

**Appendix D:
Biological Resources Supporting Information**

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Memo

Date: August 23, 2019

To: Troy Fujimoto, Acting City Planner

From: Brian Mayerle, FCS Senior Biologist, and Robert Carroll, FCS Biologist

Subject: Oak Park Properties Specific Plan Biological Resources Supporting Information

In support of the Oak Park Properties Specific Plan Draft EIR, FirstCarbon Solutions (FCS) biologists completed a wetland assessment; a search of the California Department of Fish and Wildlife California Natural Diversity Database; and a search of the special-status plant and wildlife species with potential to occur within the Specific Plan area (plan area). HortScience | Bartlett Consulting completed an Arborist Report and Live Oak Associates completed a Biological Constraints Analysis. These reports included an assessment of both the Civic Project site and the Residential Project site. FCS also prepared a California Red-Legged Frog Habitat Assessment and a Jurisdictional Delineation for the Grayson Creek Outfalls Project, which included an assessment of the Civic Project site.

Sincerely,

Brian Mayerle, Senior Biologist
FirstCarbon Solutions
2204 Plaza Drive, Suite 210
Rocklin, CA 95765



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D.1 - Wetland Assessment Due Diligence Memo

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Memo

Date: August 23, 2019

To: John Baker, City of Pleasant Hill

From: Brian Mayerle and Robert Carroll

Subject: Oak Park Properties Specific Plan—Wetland Assessment

As part of our scope of work, FirstCarbon Solutions (FCS) biologists recently conducted a wetland due diligence assessment for the Oak Park Properties Specific Plan site on March 28, 2018 from 2:30 until 4:30 p.m. Field conditions were sunny with an average temperature of 81 degrees Fahrenheit. The assessment focused on depression features with standing water for the potential presence of wetlands in the southeastern portion of the project site as observed on an initial drive-by of the site. The purpose of the assessment was to determine whether the presence of potential wetlands would be subject to the jurisdiction of the U.S. Army Corps of Engineers (USACE) and the Regional Water Quality Control Board (RWQCB).

As shown in Table 1, the southeastern portion of the project site contains various plant species. This area was predominately composed of upland and facultative upland plant species. Upland and facultative upland plant species are defined by the U.S. Fish and Wildlife Service (USFWS) and USACE as “plants that occur almost always under natural conditions in non-wetlands, and plants that occur in non-wetlands but are occasionally found in wetlands,” respectively. Furthermore, this portion of the project site exhibited significant disturbance (e.g., engineered fill and areas containing impervious surfaces). One facultative wetland plant species, common rush (*Juncus effuses*) was observed on the project site (Exhibit 1). FCS biologists further investigated the area by digging a soil pit and concluded that area lack both wetland hydrology and hydric soils. As such, the project site is likely not to contain jurisdictional wetland features; any fill or removal would not likely require a Section 404 permit under the federal Clean Water Act (CWA) or a Section 401 certification with the RWCB.

Additionally, the eastern portion of the project site is bounded by Grayson Creek. This stream flows out of the Walnut Creek watershed and into Pacheco Slough, which ultimately connects to Suisun Bay, a USACE-classified traditional navigable waterway (TNW). The connection from Grayson Creek to Suisun Bay makes the creek a likely water of the U.S. and jurisdictional under the Clean Water Act, based on its connectivity to a TNW. A project applicant would be required to abide by the City’s riparian setback ordinance and, if possible, avoid impacts to riparian habitat associated with Grayson Creek. Designing any project to avoid this likely jurisdictional area would ensure no further permitting or focused studies would be required.

Table 1: List of Plant Species Observed

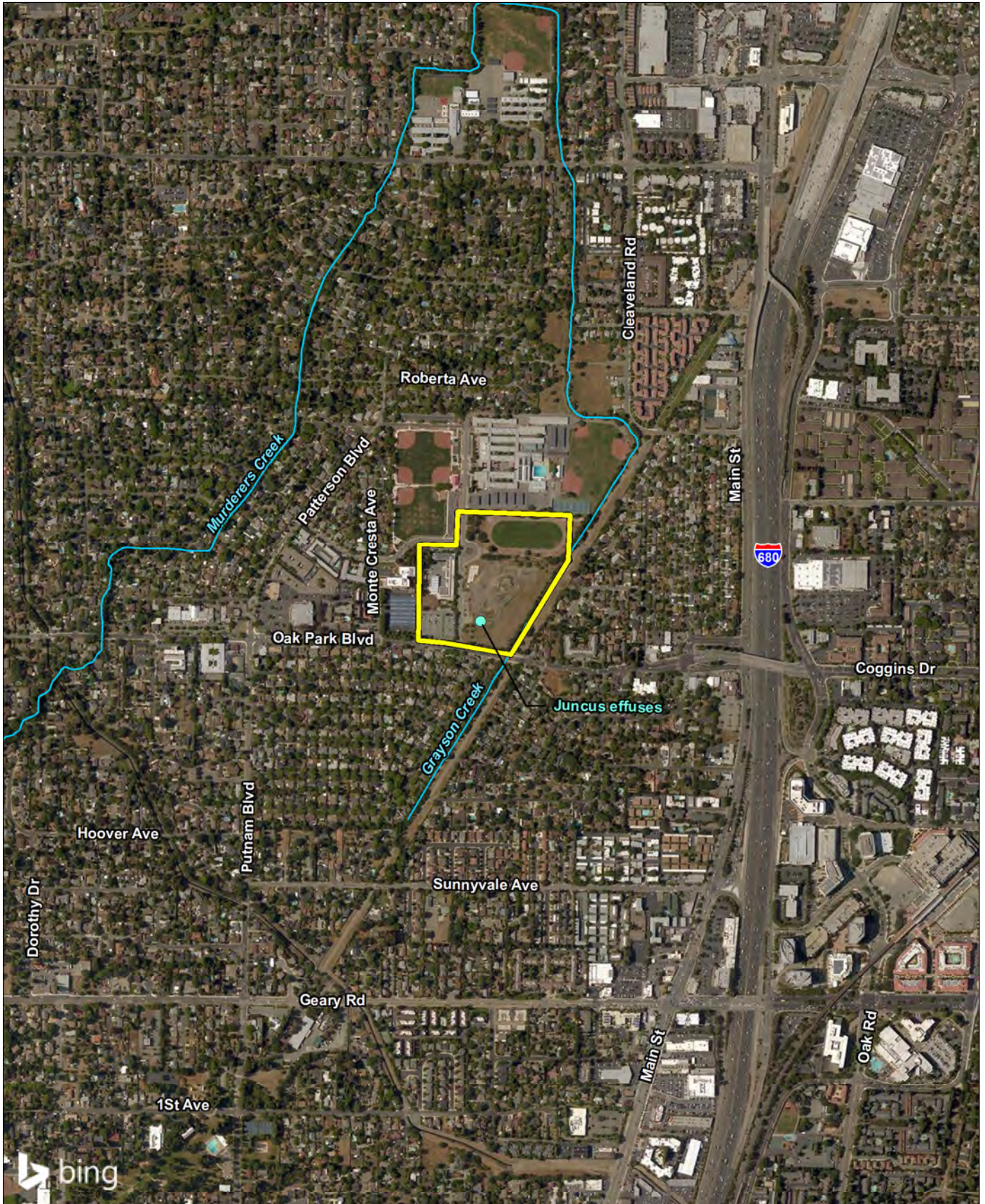
<i>Scientific Name</i>	Common Name	Wetland Indicator Status
<i>Avena barbata</i>	slender oat	UPL
<i>Brassica rapa</i>	field mustard	FACU
<i>Bromus diandrus</i>	ripgut brome	UPL
<i>Cortaderia selloana</i>	pampas grass	FACU
<i>Erodium botrys</i>	longbeak stork's bill	FACU
<i>Juncus effuses</i>	common rush	FACW
<i>Lotus corniculatus</i>	bird's-foot trefoil	FAC
<i>Malva parviflora</i>	cheeseweed	UPL
<i>Medicago polymorpha</i>	burclover	FACU
<i>Picris echioides</i>	bristly ox tongue	FAC
<i>Rumex crispus</i>	curly dock	FAC
<i>Vulpia myuros</i>	rat tail fescue	FACU

Notes:
OBL = Obligate, FACW = Facultative wetland, FAC = Facultative, FACU = Facultative upland
UPL = Upland, UPL = No indicator or no indicator listed.

Sincerely,



Brian Mayerle, Senior Biologist
FirstCarbon Solutions
2204 Plaza Drive, Suite 210
Rocklin, CA 95765



Source: Bing Aerial Imagery.

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Exhibit 1 Potential Wetlands

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D.2 - Database Searches and Soils Map

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Selected Elements by Common Name
California Department of Fish and Wildlife
California Natural Diversity Database



Query Criteria: Quad IS (Walnut Creek (3712281))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Alameda whipsnake <i>Masticophis lateralis euryxanthus</i>	ARADB21031	Threatened	Threatened	G4T2	S2	
Antioch Dunes evening-primrose <i>Oenothera deltooides ssp. howellii</i>	PDONA0C0B4	Endangered	Endangered	G5T1	S1	1B.1
big tarplant <i>Blepharizonia plumosa</i>	PDAST1C011	None	None	G1G2	S1S2	1B.1
burrowing owl <i>Athene cunicularia</i>	ABNSB10010	None	None	G4	S3	SSC
California red-legged frog <i>Rana draytonii</i>	AAABH01022	Threatened	None	G2G3	S2S3	SSC
California tiger salamander <i>Ambystoma californiense</i>	AAAAA01180	Threatened	Threatened	G2G3	S2S3	WL
Carquinez goldenbush <i>Isocoma arguta</i>	PDAST57050	None	None	G1	S1	1B.1
Congdon's tarplant <i>Centromadia parryi ssp. congdonii</i>	PDAST4R0P1	None	None	G3T2	S2	1B.1
Contra Costa goldfields <i>Lasthenia conjugens</i>	PDAST5L040	Endangered	None	G1	S1	1B.1
Diablo helianthella <i>Helianthella castanea</i>	PDAST4M020	None	None	G2	S2	1B.2
foothill yellow-legged frog <i>Rana boylei</i>	AAABH01050	None	Candidate Threatened	G3	S3	SSC
fragrant fritillary <i>Fritillaria liliacea</i>	PMLIL0V0C0	None	None	G2	S2	1B.2
Hall's bush-mallow <i>Malacothamnus hallii</i>	PDMAL0Q0F0	None	None	G2	S2	1B.2
hoary bat <i>Lasiurus cinereus</i>	AMACC05030	None	None	G5	S4	
Mt. Diablo fairy-lantern <i>Calochortus pulchellus</i>	PMLIL0D160	None	None	G2	S2	1B.2
northern California legless lizard <i>Anniella pulchra</i>	ARACC01020	None	None	G3	S3	SSC
obscure bumble bee <i>Bombus caliginosus</i>	IIHYM24380	None	None	G4?	S1S2	
oval-leaved viburnum <i>Viburnum ellipticum</i>	PDCPR07080	None	None	G4G5	S3?	2B.3
pallid bat <i>Antrozous pallidus</i>	AMACC10010	None	None	G5	S3	SSC
San Joaquin spearscale <i>Extriplex joaquinana</i>	PDCHE041F3	None	None	G2	S2	1B.2



Selected Elements by Common Name
California Department of Fish and Wildlife
California Natural Diversity Database



Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
slender silver moss <i>Anomobryum julaceum</i>	NBMUS80010	None	None	G5?	S2	4.2
slender-leaved pondweed <i>Stuckenia filiformis ssp. alpina</i>	PMPOT03091	None	None	G5T5	S2S3	2B.2
Townsend's big-eared bat <i>Corynorhinus townsendii</i>	AMACC08010	None	None	G3G4	S2	SSC
western bumble bee <i>Bombus occidentalis</i>	IIHYM24250	None	None	G2G3	S1	
western pond turtle <i>Emys marmorata</i>	ARAAD02030	None	None	G3G4	S3	SSC

Record Count: 25

Plant List

Inventory of Rare and Endangered Plants

6 matches found. *Click on scientific name for details*

Search Criteria

California Rare Plant Rank is one of [1B, 2B], FESA is one of [Endangered, Threatened], CESA is one of [Endangered, Threatened, Rare], Found in Quads 3812212, 3812211, 3812118, 3712282, 3712281, 3712188, 3712272 3712271 and 3712178;

[Modify Search Criteria](#)
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Scientific Name	Common Name	Family	Lifeform	Blooming Period	CA Rare Plant Rank	State Rank	Global Rank
Arctostaphylos pallida	pallid manzanita	Ericaceae	perennial evergreen shrub	Dec-Mar	1B.1	S1	G1
Chloropyron molle ssp. molle	soft bird's-beak	Orobanchaceae	annual herb (hemiparasitic)	Jun-Nov	1B.2	S1	G2T1
Clarkia franciscana	Presidio clarkia	Onagraceae	annual herb	May-Jul	1B.1	S1	G1
Erysimum capitatum var. angustatum	Contra Costa wallflower	Brassicaceae	perennial herb	Mar-Jul	1B.1	S1	G5T1
Holocarpha macradenia	Santa Cruz tarplant	Asteraceae	annual herb	Jun-Oct	1B.1	S1	G1
Oenothera deltoides ssp. howellii	Antioch Dunes evening-primrose	Onagraceae	perennial herb	Mar-Sep	1B.1	S1	G5T1

Suggested Citation

California Native Plant Society, Rare Plant Program. 2019. Inventory of Rare and Endangered Plants of California (online edition, v8-03 0.39). Website <http://www.rareplants.cnps.org> [accessed 03 January 2019].

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Contributors

[The Calflora Database](#)
[The California Lichen Society](#)
[California Natural Diversity Database](#)
[The Jepson Flora Project](#)
[The Consortium of California Herbaria](#)
[CalPhotos](#)

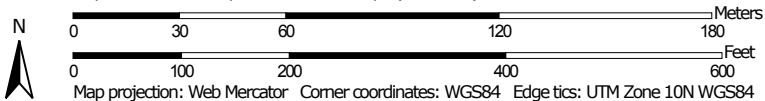
Questions and Comments

rareplants@cnps.org

Soil Map—Contra Costa County, California




Map Scale: 1:2,130 if printed on A landscape (11" x 8.5") sheet.





MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features



Blowout



Borrow Pit



Clay Spot



Closed Depression



Gravel Pit



Gravelly Spot



Landfill



Lava Flow



Marsh or swamp



Mine or Quarry



Miscellaneous Water



Perennial Water



Rock Outcrop



Saline Spot



Sandy Spot



Severely Eroded Spot



Sinkhole



Slide or Slip



Sodic Spot



Spoil Area



Stony Spot



Very Stony Spot



Wet Spot



Other



Special Line Features

Water Features



Streams and Canals

Transportation



Rails



Interstate Highways



US Routes



Major Roads



Local Roads

Background



Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service

Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

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

Soil Survey Area: Contra Costa County, California

Survey Area Data: Version 15, Sep 14, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 11, 2015—Jun 17, 2015

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Cc	Clear Lake clay, 0 to 15 percent slopes, MLRA 15	13.0	93.9%
CkB	Cropley clay, 2 to 5 percent slopes	0.8	6.1%
Totals for Area of Interest		13.8	100.0%

D.3 - Special-status Species Tables

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Table 1: Special-status Plant Species Potentially Occurring within the Project

Scientific Name Common Name	Status			Habitat Description ⁴	Potential to Occur and Rationale	Included in Impact Analysis
	USFWS ¹	CDFW ²	CNPS ³			
<i>Oenothera deltooides</i> ssp. <i>howellii</i> Antioch Dunes evening-primrose	FE	SE	1B.2	Interior dunes. Remnant river bluffs and sand dunes east of Antioch. 1–15 m.	Unlikely to Occur: Lack of suitable habitat and extremely high level of disturbance at site preclude presence. Lack of sand dunes on site.	No
<i>Isocoma arguta</i> Carquinez goldenbush	—	—	1B.1	Valley and foothill grassland. Alkaline soils, flats, lower hills. On low benches near drainages & on tops & sides of mounds in swale habitat. 1–50 m.	Unlikely to Occur: Lack of suitable habitat and extremely high level of disturbance at site preclude presence. Lack of suitable soil and drainages on site.	No
<i>Blepharizonia plumosa</i> big tarplant	—	—	1B.1	Valley and foothill grassland. Dry hills & plains in annual grassland. Clay to clay-loam soils; usually on slopes and often in burned areas. 60–505 m.	Unlikely to Occur: Lack of suitable habitat and extremely high level of disturbance at site preclude presence. Lack of clay soil and foothill grassland habitat on site.	No
<i>Centromadia parryi</i> ssp. <i>congdonii</i> Congdon's tarplant	—	—	1B.1	Valley and foothill grassland. Alkaline soils, sometimes described as heavy white clay. 0–230 m.	Unlikely to Occur: Lack of suitable habitat and extremely high level of disturbance at site preclude presence. Lack of alkaline soils on site.	No
<i>Lasthenia conjugens</i> Contra Costa goldfields	FE	—	1B.1	Valley and foothill grassland, vernal pools, alkaline playas, cismontane woodland, swales, low depressions, in open grassy areas. 1–450 m.	Unlikely to Occur: Lack of suitable habitat and extremely high level of disturbance at site preclude presence. Lack of vernal pools and cismontane woodlands onsite.	No
<i>Helianthella castanea</i> Diablo helianthella	—	—	1B.2	Broadleafed upland forest, chaparral, cismontane woodland, coastal scrub, riparian woodland, valley and foothill grassland. Usually in chaparral/oak woodland interface in rocky, azonal soils. Often in partial shade. 45–1070 m.	Unlikely to Occur: Lack of suitable habitat and extremely high level of disturbance at site preclude presence. Lack of upland forest and chaparral habitat onsite.	No
<i>Malacothamnus hallii</i> Hall's bush-mallow	—	—	1B.2	Chaparral, coastal scrub. Some populations on serpentine soils. 10–735 m.	Unlikely to Occur: Lack of suitable habitat and extremely high level of disturbance at site preclude presence. Lack of chaparral and coastal scrub onsite.	No

Table 1 (cont.): Special-status Plant Species Potentially Occurring within the Project

Scientific Name Common Name	Status			Habitat Description ⁴	Potential to Occur and Rationale	Included in Impact Analysis
	USFWS ¹	CDFW ²	CNPS ³			
<i>Fritillaria liliacea</i> fragrant fritillary	—	—	1B.2	Coastal scrub, valley and foothill grassland, coastal prairie, cismontane woodland. Often on serpentine; various soils reported though usually on clay, in grassland. 3–385 m.	Unlikely to Occur: Lack of suitable habitat and extremely high level of disturbance at site preclude presence. Lack of coastal scrub and cismontane woodland onsite.	No
Mt. Diablo fairy-lantern <i>Calochortus pulchellus</i>	—	—	1B.2	Chaparral, cismontane woodland, riparian woodland, valley and foothill grassland. On wooded and brushy slopes. 45–915 m.	Unlikely to Occur: Lack of suitable habitat and extremely high level of disturbance at site preclude presence. Lack of chaparral and cismontane woodland onsite.	No
San Joaquin spearscale <i>Extriplex joaquinana</i>	—	—	1B.2	Chenopod scrub, Meadows and seeps, Playas, Valley and foothill grassland. In seasonal alkali wetlands or alkali sink scrub with <i>Distichlis spicata</i> , <i>Frankenia</i> , etc. 0–800 m.	Unlikely to Occur: Lack of suitable habitat and extremely high level of disturbance at site preclude presence. Lack of chenopod scrub and meadows/seeps onsite.	No
oval-leaved viburnum <i>Viburnum ellipticum</i>	—	—	2B.3	Chaparral, cismontane woodland, lower montane coniferous forest. 215–1400 m.	Unlikely to Occur: Lack of suitable habitat and extremely high level of disturbance at site preclude presence. Lack of chaparral and cismontane woodland habitat onsite	No
slender silver moss <i>Anomobryum julaceum</i>	—	—	4.2	Broadleafed upland forest, lower montane coniferous forest, north coast coniferous forest. Moss which grows on damp rocks and soil; acidic substrates. Usually seen on roadcuts. 100–1000 m.	Unlikely to Occur: Lack of suitable habitat and extremely high level of disturbance at site preclude presence. Lack of upland forest and montane forest onsite.	No
slender-leaved pondweed <i>Stuckenia filiformis ssp. alpina</i>	—	—	2B.2	Marshes and swamps. Shallow, clear water of lakes and drainage channels. 5–2325 m.	Unlikely to Occur: Lack of suitable habitat and extremely high level of disturbance at site preclude presence. Lack of marshes and swamps onsite.	No
Contra Costa wallflower <i>Erysimum capitatum var. angustatum</i>	FE	SE	1B.1	Inland dunes. Stabilized dunes of sand and clay near Antioch along the San Joaquin River. 3–20 m.	Unlikely to Occur: Lack of suitable habitat and extremely high level of disturbance at site preclude presence. Lack of dunes on site.	No

Table 1 (cont.): Special-status Plant Species Potentially Occurring within the Project

Scientific Name Common Name	Status			Habitat Description ⁴	Potential to Occur and Rationale	Included in Impact Analysis
	USFWS ¹	CDFW ²	CNPS ³			
pallid manzanita <i>Arctostaphylos pallida</i>	FT	SE	1B.1	Broadleaved upland forest, closed-cone coniferous forest, chaparral, cismontane woodland, coastal scrub. Grows on uplifted marine terraces on siliceous shale or thin chert. May require fire. 180–460 m.	Unlikely to Occur: Lack of suitable habitat and extremely high level of disturbance at site preclude presence. Lack of upland and coniferous forest onsite.	No
<i>Chloropyron molle</i> ssp. <i>molle</i> soft bird's-beak	FE	CR	1B.2	Coastal salt marsh with <i>Distichlis</i> , <i>Salicornia</i> , <i>Frankenia</i> , etc. 0–5 m.	Unlikely to Occur: Lack of suitable habitat and extremely high level of disturbance at site preclude presence. Lack of coastal salt marsh onsite.	No
<i>Presidio clarkia</i> <i>Clarkia franciscana</i>	FE	SE	1B.1	Coastal scrub, valley and foothill grassland. Serpentine outcrops in grassland or scrub. 20–305 m.	Unlikely to Occur: Lack of suitable habitat and extremely high level of disturbance at site preclude presence. Lack of coastal scrub and valley grassland onsite.	No
<i>Holocarpha macradenia</i> Santa Cruz tarplant	FT	SE	1B.1	Coastal prairie, coastal scrub, valley and foothill grassland. Light, sandy soil or sandy clay; often with nonnatives. 10–220 m.	Unlikely to Occur: Lack of suitable habitat and extremely high level of disturbance at site preclude presence. Lack of coastal prairie and scrub onsite.	No
Code Designations						
¹ Federal Status: 2015 USFWS Listing				² State Status: 2015 CDFW Listing		
ESU = Evolutionary Significant Unit is a distinctive population. FE = Listed as endangered under the FESA. FT = Listed as threatened under the FESA. FC = Candidate for listing (threatened or endangered) under FESA. FD = Delisted in accordance with the FESA. FPD = Federally Proposed to be Delisted. MBTA = protected by the Migratory Bird Treaty Act — = Not federally listed				SE = Listed as endangered under the CESA. ST = Listed as threatened under the CESA. SSC = Species of Special Concern as identified by the CDFW. FP = Listed as fully protected under FGC. CFG = FGC =protected by FGC 3503.5 CR = Rare in California. — = Not state listed		
³ Habitat description: Habitat description adapted from CNDDDB (CDFW 2015a).						

Table 2: Special-status Wildlife Species Potentially Occurring within the Project

Scientific Name Common Name	Status		Habitat Description ³	Potential to Occur and Rationale	Included in Impact Analysis
	USFWS ¹	CDFW ²			
Reptiles					
<i>Masticophis lateralis euryxanthus</i> Alameda whipsnake	FT	ST	Typically found in chaparral and scrub habitats but will also use adjacent grassland, oak savanna and woodland habitats. Specifically, mostly south-facing slopes and ravines, with rock outcrops, deep crevices or abundant rodent burrows, where shrubs form a vegetative mosaic with oak trees and grasses.	Unlikely to Occur: Lack of suitable habitat and extremely high level of disturbance at site preclude presence. Lack of chaparral and scrub habitat onsite.	No
<i>Anniella pulchra</i> Northern California legless lizard	—	SSC	Sandy or loose loamy soils under sparse vegetation. Soil moisture is essential. They prefer soils with a high moisture content.	Unlikely to Occur: Lack of suitable habitat and extremely high level of disturbance at site preclude presence. Lack of sandy or loose loamy soils onsite.	No
<i>Emys marmorata</i> western pond turtle	—	SSC	A thoroughly aquatic turtle of ponds, marshes, rivers, streams and irrigation ditches, usually with aquatic vegetation, below 6000 ft elevation.	Low potential to occur: Marginal habitat within Grayson’s Creek and extremely high level of disturbance at site. While Grayson creek is nearby the project site, the water depth is too shallow and surrounded by urban development.	Yes
Birds					
<i>Athene cunicularia</i> burrowing owl	—	SSC	Open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.	Unlikely to Occur: While the ruderal area is open habitat, the lack of grasslands and low-growing vegetation and high urban activity within and surrounding the site preclude presence. Additionally, the site has experience infill, removing the potential for nests to occur in certain areas.	No
Mammals					
<i>Corynorhinus townsendii</i> Townsend's big-eared bat	—	SSC	Throughout California in a wide variety of habitats. Most common in mesic sites. Roosts in the open, hanging from walls and ceilings. Roosting sites limiting. Extremely sensitive to human disturbance.	Low potential to occur: Due to the suitable nesting habitat in the riparian woodland area along Grayson creek, there is low potential for this species to occur.	Yes

Table 2 (cont.): Special-status Wildlife Species Potentially Occurring within the Project

Scientific Name Common Name	Status		Habitat Description ³	Potential to Occur and Rationale	Included in Impact Analysis
	USFWS ¹	CDFW ²			
<i>Antrozous pallidus</i> Pallid bat	—	SSC	Found in deserts, grasslands, shrublands, woodlands, and forests. Most common in open, dry habitats with rocky areas for roosting. Roosts must protect bats from high temperatures. Species is very sensitive to disturbance of roosting sites.	Low potential to occur: Due to the suitable nesting habitat in the riparian woodland area along Grayson creek, there is low potential for this species to occur.	Yes
Amphibians					
<i>Rana draytonii</i> California red-legged frog	FT	SSC	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation. Requires 11–20 weeks of permanent water for larval development	Unlikely to Occur: Lack of suitable habitat and extremely high level of disturbance at site preclude presence. No deep pools are present in Grayson creek	Yes
<i>Ambystoma californiense</i> California tiger salamander	FT	ST	Need underground refuges, especially ground squirrel burrows, and vernal pools or other seasonal water sources for breeding.	Unlikely to Occur: Lack of suitable habitat and extremely high level of disturbance at site preclude presence. Lack of underground refuges within or nearby project boundaries.	No
<i>Rana boylei</i> foothill yellow-legged frog	—	CT	Foothill yellow-legged frogs are found in or near rocky streams in a variety of habitats. Unlike most other ranid frogs in California, this species is rarely encountered (even on rainy nights) far from permanent water.	Unlikely to Occur: Lack of suitable habitat and extremely high level of disturbance at site preclude presence. Lack of deep water depth and lack of recorded sightings within or nearby project site.	No
Code Designations					
¹ Federal Status: 2015 USFWS Listing			² State Status: 2015 CDFW Listing		
ESU = Evolutionary Significant Unit is a distinctive population. FE = Listed as endangered under the FESA. FT = Listed as threatened under the FESA. FC = Candidate for listing (threatened or endangered) under FESA. FD = Delisted in accordance with the FESA. FPD = Federally Proposed to be Delisted. MBTA = protected by the Migratory Bird Treaty Act — = Not federally listed			SE = Listed as endangered under the CESA. ST = Listed as threatened under the CESA. SSC = Species of Special Concern as identified by the CDFW. FP = Listed as fully protected under FGC. CFG = FGC =protected by FGC 3503.5 CR = Rare in California. — = Not state listed		
³ Habitat description: Habitat description adapted from CNDDDB (CDFW 2015a).					

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D.4 - California Red-Legged Frog Habitat Assessment

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Memo

Date: August 16, 2019

To: John Baker, Project Manager
City of Pleasant Hill

From: Robert Carroll, Biologist
FirstCarbon Solutions

Subject: California Red-Legged Frog Habitat Existing Conditions Assessment

Introduction

This preliminary habitat existing conditions assessment for the California red-legged frog (*Rana draytonii*; CRLF) is intended to provide information on the species and potential habitats associated with the Grayson Creek Outfalls project site. This assessment follows guidelines found in the *Revised Guidance on Site Assessments and Field Surveys for the California Red-legged Frog* issued by the United States Fish and Wildlife Service (USFWS 2005; Attachment A).

Project Site Location

The Grayson Creek Outfalls project site is located in the City of Pleasant Hill, Contra Costa County, California (Exhibit 1, Attachment B). The 11.62-acre project site is generally located at the northeastern corner of Oak Park Boulevard and Monticello Avenue (Exhibit 2, Attachment B).

California Red Legged Frog

The CRLF is listed as a federally threatened wildlife species and is designated as a California Species of Special Concern. The project site is not located within the historical or current potential range of this species; furthermore, it is not within designated CRLF critical habitat. Historically, CRLF populations were found from Shasta County south to Baja California, along both the Coast Range and the west slope of the Sierra Nevada at elevations below 1,500 meters (Jennings and Hayes 1994). The current range is greatly reduced, with a few highly localized populations in the Sierra Nevada and most remaining populations occurring along the coast from Marin County to Ventura County. Only a few drainages are currently known to support CRLF in the Sierra Nevada foothills, compared with more than 60 historical records for this species. Such drastic declines and extirpation from many historically occupied sites led to the listing of CRLF as a federally threatened species in 1996 (USFWS 1996).

Multiple factors appear to be responsible for the decline of CRLF (Pechmann and Wake 1997; Kiesecker et al. 2001; USFWS 2002; USFWS 2006). The main factor for the decline appears to be habitat alteration associated with urbanization and development; however, ultraviolet (UV-B) radiation (Blaustein et al. 1994, 1995) and wind-borne chemicals from upwind agricultural land uses (LeNoir et al. 1999; Rouse et

al. 1999; Sparling et al. 2000; Davidson et al. 2001) also appear to have contributed to their decline. Other factors include disease, such as chytrid fungus (Carey 1993 and 2000; Daszak et al. 1999), trematode parasites, and competition and predation by introduced species such as fishes, bullfrogs, and crayfish (Cook and Jennings 2001; USFWS 2002).

California red-legged frogs occur primarily in perennial or ephemeral ponds, pools, and streams, where water remains long enough (14–28 weeks) for breeding and metamorphosis of the young (Fellers 2005; Jennings and Hayes 1994). Specific breeding sites include streams, creeks, ponds, marshes, sag ponds, deep pools, backwater areas, dune ponds, lagoons, and estuaries.

Methods

The California Natural Diversity Database (CNDDDB; CDFW 2019) was queried to evaluate the local distribution of CRLF occurrences within 1–5 miles of the project site. A basemap illustrating a 1-mile and a 5-mile radius surrounding the project site was created using Geographic Information Systems software. In addition, the National Wetlands Inventory (NWI) database was queried for features including: 1) freshwater ponds, 2) freshwater emergent wetlands, and 3) riverine wetlands and/or streams in the project vicinity, and these features were plotted on the basemap.

Following the procedures outlined in the USFWS's *Revised Guidance on Site Assessments and Field Surveys for the California Red-legged Frog* (2005), all potential CRLF habitats within a 1-mile radius of the project site were visited, photographed, and assessed by FirstCarbon Solutions (FCS) biologist, Robert Carroll, on January 30, 2019. Parameters recorded included size (approximate length and width), maximum depth, stream gradient, presence of pools, dominant vegetation, substrate, and a description of the bank.

Results

No CNDDDB records of CRLF have been previously recorded within a 1-mile radius of the project site, and no potential habitats exist within a 1-mile radius. The nearest CRLF record was from April 2016 in Briones Regional Park, approximately 4 miles west of the project site. According to the CNDDDB, 18 adults were observed in a stock pond; however, it was noted that bullfrogs outnumbered the CRLF in the stock pond by a factor of 4 to 5. Two additional CNDDDB records are located within 5 miles of the project site, both within Briones Regional Park, a designated area of critical habitat to the west (Exhibit 3, Attachment B).

Based on aerial photography, maps, and a general knowledge of the project area, a total of two aquatic features were evaluated for the potential presence of CRLF. Both sites are located on the East Fork of Grayson's Creek, connected via a culvert under Oak Park Boulevard. Site 1 is located north of Oak Park Boulevard, and site 2 is located south of Oak Park Boulevard and included approximately 900 and 600 linear foot segments, respectively (Exhibit 4, Attachment B). Photographs of each site and copies of site assessment datasheets are provided in Attachment C and Attachment D.

Based on the results of this CRLF habitat existing conditions assessment, it is FCS's opinion that this species is absent from the project site. As mentioned above, the nearest recorded occurrence of CRLF was in a stock pond in Briones Regional Park, approximately 4 miles west from the project site. Additionally, there have been no documented occurrences of CRLF in Grayson Creek or its tributaries, and the microhabitat on the project site lacks deep pooling features and quality upland refuge for breeding and estivation, respectively. Therefore, no CRLF or CRLF habitat exists on the project site.

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John Baker
February 11, 2019

Attachment 1

Survey Guidance Protocols



U.S. Fish and Wildlife Service



Revised Guidance on Site Assessments and Field Surveys for the California Red-legged Frog

August 2005

I. Introduction

The U.S. Fish and Wildlife Service (Service) issued guidance on conducting site assessments and surveys for the California red-legged frog (*Rana aurora draytonii*) (CRF) on February 18, 1997 (1997 Guidance). Since then, the Service has reviewed numerous CRF site assessments and surveys results, accompanied wildlife biologists in the field during the preparation and performance of site assessments and CRF surveys, and consulted with species experts on the effectiveness of the 1997 Guidance. Based on our review of the information, the Service has determined that the survey portion of the 1997 Guidance is less likely to accurately detect CRF than previously thought, especially in certain portions of the species range and particularly where CRF exist in low numbers. In response to the need for new guidance, the Service has prepared this *Revised Guidance on Site Assessment and Field Surveys for the California Red-legged Frog* (Guidance).

Similar to the 1997 Guidance, two procedures are recommended in the new Guidance to accurately assess the likelihood of CRF presence in the vicinity of a project site: (1) an assessment of CRF locality records and potential CRF habitat in and around the project area and, (2) focused field surveys of breeding pools and other associated habitat to determine whether CRF are likely to be present.

Because CRF are known to use aquatic, riparian, and upland habitat, they may be present in any of these habitat types, depending on the time of year, on any given property. For sites with no suitable aquatic breeding habitat, but where suitable upland dispersal habitat exists, it is difficult to support a negative finding with the results of any survey guidance. Therefore, this Guidance focuses on site assessments and surveys conducted in and around aquatic and riparian habitat.

This Guidance was developed by the Service's Sacramento Fish and Wildlife Office in coordination with the Ventura Fish and Wildlife Office. Input by field biologists and scientists experienced in surveying for the CRF was also used in the development of this Guidance.

If the following Guidance is followed in its entirety, the results of the site assessments and surveys will be considered valid by the Service for two (2) years, unless determined otherwise on a case-by-case basis by the appropriate Service Fish and Wildlife Office. After two (2) years, new surveys conducted under the most current Service Guidance may be required, if deemed necessary by the appropriate Service Fish and Wildlife Office.

Modifications of this Guidance for specific projects or circumstances may be approved by the appropriate Fish and Wildlife Office; however, we strongly recommend that all modifications be reviewed and approved by the Service prior to implementation.

II. Permit Requirements

Unless otherwise authorized, individuals participating in site assessments and surveys for CRF may **NOT** take the California red-legged frog during the course of site assessments or survey activities. Take may only be authorized via section 7 or section 10 of the Endangered Species Act of 1973, as amended. Typically, take associated with survey activities is authorized via issuance of section 10(a)(1)(A) permits. For reference, an application for a section 10(a)(1)(A) permit is available through the appropriate Fish and Wildlife Office or online at: <http://forms.fws.gov/3-200-55.pdf>.

The site assessment and survey methods recommended in this Guidance do NOT require the surveyor to have a permit. As stated below, the surveyor must be otherwise qualified to conduct the surveys.

It is the responsibility of the surveyor to ensure all other applicable permits are obtained and valid (e.g., state scientific collection permits), and that permission from private landowners or land managers is obtained prior to accessing a site and beginning site assessments and surveys.

III. Site Assessments

To prevent any unnecessary loss of time or use of resources, it is essential that completed site assessments be submitted to the appropriate Service Fish and Wildlife Office for review in order to obtain further guidance from the Service before conducting surveys.

Surveyors are encouraged to implement the decontamination guidelines provided in Appendix B before conducting a site assessment to prevent the spread of parasites and diseases to CRF and other amphibians.

Careful evaluation of the following information about CRF and their habitats in the vicinity of a project or other land use activities is important because this information indicates the likelihood of the presence of CRF. This information will help determine whether it is necessary to conduct field surveys.

To conduct a site assessment for CRF, complete the data sheet in Appendix D and return it with any necessary supporting documentation to the appropriate Service Fish and Wildlife Office for review prior to initiating surveys. The following information is critical to completing a proper site assessment:

1. Is the site within the current or historic range of the CRF?

Since knowledge of the distribution of the CRF is likely to change as new locality information becomes available, biologists are expected to contact the appropriate Fish and Wildlife Office (see section IV below) to determine if a project site is within the range of this species.

2. Are there known records of CRF at the site or within a 1.6-kilometer* (1-mile) radius of the site?

The biologist should consult the California Natural Diversity Data Base (CNDDDB) maintained by the California Department of Fish and Game's (CDFG) Natural Heritage Division as a starting point to determine if there are reported localities of CRF within a 1.6-kilometer (1-mile) radius of the site. Information on the CNDDDB is attached to the end of this document. Data entry into the CNDDDB is not always current nor do all surveyors submit reports to the CNDDDB, thus it is essential that other information sources on local occurrences of CRF be consulted. These sources may include, but are not limited to, biological consultants, local residents, amateur herpetologists, resource managers and biologists from municipal, State, and Federal agencies, environmental groups, and herpetologists at museums and universities. The biologist should report to the Service all known CRF records at the project site and within a 1.6-kilometer (1-mile) radius of the project boundaries. One-point-six (1.6) kilometers (1 mile) was selected as a proximity radius to a project site based on telemetry data collected by Bulger *et al.* (2003), rounded to the nearest whole mile. This distance may be subject to change when new data becomes available, or based on site-specific conditions, so it is advised that surveyors check with the appropriate Service Fish and Wildlife Office to ensure they are using the most up-to-date information.

<p>* IMPORTANT: One-point-six (1.6) kilometers (1 mile) radius is a general guideline. The appropriate Service Fish and Wildlife Office will advise surveyors of the most appropriate distance for each specific project location on a case-by-case basis.</p>

3. What are the habitats within the project site and within 1.6 kilometers* (1 mile) of the project boundary?

In order to properly characterize the habitat within 1.6 kilometers (1 mile) of the project site, individuals conducting site assessments must visit the project site and as much of the surrounding habitat within 1.6 kilometers (1 mile) of the project site as possible. Aerial photographs, maps, and other resources should be consulted as well to ensure all possible accessible habitats are considered. Based on this reconnaissance assessment, the surveyor shall describe the upland and aquatic habitats within the project site and within 1.6 kilometers (1 mile) of the project boundary. The aquatic habitats should be mapped and characterized (*e.g.*, ponds vs. creeks, pool vs. riffle, ephemeral vs. permanent (if ephemeral, give date it goes dry), vegetation (type, emergent, overhanging), water depth at the time of the site assessment, bank full depth, stream gradient (percent slope), substrate, and description of bank). The presence of

bullfrogs (*Rana catesbeiana*) and other aquatic predators such as centrarchid fishes (bass, perch, sunfish) should be documented even though their presence does not negate the presence of CRF. Upland habitats should be characterized by including a description of upland vegetation communities, land uses, and any potential barriers to CRF movement. The information provided in Appendix A serves as a guide to the features that will indicate possible CRF habitat.

4. Report the results of the site assessment

A site assessment report shall be provided to the appropriate Fish and Wildlife Office for review. Reports should include, but are not limited to, the following information:

- 1) Copies of the data sheet provided at Appendix D;
- 2) Copies of field notes and all other supporting documentation including:
 - A. A list of all known CRF localities within 1.6 kilometers* (1 mile) of the project site boundaries;
 - B. Photographs of the project site (photopoints shall be indicated on an accompanying map);
 - C. A map of the site showing all of the habitat types and other important features as well as the location of any species detected during the site assessment within 1.6 kilometers (1 mile) of the project site boundaries. Maps shall be either copies of those portions of the U.S. Geological Service 7.5-minute quadrangle map(s) or geographic information system (GIS) data;
 - D. A description of the project and/or land use that is being proposed at the site.

Based on the information provided in the site assessment report, the Service will provide guidance on how CRF issues should be addressed, including whether field surveys are appropriate, where the field surveys should be conducted, and whether incidental take authorization should be obtained through section 7 consultation or a section 10 permit pursuant to the Endangered Species Act.

IV. Field Surveys

Surveyors are encouraged to implement the decontamination guidelines provided in Appendix B before conducting surveys to prevent the spread of parasites and diseases to CRF and other amphibians.

To avoid and minimize the potential of harassment or harm to CRF, no additional surveys will be conducted in an area once occupancy has been established, unless the surveying effort is part of a Service-approved project to determine actual numbers of frogs at a site.

The Service should be notified in writing (e.g., email) by the surveyor within three (3) working

days once a CRF is detected. The Service will provide guidance to the surveyor regarding the need to collect additional information such as population size, age class, habitat use, *etc.*

A. Qualifications of Surveyors

Surveyors must be familiar with the distinguishing physical characteristics of all life stages of the CRF, other anurans of California, and with introduced, exotic species such as the bullfrog and the African clawed frog (*Xenopus Laevis*) prior to conducting surveys according to this Guidance.

Surveyors must submit their qualifications to the Service along with their survey results.

A field guide should be consulted (*e.g.*, Wright and Wright 1949; Stebbins 2003) to confirm the identification of amphibians encountered during surveys. Surveyors also should be familiar with the vocalizations of the CRF and other amphibians found in California. Recordings of these vocalizations are available through various sources (*e.g.*, Davidson 1995). Surveyors that do not have experience with the species are required to obtain training on locating and identifying CRF adult, larval and egg stages before survey results are accepted. Training may include attendance at various workshops that have an emphasis on the biology of the California red-legged frog, accompanied by an appropriate level of field identification training; field work with individuals who possess valid 10(a)(1)(A) permits for the CRF; and experience working with ranids and similar taxa.

In some localities more intensive surveys (*e.g.*, dip-netting larvae and adults) may be desirable to document the presence of CRF. In order to conduct such focused surveys a valid section 10(a)(1)(A) permit is required (refer to introduction section for information on how to apply for a section 10(a)(1)(A) permit). Applicants will be considered qualified for a section 10(a)(1)(A) permit if they meet the Service's most current qualification requirements. At a minimum, prospective applicants must:

- 1) Possess a Baccalaureate degree in biology, ecology, a resource management-related field, or have equivalent relevant experience;
- 2) Have completed course work in herpetology and study-design/survey-methodology or have equivalent relevant experience;
- 3) Have verifiable experience in the design and implementation of amphibian surveys or research or have equivalent relevant experience;
- 4) Have verifiable experience handling and identifying a minimum of 10 CRF, or similar ranid species, comprised of a minimum of 5 adults and a combination of larva and juveniles;
- 5) Obtain a minimum of 40 hours of field experience through assisting in surveys for the CRF during which positive identification is made;
- 6) Have familiarity with suitable habitats for the species and be able to identify the major vegetative components of communities in which California red-legged frog surveys or

research may be conducted.

- 7) Have familiarity with and be able to identify native and non-native amphibians that may co-occur with the listed species.

B. Survey Periods

Surveys may begin anytime during January and should be completed by the end of September. Multiple survey visits conducted throughout the survey-year (January through September) increases the likelihood of detecting the various life stages of the CRF. For example, adult frogs are most likely to be detected at night between January 1 and June 30, somewhere in the vicinity of a breeding location, whereas, sub-adults are most easily detected during the day from July 1 through September 30.

Due to the geographic and yearly variation in egg laying dates, it is not possible to specify a range of dates that is appropriate for egg surveys throughout the range of the CRF. The following table summarizes the best approximated times to survey for CRF egg masses.

Geographic Area	Best Survey Period*
Northern California along the coast and interior to the Coast Range (north of Santa Cruz County)	January 1 and February 28
Southern California along the coast and interior through the Coast Range (south of, and including Santa Cruz County)	February 25 and April 30
Sierra Nevada Mountains and other high-elevation locations	Should not begin before April 15

Site specific conditions may warrant modifications to the timing of survey periods, modifications must be made with the Service's approval prior to conducting the surveys.

Survey Methodology

This Guidance recommends a total of **up to** eight (8) surveys to determine the presence of CRF at or near a project site. Two (2) day surveys and four (4) night surveys are recommended during the breeding season; one (1) day and one (1) night survey is recommended during the non-breeding season. Each survey must take place at least seven (7) days apart. At least one survey must be conducted prior to August 15th. The survey period must be over a minimum period of 6 weeks (*i.e.*, the time between the first and last survey must be at least 6 weeks). Throughout the species' range, the non-breeding season is defined as between July 1 and September 30.

If CRF are identified at any time during the course of surveys, no additional surveys will be conducted in the area, unless the surveying effort is part of a Service-approved project to determine actual numbers of frogs at a site.

The following methodology shall be followed unless otherwise specified, or approved by the

appropriate Service Fish and Wildlife Office:

- 1) Upon arrival at the survey site, surveyors should listen for a few minutes for frogs calling, prior to disturbing the survey site by walking or looking for eye shine using bright lights. If CRF calls are identified, the surveyor should note this information on the survey data sheet and note the approximate location of the call. Once the survey begins, the surveyor should pay special attention to the area where the call originated in an attempt to visually identify the frog.
- 2) The most common method of surveying for CRF is the visual-encounter survey. This survey is conducted either during daylight hours or at night by walking entirely around the pond or marsh or along the entire length of a creek or stream while repeatedly scanning for frogs. This procedure allows one to scan each section of shore from at least two different angles. Surveyors should begin by first working along the entire shoreline, then by entering the water (if necessary and no egg masses would be crushed or disturbed), and visually scanning all shoreline areas and all aquatic habitats identified in the site assessment. Generally, surveyors shall focus on all open water to at least 2 meters (6.5 feet) up the bank. When wading, surveyors must take maximum care to avoid disturbing sediments, vegetation, or larvae. When walking on the bank, surveyors shall take care to not crush rootballs, overhanging banks, and stream-side vegetation that might provide shelter for frogs. Surveys must cover the entire area, otherwise the remaining survey area must be surveyed the next day/night that weather conditions allow (both visits would constitute one day/night survey).
- 3) Day surveys may be conducted on the same day as a night survey.

The main purpose of day surveys during the breeding season is to look for larvae, metamorphs, and egg masses; the main purpose of day surveys during the non-breeding season is to look for metamorphosing sub-adults, and non-breeding adults. Daytime surveys shall be conducted between one hour after sunrise and one hour before sunset.

4) Night surveys

The main purpose of night surveys is to identify and locate adult and metamorphosed frogs. Conditions and requirements for conducting night surveys are as follows:

- A. Night surveys must commence no earlier than one (1) hour after sunset.
- B. Due to diminished visibility, surveys should not be conducted during heavy rains, fog, or other conditions that impair the surveyor's ability to accurately locate and identify frogs.
- C. Nighttime surveys shall be conducted with a Service-approved light such as a Wheat Lamp, Nite Light, or sealed-beam light that produces less than 100,000 candle watt. Lights that the Service does not accept for surveys are lights that are either too dim or too bright. For example, Mag-Light-type lights and other

types of flashlights that rely on 2 or 4 AA's/AAA's, 2 C's or 2 D batteries. Lights with 100,000 candle watt or greater are too bright and also would not meet Service requirements.

- D. The Service approved light must be held at the surveyor's eye level so that the frog's eye shine is visible to the surveyor.
- E. The use of binoculars is a must in order to effectively see the eye shine of the frogs. Surveys conducted without the use of binoculars may call in to question the validity of the survey.

5) Weather conditions.

Weather and visibility conditions must be consistent throughout the duration of the survey; if weather conditions become unsuitable, the survey must be completed at another time when conditions are better suited to positively locating and identifying frogs. Suitable conditions are as follows:

- A. Air temperature at the survey site must be at least 10 degrees Celsius (50 degrees Fahrenheit). Frogs are less likely to be active when temperatures are below 10 degrees Celsius (50 degrees Fahrenheit).
- B. Wind speed must not exceed 8 kilometers/hour (5 miles/hour) at the survey site. High wind speeds affect temperatures and the surveyor's ability to hear frogs calling.
- C. Surveys must be conducted under clear to partly cloudy skies (high clouds are okay) but not under dense fog or during heavy rain, as stated above. Surveys may be conducted during light rains.

Surveyors should carefully consider weather conditions prior to initiating a survey. Ask yourself, "Can I collect accurate, reliable data under the existing weather conditions" prior to proceeding with the survey. Weather conditions will be taken into account when the data is reviewed by the appropriate Service Fish and Wildlife Service Office.

6) Decontamination of equipment

In an effort to minimize the spread of terrestrial and aquatic pathogens, all aquatic survey equipment including chest waders, wet suits, float tubes, kayaks, shall be decontaminated before entering potential CRF habitat using the guidelines in Appendix B. Careful attention shall be taken to remove all dirt from boots, chest waders, wetsuits, float tubes, kayaks, and other equipment before placing equipment into the water.

7) Unidentified larvae, sub-adults, and adults

If the larval life stage is the only life stage detected and the larvae are not identified to species (or similarly, if sub-adult or adult frogs are observed but not identified to

species), the surveyor must either return to the habitat to identify the frog in another life stage or obtain the appropriate permit (*e.g.*, section 10(a)(1)(A) permit) authorization allowing the surveyor to handle CRF and larvae. In order for the Service to consider a survey to be complete, all frogs encountered must be accurately identified.

8) Reporting results of the surveys

A species survey report shall be provided to the appropriate Fish and Wildlife Office for review. Reports should include, but are not limited to, the following information:

1. Copies of the data sheets provided at Appendix E;
2. Copies of field notes and all other supporting documentation including:
 - A. Photographs of all CRF observed during the survey and of the habitat where each individual was located, if possible without harming or harassing the individual;
 - B. A map of the site showing the location of any species detected during the survey. Maps shall be either copies of those portions of the U.S. Geological Service 7.5-minute quadrangle map(s) *or* geographic information system (GIS) data;

Based on the information provided in the site assessment report and the survey results, the Service will provide guidance on how CRF issues should be addressed through the section 7 or section 10 processes.

All information on CRF distribution resulting from field surveys shall be sent to the California Natural Diversity Database (CNDDDB). CNDDDB forms shall be completed, as appropriate, for each listed species identified during the survey(s) and submitted to the California Department of Fish and Game, Wildlife Habitat Data Analysis Branch, 1807 13th Street, Suite 202, Sacramento, California 95814, with copies submitted to the appropriate Service Fish and Wildlife Office. Each form sent to the CDFG shall have an accompanying 1:24,000 scale USGS map (or an exact scale photocopy of the appropriate portion(s) of the map) -or- Global Information System (GIS) data coverage of the site. Copies of the form can be obtained from the CDFG at the above address (telephone: 916-324-3812) or online at: <http://www.dfg.ca.gov/whdab/html/animals.html>. Additional information about the CNDDDB is available in Appendix C.

The Service may not accept the results of field surveys conducted under this Guidance for any of the following reasons:

- A. if the appropriate Service Fish and Wildlife Office was not contacted to review the results of the site assessment prior to field surveys being conducted;
- B. if field surveys were conducted in a manner inconsistent with this Guidance or with

- survey methods not previously approved by the Service;
- C. if field surveys were incomplete;
- D. if surveyors were not adequately qualified to conduct the surveys;
- E. if the reporting requirements, including submission of CNDDDB forms, were not fulfilled.

IV. Service Contacts

There are three Service Fish and Wildlife Offices within the range of the CRF (see Map 1). The appropriate office to contact regarding site assessments or survey authorization depends on the location where the surveys are to be conducted.

For project sites and land use activities in Santa Cruz, Monterey, San Benito, San Luis Obispo, Santa Barbara, and Ventura Counties, portions of Los Angeles and San Bernardino Counties outside of the Los Angeles Basin, and portions of Kern, Inyo and Mono Counties east of the Sierra Crest and south of Conway Summit, contact:

Ventura Fish and Wildlife Office,
2493 Portola Road, Suite B
Ventura, California, 93003
(805/644-1766).

For project sites and land use activities in all other areas of the State south of the Transverse Ranges, contact:

Carlsbad Fish and Wildlife Office
Attn: Recovery Permit Coordinator
6010 Hidden Valley Road
Carlsbad, California, 92009
(760/431-9440).

For project sites and land use activities in all other areas of the State, contact:

Sacramento Fish and Wildlife Office
2800 Cottage Way, Suite W-2605
Sacramento, California 95825
(916/414-6600).
(916/414-6713, fax)

For information on section 10(a)(1)(A) recovery permits, contact:

Regional Office,
Eastside Federal Complex
911 N.E., 11th Avenue
Portland, Oregon 97232-4181
(503/231-6241)



* These are independent offices overlapping with the Sacramento Fish and Wildlife Office. Their work primarily focuses on salmonid restoration, fishery monitoring and Forest Plan Implementation.

Map 1. Map of California showing jurisdictional boundaries of Service Fish and Wildlife Offices.

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Appendix A.

California red-legged frog identification and ecology.

1. Identification

The following information may aid surveyors in the identification of California red-legged frogs and similar species. However, all surveyors are expected to consult field guides (Wright and Wright 1949; Davidson 1995; Stebbins 2003) for further information.

General Description

The California red-legged frog (*Rana aurora draytonii*), is a relatively large aquatic frog ranging from 4 to 13 centimeters (1.5 to 5 inches) from the tip of the snout to the vent. From above, the California red-legged frog can appear brown, gray, olive, red or orange, often with a pattern of dark flecks or spots. The skin usually does not look rough or warty. The back of the California red-legged frog is bordered on either side by an often prominent dorsolateral fold of skin running from the eye to the hip. The hindlegs are well-developed with large webbed feet. A cream, white, or orange stripe usually extends along the upper lip from beneath the eye to the rear of the jaw. The undersides of adult California red-legged frogs are white, usually with patches of bright red or orange on the abdomen and hindlegs. The groin area can show a bold black mottling with a white or yellow background.

Adults

Positive diagnostic marks should be used to accurately distinguish California red-legged frogs from other species of frogs that may be observed. A positive diagnostic mark is an attribute of the animal that will not be found on any other animal likely to be encountered at the same locality. The following features are positive diagnostic marks that, if observed, will distinguish California red-legged frogs from foothill yellow-legged frogs (*Rana boylei*) and bullfrogs (*Rana catesbeiana*):

- a. Prominent dorsolateral folds (thick upraised fold of skin running from eye to hip) on any frog greater than 5 centimeters (2 inches) long from snout to vent. Young yellow-legged frogs can show reddish folds; these usually fade as the frogs mature.
- b. Bright red dorsum.
- c. Well defined stripe as described above running along upper lip.

Since California red-legged frogs are often confused with bullfrogs, surveyors should note those features that might be found on bullfrogs that will rarely be observed on California red-legged frogs. These features are:

- a. Absence of the dorsolateral fold.
- b. Bright yellow on throat.
- c. Uniform bright green snout.
- d. Tympanum (ear disc) distinct and much larger than eye.

Please note that some frogs may lack all of the above characteristics given for both California red-legged frogs and bullfrogs. Surveyors should regard such frogs as unidentified, unless it is clearly identified as another species.

California red-legged frogs are cryptic because their coloration tends to help them blend in with their surroundings, and they can remain immobile for great lengths of time. When an individual California red-legged frog is disturbed, it may jump into the water with a distinct “plop.” The California red-legged frog may do this either when the surveyor is still distant or when a surveyor is very near. Bullfrogs exhibit similar behavior but will often emit a “squawk” as they dive into the water. Because a California red-legged frog is unlikely to make such a sound, a “squawk” from a fleeing frog will be considered sufficient to positively identify the frog as a bullfrog.

Larvae

Tadpoles may be trapped and handled only by those with a valid 10(a)1(A) permit. California red-legged frog larvae range from 14 to 80 millimeters (0.5 to 3.25 inches) in length. They are greenish to generally brownish color with darker marbling and lack distinct black or white spotting or speckling. Large California red-legged frog larvae often have a wash of red coloration on their undersides and a very small single row of evenly spaced whitish or gold flecks along the side where the dorsolateral fold will develop. Other features to look for to identify California red-legged frog larvae include: eyes set well in from the outline of the head (contrasts with treefrogs (*Hyla* spp.)), oral papillae on both the sides of the mouth and the bottom of the mouth (contrasts with *Bufo* spp.), well developed oral papillae on the sides of the mouth (contrasts with other subspecies of red-legged frogs (*Rana aurora* spp.) and spadefoot toads (*Scaphiopus* spp.)), generally mottled body and tail with few or no distinct black spots on tail fins (contrasts with bullfrogs), and two to three tooth rows on the top and bottom (contrasts with foothill yellow-legged frogs).

Eggs

California red-legged frogs breed during the winter and early spring from as early as late November through April and May. Adults engage in courtship behaviors that result in the female depositing from 2,000 to 6,000 eggs, each measuring between 2 and 3 millimeter (0.1 inches). California red-legged frog eggs are typically laid in a mass attached to emergent vegetation near the surface of the water, where they can be easily dislodged. However, egg masses have been detected lying on the bottom of ponds. The egg mass is well defined and

about the size of a softball. Eggs hatch within 6 to 14 days after deposition at which time the newly hatched larvae are delicate and easily injured or killed. California red-legged frog larvae transform into juvenile frogs in 3.5 to 7 months.

During the time that red-legged frog egg surveys are conducted, other amphibian eggs may be found including those of Pacific treefrogs, spadefoot toads, California tiger salamanders, and newts. Bullfrogs and foothill yellow-legged frogs lay their eggs later in the season. Field guides should be consulted for additional information on egg identification.

2. Habitat

California red-legged frogs occur in different habitats depending on their life stage, the season, and weather conditions. Rangewide, and even within local populations, there is much variation in how frogs use their environment; in some cases, they may complete their entire life cycle in a particular habitat (*i.e.*, a pond is suitable for all life stages), and in other cases, they may seek multiple habitat types (U.S. Fish and Wildlife Service 2002).

Breeding habitat

All life history stages are most likely to be encountered in and around breeding sites, which are known to include coastal lagoons, marshes, springs, permanent and semi-permanent natural ponds, ponded and backwater portions of streams, as well as artificial impoundments such as stock ponds, irrigation ponds, and siltation ponds. California red-legged frog eggs are usually found in ponds or in backwater pools in creeks attached to emergent vegetation such as *Typha* and *Scirpus*. However, they have been found in areas completely denuded of vegetation. Creeks and ponds where California red-legged frogs are found most often have dense growths of woody riparian vegetation, especially willows (*Salix* spp.) (Hayes and Jennings 1988). The absence of *Typha*, *Scirpus*, and *Salix* at an aquatic site does not rule out the possibility that the site provides habitat for California red-legged frogs, for example stock ponds often are lacking emergent vegetation yet they provide suitable breeding habitat. California red-legged frog larvae remain in these habitats until metamorphosis in the summer months (Storer 1925; Wright and Wright 1949). Young California red-legged frogs can occur in slow moving, shallow riffle zones in creeks or along the margins of ponds.

Summer habitat

California red-legged frogs often disperse from their breeding habitat to forage and seek summer habitat if water is not available. In the summer, California red-legged frogs are often found close to a pond or a deep pool in a creek where emergent vegetation, undercut banks, or semi-submerged rootballs afford shelter from predators. California red-legged frogs may also take shelter in small mammal burrows and other refugia on the banks up to 100 meters from the water any time of the year and can be encountered in smaller, even ephemeral bodies of water in a variety of upland settings (Jennings and Hayes 1994; U.S. Fish and Wildlife Service 2002).

Upland habitat

California red-legged frogs are frequently encountered in open grasslands occupying seeps and

springs. Such bodies may not be suitable for breeding but may function as foraging habitat or refugia for dispersing frogs. During periods of wet weather, starting with the first rains of fall, some individuals make overland excursions through upland habitats (U.S. Fish and Wildlife Service 2002).

3. Movement

California red-legged frogs may move up to 3 kilometers (1.88 miles) up or down drainages and are known to wander throughout riparian woodlands up to several dozen meters from the water (Rathbun *et al.* 1993). Dispersing frogs have been recorded to cover distances from 0.40 kilometer (0.25 mile) to more than 3.2 kilometers (2 miles) without apparent regard to topography, vegetation type, or riparian corridors (Bulger 1998). California red-legged frogs have been observed to make long-distance movements that are straight-line, point to point migrations rather than using corridors for moving in between habitats. Dispersal distances are considered to be dependent on habitat availability and environmental conditions. On rainy nights California red-legged frogs may roam away from aquatic sites as much as 1.6 kilometers (1 mile). California red-legged frogs will often move away from the water after the first winter rains, causing sites where California red-legged frogs were easily observed in the summer months to appear devoid of this species. Additionally, California red-legged frogs will sometimes disperse in response to receding water which often occurs during the driest time of the year.

References for Appendix A

- Bulger, J. 1998. Wet season dispersal and habitat use by juvenile California red-legged frogs (*Rana aurora draytonii*) in forest and rangeland habitats of the Santa Cruz Mountains. Research proposal.
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- Rathbun, G.B., M.R. Jennings, T.G. Murphy, and N.R. Siepel. 1993. Status and ecology of sensitive aquatic vertebrates in lower San Simeon and Pico Creeks, San Luis Obispo County, California. U.S. Fish and Wildlife Service, National Ecology Research Center, San Simeon, California. Prepared for the California Department of Parks and Recreation. 103 pp.
- Stebbins, R.C. 2003. A field guide to western reptiles and amphibians. Third edition. Houghton Mifflin Company, New York, New York. 533 pp.
- Storer, T. 1925. A synopsis of the Amphibia of California. University of California Publications in Zoology 27:1-342.
- U.S. Fish and Wildlife Service. 2002. Recovery plan for the California red-legged frog (*Rana aurora draytonii*). Portland, Oregon. 173 pp.
- Wright, A.H. and A.A. Wright. 1949. Handbook of frogs and toads of the United States and Canada. Third Edition. Comstock Publishing Company, Ithaca, New York. xii+640 pp.

Appendix B. Recommended Equipment Decontamination Procedures

In an effort to minimize the spread of pathogens that may be transferred as result of activities, surveyors should follow the guidance outlined below for disinfecting equipment and clothing after entering a pond and before entering a new pond, unless the wetlands are hydrologically connected to one another:

- i. All organic matter should be removed from nets, traps, boots, vehicle tires and all other surfaces that have come into contact with water or potentially contaminated sediments. Cleaned items should be rinsed with clean water before leaving each study site.
- ii. Boots, nets, traps, hands, *etc.* should be scrubbed with either a 75% ethanol solution, a bleach solution (0.5 to 1.0 cup per 1.0 gallon of water), Quat-128™ (1:60), or a 6% sodium hypochlorite 3 solution. Equipment should be rinsed clean with water between study sites. Cleaning equipment in the immediate vicinity of a pond or wetland should be avoided (*e.g.*, clean in an area at least 100 feet from aquatic features). Care should be taken so that all traces of the disinfectant are removed before entering the next aquatic habitat.
- iii. Used cleaning materials (liquids, *etc.*) should be disposed of safely, and if necessary, taken back to the lab for proper disposal. Used disposable gloves should be retained for safe disposal in sealed bags.
- iv. Additionally, the surveyors shall implement the following when working at sites with known or suspected disease problems: disposable gloves should be worn and changed between handling each animal. Gloves should be wetted with water from the site or distilled water prior to handling any amphibians. Gloves should be removed by turning inside out to minimize cross-contamination.

Appendix C.
General instructions for filling out CNDDDB field survey forms

The Natural Diversity Data Base (NDDDB) is the largest, most comprehensive database of its type in the world. It presently contains more than 33,000 site specific records on California's rarest plants, animals, and natural communities. The majority of the data collection effort for this has been provided by an exceptional assemblage of biologists throughout the state and the west. The backbone of this effort is the field survey form. We are enclosing copies of Natural Diversity Data Base (NDDDB) field survey forms for species and natural communities. We would greatly appreciate you recording your field observations of rare, threatened, endangered, or sensitive species and natural communities (elements) and sending them to us on these forms.

We are interested in receiving forms on elements of concern to us; refer to our free publications: *Special Plants List*, *Special Animals List*, and *Natural Communities List* for lists of which elements these include. Reports on multiple visits to sites that already exist in the NDDDB are as important as new site information as it helps us track trends in population/stand size and condition. Naturally, we also want information on new sites. We have enclosed an example of a field survey form that includes the information we like to see. It is especially important to include a xeroxed portion of a USGS topographic quad with the population/stand outlined or marked (see back of enclosed example).

Without the map, your information will be mapped less accurately, as written descriptions of locations are frequently hard to interpret. Do not worry about filling in every box on the form; only fill out what seems most relevant to your site visit. Remember that your name and telephone number are very important in case we have any questions about the form.

If you are concerned about the sensitivity of the site, remember that the NDDDB can label your element occurrence "Sensitive" in the computer, thus restricting access to that information. The NDDDB is only as good as the information in it, and we depend on people like you as the source of that information. Thank you for your help in improving the NDDDB.

Copies of the NDDDB form can be obtained from the CDFG at the above address (telephone: 916-324-3812) or online at: <http://www.dfg.ca.gov/whdab/html/animals.html>.

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

This data sheet is to assist in the data collection of California red-legged frog habitat in the vicinity of projects or other land use activities, following the August 2005, *Revised Guidance on Site Assessment and Field Surveys for California Red-legged Frogs* (Guidance), issued by the U.S. Fish and Wildlife Service. Prior to collecting the data requested on this form, the biologist should be familiar with and understand the Guidance.

The “Site Assessments” section of the Guidance details the data needed to complete a site assessment. When submitting a complete site assessment to the Service (one that has been done following the Guidance), one data sheet should be included for each aquatic habitat identified. If multiple aquatic habitats are identified within the project site, then multiple data sheets should be completed. A narrative description of the aquatic, riparian, and upland habitats should be provided to characterize the breeding habitat within the project site and the breeding and dispersal habitat within 1.6 kilometers (1 mile) of the project site. In addition to completing this data sheet, field notes, photographs, and maps should be provided to the appropriate Fish and Wildlife Service Office, as requested in the “Site Assessments” section of the Guidance.

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

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

Date of Site Assessment: _____
(mm/dd/yyyy)

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

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

Site Location: _____
(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: _____
Brief description of proposed action:

- 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:

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:

Necessary Attachments:

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

Appendix E.
California Red-legged Frog Survey Data Sheet

This data sheet is to assist in the data collection during surveys for California red-legged frogs in areas with potential habitat. This data sheet is intended to assist in the preparation of a final report on the field surveys as detailed in the August 2005, *Revised Guidance on Site Assessment and Field Surveys for California Red-legged Frogs* (Guidance) issued by the U.S. Fish and Wildlife Service (Service). Before completing this data sheet, a site assessment should have been conducted using the Guidance and the Service should have been contacted to determine whether surveys are required. Prior to collecting the data requested on this form, the biologist should be familiar with and understand the Guidance. To avoid and minimize the potential of harassment to California red-legged frogs, all survey activities shall cease once an individual California red-legged frog has been identified in the survey area, unless prior approval has been received from the appropriate Service Fish and Wildlife Office. The Service shall be notified within three (3) working days by the surveyor once a California red-legged frog is detected, at which point the Service will provide further guidance. Surveys should take place in consecutive breeding/non-breeding seasons (*i.e.*, the entire survey period, including breeding and non-breeding surveys should not exceed 9 months). It is important that both the breeding and non-breeding survey be conducted during the time period specified in the Guidance. Site specific conditions may warrant modifications to the timing of survey periods, modifications must be made with the Service's approval. The survey consists of two (2) day and four (4) night surveys during the breeding season and one (1) day and one (1) night surveys during the non-breeding season.

All California red-legged frog life stages should be surveyed for. Surveyors may detect larvae but not be able to identify this life stage to species as handling any life stage of the California red-legged frog necessitates a valid 10(a)(1)(A) permit. If the larval life stage is the only life stage detected and the larvae are not identified to species, the surveyor must either return to the habitat to identify the frog in another life stage or have a valid 10(a)(1)(A) permit allowing the surveyor to handle California red-legged frogs and larvae. In order for the Service to consider a survey to be complete, all frogs encountered must be accurately identified.

**Appendix E.
California Red-legged Frog Survey Data Sheet**

Survey results reviewed by _____ (FWS Field Office) (date) (biologist)

Date of Survey: _____ (mm/dd/yyyy)
 Survey Biologist: _____ (Last name) (first name)
Survey Biologist: _____ (Last name) (first name)

Site Location: _____
 (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: _____

Brief description of proposed action:

Type of Survey (circle one): **DAY** **NIGHT** **BREEDING** **NON-BREEDING**
Survey number (circle one): **1** **2** **3** **4** **5** **6** **7** **8**

Begin Time: _____ **End Time:** _____

Cloud cover: _____ **Precipitation:** _____

Air Temperature: _____ **Water Temperature:** _____

Wind Speed: _____ **Visibility Conditions:** _____

Moon phase: _____ **Humidity:** _____

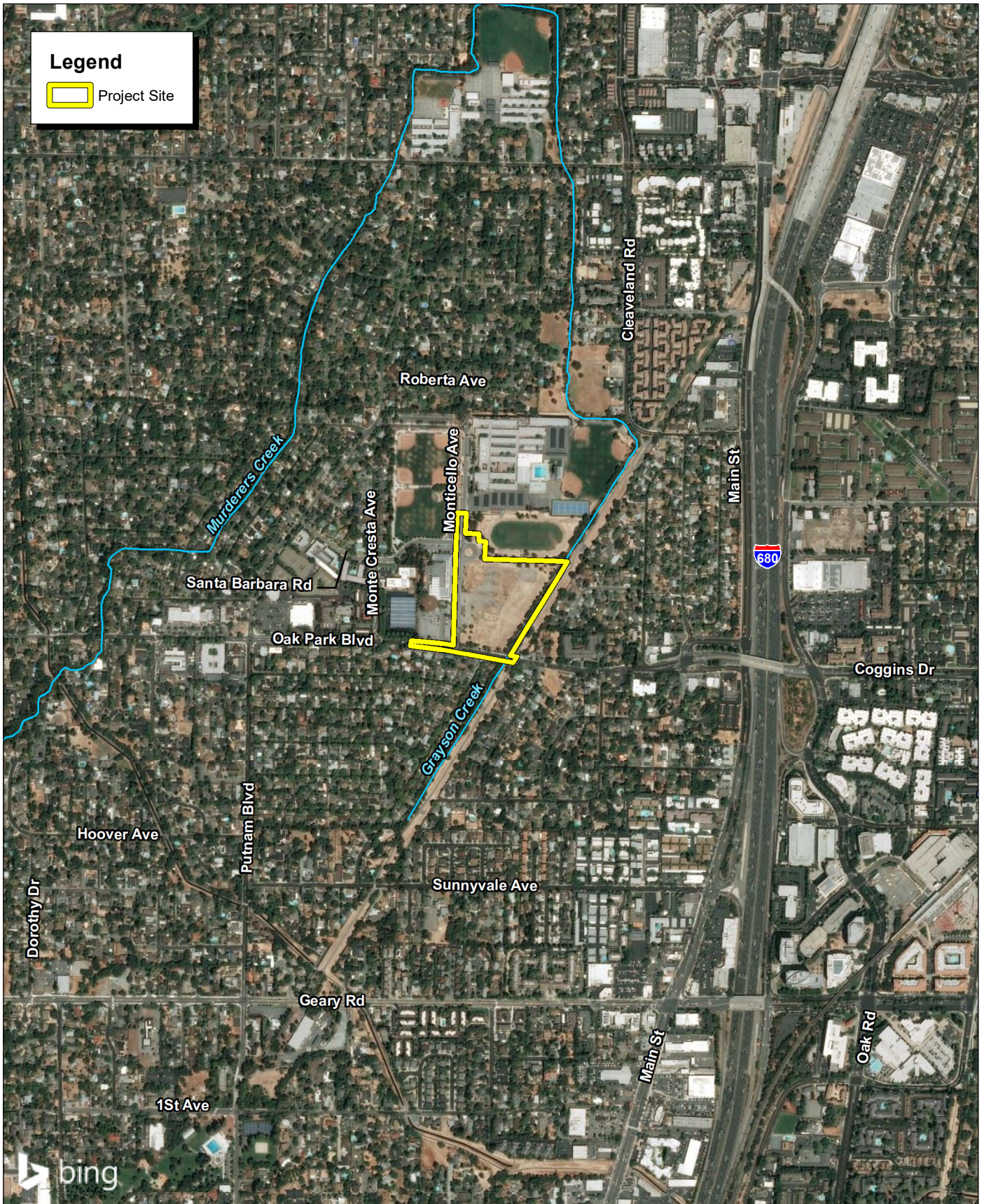
Description of weather conditions: _____

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: _____

John Baker
February 11, 2019

Attachment 2 Exhibits



Source: Bing Aerial Imagery.

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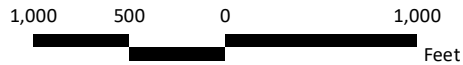
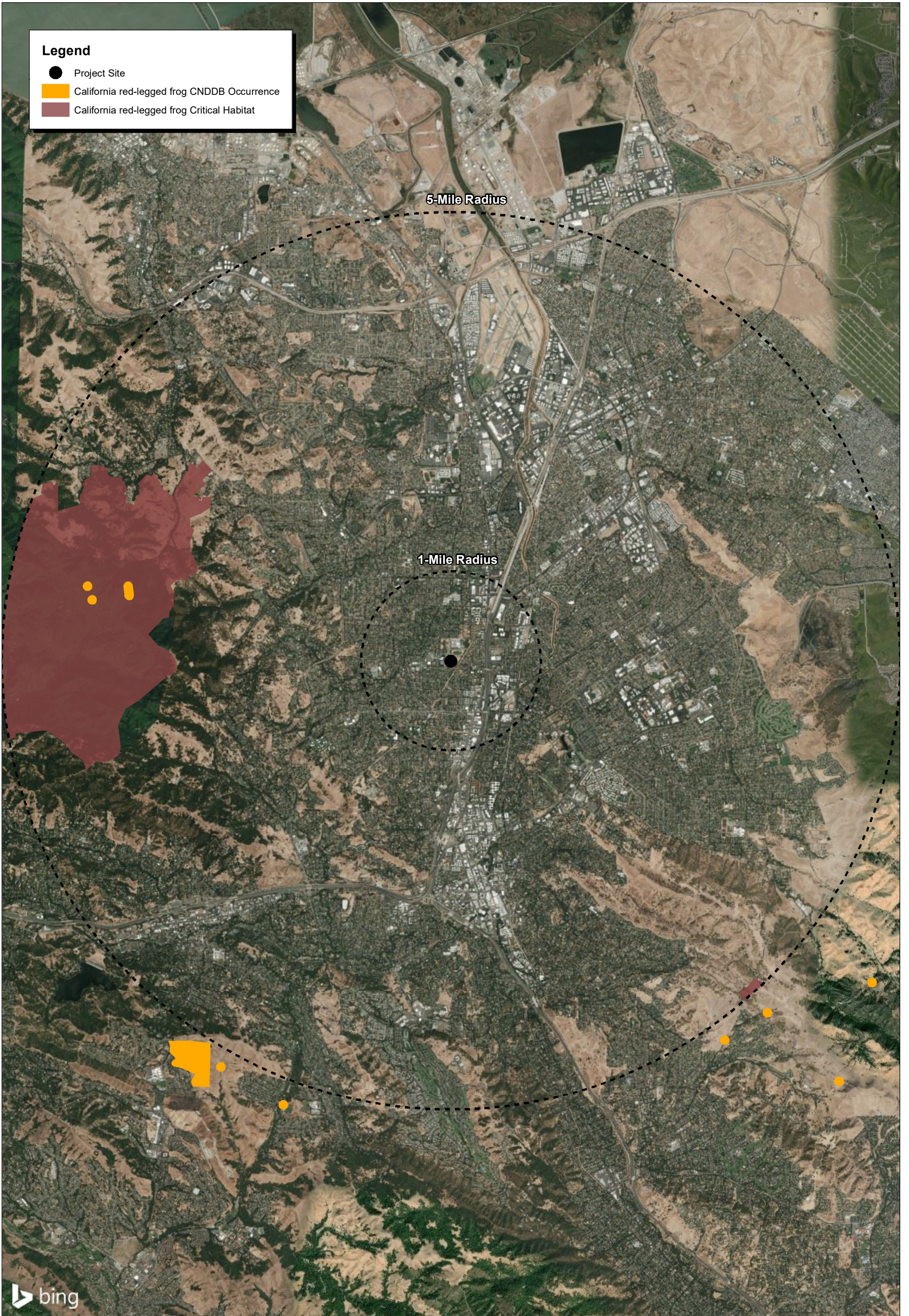
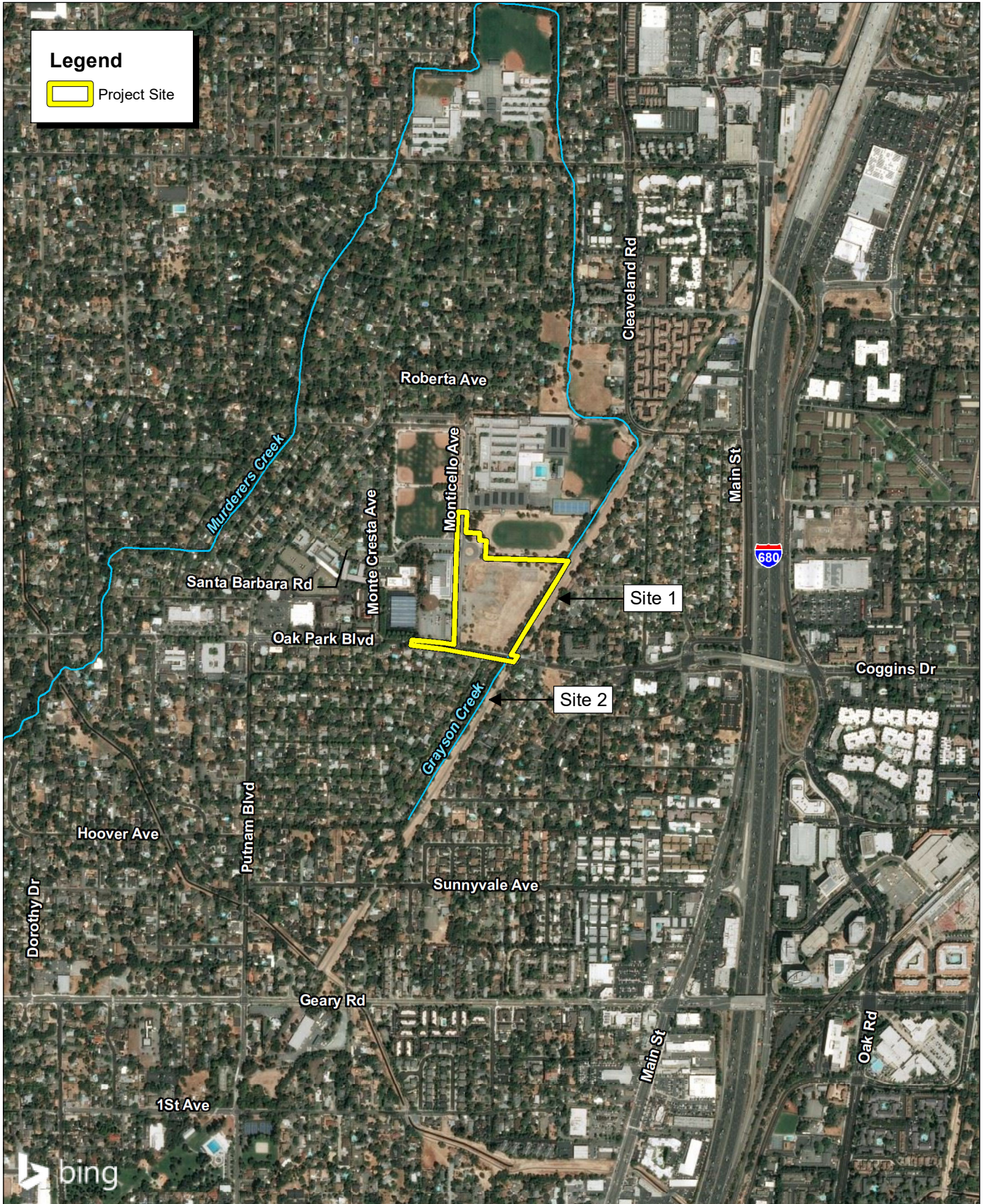


Exhibit 2
Site Vicinity Map



Source: bing aerial imagery. CA Dep. of Fish & Wildlife Natural Diversity Database. U.S. Fish & Wildlife Service.





Source: Bing Aerial Imagery.

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Exhibit 4 Survey Locations

John Baker
February 11, 2019

Attachment 3
Site Photos



Photograph 1: Site 1, just north of project boundary, looking west.



Photograph 2: Site 1, northern project boundary, looking south.



Photograph 3: Site 1, midpoint of project site, widest part of segment, looking south.



Photograph 4: Site 1, toward southern end of project boundary, where creek becomes choked with cattail, looking south.



Photograph 5: Site 1, southern end of project boundary with Oak Park Boulevard culvert in view, looking south.



Photograph 6: Site 2, just south of project boundary/Oak Park Boulevard, looking south.



Photograph 7: Site 2, southern reach of Grayson Creek.



Photograph 8: Site 2, southern reach of Grayson Creek.



Photograph 9: Site 2, southern reach of Grayson Creek.

John Baker
February 11, 2019

Attachment 4
Data Sheets

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

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

Date of Site Assessment: 1/30/2019
(mm/dd/yyyy)

Site Assessment Biologists: CARROLL ROBERT _____
(Last name) (first name) (Last name) (first name)

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

Site Location: Site 1, City of Pleasant Hill, 900 feet north of Oak Park Blvd.
(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: _____
Brief description of proposed action:

- 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: N/A Maximum depth: N/A
Vegetation: emergent, overhanging, dominant species: N/A

Substrate: N/A

Perennial or Ephemeral (circle one). If ephemeral, date it goes dry: N/A

STREAM:

Bank full width: ~ 11 feet
Depth at bank full: 1.5-2 feet
Stream gradient: < 1%

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: run + glide

Vegetation: emergent, overhanging, dominant species: cattails, coast live oak, valley oak, Mexican fan palm, acacia

Substrate: mostly silt with dispersed rocks

Bank description: banks are gently sloping

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

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

site 1; photos 1-5

Necessary Attachments:

1. All field notes and other supporting documents
 2. Site photographs
- 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: 1/30/2019
(mm/dd/yyyy)

Site Assessment Biologists: CARROLL ROBERT
(Last name) (first name) (Last name) (first name)

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

Site Location: Site 2, City of Pleasant Hill, 600 feet south of Oak Park Blvd
(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: _____
Brief description of proposed action:

- 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: N/A Maximum depth: N/A
Vegetation: emergent, overhanging, dominant species: N/A

Substrate: N/A

Perennial or Ephemeral (circle one). If ephemeral, date it goes dry: N/A

STREAM:

Bank full width: ~ 10 feet
Depth at bank full: 3-4 feet
Stream gradient: 1%

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: run + glide

Vegetation: emergent, overhanging, dominant species: Mexican fan palm,
Bamboo, ferns, grasses, oak

Substrate: silt

Bank description: gently sloping

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

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

Site 2; photos 6-9

Necessary Attachments:

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

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D.5 - Arborist Report

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Arborist Report

**Oak Park Blvd.
Pleasant Hill CA**

Prepared for:
Bates Stringer Oak Park LLC
875 Orange Blossom Way
Danville CA 94526

Prepared by:
HortScience | Bartlett Consulting
325 Ray Street
Pleasanton, CA 94566

February 2019



Arborist Report

Oak Park Blvd.
Pleasant Hill CA

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Evaluation of Impacts and Recommendations for Action	10
Estimate of Value	10
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Attachments

Tree Assessment Form

Tree Assessment Map

Introduction and Overview

Bates Stringer Oak Park LLC is planning to redevelop several parcels in the area of Monticello Avenue and Oak Park Blvd. in Pleasant Hill CA. Current site use consists of a library, office buildings, associated parking, and an open field. Bates Stringer Oak Park LLC requested that HortScience | Bartlett Consulting, divisions of the F.A. Bartlett Tree Expert Company, prepare an **Arborist Report** for the site. This report provides the following information:

This report provides the following information:

1. An evaluation of the health and structural condition of the trees within the proposed project area based on a visual inspection from the ground.
2. An assessment of the development impacts to the trees based on the drawings provided by Bates Stringer Oak Park LLC.
3. Recommendations for action based on proposed project plans.
4. Guidelines for tree preservation during the design, construction and maintenance phases of development.
5. A **Tree Assessment Form**, providing a description of each tree and a **Tree Assessment Map** showing the location of trees by tag number.

Assessment Methods

The assessment included all trees 5" and larger in diameter, within and adjacent to the proposed project area. Trees #1 to 212 were assessed in February 2018 and trees #213 to 302 were assessed in February 2019. The assessment procedure consisted of the following steps:

1. Identifying the tree as to species;
2. Tagging each tree with a numerically coded metal tag and recording its location on a map;
3. Measuring the trunk diameter at a point 54" above grade;
4. Evaluating the health and structural condition using a scale of 1 – 5:
 - 5** - A healthy, vigorous tree, reasonably free of signs and symptoms of disease, with good structure and form typical of the species.
 - 4** - Tree with slight decline in vigor, small amount of twig dieback, minor structural defects that could be corrected.
 - 3** - Tree with moderate vigor, moderate twig and small branch dieback, thinning of crown, poor leaf color, moderate structural defects that might be mitigated with regular care.
 - 2** - Tree in decline, epicormic growth, extensive dieback of medium to large branches, significant structural defects that cannot be abated.
 - 1** - Tree in severe decline, dieback of scaffold branches and/or trunk; most of foliage from epicormics; extensive structural defects that cannot be abated.
5. Rating the suitability for preservation as "high", "moderate" or "low". Suitability for preservation considers the invasiveness of the species, health, age and structural condition of the tree, and its potential to remain an asset to the site.

Description of Trees

Three hundred two (302) trees were assessed, representing 38 species (Table 1). Species present were typical of those found in landscapes in the Pleasant Hill area. Species native to the region included coast live oak, valley oak, willow, Oregon ash, Calif. black walnut, boxelder, and elderberry. It is likely that some trees of these species were indigenous to the site.

Trees were not evenly distributed across the site but were concentrated in specific areas. The vast majority of species native to the Pleasant Hill area were located in the creek corridor on the east side of the site. In particular the west side of the creek corridor was dominated by native species. These trees were unmanaged. Planted ornamental trees were found on the library and school sites.

Valley oak was the most frequently occurring species with 77 trees (Photo 1). Trees were largely young and semi-mature in development. All but three trees were less than 20-inches in diameter. Valley oaks larger than 20-inches included #14, 29, and 214. Approximately one-third of the valley oak had more than one trunk that originated close to the ground.



Photo 1. Looking west along north property line at valley oak #14

Most trees were in either fair (41) or poor (20) condition. Fourteen trees were in good condition and #220 and 231 were excellent. Factors important in tree condition were overall form and structure as well as general tree vigor.

Thirty-seven (37) coast live oaks were present (Photo 2). Trees were generally young and semi-mature in development. Coast live oaks were a mix of planted and indigenous trees. Trunk diameters ranged from 5-inches to 18-inches. Approximately 33% of coast live oaks had more than one trunk. Tree condition was a mix of fair (20 trees) and good (12). Coast live oaks #119, 154 and 179 were in poor condition while trees #153 and 225 were excellent. Trees typically had asymmetric form due to crowded growing conditions.



Photo 2. The lower trunk of coast live oak #18 was embedded in the wire fence on the east side of the site.

Table 1. Species present and tree condition. Oak Park Blvd. Pleasant Hill CA.

Common name	Scientific name	Condition					No. of Trees	
		Dead (0)	Poor (1,2)	Fair (3)	Good (4)	Excell. (5)	Protected	Total
Bailey's acacia	<i>Acacia baileyana</i>	--	8	--	--	1	3	9
Boxelder	<i>Acer negundo</i>	--	--	--	1	--	--	1
Marina madrone	<i>Arbutus 'Marina'</i>	--	--	--	1	--	--	1
Calif. incense cedar	<i>Calocedrus decurrens</i>	--	3	1	1	--	5	5
Catalpa	<i>Catalpa sp.</i>	--	--	1	--	--	--	1
Carob	<i>Ceratonia siliqua</i>	--	--	10	--	--	4	10
Arizona cypress	<i>Cupressus arizonica</i>	--	6	3	--	--	2	9
Silver dollar gum	<i>Eucalyptus polyanthemos</i>	--	4	--	--	--	--	4
Red ironbark	<i>Eucalyptus sideroxylon</i>	--	6	2	--	--	--	8
Dwarf blue gum	<i>Eucayptus globulus 'Compacta'</i>	--	--	1	--	--	--	1
Raywood ash	<i>Fraxinus angulsifolia 'Raywood'</i>	--	2	2	--	--	--	4
Oregon ash	<i>Fraxinus oregana</i>	--	1	1	--	--	2	2
Evergreen ash	<i>Fraxinus uhdei</i>	--	--	1	--	--	1	1
Ginkgo	<i>Ginkgo biloba</i>	--	--	1	1	1	--	3
Honeylocust	<i>Gleditsia triacanthos</i>	1	1	--	--	--	--	2
Calif. black walnut	<i>Juglans hindsii</i>	2	3	2	--	--	4	7
Hollywood juniper	<i>Juniperus chinensis 'Torulosa'</i>	--	3	3	--	--	3	6
Koelreuteria	<i>Koelreuteria bipinnatus</i>	--	--	1	--	--	--	1
Crape myrtle	<i>Lagerstroemia cv.</i>	--	--	1	4	--	--	5
Glossy privet	<i>Ligustrum lucidum</i>	--	2	--	--	--	1	2
Sweetgum	<i>Liquidambar styraciflua</i>	--	2	15	1	--	1	18
White mulberry	<i>Morus alba</i>	--	12	2	--	--	4	14
Olive	<i>Olea europaea</i>	2	2	4	2	--	1	10
Canary Island pine	<i>Pinus canariensis</i>	--	--	5	2	2	7	9
Aleppo pine	<i>Pinus halepensis</i>	--	1		--	--	1	1
Italian stone pine	<i>Pinus pinea</i>	--	--	1	1	--	1	2

Table 1, continued. Species present and tree condition. Oak Park Blvd. Pleasant Hill CA.

Common name	Scientific name	Condition					No. of Trees	
		Dead (0)	Poor (1,2)	Fair (3)	Good (4)	Excell. (5)	Protected	Total
Monterey pine	<i>Pinus radiata</i>	2	19	7	1	1	22	30
London plane	<i>Platanus x hispanica</i>	--	3	5	2	--	--	10
Almond	<i>Prunus dulcis</i>	--	1	--	--	--	1	1
Coast live oak	<i>Quercus agrifolia</i>	--	3	20	12	2	23	37
Holly oak	<i>Quercus ilex</i>	--	--	1	--	--	--	1
Valley oak	<i>Quercus lobata</i>	--	20	41	14	2	54	77
Black locust	<i>Robinia pseudoacacia</i>	--	1	--	--	--	--	1
Willow	<i>Salix</i> sp.	--	--	1	--	--	1	1
Elderberry	<i>Sambucus caerulea</i>	--	--	1	--	--	--	1
Calif. pepper	<i>Schinus molle</i>	--	--	--	1	--	--	1
Siberian elm	<i>Ulmus pumila</i>	--	3	1	--	--	--	4
Mexican fan palm	<i>Washingtonia robusta</i>	--	--	--	--	2	1	2
Total, all trees assessed		7	106	133	45	11	154	302

Thirty (30) Monterey pines were present. Trees were generally mature in development with trunk diameters ranging from 8-inches to 36-inches. Approximately half of the pines were 24-inches or greater. Monterey pines were concentrated along the north property line and in the northwest corner (Photo 3). Tree condition was generally poor (19 trees). Pines #197 and 198 were dead. Seven pines were in fair condition. Monterey pine #159 was in good condition and tree #172 was excellent. Factors important in tree condition were overall form and structure as well as general tree vigor.

Photo 3. Looking east along driveway Monterey pines #133 – 137.



Eighteen (18) sweetgums had been installed around the library and office buildings (Photo 4). Trees were generally young and semi-mature in development with trunk diameters between 6-inches and 18-inches. Most sweetgums had large extensive surface roots, had been topped, and lacked vigor.

Photo 4. Sweetgums #90 to 93 were located in a small planter area.



Fourteen (14) mulberries were located on the east side of the site (Photo 5). Trees were mature in development and in poor condition. Trunk diameters ranged from 8-inches to 22-inches. Trees had been topped in the past and poor form and structure. Decay and broken branches were common.

Photo 5. Mulberry trees were in poor condition with extensive twig and branch dieback.



Ten carobs formed a long row between the library parking lot and Monticello Avenue (Photo 6). Trees were mature in development and had likely been planted at the same time. Trunk diameters ranged from 12-inches to 35-inches. All trees were beneath energized utility lines and had been topped to maintain clearance. Most trees had some among of twig dieback and chlorotic foliage.

Photo 6. Carobs had been topped to provide clearance to the electrical lines overhead.



Ten London plane trees were installed along Oak Park Blvd., east of Monticello Avenue. Trees lacked vigor, likely due to lack of irrigation. London planes were semi-mature in development. Condition varied from poor (3 trees) to fair (5) to good (2). Trunk diameters ranged from 6-inches to 14-inches.

Ten olives were located on the east side of the creek, near Oak Park Blvd. Olives all had multiple stems that arose near the base. Tree condition varied from dead (#265, 272) to poor (#260, 262) to fair (#258, 259, 267, 269) to good (#264, 270).

Nine Canary Island pines were present, concentrated around the office buildings. Trees were generally mature in development. Trunk diameters ranged from 8-inches to 29-inches. Tree condition was fair (5 trees), good (2) and excellent (2). Trees #69, 70 and 71 were located beneath overhead conductors and had been topped to maintain clearance.

Nine Arizona cypresses were present along the Oak Park Blvd. frontage, near the London planes. Trees were mature in development. Trunk diameters ranged between 9-inches and 21-inches. Condition was poor (6 trees) and fair (3). Several nearby cypresses had uprooted at the base.

Nine Bailey's acacia were located on the south side of the creek corridor. Trees were young, semi-mature and mature in development with trunk diameter between 5-inches and 20-inches. All trees were in poor condition except for #294.

Eight red ironbark trees were concentrated in the northwest corner of the site. Trees were mature in development. Trunk diameters were between 10-inches and 34-inches. Tree condition was general poor (6 trees). Two ironbarks were in fair condition. Trees had been topped. Most had a history of branch failure.

Seven Calif. black walnuts were located in the creek corridor. Trunk diameters varied from 7- to 18-inches. Most trees had more than one stem that originated close to the ground. Black walnuts #227 and 244 were dead. Trees #215, 293 and 301 were in poor condition while #222 and 279 were fair.

None of the remaining species was represented by more than six trees. Included in this group were:

- Aleppo pine #174 was 16-inches, mature in development and in poor condition.
- Almond #25 was mature in development with four small stems. It was in poor condition.
- Black locust #268 was 23-inches and in very poor condition.
- Boxelder #252 was 5-inches and in good condition.
- Calif. incense cedars #167 - 171 were located in the northwest corner of the site. Trees were mature in development. Trunk diameters ranged between 13-inches and 25-inches. Tree #170 was in good condition; #168 was fair, and the remaining trees were poor.
- Calif. pepper #271 was 7-inches and in good condition.
- Catalpa #299 had trunks of 12-, 9- and 6-inches and was in fair condition.

- Crape myrtles #84, 85, 86, 87, and 88 were located in front of the library entrance. All were typical small trees in good condition with the exception of #84 which was fair.
- Dwarf blue gum #111 was located in the southwest corner of the property, along Oak Park Blvd. It had trunks that were 32, 21, 20 and 18-inches. Tree condition was fair. The trunk originated low on the trunk and were separating near the top of the tree.
- Elderberry #59 was a small tree in fair condition.
- Evergreen ash #275 had trunks of 19- and 13-inches and was in fair condition.
- Ginkgos #89, 106 and 107 were located near the Library entrance. Trees were small and in variable condition.
- Glossy privets #75 and 138 were typical multi-stem small trees in poor condition.
- Holly oak #274 had multiple stems and appeared to be a large shrub.
- Hollywood junipers #77 – 82 were large shrubs, mature in development, and in fair and poor condition.
- Honeylocust #286 was 8-inches but dead. Trees #287 had trunks of 10-, 7-, and 5-inches and was in very poor condition.
- Italian stone pine #109 was located in a parking lot planter. It was 15-inches and in good condition. Italian stone pine #132 was a large mature tree in the northwest corner of the site. Two trunks (23, 22-inches) arose low on the tree. Overall condition was fair.
- Koelreuteria #108 was located along Oak Park Blvd. It was 12-inches and in fair condition.
- Marina madrone #112 was 6-inches and in good condition.
- Mexican fan palms #23 and 68 were typical palms in good excellent condition.
- Oregon ashes #291 and 296 were mature trees with multiple stems. Tree #296 was in poor condition while #291 was fair.
- Raywood ashes #64 – 67 were small and poor.
- Siberian elms #256, 257, 266 were large mature trees in the creek corridor. Trees #256 and 266 were in poor condition while #257 was fair. Tree #3 was small and poor.
- Silver dollar gums #149 – 152 were in the interior parking area of the office building. Trees were mature in development, between 14 and 22-inches, and in poor condition.
- Willow #302 was a large mature tree with trunks of 32- and 22-inches. Tree condition was fair.

The City of Pleasant Hill defines a *Protected* tree in several ways: 1) a native oak species having a trunk diameter of nine inches or greater; 2) a species indigenous to the region having a trunk diameter of nine inches or greater and 3) a non-native species having a trunk diameter of 18-inches or greater (excluding *Eucalyptus* sp.). Based on these criteria, 154 of the 302 trees assessed have Protected status.

Descriptions of each tree are found in the ***Tree Assessment Form*** and locations are shown on the ***Tree Assessment Map*** (see attachments).

Suitability for Preservation

Trees that are preserved on development sites must be carefully selected to make sure that they may survive development impacts, adapt to a new environment and perform well in the landscape. Our goal is to identify trees that have the potential for long-term health, structural stability and longevity. Evaluation of suitability for preservation considers several factors:

- **Tree health**
Healthy, vigorous trees are better able to tolerate impacts such as root injury, demolition of existing structures, changes in soil grade and moisture, and soil compaction than are non-vigorous trees.
- **Structural integrity**
Trees with significant amounts of wood decay and other structural defects that cannot be corrected are likely to fail. Such trees should not be preserved in areas where damage to people or property is likely.
- **Species response**
There is a wide variation in the response of individual species to construction impacts and changes in the environment. In our experience, for example, coast live oak tolerant of site disturbance while eucalypts and Monterey pine are sensitive.
- **Tree age and longevity**
Old trees, while having significant emotional and aesthetic appeal, have limited physiological capacity to adjust to an altered environment. Young trees are better able to generate new tissue and respond to change.
- **Species invasiveness**
Species which spread across a site and displace desired vegetation are not always appropriate for retention. This is particularly true when indigenous species are displaced. The California Invasive Plant Inventory Database (www.cal-ipc.org) lists species identified as having being invasive. Pleasant Hill is part of the Central West Floristic Province. Bailey acacia, Calif. pepper, olive, glossy privet, and Mexican fan palm are considered invasive.

Each tree was rated for suitability for preservation based upon its age, health, structural condition and ability to safely coexist within a development environment. Table 2, following page, provides a summary of suitability ratings. Suitability ratings for individual trees are provided in the **Tree Assessment Form** (see attachments).

Table 2. Tree suitability for preservation. Oak Park Blvd. Pleasant Hill CA.

High	Trees with good health and structural stability that have the potential for longevity at the site. Eleven trees were rated as having high suitability for preservation: coast live oak #94, 153, 225; Canary Island pine #120, 144; valley oak #220, 231; Mexican fan palm #23, 68; ginkgo #89, and Monterey pine #172.
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Moderate	Trees in fair health and/or possessing structural defects that may be abated with treatment. Trees in this category require more intense management and monitoring, and may have shorter life-spans than those in the "high" category. Sixty-seven (67) trees were rated as having moderate suitability for preservation: coast live oak #18, 19, 20, 73, 110, 121, 122, 140, 141, 143, 156, 173, 187, 221, 248, 300; valley oak #1, 14, 17, 51, 202, 205, 208, 209, 210, 211, 214, 216, 217, 219, 224, 230, 233, 234, 243, 249, 254, 261, 282, 283, 284, 292, 297; crape myrtle #85 - 88; Canary Island pine #113, 117, 118; London plane #48, 54, 55; sweetgum #83, 183, 189; olive #264, 270; Calif. incense cedar #168; 170; ginkgo #106; Italian stone pine #109, Marina madrone #112; Monterey pine #159, boxelder #252, Calif. pepper #271, and Bailey acacia #294.
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Low	Trees in poor health or possessing significant defects in structure that cannot be abated with treatment. These trees can be expected to decline regardless of management. The species or individual tree may possess either characteristics that are undesirable in landscape settings or be unsuited for use areas. Two hundred seventeen (217) trees were rated as having low suitability for preservation including: 48 valley oak, 26 Monterey pine; 18 coast live oak; 15 sweetgum; 14 white mulberry; 9 Arizona cypress; 8 red ironbark; 8 Bailey's acacia; and 6 Hollywood juniper.
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Note: Table does not include seven trees that were dead.

We consider trees with high suitability for preservation to be the best candidates for preservation. We do not normally recommend retention of trees with low suitability for preservation in areas where people or property will be present. Retention of trees with moderate suitability for preservation depends on the intensity of proposed site changes.

Evaluation of Impacts and Recommendations for Action

Appropriate tree retention develops a practical match between the location and intensity of construction activities and the quality and health of trees. The tree assessment was the reference points for tree condition and quality. Impacts from the proposed project were assessed using the site plan prepared by BkF, project engineers (dated January 2019).

The plan depicted a complete re-development of the site. The current alignment of Monticello Avenue will be preserved. New structures, parking, and landscape will be constructed. The most significant impacts to trees would be associated with 1) demolition of existing buildings, parking areas and related improvements, and 2) grading. Most trees are located within areas proposed for new construction.

Based on my evaluation of the plans, I recommend preservation of 127 trees (77 Protected) and removal of 175 (72 Protected) (Table 3). Most trees recommended for preservation are located on the east and northeast portions of the site.

Recommendations for tree preservation are predicated on adherence to the ***Tree Preservation Guidelines*** (following section).

Estimate of Value

The City of Pleasant Hill requires that the value of trees on development sites be estimated. To estimate the reproduction cost of each of the surveyed trees, I employed the methods found in ***Guide for Plant Appraisal***, 9th edition (published in 2000 by the International Society of Arboriculture, Savoy IL). In addition, I referred to ***Species Classification and Group Assignment*** (2004), a publication of the Western Chapter of the International Society of Arboriculture. These two documents outline the methods employed in tree appraisal.

The reproduction cost of trees is based upon four factors: size, species, condition and location. Size is measured as trunk diameter, normally 54" above grade. The species factor considers the adaptability and appropriateness of the plant in the East Bay area. The ***Species Classification and Group Assignment*** lists recommended species ratings and evaluations. Condition reflects the health and structural integrity of the individual. The location factor considers the site, placement and contribution of the tree in its surrounding landscape. In this case, trees were either part of an established landscape or located in an open field.

The estimated reproduction cost of the 127 trees recommended for preservation is \$143,450 while that of the 175 trees recommended for removal is \$209,950.

Table 3. Proposed action. Oak Park Blvd. Pleasant Hill CA.

Tree No.	Species	Trunk Diameter (in.)	Protected Tree?	Condition 0=dead 5=excell.	Estimate of Value	Proposed Action	Notes
1	Valley oak	12	Yes	3	\$1,800	Preserve	Edge of project area; locate trunk
2	Valley oak	12	Yes	2	\$1,050	Remove	Within project area
3	Siberian elm	4,4	No	2	\$100	Remove	Within project area
4	White mulberry	14	No	3	\$700	Remove	Within project area
5	White mulberry	22	Yes	2	\$1,050	Remove	Within project area
6	Valley oak	10,9	Yes	2	\$1,250	Remove	Within project area
7	White mulberry	22	Yes	2	\$1,050	Remove	Within project area
8	White mulberry	17	No	2	\$650	Remove	Within project area
9	White mulberry	12	No	2	\$300	Remove	Within project area
10	White mulberry	13	No	1	\$100	Remove	Within project area
11	White mulberry	15	No	2	\$500	Remove	Within project area
12	Valley oak	12	Yes	2	\$1,050	Remove	Within project area
13	Valley oak	16,9	Yes	2	\$2,350	Preserve	Edge of project area; locate trunk
14	Valley oak	25,11,10,7,6	Yes	3	\$11,150	Preserve	Edge of project area; locate trunk
15	White mulberry	16	No	1	\$200	Remove	Within project area
16	White mulberry	15	No	1	\$150	Remove	Within project area
17	Valley oak	15	Yes	4	\$2,900	Preserve	Edge of project area; locate trunk
18	Coast live oak	12	Yes	3	\$800	Preserve	Edge of project area; locate trunk
19	Coast live oak	12	Yes	4	\$1,100	Preserve	Edge of project area; locate trunk
20	Coast live oak	8,8	Yes	3	\$650	Preserve	Edge of project area; locate trunk

Table 3, continued. Proposed action. Oak Park Blvd. Pleasant Hill CA.

Tree No.	Species	Trunk Diameter (in.)	Protected Tree?	Condition 0=dead 5=excell.	Estimate of Value	Proposed Action	Notes
21	Coast live oak	12,11	Yes	3	\$1,400	Preserve	Edge of project area; locate trunk
22	Valley oak	6,3	Yes	3	\$450	Preserve	Edge of project area; locate trunk
23	Mexican fan palm	20	Yes	5	\$3,050	Preserve	Edge of project area; locate trunk
24	Valley oak	7,5	Yes	3	\$500	Preserve	Edge of project area; locate trunk
25	Almond	6,5,5,5	Yes	2	\$150	Preserve	Edge of project area; locate trunk
26	Valley oak	14,13,7	Yes	2	\$2,150	Preserve	Edge of project area; locate trunk
27	Bailey's acacia	20,14,8	Yes	2	\$200	Remove	Edge of project area; poor tree; invasive species
28	Bailey's acacia	12,7	Yes	2	\$50	Remove	Edge of project area; poor tree; invasive species
29	Valley oak	20,18,12	Yes	2	\$4,650	Preserve	Edge of project area; locate trunk
30	Bailey's acacia	5	No	2	\$0	Remove	Edge of project area; poor tree; invasive species
31	Bailey's acacia	14,8	Yes	1	\$50	Remove	Edge of project area; poor tree; invasive species
32	Bailey's acacia	9	No	2	\$50	Remove	Edge of project area; poor tree; invasive species

Table 3, continued. Proposed action. Oak Park Blvd. Pleasant Hill CA.

Tree No.	Species	Trunk Diameter (in.)	Protected Tree?	Condition 0=dead 5=excell.	Estimate of Value	Proposed Action	Notes
33	Bailey's acacia	7	No	1	\$0	Remove	Edge of project area; poor tree; invasive species
34	Valley oak	17	Yes	3	\$2,650	Preserve	Edge of project area
35	London plane	8	No	3	\$500	Remove	Within project area
36	London plane	6	No	3	\$300	Remove	Within project area
37	Arizona cypress	18	Yes	3	\$2,950	Remove	Within project area
38	London plane	7	No	2	\$250	Remove	Within project area
39	London plane	10	No	3	\$800	Remove	Within project area
40	Arizona cypress	14	No	3	\$1,800	Remove	Within project area
41	Arizona cypress	15	No	2	\$1,250	Remove	Within project area
42	Arizona cypress	10	No	2	\$500	Remove	Within project area
43	Valley oak	9	Yes	2	\$900	Remove	Within project area
44	London plane	7	No	3	\$400	Remove	Within project area
45	London plane	6	No	2	\$200	Remove	Within project area
46	Arizona cypress	21	Yes	1	\$800	Remove	Within project area
47	Arizona cypress	9	No	1	\$150	Remove	Within project area
48	London plane	10	No	4	\$1,100	Remove	Within project area
49	London plane	6	No	2	\$200	Remove	Within project area
50	Arizona cypress	12	No	2	\$800	Remove	Within project area
51	Valley oak	13	Yes	3	\$3,150	Remove	Within project area
52	Arizona cypress	13	No	3	\$1,550	Remove	Within project area
53	Valley oak	7,6,5	Yes	3	\$1,900	Remove	Within project area
54	London plane	9	No	3	\$650	Remove	Within project area
55	London plane	14	No	4	\$2,100	Remove	Within project area

Table 3, continued. Proposed action. Oak Park Blvd. Pleasant Hill CA.

Tree No.	Species	Trunk Diameter (in.)	Protected Tree?	Condition 0=dead 5=excell.	Estimate of Value	Proposed Action	Notes
56	White mulberry	14	No	2	\$650	Remove	Within project area
57	Valley oak	7,4	Yes	2	\$500	Remove	Within project area
58	White mulberry	8,7	No	1	\$100	Remove	Within project area
59	Elderberry	5	No	3	\$250	Remove	Within project area
60	White mulberry	11,9	Yes	2	\$650	Remove	Within project area
61	White mulberry	19	Yes	2	\$1,150	Remove	Within project area
62	White mulberry	16	No	3	\$1,400	Remove	Within project area
63	Valley oak	9	Yes	2	\$900	Remove	Within project area
64	Raywood ash	6	No	3	\$350	Remove	Within project area
65	Raywood ash	5	No	1	\$50	Remove	Within project area
66	Raywood ash	4	No	1	\$50	Remove	Within project area
67	Raywood ash	5	No	3	\$250	Remove	Within project area
68	Mexican fan palm	17	No	5	\$1,100	Remove	Within project area
69	Canary Island pine	19	Yes	3	\$2,350	Remove	Within project area
70	Canary Island pine	18	Yes	3	\$2,100	Remove	Within project area
71	Canary Island pine	20	Yes	3	\$2,600	Remove	Within project area
72	Monterey pine	22	Yes	3	\$850	Remove	Within project area
73	Coast live oak	6,3,2	Yes	4	\$750	Remove	Within project area
74	Coast live oak	7,4	Yes	3	\$350	Remove	Within project area
75	Glossy privet	8,8,8	Yes	2	\$150	Remove	Within project area
76	Sweetgum	6	No	3	\$350	Remove	Within project area
77	Hollywood juniper	8	No	2	\$200	Remove	Within project area
78	Hollywood juniper	8	No	2	\$200	Remove	Within project area
79	Hollywood juniper	8	No	2	\$200	Remove	Within project area
80	Hollywood juniper	9,8,7,6	Yes	3	\$1,200	Remove	Within project area

Table 3, continued. Proposed action. Oak Park Blvd. Pleasant Hill CA.

Tree No.	Species	Trunk Diameter (in.)	Protected Tree?	Condition 0=dead 5=excell.	Estimate of Value	Proposed Action	Notes
81	Hollywood juniper	9,9,6	Yes	3	\$1,050	Remove	Within project area
82	Hollywood juniper	15,8,7,6,6	Yes	3	\$2,050	Remove	Within project area
83	Sweetgum	17	No	4	\$3,700	Remove	Within project area
84	Crape myrtle	4	No	3	\$350	Remove	Within project area
85	Crape myrtle	6	No	4	\$950	Remove	Within project area
86	Crape myrtle	8	No	4	\$1,650	Remove	Within project area
87	Crape myrtle	6	No	4	\$950	Remove	Within project area
88	Crape myrtle	6	No	4	\$950	Remove	Within project area
89	Ginkgo	9	No	5	\$1,400	Remove	Within project area
90	Sweetgum	18	Yes	3	\$2,950	Remove	Within project area
91	Sweetgum	9	No	3	\$750	Remove	Within project area
92	Sweetgum	12	No	3	\$1,350	Remove	Within project area
93	Sweetgum	12	No	3	\$1,350	Remove	Within project area
94	Coast live oak	11	Yes	4	\$1,550	Remove	Within project area
95	Coast live oak	12	Yes	3	\$1,350	Remove	Within project area
96	Carob	27	Yes	3	\$2,600	Remove	Within project area
97	Carob	24	Yes	3	\$2,050	Remove	Within project area
98	Carob	14	No	3	\$700	Remove	Within project area
99	Carob	14	No	3	\$700	Remove	Within project area
100	Carob	21	Yes	3	\$1,600	Remove	Within project area
101	Carob	12	No	3	\$550	Remove	Within project area
102	Carob	15	No	3	\$800	Remove	Within project area
103	Carob	16	No	3	\$950	Remove	Within project area
104	Carob	13	No	3	\$600	Remove	Within project area
105	Carob	35	Yes	3	\$4,250	Remove	Within project area

Table 3, continued. Proposed action. Oak Park Blvd. Pleasant Hill CA.

Tree No.	Species	Trunk Diameter (in.)	Protected Tree?	Condition 0=dead 5=excell.	Estimate of Value	Proposed Action	Notes
106	Ginkgo	6	No	4	\$500	Remove	Within project area
107	Ginkgo	10	No	3	\$950	Remove	Within project area
108	Koelreuteria	12	No	3	\$800	Remove	Within project area
109	Italian stone pine	15	No	4	\$2,000	Remove	Within project area
110	Coast live oak	5	No	4	\$400	Remove	Within project area
111	Dwarf blue gum	32,21,20,18	No	3	\$4,500	Remove	Within project area
112	Marina madrone	6	No	4	\$900	Remove	Within project area
113	Canary Island pine	25	Yes	4	\$9,500	Remove	Within project area
114	Valley oak	4,3,3,2,2	Yes	3	\$600	Remove	Within project area
115	Valley oak	5,4,3	Yes	3	\$700	Remove	Within project area
116	Sweetgum	8	No	3	\$500	Remove	Within project area
117	Canary Island pine	27	Yes	4	\$8,250	Remove	Within project area
118	Canary Island pine	8	No	3	\$500	Remove	Within project area
119	Coast live oak	16	Yes	2	\$1,400	Remove	Within project area
120	Canary Island pine	29	Yes	5	\$12,200	Remove	Within project area
121	Coast live oak	8	No	4	\$850	Remove	Within project area
122	Coast live oak	18	Yes	4	\$4,100	Remove	Within project area
123	Monterey pine	28	Yes	2	\$1,000	Remove	Within project area
124	Coast live oak	6,4,4,3	Yes	3	\$600	Remove	Within project area
125	Coast live oak	6,5,4,3,3,2	Yes	3	\$800	Remove	Within project area
126	Monterey pine	25	Yes	2	\$800	Remove	Within project area
127	Coast live oak	5,4,3	Yes	3	\$450	Remove	Within project area
128	Monterey pine	26	Yes	2	\$900	Remove	Within project area
129	Coast live oak	6,5,3,3,2	Yes	3	\$650	Remove	Within project area
130	Canary Island pine	19	Yes	3	\$2,950	Remove	Within project area

Table 3, continued. Proposed action. Oak Park Blvd. Pleasant Hill CA.

Tree No.	Species	Trunk Diameter (in.)	Protected Tree?	Condition 0=dead 5=excell.	Estimate of Value	Proposed Action	Notes
131	Monterey pine	34	Yes	2	\$1,450	Remove	Within project area
132	Italian stone pine	23,22	Yes	3	\$6,300	Preserve	Edge of project area; locate trunk
133	Monterey pine	32	Yes	2	\$1,300	Remove	Within project area
134	Monterey pine	24	Yes	2	\$750	Remove	Within project area
135	Monterey pine	36	Yes	2	\$1,600	Remove	Within project area
136	Monterey pine	32	Yes	2	\$1,300	Remove	Within project area
137	Monterey pine	22	Yes	2	\$650	Remove	Within project area
138	Glossy privet	6,3,3	No	2	\$50	Remove	Within project area
139	Monterey pine	28	Yes	2	\$1,000	Remove	Within project area
140	Coast live oak	8	No	3	\$600	Remove	Within project area
141	Coast live oak	7	No	3	\$500	Remove	Within project area
142	Monterey pine	23	Yes	2	\$700	Remove	Within project area
143	Coast live oak	8	No	4	\$1,050	Remove	Within project area
144	Canary Island pine	12	No	5	\$2,400	Remove	Within project area
145	Valley oak	6,5	Yes	2	\$500	Remove	Within project area
146	Sweetgum	15	No	2	\$1,050	Remove	Within project area
147	Sweetgum	10	No	2	\$450	Remove	Within project area
148	Sweetgum	12	No	3	\$1,100	Remove	Within project area
149	Silver dollar gum	18	No	2	\$1,800	Remove	Within project area
150	Silver dollar gum	22	No	2	\$2,650	Remove	Within project area
151	Silver dollar gum	19	No	2	\$2,000	Remove	Within project area
152	Silver dollar gum	14	No	2	\$1,100	Remove	Within project area
153	Coast live oak	18	Yes	5	\$7,050	Remove	Within project area
154	Coast live oak	14	Yes	2	\$1,300	Remove	Within project area

Table 3, continued. Proposed action. Oak Park Blvd. Pleasant Hill CA.

Tree No.	Species	Trunk Diameter (in.)	Protected Tree?	Condition 0=dead 5=excell.	Estimate of Value	Proposed Action	Notes
155	Monterey pine	36	Yes	1	\$550	Remove	Within project area
156	Coast live oak	12	Yes	4	\$1,850	Remove	Within project area
157	Monterey pine	11	No	3	\$250	Remove	Within project area
158	Monterey pine	21	Yes	3	\$950	Remove	Within project area
159	Monterey pine	19	Yes	4	\$1,100	Remove	Within project area
160	Valley oak	10	Yes	3	\$1,550	Remove	Within project area
161	Red ironbark	26	No	3	\$1,050	Remove	Within project area
162	Monterey pine	13	No	2	\$250	Remove	Within project area
163	Monterey pine	17	No	3	\$650	Remove	Within project area
164	Monterey pine	8	No	2	\$100	Remove	Within project area
165	Monterey pine	12	No	3	\$300	Remove	Within project area
166	Red ironbark	10	No	2	\$100	Remove	Within project area
167	Calif. incense cedar	23	Yes	2	\$2,000	Remove	Within project area
168	Calif. incense cedar	21	Yes	3	\$2,800	Preserve	Edge of project area; locate trunk
169	Calif. incense cedar	13,12	Yes	2	\$1,150	Remove	Within project area
170	Calif. incense cedar	22	Yes	4	\$4,300	Preserve	Edge of project area; locate trunk
171	Calif. incense cedar	25	Yes	2	\$2,350	Remove	Within project area
172	Monterey pine	22	Yes	5	\$2,100	Preserve	Edge of project area; locate trunk
173	Coast live oak	10	Yes	4	\$1,300	Preserve	Edge of project area; locate trunk
174	Aleppo pine	16	Yes	2	\$1,150	Remove	Within project area
175	Coast live oak	7	No	2	\$300	Remove	Within project area
176	Red ironbark	20	No	2	\$350	Remove	Within project area

Table 3, continued. Proposed action. Oak Park Blvd. Pleasant Hill CA.

Tree No.	Species	Trunk Diameter (in.)	Protected Tree?	Condition 0=dead 5=excell.	Estimate of Value	Proposed Action	Notes
177	Red ironbark	34	No	3	\$1,700	Remove	Within project area
178	Red ironbark	21	No	2	\$400	Remove	Within project area
179	Red ironbark	20	No	2	\$350	Remove	Within project area
180	Red ironbark	10,9,9,9	No	2	\$300	Remove	Within project area
181	Red ironbark	17	No	2	\$250	Remove	Within project area
182	Sweetgum	16	No	3	\$1,950	Remove	Within project area
183	Sweetgum	7	No	3	\$400	Remove	Within project area
184	Sweetgum	14	No	3	\$1,500	Remove	Within project area
185	Coast live oak	13,12	Yes	3	\$2,750	Remove	Within project area
186	Arizona cypress	10,5	No	2	\$450	Remove	Within project area
187	Coast live oak	10	Yes	4	\$1,300	Remove	Within project area
188	Coast live oak	8	No	3	\$600	Remove	Within project area
189	Sweetgum	6	No	3	\$350	Remove	Within project area
190	Sweetgum	16	No	3	\$2,350	Remove	Within project area
191	Sweetgum	11	No	3	\$1,100	Remove	Within project area
192	Sweetgum	12	No	3	\$1,350	Remove	Within project area
193	Sweetgum	11	No	3	\$1,100	Remove	Within project area
194	Monterey pine	24	Yes	2	\$750	Preserve	Edge of project area
195	Monterey pine	24	Yes	3	\$1,250	Preserve	Edge of project area
196	Monterey pine	23	Yes	2	\$700	Preserve	Edge of project area
197	Monterey pine	21	Yes	0	\$0	Remove	Dead
198	Monterey pine	16	No	0	\$0	Remove	Dead
199	Monterey pine	30	Yes	3	\$1,950	Preserve	Edge of project area
200	Monterey pine	16	No	1	\$100	Preserve	Edge of project area
201	Monterey pine	22	Yes	2	\$650	Preserve	Edge of project area

Table 3, continued. Proposed action. Oak Park Blvd. Pleasant Hill CA.

Tree No.	Species	Trunk Diameter (in.)	Protected Tree?	Condition 0=dead 5=excell.	Estimate of Value	Proposed Action	Notes
202	Valley oak	8	No	3	\$1,000	Preserve	Edge of project area; locate trunk
203	Valley oak	7	No	2	\$450	Preserve	Edge of project area; locate trunk
204	Valley oak	9	Yes	3	\$1,300	Preserve	Edge of project area; locate trunk
205	Valley oak	9	Yes	4	\$1,800	Preserve	Edge of project area; locate trunk
206	Valley oak	10,7	Yes	3	\$2,350	Preserve	Edge of project area
207	Valley oak	6,5,5	Yes	2	\$800	Preserve	Edge of project area
208	Valley oak	12,8	Yes	4	\$4,800	Preserve	Edge of project area
209	Valley oak	8,7	Yes	3	\$1,700	Preserve	Edge of project area; locate trunk
210	Valley oak	7	No	3	\$800	Preserve	Edge of project area; locate trunk
211	Valley oak	16	Yes	3	\$3,900	Preserve	Edge of project area
212	Monterey pine	18	Yes	2	\$400	Preserve	Edge of project area
213	Valley oak	8	No	2	\$250	Preserve	W. side creek
214	Valley oak	26	Yes	4	\$8,650	Preserve	W. side creek
215	Calif. black walnut	7,5,5,4	Yes	2	\$200	Preserve	W. side creek
216	Valley oak	9	Yes	4	\$1,050	Preserve	W. side creek
217	Valley oak	6	No	4	\$500	Preserve	W. side creek
218	Valley oak	5	No	3	\$250	Preserve	W. side creek
219	Valley oak	7,6	Yes	3	\$600	Preserve	W. side creek
220	Valley oak	5	No	5	\$500	Preserve	W. side creek
221	Coast live oak	8	No	4	\$500	Preserve	W. side creek

Table 3, continued. Proposed action. Oak Park Blvd. Pleasant Hill CA.

Tree No.	Species	Trunk Diameter (in.)	Protected Tree?	Condition 0=dead 5=excell.	Estimate of Value	Proposed Action	Notes
222	Calif. black walnut	14,6	Yes	3	\$700	Preserve	W. side creek
223	Valley oak	11	Yes	3	\$900	Preserve	W. side creek
224	Valley oak	5	No	4	\$350	Preserve	W. side creek
225	Coast live oak	9	Yes	5	\$950	Preserve	W. side creek
226	Coast live oak	5	No	3	\$150	Preserve	W. side creek
227	Calif. black walnut	15	Yes	0	\$0	Preserve	W. side creek; dead
228	Coast live oak	10,9	Yes	3	\$750	Preserve	W. side creek
229	Valley oak	6,5	No	3	\$550	Preserve	W. side creek
230	Valley oak	8	No	4	\$850	Preserve	W. side creek
231	Valley oak	7	No	5	\$950	Preserve	W. side creek
232	Coast live oak	12,11	Yes	3	\$1,100	Preserve	W. side creek
233	Valley oak	5	No	3	\$250	Preserve	W. side creek
234	Valley oak	8	No	3	\$600	Preserve	W. side creek
235	Valley oak	7,4	Yes	2	\$200	Preserve	W. side creek
236	Valley oak	5	No	3	\$200	Preserve	W. side creek
237	Valley oak	8,4	Yes	2	\$400	Preserve	W. side creek
238	Valley oak	9,8	Yes	2	\$750	Preserve	W. side creek
239	Valley oak	9	Yes	3	\$750	Preserve	W. side creek
240	Valley oak	5,5	No	2	\$200	Preserve	W. side creek
241	Valley oak	5	No	2	\$100	Preserve	W. side creek
242	Valley oak	9	Yes	3	\$600	Preserve	W. side creek
243	Valley oak	11	Yes	3	\$1,100	Preserve	W. side creek
244	Calif. black walnut	7,5,5	Yes	0	\$0	Preserve	W. side creek; dead
245	Valley oak	9,7	Yes	3	\$1,000	Preserve	W. side creek
246	Valley oak	10,10	Yes	3	\$1,400	Preserve	W. side creek

Table 3, continued. Proposed action. Oak Park Blvd. Pleasant Hill CA.

Tree No.	Species	Trunk Diameter (in.)	Protected Tree?	Condition 0=dead 5=excell.	Estimate of Value	Proposed Action	Notes
247	Valley oak	11	Yes	3	\$1,100	Preserve	W. side creek
248	Coast live oak	6	No	4	\$300	Preserve	W. side creek
249	Valley oak	7	No	3	\$450	Preserve	W. side creek
250	Valley oak	10,9	Yes	2	\$950	Preserve	W. side creek
251	Coast live oak	6	No	3	\$200	Preserve	W. side creek
252	Boxelder	5	No	4	\$50	Preserve	W. side creek
253	Bailey acacia	5	No	2	\$0	Preserve	W. side creek; dead
254	Valley oak	13	Yes	4	\$2,200	Preserve	W. side creek
255	Valley oak	17	Yes	3	\$2,650	Preserve	W. side creek
256	Siberian elm	16,14,6	Yes	2	\$750	Preserve	W. side creek
257	Siberian elm	21	Yes	3	\$950	Preserve	E. side creek
258	Olive	7,6,5,5	No	3	\$400	Preserve	E. side creek
259	Olive	6,6,5,4,4	No	3	\$450	Preserve	E. side creek
260	Olive	16,11	Yes	1	\$300	Preserve	E. side creek
261	Valley oak	7	No	4	\$650	Preserve	E. side creek
262	Olive	7,5,3	No	2	\$100	Preserve	E. side creek
263	Bailey acacia	12	No	2	\$50	Preserve	E. side creek
264	Olive	5,5,3,3	No	4	\$350	Preserve	E. side creek
265	Olive	9,7,7	No	0	\$0	Preserve	E. side creek; dead
266	Siberian elm	11,9,9,8,6,5	Yes	2	\$600	Preserve	E. side creek
267	Olive	5,4,3	No	3	\$200	Preserve	E. side creek
268	Black locust	23	No	1	\$300	Preserve	E. side creek
269	Olive	7,5,4	No	3	\$300	Preserve	E. side creek
270	Olive	5,5	No	4	\$350	Preserve	E. side creek
271	Calif. pepper	7	No	4	\$250	Preserve	E. side creek

Table 3, continued. Proposed action. Oak Park Blvd. Pleasant Hill CA.

Tree No.	Species	Trunk Diameter (in.)	Protected Tree?	Condition 0=dead 5=excell.	Estimate of Value	Proposed Action	Notes
272	Olive	22,12	Yes	0	\$0	Preserve	E. side creek; dead
273	Coast live oak	5	No	3	\$150	Preserve	E. side creek
274	Holly oak	6,6,5,4	No	3	\$650	Preserve	E. side creek
275	Evergreen ash	19,13	Yes	3	\$850	Preserve	E. side creek
276	Valley oak	10,10,8	Yes	3	\$2,200	Preserve	E. side creek
277	Valley oak	9,8	Yes	3	\$1,000	Preserve	E. side creek
278	Coast live oak	6	No	3	\$200	Preserve	E. side creek
279	Calif. black walnut	18,13,10	Yes	3	\$1,700	Preserve	E. side creek
280	Valley oak	7	No	3	\$450	Preserve	E. side creek
281	Valley oak	11,10	Yes	3	\$1,250	Preserve	E. side creek
282	Valley oak	11,7	Yes	3	\$1,450	Preserve	E. side creek
283	Valley oak	8	No	4	\$850	Preserve	E. side creek
284	Valley oak	11	Yes	4	\$1,550	Preserve	E. side creek
285	Valley oak	10	Yes	3	\$750	Preserve	E. side creek
286	Honeylocust	8	No	0	\$0	Preserve	E. side creek; dead
287	Honeylocust	10,7,5	No	1	\$100	Preserve	E. side creek
288	Valley oak	7	No	3	\$350	Preserve	E. side creek
289	Valley oak	11	Yes	3	\$1,100	Preserve	E. side creek
290	Valley oak	13,9,6	Yes	3	\$2,350	Preserve	E. side creek
291	Oregon ash	14,13,13,11,9	Yes	3	\$800	Preserve	E. side creek
292	Valley oak	8	No	4	\$850	Preserve	E. side creek
293	Calif. black walnut	5,4	No	2	\$50	Preserve	E. side creek
294	Bailey acacia	5	No	5	\$50	Preserve	E. side creek
295	Valley oak	9	Yes	3	\$750	Preserve	E. side creek
296	Oregon ash	13,13,12,10,9,6,6	Yes	2	\$550	Preserve	E. side creek

Table 3, continued. Proposed action. Oak Park Blvd. Pleasant Hill CA.

Tree No.	Species	Trunk Diameter (in.)	Protected Tree?	Condition 0=dead 5=excell.	Estimate of Value	Proposed Action	Notes
297	Valley oak	9,8	Yes	4	\$1,750	Preserve	E. side creek
298	Valley oak	8	No	2	\$350	Preserve	E. side creek
299	Catalpa	12,9,6	No	3	\$750	Preserve	E. side creek
300	Coast live oak	6,6	No	3	\$350	Preserve	E. side creek
301	Calif. black walnut	13	Yes	2	\$350	Preserve	E. side creek
302	Willow	32,22	Yes	3	\$1,450	Preserve	E. side creek

Tree Preservation Guidelines

The goal of tree preservation is not merely tree survival during development but maintenance of tree health and beauty for many years. Impacts can be minimized by coordinating any construction activities inside the **TREE PROTECTION ZONE**.

The following recommendations will help reduce impacts to trees from development and maintain and improve their health and vitality through the clearing, grading and construction phases.

Design recommendations

1. Any plan affecting trees should be reviewed by the Consulting Arborist with regard to tree impacts. This includes, but is not limited to, improvement plans, utility and drainage plans, grading plans, landscape and irrigation plans, and demolition plans.
3. A **TREE PROTECTION ZONE** must be established for trees to be preserved, in which no disturbance is permitted. For design purposes, the **TREE PROTECTION ZONE** should be considered the edge of grading. More specific **TREE PROTECTION ZONES** may be identified as project plans become more detailed. No grading, excavation, construction or storage of materials shall occur within that zone.
4. Underground services including utilities, sub-drains, water or sewer shall be routed around the **TREE PROTECTION ZONE**. Where encroachment cannot be avoided, special construction techniques such as hand digging or tunneling under roots shall be employed where necessary to minimize root injury.
5. Irrigation systems must be designed so that no trenching will occur within the **TREE PROTECTION ZONE**.
6. Any herbicides placed under paving materials must be safe for use around trees and labeled for that use.

Pre-construction treatments and recommendations

1. The demolition contractor shall meet with the Consulting Arborist before beginning work to discuss work procedures and tree protection. Of specific concern is removal of existing chain-link fence in along the northeast and east property lines.
2. Cap and abandon all existing underground utilities within the **TREE PROTECTION ZONE** in place. Removal of utility boxes by hand is acceptable but no trenching should be performed within the **TREE PROTECTION ZONE** in an effort to remove utilities, irrigation lines, etc.
3. Fence trees to completely enclose the **TREE PROTECTION ZONE** prior to demolition, grubbing, or grading. Fences shall be 6 ft. chain link or equivalent as approved by the City of Pleasant Hill. Fences are to remain until all construction is completed.

4. Trees to be preserved may require pruning to provide construction clearance. Pruning of off-site trees should be performed with the property owner's permission. All pruning shall be completed by a Certified Arborist or Tree Worker. Pruning shall adhere to the latest edition of the ANSI Z133 and A300 standards as well as the *Best Management Practices -- Tree Pruning* published by the International Society of Arboriculture.
5. Structures and underground features to be removed within the **TREE PROTECTION ZONE** shall use the smallest equipment, and operate from outside the **TREE PROTECTION ZONE**. The consultant shall be on-site during all operations within the **TREE PROTECTION ZONE** to monitor demolition activity.

Recommendations for tree protection during construction

1. Prior to beginning work, the contractors working in the vicinity of trees to be preserved are required to meet with the Consulting Arborist at the site to review all work procedures, access routes, storage areas and tree protection measures.
2. Fences have been erected to protect trees to be preserved. Fences define a specific **TREE PROTECTION ZONE** for each tree or group of trees. Fences are to remain until all site work has been completed. Fences may not be relocated or removed without permission of the Consulting Arborist.
3. Any excavation within the dripline or other work that is expected to encounter tree roots should be approved and monitored by the Consulting Arborist. Roots shall be cut by manually digging a trench and cutting exposed roots with a sharp saw. The Consulting Arborist will identify where root pruning is required.
4. If injury should occur to any tree during construction, it should be evaluated as soon as possible by the Consulting Arborist so that appropriate treatments can be applied.
5. Prior to grading, pad preparation, excavation for foundations/footings/walls, trenching, trees may require root pruning outside the **TREE PROTECTION ZONE** by cutting all roots cleanly to the depth of the excavation. Roots shall be cut by manually digging a trench and cutting exposed roots with a sharp saw or other approved root pruning equipment. The Consulting Arborist will identify where root pruning is required.
6. All underground utilities, drain lines or irrigation lines shall be routed outside the **TREE PROTECTION ZONE**. If lines must traverse through the protection area, they shall be tunneled or bored under the tree as directed by the Consulting Arborist.
7. No materials, equipment, spoil, waste or wash-out water may be deposited, stored, or parked within the **TREE PROTECTION ZONE** (fenced area).
8. Any additional tree pruning needed for clearance during construction must be performed by a Certified Arborist and not by construction personnel.

HortScience | Bartlett Consulting



James R. Clark, Ph.D.
Certified Arborist WE-0846
Registered Consulting Arborist #357

ATTACHMENTS

Tree Assessment Form

Tree Assessment Map

Tree Assessment

Oak Park Blvd.
Pleasant Hill CA
February 2018 & February 2019



TREE No.	SPECIES	TRUNK DIAMETER (in.)	PROTECTED TREE?	CONDITION 0=dead 1=poor 5=excel.	SUITABILITY for PRESERVATION	COMMENTS
1	Valley oak	12	Yes	3	Moderate	Okay form but base embedded in fence; sweeps upright.
2	Valley oak	12	Yes	2	Low	Base embedded in fence; poor form & structure; bowed S.; base outside of dripline.
3	Siberian elm	4,4	No	2	Low	Poor form & structure; codominant trunks @ base; stump sprout.
4	White mulberry	14	No	3	Low	Topped & multiple attachments @ 6' with decay in trunk.
5	White mulberry	22	Yes	2	Low	Ext. trunk decay; multiple attachments @ 4'; canopy hangs to ground.
6	Valley oak	10,9	Yes	2	Low	Base embedded in fence; codominant trunks @ 2'.
7	White mulberry	22	Yes	2	Low	Codominant trunks @ 7'; cracked apart; covered by ivy.
8	White mulberry	17	No	2	Low	Poor form & structure; trunk decay; seam on S. to base.
9	White mulberry	12	No	2	Low	Poor form & structure; ext. basal sprouts; codominant trunks @ 6'.
10	White mulberry	13	No	1	Low	Largely dead; multiple attachments @ 6'.
11	White mulberry	15	No	2	Low	Leans NW.; multiple attachments @ 6'; topped.
12	Valley oak	12	Yes	2	Low	Poor form & structure; base & lower trunk embedded in fence; multiple attachments @ 5'.
13	Valley oak	16,9	Yes	2	Low	One-sided to W.; codominant trunks @ 4'; multiple attachments @ 8'.
14	Valley oak	25,11,10,7,6	Yes	3	Moderate	Multiple attachments @ 3' to 6'; vase-shaped crown.
15	White mulberry	16	No	1	Low	Largely dead; ext. decay & twig & branch dieback.
16	White mulberry	15	No	1	Low	Largely dead.

Tree Assessment

Oak Park Blvd.
Pleasant Hill CA
February 2018 & February 2019



TREE No.	SPECIES	TRUNK DIAMETER (in.)	PROTECTED TREE?	CONDITION 0=dead 1=poor 5=excel.	SUITABILITY for PRESERVATION	COMMENTS
17	Valley oak	15	Yes	4	Moderate	Oppos. side of fence; upper crown bowed into project area.
18	Coast live oak	12	Yes	3	Moderate	Base embedded in fence; otherwise good tree.
19	Coast live oak	12	Yes	4	Moderate	Oppos. side of fence; good tree.
20	Coast live oak	8,8	Yes	3	Moderate	Base of fence; codominant trunks @ 3'.
21	Coast live oak	12,11	Yes	3	Low	Base & lower trunk embedded in fence; codominant trunks @ 3'; stems separated.
22	Valley oak	6,3	Yes	3	Low	Base of fence; codominant trunks @ base; leans W.
23	Mexican fan palm	20	Yes	5	High	Oppos. side of fence; good form & structure; 40' brown trunk.
24	Valley oak	7,5	Yes	3	Low	Base embedded in fence; codominant trunks @ 1'.
25	Almond	6,5,5,5	Yes	2	Low	Oppos. side of fence; poor form & structure.
26	Valley oak	14,13,7	Yes	2	Low	Base embedded in fence; codominant trunks @ 3' with included bark; poor form & structure.
27	Bailey's acacia	20,14,8	Yes	2	Low	Oppos. side of fence; multiple attachments @ base; 20" largely dead.
28	Bailey's acacia	12,7	Yes	2	Low	Codominant trunks @ 4' & 5'; thin canopy.
29	Valley oak	20,18,12	Yes	2	Low	Tag on fence ; off-side; top of bank; multiple attachments @ 3'; completely separated; 2 stems over project.
30	Bailey's acacia	5	No	2	Low	Leans W.; lost central leader; below #29.
31	Bailey's acacia	14,8	Yes	1	Low	Oppos. side of fence; codominant trunks @ 1'; leans W.; dead?
32	Bailey's acacia	9	No	2	Low	Oppos. side of fence; leaning & one-sided to S.
33	Bailey's acacia	7	No	1	Low	Poor form & structure; bowed to ground on W.; base outside of dripline.

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TREE SPECIES No.	TRUNK DIAMETER (in.)	PROTECTED TREE?	CONDITION 0=dead 1=poor 5=excel.	SUITABILITY for PRESERVATION	COMMENTS	
34	Valley oak	17	Yes	3	Low	Oppos. side of fence; multiple attachments @ 6'; 4 stems.
35	London plane	8	No	3	Low	Lack vigor
36	London plane	6	No	3	Low	Lack vigor
37	Arizona cypress	18	Yes	3	Low	Rangy form. Several root failures in area.
38	London plane	7	No	2	Low	Poor form & structure; no vigor.
39	London plane	10	No	3	Low	Codominant trunks @ 6"; no vigor.
40	Arizona cypress	14	No	3	Low	Partly corrected lean W; base outside of dripline.
41	Arizona cypress	15	No	2	Low	Poor form & structure; codominant trunks failed @ 3'; lost central leader.
42	Arizona cypress	10	No	2	Low	Leans E.; lost central leader.
43	Valley oak	9	Yes	2	Low	Poor form & structure; lost central leader.
44	London plane	7	No	3	Low	Lack vigor
45	London plane	6	No	2	Low	Poor form & structure; no vigor.
46	Arizona cypress	21	Yes	1	Low	Failing @ base to SW.; soil lifted.
47	Arizona cypress	9	No	1	Low	Poor form & structure; lost central leader; thin canopy.
48	London plane	10	No	4	Moderate	Typical form & structure.
49	London plane	6	No	2	Low	Suppressed; poor form & structure.
50	Arizona cypress	12	No	2	Low	Partly corrected lean S.; codominant trunks high in crown; small crown.
51	Valley oak	13	Yes	3	Moderate	Bowed S.
52	Arizona cypress	13	No	3	Low	Partly corrected lean S.
53	Valley oak	7,6,5	Yes	3	Low	Multiple attachments @ 4'; upright.
54	London plane	9	No	3	Moderate	Multiple attachments @ 7'.
55	London plane	14	No	4	Moderate	Typical form & structure; lacks vigor.

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TREE SPECIES No.	TRUNK DIAMETER (in.)	PROTECTED TREE?	CONDITION 0=dead 1=poor 5=excel.	SUITABILITY for PRESERVATION	COMMENTS	
56	White mulberry	14	No	2	Low	Codominant trunks @ 6'; ext. twig & branch dieback.
57	Valley oak	7,4	Yes	2	Low	Poor form & structure; codominant trunks @ 1'; bowed NE.; base outside of dripline.
58	White mulberry	8,7	No	1	Low	All but dead; codominant trunks @ base.
59	Elderberry	5	No	3	Low	Emerges thru canopy.
60	White mulberry	11,9	Yes	2	Low	Codominant trunks @ 2'; ext. twig & branch dieback.
61	White mulberry	19	Yes	2	Low	Multiple attachments @ 6'; irregular form; ext. twig & branch dieback.
62	White mulberry	16	No	3	Low	Multiple attachments @ 6'; sinuous trunk; rangy form.
63	Valley oak	9	Yes	2	Low	Poor form & structure; suppressed; bowed flat.
64	Raywood ash	6	No	3	Low	Multiple attachments @ 3'; lacks vigor.
65	Raywood ash	5	No	1	Low	Multiple attachments @ 5'; stump sprouts; lacks vigor.
66	Raywood ash	4	No	1	Low	Multiple attachments @ 5'; sunscald.
67	Raywood ash	5	No	3	Low	Multiple attachments @ 5'; lacks vigor.
68	Mexican fan palm	17	No	5	High	No tag ; 12' clear trunk.
69	Canary Island pine	19	Yes	3	Low	Below overhead lines; topped; resprouts sweep vertical on W.
70	Canary Island pine	18	Yes	3	Low	Below overhead lines; topped.
71	Canary Island pine	20	Yes	3	Low	Below overhead lines; topped.
72	Monterey pine	22	Yes	3	Low	Below overhead lines; topped; dense canopy.
73	Coast live oak	6,3,2	Yes	4	Moderate	Adj. to overhead lines; codominant trunks @ base & 3'.
74	Coast live oak	7,4	Yes	3	Low	Below overhead lines; codominant trunks @ base; 7"; lost central leader.

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TREE SPECIES No.	TRUNK DIAMETER (in.)	PROTECTED TREE?	CONDITION 0=dead 1=poor 5=excel.	SUITABILITY for PRESERVATION	COMMENTS	
75	Glossy privet	8,8,8	Yes	2	Low	Below overhead lines; topped; codominant trunks @ 1' & 3'.
76	Sweetgum	6	No	3	Low	Typical form & structure; lacks vigor.
77	Hollywood juniper	8	No	2	Low	2' from bldg.; poor form & structure.
78	Hollywood juniper	8	No	2	Low	2' from bldg.; poor form & structure.
79	Hollywood juniper	8	No	2	Low	2' from bldg.; poor form & structure.
80	Hollywood juniper	9,8,7,6	Yes	3	Low	Multiple attachments @ base; rangy form; high crown.
81	Hollywood juniper	9,9,6	Yes	3	Low	Multiple attachments @ base; rangy form; high crown.
82	Hollywood juniper	15,8,7,6,6	Yes	3	Low	Multiple attachments @ base; rangy form; high crown.
83	Sweetgum	17	No	4	Moderate	Typical form & structure; laterals sweep vertical.
84	Crape myrtle	4	No	3	Low	Typical form & structure; lacks vigor.
85	Crape myrtle	6	No	4	Moderate	Typical form & structure; lacks vigor.
86	Crape myrtle	8	No	4	Moderate	Typical form & structure; lacks vigor.
87	Crape myrtle	6	No	4	Moderate	Typical form & structure; lacks vigor.
88	Crape myrtle	6	No	4	Moderate	Typical form & structure; lacks vigor.
89	Ginkgo	9	No	5	High	Good form & structure.
90	Sweetgum	18	Yes	3	Low	Typical form & structure; lacks vigor; large surface roots; lost central leader.
91	Sweetgum	9	No	3	Low	Typical form & structure; lacks vigor; surface roots; lost central leader.
92	Sweetgum	12	No	3	Low	Codominant trunks @ 6'; lost central leader; lacks vigor.
93	Sweetgum	12	No	3	Low	Topped; lacks vigor.

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TREE No.	SPECIES	TRUNK DIAMETER (in.)	PROTECTED TREE?	CONDITION 0=dead 1=poor 5=excel.	SUITABILITY for PRESERVATION	COMMENTS
94	Coast live oak	11	Yes	4	High	Parking lot planter; multiple attachments @ 6'.
95	Coast live oak	12	Yes	3	Low	Parking lot planter; codominant trunks @ 6'.
96	Carob	27	Yes	3	Low	Below overhead lines; topped; twig dieback. All top of bank adj. to parking. Trunks 2' back of curb.
97	Carob	24	Yes	3	Low	Below overhead lines; topped; twig dieback.
98	Carob	14	No	3	Low	Below overhead lines; topped; twig dieback.
99	Carob	14	No	3	Low	Below overhead lines; topped; twig dieback.
100	Carob	21	Yes	3	Low	Below overhead lines; topped; twig dieback.
101	Carob	12	No	3	Low	Below overhead lines; topped.
102	Carob	15	No	3	Low	Below overhead lines; topped; twig dieback.
103	Carob	16	No	3	Low	Below overhead lines; topped;
104	Carob	13	No	3	Low	Below overhead lines; topped.
105	Carob	35	Yes	3	Low	Below overhead lines; topped; dense canopy.
106	Ginkgo	6	No	4	Moderate	No tag ; typical form & structure; lacks vigor.
107	Ginkgo	10	No	3	Low	2' from curb; lost central leader; multiple attachments @ 6'.
108	Koelreuteria	12	No	3	Low	1' from curb; codominant trunks @ 5' & above; typical form & structure.
109	Italian stone pine	15	No	4	Moderate	Parking lot planter; sweeps upright from base; circling roots.
110	Coast live oak	5	No	4	Moderate	Parking lot planter; codominant trunks @ 5'; lacks vigor.
111	Dwarf blue gum	32,21,20,18	No	3	Low	Multiple attachments @ 4'; separating in upper crown.
112	Marina madrone	6	No	4	Moderate	Codominant trunks @ 5'; typical form & structure.
113	Canary Island pine	25	Yes	4	Moderate	Typical form & structure; crook mid-crown; slight lean E.

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114	Valley oak	4,3,3,2,2	Yes	3	Low	Multiple attachments @ base; upright.
115	Valley oak	5,4,3	Yes	3	Low	Multiple attachments @ base; upright.
116	Sweetgum	8	No	3	Low	One-sided to E.; lacks vigor.
117	Canary Island pine	27	Yes	4	Moderate	Typical form & structure; heavy lateral limb to W.
118	Canary Island pine	8	No	3	Moderate	Partly suppressed; typical form & structure.
119	Coast live oak	16	Yes	2	Low	Partly suppressed; codominant trunks @ 7'; separated; narrow form to E./W.
120	Canary Island pine	29	Yes	5	High	Good form & structure; sap flow on lower trunk.
121	Coast live oak	8	No	4	Moderate	Crowded with okay form.
122	Coast live oak	18	Yes	4	Moderate	One-sided to E.; codominant trunks high in crown.
123	Monterey pine	28	Yes	2	Low	Poor form & structure; codominant trunks @ 18'; lost central leader; branch dieback.
124	Coast live oak	6,4,4,3	Yes	3	Low	Multiple attachments @ base; partly suppressed.
125	Coast live oak	6,5,4,3,3,2	Yes	3	Low	Multiple attachments @ base; stump sprouts.
126	Monterey pine	25	Yes	2	Low	Engulfed by ivy; dying; poor form & structure.
127	Coast live oak	5,4,3	Yes	3	Low	Multiple attachments @ base.
128	Monterey pine	26	Yes	2	Low	Topped; lacks vigor.
129	Coast live oak	6,5,3,3,2	Yes	3	Low	Multiple attachments @ base; partly suppressed.
130	Canary Island pine	19	Yes	3	Low	One-sided with slight lean SE.
131	Monterey pine	34	Yes	2	Low	Multiple attachments @ 7'; separated; thin canopy.
132	Italian stone pine	23,22	Yes	3	Low	Codominant trunks @ 2'; 23' upright; 22" leans NW.; surface roots.
133	Monterey pine	32	Yes	2	Low	Leans S.; codominant trunks @ 14'; rangy form; thin canopy.
134	Monterey pine	24	Yes	2	Low	Poor form & structure; codominant trunks @ 7'; separated; thin canopy.

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TREE No.	SPECIES	TRUNK DIAMETER (in.)	PROTECTED TREE?	CONDITION 0=dead 1=poor 5=excel.	SUITABILITY for PRESERVATION	COMMENTS
135	Monterey pine	36	Yes	2	Low	Multiple attachments @ 4'; separated; thin canopy; adj. asphalt lifted.
136	Monterey pine	32	Yes	2	Low	Poor form & structure; codominant trunks @ 7'; separated; thin canopy; adj. asphalt lifted.
137	Monterey pine	22	Yes	2	Low	Partly corrected lean S.; thin canopy.
138	Glossy privet	6,3,3	No	2	Low	Multiple attachments @ base; suppressed.
139	Monterey pine	28	Yes	2	Low	Poor form & structure; codominant trunks @ 6'; separated; thin canopy; adj. asphalt lifted.
140	Coast live oak	8	No	3	Moderate	Narrow & upright form.
141	Coast live oak	7	No	3	Moderate	One-sided with slight lean N.
142	Monterey pine	23	Yes	2	Low	Multiple attachments high in crown; thin canopy; lacks vigor.
143	Coast live oak	8	No	4	Moderate	Multiple attachments @ 5'.
144	Canary Island pine	12	No	5	High	Good form & structure; 2' from pavement.
145	Valley oak	6,5	Yes	2	Low	Codominant trunks @ 1'; rangy; lost central leader.
146	Sweetgum	15	No	2	Low	Amazing surface roots; one-sided to SE.; no vigor; top dead.
147	Sweetgum	10	No	2	Low	One-sided to E.; no vigor.
148	Sweetgum	12	No	3	Low	Typical form & structure; no vigor.
149	Silver dollar gum	18	No	2	Low	8' from bldg.; multiple attachments @ 8'; topped.
150	Silver dollar gum	22	No	2	Low	8' from bldg.; multiple attachments @ 7'; topped.
151	Silver dollar gum	19	No	2	Low	8' from bldg.; multiple attachments @ 7'; topped.
152	Silver dollar gum	14	No	2	Low	8' from bldg.; codominant trunks @ 6'; topped.
153	Coast live oak	18	Yes	5	High	1' from curb; good form & structure; multiple attachments high in crown.
154	Coast live oak	14	Yes	2	Low	Leaning & one-sided to W. with gap in canopy.

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TREE No.	SPECIES	TRUNK DIAMETER (in.)	PROTECTED TREE?	CONDITION 0=dead 1=poor 5=excel.	SUITABILITY for PRESERVATION	COMMENTS
155	Monterey pine	36	Yes	1	Low	Multiple attachments @ 6'; dying.
156	Coast live oak	12	Yes	4	Moderate	Partly corrected lean W.
157	Monterey pine	11	No	3	Low	One-sided to S.
158	Monterey pine	21	Yes	3	Low	Narrow form; upper crown bowed E.
159	Monterey pine	19	Yes	4	Moderate	Typical form & structure; lost central leader @ top.
160	Valley oak	10	Yes	3	Low	Rangy form; lost central leader; bowed SW.
161	Red ironbark	26	No	3	Low	Typical form & structure; narrow vase-shaped crown.
162	Monterey pine	13	No	2	Low	Strong lean W.; base outside of dripline.
163	Monterey pine	17	No	3	Low	Partly corrected lean S.; lost central leader.
164	Monterey pine	8	No	2	Low	Suppressed; leans S.
165	Monterey pine	12	No	3	Low	High narrow crown.
166	Red ironbark	10	No	2	Low	Poor form & structure.
167	Calif. incense cedar	23	Yes	2	Low	Slight lean N.; codominant trunks high in crown; thin canopy.
168	Calif. incense cedar	21	Yes	3	Moderate	One-sided to S.
169	Calif. incense cedar	13,12	Yes	2	Low	Codominant trunks @ 3'; upright; thin canopy.
170	Calif. incense cedar	22	Yes	4	Moderate	Typical form & structure; thin canopy.
171	Calif. incense cedar	25	Yes	2	Low	Typical form & structure; thin canopy; top dead.
172	Monterey pine	22	Yes	5	High	Good form & structure.
173	Coast live oak	10	Yes	4	Moderate	One-sided & bowed N.
174	Aleppo pine	16	Yes	2	Low	Leans NW. with very thin canopy.
175	Coast live oak	7	No	2	Low	Suppressed; lost central leader.
176	Red ironbark	20	No	2	Low	Codominant trunks @ 6'; topped; poor form & structure.
177	Red ironbark	34	No	3	Low	Multiple attachments @ 7'; codominant trunks @ 20'; previously topped; rangy.

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TREE No.	SPECIES	TRUNK DIAMETER (in.)	PROTECTED TREE?	CONDITION 0=dead 1=poor 5=excel.	SUITABILITY for PRESERVATION	COMMENTS
178	Red ironbark	21	Yes	2	Low	Leaning & one-sided to N.; topped; branch failure.
179	Red ironbark	20	No	2	Low	Codominant trunks @ 8'; very rangy form.
180	Red ironbark	10,9,9,9	No	2	Low	Multiple attachments @ base; separated.
181	Red ironbark	17	No	2	Low	Leans N.; very rangy form; lost central leader.
182	Sweetgum	16	No	3	Low	Codominant trunks high in crown; topped with sprouts.
183	Sweetgum	7	No	3	Moderate	Very narrow form.
184	Sweetgum	14	No	3	Low	Lost central leader.
185	Coast live oak	13,12	Yes	3	Low	Codominant trunks @ 2' & 4'; both with included bark; one-sided to SW.
186	Arizona cypress	10,5	No	2	Low	Poor form & structure; codominant trunks @ 1'; partly corrected lean W.; thin canopy.
187	Coast live oak	10	Yes	4	Moderate	2' from curb; codominant trunks @ 5' & 7'; nice form.
188	Coast live oak	8	No	3	Low	2' from curb; one-sided to E. & rangy form.
189	Sweetgum	6	No	3	Moderate	8' from bldg.; typical form & structure; lacks vigor.
190	Sweetgum	16	No	3	Low	8' from bldg.; topped with resprouts; lost central leader.
191	Sweetgum	11	No	3	Low	8' from bldg.; topped with resprouts; lost central leader.
192	Sweetgum	12	No	3	Low	8' from bldg.; topped with resprouts; lost central leader.
193	Sweetgum	11	No	3	Low	8' from bldg.; topped with resprouts; lost central leader.
194	Monterey pine	24	Yes	2	Low	School; 5' from fence; poor form & structure; multiple attachments @ 7'; one-sided to W.
195	Monterey pine	24	Yes	3	Low	School; 5' from fence; irregular form; thin canopy.

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TREE No.	SPECIES	TRUNK DIAMETER (in.)	PROTECTED TREE?	CONDITION 0=dead 1=poor 5=excel.	SUITABILITY for PRESERVATION	COMMENTS
196	Monterey pine	23	Yes	2	Low	School; 5' from fence; narrow form; thin canopy; red turpentine beetle.
197	Monterey pine	21	Yes	0	--	School; 5' from fence; dead.
198	Monterey pine	16	No	0	--	School; 6' from fence; dead.
199	Monterey pine	30	Yes	3	Low	School; 5' from fence; rangy form; heavy sap flow; thin canopy.
200	Monterey pine	16	No	1	Low	School; 5' from fence; just poor.
201	Monterey pine	22	Yes	2	Low	School; 6' from fence; rangy form; heavy sap flow; thin canopy.
202	Valley oak	8	No	3	Moderate	School; @ fence; bowed E.; partly suppressed.
203	Valley oak	7	No	2	Low	School; 2' from fence; no vigor; poor form.
204	Valley oak	9	Yes	3	Low	School; @ fence; codominant trunks @ 9'; entire crown over project.
205	Valley oak	9	Yes	4	Moderate	School; @ fence; narrow & upright form.
206	Valley oak	10,7	Yes	3	Low	School; 5' from fence; codominant trunks @ 1'.
207	Valley oak	6,5,5	Yes	2	Low	School; 4' from fence; multiple attachments @ 5'; no vigor.
208	Valley oak	12,8	Yes	4	Moderate	School; 5' from fence; codominant trunks @ 3'.
209	Valley oak	8,7	Yes	3	Moderate	School; 1' from fence; codominant trunks @ 3' & 6'.
210	Valley oak	7	No	3	Moderate	School; @ fence; no vigor.
211	Valley oak	16	Yes	3	Moderate	School; 5' from fence; partly corrected lean E.; codominant trunks @ 18' kiss above attachment.
212	Monterey pine	18	Yes	2	Low	School; 7' from fence; just poor.
213	Valley oak	8	No	2	Low	Suppressed; bowed flat to S.
214	Valley oak	26	Yes	4	Medium	Codominant trunks @ 5'; one-sided to S.

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TREE SPECIES No.	TRUNK DIAMETER (in.)	PROTECTED TREE?	CONDITION 0=dead 1=poor 5=excel.	SUITABILITY for PRESERVATION	COMMENTS
215 Calif. black walnut	7,5,5,4	Yes	2	Low	Edge of channel; multiple attachments @ base; lacks vigor.
216 Valley oak	9	Yes	4	Medium	Slight lean N.; narrow form.
217 Valley oak	6	No	4	Medium	Narrow & upright; very close to #218.
218 Valley oak	5	No	3	Low	Narrow. slight bow W.; very close to #217.
219 Valley oak	7,6	Yes	3	Medium	Codominant trunks @ base; 7" narrow & upright; 6" leans N.; lost central leader.
220 Valley oak	5	No	5	High	Good young tree; narrow & upright.
221 Coast live oak	8	No	4	Medium	Leans W. into project; narrow form.
222 Calif. black walnut	14,6	Yes	3	Low	Edge of channel; leans E.; codominant trunks @ 1' & 5'.
223 Valley oak	11	Yes	3	Low	Leaning & one-sided to W.; crook @ 6'.
224 Valley oak	5	No	4	Medium	Lost central leader @ top.
225 Coast live oak	9	Yes	5	High	Good tree.
226 Coast live oak	5	No	3	Low	Leans W. into project; narrow form.
227 Calif. black walnut	15	Yes	0	--	Multiple attachments @ 6'.
228 Coast live oak	10,9	Yes	3	Low	Codominant trunks @ base; lean W. & spread apart.
229 Valley oak	6,5	No	3	Low	Codominant trunks @ base; narrow & upright.
230 Valley oak	8	No	4	Medium	Codominant trunks @ 7'; narrow & upright.
231 Valley oak	7	No	5	High	Narrow & upright.
232 Coast live oak	12,11	Yes	3	Low	Codominant trunks @ 1' with included bark & poor attachment; narrow oval form.
233 Valley oak	5	No	3	Medium	Edge of channel; narrow & upright.
234 Valley oak	8	No	3	Medium	Edge of channel; codominant trunks @ 10'; narrow form.

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TREE No.	SPECIES	TRUNK DIAMETER (in.)	PROTECTED TREE?	CONDITION 0=dead 1=poor 5=excel.	SUITABILITY for PRESERVATION	COMMENTS
235	Valley oak	7,4	Yes	2	Low	Codominant trunks @ 1'; poor form & structure; largely dead.
236	Valley oak	5	No	3	Low	Bowed flat to W.
237	Valley oak	8,4	Yes	2	Low	Series of codominant attachments; narrow & upright.
238	Valley oak	9,8	Yes	2	Low	Series of codominant attachments; one-sided to SE.
239	Valley oak	9	Yes	3	Low	Multiple attachments @ 6'; narrow & upright.
240	Valley oak	5,5	No	2	Low	Poor form & structure; codominant trunks @ 1'; wide U attachment.
241	Valley oak	5	No	2	Low	Suppressed; bowed flat to W.
242	Valley oak	9	Yes	3	Low	Codominant trunks @ 7'; separated.
243	Valley oak	11	Yes	3	Medium	Narrow & upright.
244	Calif. black walnut	7,5,5	Yes	0	--	Multiple attachments @ base.
245	Valley oak	9,7	Yes	3	Low	Codominant trunks @ 2' & above very narrow vase-shaped crown.
246	Valley oak	10,10	Yes	3	Low	Codominant trunks @ 1'; trunks twist around one another; thin canopy.
247	Valley oak	11	Yes	3	Low	Leaning & one-sided to W.
248	Coast live oak	6	No	4	Medium	Narrow form; below #247.
249	Valley oak	7	No	3	Medium	Codominant trunks @ 8'; bowed W.; narrow form.
250	Valley oak	10,9	Yes	2	Low	Codominant trunks @ 2'; poor attachment; separated with gap in canopy.
251	Coast live oak	6	No	3	Low	Below #250; one-sided & leans W.
252	Boxelder	5	No	4	Medium	Asymm. form.
253	Bailey acacia	5	No	2	Low	Suppressed; adj. to #29.

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TREE SPECIES No.	TRUNK DIAMETER (in.)	PROTECTED TREE?	CONDITION 0=dead 1=poor 5=excel.	SUITABILITY for PRESERVATION	COMMENTS	
254	Valley oak	13	Yes	4	Medium	Edge of channel; high vase-shaped crown; slightly thin canopy.
255	Valley oak	17	Yes	3	Low	Edge of channel; crowded; one-sided to SW.
256	Siberian elm	16,14,6	Yes	2	Low	Edge of channel @ Oak Park Blvd.; codominant trunks @ base & 2'; rounded irregular crown; ext. twig & branch dieback.
257	Siberian elm	21	Yes	3	Low	Codominant trunks stem failed @ base on N.; multiple attachments high in crown; high vase-shaped crown.
258	Olive	7,6,5,5	No	3	Low	Multiple attachments @ base; below #257.
259	Olive	6,6,5,4,4	No	3	Low	Multiple attachments @ base; bowed W.
260	Olive	16,11	Yes	1	Low	All but dead; 1 live branch in large tree.
261	Valley oak	7	No	4	Medium	Sinuus lower trunk; okay crown.
262	Olive	7,5,3	No	2	Low	At Oak Park Blvd.; suppressed; bowed W.; multiple attachments @ base.
263	Bailey acacia	12	No	2	Low	Leans W.; over creek. Nearby 3 large stems failed over creek, now hung up in trees on the W. side
264	Olive	5,5,3,3	No	4	Medium	Multiple attachments @ base.
265	Olive	9,7,7	No	0	--	4th stem on ground.
266	Siberian elm	11,9,9,8,6,5	Yes	2	Low	Multiple attachments @ 1'; poor form & structure.
267	Olive	5,4,3	No	3	Low	Multiple attachments @ base.
268	Black locust	23	No	1	Low	Poor form & structure; 1 stem failing towards the creek.
269	Olive	7,5,4	No	3	Low	Multiple attachments @ base; rangy form.
270	Olive	5,5	No	4	Medium	Codominant trunks @ 1'.
271	Calif. pepper	7	No	4	Medium	Leans W.

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TREE No.	SPECIES	TRUNK DIAMETER (in.)	PROTECTED TREE?	CONDITION 0=dead 1=poor 5=excel.	SUITABILITY for PRESERVATION	COMMENTS
272	Olive	22,12	Yes	0	--	Decayed; codominant trunks @ base.
273	Coast live oak	5	No	3	Low	Lost central leader.
274	Holly oak	6,6,5,4	No	3	Low	Multiple attachments @ base; big shrub.
275	Evergreen ash	19,13	Yes	3	Low	Codominant trunks @ base & 5'; large crown.
276	Valley oak	10,10,8	Yes	3	Low	Codominant trunks @ 1' & 3'; both with included bark.
277	Valley oak	9,8	Yes	3	Low	Codominant trunks @ 1' with included bark; separating.
278	Coast live oak	6	No	3	Low	Leans E. towards trail.
279	Calif. black walnut	18,13,10	Yes	3	Low	Edge of channel; multiple attachments @ base; rangy form.
280	Valley oak	7	No	3	Low	Leans SE.; narrow form.
281	Valley oak	11,10	Yes	3	Low	Codominant trunks @ 2'; separated.
282	Valley oak	11,7	Yes	3	Medium	Codominant trunks @ base; 11" good.
283	Valley oak	8	No	4	Medium	Narrow form; slight lean W.
284	Valley oak	11	Yes	4	Medium	Narrow vase-shaped crown.
285	Valley oak	10	Yes	3	Low	Leans E. over trail; base outside of dripline.
286	Honeylocust	8	No	0	--	
287	Honeylocust	10,7,5	No	1	Low	Multiple attachments @ base; leans N.; no vigor.
288	Valley oak	7	No	3	Low	Below #287; codominant trunks @ 7'; separated.
289	Valley oak	11	Yes	3	Low	Leans N.; series of codominant attachments..
290	Valley oak	13,9,6	Yes	3	Low	Multiple attachments @ 1'; wide vase-shaped crown; 9" separating on E.
291	Oregon ash	14,13,13,11,9	Yes	3	Low	Multiple attachments @ base; upright & bowed; lost central leader.
292	Valley oak	8	No	4	Medium	Upright.

Tree Assessment

Oak Park Blvd.
Pleasant Hill CA
February 2018 & February 2019



TREE SPECIES No.	TRUNK DIAMETER (in.)	PROTECTED TREE?	CONDITION 0=dead 1=poor 5=excel.	SUITABILITY for PRESERVATION	COMMENTS
293 Calif. black walnut	5,4	No	2	Low	Just poor; codominant trunks @ base.
294 Bailey acacia	5	No	5	Medium	Good young tree.
295 Valley oak	9	Yes	3	Low	Codominant trunks @ 7'; 1 stem vertical; 2nd bowed E.
296 Oregon ash	13,13,12,10,9,6,6	Yes	2	Low	Multiple attachments @ base; large gap in canopy formed by 2 stems on SW.
297 Valley oak	9,8	Yes	4	Medium	Codominant trunks @ 4'; both vertical.
298 Valley oak	8	No	2	Low	Poor form; bowed S.; base outside of dripline.
299 Catalpa	12,9,6	No	3	Low	Multiple attachments @ base; flat-topped.
300 Coast live oak	6,6	No	3	Medium	Codominant trunks @ 3'; poor attachment.
301 Calif. black walnut	13	Yes	2	Low	Suppressed; bowed flat to E.
302 Willow	32,22	Yes	3	Low	Big tree @ edge of channel; codominant trunks @ 13'; branch failures; 22" stem failed @ base on N.

Tree Assessment Plan

Oak Park Boulevard
Pleasant Hill, CA

Prepared for:
Bates Stringer Oak Park, LLC
Danville, CA

February 2018
February 2019
(Added Trees #213-#302)

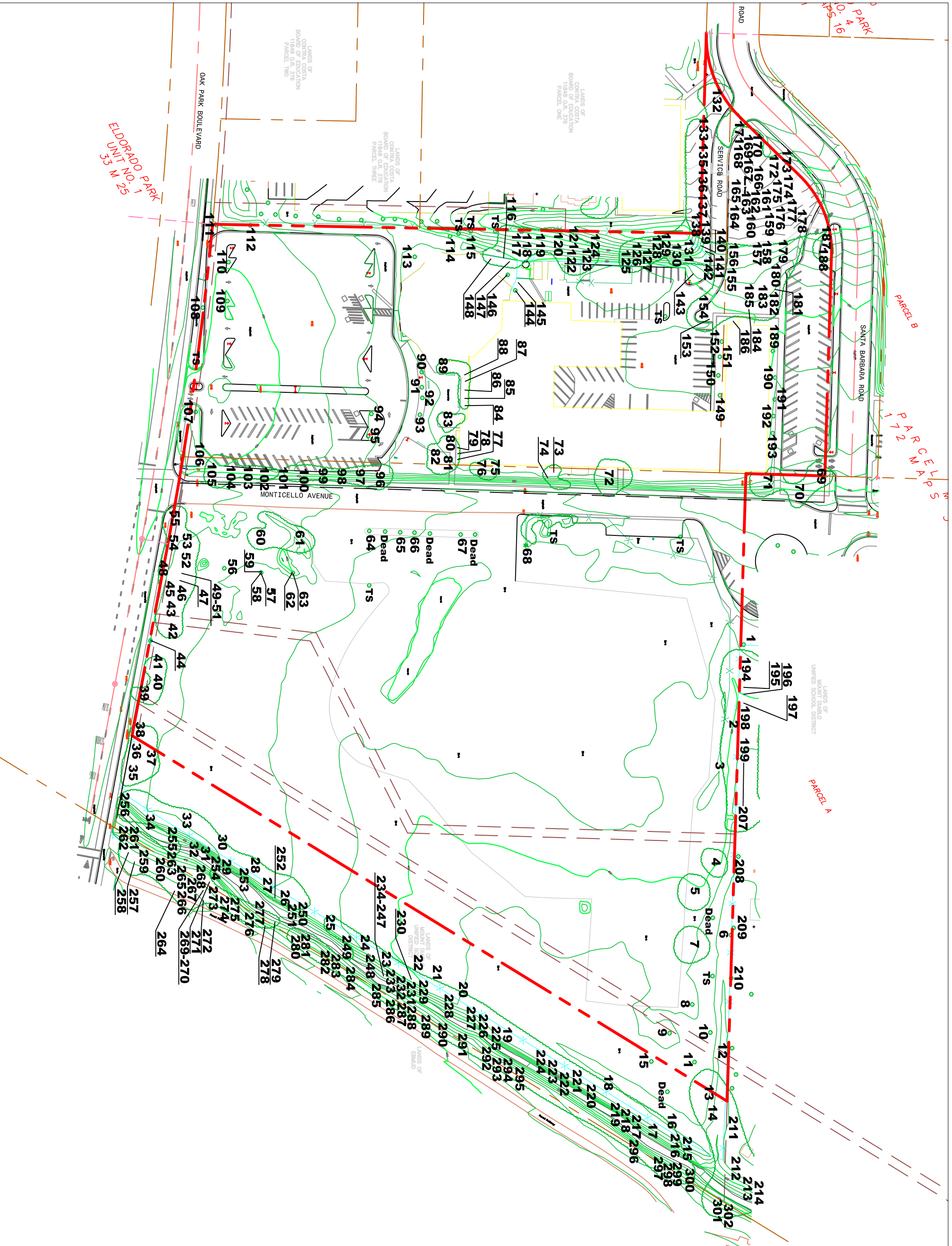


No Scale

Notes:
Base map provided by:
BKF
Walnut Creek, CA
Numbered tree locations are approximate.



325 Ray Street
Pleasanton, CA 94566
Phone 925.484.0211
Fax 925.484.0596
www.hortscience.com



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D.6 - Waters of the United States Jurisdictional Delineation

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Waters of the United States Jurisdictional Delineation Grayson Creek Outfalls Project Pleasant Hill, California

Prepared for:
City of Pleasant Hill
100 Gregory Lane
Pleasant Hill, CA 94523
925.671.5218

Contact:
Mario Moreno, City Engineer
mmoreno@pleasanthillca.org

Prepared by:
FirstCarbon Solutions
1350 Treat Boulevard, Suite 380
Walnut Creek, CA 94597
925.357.2562

Contact: Robert Carroll, Biologist

Date: August 23, 2019

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SECTION 1: INTRODUCTION

1.1 - Purpose of Assessment

As requested, FirstCarbon Solutions (FCS) prepared a delineation of waters of the United States, for the City of Pleasant Hill for stormwater drainage improvements related to the Grayson Creek Outfalls Project. The purpose of the delineation is to identify potential waters of the United States, occurring within the Grayson Creek Outfalls project site. The delineation area additionally includes a sufficient buffer around the project site to account for potential adjacent jurisdictional features. The results of this delineation are preliminary until verified by the United States Army Corps of Engineers (USACE); as such, we respectfully request a Preliminary Jurisdictional Determination (JD).

1.2 - Project Site Location

The Grayson Creek Outfalls project site is located in the City of Pleasant Hill, Contra Costa County, California (Exhibit 1). The 11.62-acre project site is generally located at the northeastern corner of Oak Park Boulevard and Monticello Avenue (Exhibit 2).

1.3 - Driving Directions to Project Site

From Interstate 680 (I-680), take exit 48 for Treat Boulevard toward Geary Road, keep right to continue toward Buskirk Avenue, keep left at the fork to continue on Buskirk Avenue, turn left onto Oak Road, turn left onto Oak Park Boulevard, and turn right onto Monticello Avenue.

1.4 - Contact Information

The project sponsor for the Grayson Creek Outfalls Project is the City of Pleasant Hill. If necessary, please contact the City Engineer, Mario Moreno (mmoreno@pleasanthillca.org).

Delineation Representative

FirstCarbon Solutions
Robert Carroll
2204 Plaza Drive, Suite 210
Rocklin, CA 95765
rcarroll@fcs-intl.com

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Source: Bing Aerial Imagery.

FIRSTCARBON
 SOLUTIONS™



Exhibit 2
Local Vicinity Map
Aerial Base

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SECTION 2: METHODOLOGY

The jurisdictional delineation study methods included a project site visit and background information review. Prior to conducting the field visit and delineation, a 200-scale color aerial photograph of the project site and United States Geological Survey (USGS) topographic maps were assessed to determine the locations of potential areas of USACE/California Department of Fish and Wildlife (CDFW)/Regional Water Quality Control Board (RWQCB) jurisdiction. The presence of potentially jurisdictional features within the project site was evaluated using the USACE and CDFW methodologies described below (See Appendix A for data sheets).

2.1 - Background Information Review

Prior to conducting field studies, available reference materials were reviewed, including but not limited to:

- Natural Resources Conservation Service’s web soil survey (NRCS 2019)
- National Wetland Inventory (NWI) Map Data (USFWS 2019) for the project site that characterize wetland and waters of the United States according to the Classification of Wetlands and Deepwater Habitats of the United States developed by the U.S. Fish and Wildlife Service (Cowardin et al. 1979).
- Biological Constraints Analysis (Live Oak Associates, Inc. 2018)

2.2 - Field Investigation

For non-wetland, “other water” features, the extent of the USACE jurisdiction is defined by the ordinary high water mark (OHWM). Delineation of other waters was based on observing indicators for the OHWM (33 Code of Federal Regulations [CFR] 328.3), following established USACE criteria and considering hydrological connectivity or isolation. In general, the OHWM for a stream is usually determined through an examination of the recent physical evidence of surface flow. Common physical characteristics that indicate the presence of an OHWM include but are not limited to a clear natural line impressed on the bank, evidence of scour, recent bank erosion, destruction of native terrestrial vegetation, sediment deposition, and the presence of litter and debris.

The delineation was conducted according to methodology outlined in A Field Guide to the Identification of the OHWM (USACE 2008). The fieldwork for the jurisdictional determination was conducted by FCS Biologist, Robert Carroll, on June 5, 2019. The extent of potentially jurisdictional waters and wetlands were mapped, quantified, and documented for the entire 11.62 project site.

2.3 - CDFW Jurisdictional Streambeds

According to the CDFW, streams are generally defined by the presence of bed and bank or channelized topography, shorelines, and similar features. In addition, the CDFW has discretion to assert jurisdiction over ecological systems (i.e., riparian communities) associated with streams and

water bodies, as well as isolated water bodies that are outside of the USACE jurisdiction. Delineation of the limits of CDFW jurisdiction was accomplished through both on-site and remote analysis. State jurisdiction was delineated by measuring outer width and length boundaries of State jurisdiction (“lakes or streambeds”), consisting of the greater of either the “top of bank” measurement (“bankfull” width) or the extent of associated riparian or wetland vegetation. Additionally, remote or off-site analysis included a review of aerial photography, analysis of available topographic maps, and calculation of preliminary jurisdictional area using ArcView GIS software.

2.4 - RWQCB Jurisdictional Waters of the State

Evaluation of the waters of the State followed the same methods for collection of data as described above under the USACE Delineation Methodology. Isolated features were not identified within the project site, and, therefore, all features mapped as potentially jurisdictional to the USACE are also mapped as potentially jurisdictional to the RWQCB.

SECTION 3: ENVIRONMENTAL SETTING

A portion of the project site contains riparian woodlands that occur along a perennial creek, Grayson Creek. The Creek and its associated riparian woodland habitat occurs on the eastern portion of the project site. The remaining components of the project site consists of urban developed and ruderal/disturbed habitat.

The average yearly rainfall for the City is approximately 20.1 inches. Precipitation falls primarily as rain, with the majority of precipitation events occurring between November and March. The average rainfall for the month of June is approximately 0.10 inch. The project site has received above-average rainfall during the last annual rainfall year (November 2018 to March 2019), totaling approximately 28.8 inches (usclimatedata.com). The weather during the June 5, 2019, survey was sunny with a high of 92 degrees Fahrenheit.

3.1 - Soils

Soils within the project site are depicted in Exhibit 3.

3.1.1 - Cc-Clear Lake Clay

This series consists of very deep, poorly drained soils that formed in fine textured alluvium derived from mixed rock sources. These soils are commonly found in flood basins, flood plains, and on swales of drainage ways on slopes between 0 to 5 percent (NRCS 2019).

3.2 - Hydrology

The project site is located within the Walnut Creek watershed. This watershed is the largest in Contra Costa County and is approximately 146 square miles. Additionally, the Project site is also located in a sub-watershed of the larger Walnut Creek watershed, the Grayson Creek watershed. This sub-watershed collects water from the Pleasant Hill area in the northwest portion of the Walnut Creek watershed. Grayson Creek flows out of the Walnut Creek watershed and into Pacheco Slough that ultimately connects to Suisun Bay, which is considered a traditional navigable water (TNW).

3.3 - Vegetation

The plant communities that occur within the project site include three vegetation types: riparian/creek, ruderal/disturbed, and urban developed (Exhibit 4).

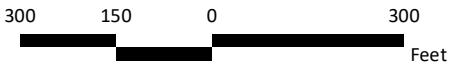
The riparian/creek portion of the project site consists of a mix of common riparian species and is 0.65 acre. Grayson Creek comprises approximately 0.39 acre of the project site. The riparian habitat associated with Grayson Creek encompasses approximately 0.26 acre. Species observed within these areas include: valley oak (*Quercus lobata*), coast live oak (*Quercus agrifolia*), olive (*Olea europaea*), acacia (*Acacia* spp.), silk tree (*Albizia julibrissin*), dallis grass (*Paspalum dilatatum*), cattails (*Typha* spp.), Johnson grass (*Sorghum halepense*), and field hedge parsley (*Torilis arvensis*).

The ruderal portion of the project site consists of non-native grassland species and is 8.13 acres. Species observed within this community include: pampas grass (*Cortaderia selloana*), common vetch (*Vicia sativa*), burclover (*Medicago polymorpha*), bristly ox-tongue (*Helminthotheca echinoides*), and sweet clover (*Melilotus albus*).

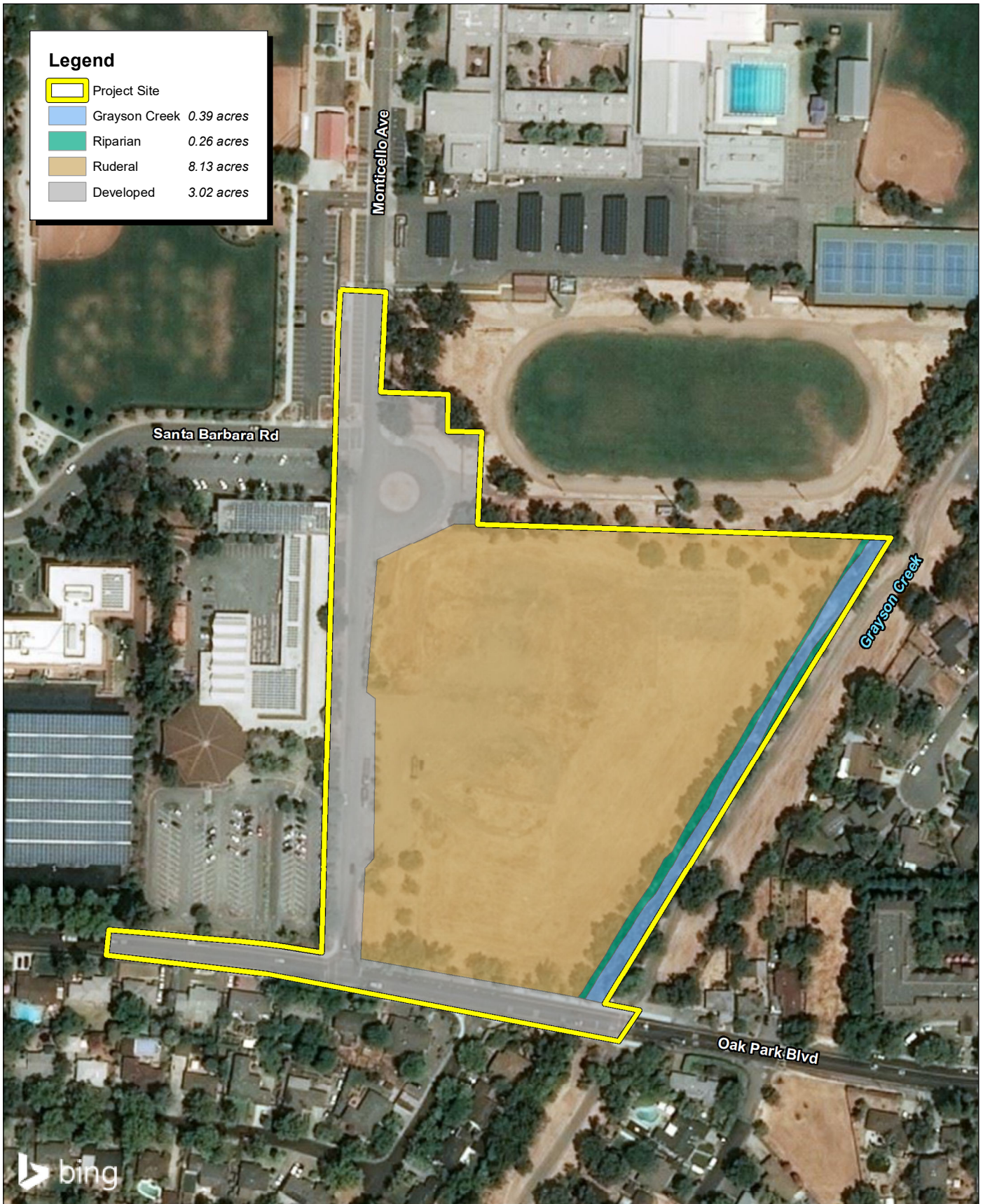
The urban portion of the project site consists of a mix of landscaped trees and shrubs and is 3.02 acres. Species observed within this area include: cypress (*Hesperocyparis* spp.), carob (*Ceratonia siliqua*), common ivy (*Hedera helix*), coyote bush (*Baccharis pilularis*), and fountain grass (*Pennisetum* spp.).



Source: Bing Aerial Imagery. USDA Soils Data Mart, Contra Costa County.



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SECTION 4: RESULTS

The entire 11.62 acre project site was evaluated for the presence of waters of the United States under USACE jurisdiction as well as waters of the State that may be regulated by the RWQCB and/or CDFW. Representative photographs were also taken during the site survey to document existing conditions (Appendix B).

Potential waters of the United States within the project site consist of Grayson Creek. The locations of all potentially jurisdictional features are mapped on Exhibit 5. The total area of potentially jurisdictional features in the project site is 0.39 acre. A summary of the dimensions and acreages of features is included in Table 1 below.

Table 1: Summary of Potential Section 404 Jurisdictional Waters within the Project Site

Map Feature	Water Type	Square Feet (sf)	Area of Potential Section 404 Jurisdiction Linear Feet (lf)	Acres (A)
Waters of the U.S.	Perennial Freshwater Creek	17,040	810	0.39

4.1 - Section 404 Water of the U.S.

Approximately 0.39 acre or 810 linear feet of non-wetland waters were mapped within the project site (refer to Table 1). One non-wetland waters was determined to be potentially jurisdictional based on the presence of an OHWM (USACE 2008). Potentially jurisdictional non-wetland features were delineated along the OHWM. The OHWM was delineated along the bank to bank width of all features and was clearly discernible by standing and/or flowing water, bed-and-bank topography, shelving, benching, water staining on bridge piers, destruction of terrestrial vegetation, and/or a distinct shift in plant community composition from upland to wetland plant communities. If a channel feature did not exhibit an OHWM, and did not contain a predominance of hydrophytic vegetation, it was not considered to be potentially jurisdictional. Classification of the other water types within the project site is based on the primary source of hydrology, relative duration of flows, and hydrogeomorphology.

4.2 - Links to Traditional Navigable Waters

Grayson Creek flows out of the Walnut Creek watershed and into Pacheco Slough, which ultimately connects to Suisun Bay, a TNW. Pursuant to the Rapanos Guidance, tributaries to TNWs are regulated if the tributary is a Relatively Permanent Water (RPW), or if a significant nexus to the TNW can be established.

4.3 - Relatively Permanent Waters

RPWs are waters that flow year-round or have continuous flow at least seasonally (a minimum of 3 months). Grayson Creek is a perennial creek, and thus does meet the definition of an RPW.

4.4 - Waters of the State

Grayson Creek will likely be regulated by the RWQCB as waters of the State through Section 401 of the Clean Water Act (CWA) and/or the State Porter-Cologne Act. Grayson Creek is also likely jurisdictional pursuant to Sections 1600–1616 of the California Fish and Game Code.

6108900

6109556

6110212



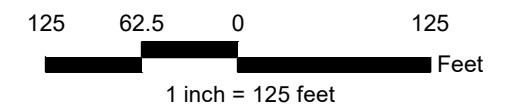
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Legend

- Project Site
- Waters of the U.S.
- Data Points
- Topography

USACE Jurisdictional Waters

ID	Avg width (ft)	Length (ft)	Area (sqft)	Acres
1	20.1	810.6	17,140.7	0.39



UTM Zone 10N, NAD 83 Walnut Creek Quadrangle
 Las Junitas Land Grant HUC 8: 18050001

Data Sources: ESRI Aerial Imagery, BKF Engineers, 2019.

Delineator(s): R. Carroll Delineation Date: 06/27/2019
 Map Preparer: K. McCracken

Exhibit 5 Wetland Delineation Map

CITY OF PLEASANT HILL
 GRAYSON CREEK OUTFALLS PROJECT
 JURISDICTIONAL DELINEATION

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SECTION 5: REFERENCES

- California Department of Fish and Game (CDFG) Environmental Services Division (ESD). 1994. A Field Guide to Lake and Streambed Alteration Agreements, Sections 1600–1607, California Fish and Game Code.
- Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe, 1979, Classification of Wetlands and Deepwater Habitats of the United States, U.S. Fish and Wildlife Service Pub. FWS/OBS79/31, Washington, D.C.
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- U.S. Climate Data. 2019. Pleasant Hill, CA Weather. Website: <https://www.usclimatedata.com/>. Accessed June 28, 2019.

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Weather.com. 2019. Pleasant Hill, CA Weather. Website:
<https://www.wunderground.com/weather/us/ca/pleasant-hill/94523>. Accessed June 28,
2019.

**Attachment 1
Data Sheets**

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WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

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

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

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____
Remarks: _____ _____ _____	

VEGETATION – Use scientific names of plants.

<u>Tree Stratum</u> (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: _____ (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
4. _____	_____	_____	_____	
_____ = Total Cover				
<u>Sapling/Shrub Stratum</u> (Plot size: _____)				Prevalence Index worksheet:
1. _____	_____	_____	_____	Total % Cover of: _____ Multiply by: _____
2. _____	_____	_____	_____	OBL species _____ x 1 = _____
3. _____	_____	_____	_____	FACW species _____ x 2 = _____
4. _____	_____	_____	_____	FAC species _____ x 3 = _____
5. _____	_____	_____	_____	FACU species _____ x 4 = _____
_____ = Total Cover				UPL species _____ x 5 = _____
				Column Totals: _____ (A) _____ (B)
				Prevalence Index = B/A = _____
<u>Herb Stratum</u> (Plot size: _____)				Hydrophytic Vegetation Indicators:
1. _____	_____	_____	_____	___ Dominance Test is >50%
2. _____	_____	_____	_____	___ Prevalence Index is ≤3.0 ¹
3. _____	_____	_____	_____	___ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
4. _____	_____	_____	_____	___ Problematic Hydrophytic Vegetation ¹ (Explain)
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
_____ = Total Cover				
<u>Woody Vine Stratum</u> (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
_____ = Total Cover				
% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____				
				Hydrophytic Vegetation Present? Yes _____ No _____

Remarks: _____

SOIL

Sampling Point: _____

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

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

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

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

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

Indicators for Problematic Hydric Soils³:

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

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

Restrictive Layer (if present):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

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

Wetland Hydrology Present? Yes _____ No _____

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

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

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

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____
Remarks: _____ _____ _____	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status		
1. _____	_____	_____	_____		
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
				_____ = Total Cover	
Sapling/Shrub Stratum (Plot size: _____)					
1. _____	_____	_____	_____		
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
				_____ = Total Cover	
Herb Stratum (Plot size: _____)					
1. _____	_____	_____	_____		
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
8. _____	_____	_____	_____		
				_____ = Total Cover	
Woody Vine Stratum (Plot size: _____)					
1. _____	_____	_____	_____		
2. _____	_____	_____	_____		
				_____ = Total Cover	
% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____					
Remarks: _____					

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

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

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

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

Hydrophytic Vegetation Present? Yes _____ No _____

SOIL

Sampling Point: _____

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

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

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

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

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

Indicators for Problematic Hydric Soils³:

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

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

Restrictive Layer (if present):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

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

Wetland Hydrology Present? Yes _____ No _____

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

Remarks:

Attachment 2 Representative Photographs of the Project Site

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Photograph 1: Just north of project boundary looking west



Photograph 2: Northern project boundary looking south



Photograph 4: Looking toward southern end of project boundary



Photograph 5: Southern end of project boundary with Oak Park Boulevard culvert in view, looking south

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