horkelia cuneata ssp. sericea*	Perennial herb												
Carquinez goldenbush *Isocoma arguta*	Shrub												
Northern California black walnut *Juglans hindsii*	Tree												
Contra Costa goldfields *Lasthenia conjugens*	Annual herb												
beach layia *Layia carnosa*	Annual herb												
rose leptosiphon *Leptosiphon rosaceus*	Annual herb												
Oregon meconella *Meconella oregana*	Annual herb												
woodland woollythreads *Monolopia gracilens*	Annual herb												

Appendix C

UCB Hill Campus Fire Hazard Reduction Project - Bloom Periods and Herbarium Collecting Dates

Yellow = No habitat present; Blue = Survey Dates; Green = Blooming Period; Brown = Herbarium collecting dates

Common Name *Scientific name*	Life Form	Blooming Period and Herbarium Collecting Dates											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Choris' popcornflower *Plagiobothrys chorisianus var. chorisianus*	Annual herb												
San Francisco popcornflower *Plagiobothrys diffusus*	Annual herb												
Oregon polemonium *Polemonium carneum*	Perennial herb												
adobe sanicle *Sanicula maritima*	Perennial herb												
long-styled sand-spurrey *Spergularia macrotheca var. longistyla*	Perennial herb												
Santa Cruz microseris *Stebbinsoseris decipiens*	Annual herb												
most beautiful jewel-flower *Streptanthus albidus ssp. peramoenus*	Annual herb												
slender-leaved pondweed *Stuckenia filiformis ssp. alpina*	Perennial herb												
California seablit *Suaeda californica*	Shrub												
saline clover *Trifolium hydrophilum*	Annual herb												
oval-leaved viburnum *Viburnum ellipticum*	Shrub												

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Appendix D

List of Observed Species

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Appendix D. Plant Species Observed within the Project Area.

Scientific Name	Common Name	Native (Y/N)
Abies grandis	lowland grand fir	Y*
Acacia melanoxylon	blackwood acacia	N
Acer macrophyllum	big leaf maple	Y
Achillea millefolium	yarrow	Y
Aesculus californica	California buckeye	Y
Agave sp.	agave	--*
Aira caryophyllea	silver hairgrass	N
Allium triquetrum	three-corner leek	N
Amaryllis belladonna	naked lady	N
Amsinckia intermedia	common fiddleneck	Y
Anagallis arvensis	scarlet pimpernel	N
Anthemis cotula	mayweed	N
Aquilegia formosa	western columbine	Y
Arbutus menziesii	Pacific madrone	Y
Arnica discoidea	rayless arnica	Y
Artemisia californica	California sagebrush	Y
Artemisia douglasiana	Douglas' mugwort	Y
Athyrium filix-femina var. cyclosorum	western lady fern	Y
Avena barbata	slender wild oat	N
Avena fatua	common wild oat	N
Baccharis pilularis	common coyote brush	Y
Bellardia trixago	Mediterranean lineseed	N
Berberis pinnata subsp. pinnata	Oregon grape	N
Brassica nigra	black mustard	N
Briza maxima	rattlesnake grass	N
Briza minor	little rattlesnake grass	N
Brodiaea elegans	harvest brodiaea	Y
Bromus carinatus	California brome	Y
Bromus diandrus	ripgut brome	N
Bromus hordeaceus	soft brome	N
Calocedrus decurrens	incense cedar	Y*
Calystegia purpurata	morning glory	Y
Capsella bursa-pastoris	shepherd's purse	N
Cardamine californica	milk maids	Y
Carduus pycnocephalus ssp. *pycnocephalus*	Italian thistle	N
Castilleja foliolosa	woolly indian paintbrush	Y
Ceanothus cuneatus	buck brush	Y
Centaurea solstitialis	yellow star-thistle	N
Chlorogalum parviflorum	soap root	Y
Cirsium vulgare	bull thistle	N
Claytonia perfoliata	miner's lettuce	Y
Clinopodium douglasii	yerba buena	Y
Conium maculatum	common poison hemlock	N
Convolvulus arvensis	field morning glory	N
Cortaderia jubata	pampas-grass	N
Corylus cornuta	hazelnut	Y
Cotoneaster lacteus	milkflower cotoneaster	N

Scientific Name	Common Name	Native (Y/N)
Cotoneaster sp.	cotoneaster	N
Crataegus monogyna	single seed hawthorne	N
Croton setigerus	dove weed	Y
Cynara cardunculus ssp. *cardunculus*	artichoke thistle	N
Cynoglossum grande	hounds tongue	Y
Cynosurus echinatus	dogtail grass	N
Delairea odorata	German-ivy	N
Dichelostemma capitatum	blue dicks	Y
Dipsacus sativus	Fuller's teasel	N
Dirca occidentalis	Western leatherwood	Y
Dittrichia graveolens	Mediterranean stinkwort	N
Drymocallis glandulosa	sticky cinquefoil	Y
Echium candicans	pride of madeira	N
Ehrharta calycina	veldt grass	N
Elymus glaucus	blue wild rye	Y
Epilobium canum	California fuchsia	Y
Epipactis helleborine	helleborine orchid	N
Equisetum telmateia braunii	giant horsetail	Y
Eriogonum nudum	naked buckwheat	Y
Eriophyllum lanatum	wooly sunflower	Y
Erodium cicutarium	red-stemmed filaree	N
Eschscholzia californica	common California poppy	Y
Eucalyptus globulus	bluegum eucalyptus	N
Euphorbia oblongata	oblong spurge	N
Festuca californica	California fescue	Y
Festuca (*Vulpia*) *myuros*	rattail grass	N
Festuca perennis	perennial rye-grass	N
Foeniculum vulgare	common fennel	N
Fragaria vesca	wood strawberry	Y
Frangula californica	California coffee-berry	Y
Fritillaria sp.	checker lily	Y
Galium aparine	annual bedstraw	N
Galium murale	tiny bedstraw	N
Genista monspessulana	French broom	N
Geranium dissectum	dissected geranium	N
Geranium molle	dove's-foot crane's-bill	N
Geranium purpureum	little robin	N
Hedera helix	English ivy	N
Helminthotheca echioides	bristly ox-tongue	N
Heracleum maximum	cow parsnip	Y
Hesperocyparis macrocarpa	Monterey cypress	Y*
Heteromeles arbutifolia	toyon	Y
Hirschfeldia incana	summer mustard	N
Holodiscus discolor	oceanspray	Y
Hordeum murinum	mouse barley	N
Hypochaeris radicata`	hairy cat's ear	N
Juncus patens	spreading rush	Y
Lactuca serriola	common prickly lettuce	N

Scientific Name	Common Name	Native (Y/N)
Lathyrus latifolius	perennial sweet-pea	N
Lepidium latifolium	broad-leaved peppergrass	N
Lithophragma affine	woodland star	Y
Lobularia maritima	sweet alyssum	N
Lonicera hispidula	California honeysuckle	Y
Lotus corniculatus	birdfoot trefoil	N
Lupinus albifrons	silver bush-lupine	Y
Lupinus albifrons.	silver bush lupine	Y
Lupinus succulentus	arroyo lupine	Y
Madia sativa	coast tarweed	N
Maianathemum stellatum	false Solomon's seal	Y
Malva parviflora	small-flowered mallow	N
Marah fabacea	manroot	Y
Marrubium vulgare	horehound	N
Matricaria discoidea	pineapple weed	N
Medicago polymorpha	burclover	N
Melilotus albus	white sweetclover	N
Melica californica	California melic	Y
Melica torreyanna	Torrey's melic	Y
Mentha sp.	mint	--
Mimulus aurantiacus	Sticky monkeyflower	Y
Myosotis latifolia	forget me not	N
Monardella villosa	coyote mint	Y
Nasturtium officinale	watercress	Y
Oemleria cerasiformis	oso berry	Y
Oxalis pes-caprae	Bermuda buttercup	N
Pellaea andromedifolia	coffee fern	Y
Pentagramma triangularis	goldback fern	Y
Phacelia californica	California phacelia	Y
Phacelia malvifolia	stinging phacelia	Y
Phalaris aquatica	Harding grass	N
Phalaris canariensis.	canary grass	N
Physocarpus capitatus	ninebark	Y
Pinus radiata	Monterey pine	Y*
Pinus sp.	ornamental pine	N
Plantago lanceolata	English plantain	N
Poa secunda	one-sided blue grass	Y
Polypodium sp	polypody fern	Y
Polystichum munitum	Western sword fern	Y
Prunus sp.	plum	N
Prunus dulcis	domestic almond	N
Psuedognaphalium sp.	cudweed	--
Pteridium aquilinum var. pubescens	bracken fern	Y
Quercus agrifolia var. *agrifolia*	coast live oak	Y
Raphanus sativus	cultivated radish	N
Ranunculus californicus	California buttercup	Y
Ranunculus repens	creeping buttercup	N
Ribes menziesii	canyon gooseberry	Y

Scientific Name	Common Name	Native (Y/N)
Ribes sanguineum var. glutinosum	red-flowering current	Y
Rosa gymnocarpa.	wood rose	Y
Rubus armeniacus	Himalayan blackberry	N
Rubus parviflorus	thimbleberry	N
Rubus ursinus	California blackberry	Y
Rumex acetosella	sheep sorrel	N
Rumex crispus	curly dock	N
Rumex pulcher	fiddle dock	N
Salix lasiolepis	arroyo willow	Y
Salix sp.	willow	Y
Sambucus nirga ssp. *caerula*	blue elderberry	Y
Sanicula crassicaulis	Pacific sanicle	Y
Scrophularia californica	California bee plant	Y
Senecio vulgaris	common groundsel	N
Sequoia sempervirens	coast redwood	Y
Silybum marianum	blessed milkthistle	N
Sisyrinchium bellum	blue-eyed-grass	Y
Solanum furcatum	forked nightshade	N
Solidago velutina ssp. californica	California goldenrod	Y
Sonchus oleraceus	common sow-thistle	N
Stachys rigida	hedge nettle	Y
Stellaria neglecta	common chickweed	N
Stipa lepida	foothill needle grass	Y
Stipa pulchra	purple needle grass	Y
Symphoricarpos albus	common snowberry	Y
Symphoricarpos mollis	creeping snowberry	Y
Symphyotrichum chilense	Pacific aster	Y
Tiarella trifoliata var. unifoliata	sugar scoop	Y
Torilis arvensis	field hedge parsley	N
Toxicodendron diversilobum	poison oak	Y
Trientalis latifolia	star flower	Y
Trifolium hirtum	rose clover	N
Trifolium willdenovii	tomcat clover	Y
Trillium chloropetalum	giant wakerobin	Y
Turritis glabra	tower rockcress	Y
Typha angustifolia	narrow cattail	N
Ulmus sp.	ornamental elm	N
Umbellularia californica	California bay	Y
Urtica dioica ssp. *holoserica*	perennial stinging nettle	Y
Vaccinium ovatum	huckleberry	Y
Vicia gigantean	giant vetch	Y
Vicia sativa	spring vetch	N
Vicia villosa	hairy vetch	N
Vinca major	periwinkle	N
Wyethia angustifolia	narrow leaved mule ears	Y
Wyethia helenioides	wooly mule ears	Y
Wyethia glabra	smooth mule ears	Y
Xanthium strumarium	common cocklebur	N

Scientific Name	Common Name	Native (Y/N)
Yucca sp.	ornamental yucca	N
Zantedeschia aethiopica	callalily	N

*= Native plant not naturally occurring in the project area

E2

California Red-legged Frog
Habitat Assessment

California Red-legged Frog Habitat Assessment

UC Berkeley Hill Campus Fire Hazard Reduction
University of California, Berkeley

April 2019

Prepared for:

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1.0 Introduction

On behalf of the University of California, Berkeley (UCB), Condor Country Consulting, Inc. (CCCI) has prepared this habitat assessment in accordance with the *Revised Guidance on Site Assessment and Field Surveys for the California Red-legged Frog* (USFWS, 2005) for the UC Berkeley Hill Campus Fire Hazard Reduction project. This site assessment was prepared in support of a California Environmental Quality Act (CEQA) document that UCB's Facilities Services is preparing for UC Berkeley Hill Campus Fire Hazard Reduction project. The purpose of this site assessment is to determine the likelihood of California red-legged frog (CRLF) presence in the Proposed Project site and surrounding vicinity.

1.1 Project Location and Description

The project is located in the East Bay Hills above the cities of Berkeley and Oakland, in the heavily vegetated 800-acre Hill Campus of the UCB. The project is primarily bounded by Grizzly Peak Road to the north and east, Centennial Drive to the west, and Claremont Avenue to the south. The UCB main campus is west of the project area (Figures 1 and 2).

The University of California Berkeley (UCB) proposes to treat vegetation in 242 acres in the Hill Campus to reduce wildfire hazard and potential damage to approximately 3,000 habitable structures and institutions of international importance as well as improved life safety for 3000-plus residents and approximately 1000 day-time users of the Hill Campus, and increasing the reliability of the 150 KV transmission line, the sole power source to the campus and Lawrence Berkeley National Laboratory. The campus will target areas forested with flammable eucalyptus and high fuel volume, and areas within 100 feet of roads, fire-trails, ridge tops, and buildings. Area treatments will thin the forest to reduce fuel volume and fire hazard. Roadside treatments will both reduce fire intensity along the road and remove hazardous trees likely to block the road. Defensible space will be installed within 100 feet of buildings.

Vegetation will be treated through the combination of the use of machinery, and hand labor. Trees would be cut using hand tools and a mechanized fellerbuncher. To prevent re-sprouting, an herbicide will be applied by a licensed California Qualified Applicator to the cambium ring of eucalyptus and acacia stumps. Felled trees will be skidded by rubber-tired or tracked vehicles along skid trails to landings. Selected tree trunks will be left on the slope. At the landings, trees would be stored or chipped using a grapple-fed chipper or a tracked chipper. Whole trees will be fed into the chipper and pulled through the blades by a conveyor belt and feed wheel. Chips will be both spread on-site and transported to a gasifier to supply electricity directly to the campus. Along roads and buildings, lower limbs of trees will be pruned, understory vegetation shortened and grass mowed.

1.2 California Red-legged Frog Background

CRLF are nearly endemic to California. They can be locally common to abundant in some areas. This species is listed as threatened under the federal Endangered Species Act (FESA; USFWS 1973), and is a California species of special concern (CDFG 2019). CRLF occur from extreme

northern Baja California, Mexico north to Mendocino and Shasta Counties, and west from the Sierra Nevada foothills to the Pacific Coast (Jennings and Hayes 1994, Stebbins 2003). CRLF are most abundant along the Inner Coast Ranges from Point Reyes to southern Santa Barbara County, and within eastern Contra Costa and Alameda Counties (Jennings and Hayes 1994). Over the years these populations have become fragmented or extirpated.

Although CRLF uses an array of habitat types (including aquatic, riparian, and upland), typical habitat for this species is perennial and long-lived ephemeral ponds and slow moving creeks. CRLF optimal habitat includes upland habitat (grasslands, oak woodlands/savannah, scrub, and riparian woodlands) with fossorial mammal burrows (especially those of California ground squirrel (*Otospermophilus beecheyi*) and pocket gopher (*Thomomys bottae*)) surrounding aquatic breeding sites (Zeiner et al. 1988, Jennings and Hayes 1994, USFWS 2002, Stebbins 2003). Rocks, downed trees, leaf litter, and man-made debris (water troughs, hay stacks) are often used as shelter for this species (USFWS 2010). Creek banks and riparian woodland corridors are also important CRLF habitat (USFWS 2010). These upland and riparian sites are used for foraging, cover, aestivation, dispersal (USFWS 2002, USFWS 2010).

CRLF reproduction occurs in aquatic environments from November through April. During heavy rains, adult CRLF migrate to nearby breeding habitats. Egg masses are attached to aquatic vegetation just below the water surface, and hatch after approximately 4 weeks (California Herps 2019). Water must be present at the breeding site for at least 11-20 weeks to allow for tadpoles to metamorphose; however, if water is perennial, tadpoles can overwinter and metamorphose the following summer (USFWS 2010, California Herps 2019).

Primary threats for this species include habitat conversion to urban development and exotic predator invasions and introductions such as bullfrogs (Jennings and Hayes 1994, USFWS 2002). Habitat protection for critical populations is an important management goal for the USFWS (2002). Reduction in exotic species introductions and removal of exotic species sympatric with CRLF may also increase habitat suitability (Zeiner et al. 1988, Jennings and Hayes 1994, USFWS 2002, Stebbins 2003).

2.0 Environmental Setting

The Project Area is located in the East Bay Hills located above the University of California, Berkeley, (UCB) campus and the Lawrence Berkeley National Lab (LBNL). Initial vegetation and aquatic community surveys were conducted in 2010 as part of the Federal Emergency Management Agency (FEMA) East Bay Hills Hazardous Fire Risk Reduction Project. Follow-up surveys were conducted during the winter and early spring of 2019 in support for a California Environmental Quality Act (CEQA) document in preparation of the next phase of the UC Berkeley Hill Campus Fire Hazard Reduction grant from the California Department of Forestry and Fire Protection (Cal Fire). A total of eleven vegetation communities were identified in the Project area and named according to the conventions used in the original FEMA biological assessment (FEMA 2012), as well as those described in *A Manual of California Vegetation* (Sawyer et al. 2009), *California Vegetation* (Holland 1995), *USFWS National Wetlands Inventory* (USFWS 2019b) and Cowardin (Cowardin et al., 1979). The vegetation communities include: California annual grassland, coastal scrub (xeric), coniferous forest/non-native

coniferous forest, coyote brush scrub, developed/disturbed/landscaped, eucalyptus forest, oak-bay woodland, redwood forest, riparian woodland, riverine and lacustrine features, and successional grassland.

3.0 Methods

3.1 Preliminary Data Gathering and Literature Review

The methods used for this CRLF site assessment are based on the U.S. Fish and Wildlife Service (USFWS) *Revised Guidance on Site Assessment and Field Surveys for the California Red-legged Frog* (USFWS 2005). The site assessment included a review of available resources to provide an overview of the upland and aquatic habitats present within the study area and surrounding vicinity. The California Department of Fish and Wildlife (CDFW) California Natural Diversity Data Base (CNDDB) (CDFW, February 2019) and the USFWS Recovery Plan for the California Red-legged Frog (*Rana draytonii*) (USFWS, 2002) were reviewed for information regarding known existing and historic populations of CRLF in the vicinity of the study area. A listing of other information sources reviewed prior to conducting the field assessment included:

- USGS "Briones Valley, Oakland East, and Richmond, CA" 7.5-minute topographic quadrangles,
- Aerial photography of the project area and vicinity, (Google Earth Pro, 2019),
- California's Wildlife Volume 1, Amphibians and Reptiles (Zeiner, D.C., et al., 1988),
- Amphibians and Reptiles of Special Concern (Jennings and Hayes, 1994),
- USFWS online species information for CRLF (USFWS, 2007),
- National Wetlands Inventory database shapefiles (USFWS 2019b).

3.2 Habitat Assessment

Three criteria were used to assess the likelihood of CRLF presence in or within the vicinity of the Project Area:

1. The location of the Project Area with respect to the current and historic range of CRLF.
2. The presence of absence of known record of CRLF within a one-mile radius of the Project Area.
3. The habitat types occurring within and adjacent to the Project Area.

CCCI biologists conducted biological reconnaissance surveys of the Project Area during nine visits spanning between February 27 and April 16, 2019 (Feb. 27, 28; Mar. 1, 4, 12-14, 19; and Apr 16). During the surveys, the habitat types on-site were classified, 39 stream and pond habitat locations were assessed, and protocol level surveys were conducted at ten (10) pond and stream pool locations (Figures 3 and 4).

3.3 Vegetation Community and Wildlife Habitat Classification

Plant identification was based upon the *Second Edition of The Jepson Manual* (Baldwin et al. 2012). Vegetation communities were identified using a combination of the characterizations in *A Manual of California Vegetation* (Sawyer et al. 2009) and the land cover types identified by

California Vegetation (Holland 1995). Final vegetation community types were aligned with those described in the 2012 Biological Assessment for the Hazardous Fire Risk Reduction for the East Bay Hills (FEMA 2012). Land cover types were classified by disturbance, dominant species, overall species composition, and affinity for water or various substrates. The minimum mapping unit for this project was defined as an area of 200 square feet. Wetlands and other aquatic habitats were classified using the USFWS National Wetlands Inventory (NWI) Classification System for Wetland and Deepwater Habitats, or "Cowardin class" (Cowardin et al., 1979 and USFWS 2019b).

4.0 Results

4.1 Current and Historic Range of the CRLF in Relation to the Project Area

The study area is within the historic range of the CRLF according to California's Wildlife Volume 1, Amphibians and Reptiles revised map (Zeiner et al., 1988 and Wright & Thomson 2014). Its current range is much reduced, with most remaining populations found in central California along the coast from Marin County south to Ventura County. No USFWS critical recovery areas were identified within, or in the vicinity of the Project Area. The nearest CRLF critical recovery unit is located in Contra Costa County, four miles northeast of the Project Area (USFWS 2019a).

4.2 Assessment of CRLF Records within One Mile of the Study Area

There were two non-CNDDB documented occurrences within 1 mile of the site documented by the East Bay Regional Park District (EBRPD) biologists (Figure 5). On March 5th, 2019, a Fisheries database search came up with two records, a 2008 record (confirmed by park stewardship manager Joe DiDonato) of an adult CRLF found in Lake Anza which intersects the 1-mile Project Area buffer to the north. Steve Edwards, the former director of the Tilden Botanical Garden, remembers seeing a few CRLF adults after the botanical garden pond was rebuilt in 2001. Soon after the pond was rebuilt, members of the public started to release bullfrogs into the pond. The pond became infested with bullfrogs, and subsequently, no CRLF sightings have occurred at this site, located 0.7 miles north of the Project Area.

The nearest documented CNDDB occurrence of CRLF is 1.7 miles northeast of the Project Area and is located in Contra Costa County (CNDDB occurrence #960); two adult and 40-60 tadpoles CRLF were observed in the Wagner Ranch Nature area pond in 2007 (Figure 5). Personal communication with wildlife biologist Dr. Reg Barrett, a volunteer caretaker for this nature area in January 2019, personally observed that CRLF are still present in this pond. This pond is separated from the project area by two major watersheds and ridgelines, and a heavily used commuter highway (San Pablo Dam Road). The next closest CNDDB occurrence was 1.9 miles east of the Project Area (CNDDB occurrence # 226) in 1997, were two adult CRLF in a culvert outlet pool in a seasonal tributary to Brookside Creek. This area has been extensively developed since that sighting and the SR-24 eight-lane highway creates a major dispersal barrier for this population. The third CNDDB record (occurrence #8), located 2 miles southeast of the Project Area, is from a UCB Museum of Vertebrate Zoology (MVZ) collection of egg masses and 3 adults from 1931.

4.3 Habitats Within the Project Area

As shown on Figures 6 and 7, terrestrial habitat types within the study area include California annual grassland, coastal scrub (xeric), coniferous forest/non-native coniferous forest, coyote brush scrub, developed/disturbed/landscaped, eucalyptus forest, oak-bay woodland, redwood forest, riparian woodland, riverine and lacustrine features, and successional grassland. Aquatic habitats within the study area include man-made lakes, man-made ponds, and stream courses. A general discussion of each habitat type is provided below.

4.3.1 Terrestrial Habitats Within the Project Area

California Annual Grassland

California annual grassland, also known as non-native annual grassland, is a predominantly herbaceous community, typically composed of a dense cover of introduced annual grasses and non-native and native forbs adapted to colonizing and persisting in disturbed upland habitats. Native grasses and perennial forb may also occur sporadically in the California annual grassland community. Dominant non-native invasive grasses include wild oats (*Avena* spp.), ripgut brome (*Bromus diandrus*), foxtail barley (*Hordeum murinum*), and annual fescues (*Festuca* spp.). Common non-native forbs observed include burclover (*Medicago polymorpha*), rose clover (*Trifolium hirtum*), and filarees (*Erodium* spp.). Nonnative invasive forbs, such as poison hemlock (*Conium maculatum*) and Italian thistle (*Carduus pycnocephalus*) are present in California annual grassland communities where soils have been disturbed. Scattered native grasses, including purple needlegrass (*Stipa pulchra*), blue wild rye (*Elymus glaucus*), and creeping wild rye (*Elymus triticoides*), occur sparingly in this community in the project area. Native forbs present include California poppy (*Eschscholzia californica*), yarrow (*Achillea millefolium*), clovers (*Trifolium* spp.), and blue-eyed grass (*Sisyrinchium bellum*). California annual grasslands within the action area may provide suitable dispersal, upland refugia, and aestivation habitat for California red-legged frogs.

Coastal Scrub (xeric)

Northern coastal scrub communities are characterized by relatively open to dense woody shrub cover and an absence of trees. Saplings of oak species (*Quercus* spp.), California bay (*Umbellularia californica*), and Monterey pine (*Pinus radiata*) trees sometimes emerge from the shrub canopy cover. The project area is dominated by shrubs and forbs adapted to relatively xeric conditions. Coyote brush (*Baccharis pilularis*) is the dominant shrub in xeric coastal scrub communities in the project area. Other shrub species present include California sagebrush (*Artemisia californica*), toyon (*Heteromeles arbutifolia*), silver bush lupine (*Lupinus albifrons*), poison oak (*Toxicodendron diversilobum*), and sticky monkey-flower (*Diplacus aurantiacus*). Scattered coast live oak (*Quercus agrifolia*), California bay, and Monterey pine trees also occur in this community. Non-native invasive species commonly observed in coastal scrub include French broom (*Genista monspessulana*), poison hemlock, and fennel (*Foeniculum vulgare*). Coastal scrub communities dominated by species adapted to more mesic (i.e., moist) conditions are also present in the project area, although less common than xeric coastal scrub communities. The dominant plant species observed in mesic coastal scrub include California blackberry (*Rubus ursinus*), thimbleberry (*Rubus parviflorus*), blue elderberry (*Sambucus nigra* ssp. *caerulea*), and California hazelnut (*Corylus cornuta*). Non-native invasive species in this community include poison hemlock, Italian thistle, and Himalayan blackberry (*Rubus armeniacus*). Scattered coast live oak and California bay, as well as madrone (*Arbutus menziesii*) and bigleaf maple (*Acer*

macrophyllum) are also occasionally present in this community. Coastal scrub communities within the action area may provide suitable dispersal habitat for CRLF.

Coniferous Forest/Non-native Coniferous Forest
The coniferous forest community in the project area is dominated by Monterey pine, which is native only to San Mateo, Monterey, and San Luis Obispo counties and was planted in the East Bay Hills in the early 1900s. Similar to other woodland and forest communities, the understory is typically sparse, and the ground is covered mostly by pine needles. In more open canopied Monterey pine forests, native shrubs species such as California blackberry, coyote brush, and poison oak are common. Non-native species commonly observed in Monterey pine forests include erect veldt grass (*Ehrharta erecta*) and poison hemlock. Mature groves of varying densities of Monterey pine occur throughout the project area, often with eucalyptus (*Eucalyptus globulus*), coast live oak, and California bay trees.

Coyote Brush Scrub
Coyote brush scrub is a successional stage from grassland to scrub and commonly occurs where grazing or fire has been discontinued or suppressed. Coyote brush scrub is distinct from coastal scrub by the density of coyote brush and low cover of other shrubs species, such as California sagebrush and poison oak. In areas of dense coyote brush, little or no understory is present; however, herbaceous grass and forb species such as wild oats, blue wild rye, and bracken fern (*Pteridium aquilinum* var. *pubescens*) are along edges or in open areas. Non-native invasive species such as Italian thistle and French broom are also commonly present in disturbed areas in this community.

Developed/Disturbed/Landscaped
Developed, disturbed, and landscaped areas consist of land developed for residential and urban use, including landscaped and maintained residential and parkland, as well as areas used for road and trail construction and maintenance. Vegetation in these areas is predominantly planted trees, shrubs, and non-native herbaceous species. A large variety of ornamental trees and shrubs were observed in this community.

The action area includes; large buildings, structures, and parking lots, such as the UCB Mathematical Sciences Research Institute Building, and public roads. Landscaped areas include maintained yards associated with private residences and planted or maintained areas associated with public or University buildings, and botanical gardens such as the UCB Botanical Garden. Disturbed vegetation includes areas created by natural or human disturbance that may support early succession stages of adjacent habitats. Disturbed areas are often susceptible to invasion by non-native species, including weeds such as French broom, fennel, poison hemlock, and Italian thistle. Disturbed areas were identified in a variety of locations, including areas near new development, along road shoulders, or on hillsides, such as the hillsides along portions of Grizzly Peak Blvd. Developed, disturbed, and landscaped areas do not provide suitable habitat for CRLF, but they may occasionally disperse through these areas to access more suitable habitat.

Eucalyptus Forest
Eucalyptus trees were introduced from Australia and were widely planted throughout the East Bay Hills in the early 1900s. Eucalyptus trees are capable of rapid growth and prolific

reproduction. A rapid growth rate and the production of allelopathic oils, which inhibit establishment of other species, have helped eucalyptus forests invade large areas of the project area.

Eucalyptus stands in the project area range between young stands (i.e., less than 40 years old) of recently colonized saplings to mature stands (i.e., over 40 years old) including some stands that have never been logged. Blue-gum eucalyptus is the dominant species. The understory of these young stands usually supports a more diverse mix of native and non-native shrubs and herbaceous plants when compared to those in the mature stands. Native species in this community include California blackberry, poison oak, toyon, and coyote brush; non-native invasive species include cotoneaster (*Cotoneaster* sp.), French broom, erect veldtgrass, and the non-native oblong spurge (*Euphorbia oblongata*). Mature eucalyptus forests characterized by a closed-canopy and sparse shrub and forb understory. Scattered coast live oak and California bay trees are present in both young and mature eucalyptus stands. Additionally, redwood trees (*Sequoia sempervirens*) are occasionally present in stands of eucalyptus.

Eucalyptus forests within the action area provide low quality dispersal habitat for CRLF. Eucalyptus trees within the action area degrade the aquatic habitat for CRLF by altering hydrology and water chemistry. The high rates of transpiration by eucalyptus trees reduce the availability of surface water within the action area. The allelopathic oils released from the litter of eucalyptus trees impair water quality within the action area and reduce the availability of suitable invertebrate prey species for the CRLF.

Oak-Bay Woodland

The oak-bay woodland community consists of a mix of predominantly coast live oak and California bay trees. Other native trees found in this vegetation community in the project area include California buckeye, bigleaf maple, and madrone. Understory species may contain poison oak, woodfern (*Dryopteris arguta*), Swordfern (*Polystichum* sp.), California blackberry, coyote brush, California hazelnut, toyon, and currants (*Ribes* spp.). Oak-bay woodland within the action area may provide suitable dispersal habitat for CRLF.

Redwood Forest

Coast redwood trees tend to be on shallow soils on north and east-facing slopes or in valley or canyon bottoms. In the project area, redwood forest exists in small patches in Strawberry Creek, the UC Botanical gardens and in Claremont Canyon. Shrubs and herbaceous species are relatively sparse in the understory of closed canopy redwood forests. Understory plants may include poison oak, ocean spray (*Holodiscus discolor*), and California hazelnut. Redwood forests within the action area may provide suitable dispersal habitat for California red-legged frogs.

Riparian Woodland

Riparian woodland communities are located along streams and on the edges of seeps and ponds. Arroyo willow (*Salix lasiolepis*) is the dominant species in this community in the project area. Scattered California bay and coast live oak trees were also identified adjacent to riparian woodland communities. California blackberry, thimbleberry, sword fern, blue gum eucalyptus, and poison oak are commonly found in the understory. The most common non-native species identified in the action area's riparian woodland communities are English ivy (*Hedera helix*) and

poison hemlock. Riparian woodlands within the action area may provide suitable dispersal, foraging, and non-breeding aquatic habitat for CRLF.

Riverine and Lacustrine Features
Riverine features in the action area and vicinity include several unnamed intermittent drainages. There are two perennial creeks in the project area: Strawberry and Claremont Creeks. Strawberry and Claremont Creeks originate in the action area in Strawberry Canyon and Claremont Canyon Regional Preserve, respectively. These creeks run westward from the project area and become channelized and are diverted in culverts underground through the cities of Berkeley and Oakland before draining into San Francisco Bay.

There are limited lacustrine features in the action area, a small ephemeral pond west of the Lawrence Hall Science staff parking lot, and a shallow, perennial pond inside the UCB botanical garden. Streams, ponds, and lacustrine features within the action area provide suitable dispersal and non-breeding aquatic habitat for California red-legged frogs. There is only one pond near the action area (UCB Botanical Garden pond) that has suitable depths and hydroperiods that could provide suitable breeding habitat for CRLF.

Successional Grassland
The successional grassland community is characterized by grassland areas that appear to be in the process of transitioning into shrub-dominated communities. Vegetation consists primarily of non-native annual grasses and forb species found in California annual grasslands but with a higher cover of shrub species, typically coyote brush, than typically occurs in California annual grassland communities. In some areas, fire suppression and cessation of livestock grazing in the East Bay Hills have resulted in the succession of California annual grasslands into coyote brush scrub and coastal scrub communities (Stromberg et al. 2007). Vegetation management practices, including clearing eucalyptus stands, have also produced areas of successional grassland as shrubs have recolonized the area. Although coyote brush is the dominant shrub, other species such as sticky monkey-flower, poison oak, and occasional immature coast live oak, California bay, and other saplings were also observed. Successional grassland community present in the project area is found along the west side of Grizzly Peak Road. Successional grassland within the action area provides suitable dispersal, upland refugia, and aestivation habitat for CRLF.

4.3.2 Aquatic Habitats within the Study Area

Streams Intersecting Project Area

Claremont Creek (and Telegraph Canyon Tributary)
The portion of Claremont Creek that intersect the project area are intermittent and are accessible by Claremont Avenue. The creek contains no suitable pools or emergent vegetation that could be used by breeding CRLF. The tributaries could be used as dispersal corridors by CRLF, but ridgelines, an eight-lane freeway (SR-24), and adjacent tributaries that flow into long culverts that are not day lighted for well over 1 mile create insurmountable barriers for CRLF to access the Claremont watershed.

Strawberry Creek (and Hamilton Gulch Tributary)
The tributary portions of Strawberry Creek that intersect the project area are intermittent to ephemeral and are accessible by a gated fire road. The lower perennial portions of Strawberry Creek are below the project area impact zones. Only the perennial portion of the creek contains a few pools, but these pools have strong currents and no emergent vegetation, thus there is no suitable breeding habitat for CRLF in this drainage. There is a potential that CRLF could use the tributaries as dispersal corridors, but the watershed is separated from other watersheds by a ridgeline and Grizzly Peak Boulevard.

Streams within One Mile of Project Area

Round Top Creek
Round Top Creek is an intermittent stream located southeast of the project area that flows into a miles long culvert. The creek watershed is isolated from the project area by the eight-lane SR-24 highway and adjoining tributaries that disappear into culverts. The creek contains no breeding habitat for CRLF and the previously mentioned dispersal barriers prevent CRLF from entering into the project area.

San Pablo Creek
San Pablo Creek flows from the City of Orinda northwest into San Pablo Reservoir. The perennial portion of the creek is over 1.5 miles from the project area. A few intermittent and ephemeral tributaries enter the 1-mile project area buffer and are northeast of the Wildcat Creek and Siesta Valley Creek watersheds. There are 2 long ridgelines that separate this watershed from the project area watersheds. There is a known CRLF breeding pond that is inside this watershed, but this breeding pond is outside of the 1-mile dispersal buffer. The tributaries could provide potential CRLF dispersal habitat.

Siesta Valley Creek
Siesta Valley Creek is an intermittent creek within a small water shed less than one square mile in size. The creek and its tributaries drain into a culvert over 1-mile long underneath Highway 24. This watershed is east of the Claremont Creek watershed and south of the Wildcat Creek watershed. The creek does not contain any CRLF breeding habitat (no pools with emergent vegetation), but could provide dispersal habitat.

Wildcat Creek
Wildcat Creek flows perennially (except during drought years) in a northwest direction through the middle of Tilden Regional Park. On the north edge of the 1-mile project buffer, the creek flows through Lake Anza, a lake that has contained CRLF. The portion of Wildcat Creek above lake Anza contains CLFR dispersal habitat.

Lakes and Ponds

Lake Anza
Lake Anza is a 10-acre lake that is used for recreational swimming along one shore during the summer. The Tilden Park Fisheries Database has a 2011 record of a sub-adult CRLF observation

on the north end of the lake that was confirmed by the East Bay Regional Park Stewardship Manager, Joe DiDonato.

Lawrence Hall of Science Pond
This pond is located just west of the Lawrence Hall of Science staff parking lot. This report's principal author, Ted Robertson, was responsible for caretaking this pond for 20 years until leaving employment in 2010. In 2010 and prior years, this pond was regularly sampled several times a month and contained predominantly bullfrog tadpoles, crayfish, and aquatic insects. Summer water levels were maintained using a filtered water source. No native amphibians were observed in this pond. Between 2011 and 2019, the maintenance of this pond was neglected and a large crack developed that caused the pond to dry up each year, approximately one month after the last major rainfall. Cattails no longer survive in this pond. This pond is fed by ephemeral run-off and has no direct tributary link to Strawberry Creek. The uphill portion of the pond has a migration barrier consisting of a tall, 15 foot concrete wall, asphalt, and a large building. Three protocol level surveys were conducted at this pond at the end of the breeding season, twice during the day and once at night. No amphibians were observed or heard.

UCB Botanical Gardens Pond
This artificial and perennial pond is fed by a tributary of Strawberry Creek. It has become a well-established breeding site for California and rough-skinned newts (*Taricha torosa* and *T. granulosa*). The pond is concrete lined and contains emergent vegetation. This pond provides potential CRLF breeding habitat but there are no CRLF records for this pond since it was rebuilt in 1963 (A flood destroyed the original 1939 pond in October 1962). Three protocol level surveys were conducted at this pond at the end of the breeding season, twice during the day and once at night. No CRLF were detected, but there was observations of California newt and Sierra treefrog breeding at this pond.

Tilden Park Botanical Garden Pond
This artificial pond with a concrete base currently contains California newts and Sierran treefrogs. In 2001, an adult CRLF was spotted in this pond (Edward Culver, EBRPD fisheries biologist, personal communication 2019). CRLF have not been observed in subsequent years. About ten years ago, this pond became infested with bullfrogs until it was drained around 2015 and all bullfrogs were removed. A March 2019 amphibian survey by the author found California newts and Sierran treefrogs inhabiting the pond.

Sibley Park Northern Ponds
These adjacent perennial 3/4 acre ponds are separated by a 12 to 16-foot wide dike. These ponds are heavily infested with bullfrogs. On a recent survey, 85 individual bullfrogs were counted within 5-feet of the shoreline. Hundreds more are presumably hiding within the tules (*Schoenoplectus* sp.) that cover over 85% of the pond. The bullfrogs have captured the pond site, preventing CRLF from using this pond for reproduction or refugia.

Siesta Valley Wetland
This wetland was a cattle pond several years in the past but has now become a seasonal wetland. The seasonal wetland is well sloped allowing for drainage that prevents any pools from

developing. There is no CRLF breeding habitat at this pond, but is could serve as part of the dispersal corridor.

5.0 Summary

CCCI biologists conducted a CRLF site assessment for the Project Area and surrounding vicinity. Literature reviews, personal communications with resource managers, and CNDDB searches were conducted to assess the current and historic distribution of CRLF in relation to the Project Area. Aquatic and upland features within the Project Area and within one-mile radius were assessed for potential CRLF breeding and dispersal habitats.

There are no documented records of CRLF within the Project Area, an area that has been well traversed by herpetologists from the local University for over 130 years. The Strawberry Creek and Claremont Creek watersheds contain no adequate pools or emergent vegetation that would provide suitable CRLF breeding habitat. The few pools that are located along the lower reaches of Strawberry Creek are shallow, have strong currents running through them, and contain no emergent vegetation for egg attachment. The nearest ponds to the project area is the former Lawrence Hall of Science (LHS) pond, which is 500 feet from the urbanized portion of the Project area. Due to a breach, this pond does not hold water for more than one month after a major rain event and it is contaminated with pollutants. The UC Berkeley Botanical Garden pond could be a potential breeding location and is approximately 800 feet away from the nearest edge of the Project Area. This pond was built in 1963 and there has been no record of CRLF at this pond, although it does support a healthy breeding population of California newts and Sierran treefrogs.

The nearest confirmed sightings for CRLF are from Lake Anza, a lake that is exactly one mile from the edge of the nearest Project Boundary. There is documentation of CRLF dispersing upstream along Wildcat Creek to the Tilden Park Botanical garden, a location 0.7 miles from the nearest edge of the Project Area. There is a large golf course between the Wildcat Creek dispersal corridor and the Project Area. There is a small potential that CRLF could disperse over the ridgeline that separates Wildcat Creek into the Strawberry Creek watershed and into the Project area. Dispersal could only occur during the winter and spring months when there is adequate moisture in the habitats. By mid-May, the habitat becomes too arid for safe dispersal of CRLF. The cutting, removal and chipping of the non-native trees in the Project Area will occur between mid-August to mid-October, ending before the start of the winter rainy season. It is highly unlikely that CRLF are within the Project Area or estivating in underground burrows.

Due to the reasons outline above combined with the lack of documented historic population use in the Project Area, it is determined that the Project Area would not support a breeding population of CRLF and that CRLF would not be dispersing through the area during the summer and early fall dates scheduled for the tree removal. It is CCCI's recommendation that no additional CRLF study is warranted. Additional day and nighttime surveys that are specified in the CRLF protocol could be performed at the UC Berkeley botanical garden this summer if the USFWS feels they are still warranted.

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Appendix A

List of Figures

UC Berkeley Hill Campus Fire Hazard Reduction
University of California, Berkeley

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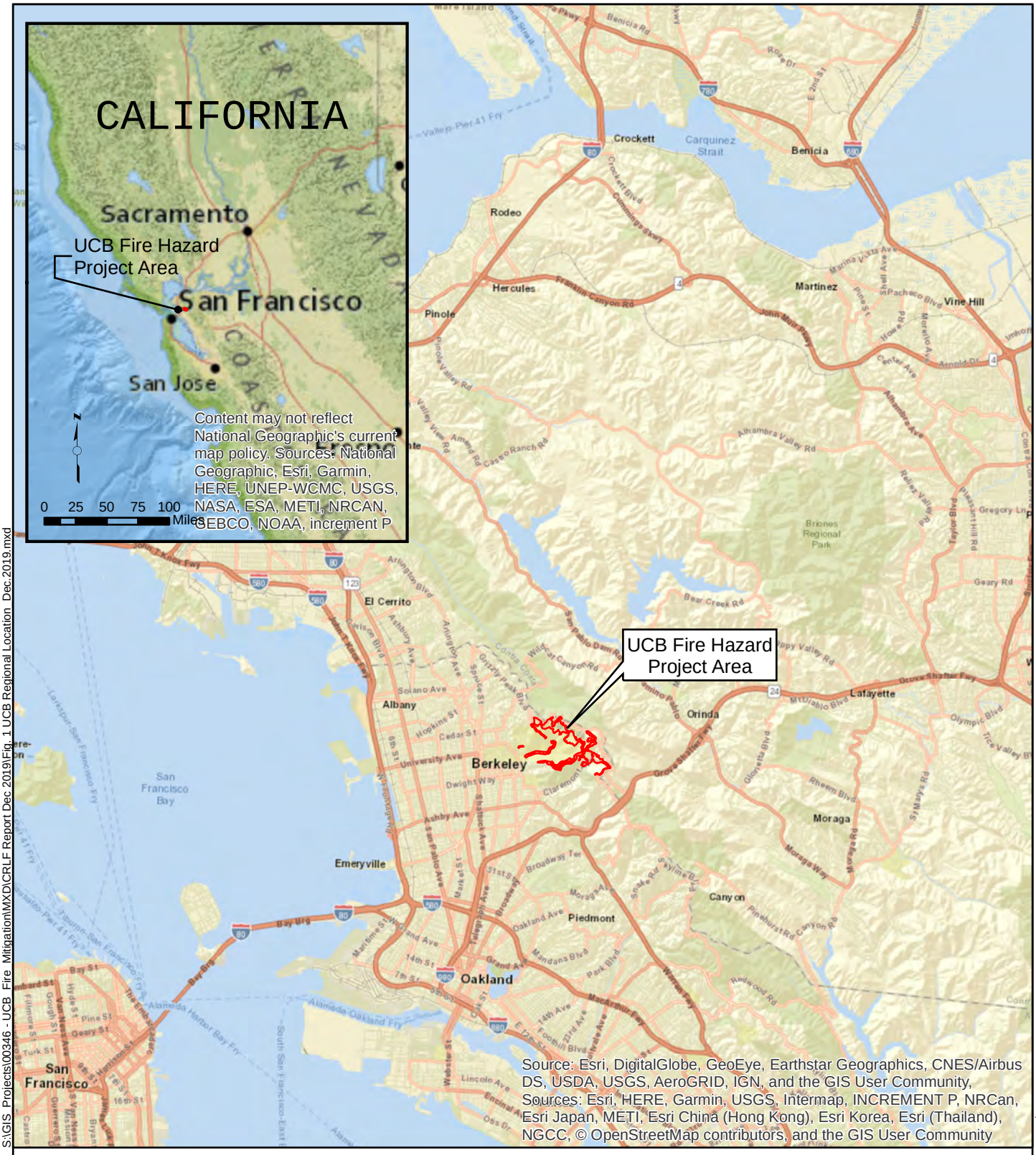


S:\GIS Projects\00346 - UCB Fire Mitigation\MXD\CRLF Report Dec 2019\Fig. 1 UCB Regional Location Dec.2019.mxd

Ted Robertson Dec 9, 2019

Regional Location of UC Berkeley Hill Campus Fire Hazard Reduction Project

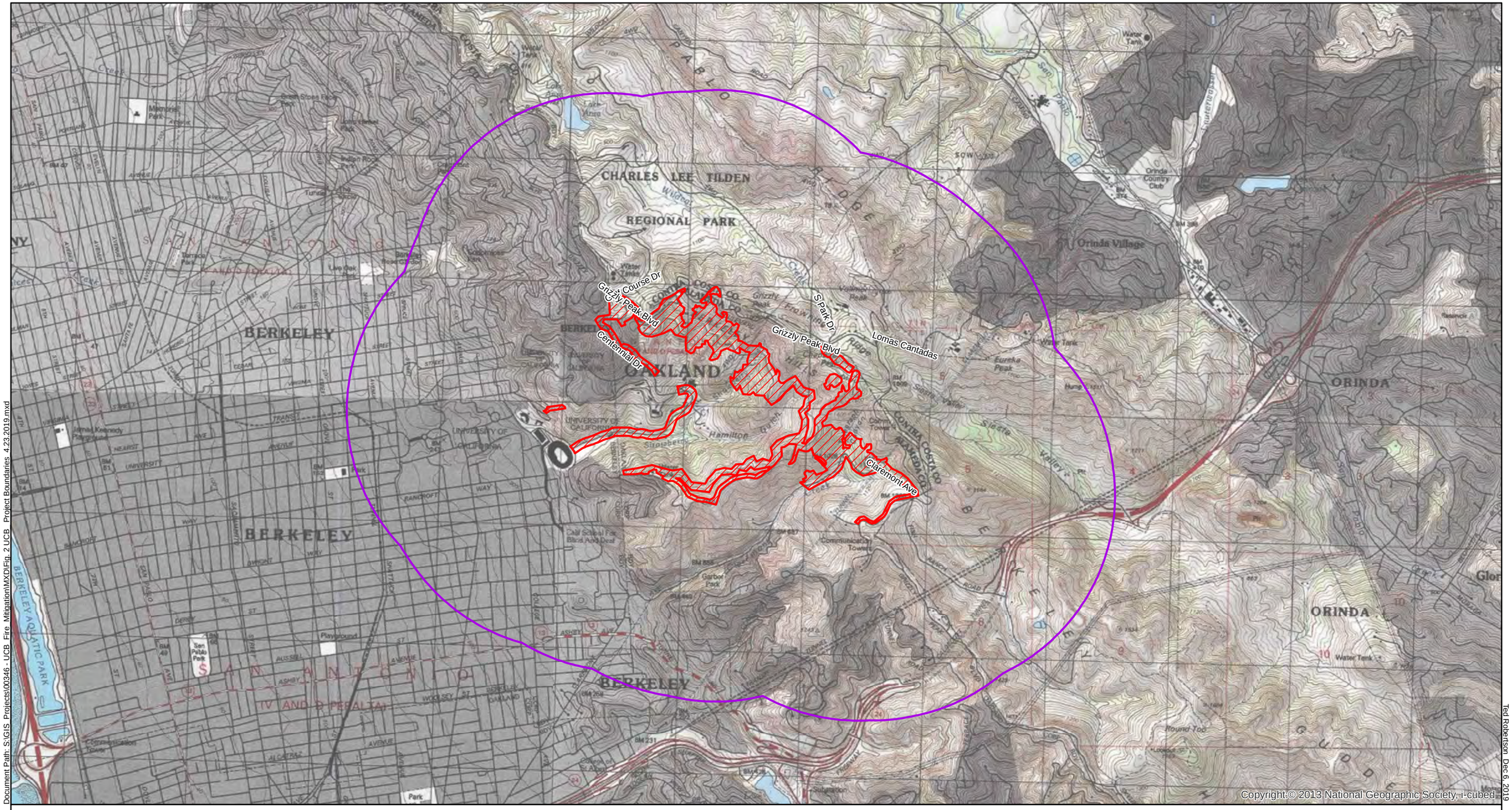
FIGURE 1

City of Berkeley, CA

N
W E
S

0 1 2 3 4 Miles

CONDOR COUNTRY CONSULTING, INC.



Project Area

1 Mile Buffer

Project Boundaries

UC Berkeley Hill Camus Fire Hazard Reduction Project

Alameda and Contra Costa Counties, California

N W E S

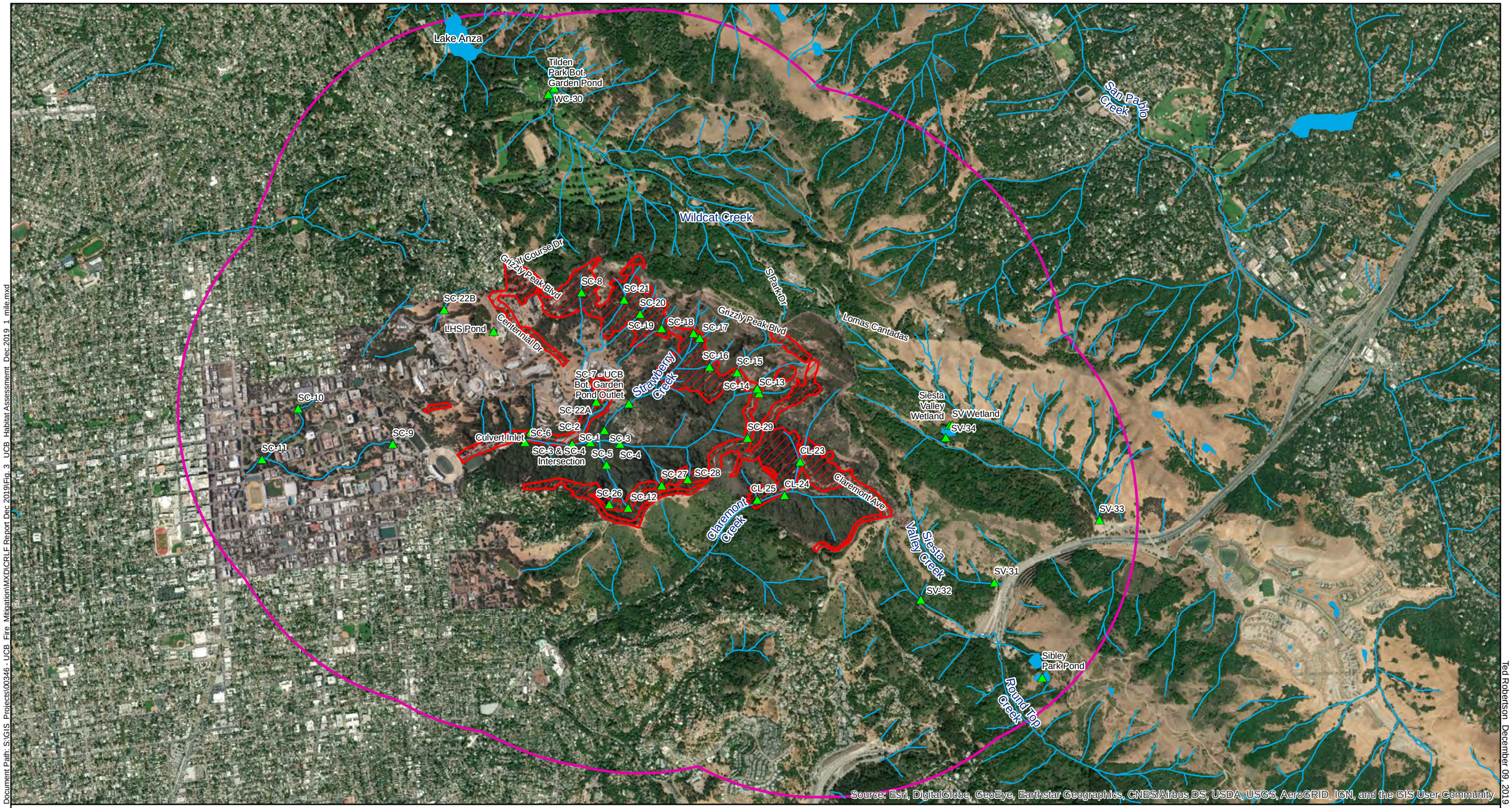
0 0.2 0.4 0.6 0.8 1 Miles

FIGURE 2

CONDOR COUNTRY CONSULTING, INC.

Document Path: S:\GIS_Projects\00346 - UCB_Fire_Mitigation\MXD\Fig_2 UCB_Project Boundaries_4.23.2019.mxd

Ted Robertson, Dec 6, 2019



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Ted Robertson December 09, 2019

CRLF Habitat Assessment Sites
UCB Fire Mitigation Project Area
1-mile Project Buffer
NWI Riverine Data

SC = Strawberry Cr. Watershed
C = Claremont Cr. Watershed
SV = Siesta Valley Watershed
W = Wildcat Cr. Watershed

Frog Habitat Assessment Locations within 1 mile of the Project Boundaries

UC Berkeley Hill Campus Fire Hazard Reduction Project

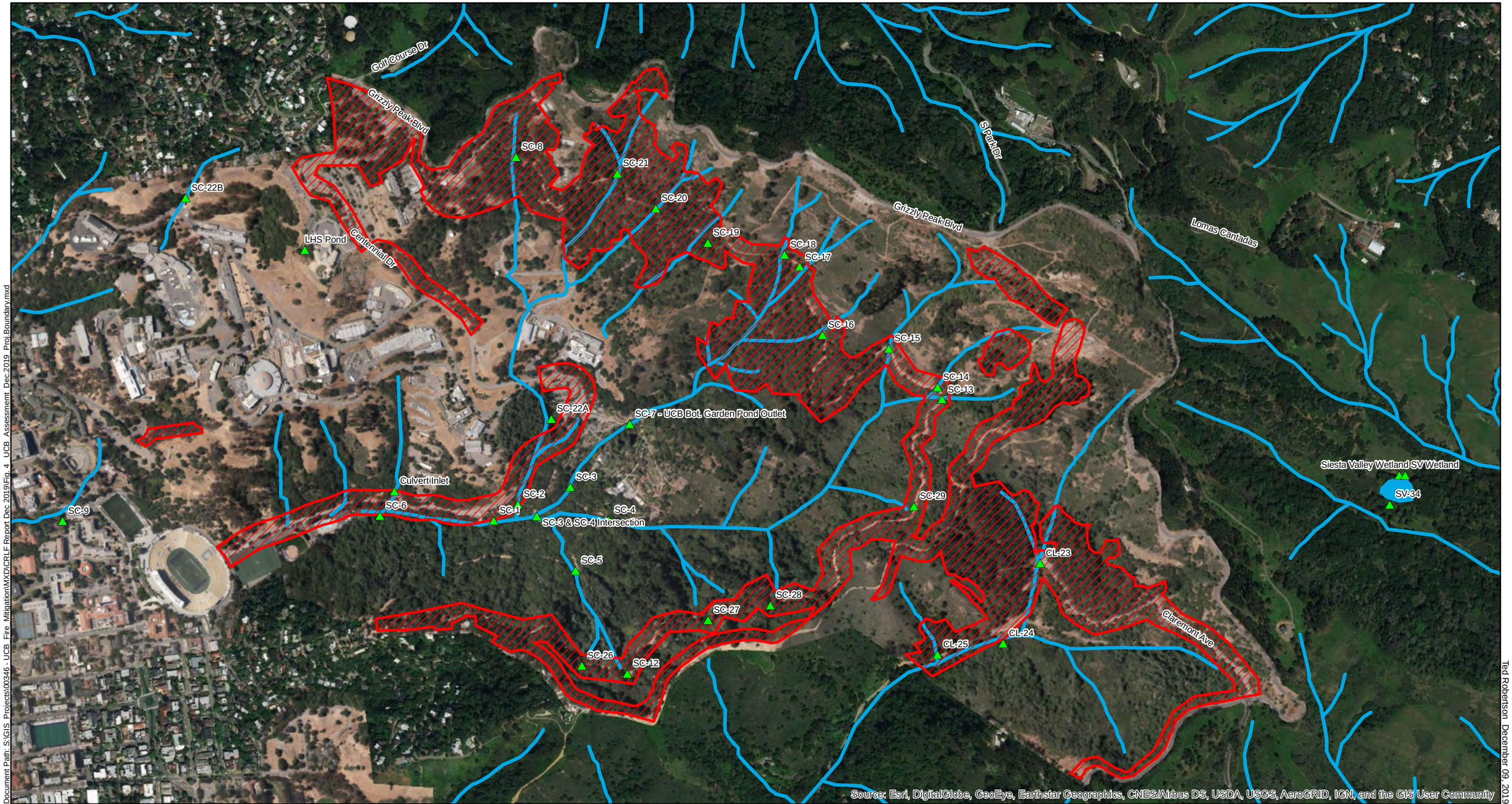
Alameda and Contra Costa Counties, California

N
W E
S

0 0.2 0.4 0.6 0.8 1 Miles

FIGURE 3

CONDOR COUNTRY CONSULTING, INC.



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Ted Robertson December 09, 2019

CRLF Habitat Assessment Sites

UCB Fire Mitigation Project Project Area

NWI Riverine Data

SC = Strawberry Cr. Watershed C = Claremont Cr. Watershed
SV = Siesta Valley Watershed W = Wildcat Cr. Watershed

Frog Habitat Assessment Locations within the Project Boundaries

UC Berkeley Hill Campus Fire Hazard Reduction Project

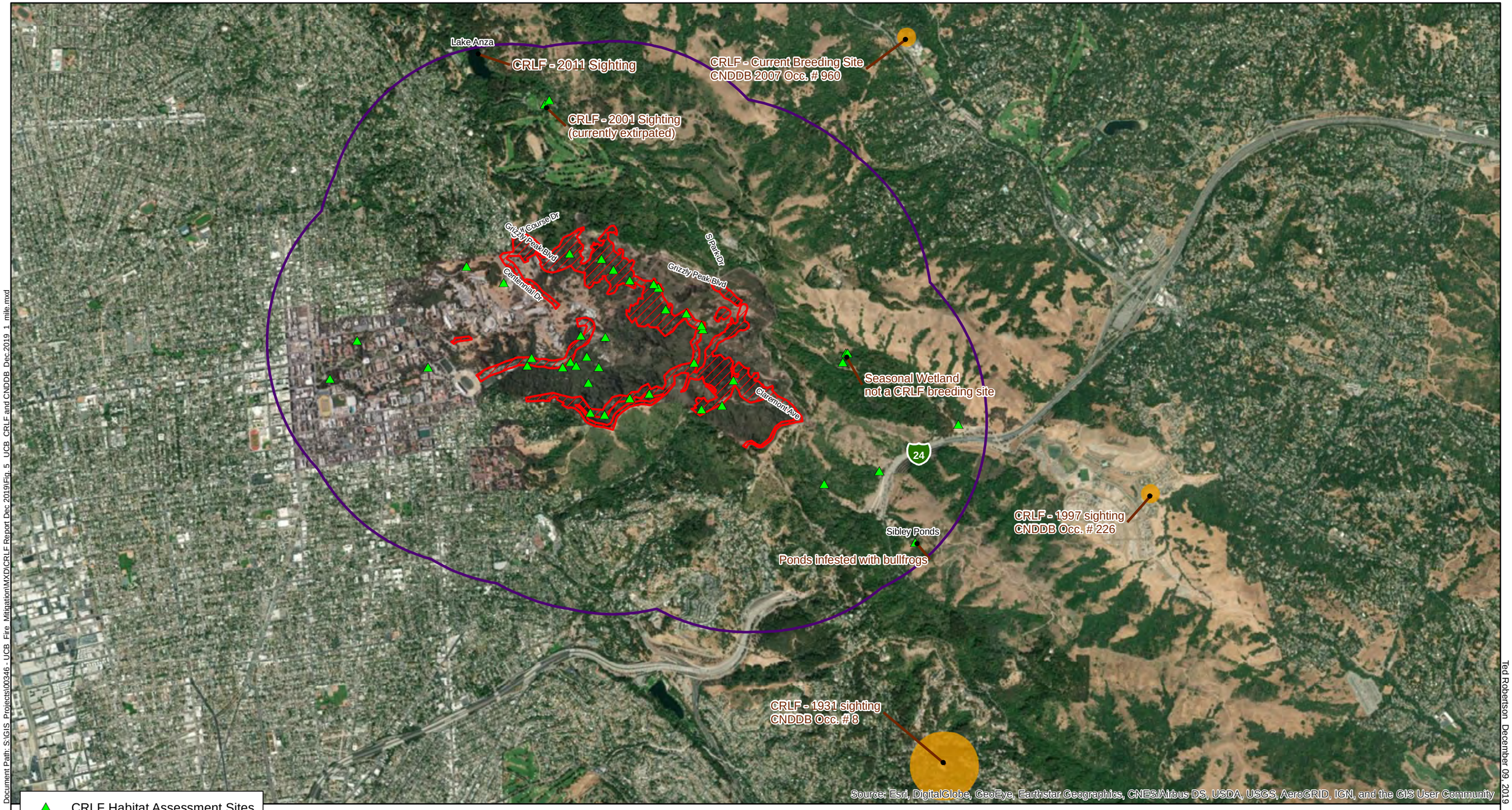
Alameda and Contra Costa Counties, California

N
W E
S

0 0.1 0.2 0.3 0.4 Miles

FIGURE 4

CONDOR COUNTRY CONSULTING, INC.



Document Path: S:\GIS_Projects\00346 - UCB_Fire_Mitigation\MXD\CRLF Report Dec 2019\Fig. 5_UCB_CRLF and CNDDB_Dec2019_1_mile.mxd

Ted Robertson, December 09, 2019

- CRLF Habitat Assessment Sites
- UCB Fire Mitigation Project Area
- 1-mile Project Buffer

CNDDB Records

- California red-legged frog

SC = Strawberry Cr. Watershed
C = Claremont Cr. Watershed
SV = Siesta Valley Watershed
W = Wildcat Cr. Watershed

CRLF Sightings and CNDDB Records

UC Berkeley Hill Campus Fire Hazard Reduction Project

Alameda and Contra Costa Counties, California

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Miles
0 0.2 0.4 0.6 0.8 1

FIGURE 5

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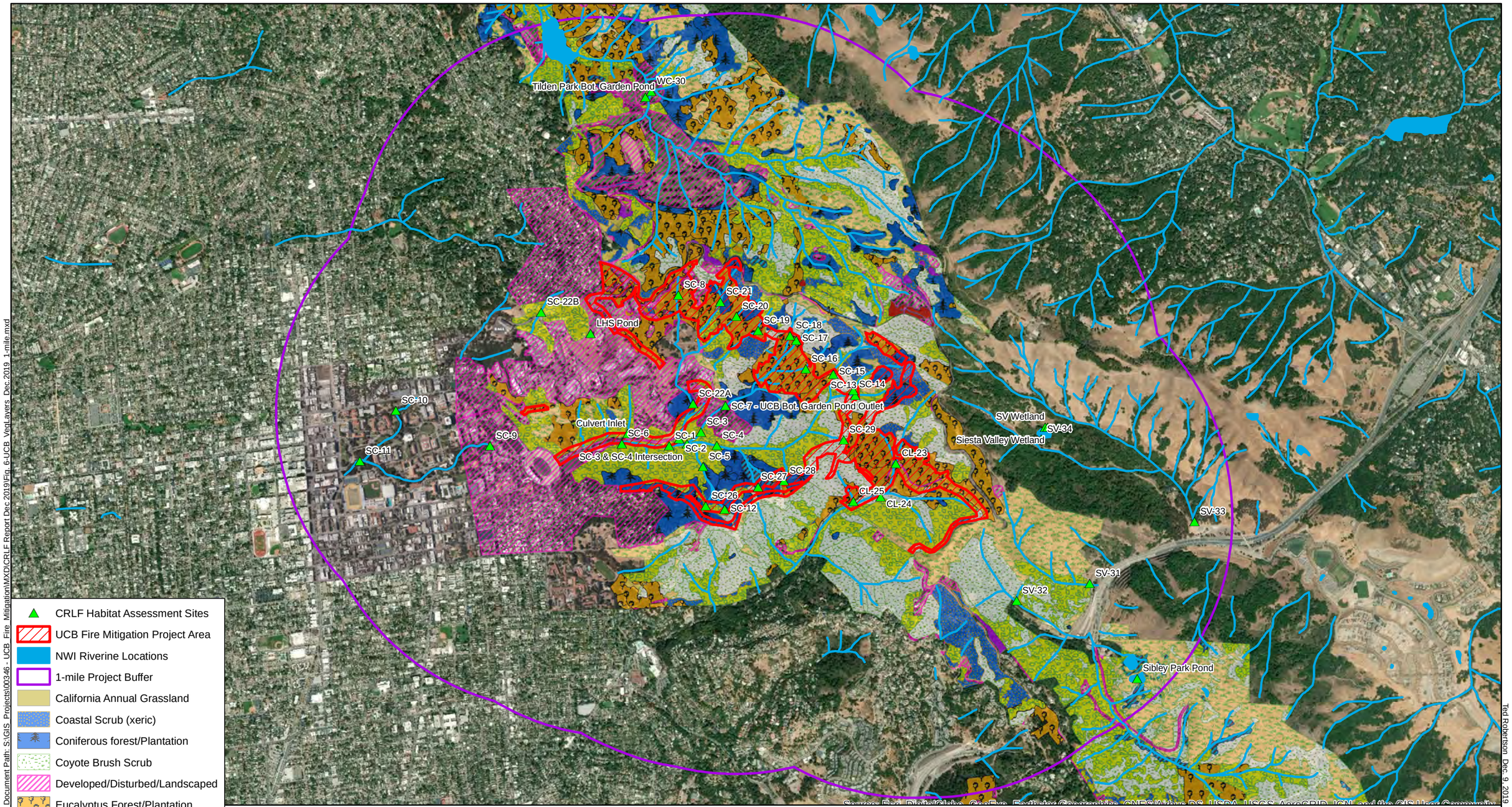


CRLF Habitat Assessment Sites
UCB Fire Mitigation Project Area
NWI Riverine Locations
1-mile Project Buffer
California Annual Grassland
Coastal Scrub (xeric)
Coniferous forest/Plantation
Coyote Brush Scrub
Developed/Disturbed/Landscaped
Eucalyptus Forest/Plantation
Non-native Coniferous Forest
Northern Maritime Chaparral
Oak-Bay Woodland/Forest
Redwood Forest
Riparian Woodland
Successional grassland

SC = Strawberry Cr. Watershed
C = Claremont Cr. Watershed
SV = Siesta Valley Watershed
W = Wildcat Cr. Watershed

HABITATS

UC Berkeley Hill Campus Fire Hazard Reduction Project

Alameda and Contra Costa County, California

N
W E
S

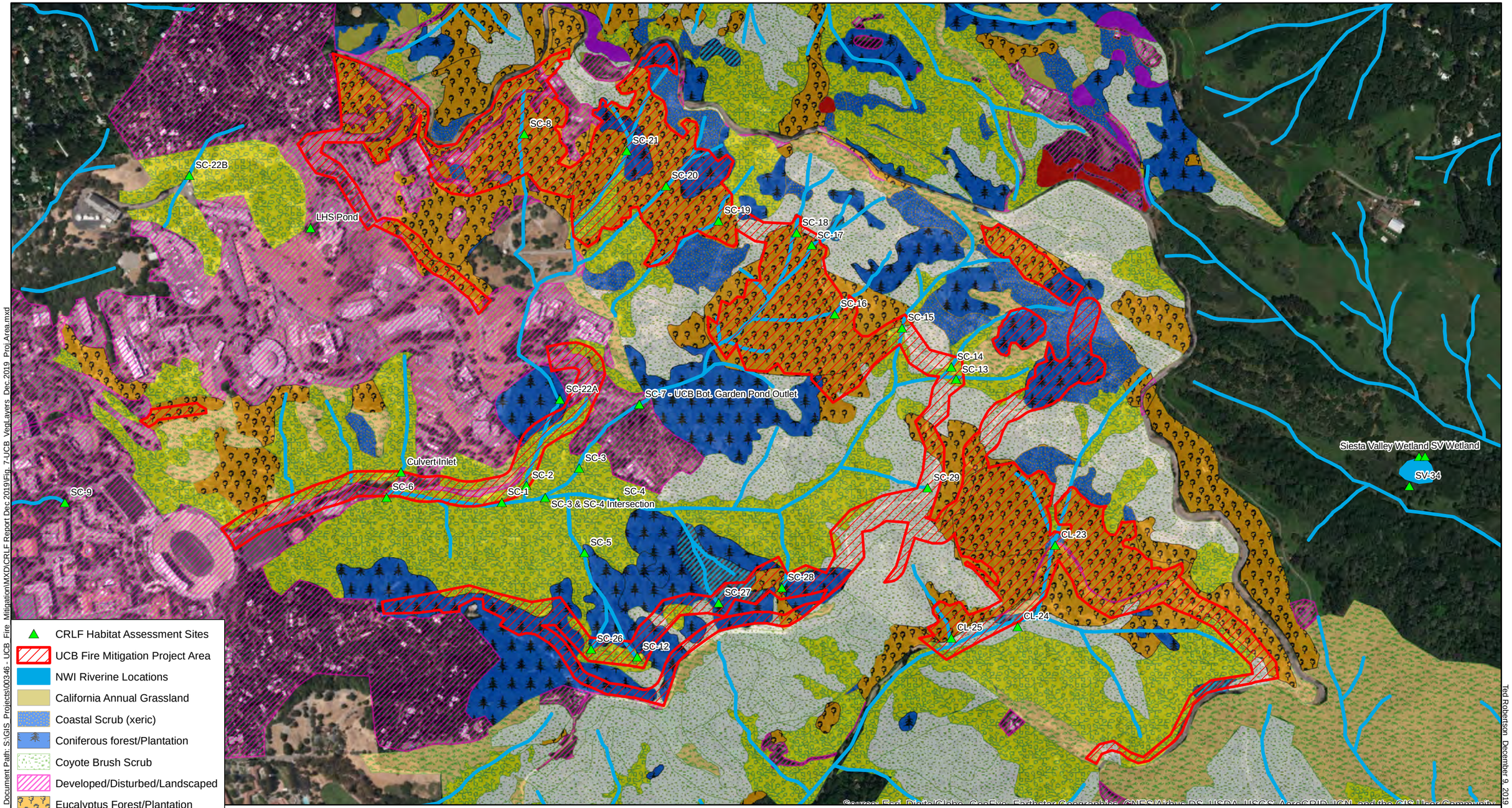
0 0.2 0.4 0.6 0.8 1 Miles

FIGURE 6

CONDOR COUNTRY CONSULTING, INC.

Document Path: S:\GIS_Projects\00346 - UCB_Fire_Mitigation\MXD\CRLF Report Dec 2019\Fig. 6-UCB_VegLayers_Dec.2019_1-mile.mxd

Ted Robertson Dec. 9, 2019



Document Path: S:\GIS_Projects\00346 - UCB_Fire_Mitigation\MXD\CRLF Report Dec 2019\Fig. 7-UCB_VegLayers_Dec2019_ProjArea.mxd

Ted Robertson December 9, 2019

HABITATS

UC Berkeley Hill Campus Fire Hazard Reduction Project

Alameda and Contra Costa County, California

SC = Strawberry Cr. Watershed
C = Claremont Cr. Watershed
SV = Siesta Valley Watershed
W = Wildcat Cr. Watershed

N
W E
S

Miles
0 0.1 0.2 0.3 0.4

FIGURE 7

CONDOR COUNTRY CONSULTING, INC.

Appendix B

Site Photographs

UC Berkeley Hill Campus Fire Hazard Reduction
University of California, Berkeley

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S.C. (Strawberry Creek) - 01: Alameda County, U.C. Berkeley

- Steep banks, fast-moving stream with no pools, no emergent vegetation and rocky substrate.
- Not characteristic of adequate CRLF breeding habitat.

S.C. - 02: Alameda County, U.C. Berkeley

- Steep banks with concrete features and substrate, no emergent vegetation.
- Fast-moving water, few legitimate pools – stream segment does not represent adequate CRLF breeding habitat.

S.C. - 03: Alameda County, U.C. Berkeley

- Fast-moving stream with some small pools, very steep banks with rocky substrate.
- Main pool occurs at base of culvert, shallow depth and lack of emergent (or submerged) vegetation represent poor CRLF breeding habitat.

S.C. - 04: Alameda County, U.C. Berkeley

- Fast-moving stream, small bank width, steep banks, banks choked with blackberry and other overhanging vegetation.
- No emergent vegetation present, substrate is rocky, stream segment does not represent adequate CRLF habitat.

Photo 1. S.C. - 04 Terminating into culvert.

Photo 2. S.C. - 04 emptying from culvert.

S.C. - 05: Alameda County, U.C. Berkeley

- Small, fast-moving stream with steep banks, sandy/silty substrate, and large amounts of overhanging vegetation dominating banks.
- No pooling areas or emergent vegetation in stream segment, does not represent adequate CRLF habitat.

Photo 1. S.C. - 05 terminating into culvert at blackberry thicket.
base of photo.

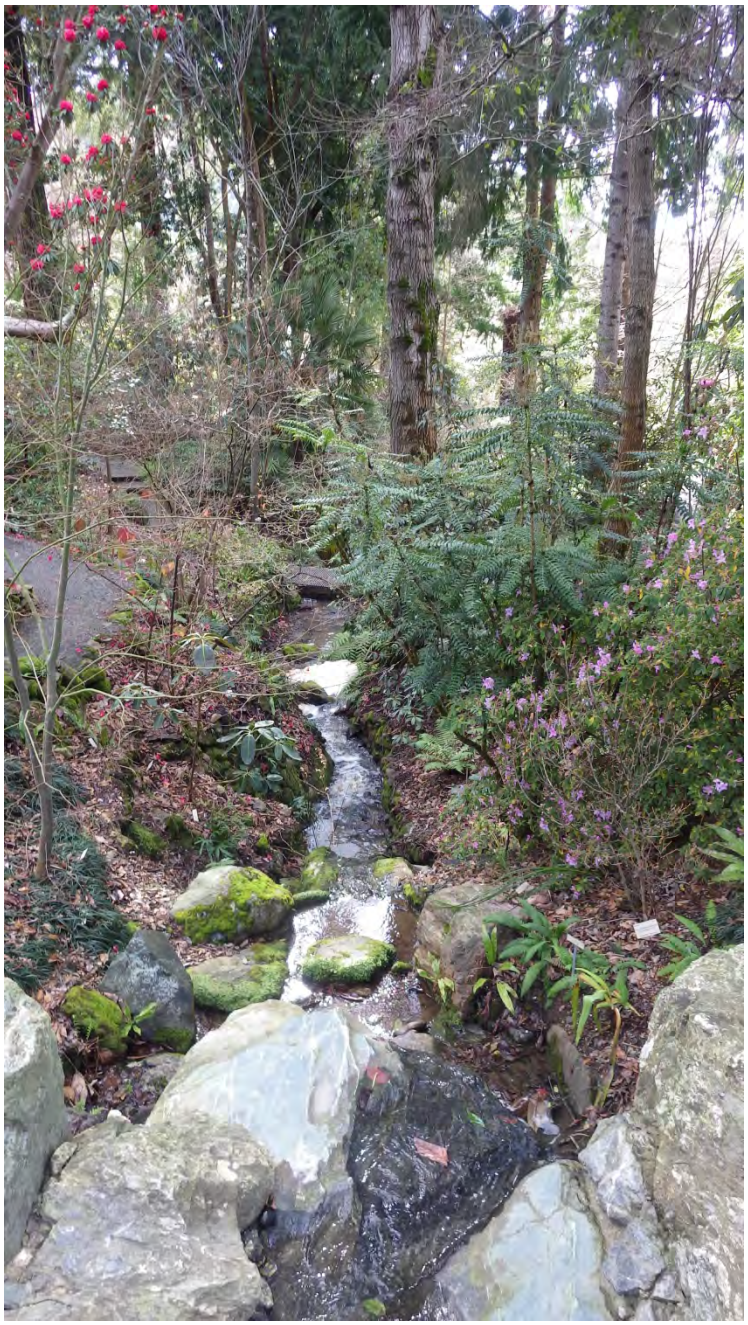
Photo 2. S.C. - 05 emptying into

S.C. - 06: Alameda County, U.C. Berkeley

- Small, slow-flowing glide, silty/mud substrate with steep slopes and no pooling areas.
- Stream segment is 1-2 inches deep with no emergent vegetation, does not represent adequate CRLF habitat.

S.C. - 07: Alameda County, U.C. Berkeley

- Small fast-moving stream with steep banks, rocky substrate, narrow width and no emergent vegetation.
- Stream flows out of U.C. Berkeley Botanical Garden pond, represents potential (though unlikely) CRLF habitat.



S.C. - 08: Alameda County, U.C. Berkeley

- Small riffle, slow-moving with no pooling areas, no emergent vegetation and rocky/silty substrate.
- Lack of pools and emergent vegetation, does not represent adequate CRLF habitat.

S.C. - 09: Alameda County, U.C. Berkeley

- Shallow, fast-moving stream with one pool beneath culvert exit. Rocky/concrete substrate, steep banks and no emergent vegetation.
- Located within U.C. Berkeley campus in urban setting, lack of pooling and emergent vegetation does not represent adequate CRLF habitat.

Photo 1. S.C. - 09 emptying from culvert and flowing downstream.

Photo 2. S.C. 09 downstream from culvert, depicting rocky substrate, urban setting and lack of emergent vegetation.

S.C. - 10: Alameda County, U.C. Berkeley

- Large, fast-moving stream, relatively wide with large, deep pooling areas. Substrate is rocky/muddy/silty with no emergent vegetation, steep banks, and extensive bank coverage by invasive English ivy (*Hedera helix*).
- Stream segment represents appropriate CRLF habitat, though lack of emergent vegetation, steep banks, and presence of extensive vegetation covering banks means their presence is unlikely.

S.C. - 11: Alameda County, U.C. Berkeley

- Fast-moving stream with wide, steep banks, no emergent vegetation and large pools.
- Substrate is rocky, banks are covered in scattered annual grasses, duff, English ivy (*Hedera helix*), and *Cornus* sp.
- Stream segment represents appropriate CRLF habitat, though a lack of species records in the area makes their presence unlikely.

S.C. - 12: Alameda County, U.C. Berkeley

- Fast-moving stream with rock/gravel/silt substrate, emptying from a culvert into steep, narrow canal.
- Banks are steep and choked with vegetation, with no pooling areas and no emergent vegetation.
- Stream segment does not represent adequate CRLF habitat.

Photo 1. S.C. - 12, yellow arrow shows location of culvert, the stream itself was not visible or safely accessible.

S.C. - 13: Alameda County, U.C. Berkeley

- Narrow, fast-moving stream with low water levels during survey, rocky substrate, and steep banks.
- Banks dominated by accumulated duff and organic matter. No emergent vegetation present, no pooling areas and clear ephemeral conditions.
- Does not represent adequate CRLF habitat.

S.C. - 14: Alameda County, U.C. Berkeley

- Fast-flowing stream with no pools, no emergent vegetation and a rocky/silty substrate.
- Stream segment is ephemeral with steep banks and does not represent adequate CRLF habitat.

S.C. - 15: Alameda County, U.C. Berkeley

- Fast-moving stream segment with steep banks, a steep grade with sharp drops no pooling areas, and a rocky/silty substrate.
- Stream segment has no emergent vegetation and no pooling areas, meaning it does not represent adequate CRLF habitat.

S.C. - 16: Alameda County, U.C. Berkeley

- Segment is not an actual creek, merely an ephemeral water collection point along a fire road. Not classified as CRLF habitat.

S.C. - 17: Alameda County, U.C. Berkeley

- Fast-flowing stream with steep banks, no emergent vegetation and rocky/silty substrate.
- Stream is too small with no pooling areas to support CRLF. Not adequate CRLF habitat.

S.C. - 18: Alameda County, U.C. Berkeley

- Fast-flowing, shallow, steep-banks with no emergent vegetation and no pooling areas.
- Does not represent adequate CRLF habitat.

S.C. - 19: Alameda County, U.C. Berkeley

- Stream segment is not currently running, and does not appear to have been running for some time.
- Does not represent adequate CRLF habitat.

S.C. - 20: Alameda County, U.C. Berkeley

- Stream segment not currently running, and looks to not have been running for some time.
- Does not represent adequate CRLF habitat.

S.C. - 21: Alameda County, U.C. Berkeley

- Stream segment is not currently running. The amount of vegetation filling the former segment suggests that water has not run through it significantly in some time.
- Segment does not represent adequate CRLF habitat.

S.C. - 22A: Alameda County, U.C. Berkeley

- Large, fast-flowing stream with rocky substrate and no emergent vegetation.
- Pooling areas are present along with steep, rocky banks and large rocks throughout.
- Stream segment represents potentially adequate CRLF habitat. No animals seen in the area.

S.C. - 22B: Alameda County, U.C. Berkeley

- Stream segment is fast-flowing, very shallow, with a rocky substrate and no emergent vegetation or pooling areas.
- Does not represent adequate CRLF habitat.

C - 23: Alameda County, U.C. Berkeley

- Stream segment is fast-flowing, very shallow, with a rocky substrate and no emergent vegetation or pooling areas.
- Does not represent adequate CRLF habitat.

C - 24: Alameda County, U.C. Berkeley

- Stream segment is fast-flowing, has a large pooling area, though the water moves fast through it, no emergent vegetation with a rocky, sandy substrate.
- Represents potentially suitable CRLF habitat, though not suitable breeding habitat.

The pooling area is large enough for CRLF to live in, but the water moves too quickly for this area to act as a breeding site for CRLF.

C - 25: Alameda County, U.C. Berkeley

- There was no water in this stream three days after a rain event. It is therefore likely to dry up too quickly to support amphibian populations.
- Does not represent adequate CRLF habitat.

S.C. - 26: Alameda County, U.C. Berkeley

- Small, fast-moving stream with steep banks, shallow depth and no emergent vegetation.
- Rocky to sandy substrate, no emergent vegetation, and no pooling areas makes this inadequate CRLF habitat.

S.C. - 27: Alameda County, U.C. Berkeley

- No running water, no emergent vegetation, no substrate other than silt and leafy debris.
- Not adequate CRLF habitat.

Photo 1. Depicting culvert and drainage paths leading under road.

Photo 2. Culvert terminating on other side of road into dense blackberry thicket (arrow points to culvert).

S.C. - 28: Alameda County, U.C. Berkeley

- No water present at time of survey. Stream is simple drainage ditch with no vegetation, no pooling areas, and no adequate CRLF habitat.

Photo 1. Drainage moves into culvert and beneath road.

Photo 2. Stream terminates in culvert and empties into area dominated by blackberry thicket.

S.C. - 29: Alameda County, U.C. Berkeley

- No water at time of survey. No emergent vegetation, minimal banks, likely does not hold water more than a few days after a rain event. Does not represent adequate CRLF habitat.

Photo 1. Drainage moves into culvert and beneath road.

Photo 2. Stream terminates in culvert and empties into area dominated by blackberry thicket.

W.C. (Wildcat Creek) - 30: Alameda County, U.C. Berkeley

- This stream is shallow (within 2 days of a rain event), concrete-lined, fast-flowing and has no emergent vegetation.
- Does not represent adequate CRLF habitat.

S.V. (Siesta Valley) 31: Contra Costa County, Siesta Valley

- Fast-flowing stream with small pooling areas, split into north fork and south fork.
- Both forks have steep banks dominated by invasive Himalayan blackberry, and no emergent vegetation. Stream does not represent adequate CRLF habitat.

Photo 1. S.V. 31 – South fork.

Photo 2. S.V. 31 – North fork.

S.V. 32: Contra Costa County, Siesta Valley

- Large, fast-moving stream with no large pooling areas and no emergent vegetation.
- Represents low quality CRLF habitat.

S.V. 33: Contra Costa County, Siesta Valley

- Large, fast moving stream with no emergent vegetation, dense canopy, no large pooling areas and banks dominated by invasive vegetation (Himalayan blackberry).

Photo 1. Downstream portion of S.V. 33, tree in photo is *Salix sp.*

Photo 2. Upstream portion of S.V. - 33.

Sibley Park Pond: Contra Costa County

- Diked pond with tules (*Schoenoplectus* sp.) throughout.
- Site is currently a breeding pond for large numbers of bullfrogs (*Lithobates catesbeianus*).
- Bullfrogs have captured the site, preventing other amphibians such as CRLF from using this pond for breeding or dispersal.

Tilden Park Botanical Garden Pond: Contra Costa County

- Concrete-lined pond, filled artificially, no emergent vegetation.
- Site is currently a breeding pond for California newts (*Taricha torosa*) and Sierran tree frogs (*Pseudacris sierra*).
- Represents adequate CRLF habitat, though no frogs were seen during initial survey.

Photo 1. Tilden Regional Park Botanical Garden Pond.

Photo 2. Sierran tree frog (*Pseudacris sierra*).

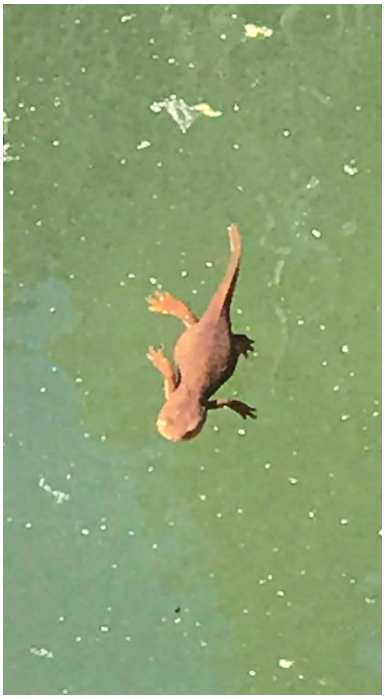


Photo 3. California newt (*Taricha torosa*)

U.C. Berkeley Botanical Garden Pond: Alameda County

- Large pond, estimated depth of three feet, with water lily and *Iris laevigata* throughout.
- Breeding habitat for rough-skinned (*Taricha granulosa*) and California newts (*Taricha torosa*) and Sierran tree frogs (*Pseudacris sierra*), 200+ adult newts and 100+ newt egg masses.
- Strawberry Creek runs into and out of this pond, meaning it is potential dispersal habitat for amphibians. The pond represents good CRLF habitat, though none were seen during initial survey, and none have been reported occurring in the pond.

Photo 1. Rough-skinned newt adult.

Photo 2. Newt egg masses.

Lawrence Hall of Science (LHS) Pond: Alameda County

- Pond is small with emergent vegetation (*Typha latifolia*) and silty/rocky substrate.
- Pond is ephemeral in nature, losing all water within one month of the last rain events.
- According to LHS stewards, the pond has not housed any visible wildlife for at least the past two years.
- Pond is poor CRLF habitat, due to the past presence of bullfrogs and crayfish and current ephemeral nature.

Appendix C

Correspondence Letters

UC Berkeley Hill Campus Fire Hazard Reduction
University of California, Berkeley

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From: Devin L. WOOLRIDGE
To: Ted Robertson
Cc: Carol Rice
Subject: Fwd: FW: CRLF habitat assessment
Date: Friday, March 08, 2019 10:20:10 AM
Attachments: image001.png

Hi Ted,

This is what we have received from EBRP so far. I don't quite understand it, so I'm not sure if it's what you requested or if it's through enough, etc. Take a look at it and let me know what might be the next steps.

Devin

---------- Forwarded message ---------
From: **Brad Gallup** <bgallup@ebparks.org>
Date: Thu, Mar 7, 2019 at 1:24 PM
Subject: FW: CRLF habitat assessment
To: Devin L. WOOLRIDGE <woolridg@berkeley.edu>

Devin – Kristen sent this to me before and I forgot to forward to you. Sorry about that.

If you have questions, feel free to contact Kristen directly.

Thank you

East Bay Regional Park District
Healthy Parks Healthy People

Brad Gallup
Assistant Fire Chief | Fire Department
East Bay Regional Park District
17930 Lake Chabot Road, Castro Valley, CA 94546
T: 510-690-6606| F: 510-881-4942
bgallup@ebparks.org | www.ebparks.org

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Please consider the environment before you print

From: Kristen Van Dam <KVanDam@ebparks.org>
Sent: Tuesday, March 5, 2019 10:06 AM
To: Brad Gallup <bgallup@ebparks.org>
Subject: FW: CRLF habitat assessment

Here is what we have.

Kristen

East Bay Regional Park District
Healthy Parks Healthy People

Kristen Van Dam
Resource Analyst / Ecologist | Stewardship
East Bay Regional Park District
2950 Peralta Oaks Court, Oakland, CA 94605
T: 510-544-2324| F: 510-635-3478
KVanDam@ebparks.org | www.ebparks.org

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Please consider the environment before you print

From: Edward Culver
Sent: Tuesday, March 5, 2019 9:49 AM
To: Tammy Lim <TLim@ebparks.org>; Steven Bobzien <sbobzien@ebparks.org>; Kristen Van Dam <KVanDam@ebparks.org>
Cc: Doug Bell <DBell@ebparks.org>; Joe Sullivan <JSullivan@ebparks.org>
Subject: RE: CRLF habitat assessment

Here are the instances of CRLF that I show in Tilden Park in the Fisheries Database.

Description	Species	Long	Lat
CRLF sub-adult 2011 – Brook Base	California Red-legged Frog	-122.26326915000	37.90742164750
CRLF egg mass – 2013 – EEC Ponds	California Red-legged Frog	-122.26717905900	37.91111489500
CRLF – 2008 – Pond Survey	California Red-legged Frog	-122.26717905900	37.91111489500
Adult CRLF 2001 – Bot Garden	California Red-legged Frog	-122.24366836000	37.89304090500

The CRLF in red is well within the 1-mile buffer. This was an adult observed in the larger of the Botanic Garden ponds in 2001.

The CRLF in yellow is just on the edge of the 1-mile buffer (at the north end of Lake Anza). This was a sub-adult observed during Fisheries surveys of Wildcat Creek. It was confirmed by Joe DiDonato.

The other two instances occurred in the Environmental Education Center ponds in 2008 and 2013. I believe that the 2008 occurrence was observed by Steve during his pond surveys, so he might be able to provide more insight into this particular observation.

I hope this helps.

Ed

East Bay Regional Park District
Healthy Parks Healthy People

Edward Culver
Resource Analyst I - Fisheries Biologist | Fisheries Management Unit
East Bay Regional Park District
2950 Peralta Oaks Court, Oakland, CA 94605
T: 510-544-2342
ECulver@ebparks.org | www.ebparks.org

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Please consider the environment before you print

From: Tammy Lim <TLim@ebparks.org>
Sent: Monday, March 04, 2019 2:11 PM
To: Edward Culver <ECulver@ebparks.org>; Steven Bobzien <sbobzien@ebparks.org>; Kristen Van Dam <KVanDam@ebparks.org>
Cc: Doug Bell <DBell@ebparks.org>
Subject: FW: CRLF habitat assessment

Hi Kristen,

I asked Doug about this and unfortunately, we are a dead end!

Ed and Steve might have a better idea what/where stream CRLF frog habitat occurs (items 1-3). I've cc'd both of them.

In regards to the fourth item, is that Nate Luna? I'm not sure who deals with site access that's not a research project.

Requests from Condor Country:

1. Their report and data sheets for each body of water they assessed.
2. Are there any unreported CNDDB CRLF locations (I only have 2 CNDDB locations and they are just outside of the 1-mile project buffer).
3. We will need to get a GIS layer of all of ponds (and stock ponds) within 1 mile of the UCB properties.
4. Who we need to contact to get permission for a site visit.

Tammy Lim
Resource Analyst | Acquisition, Stewardship & Development

From: stephen edwards
To: Ted Robertson
Subject: Re: Hi and a pond question
Date: Wednesday, March 27, 2019 11:12:49 AM

Hi Ted,
The pond was built in 1980. I had seen one or two red legged frogs under the garden's creek dogwood patch--close to Wildcat Creek-- in each of 1970 and 71. Then I was away from the garden until 1978 I think. Never saw any red leggeds from then on until we rebuilt the pond somewhere around 2000. I forget the year. There were a couple, as I vaguely recall, hopping about in the vegetation near the pond. This was strange, as, during the life of the first pond, I looked for these frogs every day, and never saw one.

Where did these come from? Anyway, soon after we rebuilt the pond, kids started sneaking bullfrogs into it, and these were a recurrent problem, and probably still are today. We never saw a red legged frog in the garden again (I can speak for my time there which ended in late 2013).

Steve

> On March 27, 2019 at 8:23 AM Ted Robertson <Ted@condorcountry.com> wrote:
>
> Hi Steve,
>
> I have a quick question regarding the Tilden botanical garden pond. Do you know what year it was first created? I'm writing a red-legged frog habitat assessment and the history of the pond's creation would help me with that effort. Also, any history of red-legged frogs or bullfrog occupancy would be helpful too.
>
> Hope all is well,
>
> *Ted Robertson*
>
> *Biologist II*
> Condor Country Consulting, Inc.
> 815 Estudillo Street
> Martinez, CA 94553
> url: condorcountry.com

Appendix D

CRLF Habitat Site Assessment Data Sheets

UC Berkeley Hill Campus Fire Hazard Reduction
University of California, Berkeley

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Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

Site Assessment reviewed by _____ (FWS Field Office) _____ (date) _____ (biologist)

Date of Site Assessment: 02/28/2019 (mm/dd/yyyy)

Site Assessment Biologists: Robertson, Ted (Last name, first name) _____ (Last name, first name)

Sandy Grayson (Last name, first name) _____ (Last name, first name)

Site Location: S.C. #1, Alameda Co. UC Berkeley, 37.87239593, -122.2413249
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: UCB Hill Campus Fire Hazard Reduction
Brief description of proposed action:
Thin eucalyptus & non-native trees near roads & buildings.

1) Is this site within the current or historic range of the CRF (circle one)? YES (NO)

2) Are there known records of CRF within 1.6 km (1 mi) of the site (circle one)? YES (NO)
If yes, attach a list of all known CRF records with a map showing all locations.

GENERAL AQUATIC HABITAT CHARACTERIZATION

(if multiple ponds or streams are within the proposed action area, fill out one data sheet for each)

POND:

Size: _____ Maximum depth: _____

Vegetation: emergent, overhanging, dominant species: _____

_____

_____

Substrate: _____

_____

Perennial or Ephemeral *(circle one)*. If ephemeral, date it goes dry: _____

Appendix D.

California Red-legged Frog Habitat Site Assessment Data Sheet

STREAM: S.C. #1

Bank full width: 8 ft.

Depth at bank full: 1 ft.

Stream gradient: 3-5°

Are there pools (circle one)? YES (NO)

If yes,

Size of stream pools: _____

Maximum depth of stream pools: _____

Characterize non-pool habitat: run (riffle) glide, other: _____

Vegetation: emergent, (overhanging), dominant species: _____

Quercus agrifolia Prunus spp

No Emergent veg.

Substrate: Rocky

Bank description: Sandy, gravel, 45° bank Slope

(**Perennial**) **or Ephemeral** *(circle one)*. If ephemeral, date it goes dry: _____

Other aquatic habitat characteristics, species observations, drawings, or comments:

stream enters culvert. R.SHA nest

SIDE-VIEW

Necessary Attachments:

1. All field notes and other supporting documents
2. Site photographs – 4995-4996
3. Maps with important habitat features and species location

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

Site Assessment reviewed by _____ (FWS Field Office) _____ (date) _____ (biologist)

Date of Site Assessment: 02/28/2019 (mm/dd/yyyy)

Site Assessment Biologists: Robertson, Tad (Last name) (first name) _____ (Last name) (first name)

Sandy, Grayson (Last name) (first name) _____ (Last name) (first name)

Site Location: SC-2; Alameda County, UC Berkeley, 37.8728122, -122.2405816
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: UCB Hill Campus Fire Hazard Reduction
Brief description of proposed action:

Thin eucalyptus & non-native trees near roads & buildings.

1) Is this site within the current or historic range of the CRF (circle one)? YES (NO)

2) Are there known records of CRF within 1.6 km (1 mi) of the site (circle one)? YES (NO)
If yes, attach a list of all known CRF records with a map showing all locations.

GENERAL AQUATIC HABITAT CHARACTERIZATION
(if multiple ponds or streams are within the proposed action area, fill out one data sheet for each)

POND:

Size: _____ Maximum depth: _____

Vegetation: emergent, overhanging, dominant species: _____

_____

_____

Substrate: _____

_____

Perennial or Ephemeral *(circle one).* If ephemeral, date it goes dry: _____

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

STREAM: SC-02
Bank full width: 12 ft than 6 ft.
Depth at bank full: 3 ft
Stream gradient: 0 to 10°

Are there pools (circle one)? (YES) NO Just 1 below culvert
If yes,
Size of stream pools: 12 x 15 ft.
Maximum depth of stream pools: _____

Characterize non-pool habitat: run, riffle, glide, other: _____
Riffle w/ 1-pool

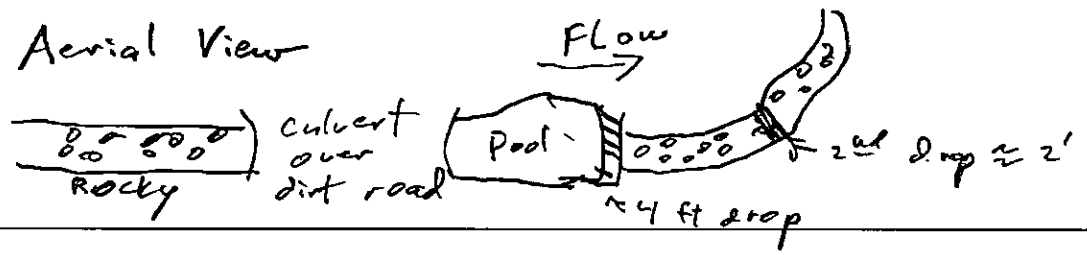
Vegetation: emergent, overhanging, dominant species:
Calif. Buckeye Umbellularia californica
Quercus agrifolia, no emergent veg.
Substrate: Rocky

Bank description: Steep, rocky, 45+ bank gradient.

Perennial or (Ephemeral) *(circle one)*. If ephemeral, date it goes dry: Late Summer.

Other aquatic habitat characteristics, species observations, drawings, or comments:

*37.872823, -122.240578 → GPS



Necessary Attachments:

1. All field notes and other supporting documents
2. Site photographs 4997 - 5001
3. Maps with important habitat features and species location

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

Site Assessment reviewed by _____ (FWS Field Office) _____ (date) _____ (biologist)

Date of Site Assessment: 02/28/2019 (mm/dd/yyyy)

Site Assessment Biologists: Robertson (Last name) Ted (first name) _____ (Last name) _____ (first name)

Sandy (Last name) Grayson (first name) _____ (Last name) _____ (first name)

Site Location: SC-3; Alameda County, U.C. Berkeley, 37.87325769, -122.2387455
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)****

Proposed project name: UCB Hill Campus Fire Hazard Reduction
Brief description of proposed action:

Thin eucalyptus & non-native trees near roads & buildings.

1) Is this site within the current or historic range of the CRF (circle one)? YES (NO)

2) Are there known records of CRF within 1.6 km (1 mi) of the site (circle one)? YES (NO)
If yes, attach a list of all known CRF records with a map showing all locations.

GENERAL AQUATIC HABITAT CHARACTERIZATION

(if multiple ponds or streams are within the proposed action area, fill out one data sheet for each)

POND:

Size: _____ Maximum depth: _____

Vegetation: emergent, overhanging, dominant species: _____

_____

_____

Substrate: _____

_____

Perennial or **Ephemeral** *(circle one)*. If ephemeral, date it goes dry: _____

Appendix D. SC-3
California Red-legged Frog Habitat Site Assessment Data Sheet

STREAM: SC-3
Bank full width: 4-8 ft
Depth at bank full: 1 ft
Stream gradient: 4°

Are there pools (circle one)? (YES) NO → Just one @ culvert.
If yes,
Size of stream pools: 8 x 8 ft
Maximum depth of stream pools: _____

Characterize non-pool habitat: run, (riffle), glide, other: _____

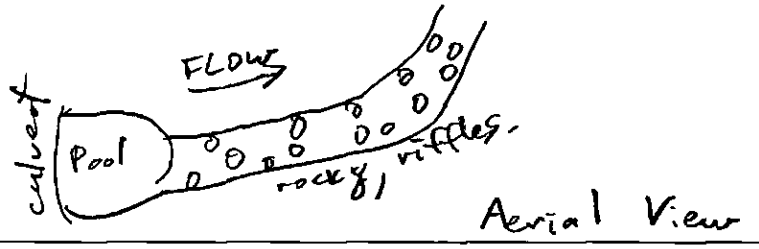
Vegetation: emergent, (overhanging), dominant species: Umbellularia californica
No emergent veg.

Substrate: Rocky

Bank description: steep (>45°), rocky

Perennial or (Ephemeral) *(circle one).* If ephemeral, date it goes dry: Late Summer

Other aquatic habitat characteristics, species observations, drawings, or comments:



Necessary Attachments:

1. All field notes and other supporting documents
2. Site photographs – 5 DSC
3. Maps with important habitat features and species location

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

Site Assessment reviewed by _____ (FWS Field Office) _____ (date) _____ (biologist)

Date of Site Assessment: 02/28/2019 (mm/dd/yyyy)

Site Assessment Biologists: Robertson (Last name) Ted (first name) _____ (Last name) _____ (first name)

Sandy (Last name) Grayson (first name) _____ (Last name) _____ (first name)

Site Location: SC-04; Alameda County; UC Berkeley, 37.8724617, -122.2377652
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: UCB Hill Campus Fire Hazard Reduction
Brief description of proposed action:

Thin eucalyptus & non-native trees near roads & buildings.

1) Is this site within the current or historic range of the CRF (circle one)? YES (NO)

2) Are there known records of CRF within 1.6 km (1 mi) of the site (circle one)? YES (NO)
If yes, attach a list of all known CRF records with a map showing all locations.

GENERAL AQUATIC HABITAT CHARACTERIZATION

(if multiple ponds or streams are within the proposed action area, fill out one data sheet for each)

POND:

Size: _____ Maximum depth: _____

Vegetation: emergent, overhanging, dominant species: _____

_____

_____

Substrate: _____

_____

Perennial or Ephemeral *(circle one)*. If ephemeral, date it goes dry: _____

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

STREAM: SC-4
Bank full width: 2-5 ft
Depth at bank full: 1ft
Stream gradient: 6°

Are there pools (circle one)? (YES) NO
If yes,
Size of stream pools: 4-3 ft
Maximum depth of stream pools: 3ft

Characterize non-pool habitat: run, (riffle) glide, other: _____

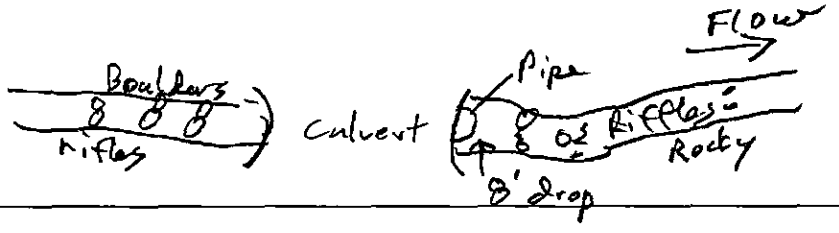
Vegetation: emergent, (overhanging), dominant species: Umbellularia, California Salix (Arroyo willow)
No emergent veg.

Substrate: Rocky

Bank description: steep (45-60°), rocky

(Perennial) or **Ephemeral** *(circle one)*. If ephemeral, date it goes dry: _____

Other aquatic habitat characteristics, species observations, drawings, or comments:



Necessary Attachments:

1. All field notes and other supporting documents
2. Site photographs
3. Maps with important habitat features and species location

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

Site Assessment reviewed by: _____ (EWS Field Office) _____ (date) _____ (biologist)

Date of Site Assessment: 2/28/2019 (mm/dd/yyyy)

Site Assessment Biologists: Robertson (Last name) Ted (first name) _____ (Last name) _____ (first name)

Sandy (Last name) Grayson (first name) _____ (Last name) _____ (first name)

Site Location: SC-05: Alameda Co., UC Berkeley, 37.87120848, -122387581
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)****

Proposed project name: UCB Wall Campus Fire Hazard Reduction
Brief description of proposed action:

Thin eucalyptus & non-native trees near roads & buildings.

1) Is this site within the current or historic range of the CRF (circle one)? YES (NO)

2) Are there known records of CRF within 1.6 km (1 mi) of the site (circle one)? YES (NO)
If yes, attach a list of all known CRF records with a map showing all locations.

GENERAL AQUATIC HABITAT CHARACTERIZATION

(if multiple ponds or streams are within the proposed action area, fill out one data sheet for each)

POND:

Size: _____ Maximum depth: _____

Vegetation: emergent, overhanging, dominant species: _____

_____

_____

Substrate: _____

_____

Perennial or Ephemeral *(circle one)*. If ephemeral, date it goes dry: _____

Appendix D.

California Red-legged Frog Habitat Site Assessment Data Sheet

STREAM: SC-05

Bank full width: 1 ft

Depth at bank full: 6-8 cm

Stream gradient: 20°

Are there pools (circle one)? YES (NO)

If yes,

Size of stream pools: _____

Maximum depth of stream pools: _____

Characterize non-pool habitat: run, (riffle), glide, other: _____

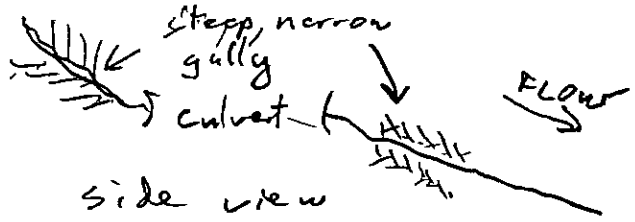
Vegetation: emergent, (overhanging), dominant species: Umbellularia californica Sequoia sempervirons, Rubus armeniacus, no emergent veg.

Substrate: Rocky

Bank description: Sandy, gravelly, (steep 45 – 75° slope).

Perennial or (Ephemeral) *(circle one)*. If ephemeral, date it goes dry: late spring

Other aquatic habitat characteristics, species observations, drawings, or comments:



Necessary Attachments:

1. All field notes and other supporting documents
2. Site photographs 005 - 5006
3. Maps with important habitat features and species location

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

Site Assessment reviewed by _____ (FWS Field Office) _____ (date) _____ (biologist)

Date of Site Assessment: 02/28/2019 (mm/dd/yyyy)

Site Assessment Biologists: Robertson (Last name) Ted (first name) _____ (Last name) _____ (first name)

Sandy (Last name) Grayson (first name) _____ (Last name) _____ (first name)

Site Location: SC-06; Alameda Co., UC Berkeley, 37.8724651 7, -122.2448556
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: UCB 1911 Campus Fire Hazard Reduction
Brief description of proposed action:

Thin eucalyptus & non-native trees near roads & buildings.

1) Is this site within the current or historic range of the CRF (circle one)? YES (NO)

2) Are there known records of CRF within 1.6 km (1 mi) of the site (circle one)? YES (NO)
If yes, attach a list of all known CRF records with a map showing all locations.

GENERAL AQUATIC HABITAT CHARACTERIZATION

(if multiple ponds or streams are within the proposed action area, fill out one data sheet for each)

POND:

Size: _____ Maximum depth: _____

Vegetation: emergent, overhanging, dominant species: _____

_____

_____

Substrate: _____

_____

Perennial or Ephemeral *(circle one)*. If ephemeral, date it goes dry: _____

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

STREAM: SC-06
Bank full width: 10-15 ft
Depth at bank full: 1-2 in
Stream gradient: 2-3°

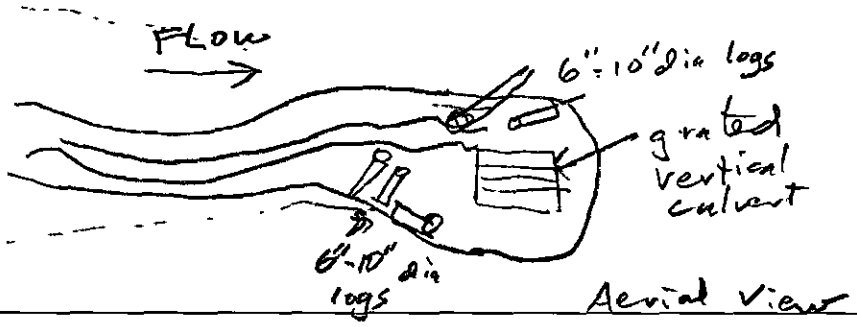
Are there pools (circle one)? YES (NO)
If yes,
Size of stream pools: _____
Maximum depth of stream pools: _____

Characterize non-pool habitat: run, riffle, (glide), other: _____

Vegetation: emergent, (overhanging), dominant species: Umbellularia californica, Prunus spp., Rubus armeniacus., Annual grasses. No Emergent veg.
Substrate: Silty mud.
Bank description: steep slopes, (30°- 45° slopes)

Perennial or Ephemeral *(circle one)*. If ephemeral, date it goes dry: _____

Other aquatic habitat characteristics, species observations, drawings, or comments:



Necessary Attachments:

1. All field notes and other supporting documents
2. Site photographs -5007
3. Maps with important habitat features and species location

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

Site Assessment reviewed by _____ (FWS Field Office) _____ (date) _____ (biologist)

Date of Site Assessment: 02/28/2019 (mm/dd/yyyy)

Site Assessment Biologists: Robertson (Last name) Ted (first name) _____ (Last name) _____ (first name)

Sandy (Last name) Grayson (first name) _____ (Last name) _____ (first name)

Site Location: SC-7; Alameda Co., UC Berkeley, 37.87438189, -122.2371679
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)****

Proposed project name: UCB Hill Campus Fire Hazard Reduction
Brief description of proposed action:

Thin eucalyptus & non-native trees near roads & buildings.

1) Is this site within the current or historic range of the CRF (circle one)? YES (NO)

2) Are there known records of CRF within 1.6 km (1 mi) of the site (circle one)? YES (NO)
If yes, attach a list of all known CRF records with a map showing all locations.

GENERAL AQUATIC HABITAT CHARACTERIZATION

(if multiple ponds or streams are within the proposed action area, fill out one data sheet for each)

POND:

Size: _____ Maximum depth: _____

Vegetation: emergent, overhanging, dominant species: _____

_____

_____

Substrate: _____

_____

Perennial or Ephemeral *(circle one)*. If ephemeral, date it goes dry: _____

Appendix D.

California Red-legged Frog Habitat Site Assessment Data Sheet

STREAM: SC-07

Bank full width: 3-4 ft.

Depth at bank full: 6in - 1 ft.

Stream gradient: 10°

Are there pools (circle one)? YES (NO)

If yes,

Size of stream pools: _____

Maximum depth of stream pools: _____

Characterize non-pool habitat: run, (riffle), glide, other: small cascades

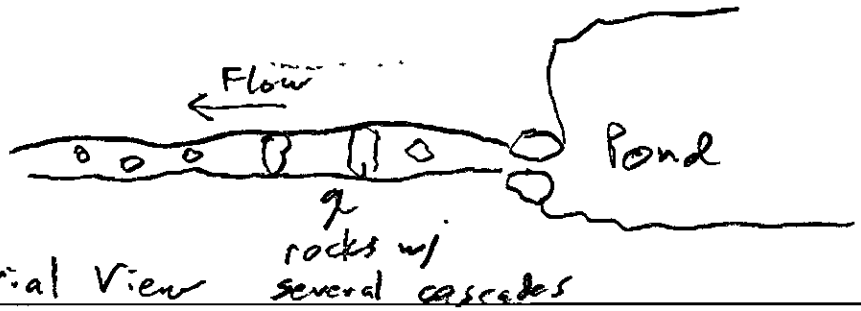
Vegetation: emergent, (overhanging), dominant species: Variety of ornamental trees (Botanical Garden) No emergent veg.

Substrate: Rocky

Bank description: steep (30°-60°), gravel, rocks, covered with scattered ferns

Perennial or Ephemeral *(circle one).* If (ephemeral), date it goes dry: late summer

Other aquatic habitat characteristics, species observations, drawings, or comments:



Aerial View

Necessary Attachments:

1. All field notes and other supporting documents
2. Site photographs - 5010
3. Maps with important habitat features and species location

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

Site Assessment reviewed by _____ (FWS Field Office) _____ (date) _____ (biologist)

Date of Site Assessment: 02/28/2019 (mm/dd/yyyy)

Site Assessment Biologists: Robertson (Last name) Ted (first name) _____ (Last name) _____ (first name)

Sandy (Last name) Grayson (first name) _____ (Last name) _____ (first name)

Site Location: SC-8: Alameda Co., UC Berkeley, 37.8813435, -122.240843 1
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: UCB Hill Campus Fire Hazard Reduction
Brief description of proposed action:

Thin eucalyptus & non-native trees near roads & buildings.

1) Is this site within the current or historic range of the CRF (circle one)? YES (NO)

2) Are there known records of CRF within 1.6 km (1 mi) of the site (circle one)? YES (NO)
If yes, attach a list of all known CRF records with a map showing all locations.

GENERAL AQUATIC HABITAT CHARACTERIZATION

(if multiple ponds or streams are within the proposed action area, fill out one data sheet for each)

POND:

Size: _____ Maximum depth: _____

Vegetation: emergent, overhanging, dominant species: _____

_____

_____

Substrate: _____

_____

Perennial or **Ephemeral** *(circle one)*. If ephemeral, date it goes dry: _____

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

STREAM: SC-8
Bank full width: 2-3 ft
Depth at bank full: 2-4 in
Stream gradient: 20°

Are there pools (circle one)? YES (NO)
If yes,
Size of stream pools: _____
Maximum depth of stream pools: _____

Characterize non-pool habitat: run, (riffle), glide, other: _____

Vegetation: emergent, (overhanging), dominant species: Eucalyptus globulus
Umbellularia californica, No emergent or bank vegetation

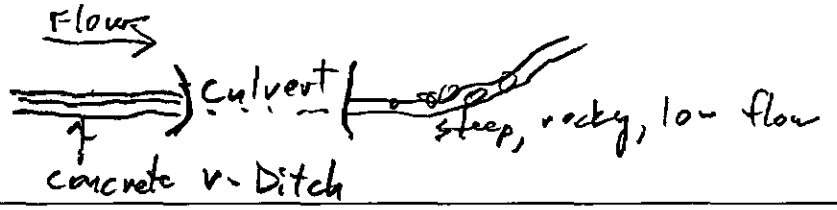
Substrate: rock, silt

Bank description: rocky, gravel, silt, steep slope (30-50°)

Perennial or Ephemeral *(circle one)*. If ephemeral, date it goes dry: 2-4 wks after last storm.

Other aquatic habitat characteristics, species observations, drawings, or comments:
Flow low, 24 hrs. after last storm.

Aerial view



Necessary Attachments:

1. All field notes and other supporting documents
2. Site photographs - 5013 & 5014
3. Maps with important habitat features and species location

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

Site Assessment reviewed by _____ (FWS Field Office) _____ (date) _____ (biologist)

Date of Site Assessment: 03/01/2019 (mm/dd/yyyy)

Site Assessment Biologists: Robertson (Last name) Ted (first name) _____ (Last name) _____ (first name)

Sandy (Last name) Grayson (first name) _____ (Last name) _____ (first name)

Site Location: SC-09: Alameda Co., UC Berkeley, 37.872/9253, -122.254623
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)****

Proposed project name: UCB Hill Campus Fire Hazard Reduction
Brief description of proposed action:

Thin eucalyptus & non-native trees near roads & buildings.

1) Is this site within the current or historic range of the CRF (circle one)? YES (NO)

2) Are there known records of CRF within 1.6 km (1 mi) of the site (circle one)? YES (NO)
If yes, attach a list of all known CRF records with a map showing all locations.

GENERAL AQUATIC HABITAT CHARACTERIZATION

(if multiple ponds or streams are within the proposed action area, fill out one data sheet for each)

POND:

Size: _____ Maximum depth: _____

Vegetation: emergent, overhanging, dominant species: _____

_____

_____

Substrate: _____

_____

Perennial or Ephemeral *(circle one)*. If ephemeral, date it goes dry: _____

Appendix D.

California Red-legged Frog Habitat Site Assessment Data Sheet

STREAM: SC-09

Bank full width: 3-4'

Depth at bank full: 2-4"

Stream gradient: 10

Are there pools (circle one)? (YES) NO

If yes,

Size of stream pools: 8x10' - sandy rocky substrate, No vegetation

Maximum depth of stream pools: 1.5 ft.

Characterize non-pool habitat: run, (riffle), (glide) other: .

Vegetation: emergent, overhanging, dominant species: Sequoia sempervirens Umbellularia californica no emergent or bank vegetation

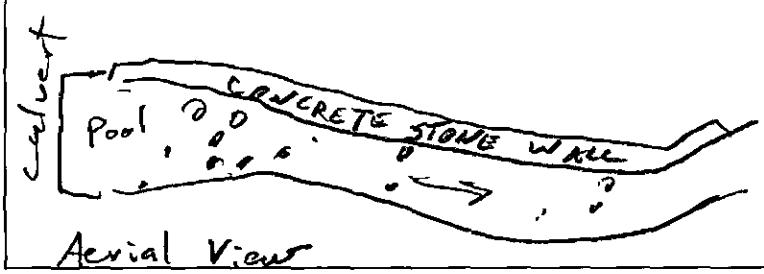
Substrate: rock

Bank description: rocky / duff & debris. SW = Rock wall NE = Redwood leaf duff over loamy soils, on 10° slope.

Perennial or Ephemeral *(circle one)*. If ephemeral, date it goes dry: Summer

Other aquatic habitat characteristics, species observations, drawings, or comments:

* GPS point at culvert



Necessary Attachments:

1. All field notes and other supporting documents
2. Site photographs - 5015 - 5016
3. Maps with important habitat features and species location

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

Site Assessment reviewed by: _____ (FWS Field Office) _____ (date) _____ (biologist)

Date of Site Assessment: 03/01/2019 (mm/dd/yyyy)

Site Assessment Biologists: Robertson (Last name) Ted (first name); _____ (Last name) _____ (first name)

Sand (Last name) Grayson (first name); _____ (Last name) _____ (first name)

Site Location: SC-10: Alameda Co, UCBerkeley, 37.87418055, -122.2617777
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: UCB Hill Campus Fire Hazard Reduction
Brief description of proposed action:

Thin eucalyptus & non-native trees near roads & buildings.

1) Is this site within the current or historic range of the CRF (circle one)? YES (NO)

2) Are there known records of CRF within 1.6 km (1 mi) of the site (circle one)? YES (NO)
If yes, attach a list of all known CRF records with a map showing all locations.

GENERAL AQUATIC HABITAT CHARACTERIZATION

(if multiple ponds or streams are within the proposed action area, fill out one data sheet for each)

POND:

Size: _____ Maximum depth: _____

Vegetation: emergent, overhanging, dominant species: _____

_____

_____

Substrate: _____

_____

Perennial or Ephemeral *(circle one).* If ephemeral, date it goes dry: _____

Appendix D. - SC-10

California Red-legged Frog Habitat Site Assessment Data Sheet

STREAM: SC-10

Bank full width: 5-10'

Depth at bank full: 6" - 2FT

Stream gradient: 2°

Are there pools (circle one)? (YES) NO

If yes,

Size of stream pools: 10'x20'; 3'x20'; 4'x20'

Maximum depth of stream pools: 3', 1', 2' respectively.

Characterize non-pool habitat: run, (riffle), glide, other: _____

Vegetation: emergent, (overhanging), dominant species: No emergent

Hedera helix on banks

Overhang = Sequoia sempervirens, Umbellularia californica

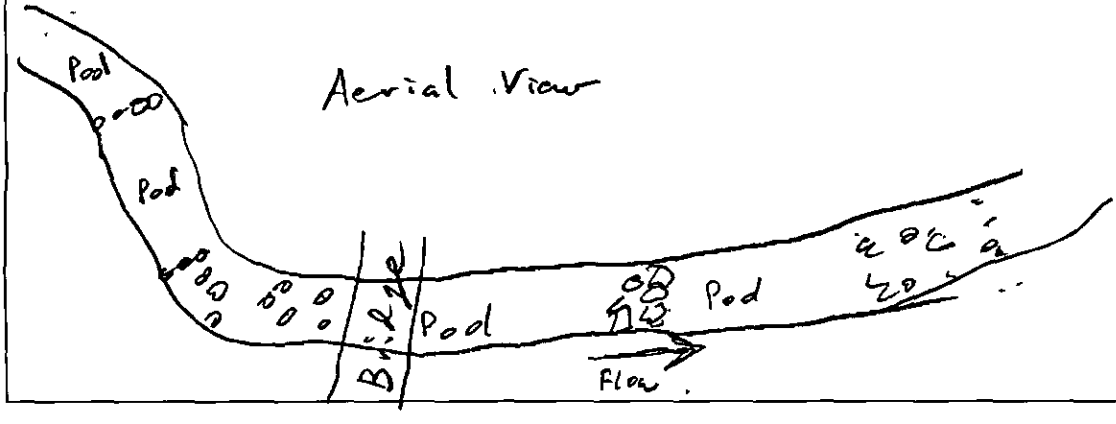
Substrate: Rocky & silty

Bank description: 35° slope w/ English Ivy or redwood leaf duff.

Undercut in a few spots

Perennial or (Ephemeral) *(circle one).* If ephemeral, date it goes dry: Mid-summer

Other aquatic habitat characteristics, species observations, drawings, or comments:



Necessary Attachments:

1. All field notes and other supporting documents
2. Site photographs 5017 - 5018
3. Maps with important habitat features and species location

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

Site Assessment reviewed by _____ (FWS Field Office) _____ (date) _____ (biologist)

Date of Site Assessment: 03/04/2019 (mm/dd/yyyy)

Site Assessment Biologists: Robertson (Last name) Ted (first name) _____ (Last name) _____ (first name)

Sandy (Last name) Grayson (first name) _____ (Last name) _____ (first name)

Site Location: SC-11; Alameda Co., UC Berkeley, 37.87115526, -122.2644041
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)****

Proposed project name: UCB Hill Campus Fire Hazard Reduction
Brief description of proposed action:

Thin eucalyptus & non-native trees near roads & buildings.

1) Is this site within the current or historic range of the CRF (circle one)? YES (NO)

2) Are there known records of CRF within 1.6 km (1 mi) of the site (circle one)? YES (NO)
If yes, attach a list of all known CRF records with a map showing all locations.

GENERAL AQUATIC HABITAT CHARACTERIZATION

(if multiple ponds or streams are within the proposed action area, fill out one data sheet for each)

POND:

Size: _____ Maximum depth: _____

Vegetation: emergent, overhanging, dominant species: _____

_____

_____

Substrate: _____

_____

Perennial or Ephemeral *(circle one)*. If ephemeral, date it goes dry: _____

Appendix D.

California Red-legged Frog Habitat Site Assessment Data Sheet

STREAM: SC-11

Bank full width: 20ft

Depth at bank full: 6 in & 12 in.

Stream gradient: 1°

Are there pools (circle one)? (YES) NO

If yes,

Size of stream pools: 15'x20'

Maximum depth of stream pools: 1.5 to 2 ft

Characterize non-pool habitat: run, (riffle), glide, other: _____

Vegetation: emergent, (overhanging), dominant species: _____

No emergent.

Eucalyptus, Sequoia sempervirens, Umbellularia californica

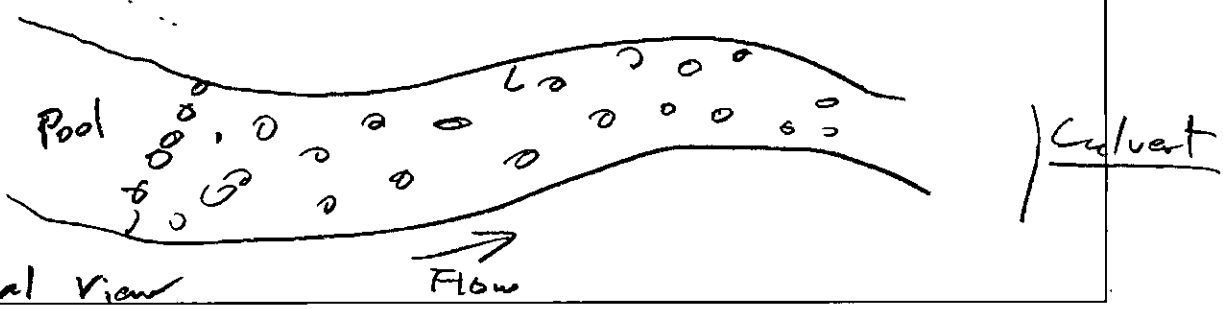
Substrate: Rocky

Bank description: steep, 80° to 30° slope.

Mostly Bare with scattered cracked grasses & English ivy & Prunus

(Perennial) or **Ephemeral** *(circle one)*. If ephemeral, date it goes dry: _____

Other aquatic habitat characteristics, species observations, drawings, or comments:



Necessary Attachments:

1. All field notes and other supporting documents
2. Site photographs
3. Maps with important habitat features and species location

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

Site Assessment reviewed by _____ (FWS Field Office) _____ (date) _____ (biologist)

Date of Site Assessment: 03/01/2019 (mm/dd/yyyy)

Site Assessment Biologists: Robertson Ted (Last name) (first name); _____ (Last name) (first name)

Sandy Grayson (Last name) (first name); _____ (Last name) (first name)

Site Location: SC-12: Alameda Co., UC Berkeley, 37.86870547, -122.237093
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)****

Proposed project name: UCB Hill Campus Fire Hazard Reduction
Brief description of proposed action:

Thin eucalyptus & non-native trees near roads & buildings.

1) Is this site within the current or historic range of the CRF (circle one)? YES (NO)

2) Are there known records of CRF within 1.6 km (1 mi) of the site (circle one)? YES (NO)
If yes, attach a list of all known CRF records with a map showing all locations.

GENERAL AQUATIC HABITAT CHARACTERIZATION

(if multiple ponds or streams are within the proposed action area, fill out one data sheet for each)

POND:

Size: _____ Maximum depth: _____

Vegetation: emergent, overhanging, dominant species: _____

_____

_____

Substrate: _____

_____

Perennial or Ephemeral *(circle one).* If ephemeral, date it goes dry: _____

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

STREAM: SC-12
Bank full width: 20. ft.
Depth at bank full: 1 To 2 inches.
Stream gradient: 25°

Are there pools (circle one)? YES (NO)
If yes,
Size of stream pools: _____
Maximum depth of stream pools: _____

Characterize non-pool habitat: run, (riffle), glide, other: _____

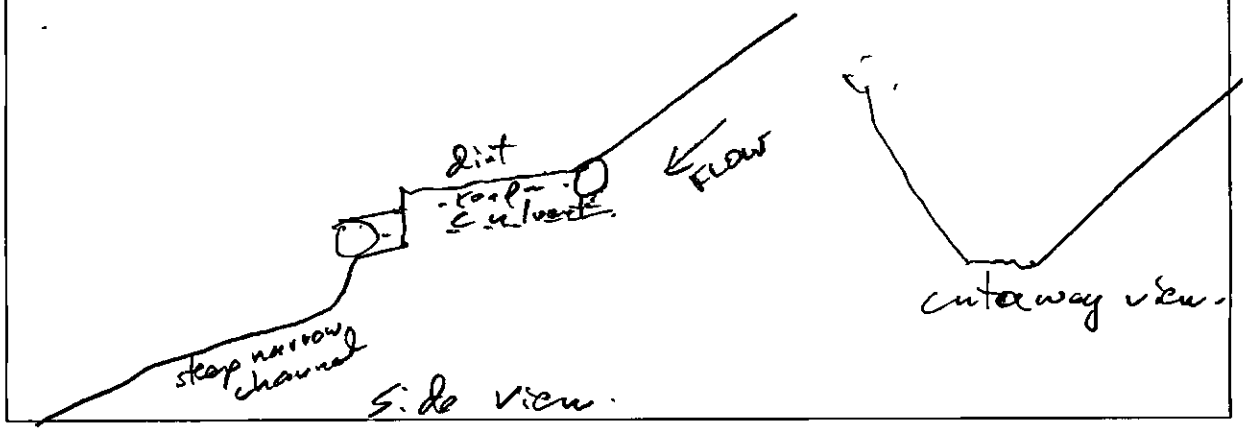
Vegetation: emergent, (overhanging), dominant species: Umbellularia californica
no emergent Veg.

Substrate: Rocky

Bank description: Rocky, gravel, silt

Perennial or Ephemeral *(circle one)*. If (ephemeral), date it goes dry: Late Spring.

Other aquatic habitat characteristics, species observations, drawings, or comments:



Necessary Attachments:

1. All field notes and other supporting documents
2. Site photographs - 5021
3. Maps with important habitat features and species location

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

Site Assessment reviewed by _____ (FWS Field Office) _____ (date) _____ (biologist)

Date of Site Assessment: 03/01/2009 (mm/dd/yyyy)

Site Assessment Biologists: Robertson (Last name) Ted (first name) _____ (Last name) _____ (first name)

Sandy (Last name) Grayson (first name) _____ (Last name) _____ (first name)

Site Location: SC-13: Alameda Co., UC Berkeley, 37.87558983, -122.2274892
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)****

Proposed project name: UCB Hill Campus Fire Hazard Reduction
Brief description of proposed action:

Thin eucalyptus & non-native trees near roads & buildings.

1) Is this site within the current or historic range of the CRF (circle one)? YES (NO)

2) Are there known records of CRF within 1.6 km (1 mi) of the site (circle one)? YES (NO)
If yes, attach a list of all known CRF records with a map showing all locations.

GENERAL AQUATIC HABITAT CHARACTERIZATION

(if multiple ponds or streams are within the proposed action area, fill out one data sheet for each)

POND:

Size: _____ Maximum depth: _____

Vegetation: emergent, overhanging, dominant species: _____

_____

_____

Substrate: _____

_____

Perennial or Ephemeral *(circle one)*. If ephemeral, date it goes dry: _____

Appendix D.

California Red-legged Frog Habitat Site Assessment Data Sheet

STREAM: SC-13

Bank full width: 2-4 ft

Depth at bank full: 1-2 in

Stream gradient: 18°

Are there pools (circle one)? YES (NO)

If yes,

Size of stream pools: —

Maximum depth of stream pools: —

Characterize non-pool habitat: run, (riffle), glide, other: _____

Vegetation: emergent, (overhanging), dominant species: Umbellularia californica

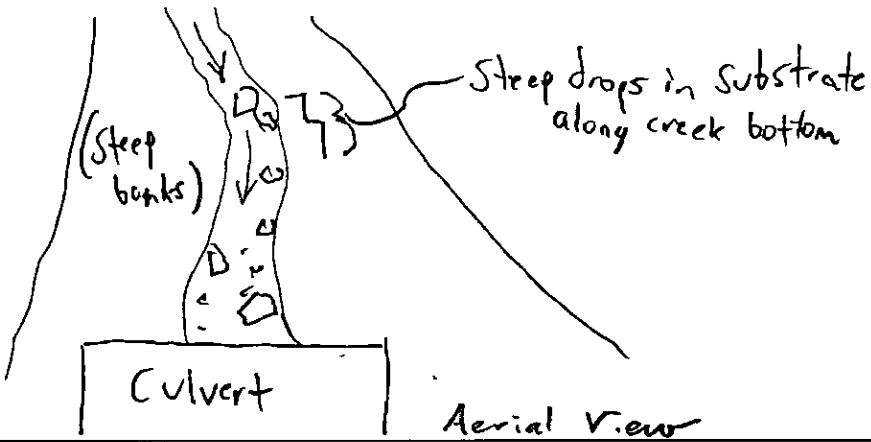
NO EMERGENT VEG.

Substrate: rocky, silty

Bank description: rocky, silt, duff & organic matter

Perennial or (Ephemeral) *(circle one).* If ephemeral, date it goes dry: Summer

Other aquatic habitat characteristics, species observations, drawings, or comments:



Necessary Attachments:

1. All field notes and other supporting documents
2. Site photographs 5022-5023
3. Maps with important habitat features and species location

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

Site Assessment reviewed by _____
(FWS Field Office) (date) (biologist)

Date of Site Assessment: 03/01/2019
(mm/dd/yyyy)

Site Assessment Biologists: Robertson Ted
(Last name) (first name)

_____
(Last name) (first name)

Sandy Grayson
(Last name) (first name)

_____
(Last name) (first name)

Site Location: SC-14: Alameda Co., UC Berkeley, 37.87588235, -122.2276435
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)****

Proposed project name: UCB Hill Campus Fire Hazard Reduction
Brief description of proposed action:

Thin eucalyptus & non-native trees near roads & buildings.

1) Is this site within the current or historic range of the CRF (circle one)? YES (NO)

2) Are there known records of CRF within 1.6 km (1 mi) of the site (circle one)? YES (NO)
If yes, attach a list of all known CRF records with a map showing all locations.

GENERAL AQUATIC HABITAT CHARACTERIZATION
(if multiple ponds or streams are within the proposed action area, fill out one data sheet for each)

POND:

Size: _____ Maximum depth: _____

Vegetation: emergent, overhanging, dominant species: _____

_____

_____

Substrate: _____

_____

Perennial or Ephemeral *(circle one).* If ephemeral, date it goes dry: _____

Appendix D. SC-14

California Red-legged Frog Habitat Site Assessment Data Sheet

STREAM: SC-14

Bank full width: 1-2 ft

Depth at bank full: 1-2 in

Stream gradient: 27°

Are there pools (circle one)? YES (NO)

If yes,

Size of stream pools: _____

Maximum depth of stream pools: _____

Characterize non-pool habitat: run, (riffle), glide, other: fast-flowing, no pools

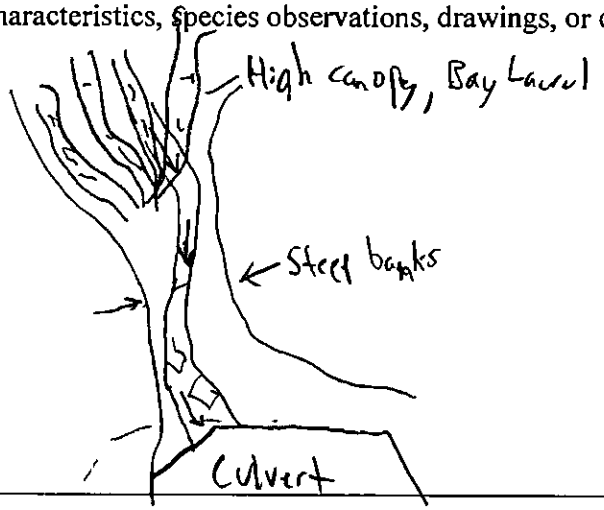
Vegetation: emergent, (overhanging), dominant species: Umbellularia californica - No emergent veg.

Substrate: Rocks, silt

Bank description: Silty, rocky, duff

Perennial or (Ephemeral) *(circle one)*. If ephemeral, date it goes dry: Summer

Other aquatic habitat characteristics, species observations, drawings, or comments:



Aerial view

Necessary Attachments:

1. All field notes and other supporting documents
2. Site photographs 5026-5027
3. Maps with important habitat features and species location

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

Site Assessment reviewed by _____ (FWS Field Office) on _____ (date) _____ (biologist)

Date of Site Assessment: 03/01/2019 (mm/dd/yyyy)

Site Assessment Biologists: Robertson (Last name) Ted (first name) _____ (Last name) _____ (first name)

Sandy (Last name) Grayson (first name) _____ (Last name) _____ (first name)

Site Location: SC-15: Alameda Co, UC Berkeley, 37.87680673, -122.2291724
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)****

Proposed project name: UCB Hill Campus Fire Hazard Reduction
Brief description of proposed action:

Thin eucalyptus & non-native trees near roads & buildings.

1) Is this site within the current or historic range of the CRF (circle one)? YES (NO)

2) Are there known records of CRF within 1.6 km (1 mi) of the site (circle one)? YES (NO)
If yes, attach a list of all known CRF records with a map showing all locations.

GENERAL AQUATIC HABITAT CHARACTERIZATION

(if multiple ponds or streams are within the proposed action area, fill out one data sheet for each)

POND:

Size: _____ Maximum depth: _____

Vegetation: emergent, overhanging, dominant species: _____

_____

_____

Substrate: _____

_____

Perennial or Ephemeral *(circle one).* If ephemeral, date it goes dry: _____

Appendix D.

California Red-legged Frog Habitat Site Assessment Data Sheet

STREAM: SC-15

Bank full width: 1-2 ft

Depth at bank full: 3-5 in

Stream gradient: 25°

Are there pools (circle one)? YES (NO)

If yes,

Size of stream pools: _____

Maximum depth of stream pools: _____

Characterize non-pool habitat: run, ~~riffle~~, glide, other: steep banks, rocky substrate, no pools

Vegetation: emergent, (overhanging), dominant species: Umbellularia californica

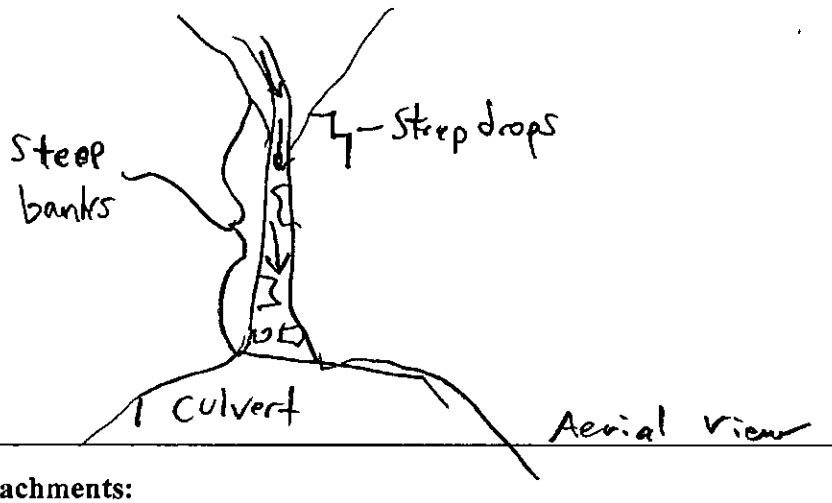
No emergent veg.

Substrate: rock, silt, duff

Bank description: rocky, silty

Perennial or (Ephemeral *(circle one)*. If ephemeral, date it goes dry: Late spring

Other aquatic habitat characteristics, species observations, drawings, or comments:



Necessary Attachments:

1. All field notes and other supporting documents
2. Site photographs 5029 + 5030
3. Maps with important habitat features and species location

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

Site Assessment reviewed by _____ (FWS Field Office) _____ (date) _____ (biologist)

Date of Site Assessment: 03/01/2019 (mm/dd/yyyy)

Site Assessment Biologists: Robertson (Last name) Ted (first name) _____ (Last name) _____ (first name)

Sandy (Last name) Grayson (first name) _____ (Last name) _____ (first name)

Site Location: SC-16; Alameda Co., UCBerkeley, 37.8771095, -122.2312365
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)****

Proposed project name: UCB Hill Campus Fire Hazard Reduction
Brief description of proposed action:

Thin eucalyptus & non-native trees near roads & buildings.

1) Is this site within the current or historic range of the CRF (circle one)? YES (NO)

2) Are there known records of CRF within 1.6 km (1 mi) of the site (circle one)? YES (NO)
If yes, attach a list of all known CRF records with a map showing all locations.

GENERAL AQUATIC HABITAT CHARACTERIZATION
(if multiple ponds or streams are within the proposed action area, fill out one data sheet for each)

POND:

Size: _____ Maximum depth: _____

Vegetation: emergent, overhanging, dominant species: _____

_____

_____

Substrate: _____

_____

Perennial or Ephemeral *(circle one)*. If ephemeral, date it goes dry: _____

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

STREAM: SC-16
Bank full width: 1-2ft
Depth at bank full: <1 inch
Stream gradient: 2°

Are there pools (circle one)? YES (NO)
If yes,
Size of stream pools: _____
Maximum depth of stream pools: _____

Characterize non-pool habitat: run, riffle, glide, other: ephemeral water collection point

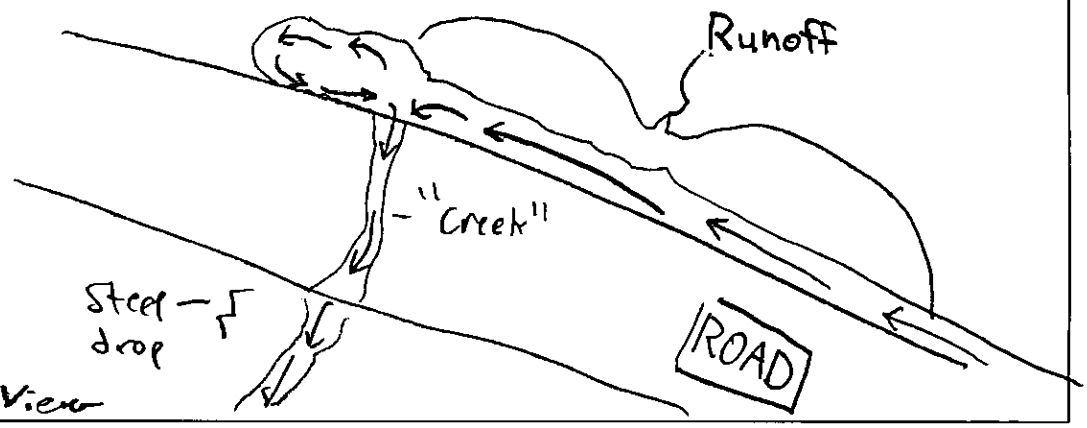
Vegetation: emergent, (overhanging), dominant species: Coyote brush: Baccharis sp. No emergent veg.

Substrate: rock & mud

Bank description: no banks water pooling along road and flowing across

Perennial or (Ephemeral) *(circle one)*. If ephemeral, date it goes dry: 1 week post-rain event

Other aquatic habitat characteristics, species observations, drawings, or comments:



Necessary Attachments:

1. All field notes and other supporting documents
2. Site photographs 5031-5032
3. Maps with important habitat features and species location

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

Site Assessment reviewed by _____ (FWS Field Office) _____ (date) _____ (biologist)

Date of Site Assessment: 03/01/2019 (mm/dd/yyyy)

Site Assessment Biologists: Robertson (Last name) Ted (first name) _____ (Last name) _____ (first name)

Saady. (Last name) Grayson (first name) _____ (Last name) _____ (first name)

Site Location: SC-17; Alameda Co., UC Berkeley, 37.87878473, -122.2518843
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: UCB Hill Campus Fire Hazard Reduction
Brief description of proposed action:

Thin eucalyptus & non-native trees near roads & buildings.

1) Is this site within the current or historic range of the CRF (circle one)? YES (NO)

2) Are there known records of CRF within 1.6 km (1 mi) of the site (circle one)? YES (NO)
If yes, attach a list of all known CRF records with a map showing all locations.

GENERAL AQUATIC HABITAT CHARACTERIZATION
(if multiple ponds or streams are within the proposed action area, fill out one data sheet for each)

POND:

Size: _____ Maximum depth: _____

Vegetation: emergent, overhanging, dominant species: _____

_____

_____

Substrate: _____

_____

Perennial or Ephemeral *(circle one)*. If ephemeral, date it goes dry: _____

Appendix D.

California Red-legged Frog Habitat Site Assessment Data Sheet

STREAM: SC-17

Bank full width: 1-5ft

Depth at bank full: 1-2ft

Stream gradient: 26°

Are there pools (circle one)? YES (NO)

If yes,

Size of stream pools: _____

Maximum depth of stream pools: _____

Characterize non-pool habitat: run, (riffle), glide, other: Steep banks, fast-flowing

Vegetation: emergent, (overhanging), dominant species: Umbellularia californica, Eucalyptus globulus

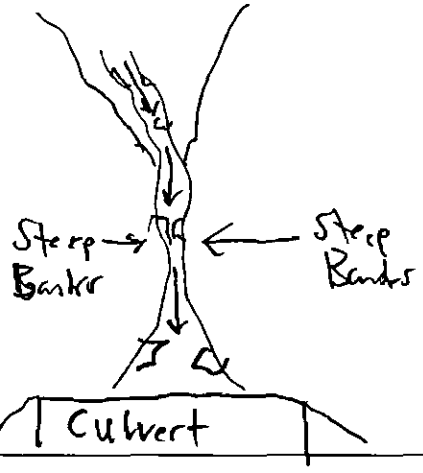
No EMERGENT VEG.

Substrate: rock, silt, duff

Bank description: rocky & silty, w/ eucalyptus leaves intermittent

Perennial or (Ephemeral) *(circle one)*. If ephemeral, date it goes dry: Late Spring/Summer

Other aquatic habitat characteristics, species observations, drawings, or comments:



Aerial view

Necessary Attachments:

1. All field notes and other supporting documents
2. Site photographs 5033 & 5034
3. Maps with important habitat features and species location

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

Site Assessment reviewed by _____ (FWS Field Office) _____ (date) _____ (biologist)

Date of Site Assessment: 03/01/2019 (mm/dd/yyyy)

Site Assessment Biologists: Robertson (Last name) Ted (first name) _____ (Last name) _____ (first name)

Sandy (Last name) Grayson (first name) _____ (Last name) _____ (first name)

Site Location: SC-18: Alameda, UC Berkeley, 37.87906565, -122.2324586
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: UCB Hill Campus Fire Hazard Reduction
Brief description of proposed action:

Thin eucalyptus & non-native trees near roads & buildings.

1) Is this site within the current or historic range of the CRF (circle one)? YES (NO)

2) Are there known records of CRF within 1.6 km (1 mi) of the site (circle one)? YES (NO)
If yes, attach a list of all known CRF records with a map showing all locations.

GENERAL AQUATIC HABITAT CHARACTERIZATION

(if multiple ponds or streams are within the proposed action area, fill out one data sheet for each)

POND:

Size: _____ Maximum depth: _____

Vegetation: emergent, overhanging, dominant species: _____

_____

_____

Substrate: _____

_____

Perennial or Ephemeral *(circle one)*. If ephemeral, date it goes dry: _____

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

STREAM: SC-18
Bank full width: 1-2 ft
Depth at bank full: 2-6 in
Stream gradient: 27°

Are there pools (circle one)? YES (NO)
If yes,
Size of stream pools: _____
Maximum depth of stream pools: _____

Characterize non-pool habitat: run, riffle, glide, other: fast-flow, shallow stream, no emergent veg.

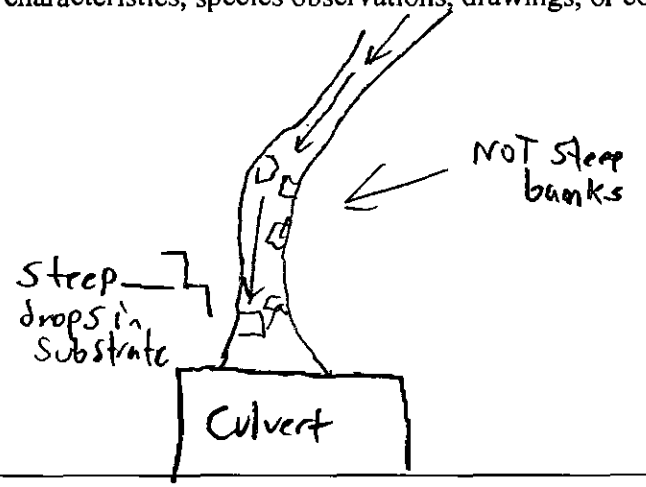
Vegetation: emergent, overhanging, dominant species: Eucalyptus globulus

Substrate: rock, silt, duff

Bank description: rocky & silty, clogged with eucalyptus leaves

Perennial or Ephemeral *(circle one)*. If ephemeral, date it goes dry: Summer

Other aquatic habitat characteristics, species observations, drawings, or comments:



Necessary Attachments:

1. All field notes and other supporting documents
2. Site photographs 5033 & 5036
3. Maps with important habitat features and species location

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

Site Assessment reviewed by _____ (FWS Field Office) _____ (date) _____ (biologist)

Date of Site Assessment: 03/01/2019 (mm/dd/yyyy)

Site Assessment Biologists: Robertson - Ted (Last name) (first name) _____ (Last name) (first name)

Sandy Grayson (Last name) (first name) _____ (Last name) (first name)

Site Location: SC-19; Alameda Co, UC Berkeley, 37.87932294, -122.2348484
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)****

Proposed project name: UCB Hill Campus Fire Hazard Reduction
Brief description of proposed action:

Thin eucalyptus & non-native trees near roads & buildings

1) Is this site within the current or historic range of the CRF (circle one)? YES (NO)

2) Are there known records of CRF within 1.6 km (1 mi) of the site (circle one)? YES (NO)
If yes, attach a list of all known CRF records with a map showing all locations.

GENERAL AQUATIC HABITAT CHARACTERIZATION

(if multiple ponds or streams are within the proposed action area, fill out one data sheet for each)

POND:

Size: _____ Maximum depth: _____

Vegetation: emergent, overhanging, dominant species: _____

_____

_____

Substrate: _____

_____

Perennial or Ephemeral *(circle one).* If ephemeral, date it goes dry: _____

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

STREAM: SC-19
Bank full width: 1-2 ft
Depth at bank full: No water
Stream gradient: 28°

Are there pools (circle one)? YES (NO)
If yes,
Size of stream pools: _____
Maximum depth of stream pools: _____

Characterize non-pool habitat: run, ~~riffle~~, glide, other: Rocky, choked w/eucalyptus

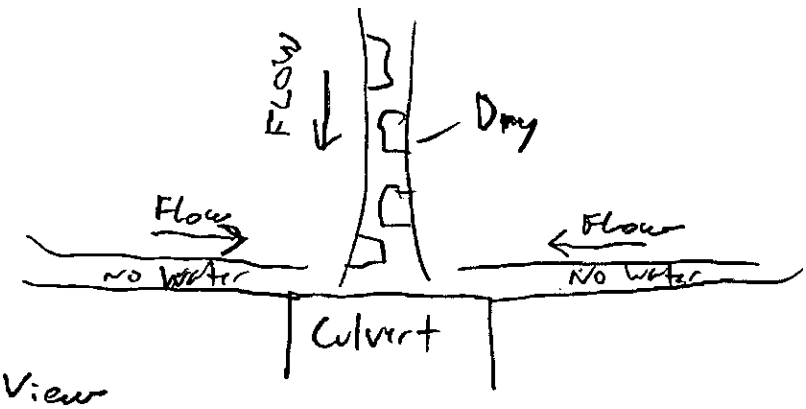
Vegetation: emergent, (overhanging), dominant species: Eucalyptus globulus, Umbellularia californica, no emergent veg.

Substrate: rocks, eucalyptus duff

Bank description: heavily inundated w/eucalyptus leaves

Perennial or (Ephemeral) *(circle one)*. If ephemeral, date it goes dry: 1-2 days after rain event

Other aquatic habitat characteristics, species observations, drawings, or comments:



Aerial View

Necessary Attachments:

1. All field notes and other supporting documents
2. Site photographs 5037 @ 5038
3. Maps with important habitat features and species location

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

Site Assessment reviewed by _____ (EWS Field Office) _____ (date) _____ (biologist)

Date of Site Assessment: 03/01/2019 (mm/dd/yyyy)

Site Assessment Biologists: Robertson (Last name) Ted (first name) _____ (Last name) _____ (first name)

Sandy (Last name) Grayson (first name) _____ (Last name) _____ (first name)

Site Location: SC-20; Alameda Co., UC Berkeley, 37.8801449, -122.2364756
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: UCB Hill Campus Fire Hazard Reduction
Brief description of proposed action:

Thin eucalyptus & non-native trees near roads & buildings.

1) Is this site within the current or historic range of the CRF (circle one)? YES (NO)

2) Are there known records of CRF within 1.6 km (1 mi) of the site (circle one)? YES (NO)
If yes, attach a list of all known CRF records with a map showing all locations.

GENERAL AQUATIC HABITAT CHARACTERIZATION

(if multiple ponds or streams are within the proposed action area, fill out one data sheet for each)

POND:

Size: _____ Maximum depth: _____

Vegetation: emergent, overhanging, dominant species: _____

_____

_____

Substrate: _____

_____

Perennial or Ephemeral *(circle one)*. If ephemeral, date it goes dry: _____

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

STREAM: SC-20
Bank full width: 6-10 ft
Depth at bank full: No water
Stream gradient: 20°

Are there pools (circle one)? YES (NO)
If yes,
Size of stream pools: _____
Maximum depth of stream pools: _____

Characterize non-pool habitat: run, (riffle), glide, other: Creek not marshy

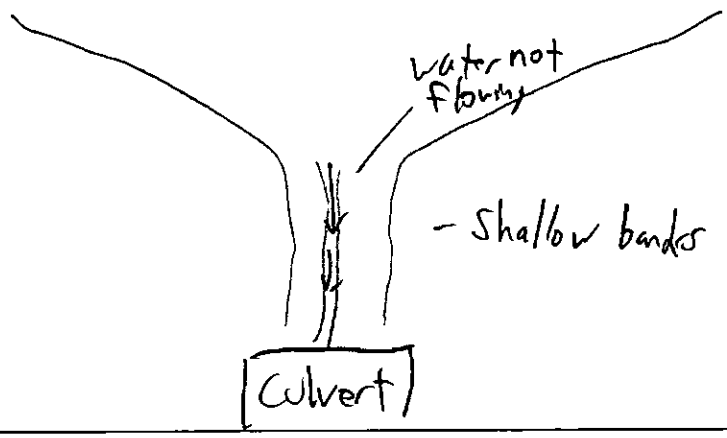
Vegetation: emergent, (overhanging), dominant species: Eucalyptus globulus
No emergent veg.

Substrate: rocks, duff, silt

Bank description: rocky, covered in non-native veg, filled w/eucalyptus leaves

Perennial or ~~Ephemeral~~ *(circle one)*. If ephemeral, date it goes dry: 1-2 days post-rain event

Other aquatic habitat characteristics, species observations, drawings, or comments:



Necessary Attachments:

1. All field notes and other supporting documents
2. Site photographs 5039 & 5040
3. Maps with important habitat features and species location

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

Site Assessment reviewed by: _____ (FWS Field Office) _____ (date) _____ (biologist)

Date of Site Assessment: 03/01/2019 (mm/dd/yyyy)

Site Assessment Biologists: Robertson (Last name) Ted (first name) _____ (Last name) _____ (first name)

Sand (Last name) Grayson (first name) _____ (Last name) _____ (first name)

Site Location: SC-21; Alameda Co., UC Berkeley, 37.88098341, -122.2376942
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)****

Proposed project name: UCB Hill Campus Fire Hazard Reduction
Brief description of proposed action:

Thin eucalyptus & non-native trees near roads & buildings.

1) Is this site within the current or historic range of the CRF (circle one)? YES (NO)

2) Are there known records of CRF within 1.6 km (1 mi) of the site (circle one)? YES (NO)
If yes, attach a list of all known CRF records with a map showing all locations.

GENERAL AQUATIC HABITAT CHARACTERIZATION

(if multiple ponds or streams are within the proposed action area, fill out one data sheet for each)

POND:

Size: _____ Maximum depth: _____

Vegetation: emergent, overhanging, dominant species: _____

_____

_____

Substrate: _____

_____

Perennial or Ephemeral *(circle one)*. If ephemeral, date it goes dry: _____

Appendix D.

California Red-legged Frog Habitat Site Assessment Data Sheet

STREAM: JC-21

Bank full width: 2-4 ft

Depth at bank full: No water

Stream gradient: 30°

Are there pools (circle one)? YES (NO)

If yes,

Size of stream pools: _____

Maximum depth of stream pools: _____

Characterize non-pool habitat: run, (riffle), glide, other: No water

Vegetation: emergent, (overhanging), dominant species: Eucalyptus globulus, Umbellularia californica, Coast live oak: Quercus agrifolia

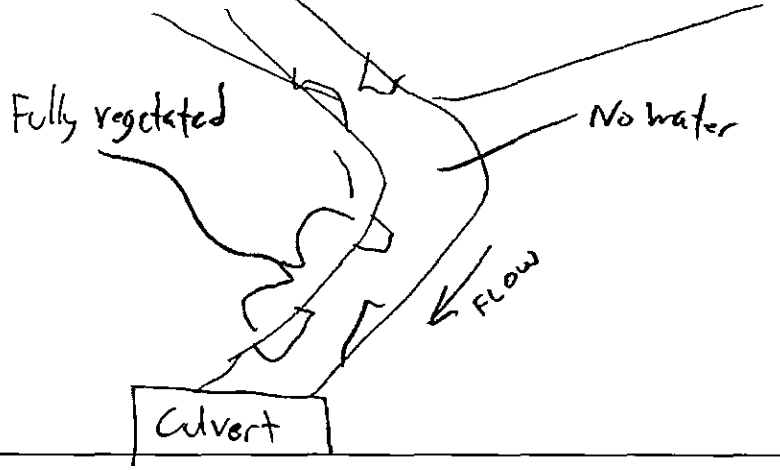
No emergent veg.

Substrate: rock, silt, organic matter

Bank description: fully vegetated w/ non-native annuals

Perennial or (Ephemeral) *(circle one)*. If ephemeral, date it goes dry: 1-2 days post-rain event

Other aquatic habitat characteristics, species observations, drawings, or comments:



Necessary Attachments:

1. All field notes and other supporting documents
2. Site photographs 5041 & 5042
3. Maps with important habitat features and species location

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

Site Assessment reviewed by: _____ (FWS Field Office) _____ (date) _____ (biologist)

Date of Site Assessment: 03/01/2019 (mm/dd/yyyy)

Site Assessment Biologists: Robertson (Last name) Ted (first name) _____ (Last name) _____ (first name)

Sandy (Last name) Grayson (first name) _____ (Last name) _____ (first name)

Site Location: SC-22A; Alameda Co., UC Berkeley, 37.8749132, -122.2396007
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: UCB Hill Campus Fire Hazard Reduction
Brief description of proposed action:

Thin eucalyptus & non-native trees near roads & bridges.

1) Is this site within the current or historic range of the CRF (circle one)? YES (NO)

2) Are there known records of CRF within 1.6 km (1 mi) of the site (circle one)? YES (NO)
If yes, attach a list of all known CRF records with a map showing all locations.

GENERAL AQUATIC HABITAT CHARACTERIZATION

(if multiple ponds or streams are within the proposed action area, fill out one data sheet for each)

POND:

Size: _____ Maximum depth: _____

Vegetation: emergent, overhanging, dominant species: _____

_____

_____

Substrate: _____

_____

Perennial or Ephemeral *(circle one)*. If ephemeral, date it goes dry: _____

Appendix D.

California Red-legged Frog Habitat Site Assessment Data Sheet

STREAM: SC-22A

Bank full width: 2-3ft

Depth at bank full: 4-8in

Stream gradient: _____

Are there pools (circle one)? YES NO

If yes,

Size of stream pools: _____

Maximum depth of stream pools: _____

Characterize non-pool habitat: run, (riffle), glide, other: fast-flowing, stream, rocky substrate w/large rocks

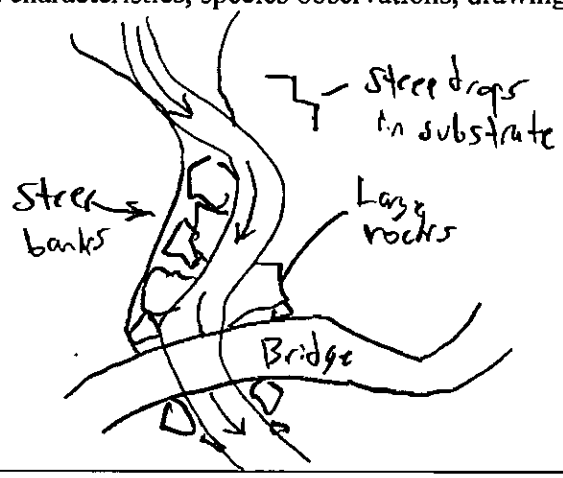
Vegetation: emergent, (overhanging), dominant species: Umbellularia californica Sequoia sempervirens, no emergent veg.

Substrate: Large rocks

Bank description: large rocks, no emergent veg.

(Perennial) or Ephemeral *(circle one)*. If ephemeral, date it goes dry: _____

Other aquatic habitat characteristics, species observations, drawings, or comments:



Aerial view

Necessary Attachments:

1. All field notes and other supporting documents
2. Site photographs 5043-5044
3. Maps with important habitat features and species location

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

Site Assessment reviewed by _____
(FWS Field Office) (date) (biologist)

Date of Site Assessment: 03/04/2019
(mm/dd/yyyy)

Site Assessment Biologists: Roberson, Ted _____
(Last name) (first name) (Last name) (first name)

_____ _____
(Last name) (first name) (Last name) (first name)

Site Location: SC-22B; Alameda Co., UC Berkeley, 37.8801823, -122.2510639
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: UCB Hill Campus Fire Hazard Reduction
Brief description of proposed action:

Thin eucalyptus & non-native trees near roads & buildings.

1) Is this site within the current or historic range of the CRF (circle one)? YES (NO)

2) Are there known records of CRF within 1.6 km (1 mi) of the site (circle one)? YES (NO)
If yes, attach a list of all known CRF records with a map showing all locations.

GENERAL AQUATIC HABITAT CHARACTERIZATION

(if multiple ponds or streams are within the proposed action area, fill out one data sheet for each)

POND:

Size: _____ Maximum depth: _____

Vegetation: emergent, overhanging, dominant species: _____

_____

_____

Substrate: _____

_____

Perennial or Ephemeral *(circle one).* If ephemeral, date it goes dry: _____

Appendix D. ~ SC-22

California Red-legged Frog Habitat Site Assessment Data Sheet

STREAM: SC-22B

Bank full width: 2- ft.

Depth at bank full: 2-4 inches

Stream gradient: 25° slope

Are there pools (circle one)? YES (NO)

If yes,

Size of stream pools: _____

Maximum depth of stream pools: _____

Characterize non-pool habitat: run (riffle), glide, other: _____

Vegetation: emergent, (overhanging), dominant species: _____

Bay Laurel - Umbellularia californica

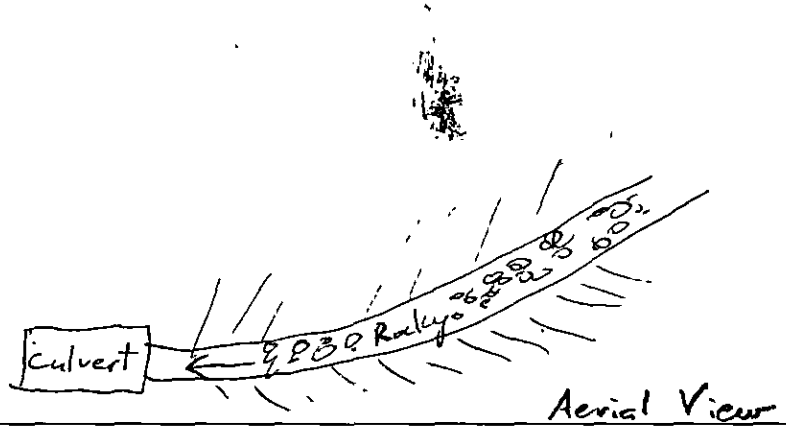
Quercus agrifolia, no emergent veg.

Substrate: Rocky

Bank description: 30-35° slopes, Rocky, gravel, S.M, clay with non-native annual vegetation

Perennial or (Ephemeral) *(circle one)*. If ephemeral, date it goes dry: 2 weeks after last rain event.

Other aquatic habitat characteristics, species observations, drawings, or comments:



Necessary Attachments:

1. All field notes and other supporting documents
2. Site photographs 5045-5046
3. Maps with important habitat features and species location

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

Site Assessment reviewed by _____
(FWS Field Office) (date) (biologist)

Date of Site Assessment: 03/04/2019
(mm/dd/yyyy)

Site Assessment Biologists: Robertson, Tod _____
(Last name) (first name) (Last name) (first name)

_____ _____
(Last name) (first name) (Last name) (first name)

Site Location: C-23; Alameda Co., UC Berkeley, 37.87160403, -122.2543632
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: UCB Hill Campus Fire Hazard Reduction
Brief description of proposed action:

Thin eucalyptus & non-native trees near roads & buildings

1) Is this site within the current or historic range of the CRF (circle one)? YES (NO)

2) Are there known records of CRF within 1.6 km (1 mi) of the site (circle one)? YES (NO)
If yes, attach a list of all known CRF records with a map showing all locations.

GENERAL AQUATIC HABITAT CHARACTERIZATION
(if multiple ponds or streams are within the proposed action area, fill out one data sheet for each)

POND:

Size: _____ Maximum depth: _____

Vegetation: emergent, overhanging, dominant species: _____
_____
_____

Substrate: _____
_____

Perennial or Ephemeral *(circle one)*. If ephemeral, date it goes dry: _____

Appendix D.

California Red-legged Frog Habitat Site Assessment Data Sheet

STREAM: C-23

Bank full width: 2 to 4 ft

Depth at bank full: 2 To 4 inches

Stream gradient: 20° slope

Are there pools (circle one)? YES (NO)

If yes,

Size of stream pools: _____

Maximum depth of stream pools: _____

Characterize non-pool habitat: run, (riffle), glide, other: _____

Vegetation: emergent, (overhanging), dominant species:

Bay laurel - Umbellularia californica, Genista monspessulana

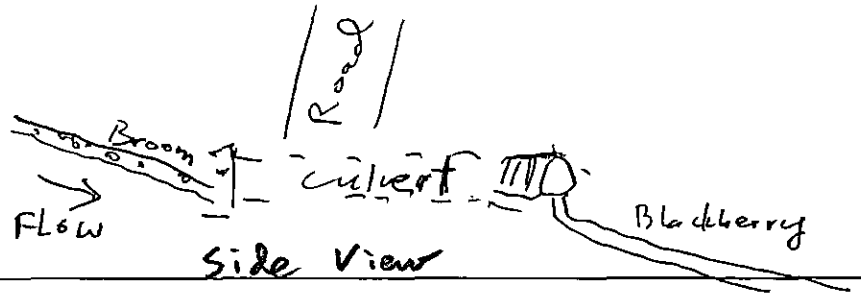
H. Ivy - Hedera helix Blackberry - Rubus Emergent ⇒ Watercress / Tropaeolum

Substrate: Rocky, gravel, silt

Bank description: 30°-40° slopes, rocky to gravel to silt.

Perennial or (Ephemeral) *(circle one).* If ephemeral, date it goes dry: late spring

Other aquatic habitat characteristics, species observations, drawings, or comments:



Necessary Attachments:

1. All field notes and other supporting documents
2. Site photographs 5047 & 5048
3. Maps with important habitat features and species location

Appendix D.

California Red-legged Frog Habitat Site Assessment Data Sheet

Site Assessment reviewed by _____ (FWS Field Office) _____ (date) _____ (biologist)

Date of Site Assessment: 03/04/2019 (mm/dd/yyyy)

Site Assessment Biologists: Robertson, Ted (Last name) (first name) _____ (Last name) (first name)

_____ (Last name) (first name) _____ (Last name) (first name)

Site Location: C-24; Alameda Co., UC Berkeley; 37.8696163 -122.2254625
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)****

Proposed project name: UCB Hill Campus Fire Hazard Reduction
Brief description of proposed action:

Thin eucalyptus & non-native trees near roads & bridges.

1) Is this site within the current or historic range of the CRF (circle one)? YES (NO)

2) Are there known records of CRF within 1.6 km (1 mi) of the site (circle one)? YES (NO)
If yes, attach a list of all known CRF records with a map showing all locations.

GENERAL AQUATIC HABITAT CHARACTERIZATION

(if multiple ponds or streams are within the proposed action area, fill out one data sheet for each)

POND:

Size: _____ Maximum depth: _____

Vegetation: emergent, overhanging, dominant species: _____

_____

_____

Substrate: _____

_____

Perennial or Ephemeral *(circle one)*. If ephemeral, date it goes dry: _____

Appendix D.

California Red-legged Frog Habitat Site Assessment Data Sheet

STREAM: C-24

Bank full width: 6 ft

Depth at bank full: 0.5 - 1 ft.

Stream gradient: 5-8° slope

Are there pools (circle one)? (YES) NO (One pool)

If yes,

Size of stream pools: 15'X15' ft.

Maximum depth of stream pools: 2 ft.

Strong current through Pool, No emergent vegetation.

Characterize non-pool habitat: run, (riffle), glide, other: _____

Vegetation: ~~emergent~~, (overhanging), dominant species: _____

: Bay laurel - Umbellularia californica

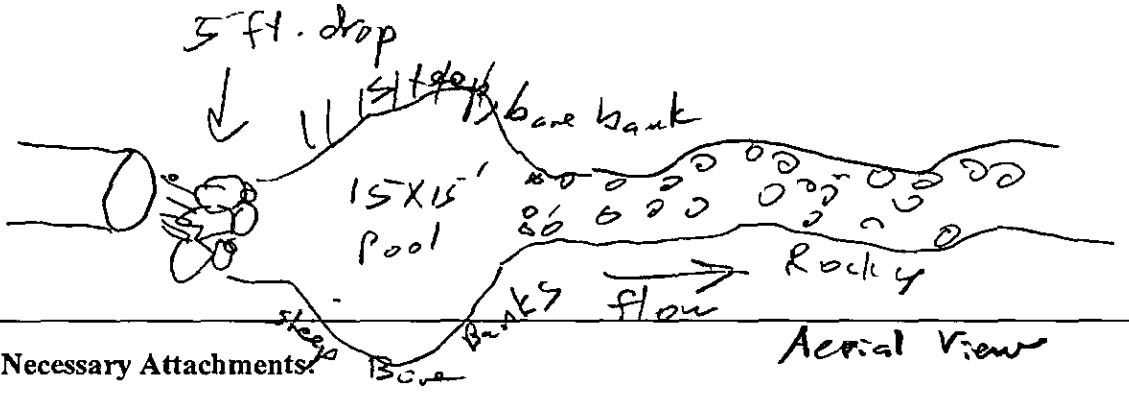
& No emergent veg.

Substrate: Rocky, gravel, sand.

Bank description: 3 - 8' foot vertical incision followed by 25°-45° slope. Mostly rocky, gravel, sand, silt with scattered small trees.

Perennial or **Ephemeral** *(circle one)*. If (ephemeral), date it goes dry: mid-summer

Other aquatic habitat characteristics, species observations, drawings, or comments:



Necessary Attachments:

1. All field notes and other supporting documents
2. Site photographs 5049 & 5050 ≈ 200 ft. downstream
3. Maps with important habitat features and species location

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

Site Assessment reviewed by _____ (FWS Field Office) _____ (date) _____ (biologist)

Date of Site Assessment: 03/04/2019 (mm/dd/yyyy)

Site Assessment Biologists: Roberton, Tad (Last name) (first name) _____ (Last name) (first name)

_____ (Last name) (first name) _____ (Last name) (first name)

Site Location: #C-25: Alameda Co. UC Berkeley; 37.869325; 122.2274894
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

* → change 24 to 25

****ATTACH A MAP** (include habitat types, important features, and species locations)****

Proposed project name: UCB Hill Campus Fire Hazard Reduction
Brief description of proposed action:

Thin eucalyptus & non-native trees near roads & buildings

1) Is this site within the current or historic range of the CRF (circle one)? YES (NO)

2) Are there known records of CRF within 1.6 km (1 mi) of the site (circle one)? YES (NO)
If yes, attach a list of all known CRF records with a map showing all locations.

GENERAL AQUATIC HABITAT CHARACTERIZATION

(if multiple ponds or streams are within the proposed action area, fill out one data sheet for each)

POND:

Size: _____ Maximum depth: _____

Vegetation: emergent, overhanging, dominant species: _____

_____

_____

Substrate: _____

_____

Perennial or Ephemeral *(circle one)*. If ephemeral, date it goes dry: _____

Appendix D.

California Red-legged Frog Habitat Site Assessment Data Sheet

#C-25 (24 slope foot)

STREAM:

Bank full width: 3 ft.

Depth at bank full: < 1 inch (No water)

Stream gradient: 18°

Are there pools (circle one)? YES (NO)

If yes,

Size of stream pools: _____

Maximum depth of stream pools: _____

Characterize non-pool habitat: (run), riffle, glide, other: _____

No Water 3 days after large storm (2" rain-fall)

Vegetation: emergent (overhanging) dominant species: _____

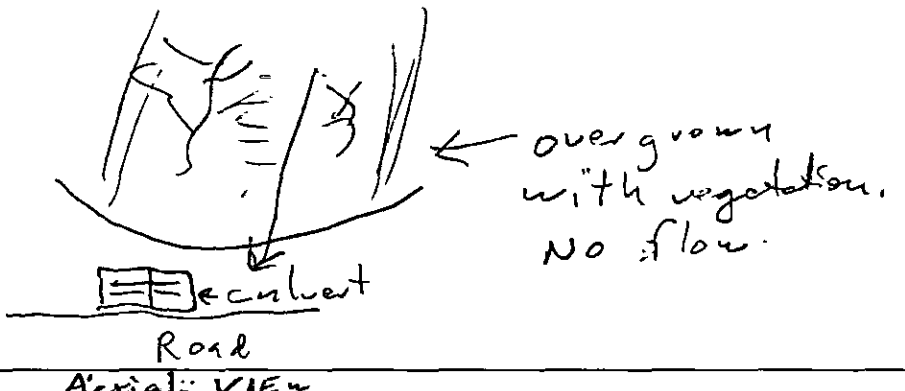
willow-Salix spp. & poison oak.-Toxicodendron diversilobum

Substrate: silty loam

Bank description: 25°-30° bank slope

Perennial or (Ephemeral) *(circle one)*. If ephemeral, date it goes dry: 1-2 days after heavy rain

Other aquatic habitat characteristics, species observations, drawings, or comments:



Aerial: VIEW

Necessary Attachments:

1. All field notes and other supporting documents
2. Site photographs - 5051
3. Maps with important habitat features and species location

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

Site Assessment reviewed by _____ _____ _____
(FWS Field Office) (date) (biologist)

Date of Site Assessment: 03/04/2019
(mm/dd/yyyy)

Site Assessment Biologists: Robertson Tad _____
(Last name) (first name) (Last name) (first name)

_____ _____
(Last name) (first name) (Last name) (first name)

Site Location: SC-26: Alameda Co., UC Berkeley; 37.86888037 -122.2585072
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)****

Proposed project name: UCB Hill Campus Fire Hazard Reduction
Brief description of proposed action:

This eucalyptus & non-native trees near roads & buildings.

1) Is this site within the current or historic range of the CRF (circle one)? YES (NO)

2) Are there known records of CRF within 1.6 km (1 mi) of the site (circle one)? YES (NO)
If yes, attach a list of all known CRF records with a map showing all locations.

GENERAL AQUATIC HABITAT CHARACTERIZATION

(if multiple ponds or streams are within the proposed action area, fill out one data sheet for each)

POND:

Size: _____ Maximum depth: _____

Vegetation: emergent, overhanging, dominant species: _____

_____

_____

Substrate: _____

_____

Perennial or Ephemeral *(circle one)*. If ephemeral, date it goes dry: _____

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

STREAM: SC-26
Bank full width: 1 ft.
Depth at bank full: 1-2 inches
Stream gradient: 18-20° slope

Are there pools (circle one)? YES (NO)
If yes,
Size of stream pools: _____
Maximum depth of stream pools: _____

Characterize non-pool habitat: run, (riffle) glide, other: _____

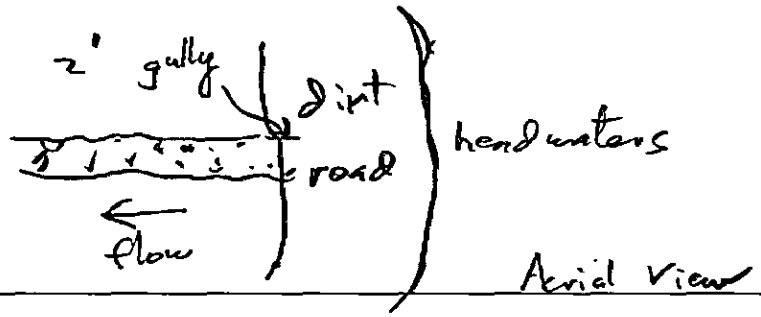
Vegetation: emergent, (overhanging,) dominant species: Salix spp, Sequoia sempervirens, Bay laurel: Umbellularia californica

Substrate: Rocky to sandy

Bank description: Steep 30° slopes, bare with patches of moss

Perennial or (Ephemeral) *(circle one).* If ephemeral, date it goes dry: 1-2 weeks after heavy rain event

Other aquatic habitat characteristics, species observations, drawings, or comments:



Necessary Attachments:

1. All field notes and other supporting documents
2. Site photographs 5052
3. Maps with important habitat features and species location

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

Site Assessment reviewed by _____ (FWS Field Office) _____ (date) _____ (biologist)

Date of Site Assessment: 03/04/2019 (mm/dd/yyyy)

Site Assessment Biologists: Roberton, Ted (Last name) (first name) _____ (Last name) (first name)

_____ (Last name) (first name) _____ (Last name) (first name)

Site Location: #SC-27; Alameda Co., UC Berkeley, 37.87005556, -122.2346231
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: UCB Hill Campus Fire Hazard Reduction
Brief description of proposed action:

Thin eucalyptus & non-native trees near roads & buildings

1) Is this site within the current or historic range of the CRF (circle one)? YES (NO)

2) Are there known records of CRF within 1.6 km (1 mi) of the site (circle one)? YES (NO)
If yes, attach a list of all known CRF records with a map showing all locations.

GENERAL AQUATIC HABITAT CHARACTERIZATION
(if multiple ponds or streams are within the proposed action area, fill out one data sheet for each)

POND:

Size: _____ Maximum depth: _____

Vegetation: emergent, overhanging, dominant species: _____

_____

_____

Substrate: _____

_____

Perennial or Ephemeral *(circle one)*. If ephemeral, date it goes dry: _____

Appendix D.

California Red-legged Frog Habitat Site Assessment Data Sheet

STREAM: SC-27

Bank full width: 1 ft.

Depth at bank full: 1-2 inch.

Stream gradient: 30° slope

Are there pools (circle one)? YES (NO)

If yes,

Size of stream pools: _____

Maximum depth of stream pools: _____

Characterize non-pool habitat: (run), riffle, glide, other: _____

Vegetation: emergent, (overhanging), dominant species: _____

Sambucus nigra, Bay laurel - Umbellularia californica

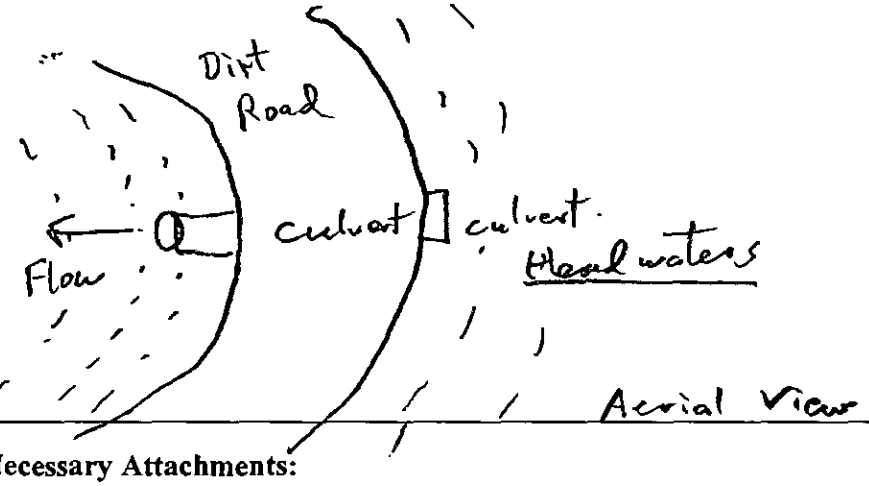
Ribes sanguineum, NO EMERGENT VEG.

Substrate: Rocky to Silt.

Bank description: Bowl shaped in X-section.

Perennial or (Ephemeral) *(circle one)*. If ephemeral, date it goes dry: 1-day after storm

Other aquatic habitat characteristics, species observations, drawings, or comments:



Necessary Attachments:

1. All field notes and other supporting documents
2. Site photographs 5053 - 5054
3. Maps with important habitat features and species location

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

Site Assessment reviewed by _____ (FWS Field Office) _____ (date) _____ (biologist)

Date of Site Assessment: 03/04/2019 (mm/dd/yyyy)

Site Assessment Biologists: Robertson, Ted (Last name) (first name) _____ (Last name) (first name)

_____ (Last name) (first name) _____ (Last name) (first name)

Site Location: # SC 28; Alameda Co., UC Berkeley; 37.8704547, -122.2326991
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: UCB Hill Campus Fire Hazard Reduction
Brief description of proposed action:

Thin eucalyptus & non-native trees near roads & buildings.

1) Is this site within the current or historic range of the CRF (circle one)? YES (NO)

2) Are there known records of CRF within 1.6 km (1 mi) of the site (circle one)? YES (NO)
If yes, attach a list of all known CRF records with a map showing all locations.

GENERAL AQUATIC HABITAT CHARACTERIZATION
(if multiple ponds or streams are within the proposed action area, fill out one data sheet for each)

POND:

Size: _____ Maximum depth: _____

Vegetation: emergent, overhanging, dominant species: _____

_____

_____

Substrate: _____

_____

Perennial or Ephemeral *(circle one)*. If ephemeral, date it goes dry: _____

Appendix D.

California Red-legged Frog Habitat Site Assessment Data Sheet

STREAM: SC-28

Bank full width: 2 ft.

Depth at bank full: 1 to 2 in

Stream gradient: _____

Are there pools (circle one)? YES (NO)

If yes,

Size of stream pools: _____

Maximum depth of stream pools: _____

Characterize non-pool habitat: (run), riffle, glide, other: _____

Vegetation: ~~emergent~~, (overhanging) dominant species: _____

Bay, laurel – U. californica, Sequoia sempervirens

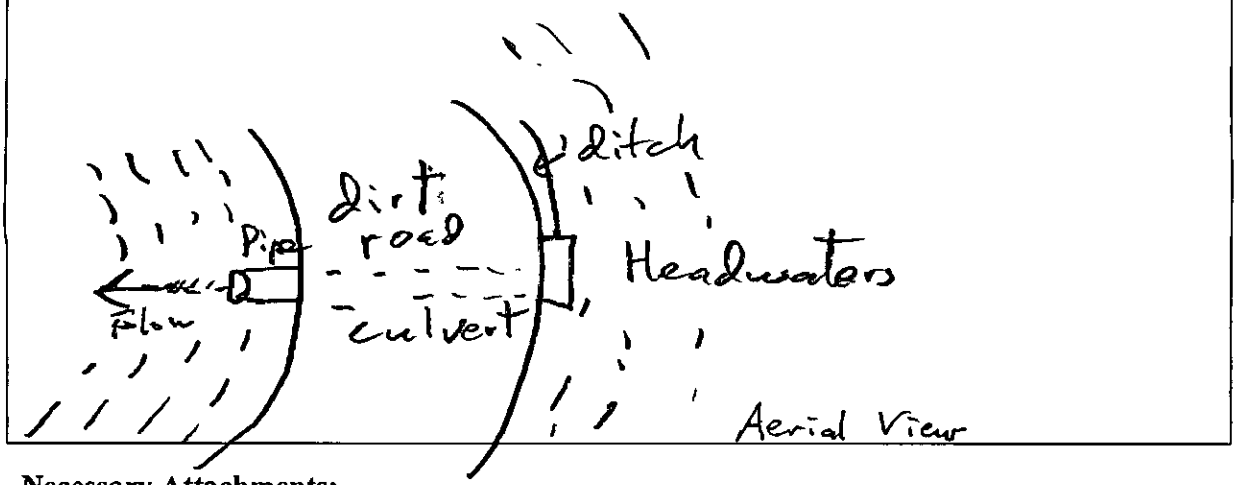
Rubus ursinus

Substrate: Rocky, gravel, silt

Bank description: Bowl shaped

Perennial or Ephemeral *(circle one)*. If ephemeral, date it goes dry: 4-6 days after heavy rain event.

Other aquatic habitat characteristics, species observations, drawings, or comments:



Necessary Attachments:

1. All field notes and other supporting documents
2. Site photographs 5055, 50 56
3. Maps with important habitat features and species location

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

Site Assessment reviewed by _____
(FWS Field Office) (date) (biologist)

Date of Site Assessment: 03/04/2019
(mm/dd/yyyy)

Site Assessment Biologists: Robertson, Tad _____
(Last name) (first name) (Last name) (first name)

_____ _____
(Last name) (first name) (Last name) (first name)

Site Location: SC-29: Alameda Co., UC Berkeley; 37.87294451, -122.2283017
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)****

Proposed project name: UCB Hill Campus Fire Hazard Reduction
Brief description of proposed action:

Thin eucalyptus & non-native trees near roads & buildings.

1) Is this site within the current or historic range of the CRF (circle one)? YES (NO)

2) Are there known records of CRF within 1.6 km (1 mi) of the site (circle one)? YES (NO)
If yes, attach a list of all known CRF records with a map showing all locations.

GENERAL AQUATIC HABITAT CHARACTERIZATION

(if multiple ponds or streams are within the proposed action area, fill out one data sheet for each)

POND:

Size: _____ Maximum depth: _____

Vegetation: emergent, overhanging, dominant species: _____

_____

_____

Substrate: _____

_____

Perennial or Ephemeral *(circle one)*. If ephemeral, date it goes dry: _____

Appendix D.

California Red-legged Frog Habitat Site Assessment Data Sheet

STREAM: #SC-29

Bank full width: 1-2 ft

Depth at bank full: 1-2 inches

Stream gradient: _____

Are there pools (circle one)? YES (NO)

If yes,

Size of stream pools: _____

Maximum depth of stream pools: _____

Characterize non-pool habitat: (run) riffle, glide, other: _____

Vegetation: ~~emergent~~, (overhanging) dominant species: Coyote Brush- Baccharis pilularis

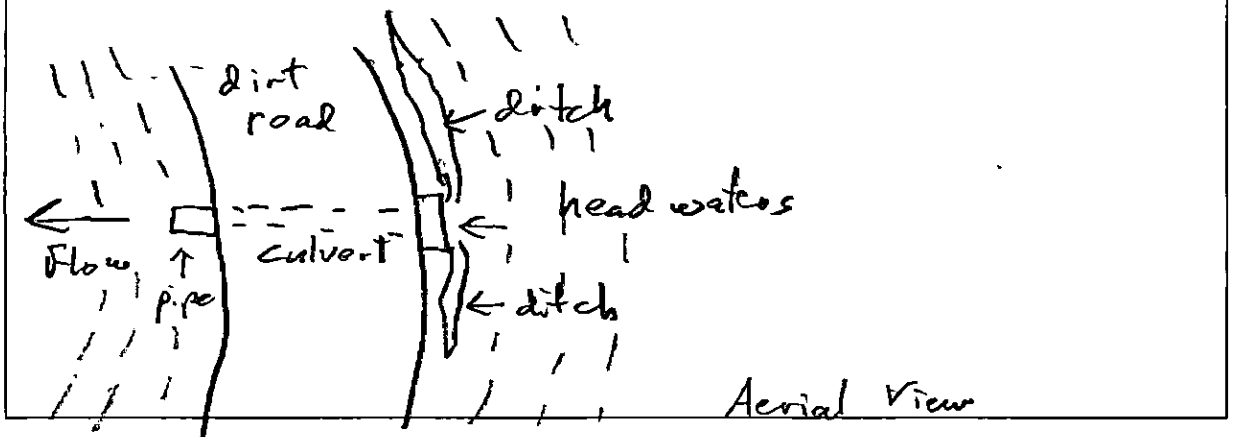
No Emergent Veg.

Substrate: gravel, silty

Bank description: - Minimal bank, mostly continuation of contours.

Perennial or Ephemeral *(circle one)*. If (ephemeral) date it goes dry: 4-6 days after last rain event

Other aquatic habitat characteristics, species observations, drawings, or comments:



Necessary Attachments:

1. All field notes and other supporting documents
2. Site photographs 5058, 5059
3. Maps with important habitat features and species location

5057 = Headwaters of Strawberry Cr.

Appendix D.

California Red-legged Frog Habitat Site Assessment Data Sheet

Site Assessment reviewed by _____ (FWS Field Office) _____ (date) _____ (biologist)

Date of Site Assessment: 03/12/19 (mm/dd/yyyy)

Site Assessment Biologists: Roberts, Ted (Last name, first name) _____ (Last name, first name)

Sandy, Grayson (Last name, first name) _____ (Last name, first name)

Site Location: Wildcat Creek (WC) - 30: Contra Costa Co.; 37.89338298, -122.2431595

(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)****

Proposed project name: UCB Hill Campus Fire Hazard Reduction

Brief description of proposed action:

Thin non-native trees near roads & buildings

1) Is this site within the current or historic range of the CRF (circle one)? (YES) NO

2) Are there known records of CRF within 1.6 km (1 mi) of the site (circle one)? (YES) NO
If yes, attach a list of all known CRF records with a map showing all locations.

GENERAL AQUATIC HABITAT CHARACTERIZATION

(if multiple ponds or streams are within the proposed action area, fill out one data sheet for each)

POND:

Size: _____ Maximum depth: _____

Vegetation: emergent, overhanging, dominant species: _____

_____

_____

Substrate: _____

_____

Perennial or Ephemeral *(circle one)*. If ephemeral, date it goes dry: _____

Appendix D.

California Red-legged Frog Habitat Site Assessment Data Sheet

STREAM: WC-30

Bank full width: 12ft

Depth at bank full: 2-4 1/2

Stream gradient: 45°

Are there pools (circle one)? YES (NO)

If yes,

Size of stream pools: _____

Maximum depth of stream pools: _____

Characterize non-pool habitat: run, riffle, glide, other: fast-moving Stream.

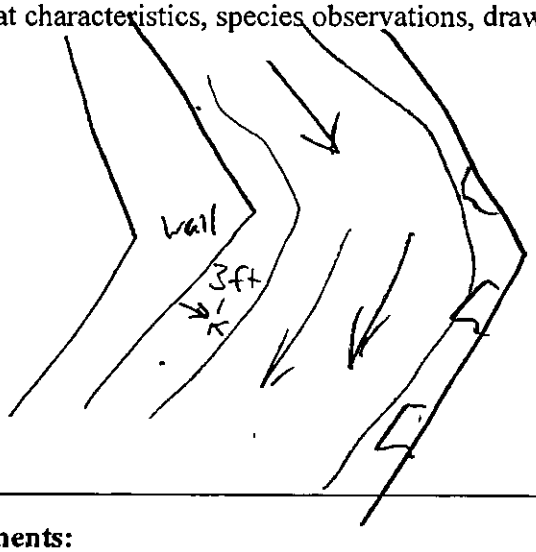
Vegetation: emergent, overhanging, dominant species: Salix, Ribes, Cornus, Sequoia, Pinus, Alnus,

Substrate: Concrete

Bank description: Sloped, Steep walls

Perennial or Ephemeral *(circle one)*. If ephemeral, date it goes dry: _____

Other aquatic habitat characteristics, species observations, drawings, or comments:



Necessary Attachments:

1. All field notes and other supporting documents
2. Site photographs 5074-5076
3. Maps with important habitat features and species location

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

Site Assessment reviewed by _____ (FWS Field Office) _____ (date) _____ (biologist)

Date of Site Assessment: 03/13/2019 (mm/dd/yyyy)

Site Assessment Biologists: Robertson (Last name) Ted (first name) _____ (Last name) _____ (first name)

Sandy (Last name) Grayson (first name) _____ (Last name) _____ (first name)

Site Location: SV-31; Contra Costa Co, Siesta Valley, 37.86470665, -122.2097347
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: UCB Hill Campus Fire Hazard Reduction
Brief description of proposed action:

Thin eucalyptus & non-native trees near roads & buildings

1) Is this site within the current or historic range of the CRF (circle one)? YES NO

2) Are there known records of CRF within 1.6 km (1 mi) of the site (circle one)? YES NO
If yes, attach a list of all known CRF records with a map showing all locations.

GENERAL AQUATIC HABITAT CHARACTERIZATION

(if multiple ponds or streams are within the proposed action area, fill out one data sheet for each)

POND:

Size: _____ Maximum depth: _____

Vegetation: emergent, overhanging, dominant species: _____

_____

_____

Substrate: _____

_____

Perennial or Ephemeral *(circle one).* If ephemeral, date it goes dry: _____

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

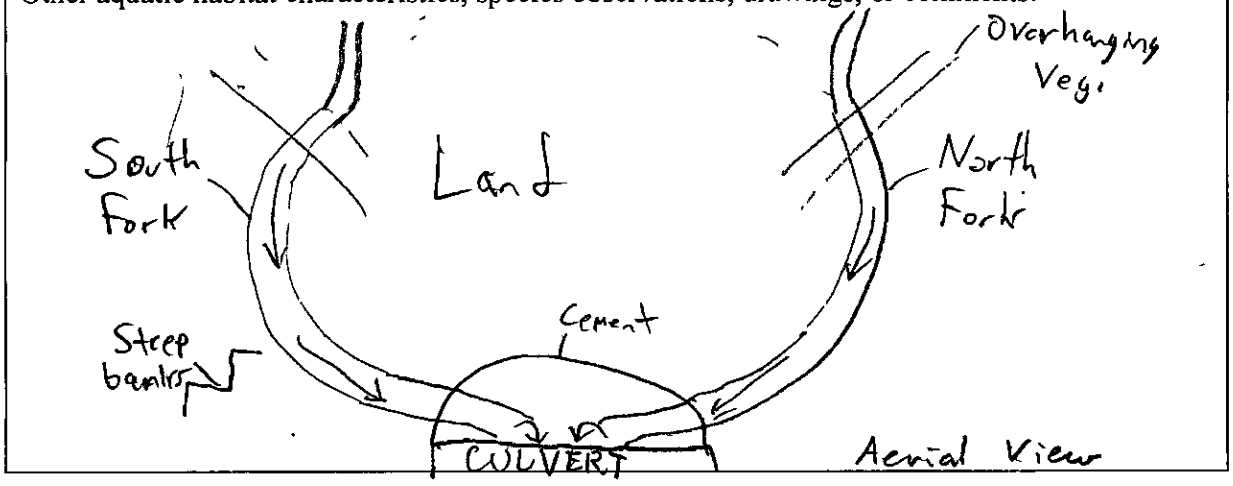
STREAM: SV-31
Bank full width: 3ft
Depth at bank full: 6-8 in
Stream gradient: N. Fork: 18° S. Fork: 20°

Are there pools (circle one)? (YES) NO
If yes,
Size of stream pools: 2ft X 3ft
Maximum depth of stream pools: 4-6 in

Characterize non-pool habitat: (run) (riffle) glide, other: fast-moving stream with small pooling areas. Stream is forked @ survey area: North fork and South fork.
Vegetation: emergent, (overhanging), dominant species: U. californica - Bay laurel
Q. agrifolia - coast live oak
No emergent vegetation
Substrate: rock, silt, concrete
Bank description: steep & rocky

Perennial or Ephemeral *(circle one)*. If ephemeral, date it goes dry: Late spring to early summer.

Other aquatic habitat characteristics, species observations, drawings, or comments:



Necessary Attachments:

1. All field notes and other supporting documents
2. Site photographs N-fork – 5077 S-fork - 5078
3. Maps with important habitat features and species location

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

Site Assessment reviewed by _____ (FWS Field Office) (date) (biologist)

Date of Site Assessment: 03/13/2019 (mm/dd/yyyy)

Site Assessment Biologists: Robertson Tef (Last name) (first name) _____ (Last name) (first name)

Sandy Grayson (Last name) (first name) _____ (Last name) (first name)

Site Location: SV-32: Contra Costa Co.; Siesta Valley, Watershed: 37.86360879, -122.2151719
(County, General location name, UTM Coordinates or Lat./Long. of T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: UCB Hill Campus Fire Hazard Reduction
Brief description of proposed action:

Thin eucalyptus & non-native trees near roads & buildings.

1) Is this site within the current or historic range of the CRF (circle one)? YES NO

2) Are there known records of CRF within 1.6 km (1 mi) of the site (circle one)? YES NO
If yes, attach a list of all known CRF records with a map showing all locations.

GENERAL AQUATIC HABITAT CHARACTERIZATION

(if multiple ponds or streams are within the proposed action area, fill out one data sheet for each)

POND:

Size: _____ Maximum depth: _____

Vegetation: emergent, overhanging, dominant species: _____

_____

_____

Substrate: _____

_____

Perennial or Ephemeral *(circle one)*. If ephemeral, date it goes dry: _____

Appendix D.

California Red-legged Frog Habitat Site Assessment Data Sheet

STREAM: SV-32

Bank full width: 2-5ft

Depth at bank full: 4in

Stream gradient: 2°

Are there pools (circle one)? (YES) NO

If yes,

Size of stream pools: 4X6 ft

Maximum depth of stream pools: 8in

Characterize non-pool habitat: run, riffle, glide, other:

Vegetation: emergent, overhanging, dominant species: Umbellularia californica Quercus agrifolia, Ribes sp., Salix sp.

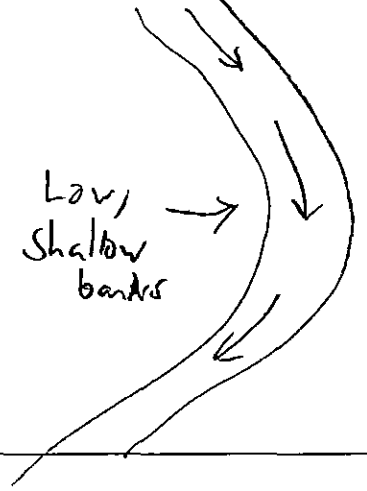
No emergent veg.

Substrate: rock, silt

Bank description: low, shallow, muddy & silty

Perennial or Ephemeral *(circle one)*. If ephemeral, date it goes dry: Late Spring

Other aquatic habitat characteristics, species observations, drawings, or comments:



Aerial View

Necessary Attachments:

1. All field notes and other supporting documents
2. Site photographs 5079-5080
3. Maps with important habitat features and species location

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

Site Assessment reviewed by _____ (FWS Field Office) _____ (date) _____ (biologist)

Date of Site Assessment: 03/13/2019 (mm/dd/yyyy)

Site Assessment Biologists: Robertson (Last name) Ted (first name) _____ (Last name) _____ (first name)

Sand (Last name) Grayson (first name) _____ (Last name) _____ (first name)

Site Location: SV-33 ' Contra Costa Co; Siesta Valley Watershed ; 37.86849884, -122.2019835
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)****

Proposed project name: UCB Hill Campus Fire Hazard Reduction
Brief description of proposed action:

Thin eucalyptus & non-native trees near roads & buildings.

1) Is this site within the current or historic range of the CRF (circle one)? YES NO

2) Are there known records of CRF within 1.6 km (1 mi) of the site (circle one)? YES NO
If yes, attach a list of all known CRF records with a map showing all locations.

GENERAL AQUATIC HABITAT CHARACTERIZATION

(if multiple ponds or streams are within the proposed action area, fill out one data sheet for each)

POND:

Size: _____ Maximum depth: _____

Vegetation: emergent, overhanging, dominant species: _____

_____

_____

Substrate: _____

_____

Perennial or Ephemeral *(circle one)*. If ephemeral, date it goes dry: _____

Appendix D.

California Red-legged Frog Habitat Site Assessment Data Sheet

STREAM: SV-33

Bank full width: 8

Depth at bank full: 6-12 in

Stream gradient: 120

Are there pools (circle one)? YES (NO)

If yes,

Size of stream pools: _____

Maximum depth of stream pools: _____

Characterize non-pool habitat: ~~run~~, (riffle), glide, other: fast-moving large stream

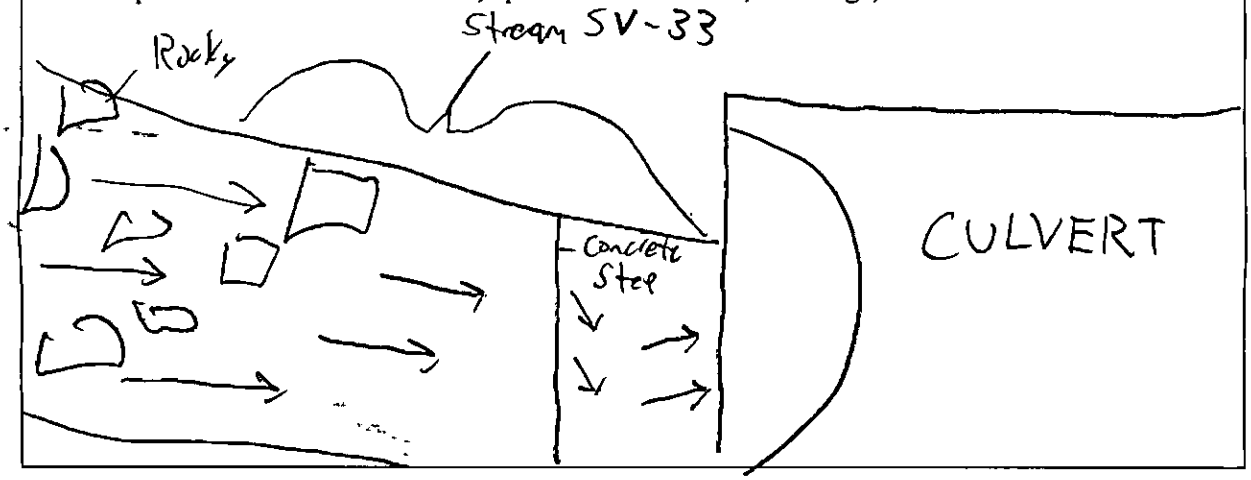
Vegetation: emergent, (overhanging), dominant species: Umbellularia californica, Eucalyptus globulus, Quercus agrifolia, Salix sp. No emergent veg.

Substrate: Rock, concrete

Bank description: shallow, rocky

Perennial or (Ephemeral) *(circle one)*. If ephemeral, date it goes dry: Late summer

Other aquatic habitat characteristics, species observations, drawings, or comments:



Necessary Attachments:

1. All field notes and other supporting documents
2. Site photographs 5083-5084
3. Maps with important habitat features and species location

Appendix D.

California Red-legged Frog Habitat Site Assessment Data Sheet

Site Assessment reviewed by: _____ (FWS Field Office) _____ (date) _____ (biologist)

Date of Site Assessment: 03/19/2018 (mm/dd/yyyy)

Site Assessment Biologists: Robertson, Ted (Last name / first name) _____ (Last name / first name)

Dexter, Sean (Last name / first name) _____ (Last name / first name)

Site Location: Siesta Valley Creek-SV-34, Siesta Valley Wetland, Contra Costa Co. 37.873203, -122.213553 37.873924, -122.213274 East Bay Municipal Utility District (EBMUD).

(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: UCB Hill Campus Fire Hazard Reduction.

Brief description of proposed action:

Thin Eucalyptus & non-native trees near roads & buildings

1) Is this site within the current or historic range of the CRF (circle one)? YES NO

2) Are there known records of CRF within 1.6 km (1 mi) of the site (circle one)? YES NO
If yes, attach a list of all known CRF records with a map showing all locations.

GENERAL AQUATIC HABITAT CHARACTERIZATION

(if multiple ponds or streams are within the proposed action area, fill out one data sheet for each)

POND:

Size: 20x40 ft (filled in) Maximum depth: 2-3 inches.

Vegetation: (emergent), overhanging, dominant species: overhanging: Quercus agrifolia Juncus sp.

Substrate: Silt, clay, sand

Perennial or (Ephemeral) *(circle one).* If ephemeral, date it goes dry: Late Spring

Appendix D.

California Red-legged Frog Habitat Site Assessment Data Sheet

STREAM:

Bank full width: 2 ft

Depth at bank full: 6 in.

Stream gradient: 100

Are there pools (circle one)? (YES) NO

If yes,

Size of stream pools: 18 in X 7 ft.

Maximum depth of stream pools: 6 inches.

Characterize non-pool habitat: run (riffle) glide, other: _____

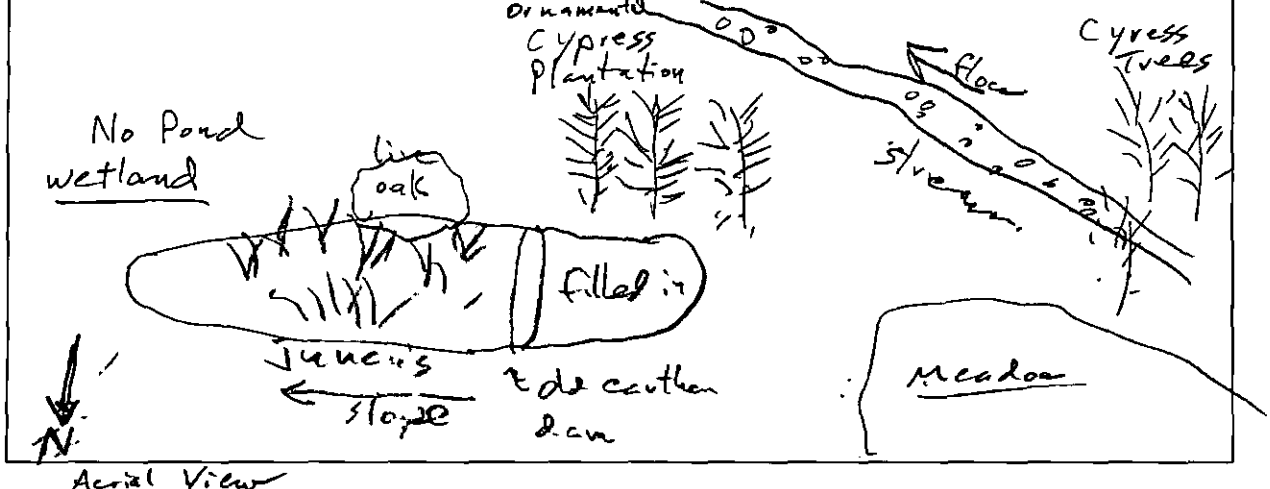
Vegetation: emergent, overhanging, dominant species: Cypress sp. overhanging. No Emergent.

Substrate: Rocky & sandy.

Bank description: Vertical erosion ≈ 1 ft.,

Perennial or (Ephemeral) *(circle one)*. If ephemeral, date it goes dry: Late spring

Other aquatic habitat characteristics, species observations, drawings, or comments:



Necessary Attachments:

1. All field notes and other supporting documents
2. Site photographs 5092 - 5096 Stream 5097-5098
3. Maps with important habitat features and species location

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

Site Assessment reviewed by _____ (FWS Field Office) _____ (date) _____ (biologist)

Date of Site Assessment: 02/27/2009 (mm/dd/yyyy)

Site Assessment Biologists: Robertson Ted (Last name) (first name) _____ (Last name) (first name)

_____ (Last name) (first name) _____ (Last name) (first name)

Site Location: Alameda Co., LHS Pond; UCBerkeley; 37.87896606, -122.2473361
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)****

Proposed project name: UCB Hill Campus Fire Hazard Reduction
Brief description of proposed action:

Thin eucalyptus & non-native trees near roads & buildings.

1) Is this site within the current or historic range of the CRF (circle one)? YES NO

2) Are there known records of CRF within 1.6 km (1 mi) of the site (circle one)? YES NO
If yes, attach a list of all known CRF records with a map showing all locations.

GENERAL AQUATIC HABITAT CHARACTERIZATION

(if multiple ponds or streams are within the proposed action area, fill out one data sheet for each)

POND: LHS Pond

Size: 30X60 ft. Maximum depth: _____

Vegetation: (emergent), (overhanging), dominant species: _____
Typha latifolia & Acer macrophyllum, Salix spp, cotoneaster spp, & Quercus agrifolia.

Substrate: silt & clay

Perennial or (Ephemeral) *(circle one)*. If ephemeral, date it goes dry: Dry 8-9 months of year.

D

Appendix D.

California Red-legged Frog Habitat Site Assessment Data Sheet

STREAM:

Bank full width: _____

Depth at bank full: _____

Stream gradient: _____

Are there pools (circle one)? YES NO

If yes,

Size of stream pools: _____

Maximum depth of stream pools: _____

Characterize non-pool habitat: run, riffle, glide, other: _____

_____

_____

Vegetation: emergent, overhanging, dominant species: _____

_____

_____

Substrate: _____

_____

Bank description: _____

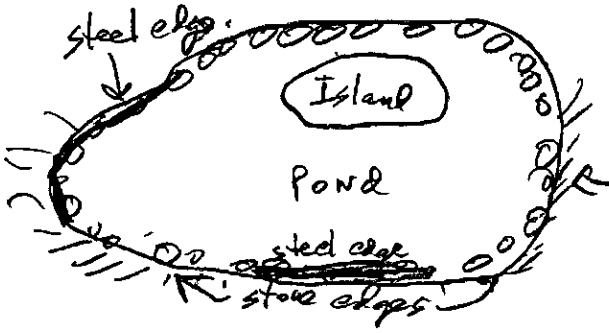
_____

_____

Perennial or Ephemeral *(circle one)*. If ephemeral, date it goes dry: Mid-spring, 1 month after last rain.

Other aquatic habitat characteristics, species observations, drawings, or comments:

Talked w/ Bio Lab Manager. Deena Sampson- "No animals in pond for at least 2+ yrs. No crayfish no bullfrog tadpoles, spp. present in 2009."



Necessary Attachments:

1. All field notes and other supporting documents
2. Site photographs 5011 - 5012
3. Maps with important habitat features and species location

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

Site Assessment reviewed by _____ (FWS Field Office) _____ (date) _____ (biologist)

Date of Site Assessment: 03/12/2019 (mm/dd/yyyy)

Site Assessment Biologists: Robertson, Ted (Last name, first name) Sandy, Grayson (Last name, first name)

_____ (Last name, first name) _____ (Last name, first name)

Site Location: Tilden Park Botanical Garden Pond: Contra Costa Co.; 37.89302565, -122.2435934
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: UCB Hill Campus Fire Hazard Reduction
Brief description of proposed action:

Thin eucalyptus & non-native trees near roads & buildings.

1) Is this site within the current or historic range of the CRF (circle one)? (YES) NO

2) Are there known records of CRF within 1.6 km (1 mi) of the site (circle one)? (YES) NO
If yes, attach a list of all known CRF records with a map showing all locations.

GENERAL AQUATIC HABITAT CHARACTERIZATION

(if multiple ponds or streams are within the proposed action area, fill out one data sheet for each)

POND: Tilden Park Botanical Garden Pond
Size: 30 x 40 ft. Maximum depth: 5 ft.

Vegetation: emergent, overhanging, dominant species:
Duckweed (floating)
Overhanging - Aspen - Populus tremuloides, willows - Salix prolixa

Substrate: Concrete.

(Perennial) or **Ephemeral** *(circle one)*. If ephemeral, date it goes dry: _____

Filled artificially

Appendix D.

California Red-legged Frog Habitat Site Assessment Data Sheet

STREAM:

Bank full width: _____

Depth at bank full: _____

Stream gradient: _____

Are there pools (circle one)? YES NO

If yes,

Size of stream pools: _____

Maximum depth of stream pools: _____

Characterize non-pool habitat: run, riffle, glide, other: _____

_____

_____

Vegetation: emergent, overhanging, dominant species: _____

_____

_____

Substrate: _____

_____

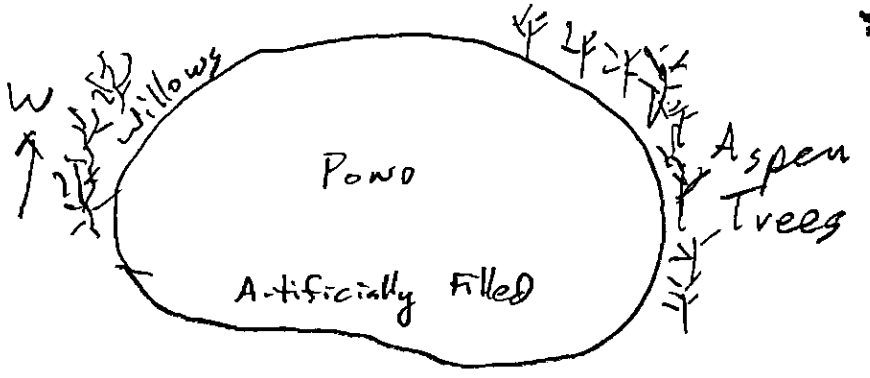
Bank description: _____

_____

_____

Perennial or Ephemeral *(circle one)*. If ephemeral, date it goes dry: _____

Other aquatic habitat characteristics, species observations, drawings, or comments:



Aerial view

Necessary Attachments:

1. All field notes and other supporting documents
2. Site photographs 5073
3. Maps with important habitat features and species location

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

Site Assessment reviewed by _____ (FWS Field Office) _____ (date) _____ (biologist)

Date of Site Assessment: 02/27/2019 (mm/dd/yyyy)

Site Assessment Biologists: Robertson (Last name) Ted (first name) _____ (Last name) _____ (first name)

_____ (Last name) _____ (first name) _____ (Last name) _____ (first name)

Site Location: Alameda Co., UCB Botanical Garden Pond; 37.87483189, -122.2371679
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: UCB Hill Campus Fire Hazard Reduction
Brief description of proposed action:

Thin eucalyptus & non-native trees near roads & buildings.

1) Is this site within the current or historic range of the CRF (circle one)? YES NO

2) Are there known records of CRF within 1.6 km (1 mi) of the site (circle one)? YES NO
If yes, attach a list of all known CRF records with a map showing all locations.

GENERAL AQUATIC HABITAT CHARACTERIZATION
(if multiple ponds or streams are within the proposed action area, fill out one data sheet for each)

POND: UCB Botanical Garden Pond
Size: 36 x 66 ft Maximum depth: 3' ft

Vegetation: (emergent) overhanging, dominant species:
1° = Nymphaea sp - water lily & Iris laevigata

Substrate: Concrete overlain with silt & clay

(Perennial) or **Ephemeral** *(circle one)*. If ephemeral, date it goes dry: _____

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

STREAM:

Bank full width: _____
Depth at bank full: _____
Stream gradient: _____

Are there pools (circle one)? YES NO
If yes,
Size of stream pools: _____
Maximum depth of stream pools: _____

Characterize non-pool habitat: run, riffle, glide, other: _____
_____
_____

Vegetation: emergent, overhanging, dominant species: _____
_____
_____

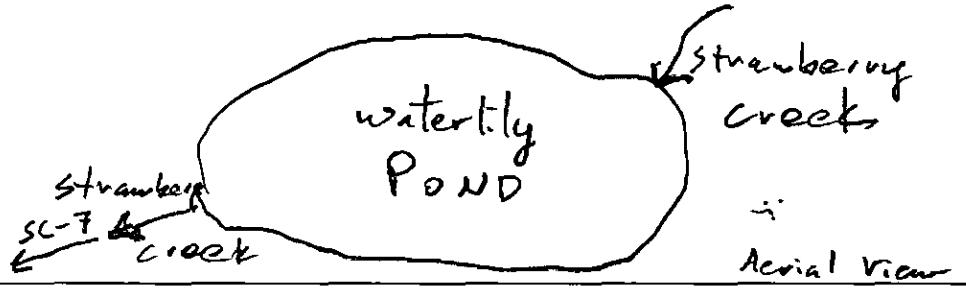
Substrate: _____
_____

Bank description: _____
_____
_____

Perennial or Ephemeral *(circle one).* If ephemeral, date it goes dry: _____

Other aquatic habitat characteristics, species observations, drawings, or comments:

* CA Newts - breeding (amplexus), 100+ egg masses by 200+ individuals



Necessary Attachments:

1. All field notes and other supporting documents
2. Site photographs - 5008 - 5009
3. Maps with important habitat features and species location

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

Site Assessment reviewed by: _____ (FWS Field Office) _____ (date) _____ (biologist)

Date of Site Assessment: 03/19/2019 (mm/dd/yyyy)

Site Assessment Biologists: Robertson, Tad (Last name, first name) _____ (Last name, first name)

Dexter, Sean (Last name, first name) _____ (Last name, first name)

Site Location: S. Wey Park Pond Contra Costa County 37.859132, -122.206052
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).
East Bay Regional Park District.
****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: UCB Hill Campus Fire Hazard Reduction.
Brief description of proposed action:
Thin Eucalyptus & non-native trees near roads & bridges

1) Is this site within the current or historic range of the CRF (circle one)? YES NO

2) Are there known records of CRF within 1.6 km (1 mi) of the site (circle one)? YES NO
If yes, attach a list of all known CRF records with a map showing all locations.

GENERAL AQUATIC HABITAT CHARACTERIZATION
(if multiple ponds or streams are within the proposed action area, fill out one data sheet for each)

POND:
Size: 180 ft. X 150 ft & 150 ft X 60 ft. Maximum depth: >6 ft.
Vegetation: emergent, overhanging, dominant species:
Emergent - Schoenoplectus Typha latifolia.
Overhanging: Salix sp. (inc. S. lasiolepis), Quercus agrifolia.
Substrate: silt, sand, clay.

(Perennial) or **Ephemeral** *(circle one)*. If ephemeral, date it goes dry: _____

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

STREAM:

Bank full width: _____
Depth at bank full: _____
Stream gradient: _____

Are there pools (circle one)? YES NO
If yes,
Size of stream pools: _____
Maximum depth of stream pools: _____

Characterize non-pool habitat: run, riffle, glide, other: _____
_____
_____

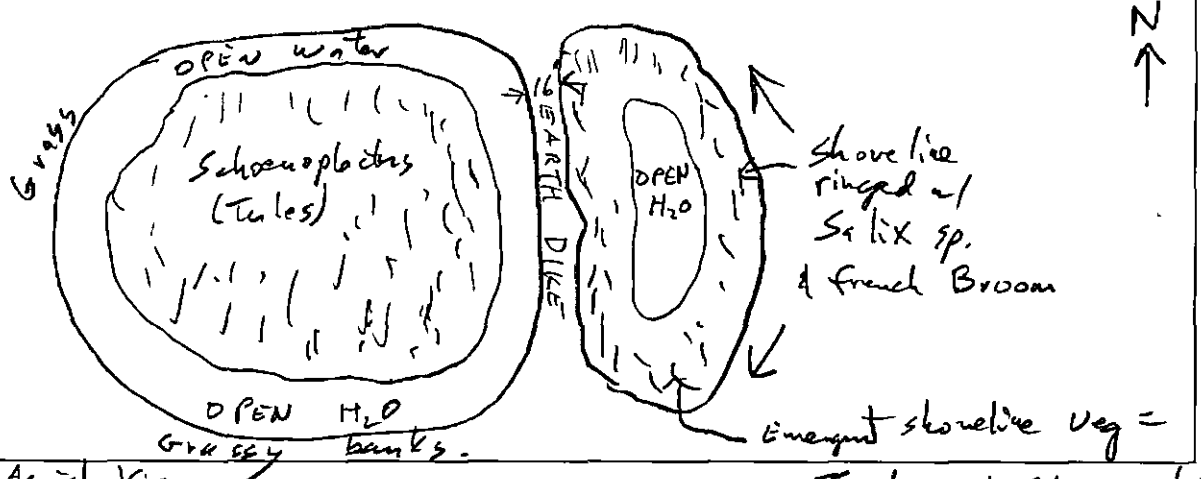
Vegetation: emergent, overhanging, dominant species: _____
_____
_____

Substrate: _____
_____

Bank description: _____
_____
_____

Perennial or Ephemeral *(circle one)*. If ephemeral, date it goes dry: _____

Other aquatic habitat characteristics, species observations, drawings, or comments:



Aerial View

Necessary Attachments:

1. All field notes and other supporting documents
2. Site photographs
3. Maps with important habitat features and species location

Appendix E

CRLF Survey Data Sheets

UC Berkeley Hill Campus Fire Hazard Reduction
University of California, Berkeley

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Appendix E.
California Red-legged Frog Survey Data Sheet

Survey results reviewed by: _____ (FWS Field Office) _____ (date) _____ (biologist)

Date of Survey: 03/14/2018 (mm/dd/yyyy) **Survey Biologist:** Robertson, Ted (Last name) (first name)

Survey Biologist: Dexter, Sean (Last name) (first name)

Site Location: SC-2, Alameda County, 37.8728122, -122.24058116
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).
SC = Strawberry Creek
****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: UCB Hill Campus Fire Hazard Reduction
Brief description of proposed action:

Thin non-native trees near roads & buildings.

Type of Survey (circle one): (DAY) NIGHT BREEDING (NON-BREEDING)

Survey number (circle one): (1) 2 3 4 5 6 7 8

Begin Time: 4:21 PM **End Time:** 4:50

Cloud cover: 0% **Precipitation:** 0

Air Temperature: 11°C **Water Temperature:** 11°C

Wind Speed: 0 **Visibility Conditions:** Clear

Moon phase: N/A **Humidity:** 55%

Description of weather conditions: Sunny, calm

Brand name and model of light used to conduct surveys: N/A

Were binoculars used for the surveys (circle one)? (YES) NO
Brand, model, and power of binoculars: Swarovski EL 8.5 x 42

Appendix E.
California Red-legged Frog Survey Data Sheet

S.C-2

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life Stages	Size Class	Certainty of Identification
None observed or heard.					

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: Strong current through pool & no emergent vegetation
Domestic dogs

Other notes, observations, comments, *etc.*

Necessary Attachments:

4. All field notes and other supporting documents
5. Site photographs
6. Maps with important habitat features and species locations

Appendix E.
California Red-legged Frog Survey Data Sheet

Survey results reviewed by _____ (FWS Field Office) _____ (date) _____ (biologist)

Date of Survey: 04/16/2019 (mm/dd/yyyy) **Survey Biologist:** Robertson, Ted (Last name, first name)
Survey Biologist: & Sandy, Grayson (Last name, first name)

Site Location: SC-2, Alameda County; 37.872812, -122.2405816
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: UCB Hill Campus Fire Hazard Reduction
Brief description of proposed action:
Thin non-native trees near roads & buildings.

Type of Survey (circle one) (DAY) NIGHT BREEDING (NON-BREEDING)

Survey number (circle one): 1 (2) 3 4 5 6 7 8

Begin Time: 5:04 PM **End Time:** 5:14 PM

Cloud cover: 70% **Precipitation:** 0

Air Temperature: 15°C **Water Temperature:** 12°C water = 2+ ft

Wind Speed: 1-3 mph. **Visibility Conditions:** Air > 10 mile.

Moon phase: N/A **Humidity:** 66%

Description of weather conditions: Hazy, light breeze

Brand name and model of light used to conduct surveys: Mag-Lite LED - 3-D cells

Were binoculars used for the surveys (circle one)? (YES) NO
Brand, model, and power of binoculars: Swarovski 8.5X42 EL

Appendix E.
California Red-legged Frog Survey Data Sheet

SC-2

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life Stages	Size Class	Certainty of Identification
None observed or heard.					

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: Dogs, raccoons, skunk (J)

Other notes, observations, comments, *etc.*

strong current through pool.
No vegetation in creek or within 6 to 12" of water on bank.

Necessary Attachments:

1. All field notes and other supporting documents
2. Site photographs
3. Maps with important habitat features and species locations

Appendix E.
California Red-legged Frog Survey Data Sheet

Survey results reviewed by: _____ (FWS Field Office) _____ (date) _____ (biologist)

Date of Survey: 04/16/2019 (mm/dd/yyyy) **Survey Biologist:** Robertson, Ted (Last name) (first name)
Survey Biologist: & Sandy, Grayson (Last name) (first name)

Site Location: SC-2, Alameda Co., 37.8728122, -122.2905816
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: UCB Hill Campus Fire Hazard Reduction
Brief description of proposed action:
Thin non-native trees near roads & buildings

Type of Survey (circle one): **DAY** (NIGHT) **BREEDING** (NON-BREEDING)

Survey number (circle one): **1** **2** (3) **4** **5** **6** **7** **8**

Begin Time: 9:23 PM **End Time:** 9:30 PM.

Cloud cover: 20% **Precipitation:** ∅

Air Temperature: 9°C **Water Temperature:** 10°C

Wind Speed: 0-1 mph **Visibility Conditions:** Air >10 mi. H_2O >2 ft. clear.

Moon phase: 3/4 waxing **Humidity:** 68%

Description of weather conditions: Calm & clear

Brand name and model of light used to conduct surveys: Mag-Lite LED - 3-D cells

Were binoculars used for the surveys (circle one)? (YES) NO
Brand, model, and power of binoculars: Swarovski 8.5X42 EL

Appendix E.
California Red-legged Frog Survey Data Sheet

SC-2

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life Stages	Size Class	Certainty of Identification
None heard or observed					

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: _____

Other notes, observations, comments, *etc.*

No animals observed

Necessary Attachments:

1. All field notes and other supporting documents
2. Site photographs
3. Maps with important habitat features and species locations

Appendix E.
California Red-legged Frog Survey Data Sheet

Survey results reviewed by: _____ (FWS Field Office) _____ (date) _____ (biologist)

Date of Survey: 03/14/2018 (mm/dd/yyyy) **Survey Biologist:** Robertson, Ted (Last name) (first name)

Survey Biologist: Dexter, Sean (Last name) (first name)

Site Location: SC-3 Alameda Co, 37.87325769, -122.2389745
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: UCB Hill Campus Fire Hazard Reduction
Brief description of proposed action:

Thin non-native trees near roads & buildings

Type of Survey (circle one): (DAY) NIGHT BREEDING (NON-BREEDING)

Survey number (circle one): (1) 2 3 4 5 6 7 8

Begin Time: 4:52 PM **End Time:** 4:58

Cloud cover: 0% **Precipitation:** 0

Air Temperature: 11°C **Water Temperature:** 11°C

Wind Speed: 0-1 mph **Visibility Conditions:** clear water

Moon phase: N/A **Humidity:** 55%

Description of weather conditions: Sunny, calm, dry

Brand name and model of light used to conduct surveys: N/A

Were binoculars used for the surveys (circle one)? (YES) NO
Brand, model, and power of binoculars: Swarovski EL 8.5 x 42

Appendix E.
California Red-legged Frog Survey Data Sheet

S.C.-3

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life Stages	Size Class	Certainty of Identification
None					

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: Dogs in creek, raccoons
Swift water through small pools. No emergent vegetation for CRLF egg.

Other notes, observations, comments, *etc.*

No animals observed.

Necessary Attachments:

4. All field notes and other supporting documents
5. Site photographs
6. Maps with important habitat features and species locations

Appendix E.
California Red-legged Frog Survey Data Sheet

Survey results reviewed by: _____ (FWS Field Office) _____ (date) _____ (biologist)

Date of Survey: 04/16/2019 (mm/dd/yyyy) **Survey Biologist:** Robertson, Ted (Last name, first name)
Survey Biologist: & Sandy, Grayson (Last name, first name)

Site Location: SC-3; Alameda County; 37.87525769 -122.2389745
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: UCB Hill Campus Fire Hazard Reduction
Brief description of proposed action:
Thin non-native trees near roads & buildings

Type of Survey (circle one): (DAY) NIGHT BREEDING (NON-BREEDING)

Survey number (circle one): 1 (2) 3 4 5 6 7 8

Begin Time: 5:28 PM. **End Time:** 5:33 PM.

Cloud cover: 40% **Precipitation:** 0

Air Temperature: 15°C **Water Temperature:** 12°C

Wind Speed: 0-1 mph. **Visibility Conditions:** H2O in 2 ft. to bottom of pool. Air > 10 mi.

Moon phase: N/A. **Humidity:** 66%

Description of weather conditions: Mostly sunny, no breeze.

Brand name and model of light used to conduct surveys: Mag-Lite LED - 3-D cells

Were binoculars used for the surveys (circle one)? (YES) NO
Brand, model, and power of binoculars: Swarovski 8.5X42 EL

Appendix E.
California Red-legged Frog Survey Data Sheet

S.C.-3

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life.Stages	Size Class	Certainty of Identification
None observed or heard.					

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: Raccoons, roaming dogs, skunks.

Other notes, observations, comments, *etc.*

No vegetation in creek.
Strong current through Pool.
Most of bank lacks vegetation near pool.

Necessary Attachments:

1. All field notes and other supporting documents
2. Site photographs
3. Maps with important habitat features and species locations

Appendix E.
California Red-legged Frog Survey Data Sheet

Survey results reviewed by _____ (FWS Field Office) _____ (date) _____ (biologist)

Date of Survey: 04/16/2019 (mm/dd/yyyy) **Survey Biologist:** Robertson, Ted (Last name) (first name)
Survey Biologist: & Sandy, Grayson (Last name) (first name)

Site Location: SC-3; Alameda Co., 37.8732576, -122.2389745
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: UCB Hill Campus Fire Hazard Reduction
Brief description of proposed action:
Thin non-native trees near roads & buildings

Type of Survey (circle one): **DAY** (NIGHT) **BREEDING** (NON-BREEDING)

Survey number (circle one): 1 2 (3) 4 5 6 7 8

Begin Time: 9:04 PM. **End Time:** 9:11 PM.

Cloud cover: _____ **Precipitation:** Ø

Air Temperature: 9°C **Water Temperature:** 10°C

Wind Speed: 0 mph. **Visibility Conditions:** Air >10mi. H2O 2ft - clear.

Moon phase: Waxing gibbous **Humidity:** 68%

Description of weather conditions: clear & calm.

Brand name and model of light used to conduct surveys: Mag-Lite LED - 3-D cells

Were binoculars used for the surveys (circle one)? (YES) NO
Brand, model, and power of binoculars: Swarovski 8.5X42 EL

Appendix E.

California Red-legged Frog Survey Data Sheet

S.C.-3

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life Stages	Size Class	Certainty of Identification
None heard or observed					

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: _____

Other notes, observations, comments, *etc.*

No animals observed

Necessary Attachments:

1. All field notes and other supporting documents
2. Site photographs
3. Maps with important habitat features and species locations

Appendix E.
California Red-legged Frog Survey Data Sheet

Survey results reviewed by: _____ (FWS Field Office) _____ (date) _____ (biologist)

Date of Survey: 03/14/2019 (mm/dd/yyyy) **Survey Biologist:** Robertson, Ted (Last name) (first name)
Survey Biologist: Dexter, Sean (Last name) (first name)

Site Location: SC 3 & 4 intersection, Alameda Co., 37.872590, -122.239338
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).
Pool @ downstream intersection of SC-3 & SC-4
****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: UCB Hill Campus Fire Hazard Reduction.
Brief description of proposed action:

Thin non-native trees near roads & buildings.

Type of Survey (circle one): (DAY) NIGHT BREEDING NON-BREEDING

Survey number (circle one): (1) 2 3 4 5 6 7 8

Begin Time: 5:10 PM **End Time:** 5:18 PM.

Cloud cover: 0% **Precipitation:** 0

Air Temperature: 11°C **Water Temperature:** 11°C

Wind Speed: 0 - 2 mph. **Visibility Conditions:** clear

Moon phase: N/A **Humidity:** 55%

Description of weather conditions: Sunny & calm

Brand name and model of light used to conduct surveys: N/A

Were binoculars used for the surveys (circle one)? (YES) NO
Brand, model, and power of binoculars: Swarovski EL 8.5 x 42

Appendix E.
California Red-legged Frog Survey Data Sheet

S.C. 3+4

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life Stages	Size Class	Certainty of Identification
None observed or heard.					

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: domestic dog, raccoons
No emergent vegetation, strong current through pool

Other notes, observations, comments, *etc.*
Water striders, mosquitoes

Necessary Attachments:

4. All field notes and other supporting documents
5. Site photographs 5088-5089
6. Maps with important habitat features and species locations

Appendix E.

California Red-legged Frog Survey Data Sheet

Survey results reviewed by: _____ (USFWS Field Office) _____ (date) _____ (biologist)

Date of Survey: 04/16/2019 (mm/dd/yyyy) **Survey Biologist:** Robertson, Ted (Last name) (first name)

Survey Biologist: & Sandy, Grayson (Last name) (first name)

Site Location: SC 3 & SC 4 junction; Alameda Co.; 37.872590; -122.239338
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: UCB Hill Campus Fire Hazard Reduction
Brief description of proposed action:
Thin non-native trees near roads & buildings

Type of Survey (circle one): (DAY) NIGHT BREEDING (NON-BREEDING)

Survey number (circle one): 1 (2) 3 4 5 6 7 8

Begin Time: 5:17 PM **End Time:** 5:26 PM.

Cloud cover: 40% **Precipitation:** Ø

Air Temperature: 15°C **Water Temperature:** 12°C

Wind Speed: 0-1 mph **Visibility Conditions:** Air > 10 mi. H_2O ≈ 2 ft. to bottom of pool

Moon phase: N/A **Humidity:** 66%

Description of weather conditions: Partly cloudy & slight breeze.

Brand name and model of light used to conduct surveys: Mag-Lite LED - 3-D cells

Were binoculars used for the surveys (circle one)? (YES) NO
Brand, model, and power of binoculars: Swarovski 8.5X42 EL

Appendix E.
California Red-legged Frog Survey Data Sheet

S,C.374

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life Stages	Size Class	Certainty of Identification
No observed or heard					

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: Raccoons, people, dogs, skunks

Other notes, observations, comments, *etc.*

No vegetation in creek or on banks within 6 to 24 inches of H_2O.
Strong currents in pools.

Necessary Attachments:

1. All field notes and other supporting documents
2. Site photographs
3. Maps with important habitat features and species locations

Appendix E.
California Red-legged Frog Survey Data Sheet

Survey results reviewed by _____ (FWS Field Office) _____ (date) _____ (biologist)

Date of Survey: 04/16/2019 (mm/dd/yyyy) **Survey Biologist:** Robertson, Ted (Last name) (first name)

Survey Biologist: & Sandy, Grayson (Last name) (first name)

Site Location: SC3 & SC4 intersection Alameda Co.; 37.872590, -122.239338
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)****

Proposed project name: UCB Hill Campus Fire Hazard Reduction
Brief description of proposed action:
Thin non-native trees near roads & buildings

Type of Survey (circle one): **DAY** (NIGHT) **BREEDING** (NON-BREEDING)

Survey number (circle one): 1 2 (3) 4 5 6 7 8

Begin Time: 9:13 PM. **End Time:** 9:20 PM.

Cloud cover: 20% **Precipitation:** Ø

Air Temperature: 9°C **Water Temperature:** 10°C

Wind Speed: 0-1 m.p.h. **Visibility Conditions:** Air >10 mi; H_2O > 2Ft - clear

Moon phase: waxing gibbous **Humidity:** 68%

Description of weather conditions: clear & calm

Brand name and model of light used to conduct surveys: Mag-Lite LED - 3-D cells

Were binoculars used for the surveys (circle one)? (YES) NO
Brand, model, and power of binoculars: Swarovski 8.5X42 EL

Appendix E.
California Red-legged Frog Survey Data Sheet

SC 3+4

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life Stages	Size Class	Certainty of Identification
None heard or observed					

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: _____

Other notes, observations, comments, *etc.*

No animals observed

Necessary Attachments:

1. All field notes and other supporting documents
2. Site photographs
3. Maps with important habitat features and species locations

Appendix E.
California Red-legged Frog Survey Data Sheet

Survey results reviewed by _____ (FWS Field Office) _____ (date) _____ (biologist)

Date of Survey: 03/14/2019 (mm/dd/yyyy) **Survey Biologist:** Robertson, Ted (Last name) (first name)

Survey Biologist: Dexter, Sean (Last name) (first name)

Site Location: SC-4, Alameda Co. 37.8724617, -122.2377652
(County, General location name, UTM Coordinates or Lat/Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: UCB Hill Campus Fire Hazard Reduction
Brief description of proposed action:

Thin non-native trees near roads & buildings

Type of Survey (circle one): (DAY) NIGHT BREEDING (NON-BREEDING)

Survey number (circle one): (1) 2 3 4 5 6 7 8

Begin Time: 5:00 **End Time:** 5:08

Cloud cover: 0% **Precipitation:** 0

Air Temperature: 11°C **Water Temperature:** 11°C

Wind Speed: 0-1 mph **Visibility Conditions:** Clear

Moon phase: N/A **Humidity:** 55%

Description of weather conditions: Sunny & mild

Brand name and model of light used to conduct surveys: N/A

Were binoculars used for the surveys (circle one)? (YES) NO
Brand, model, and power of binoculars: Swarovski EL 8.5x42

Appendix E.
California Red-legged Frog Survey Data Sheet

S.C.-4

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life Stages	Size Class	Certainty of Identification
None					

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: _____

Other notes, observations, comments, *etc.*
No pools

Necessary Attachments:

4. All field notes and other supporting documents
5. Site photographs
6. Maps with important habitat features and species locations

Appendix E.
California Red-legged Frog Survey Data Sheet

Survey results reviewed by _____ (FWS Field Office) _____ (date) _____ (biologist)

Date of Survey: 04/16/2019 (mm/dd/yyyy) **Survey Biologist:** Robertson, Ted (Last name, first name)
Survey Biologist: & Sandy, Grayson (Last name, first name)

Site Location: SC-4 Alameda Co.; 37.8724617, -122.2377652
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)****

Proposed project name: UCB Hill Campus Fire Hazard Reduction
Brief description of proposed action:
Thin non-native trees near roads & buildings

Type of Survey (circle one): (DAY) NIGHT BREEDING (NON-BREEDING)

Survey number (circle one): 1 (2) 3 4 5 6 7 8

Begin Time: 5:35 **End Time:** 5:92

Cloud cover: 40% **Precipitation:** ϕ

Air Temperature: 15°C **Water Temperature:** 12°C. Air

Wind Speed: 1-2 mph **Visibility Conditions:** H_2O ~2 ft., could see base of pool.

Moon phase: N/A. **Humidity:** 66%

Description of weather conditions: Mostly sunny, light breeze.

Brand name and model of light used to conduct surveys: Mag-Lite. LED - 3-D cells

Were binoculars used for the surveys (circle one)? (YES) NO
Brand, model, and power of binoculars: Swarovski 8.5X42 EL

Appendix E.
California Red-legged Frog Survey Data Sheet

S.C.-4

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life Stages	Size Class	Certainty of Identification
None observed or heard.					

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: _____

Other notes, observations, comments, *etc.*

No emergent Vegetation.
Equisetum (Horse tail), 2 - 12 inches from edge of pool.
Strong current through pool upstream of culvert.

Necessary Attachments:

1. All field notes and other supporting documents
2. Site photographs
3. Maps with important habitat features and species locations

Appendix E.
California Red-legged Frog Survey Data Sheet

Survey results reviewed by: _____ (FWS Field Office) _____ (date) _____ (biologist)

Date of Survey: 04/16/2019 (mm/dd/yyyy) **Survey Biologist:** Robertson, Ted (Last name) (first name)

Survey Biologist: & Sandy, Grayson (Last name) (first name)

Site Location: SC-4: Alameda Co.; 37.8724617, -122.2377652
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: UCB Hill Campus Fire Hazard Reduction
Brief description of proposed action:
Thin non-native trees near roads & buildings

Type of Survey (circle one): **DAY** (NIGHT) **BREEDING** (NON-BREEDING)

Survey number (circle one): 1 2 (3) 4 5 6 7 8

Begin Time: 8:55 **End Time:** 9:02 P.M.

Cloud cover: 20% **Precipitation:** ∅

Air Temperature: 9°C **Water Temperature:** 10°C

Wind Speed: 0-1 **Visibility Conditions:** Air > 1 mi, H_2O clear, > 2ft.

Moon phase: Waxing gibbous **Humidity:** 68%

Description of weather conditions: Clear & calm

Brand name and model of light used to conduct surveys: Mag-Lite LED - 3-D cells

Were binoculars used for the surveys (circle one)? (YES) NO
Brand, model, and power of binoculars: Swarovski 8.5X42 EL

Appendix E.
California Red-legged Frog Survey Data Sheet

S.C.-4

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life Stages	Size Class	Certainty of Identification
None observed or heard.					

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: _____

Other notes, observations, comments, *etc.*

No animals observed

Necessary Attachments:

1. All field notes and other supporting documents
2. Site photographs
3. Maps with important habitat features and species locations

Appendix E.
California Red-legged Frog Survey Data Sheet

Survey results reviewed by: _____ (FWS Field Office) _____ (date) _____ (biologist)

Date of Survey: 04/16/2019 (mm/dd/yyyy) **Survey Biologist:** Robertson, Ted (Last name) (first name)

Survey Biologist: & Sandy, Grayson (Last name) (first name)

Site Location: SC-5; Alameda Co.; 37.87120848 -122.2387581
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: UCB Hill Campus Fire Hazard Reduction
Brief description of proposed action:
Thin non-native trees near roads & buildings

Type of Survey (circle one): (DAY) NIGHT BREEDING (NON-BREEDING)

Survey number (circle one): (1) 2 3 4 5 6 7 8

Begin Time: 5:45 **End Time:** 5:57

Cloud cover: 40% **Precipitation:** ∅

Air Temperature: 15°C **Water Temperature:** 12°C.

Wind Speed: 1-2 mph. **Visibility Conditions:** H_2O - clear — Air > 10 miles. No pool.

Moon phase: N/A **Humidity:** 66%

Description of weather conditions: Mostly sunny & light breeze.

Brand name and model of light used to conduct surveys: Mag-Lite LED - 3-D cells

Were binoculars used for the surveys (circle one)? (YES) NO
Brand, model, and power of binoculars: Swarovski 8.5X42 EL

Appendix E.
California Red-legged Frog Survey Data Sheet

S.C.-05

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life.Stages	Size Class	Certainty of Identification
None observed or heard					

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: _____

Other notes, observations, comments, *etc.*

No pool. All ripples.
No emergent vegetation
Basic vegetation annual herbs above (2-6") water's edge.

Necessary Attachments:

1. All field notes and other supporting documents
2. Site photographs
3. Maps with important habitat features and species locations

Appendix E.
California Red-legged Frog Survey Data Sheet

Survey results reviewed by _____ (EWS Field Office) _____ (date) _____ (biologist)

Date of Survey: 04/16/2019 (mm/dd/yyyy) **Survey Biologist:** Robertson, Ted (Last name) (first name)

Survey Biologist: Sandy, Grayson (Last name) (first name)

Site Location: SC-5, Alameda Co., 37.8712084, -122.2387581
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: UCB Hill Campus Fire Hazard Reduction
Brief description of proposed action:
Thin non-native trees near roads & buildings

Type of Survey (circle one): **DAY** (NIGHT) **BREEDING** (NON-BREEDING)

Survey number (circle one): 1 (2) 3 4 5 6 7 8

Begin Time: 8:45 PM. **End Time:** 9:52 PM.

Cloud cover: 25% **Precipitation:** 0

Air Temperature: 10°C **Water Temperature:** 10°C

Wind Speed: 0-1 **Visibility Conditions:** Air > 10 miles, H2O > 1 ft.

Moon phase: Waxing gibbous **Humidity:** 65% CREEK Pool, ~3" depth.

Description of weather conditions: Clear, cool, no breeze.

Brand name and model of light used to conduct surveys: Mag-Lite LED - 3-D cells

Were binoculars used for the surveys (circle one)? (YES) NO
Brand, model, and power of binoculars: Swarovski 8.5X42 EL

Appendix E.
California Red-legged Frog Survey Data Sheet

S.C.-5

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life.Stages	Size Class	Certainty of Identification
None observed or heard					

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: _____

Other notes, observations, comments, *etc.*

No animals observed

Necessary Attachments:

1. All field notes and other supporting documents
2. Site photographs
3. Maps with important habitat features and species locations

Appendix E.
California Red-legged Frog Survey Data Sheet

Survey results reviewed by _____ (FWS Field Office) _____ (date) _____ (biologist)

Date of Survey: 03/14/2019 (mm/dd/yyyy) Survey Biologist: Robertson (Last name), Ted (first name)

Survey Biologist: Dexter (Last name), Sean (first name)

Site Location: LHS POND, Alameda County, 37.87896606 -122.2473361
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

ATTACH A MAP (include habitat types, important features, and species locations)

Proposed project name: UCB Hill Campus Fire Hazard Reduction
Brief description of proposed action:
Thin non-native treas near roads & buildings

Type of Survey (circle one): (DAY) NIGHT BREEDING (NON-BREEDING)

Survey number (circle one): (1) 2 3 4 5 6 7 8

Begin Time: 4:12 PM End Time: 4:32 PM

Cloud cover: 2% Precipitation: NONE

Air Temperature: 16°C Water Temperature: 8°C

Wind Speed: 0-1 mph Visibility Conditions: clear to base of Pond, Rusty tint to water

Moon phase: N/A Humidity: 55%

Description of weather conditions: Sunny, mild tono wind.

Brand name and model of light used to conduct surveys: N/A

Were binoculars used for the surveys (circle one)? (YES) NO
Brand, model, and power of binoculars: Swarovski EL 8.5 x 42

Appendix E.
California Red-legged Frog Survey Data Sheet

L.H.S Pond

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life Stages	Size Class	Certainty of Identification
None observed					

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: Raccoon scat, high iron content from rusty guard rails used to shore up pond edges.

Other notes, observations, comments, *etc.*

Mosquito larvae.

Cattails (Typha latifolia) dead. Noi emergent shoots

Necessary Attachments:

4. All field notes and other supporting documents
5. Site photographs 5085-5087
6. Maps with important habitat features and species locations

Appendix E.
California Red-legged Frog Survey Data Sheet

Survey results reviewed by _____ (FWS Field Office)* _____ (date) _____ (biologist)

Date of Survey: 04/16/2019 (mm/dd/yyyy) **Survey Biologist:** Robertson, Ted (Last name, first name)
Survey Biologist: & Sandy, Grayson (Last name, first name)

Site Location: LHS Pond: Alameda; 37.8789606, -122.247336 |
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: UCB Hill Campus Fire Hazard Reduction
Brief description of proposed action:
Thin non-native trees near roads & buildings

Type of Survey (circle one): (DAY) NIGHT BREEDING (NON-BREEDING)

Survey number (circle one): 1 (2) 3 4 5 6 7 8

Begin Time: 6:09 PM. **End Time:** 6:22 PM.

Cloud cover: 25 % **Precipitation:** 0

Air Temperature: 13°C **Water Temperature:** 14°C

Air > 10mi!

Wind Speed: 2-4 mph. **Visibility Conditions:** H_2O x 6" to base of puddle

Moon phase: N/A **Humidity:** 65%

Description of weather conditions: Mostly sunny w/ light breeze

Brand name and model of light used to conduct surveys: Mag-Lite LED - 3-D cells

Were binoculars used for the surveys (circle one)? (YES) NO
Brand, model, and power of binoculars: Swarovski 8.5X42 EL

Appendix E.
California Red-legged Frog Survey Data Sheet

LHS Pond

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life Stages	Size Class	Certainty of Identification
None observed or heard.					

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: Pond quickly "drains up" do to crack in pond liner. People dogs, raccoons, skunks, Water pollutants.

Other notes, observations, comments, *etc.*

No insect life in pond. Pollution? Oily sheen on water surface

Necessary Attachments:

1. All field notes and other supporting documents
2. Site photographs
3. Maps with important habitat features and species locations

Appendix E.
California Red-legged Frog Survey Data Sheet

Survey results reviewed by _____ (FWS Field Office) _____ (date) _____ (biologist)

Date of Survey: 04/16/2019 (mm/dd/yyyy) **Survey Biologist:** Robertson, Ted (Last name) (first name)
Survey Biologist: & Sandy, Grayson (Last name) (first name)

Site Location: LHS Pond, UC Berkeley; 37.87896606, -122.2473361
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: UCB Hill Campus Fire Hazard Reduction
Brief description of proposed action:
Thin non-native trees near roads & buildings

Type of Survey (circle one): DAY (NIGHT) BREEDING (NON-BREEDING)

Survey number (circle one): 1 2 (3) 4 5 6 7 8

Begin Time: 10:09 PM. **End Time:** 10:20 PM.

Cloud cover: 20% **Precipitation:** Ø

Air Temperature: 9°C **Water Temperature:** 10°C

Wind Speed: 3-5 mph. **Visibility Conditions:** Air > 10 mi Water =

Moon phase: 3/4 waxing **Humidity:** 68%

Description of weather conditions: clear, light breeze

Brand name and model of light used to conduct surveys: Mag-Lite LED - 3-D cells

Were binoculars used for the surveys (circle one)? (YES) NO
Brand, model, and power of binoculars: Swarovski 8.5X42 EL

Appendix E.
California Red-legged Frog Survey Data Sheet

LHS Pond

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life.Stages	Size Class	Certainty of Identification
None heard or observed					

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: _____

Other notes, observations, comments, *etc.*
Thousands & thousands of copepods in remnant water

Necessary Attachments:

1. All field notes and other supporting documents
2. Site photographs
3. Maps with important habitat features and species locations

Appendix E.
California Red-legged Frog Survey Data Sheet

Survey results reviewed by _____ (FWS Field Office) _____ (date) _____ (biologist)

Date of Survey: 03/19/2018 (mm/dd/yyyy) **Survey Biologist:** Robertson (Last name) Ted (first name)
Survey Biologist: Dexter (Last name) Sean (first name)

Site Location: Sibley Pond, Contra Costa Co, 37.859132, -122.206052
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).
EB Regional Park Dist.
****ATTACH A MAP** (include habitat types, important features, and species locations)****

Proposed project name: UCB Hill Campus Fire Hazard Reduction
Brief description of proposed action:
Thin Eucalyptus & non-native trees near roads & buildings

Type of Survey (circle one): (DAY) NIGHT BREEDING (NON-BREEDING)

Survey number (circle one): (1) 2 3 4 5 6 7 8

Begin Time: 4:15 PM. **End Time:** 4:45 PM.

Cloud cover: 100% **Precipitation:** ∅

Air Temperature: 20°C **Water Temperature:** 12°C

Wind Speed: 0-1 mph **Visibility Conditions:** water ≈ 1 ft. Air > 5 mile.

Moon phase: N/A (full) **Humidity:** 57%

Description of weather conditions: Cloudy, no wind.

Brand name and model of light used to conduct surveys: _____

Were binoculars used for the surveys (circle one)? (YES) NO
Brand, model, and power of binoculars: Zeiss Terra 8X42
Swarovski WB 8X30

Appendix E.
California Red-legged Frog Survey Data Sheet

Sibley Pond

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life Stages	Size Class	Certainty of Identification
Bullfrogs	85	O & H	Ad & H	4-6"	100%

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: Bullfrogs, raccoons, skunks

Other notes, observations, comments, *etc.*

Almost 100 bullfrogs spotted within 5 ft. of shore. Estimate over 200+ additional bullfrogs hidden in reeds in center of pond. Very heavy bullfrog infestation. Tree frogs heard in ditches 1/4 mile south of pond; non observed or heard in or near pond due to bullfrogs.

Necessary Attachments:

4. All field notes and other supporting documents
5. Site photographs
6. Maps with important habitat features and species locations

Appendix E.
California Red-legged Frog Survey Data Sheet

Survey results reviewed by _____ (FWS Field Office) _____ (date) _____ (biologist)

Date of Survey: 03/12/2019 (mm/dd/yyyy) **Survey Biologist:** Roberton (Last name), Ted (first name)
Survey Biologist: Sandy (Last name), Grayson (first name)

Site Location: Tilden Park Botanical Garden Pond, 37.893026, -122.243593
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: UCB Hill Campus Fire Hazard Reduction.
Brief description of proposed action:
Thin Eucalyptus & non-native trees near roads & buildings.

Type of Survey (circle one): (DAY) NIGHT BREEDING (NON-BREEDING)

Survey number (circle one): (1) 2 3 4 5 6 7 8

Begin Time: 3:50 PM **End Time:** 4:14 PM.

Cloud cover: 3% **Precipitation:** 0

Air Temperature: 58°F **Water Temperature:** 50°F

Wind Speed: 1-4 mph **Visibility Conditions:** > 10 miles

Moon phase: N/A **Humidity:** 60%

Description of weather conditions: Sunny, light breeze

Brand name and model of light used to conduct surveys: N/A

Were binoculars used for the surveys (circle one)? (YES) NO
Brand, model, and power of binoculars: Nikon Monarch 8X42
Zeiss Terra 8X42

Appendix E.

California Red-legged Frog Survey Data Sheet

Tilden Park Botanical Garden Pond

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life Stages	Size Class	Certainty of Identification
CA Newt (Taricha torosa)	5-10	O	Adult	Adult	100%
Sierra tree frog (Pseudacris sierra)	2	O/H	Adult	Adult	100%

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: Past history of bullfrogs. Last C.R.L.F. spotted in 2001 by EB Park Resource staff.

Other notes, observations, comments, *etc.*

Adult newts + tree frogs, no egg masses

Necessary Attachments:

4. All field notes and other supporting documents
5. Site photographs 5073
6. Maps with important habitat features and species locations

Appendix E.
California Red-legged Frog Survey Data Sheet

Survey results reviewed by: _____ (FWS Field Office) _____ (date) _____ (biologist)

Date of Survey: 03/14/2019 (mm/dd/yyyy) **Survey Biologist:** Robertson, Lee (Last name, first name)
Survey Biologist: Dexter, Sean (Last name, first name)

Site Location: UCB Botanical Garden Pond, Alameda Co. 37.87483189 (County, General location name, UTM Coordinates or Lat./Long. or T-R-S). -122.2371679

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: UCB Hill Campus Fire Hazard Reduction
Brief description of proposed action:

Thin non-native trees near roads & buildings.

Type of Survey (circle one) (DAY) NIGHT BREEDING (NON-BREEDING)

Survey number (circle one): (1) 2 3 4 5 6 7 8

Begin Time: 5:45 PM **End Time:** 6:03

Cloud cover: 10% **Precipitation:** 0

Air Temperature: 11°C **Water Temperature:** 12°C

Wind Speed: 0-2 mph **Visibility Conditions:** clear to base of Pond.

Moon phase: N/A. **Humidity:** 55%

Description of weather conditions: Sunny, clear.

Brand name and model of light used to conduct surveys: N/A

Were binoculars used for the surveys (circle one)? (YES) NO
Brand, model, and power of binoculars: Swarovski EL 8.5 x 42

Appendix E.

California Red-legged Frog Survey Data Sheet

UCB Botanical Garden Pond

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life Stages	Size Class	Certainty of Identification
Taricha torosa	300	O	EGG Masses	4-5 cm	100%
" "	18	O	Adult	2 dm	100%
Pseudacris sierra	~10	H	Adult		100%
↳ in small artificial Pond 100 yds from main pond.					

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: Raccoons. Water lilies = Emergent Vegetation.

Other notes, observations, comments, *etc.*

Necessary Attachments:

4. All field notes and other supporting documents
5. Site photographs
6. Maps with important habitat features and species locations

Appendix E.

California Red-legged Frog Survey Data Sheet

Survey results reviewed by: _____ (FWS Field Office): _____ (date) _____ (biologist)

Date of Survey: 04/16/2019 (mm/dd/yyyy) **Survey Biologist:** Robertson, Ted (Last name, first name)

Survey Biologist: & Sandy, Grayson (Last name, first name)

Site Location: UCB Botanical Garden Pond: 37.87483189, -122.2371679

(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: UCB Hill Campus Fire Hazard Reduction

Brief description of proposed action:

Thin non-native trees near roads & buildings

Type of Survey (circle one): (DAY) NIGHT BREEDING (NON-BREEDING)

Survey number (circle one): 1 (2) 3 4 5 6 7 8

Begin Time: 4:34 PM **End Time:** 4:52 PM

Cloud cover: 70% **Precipitation:** Ø

Air Temperature: 15°C **Water Temperature:** 13°C

Wind Speed: 2-4 mph **Visibility Conditions:** > 10 miles = air. 3+ ft = water

Moon phase: N/A **Humidity:** 66%

Description of weather conditions: Partly cloudy with light breeze.

Brand name and model of light used to conduct surveys: Mag-Lite. LED - 3-D cells

Were binoculars used for the surveys (circle one)? (YES) NO

Brand, model, and power of binoculars: Swarovski 8.5X42 EL

Appendix E.

California Red-legged Frog Survey Data Sheet

UCB Botanical Garden Pond

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life.Stages	Size Class	Certainty of Identification
Taricha torosa	30 20	0 0	Larvae Adult	2-3" = TL 6"-8" = TL	100%

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: striped skunk (signs of foraging along bank), raccoon, people, water striders

Other notes, observations, comments, *etc.*

No newt egg masses
Most larvae newts w/ external gills.
↳ 90%

Necessary Attachments:

1. All field notes and other supporting documents
2. Site photographs
3. Maps with important habitat features and species locations

Appendix E.
California Red-legged Frog Survey Data Sheet

Survey results reviewed by: _____ (FWS Field Office) _____ (date) _____ (biologist)

Date of Survey: 04/16/2019 (mm/dd/yyyy) **Survey Biologist:** Robertson, Ted (Last name, first name)

Survey Biologist: & Sandy, Grayson (Last name, first name)

Site Location: UCB Botanical Garden Pond; Alameda Co., 37.8748318, -122.2371679
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: UCB Hill Campus Fire Hazard Reduction
Brief description of proposed action:
Thin non-native trees near roads & buildings

Type of Survey (circle one): **DAY** (NIGHT) **BREEDING** (NON-BREEDING)

Survey number (circle one): 1 2 (3) 4 5 6 7 8

Begin Time: 9:45 PM. **End Time:** 10:01 PM

Cloud cover: 20% **Precipitation:** ø

Air Temperature: 9°C **Water Temperature:** 13°C

Wind Speed: 0-1 mph **Visibility Conditions:** $H_2O \approx 2.5$ ft - clear Air > 10 mi.

Moon phase: 3/4 Waxing **Humidity:** water ≈ 2-3 ft. - clear. Air > 10 mi. ↳ 66%

Description of weather conditions: clear & calm

Brand name and model of light used to conduct surveys: Mag-Lite LED - 3-D cells

Were binoculars used for the surveys (circle one)? (YES) NO

Brand, model, and power of binoculars: Swarovski 8.5X42 EL

Appendix E.

California Red-legged Frog Survey Data Sheet

UCB Bot. Garden Pond

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life.Stages	Size Class	Certainty of Identification
Taricha torosa	30+	O	Larvae	5-6 cm	
	10	O	Adult	1.5-2 dm	100%
Pseudacris sierra	10+	O & H	Adult	3-4 cm	100%
Taricha torosa	3	O	EGG sac	3 cm	100%

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: _____

Other notes, observations, comments, *etc.*

No animals observed

Necessary Attachments:

1. All field notes and other supporting documents
2. Site photographs
3. Maps with important habitat features and species locations

E3

Woodrat Nest Survey Report

Woodrat Nest Survey Report

UC Berkeley Hill Campus Fire Hazard Reduction
University of California, Berkeley

October 2019

Prepared for:

University of California, Berkeley, Facilities Services
2000 Carleton Street
Berkeley, CA 94720

Prepared by:
Condor Country Consulting, Inc.
815 Estudillo Street
Martinez, CA 94553

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1.0 Introduction

On behalf of the University of California, Berkeley (UCB), Condor Country Consulting, Inc. (CCCI) performed San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*) nest surveys between May 6 and August 15, 2019 for the UC Berkeley Hill Campus Fire Hazard Reduction project. This survey and report was prepared in support of a California Environmental Quality Act (CEQA) document that UCB's Facilities Services is preparing for UC Berkeley Hill Campus Fire Hazard Reduction project. A total of 75 woodrat nest were located and mapped. Most of the nests were located under eucalyptus trees (*Eucalyptus globulus*, 28 nests) and bay trees (*Umbellularia californica*, 25 nests).

1.1 Project Location and Description

The project is located in the East Bay Hills above the cities of Berkeley and Oakland, in the heavily vegetated 800-acre Hill Campus of the UCB. The project is primarily bounded by Grizzly Peak Road to the north and east, Centennial Drive to the west, and Claremont Avenue to the south. The UCB main campus and the Lawrence Berkeley National Lab (LBNL) are west of the Project Area (Figures 1 and 2).

The University of California Berkeley (UCB) proposes to treat vegetation in 250 acres of the Hill Campus to reduce wildfire hazard and potential damage to approximately 3,000 habitable structures and institutions of international importance as well as improved life safety for 3,000-plus residents and approximately 1,000 day-time users of the Hill Campus, and increasing the reliability of the 150 KV transmission line, the sole power source to the campus and Lawrence Berkeley National Laboratory. The campus will target areas forested with flammable eucalyptus and high fuel volume, and areas within 100 feet of roads, fire-trails and buildings. Area treatments will thin the forest to reduce fuel volume and fire hazard. Roadside treatments will both reduce fire intensity along the road and remove hazardous trees likely to block the road. Defensible space will be installed within 100 feet of buildings.

Vegetation will be treated through the combination of the use of machinery and hand labor. Trees would be cut using hand tools and a mechanized feller buncher. To prevent re-sprouting, an herbicide will be applied by a licensed California Qualified Applicator to the cambium ring of eucalyptus and acacia stumps. Felled trees will be skidded by rubber-tired or tracked vehicles along skid trails to landings. Selected tree trunks will be left on the slope. At the landings, trees would be stored or chipped using a grapple-fed chipper or a tracked chipper. Whole trees will be fed into the chipper and pulled through the blades by a conveyor belt and feed wheel. Chips will be both spread on-site and transported to a gasifier to supply electricity directly to the campus.

Along roads and buildings, lower limbs of trees will be pruned, understory vegetation shortened and grass mowed.

2.0 Environmental Setting

The Project Area is located in the East Bay Hills located above the University of California, Berkeley (UCB) campus and the Lawrence Berkeley National Lab (LBNL). Initial vegetation and aquatic community surveys were conducted in 2010 as part of the Federal Emergency Management Agency (FEMA) East Bay Hills Hazardous Fire Risk Reduction Project. Follow-up plant and vegetation surveys were conducted during the late winter, spring, and summer of 2019 in support for a California Environmental Quality Act (CEQA) document in preparation of the next phase of the UC Berkeley Hill Campus Fire Hazard Reduction grant from the California Department of Forestry and Fire Protection (Cal Fire). A total of nine vegetation communities were identified inside the Project Area including: coastal scrub, coniferous forest/non-native coniferous forest, coyote brush scrub, developed/disturbed/landscaped, eucalyptus forest, oak-bay woodland, riparian woodland, riverine features, and successional grassland.

3.0 Background Information

The San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*) is one of 11 subspecies of woodrat that live in California and the arid west. This subspecies is designated by California Department of Fish and Wildlife (CDFW) as a species of special concern in California.

The San Francisco dusky-footed woodrat prefers forest habitats with moderate canopy, year-round greenery, a brushy understory, and suitable nest-building materials (Zeiner et al. 1990). They build large, complex nests made of sticks, leaves and debris, often at the base of, or in a tree, around a shrub, or at the base of a hill (Jameson and Peeters 2004). Woodrats live in loose associations at times, in networks of 15 or more midens. The dusky-footed woodrat defends its nest against competitors year-round (Zeiner et al. 1990). Forage for woodrats consists of leaves, flowers, fungi, fruits and nuts; however, they favor poison oak, coffeeberry, blackberry and roses (Jameson and Peeters 2004). Woodrats typically breed from December through September, producing up to 5 litters of one to three young (Zeiner et al. 1990, Jameson and Peeters 2004).

Threats to the San Francisco dusky-footed woodrat include cover reducing activities such as cattle grazing, wildfire, habitat fragmentation, urbanization, and human disturbance as well as predation pressure from domestic/feral cats and dogs. The availability of suitably-sized sticks may limit the number of woodrat middens in an area (Zeiner et al. 1990).

4.0 Methods

CCCI biologists Ted Robertson and Steven Cochrane conducted field surveys on foot and covered all areas within the Project Area except for areas with dense stands of poison oak or steep areas with slopes greater than 45 degrees. These areas were visually searched using binoculars along the perimeters of these inaccessible portions. All nest locations were mapped using a handheld Global Navigation Satellite System (GNSS) device. Accuracy varied between 2 feet in open accessible areas to approximately 20 feet in areas with thick tree canopy or steep canyons that interfered with the reception of satellite Global Positioning System (GPS) transmission data. Several nest locations were mapped using offset point location procedures using range finders for distance and compass for direction to the nest locations. Table 1 lists the dates nest surveys were performed.

Table 1. Survey Areas and Dates, Personnel

Area Surveyed	Date	CCCI Personnel
Campus Hill Area, Claremont Canyon	May 6-8, 2019	Ted Robertson Steven Cochrane
Campus Hill Area, Claremont Canyon, Lower Centennial Drive	August 13-15, 2019	Ted Robertson Steven Cochrane

5.0 Results

Nine terrestrial habitat types occurred within the study area including:

- Coastal scrub
- Coniferous forest/non-native coniferous forest
- Coyote brush scrub
- Developed/disturbed/landscaped
- Eucalyptus forest
- Oak-bay woodland
- Riparian woodland
- Riverine features
- Successional grassland.

A general discussion and map location for each habitat type can be found in the following report; *Special Status Plant Species Survey Report, UC Berkeley Hill Campus Fire Hazard Reduction, University of California, Berkeley, October 2019* (CCCI 2019).

Seventy-five (75) woodrat nests were located and mapped inside the Project Area (Figure 3). Woodrat nests were located within or under the following 13 plants or habitats:

- Bay trees (25 nests)
- Coyote brush (1 nest)
- Currant bush (1 nest)
- Elderberry tree (1 nest)
- Eucalyptus trees (28 nests)
- French broom shrub (1 nest)
- Ground with no overstory cover (1 nest)
- Hazelnut shrub (1 nest)
- Live oak trees (7 nests)
- Madrone tree (1 nest)
- Poison oak (4 nests)
- Stumps (4 nests)
- Willow (1 nest)

A table of latitude and longitude coordinates along with the name of the host plant or habitat for each woodrat nest is located in Appendix A.

6.0 Recommendations

Because a nest may become inactive or a new nest built between the time period of the current nest surveys and the actual removal of vegetation, the following recommendations are suggested:

1. Get pre-approval from CDFW for any actions that may impact the woodrat nests.
2. Have a qualified biologist survey the plot of land no more than 7 days prior to the start of any logging activities for the presence or absence of any woodrat nest.
3. If a nest is found, the following actions can be taken;
    - If the nest will not be disturbed, mark the perimeter of the next with ESA fencing to prevent accidental encroachment by machinery. If there is a probability of woodchips covering the nest from logging or chipping activities, temporarily cover the nest with a tarp. A nest should not be covered for more than a 4 hour period of time.
    - If there is a danger of the nest being damaged or destroyed by the logging activities, move the nest to nearby adjacent habitat out of harm's way.
    - If a nest is located at the very base of the tree, cut the tree at least 2 feet above the top of the nest. Using a mechanized feller buncher or similar piece of equipment will greatly decrease the likelihood of the felled tree from damaging the nest. Prior to cutting, temporarily protect the nest with a trap to prevent wood chips from covering the nest.

7.0 References

Condor Country Consulting, Inc. (CCCI). 2019. Special Status Plant Species Survey Report, UC Berkeley Hill Campus Fire Hazard Reduction, University of California, Berkeley, October 2019.

Federal Emergency Management Agency (FEMA). 2012. Hazardous Fire Risk Reduction, Biological Assessment, East Bay Hills, California. Department of Homeland Security, Region IX, 1111 Broadway, Suite 1200, Oakland, California, December 2012.

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U.S. Fish and Wildlife Service. 2013. Biological Opinion for the Proposed Federal Emergency Management Agency (FEMA) Hazardous Fire Risk Reduction in the East Bay Hills of Alameda and Contra Costa Counties, California (HMGP 1731-16-34, PDM-PJ-09-CA-2005-003, PDM-PJ-09-CA-2005-011, PDM-PJ-09-CA-2006-004).

Zeiner, D. C., W. F. Laudenslayer, Jr., K. E. Mayer, and M. White, editors. 1990. California's wildlife. Volume III: mammals. California Statewide Wildlife Habitat Relationships System, California Department of Fish and Game, Sacramento, USA.

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Figures

UC Berkeley Hill Campus Fire Hazard Reduction
University of California, Berkeley

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S:\GIS_Projects\00346 - UCB_Fire_Mitigation\MXD\Fig. 1 UCB Regional Location_Apr2019.mxd

Ted Robertson April 23, 2019

FIGURE 1

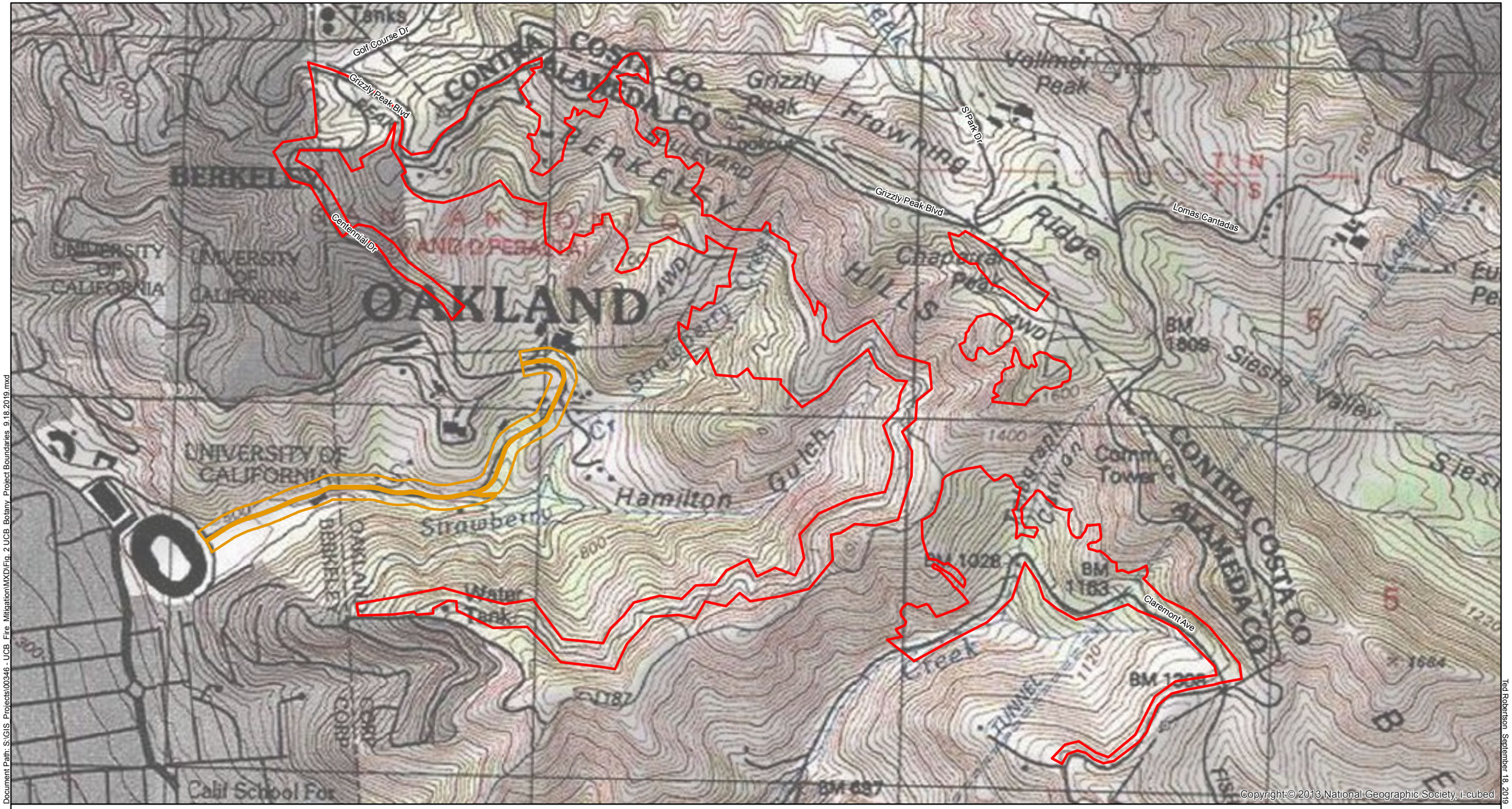
Regional Location of UC Berkeley Hill Campus Fire Hazard Reduction Project

City of Berkeley, CA

N
W E
S

0 1 2 3 4 Miles

CONDOR COUNTRY CONSULTING, INC.



Project Area

Lower Centennial Drive Project Area

Project Boundaries

UC Berkeley Hill Campus Fire Hazard Reduction Project

Alameda and Contra Costa Counties, California

N W E S

0 0.1 0.2 0.3 0.4 Miles

FIGURE 2

CONDOR COUNTRY CONSULTING, INC.

Document Path: S:\GIS_Projects\00346 - UCB_Fire_Mitigation\MXD\Fig_2 UCB_Botany_Project Boundaries_9.18.2019.mxd

Ted Robertson September 18, 2019

Woodrat Nest Locations - August 2019

Host Plant

- Bay tree
- Coyote brush
- Currant
- Elderberry
- Eucalyptus
- French broom
- Ground
- Hazelnut
- Live oak
- Madrone
- Poison Oak
- Stump
- Willow
- UCB Fire Mitigation Project Area
- Lower Centennial Drive Project Area

Woodrat Nest Locations

UC Berkeley Hill Campus Fire Hazard Reduction Project

Alameda and Contra Costa County, California

FIGURE 3

N W E S

0 500 1,000 1,500 2,000 Feet

CONDOR COUNTRY CONSULTING, INC.

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Ted Robertson October 17, 2019

Appendix A

Appendix A: Woodrat Nest Location Coordinates

UC Berkeley Hill Campus Fire Hazard Reduction
University of California, Berkeley

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Table 1. Woodrat Nest Coordinates

Item Number	Latitude	Longitude	Host Plant
0	37.87248054	-122.2245644	Bay tree
1	37.87253805	-122.2243749	Bay tree
2	37.87300373	-122.2245717	Bay tree
3	37.87311874	-122.2246101	Bay tree
4	37.86963684	-122.2405018	Live oak
5	37.87271330	-122.2283087	Willow
6	37.87916506	-122.2369480	Eucalyptus
7	37.87916014	-122.2368885	Eucalyptus
8	37.87924038	-122.2369079	Eucalyptus
9	37.87926254	-122.2367589	Eucalyptus
10	37.87925583	-122.2365765	Eucalyptus
11	37.87944591	-122.2366741	Eucalyptus
12	37.87806990	-122.2320940	Eucalyptus
13	37.87810850	-122.2322931	Eucalyptus
14	37.87125664	-122.2219596	Bay tree
15	37.87317533	-122.2247609	Bay tree
16	37.87323889	-122.2247733	Bay tree
17	37.87295001	-122.2245138	Bay tree
18	37.87842365	-122.2251101	Bay tree
19	37.87839420	-122.2251041	Bay tree
20	37.87803944	-122.2246939	Stump
21	37.87782313	-122.2243376	Stump
22	37.86880272	-122.2386641	Currant
23	37.86871617	-122.2374933	Madrone
24	37.86984081	-122.2354944	Live oak
25	37.87019222	-122.2344194	Live oak
26	37.87074211	-122.2318917	Hazelnut
27	37.87342138	-122.2280385	Coyote brush
28	37.87375690	-122.2280243	Stump
29	37.87379911	-122.2279514	Ground
30	37.87393300	-122.2281715	Bay tree
31	37.87429010	-122.2281311	Bay tree
32	37.87418793	-122.2283835	Eucalyptus
33	37.87433502	-122.2284687	Bay tree
34	37.87440408	-122.2282643	Bay tree
35	37.87472313	-122.2282691	Elderberry
36	37.87544418	-122.2274702	Bay tree
37	37.87670738	-122.2296576	French broom
38	37.87637290	-122.2297112	Eucalyptus
39	37.87628737	-122.2297815	Eucalyptus
40	37.87613407	-122.2299803	Eucalyptus

Item Number	Latitude	Longitude	Host Plant
41	37.87617271	-122.2302757	Bay tree
42	37.87577878	-122.2304761	Bay tree
43	37.87570129	-122.2304869	Bay tree
44	37.87549104	-122.2306105	Bay tree
45	37.87539758	-122.2306083	Bay tree
46	37.88006468	-122.2403313	Eucalyptus
47	37.88001591	-122.2399894	Eucalyptus
48	37.87995554	-122.2398616	Eucalyptus
49	37.87989674	-122.2396991	Eucalyptus
50	37.87982533	-122.2393180	Eucalyptus
51	37.87991654	-122.2393575	Eucalyptus
52	37.87988942	-122.2392650	Eucalyptus
53	37.88003162	-122.2390660	Eucalyptus
54	37.87933715	-122.2361614	Eucalyptus
55	37.87966308	-122.2353617	Bay tree
56	37.87900920	-122.2345922	Eucalyptus
57	37.87900468	-122.2345291	Eucalyptus
58	37.87892152	-122.2333012	Bay tree
59	37.87659414	-122.2309744	Poison Oak
60	37.87632206	-122.2315699	Eucalyptus
61	37.87936234	-122.2352096	Eucalyptus
62	37.87870839	-122.2344482	Eucalyptus
63	37.87302937	-122.2244450	Bay tree
64	37.87213026	-122.2260063	Eucalyptus
65	37.87956241	-122.2351247	Bay tree
66	37.87850641	-122.2249448	Stump
67	37.87853071	-122.2249702	Poison Oak
68	37.87857371	-122.2249988	Poison Oak
69	37.87846963	-122.2249910	Poison Oak
70	37.87346184	-122.2256804	Eucalyptus
71	37.87681858	-122.2249396	Bay tree
72	37.87675792	-122.2251476	Live oak
73	37.87661085	-122.2254203	Live oak
74	37.87659553	-122.2252434	Live oak

E4

Sensitive Plant Communities Survey Report

Sensitive Plant Communities Survey Report

UC Berkeley Hill Campus Fire Hazard Reduction
University of California, Berkeley

July 2020

Prepared for:

University of California, Berkeley, Facilities Services
2000 Carleton Street
Berkeley, CA 94720

Prepared by:
Condor Country Consulting, Inc.
815 Estudillo Street
Martinez, CA 94553

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Table of Contents

List of Figures

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1.0 Introduction

On behalf of the University of California, Berkeley (UCB), Condor Country Consulting, Inc. (CCCI) performed sensitive plant community surveys between May 5 and May 15, 2020 for the UC Berkeley Hill Campus Fire Hazard Reduction project. This survey and report was prepared in support of a California Environmental Quality Act (CEQA) document that UCB's Facilities Services is preparing for UC Berkeley Hill Campus Fire Hazard Reduction project. Eight sensitive plant communities totaling 29 acres were mapped within the Project Area; bigleaf maple forest, bush monkeyflower scrub, California bay forest, California buckeye grove, hazelnut scrub, madrone forest, ocean spray brush, and redwood forest (planted). The most abundant sensitive community was the California bay forest, occupying 24 acres withing the project area.

1.1 Project Location and Description

The project is located in the East Bay Hills above the cities of Berkeley and Oakland, in the heavily vegetated 800-acre Hill Campus of the UCB. The project is primarily bounded by Grizzly Peak Road to the north and east, Centennial Drive to the west, and Claremont Avenue to the south. The UCB main campus and the Lawrence Berkeley National Lab (LBNL) are west of the Project Area (Figures 1 and 2).

The University of California Berkeley (UCB) proposes to treat vegetation in 279 acres of the Hill Campus to reduce wildfire hazard and potential damage to approximately 3,000 habitable structures and institutions of international importance as well as improved life safety for 3,000-plus residents and approximately 1,000 day-time users of the Hill Campus, and increasing the reliability of the 150 KV transmission line, the sole power source to the campus and Lawrence Berkeley National Laboratory. The campus will target areas forested with flammable eucalyptus and high fuel volume, and areas within 100 feet of roads, fire-trails and buildings. Area treatments will thin the forest to reduce fuel volume and fire hazard. Roadside treatments will both reduce fire intensity along the road and remove hazardous trees likely to block the road. Defensible space will be installed within 100 feet of buildings.

Vegetation will be treated through the combination of the use of machinery and hand labor. Trees would be cut using hand tools and a mechanized feller buncher. To prevent re-sprouting, an herbicide will be applied by a licensed California Qualified Applicator to the cambium ring of eucalyptus and acacia stumps. Felled trees will be skidded by rubber-tired or tracked vehicles along skid trails to landings. Selected tree trunks will be left on the slope. At the landings, trees would be stored or chipped using a grapple-fed chipper or a tracked chipper. Whole trees will be fed into the chipper and pulled through the blades by a conveyor belt and feed wheel. Chips will be both spread on-site and transported to a gasifier to supply electricity directly to the campus.

Along roads and buildings, lower limbs of trees will be pruned, understory vegetation shortened, and grass mowed.

2.0 Environmental Setting

The Project Area is located in the East Bay Hills located above the University of California, Berkeley (UCB) campus and the Lawrence Berkeley National Lab (LBNL). Initial vegetation and aquatic community surveys were conducted in 2010 as part of the Federal Emergency Management Agency (FEMA) East Bay Hills Hazardous Fire Risk Reduction Project. Follow-up plant and vegetation surveys were conducted during the late winter, spring, and summer of 2019 and 2020 in support for a California Environmental Quality Act (CEQA) document in preparation of the next phase of the UC Berkeley Hill Campus Fire Hazard Reduction grant from the California Department of Forestry and Fire Protection (Cal Fire). A total of nine vegetation communities were identified inside the Project Area and named according to the conventions used in the original FEMA biological assessment (FEMA 2012), as well as those described in *A Manual of California Vegetation* (Sawyer et al. 2009), *California Vegetation* (Holland 1995), *USFWS National Wetlands Inventory* (USFWS 2020), and Cowardin (Cowardin et al., 1979). The vegetation communities include coastal scrub (xeric), coniferous forest/non-native coniferous forest, coyote brush scrub, developed/disturbed/landscaped, eucalyptus forest, oak-bay woodland, riparian woodland, riverine features, and successional grassland. During 2020, eight sensitive community habitats were mapped throughout the expanded Project Area including bigleaf maple forest, bush monkeyflower scrub, California bay forest, California buckeye grove, hazelnut scrub, madrone forest, ocean spray brush, and redwood forest.

3.0 Methods

3.1 Literature and Data Review

CCCI biologist Ted Robertson conducted a literature search prior to field visits. The literature search included a review of the CDFW list of California Sensitive Natural Communities (CDFW 2019b) and aerial imagery of the project location (Google Earth Pro 2020). The Biological Assessment (BA) and the Biological Opinion (BO) for the Project Area was referenced for a list of major habitats previously mapped in areas inside and adjacent to the Project Area. A list of potential sensitive natural communities was compiled based upon the previous floristic studies that had cataloged every species observed by Mr. Robertson when he conducted surveys for sensitive plant species inside the expanded Project Area in 2019 and 2020.

3.2 Sensitive Plant Community Study Methods

CCCI botanist Ted Robertson conducted background literature research and led a team of botanists and biologists to perform field surveys of the entire Project Area (Table 1). Mr. Robertson holds a California Department of Fish and Wildlife (CDFW) Voucher Collecting

Permit for special status plants (Permit Number 2081(a)-19-015-V). CCCI botanists conducted surveys in accordance with California Native Plant Society's Botanical Survey Guidelines (CNPS 2001), CDFW Protocol for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities (CDFW 2009), and U.S. Fish and Wildlife Service (USFWS) Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed and Candidate Plants (USFWS 1996).

Table 1. Survey Areas, Dates, and Personnel

Area Surveyed	Date	Total Survey Person Hours	CCCI Personnel
East/West Ridge Fuel Breaks Landing Areas Hearst Gate Fuel Break	May 5, 2020	24 hours	Ted Robertson Steven Cochrane Rachel McCracken
Centennial Drive Lower Jordan EST Strawberry FHR	May 6, 2020	16 hours	Ted Robertson Steven Cochrane
Upper Jordan EST	May 14, 2020	16 hours	Ted Robertson Rachel McCracken
Frowning FHR Claremont FHR	May 15, 2020	16 hours	Ted Robertson Rachel McCracken

Field surveys were conducted on foot and covered all areas within the Project Area except for areas with dense stands of poison oak or steep areas with slopes greater than 45 degrees. These areas were visually searched using binoculars along the perimeters of these inaccessible portions. All habitats withing the Project Area were investigated, and all sensitive plant communities were mapped (Figure 3).

3.3 Sensitive Plant Community Classification

Plant identification was based upon the *Second Edition of The Jepson Manual* (Baldwin et al. 2012). Plant communities were identified using the characterizations in *A Manual of California Vegetation* (Sawyer et al. 2009). Sensitive plant community types were classified using the California Sensitive Natural Communities list (CDFW 2019b). Vegetation community types were aligned with those described in the 2019 Biological Assessment for the Hazardous Fire Risk Reduction for the East Bay Hills (FEMA 2012). The minimum mapping unit for this project was defined as an area of 800 square feet.

4.0 Sensitive Plant Communities Within the Project Area

As shown in Figure 3, sensitive plant communities within the study area include:

- Bigleaf maple forest
- Bush monkeyflower scrub
- California bay forest
- California buckeye grove
- Hazelnut scrub
- Madrone forest
- Ocean spray brush
- Redwood forest (planted)

A general discussion of each habitat type is provided below.

Bigleaf Maple Forest

Bigleaf maples (*Acer macropyhyllum*) are mostly associated with riparian environments, and the best developed stands are scattered near river terraces and adjacent side drainages. There were five stands in the project area, most averaging 0.17 acres in size. Four of the stands are associated with the lower reaches of the Strawberry Creek drainage. Bigleaf maples have a moderate to long fire interval and will vigorously sprout from the root crown if the top branches are killed by a moderate intensity fire or by major pruning. This forest was mapped in 0.9 acres in the Project Area.

Bush Monkeyflower Scrub

Only one small linear strand of bush monkey flower (*Diplacus aurantiacus*) 0.1 acres in size was found along the edge of the eastern fire break portion of the project area. There were many scattered individuals of this bush commonly found in the coastal and coyote brush scrub habitats inside the Project Area. This plant is a drought-deciduous shrub with surface feeder roots less than 6 feet deep. This plant is a low growing shrub, rarely exceeding 5 feet in height. After a fire, this shrub will grow back fast and flower quickly. This plant will also sprout from its roots after light fires. It is adapted to medium fire intervals of 20 to 50 years and will burn with moderate to high intensity.

California Bay Forest

The California bay forest community was the most common sensitive community in the Project Area, ninety-one stands were mapped, each averaging 0.25 acres in size. California bay (*Umbelullaria californica*) was also the most common understory tree found under Eucalyptus stands, although these understory stands were not mapped. Once the overstory eucalyptus trees are removed, the California bay forest will become the most abundant forest type. California bays are an evergreen broadleaf tree that have very aromatic leaves and can grow up to 80 feet

tall. Other native trees found adjacent to this vegetation community in the Project Area include California buckeye (*Aesculus californica*), bigleaf maple, and madrone (*Arbutus menziesii*). Understory species may contain poison oak (*Toxicodendron diversilobum*), Swordfern (*Polystichum munitum*), California blackberry (*Rubus ursinus*), coyote brush (*Baccharis pilularis*), California hazelnut (*Corylus cornuta*), toyon (*Heteromeles arbutifolia*), and currants (*Ribes* spp.). In many cases, mature stands of bay trees can become the only tree present with very few shrubs or herbs present underneath the crown. They will spread into adjacent habitat becoming the dominant species. The tree's ability to sprout after fire allows it to grow in areas with frequent fire, but its typical fire interval is moderate, 30 – 100+ years. This forest was mapped in 24 acres in the Project Area.

California Buckeye Grove

There were six small buckeye groves in the project area, most were under 0.1 acres in size. Most of the small groves were in the Claremont Canyon area. They are frequently found adjacent to California bay trees, coast live oaks (*Quercus agrifolia*), and toyon shrubs. California buckeyes are a small, tree, growing up to 24 feet tall. California buckeyes are summer deciduous in areas away from the immediate coast, losing their leaves when the soil becomes dry. Because of this growth habit of not having leaves during the fire season, they are not prone to burning. Damaged trees can sprout from stumps or root crowns. They produce very large, round seeds annually. Buckeye groves were mapped in 0.4 acres of the Project Area.

Hazelnut Scrub

Hazelnut is a multi-stemmed shrub that grows up to 12 feet in height. This shrub was found growing in mostly north-facing slopes in well-drained soils. Hazelnut scrub was found in seven locations, in patches averaging 0.05 acres in size. Six of the patches were found along the Upper Jordan firebreak area, and a single patch along the Lower Jordan firebreak. Hazelnut scrub was found adjacent to coyote brush scrub and next to bay/oak woodland habitat. The above ground stems of hazelnut are killed by fire, but this plant will abundantly sprout from their root crowns, increasing the number of post-fire stems. Hazelnut adds low intensity and severity to fires.

Madrone forest

Madrone is an evergreen hardwood tree with thin, reddish peeling bark that is susceptible to top kill by a fire. The leaves are broad and thick. After a fire, new growth will sprout from the root crown. The tree will attain a height of 120 feet. It closely associates with California bay and coast live oak forests but tend to grow in slightly more drier conditions. Only a single 0.3-acre patch of madrone forest along the Lower Jordan Trail was found within the Project Area.

Ocean Spray Brush

Ocean spray is a deciduous shrub with small, strongly veined leaves, and a reddish-grey shredding bark. It grows up to 18 feet tall but is typically half this size in height. In burns with

low to moderate intensity, it will sprout from root crowns if the branches become damaged mechanically or by fire. Ocean spray brush was found in seven small patches along the Upper Jordan Trail, mostly along the edges of coyote brush scrub habitat. Ocean spray brush was mapped in 0.5 acres of the Project Area.

Redwood Forest (planted)

Coast redwood trees (*Sequoia sempervirens*) tend to be found on north and east-facing slopes on shallow soils, in valley and canyon bottoms, in areas with abundant summer fog. These evergreen trees can attain maximum heights close to 400 feet. In the Project Area, six redwood patches were located along lower Centennial Road and Lower Jordan Fire Trail. All the redwood patches inside the Project Area have been planted. Redwoods are well adapted to small ground fires, mature trees have a thick, fire resistant bark. If the above ground portion of the tree becomes severely damaged by fire, they can sprout from stumps and roots. Most fires are fueled by the redwood leaf duff in the understory. Understory plants are sparse but can include sword fern, poison oak, and ocean spray. Redwood forests were mapped in 2.4 acres of the Project Area.

5.0 Habitats Within the Project Area

As shown on Figure 4, terrestrial habitat types within the study area include:

- Coastal scrub
- Coniferous forest/non-native coniferous forest
- Coyote brush scrub
- Developed/disturbed/landscaped
- Eucalyptus forest
- Oak-bay woodland
- Riparian woodland
- Riverine features
- Successional grassland

A general discussion of each habitat type is provided in the *Special Status Plant Species Survey Report*, UC Berkeley Hill Campus Fire Hazard Reduction, University of California, Berkeley, 2020 (UCB 2020).

6.0 Results

The following summarizes the results of CCCI's sensitive plant community surveys in the Project Area.

Sensitive Plant Communities

During the vegetation surveys, eight sensitive plant communities were observed inside the Project Area. A total of 130 plots were mapped for a total combined acreage of 28.8 acres. Table 2 describes the number of locations and total acreages for each of the sensitive plant communities.

Table 2: Sensitive Plant Community Statistics.

Sensitive Community Name	Number of Plots	Total Acreage
Bigleaf maple forest	5	0.9
Bush monkeyflower scrub	1	0.1
California bay forest	97	23.9
California buckeye grove	6	0.4
Hazelnut scrub	7	0.3
Madrone forest	1	0.3
Ocean spray brush	7	0.5
Redwood forest (planted)	6	2.4
TOTALS	**130**	**28.8**

Critical Habitat

The Project Area is not located within any federally listed special status plant critical habitat units.

7.0 Recommendations

To prevent impacts to sensitive plant communities, implementing different avoidance measures geared to each specific sensitive community is suggested. The sensitive plant communities have been grouped into five categories, shrubby sensitive species (monkeyflower scrub, hazelnut scrub, and ocean spray brush), deciduous trees (buckeyes and bigleaf maples), madrones, redwoods, and California bays. Clues for proper identification of sensitive vegetation to be protected along with avoidance and impact minimization precautions should be part of environmental awareness material used for training future work/logging crews.

Shrubby Sensitive Communities

The three shrubby sensitive communities (15 locations totaling 0.9 acres, bush monkeyflower scrub, hazelnut scrub, and ocean spray brush) are the most difficult sensitive plant communities to identify and should be surrounded with bright orange ESA fence. Locations away from logging operations can be marked with ESA fence along edges of the dirt road that borders these three shrubby sensitive communities. The biologist or forester assigned to monitoring the logging portion of this project should be familiar with identifying these three shrubs during the

fall, non-flowering season, a time when they are more difficult to identify. Any mulching of the felled trees should not cover the sensitive community vegetation.

Deciduous Tree Sensitive Communities

The two sensitive communities composed of deciduous trees (11 locations totaling 1.3 acres, bigleaf maples and buckeyes), should have the boundaries of their driplines well marked by a qualified botanist, forester, or biologist who is familiar with the identification of these two species, especially when they become harder to identify after they lose their leaves in the late summer and fall. California buckeyes are summer deciduous, losing their leaves early during drought conditions to prevent water loss. A few of these trees had been heavily pruned prior to the surveys, creating a disadvantage for these species to successfully compete with adjacent vegetation.

Madrone Forest

There is a single 0.3-acre plot located along the Lower Jordan trail. The madrone forest dripline boundaries should be marked to keep logging equipment from entering the area to prevent damaging the trees and compacting the soil above the tree roots.

Redwood forest (planted)

There are 6 locations of redwood forests totaling 2.4 acres. All the patches are small (less than 0.2 acres) except for a 2-acre patch along the eastern edge of the UC Botanical Garden. All the groves have been planted in areas that are not part of their recent historical range, hence their status as a natural sensitive plant community is not well established for these UCB locations. None the less, logging equipment should avoid soil compaction around the root zone by not driving under the drip line zone surrounding these trees.

California Bay Forest

California bay forests are the most dominant and widespread sensitive plant community in the Project Area, mapped in 97 locations totaling 24 acres. In addition, bay trees are the most abundant understory tree found underneath the eucalyptus canopy (these understory bay tree locations were not mapped). To minimize impacts, heavy logging equipment should avoid traveling under the driplines of bay trees. In locations where the bay tree is part of the understory of trees to be removed, logging equipment and tree felling should occur using methods that avoid damaging the bay trees.

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List of Figures

UC Berkeley Hill Campus Fire Hazard Reduction
University of California, Berkeley

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S:\GIS Projects\00346 - UCB Fire Mitigation\MXD\Fig. 1 UCB Regional Location June 2020.mxd

Ted Robertson June 15, 2020

Regional Location of UC Berkeley Hill Campus Fire Hazard Reduction Project

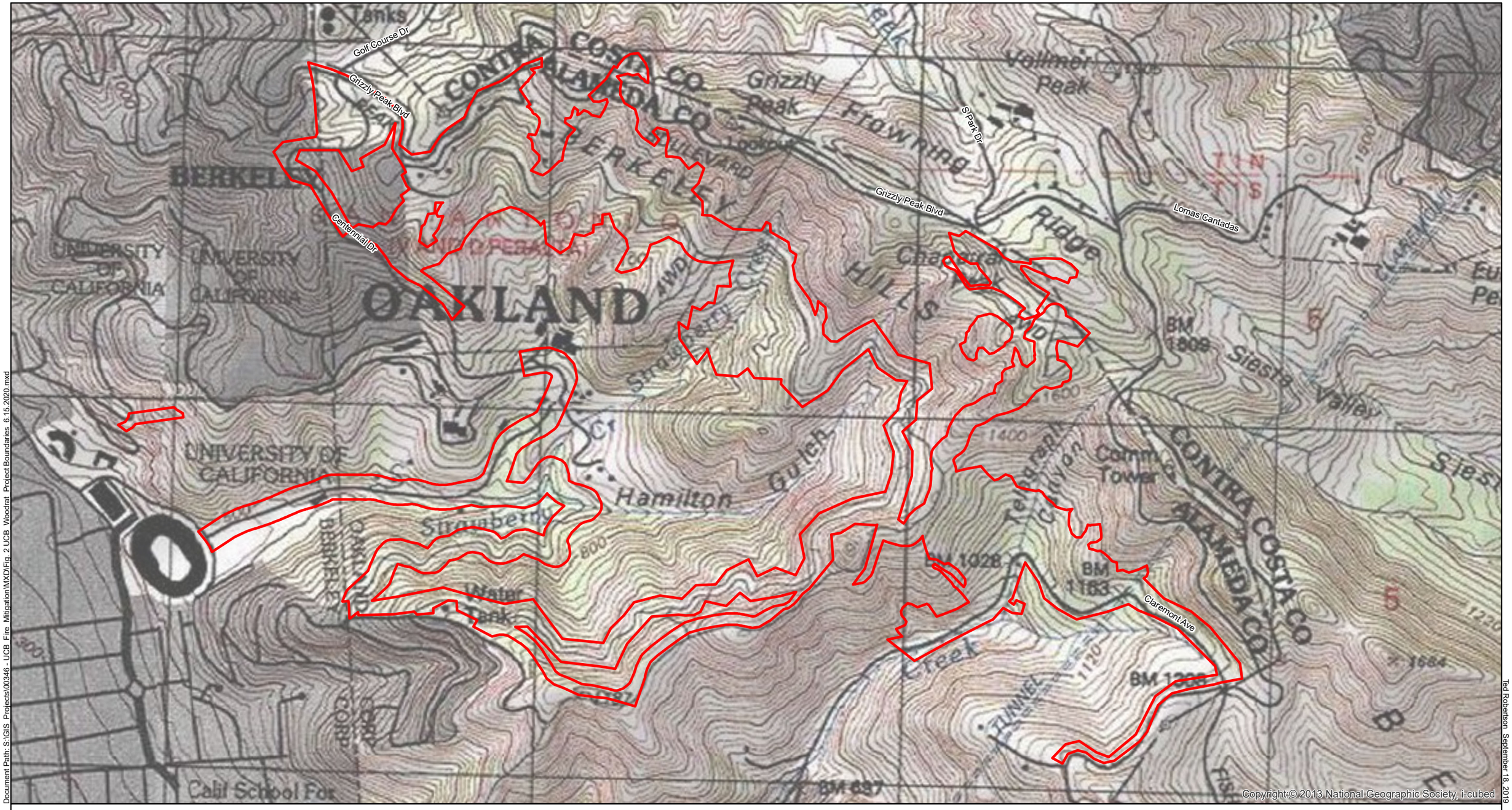
FIGURE 1

City of Berkeley, CA

N W E S

0 1 2 3 4 Miles

CONDOR COUNTRY CONSULTING, INC.



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Ted Robertson September 18, 2019

Project Boundaries

UC Berkeley Hill Campus Fire Hazard Reduction Project

Alameda and Contra Costa Counties, California

Project Area

N
W E
S

0 0.1 0.2 0.3 0.4 Miles

FIGURE 2

CONDOR COUNTRY CONSULTING, INC.

Project Area - Final

Sensitive Communities

- Bigleaf Maple Forest
- Bush Monkeyflower
- California Bay Forest
- California Buckeye Forest
- Hazelnut Scrub
- Madrone Forest
- Ocean Spray Brush
- Redwood Forest (planted)

Sensitive Communities

UC Berkeley Hill Campus Fire Hazard Reduction Project

Alameda and Contra Costa County, California

N E W S

0 0.1 0.2 0.3 Miles

FIGURE 3

CONDOR COUNTRY CONSULTING, INC.

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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Ted Robertson, June 30, 2020

Project Area
NWI Riverine Locations
California Annual Grassland
Coastal Scrub (xeric)
Coniferous forest/Plantation
Coyote Brush Scrub
Developed/Disturbed/Landscaped
Eucalyptus Forest/Plantation
Non-native Coniferous Forest
Northern Maritime Chaparral
Oak-Bay Woodland/Forest
Redwood Forest
Riparian Woodland
Successional grassland

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

HABITATS

UC Berkeley Hill Campus Fire Hazard Reduction Project

Alameda and Contra Costa County, California

FIGURE 4

N
W
E
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0 0.1 0.2 0.3 0.4 Miles

CONDOR COUNTRY CONSULTING, INC.

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Ted Robertson July 16, 2020